Appendix　Detailed Stipulations for ECHONET Device Objects

Ver. 2.11 Release a

Contents

Revision record

	Revision overview
Ver.1.01 Release b	- The water flow rate sensor class, micromotion sensor class, passage sensor class, bed presence sensor class, and open/close sensor class were additionally stipulated (with new class codes stipulated). - Detailed stipulations for the electric hot water pot class were added. - Property stipulations for the hot water generator class were added.
Ver.2.00 Release b	- The activity amount sensor class, human body location sensor class, and buzzer class were additionally stipulated (with new class codes stipulated). - Detailed stipulations for the rice cooker class were added. - Property stipulations for the washing machine class and midnight power electric hot water generator class were added.
Ver.2.01 Release a	- For the measured current value property (0xE0) of the current value sensor class, a description was added to stipulate the use of an effective value for indication of an AC measurement. - For the measured current consumption property (0xB9) of the home air conditioner class, a description was added to stipulate the use of an effective value for indication of an AC measurement. - For the measured current consumption property (0xDA) of the refrigerator class, a description was added to stipulate the use of an effective value for indication of an AC measurement. - Organizational errors in the existing human body information bitmap tables for the activity amount sensor class and human body location sensor class were corrected. - Entry numbers in the detailed descriptions of the activity amount sensor class, human body location sensor class, and rice cooker class were corrected. - Property-related descriptions for the LP gas meter class residual volume control warning, residual volume warning level setting 1, residual volume warning level setting 2, residual volume warning level setting 3, and test call were revised.
Ver.2.10 Preview	- The open/close level property of the electrically operated shade class was renamed to the degree-of-opening level property. - Typographical errors in the annexes were corrected.

	Revision overview
Ver.2.10 Draft	- The shade angle setting property of the electrically operated shade class was adjusted for vertical shades. - The following properties were added to the home air conditioner class: Ventilation volume setting, humidification volume setting, mounted air cleaning method, air cleaning function operation status, mounted refresh method, refresh function operating status, mounted self-cleaning method, self-cleaning function operating status, and electrical current limit setting - The following properties of the home air conditioner class were changed: Operation mode, air flow direction auto setting, vertical air flow direction, horizontal air flow direction , ventilating operation setting, room relative humidity measured value, room temperature measured value, blow-off temperature measured value, and outdoor temperature measured value - The following properties were added to the off peak electric water heater class: Water supply temperature setting, bath temperature setting, bath water adding operation setting, bath temperature lowering operation setting, bath water level setting 2, and bath water level setting 3 - The following property was added to the hot water generator class: Bath water level setting 3 - Typographical errors in the descriptions of the off peak electric water heater class and hot water generator class were corrected. - Version information for the stipulations was added to Annex 1-8. - Typographical errors in the annexes were corrected.
Ver.2.10 Release a	Typographical errors in Version 2.10 Draft were corrected.
Ver.2.11 Release a	Typographical errors in Ver.2.11 Release a annexes were corrected.

Chapter 1 Detailed Stipulations for Device Objects

This Appendix describes detailed property configurations of the device objects of class groups (class group codes 0x00 to 0x05: see Annex 2) corresponding to device objects.

Each class in this Appendix is inherited from properties of the device object super-class specified in Part 2 ECHONET Communications Middleware Specification, 9.3 Stipulations for Device Object Super-classes (see Annex 1). Accordingly, the device mounting each class shall mount a property specified by each class of this Appendix (see Annex 3: Code Area Allocation) and a property of the device object super-class.

1.1 Sensor-related Device Class Group

This section specifies detailed codes and properties of each ECHONET object belonging to the sensor-related device class group (class group code X1 = 0x00). Table 1.1 shows a list of classes specified in detail in this section. “Mandatory” means that the device mounting each class must mount a combination of its property and service.

Table 1.1 List of Objects of Sensor-related Device Class Group (1/2)

Group code	Class code	Class name	Remark
0x00	0x01	Gas leak sensor	
	0x02	Crime prevention sensor	
	0x03	Emergency button	
	0x04	First-aid sensor	
	0x05	Earthquake sensor	
	0x06	Electric leak sensor	
	0x07	Human detection sensor	
	0x08	Visitor sensor	
	0x09	Call sensor	
	0x0A	Condensation sensor	
	0x0B	Air pollution sensor	
	0x0C	Oxygen sensor	
	0x0D	Illuminance sensor	
	0x0E	Sound sensor	
	0x0F	Mailing sensor	
	0x10	Weight sensor	
	0x11	Temperature sensor	
	0x12	Humidity sensor	
	0x13	Rain sensor	
	0x14	Water level sensor	
	0x15	Bath water level sensor	
	0x16	Bath boil-up sensor	
	0x17	Water leak sensor	
	0x18	Water overflow sensor	
	0x19	Fire sensor	
	0x1A	Cigarette smoke sensor	
	0x1B	CO_2 sensor	
	0x1C	Gas sensor	
	0x1D	VOC sensor	
	0x1E	Differential pressure sensor	
	0x1F	Air speed sensor	

Table 1.2 List of Objects of Sensor-related Device Class Group (2/2)

Group code	Class code	Class name	Remark
0x00	0x20	Odor sensor	
	0x21	Flame sensor	
	0x22	Electric energy sensor	
	0x23	Current value sensor	
	0x25	Water flow rate sensor	
	0x26	Micromotion sensor	
	0x27	Passage sensor	
	0x28	Bed presence sensor	
	0x29	Open/close sensor	
	0x2A	Activity amount sensor	
	0x2B	Human body location sensor	

1.1.1 Stipulations for gas leak sensor class

Class group code : 0x00
Class code : 0x01
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Size	Access rule	Man-datory	Announcement at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level in 8 steps. 0x31～0x38	unsigned char	1 Byte	Set/Get			
Gas leak occurrence status	0xB1	Indicates gas leak occurrence status. Gas leak occurrence found = 0x41 Gas leak occurrence not found = 0x42	unsigned char	1 Byte	Get	○	○	
Gas leak occurrence status resetting	0xBF	Resets gas leak occurrence status by setting 0x00. Reset=0x00	unsigned char	1 Byte	Set			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Gas leak occurrence status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Gas leak occurrence status
Indicates whether a gas leak occurrence status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Gas leak occurrence found” if the threshold set by the detection threshold level is exceeded. When this property is set to “Gas leak occurrence found” = 0x41, it shall be announced periodically. This property shall be set to “Gas leak occurrence not found” = 0x42 by resetting the main body or by EPC = 0xBF “Gas leak occurrence status resetting”.

(4) Gas leak occurrence status resetting
Resets EPC = 0xB1 “Gas leak occurrence status” by setting 0x00.

1.1.2 Stipulations for crime prevention sensor class

Class group code : 0x00
Class code : 0x02
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Access rule	Man-datory	Announcement at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	Set/Get			
Invasion occurrence status	0xB1	Indicates invasion occurrence status. Invasion occurrence found = 0x41 Invasion occurrence not found = 0x42	unsigned char	1 Byte	Get	○	○	
Invasion occurrence status resetting	0xBF	Resets invasion occurrence status by setting 0x00. Reset=0x00	unsigned char	1 Byte	Set			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the device object super-class property)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Invasion occurrence status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Invasion occurrence status
Indicates whether an invasion occurrence status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Invasion occurrence status found” = 0x41 if the threshold set by the detection threshold level is exceeded. When this property is set to “Invasion occurrence status found” = 0x41, it shall be announced periodically. This property shall be set to “Invasion occurrence status not found” = 0x42 by resetting the main body or by EPC = 0xBF “Invasion occurrence status resetting”.

(4) Invasion occurrence status resetting
Resets EPC = 0xB1 “Invasion occurrence status” by setting 0x00.

1.1.3 Stipulations for emergency button class

Class group code : 0x00
Class code : 0x03
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Access rule	Man-datory	Announcement at status change	Remark
Emergency occurrence status	0xB1	Indicates emergency occurrence status. Emergency occurrence found = 0x41 Emergency occurrence not found = 0x42	unsigned char	1 Byte	Get	○	○	
Emergency occurrence status resetting	0xBF	Resets emergency occurrence status by setting 0x00. Reset=0x00	unsigned char	1 Byte	Set			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Emergency occurrence status
Indicates whether an emergency occurrence status caused by pressing the emergency button is found or not. When this property is set to “Emergency occurrence status found” = 0x41, the property shall be announced periodically. This property shall be set to “Emergency occurrence status not found” = 0x42 by resetting the main body or by EPC = 0xBF “Emergency occurrence status resetting”.

(3) Emergency occurrence status resetting
Resets EPC = 0xB1 “Emergency occurrence status” by setting 0x00.

1.1.4 Stipulations for first-aid sensor class

Class group code : 0x00
Class code : 0x04
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Access rule	Man-datory	Announcement at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	Set/Get			
First-aid occurrence status	0xB1	Indicates first-aid occurrence status. First-air occurrence found = 0x41 First-aid occurrence not found = 0x42	unsigned char	1 Byte	Get	○	○	
First-aid occurrence status resetting	0xBF	Resets first-aid occurrence status by setting 0x00. Reset=0x00	unsigned char	1 Byte	Set			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “First-aid occurrence status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) First-aid occurrence status

Indicates whether a first-aid occurrence status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “First-aid occurrence status found” if the threshold set by the detection threshold level is exceeded.

When this property is set to “First-aid occurrence status found” = 0x41, the property shall be announced periodically. This property shall be set to “First-aid occurrence status not found” = 0x42 by resetting the main body or by EPC = 0xBF “First-aid occurrence status resetting”.

(4) First-aid occurrence status resetting

Resets EPC = 0xB1 “First-aid occurrence status” by setting 0x00.

1.1.5 Stipulations for earthquake sensor class

Class group code : 0x00
Class code : 0x05
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Access rule	Man-datory	Announcement at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	Set/Get			
Earthquake occurrence status	0xB1	Indicates earthquake occurrence status. Earthquake occurrence found = 0x41 Earthquake occurrence not found = 0x42	unsigned char	1 Byte	Get	○	○	
Earthquake occurrence status resetting	0xBF	Resets earthquake occurrence status by setting 0x00. Reset=0x00	unsigned char	1 Byte	Set			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Earthquake occurrence status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Earthquake occurrence status
Indicates whether an earthquake occurrence status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Earthquake occurrence status found” if the threshold set by the detection threshold level is exceeded.
When this property is set to “Earthquake occurrence status found” = 0x41, the property shall be announced periodically. This property shall be set to “Earthquake occurrence status not found” = 0x42 by resetting the main body or by EPC = 0xBF “Earthquake occurrence status resetting”.

(4) Earthquake occurrence status resetting
Resets EPC = 0xB1 “Earthquake occurrence status” by setting 0x00.

1.1.6 Stipulations for electric leak sensor class

Class group code : 0x00
Class code : 0x06
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Access rule	Man-datory	Announcement at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	Set/Get			
Electric leak occurrence status	0xB1	Indicates leak occurrence status. Leak occurrence status found = 0x41 Leak occurrence status not found = 0x42	unsigned char	1 Byte	Get	○	○	
Electric leak occurrence status resetting	0xBF	Resets leak occurrence status by setting 0x00. Reset=0x00	unsigned char	1 Byte	Set			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Leak occurrence status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Electric leak occurrence status
Indicates whether an electric leak occurrence status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Electric leak occurrence status found” if the threshold set by the detection threshold level is exceeded. When this property is set to “Electric leak occurrence status found” = 0x41, the property shall be announced periodically. This property shall be set to “Electric leak occurrence status not found” = 0x42 by resetting the main body or by EPC = 0xBF “Electric leak occurrence status resetting”.

(4) Electric leak occurrence status resetting
Resets EPC = 0xB1 “Electric leak occurrence status” by setting 0x00.

1.1.7 Stipulations for human detection sensor class

Class group code : 0x00
Class code : 0x07
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Human detection status	0xB1	Indicates human detection status. Human detection status found = 0x41 Human detection status not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Human detection status” to be set to “Detected” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Human detection status

Indicates whether a human detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Human detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Human detection status not found” if the detection threshold value is not reached.

1.1.8 Stipulations for visitor sensor class

Class group code : 0x00
Class code : 0x08
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Visitor detection status	0xB1	Indicates visitor detection status. Visitor detection found = 0x41, Visitor detection not found = 0x42	unsigned char	1 Byte	–	Get	○	○	
Visitor detection holding time	0xBE	Indicates visitor detection holding time in units of 10 seconds. 0x0000～0xFFFD (0 sec. to 655,300 sec.)	unsigned short	2 Byte	10 sec	Set/Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Visitor detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Visitor detection status

Indicates whether a visitor detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Visitor detection status found” if the threshold set by the detection threshold level is exceeded. When this property is set to “Visitor detection status found” = 0x41, the property shall be announced periodically.

(4) Visitor detection holding time

Indicates the time from start of “Visitor detection status found” to return to “Visitor detection status not found” in units of 10 seconds. The property value range shall be 0x0000 to 0xFFFD (0 sec. to 655,330 sec.). If the property value of the read device exceeds the property value range, the overflow code 0xFFFF shall be used.

1.1.9 Stipulations for call sensor class

Class group code : 0x00
Class code : 0x09
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Call status	0xB1	Indicates call status. Call status found = 0x41 Call status not found = 0x42	unsigned char	1 Byte	–	Get	○	○	
Call holding time	0xBE	Indicates the call holding time in units of 10 seconds. 0x0000～0xFFFD (0 sec. to 655,300 sec.)	unsigned short	2 Byte	10 sec	Set/Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Call status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Call status
Indicates whether a call status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Call status found” if the threshold set by the detection threshold level is exceeded. When this property is set to “Call status found” = 0x41, the property shall be announced periodically.

(4) Call holding time
Indicates the time from start of “Call status found” to return to “Call status not found” in units of 10 seconds. The property value range shall be 0x0000 to 0xFFFD (0 sec. to 655,330 sec.). If the property value of the read device exceeds the property value range, the overflow code 0xFFFF shall be used.

1.1.10 Stipulations for condensation sensor class

Class group code : 0x00
Class code : 0x0A
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Condensation detection status	0xB1	Indicates condensation status. Condensation occurrence found = 0x41 Condensation occurrence not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Condensation detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Condensation detection status

Indicates whether a condensation detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Condensation detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Condensation detection status not found” if the detection threshold value is not reached.

1.1.11 Stipulations for air pollution sensor class

Class group code : 0xS00
Class code : 0x0B
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Air pollution detection status	0xB1	Indicates air pollution detection status. Air pollution detection found = 0x41 Air pollution detection not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Air pollution detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Air pollution detection status

Indicates whether an air pollution detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Air pollution detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Condensation detection status not found” if the detection threshold value is not reached.

1.1.12 Stipulations for oxygen sensor class

Class group code : 0x00
Class code : 0x0C
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measured value of oxygen concentration	0xE0	Indicates measured value of oxygen concentration in units of 0.01%. 0x0000～0x2710 (0.00～100.00%)	unsigned short	2 Byte	0.01%	Get	○		

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Measured value of oxygen concentration
Indicates the measured value of oxygen concentration in units of 0.01%. The property value range shall be 0x0000 to 0x2710 (0.00 to 100.00%). When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value falls below the property value range, the underflow code 0xFFFE shall be used.

1.1.13 Stipulations for illuminance sensor class

Class group code : 0x00
Class code : 0x0D
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measured illuminance value	0xE0	Indicates measured illuminance value in lux. 0x0000～0xFFFD (0 to 65533 luxes)	unsigned short	2 Byte	Lux	Get	○		

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Measured illuminance value

Indicates the measured illuminance value in lux. The property value range shall be 0x0000 to FFFD (0 to 65533 luxes). When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value falls below the property value range, the underflow code 0xFFFE shall be used.

1.1.14 Stipulations for sound sensor class

Class group code : 0x00
Class code : 0x0E
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Sound detection status	0xB1	Indicates sound detection occurrence status. Sound detection found = 0x41 Sound detection not found = 0x42	unsigned char	1 Byte	–	Get	○	○	
Sound detection holding time	0xBE	Indicates call holding time in units of 10 seconds. 0x0000～0xFFFD (0 sec. to 655,330 sec.)	unsigned short	2 Byte	10 sec	Set/Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Sound detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Sound detection status

Indicates whether a sound detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Call status found” if the threshold set by the detection threshold level is exceeded.

(4) Sound detection holding time

Indicates the time from start of “Sound detection status found” to return to “Sound detection status not found” in units of 10 seconds. The property value range shall be 0x0000 to 0xFFFD (0 sec. to 655,330 sec.). If the property value of the read device exceeds the property value range, the overflow code 0xFFFF shall be used.

1.1.15 Stipulations for mailing sensor class

Class group code : 0x00
Class code : 0x0F
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Mailing detection status	0xB1	Indicates mailing occurrence status. Mailing detection status found = 0x41 Mailing detection status not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Mailing detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Mailing detection status

Indicates whether a mailing detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Mailing detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Mailing detection status not found” if the detection threshold value is not reached.

1.1.16 Stipulations for weight sensor class

Class group code : 0x00
Class code : 0x10
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Weight detection status	0xB1	Indicates weight detection occurrence status. Weight detection status found = 0x41 Weight detection status not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Weight detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Weight detection status

Indicates whether a weight detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Weight detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Weight detection status not found” if the detection threshold value is not reached.

1.1.17 Stipulations for temperature sensor class

Class group code : 0x00
Class code : 0x11
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measured temperature value	0xE0	Indicates the measured temperature value in units of 0.1°C. 0xF554～0x7FFF (-2732～32766) (-273.2～3276.6°C)	signed short	2 Byte	0.1°C	Get	○		

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Measured temperature value

Indicates the measured temperature value in units of 0.1%. The property value range shall be 0xF554 to 0x7FFD (-273.2°C to 3276.6°C). When the property value of the real device exceeds this property value range, the overflow code 0x8000 shall be used. When said value falls below the property value range, the underflow code 0x7FFE shall be used.

1.1.18 Stipulations for humidity sensor class

Class group code : 0x00
Class code : 0x12
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measured value of relative humidity	0xE0	Indicates measured value of relative humidity in %. 0x00～0x64 (0～100%)	unsigned char	1 Byte	%	Get	○		

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Measured value of relative humidity
Indicates the measured value of relative humidity in %. The property value range shall be 0x00 to 0x64 (0 to 100%). When the property value of the real device exceeds this property value range, the overflow code 0xFF shall be used. When said value falls below the property value range, the underflow code 0xFE shall be used.

1.1.19 Stipulations for rain sensor class

Class group code : 0x00
Class code : 0x13
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Rain detection status	0xB1	Indicates rain detection status. Rain detection status found = 0x41 Rain detection status not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Rain detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Rain detection status

Indicates whether a rain detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Rain detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Rain detection status not found” if the detection threshold value is not reached.

1.1.20 Stipulations for water level sensor class

Class group code : 0x00
Class code : 0x14
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
		Value range (decimal notation)							
Water level over detection threshold level	0xB0	Indicates the water level over detection threshold level in cm. 0x00～0xFD(0～253)	unsigned char	1 Byte	cm	Get			
Water level over detection status	0xB1	Indicates if the water level exceeds detected water level threshold level. Water level over status found found = 0x41 Water level over status not found not found = 0x42	unsigned char	1 Byte	－	Get		○	
Measured value of water level	0xE0	Indicates measured value of water level in cm. 0x00～0xFD (0～253)	unsigned char	1 Byte	cm	Get	○		

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Water level over detection threshold level
Sets the water level threshold that causes EPC = 0xB1 to be set to “Water level over detection status” in cm.

(3) Water level over detection status
Indicates whether a water level over detection status is found or not. When EPC = 0xB0 “Detected water level threshold level” is implemented, this property is set to “Water level over detection status found” if the threshold set by the detected water level threshold level is exceeded, and is set to “Water level over detection status not found” if the detection threshold value is not reached.

(4) Measured value of water level
Indicates whether a predetermined water level is exceeded or not. When the "Water level over detection threshold level" (EPC = 0xB0) is implemented, the status changes to "Water level over status found" when the threshold value set by the "Water level over detection threshold level" is exceeded. When the water level is lower than the threshold level, the status changes to "Water level over status not found".

1.1.21 Specifications of bath water level sensor class

Class group code : 0x00
Class code : 0x15
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Bath water level over detection threshold level	0xB0	Indicates the bath water level over detection threshold level in cm. 0x00～0xFD (0～253)	unsigned char	1 Byte	Cm	Get			
Bath water level over detection status	0xB1	Indicates if bath water level exceeds detection water level threshold level. Water level over status found found = 0x41 Water level over status not found not found = 0x42	unsigned char	1 Byte	–	Get		○	
Measured value of bath water level	0xE0	Indicates measured value of bath water level in cm. 0x00～(0xFD) (0～253)	unsigned char	1 Byte	Cm	Get	○		

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Bath water level over detection threshold level

Sets the water level threshold that causes EPC = 0xB1 to be set to “Bath water level over detection status” in cm.

(3) Bath water level over detection status

Indicates whether a predetermined bath water level is exceeded or not. When the "Bath water level over detection threshold level" (EPC = 0xB0) is implemented, the status changes to "Water level over status found" when the threshold value set by the "Water level over detection threshold level" is exceeded. When the water level is lower than the threshold level, the status changes to "Water level over status not found".

(4) Measured value of bath water level

Indicates the measured value of bath water level in cm. The property value range shall be 0x00 to 0xFD (0 to 253 cm). When the property value of the real device exceeds this property value range, the overflow code 0xFF shall be used. When said

value falls below the property value range, the underflow code 0xFE shall be used.

1.1.22 Stipulations for bath heating status sensor class

Class group code : 0x00
Class code : 0x16
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). Level 0x31 to 0x38	unsigned char	1 Byte	–	Set/Get			
Bath ready detection status	0xB1	Indicates bath ready detection status. Bath heating status found = 0x41 Bath heating status not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Bath ready detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Bath ready detection status
Indicates whether a bath heating detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Bath heating detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Bath heating detection status not found” if the detection threshold value is not reached. When this property is set to “Bath ready detection status found” = 0x41, the property shall be announced periodically.

1.1.23 Stipulations for water leak sensor class

Class group code : 0x00
Class code : 0x17
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Water leak detection status	0xB1	Indicates water leak detection status Water leak detection found = 0x41 Water leak detection not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Water leak detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Water leak detection status
Indicates whether a water leak detection status is found or not. When EPC = 0xB0“Detection threshold level” is implemented, this property is set to “Water leak detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Water leak detection status not found” if the detection threshold value is not reached. When this property is set to “Water leak detection status found” = 0x41, it shall be announced periodically.

1.1.24 Stipulations for water overflow sensor class

Class group code : 0x00
Class code : 0x18
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Water overflow detection status	0xB1	Indicates water overflow status. Water overflow detection found = 0x41 Water overflow detection not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Water overflow detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Water overflow detection status

Indicates whether a water overflow detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Water overflow detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Water overflow detection status not found” if the detection threshold value is not reached. When this property is set to “Water overflow detection status found” = 0x41, the property shall be announced periodically.

1.1.25 Stipulations for fire sensor class

Class group code : 0x00
Class code : 0x19
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). Concrete status of each level is not specified. Level 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Fire occurrence detection status	0xB1	Indicates fire occurrence detection status. Fire occurrence detection found = 0x41 Fire occurrence detection not found = 0x42	unsigned char	1 Byte	–	Get	○	○	
Fire occurrence detection status resetting	0xBF	Resets fire occurrence status by setting 0x00. Reset=0x00	unsigned char	1 Byte	–	Set			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Fire occurrence detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Fire occurrence detection status
Indicates whether a fire occurrence status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Fire occurrence detection status found” = 0x41 if the threshold set by the detection threshold level is exceeded. This property shall be set to “Fire occurrence status not found” = 0x42 by resetting the main body or by EPC = 0xBF “Fire occurrence status resetting”.

(4) Fire occurrence detection status resetting
Resets EPC = 0xB1 “Fire occurrence status” by setting 0x00.

1.1.26 Stipulations for cigarette smoke sensor class

Class group code : 0x00
Class code : 0x1A
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). Concrete status of each level is not specified. Level 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Smoke (cigarette) detection status	0xB1	Indicates smoke (cigarette) detection status. Smoke (cigarette) detection status found = 0x41 Some (cigarette) detection status not found = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Smoke (cigarette) detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Smoke (cigarette) detection status

Indicates whether a smoke (cigarette) detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Smoke (cigarette) detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Smoke (cigarette) detection status not found” if the detection threshold value is not reached.

1.1.27 Stipulations for CO_2 sensor class

Class group code : 0x00
Class code : 0x1B
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measured value of CO_2 concentration	0xE0	Indicates measured value of CO_2 concentration in ppm. 0x0000～0xFFFD (0～65533)	unsigned short	2 Byte	Ppm	Get	○		

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Measured value of CO_2 concentration
Indicates the measured value of CO_2 concentration in ppm. The property value range shall be 0x0000 to 0xFFFD (0 to 65533 ppm). When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value falls below the property value range, the underflow code 0xFFFE shall be used.

1.1.28 Stipulations for gas sensor class

Class group code : 0x00
Class code : 0x1C
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Gas detection status	0xB1	Indicates whether gas detection status is found or not. Gas detection status found = 0x41 Gas detection status not found = 0x42	unsigned char	1 Byte	–	Get		○	
Measured value of gas concentration	0xE0	Indicates measured value of gas concentration in ppm. 0x0000～0xFFFD (0～65533)	unsigned short	2 Byte	ppm	Get	○		

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Gas detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Gas detection status
Indicates whether a gas detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Gas detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Gas detection status not found” if the detection threshold value is not reached.

(4) Measured value of gas concentration
Indicates the measured value of gas concentration units of in ppm. The property value range shall be from 0x0000 to 0xFFFD (0 to 65533 ppm). When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value falls below the property value range, the underflow code 0xFFFE shall be used.

1.1.29 Stipulations for VOC sensor class

Class group code : 0x00
Class code : 0x1D
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	－	Set/Get			
VOC detection status	0xB1	Indicates whether VOC detection status is found or not. VOC detection status found = 0x41 VOC detection status not found = 0x42	unsigned char	1 Byte	－	Get		○	
Measured value of VOC concentration	0xE0	Indicates measured value of VOC concentration in ppm. 0x0000～0xFFFD (0～65533)	unsigned short	2 Byte	ppm	Get	○		

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “VOC detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) VOC detection status
Indicates whether VOC detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “VOC detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “VOC detection status not found” if the detection threshold value is not reached.

(4) Measured value of VOC concentration
Indicates the measured value of VOC concentration units of in ppm. The property value range shall be from 0x0000 to 0xFFFD (0 to 65533 ppm). When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value falls below the property value range, the

underflow code 0xFFFE shall be used.

1.1.30 Stipulations for differential pressure sensor class

Class group code : 0x00
Class code : 0x1E
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measured value of differential pressure	0xE0	Indicates measured value of differential pressure in Pa. 0x8001～0x7FFE (-32767～32766)	signed short	2 Byte	Pa	Get	○		

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Measured value of differential pressure
Indicates the measured value of Differential pressure units of in Pa. The property value range shall be from 0x8001 to 0x7FFD (-32767 to 32766 Pa). When the property value of the real device exceeds this property value range, the overflow code 0x7FFF shall be used. When said value is below the property value range, the underflow code 0x8000 shall be used.

1.1.31 Stipulations for air speed sensor class

Class group code : 0x00
Class code : 0x1F
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measured value of air speed	0xE0	Indicates the measured value of air speed in units of 0.01 m/sec. 0x0000～0xFFFD (0～65533) (0～655.33m/sec)	unsigned short	2 Byte	0.01 m/sec	Get	○		

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Measured value of air speed

Indicates the measured value of air speed in units units of of 0.01 m/sec. The property value range shall be from 0x0000 to 0xFFFD (0 to 655.33 m/sec.). When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value falls below the property value range, the underflow code 0xFFFE shall be used.

1.1.32 Stipulations for odor sensor class

Class group code : 0x00
Class code : 0x20
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). Level 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Odor detection status	0xB1	Indicates whether odor detection status is found or not. Odor detection status found = 0x41 Odor detection status not found = 0x42	unsigned char	1 Byte	–	Get			
Measured odor value	0xE0	Indicates measured odor value. The unit is not specified. 0x00～0xFD (0～253)	unsigned char	1 Byte	–	Get	○		

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets the threshold value that causes EPC = 0xB1 “Odor detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Odor detection status

Indicates whether odor detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Odor detection status found” if the threshold set by the detection threshold level is exceeded, and is set to “Odor detection status not found” if the detection threshold value is not reached.

(4) Measured odor value

Indicates the measured odor value. The unit is not specified. The property value range shall be from 0x00 to 0xFD (0 to 253). When the property value of the real device exceeds this property value range, the overflow code 0xFF shall be used. When said value falls below the property value range, the underflow code 0xFE shall be used.

1.1.33 Stipulations for flame sensor class

Class group code : 0x00
Class code : 0x21
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). Detection threshold level 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Flame detection status	0xB1	Indicates whether flame detection status is found or not. Flame detection status found = 0x41 Flame detection status not found = 0x42	unsigned char	1 Byte	–	Get		○	
Flame detection status setting	0xBF	Resets flame detection status by setting 0x00. Reset=0x00	unsigned char	1 Byte	–	Set			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level
Sets the threshold value that causes EPC = 0xB1 “Flame detection status” to be set to “Found” (8-step). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Flame detection status
Indicates whether a flame detection status is found or not. When EPC = 0xB0 “Detection threshold level” is implemented, this property is set to “Flame detection status found” = 0x41 if the threshold set by the detection threshold level is exceeded. This property shall be set to “Flame detection status not found” = 0x42 by resetting the main body or by EPC = 0xBF “Flame detection status resetting”.

(4) Flame detection status resetting
Resets EPC = 0xB1 “Flame detection status” by setting 0x00.

1.1.34 Stipulations for electric energy sensor class

Class group code : 0x00
Class code : 0x22
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Integral electric energy	0xE0	Indicates integral electric energy in Wh. 0x0～0x3B9AC9FF (0～999,999,999Wh)	unsigned long	4 Byte	Wh	Get	○		
Small-capacity sensor instantaneous electric energy	0xE2	Indicates instantaneous electric energy in units of 0.1 W. 0x8001～0x7FFE (-3276.7～3276.6)	signed short	2 Byte	0.1 W	Get			
Large-capacity sensor instantaneous electric energy	0xE3	Indicates instantaneous electric energy in units of 0.1 kW. 0x8001～0x7FFE (-3276.7～3276.6)	signed short	2 Byte	0.1 kW	Get			
Integral electric energy measurement log	0xE4	Indicates measurement result log of integral electric energy (Wh) for past 24 hours in 30-minute sections. 0～0x3B9AC9F (0～999,999,999) (0～999,999,999Wh)	unsigned long x 48	192 Byte	Wh	Get			
Effective voltage value	0xE5	Indicates effective voltage value in V. 0x0000～0xFFFD (0～65533V)	unsigned short	2 Byte	V	Get			
Current time setting	0x97	Current time HH:MM 0～0x17:0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Current year/month/day setting	0x98	Current year/month/day 0～270F:0～0x0C:0～0x1F (=0～9999):(=0～12):(=0～31)	unsigned char x 4	4 Byte	–	Set/Get			

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Integral electric energy
Indicates the integral electric energy in Wh. The property value range shall be from 0x00000000 to 0x3B9AC9FF (0 to 999,999,999 Wh). When the integral electric energy overflows, this value shall be incremented from 0x00000000.

(3) Small-capacity sensor instantaneous electric energy

Indicates the measured value of small-capacity sensor instantaneous electric energy in units of 0.1 W. The property value range shall be from 0x8001 to 0x7FFD (-3276.7 to 3276.6 W). When the property value of the real device exceeds this property value range, the overflow code 0x7FFF shall be used. When said value falls below the property value range, the underflow code 0x8000 shall be used.

(4) Large-capacity sensor instantaneous electric energy

Indicates the measured value of large-capacity sensor instantaneous electric energy in units of 0.1 kW. The property value range shall be from 0x8001 to 0x7FFD (-3276.7 to 3276.6 kW). When the property value of the real device exceeds this property value range, the overflow code 0x7FFF shall be used. When said value falls below the property value range, the underflow code 0x8000 shall be used.

(5) Integral electric energy measurement log

Indicates the integral electric energy (Wh) measurement result log for the past 24 hours in 30-minute sections. The measured value in Wh at each 0 minute and 30 minutes based on the time set in the property name “Current time setting” (EPC = 0x97) shall be indicated in the range from of 0x00000000 to 0x3B9AC9FF (0 to 999,999,999 Wh). The property value shall begin with the high-order byte in time series.

(6) Effective voltage value

Indicates the measured value of effective voltage of the electric energy sensor in V. This property may be implemented as a fixed value of the rated voltage of measurement.

(7) Current time setting

Indicates the current time by hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). This property value shall begin with the high-order byte, in the order of hour, minute. This property is used to set the accurate time at the integral electric energy measurement log of “Integral electric energy measurement log” (EPC = 0xE4).

(8) Current year/month/day setting

Indicates the current year/month/day by year: 0x0000 to 0x270F (0 to 9999), month: 0x00 to 0x0C (0 to 12), and day: 0x00 to 0x1F (0 to 31). This property value shall begin with the high-order byte in the order of year (2 bytes), month (1 byte), day (1 byte).

1.1.35 Stipulations for current value sensor class

Class group code : 0x00
Class code : 0x23
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measured current value	0xE0	Indicates measured current value in units of 0.1 A. 0x00000000～0xFFFFFFFD (0～4,294,967,293mA)	unsigned long	4 Byte	mA	Get	○		
Rated voltage to be measured	0xE1	Rated voltage value to be measured by current sensor 0x0000～0xFFFD (0～65533V)	unsigned short	2 Byte	V	Get			

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Measured current value
Indicates the measured current value in mA. When an alternating current is measured, its effective value shall be indicated. The property value range shall be from 0x00000000 to 0xFFFFFFFD (0 to 4,294,967,293 mA). When the prop
erty value of the real device exceeds this property value range, the overflow code 0xFFFFFFFF shall be used. When said value is below the property value range, the underflow code 0xFFFFFFFE shall be used.

(3) Rated voltage to be measured
Indicates the rated voltage value to be measured by the current sensor in V. This property may be implemented as a fixed value.

1.1.36 Stipulations for water flow rate sensor class

This class is provided for a water tap or the like and is stipulated for the purpose of measuring the amount of water used.

Class group code : 0x00
Class code : 0x25
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Integral flow rate	0xE0	Indicates measured integral flow in cc. 0x00000000～0x3B9AC9FF (0～999,999,999)	unsigned long	4 Byte	cc	Get			
Flow rate	0xE2	Indicates measured instantaneous flow rate in cc/mm. 0x0000～0x3B9AC9FF (0～999,999,999)	unsigned long	4 Byte	cc/min	Get	○		

(1) Operation status (inherited from the property of super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (operation status ON).

(2) Integral flow rate

Indicates the integral value of the flow rate in units of cc. The property value range shall be from 0x00000000 to 0x3B9AC9FF (0 to 999,999,999 cc). If the measured integral flow of the real device exceeds this property value range, the overflow code 0xFFFFFFFF shall be set.

(3) Flow rate

Indicates the flow rate in units of cc/min. The property value range shall be from 0x00000000 to 0x3B9AC9FF(0 to 999,999,999 cc/min). If the measured value of flow rate of the real device exceeds this property value range, the overflow code 0xFFFFFFFF shall be set.

1.1.37 Stipulations for micromotion sensor class

Class group code : 0x00
Class code : 0x26
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Micromotion detection status	0xB1	Indicates whether micromotion is detected. Micromotion detected = 0x41, micromotion not detected = 0x42	unsigned char	1 Byte	–	Get	○	○	
Detection counter	0xB2	Indicates micromotion detection count. 0x0000～0xFFFE (0～65534)	unsigned short	2 Byte	–	Set/Get			
Sampling count	0xBC	Indicates micromotion detection sampling count. 0x0000～0xFFFE (0～65534)	unsigned short	2 Byte	–	Set/Get			
Sampling cycle	0xBD	Indicates micromotion detection sampling cycle. 0x0000～0xFFFE (0～65534)	unsigned short	2 Byte	msec	Set/Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets 8 levels of threshold values at which the "Micromotion detection status" property (EPC = 0xB1) changes to "Micromotion detected". The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Micromotion detection status

Indicates whether a micromotion is detected or not. When the "Detection threshold level" (EPC = 0xB0) is implemented and the threshold value set by the detection threshold level is exceeded, the status shall change to "Micromotion detected". On the other hand, if the threshold value is not reached, the status shall change to "Micromotion not detected". When the "Sampling count" (EPC = 0xBC) and "Sampling cycle" (EPC = 0xBD) are implemented, the micromotion detection port and other relevant status shall be checked at time intervals specified by the sampling cycle. When the same micromotion detection state persists during the sampling period specified by the "sampling count" setting (EPC = 0xBD), the status shall change to that state.

(4) Detection counter

Indicates the number of micromotion detections. Here, the term "micromotion detection" represents the above-mentioned property and does not indicate the number of conclusive detections.

The count shall range from 0x0000 to 0xFFFE (0 to 65534). If the count limit is exceeded, the overflow code 0xFFFF shall be used. The timing for clearing the counter depends on the application and is not stipulated here.

(5) Sampling count

Indicates the sampling count for concluding that a micromotion is detected. When this property is implemented, the "Sampling cycle" (EPC = 0xBD) shall be implemented as well. The sampling count shall range from 0x0000 to 0xFFFE (0 to 65543).

(6) Sampling cycle

Indicates the sampling cycle for the micromotion detection port, etc. in msec. When this property is implemented, the "Sampling count" (EPC = 0xBC) shall be implemented as well. The sampling cycle value shall vary in msec and range from 0x0000 to 0xFFFE (0 to 65543).

1.1.38 Stipulations for passage sensor class

Class group code : 0x00
Class code : 0x27
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Passage detection hold time	0xBE	Indicates passage detection hold time in ms. 0x0000～0xFFFD (0～65533ms)	unsigned char	2 Byte	ms	Set/Get			
Passage detection direction	0xE0	Indicates direction of passage (one of 8 different directions). 0x30: No passage. 0x31 to 0x38: Direction of passage. 0x39: Passage was detected but not located. Or, a sensor incapable of detecting passage direction was passed.	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets 8 steps of threshold values at which the "Passage detection direction" (EPC = 0xE0) property changes from "No passage" (0x30) to "Passage detected" (0x31 to 0x39). The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Passage detection hold time

This property refers to the time interval between the instant at which the passage detection direction property changes to "Passage detected" (0x31 to 0x39) and the instant at which the property reverts to "No passage". The property value range shall be 0x0000 to 0xFFFD (0 to 65533 ms).

(4) Passage detection direction

Uses a value between 0x30 and 0x38 to indicate the two-dimensional direction of passage. The values within the range of 0x31 to 0x38 shall indicate the direction of passage. The values shall indicate 8 different directions clockwise with the value 0x31 representing "IN".

The value 0x30 indicates the state in which no passage is detected. If a passage is detected but its direction be identified, the value 0x39 shall be taken. The value 0x39 shall also be taken if a passage is detected by a sensor incapable of detecting the direction of passage.

In situations where "Passage detection hold time" (EPC = 0xBE) is implemented, the value of this property shall revert to "No passage" (0x30) if the detection hold time elapses after the property value change from "No passage" (0x30) to "Passage detected" (0x31 to 0x39).

Even if a real device (sensor) capable of detecting the direction of passage detects fewer than or more than 8 directions, the passage detection directions of the real device (sensor) shall be assigned to the 8-direction property values defined here. When two directions are to be detected, their property values shall be 0x31 (IN) and 0x35 (OUT). The directions IN and OUT are not stipulated here.

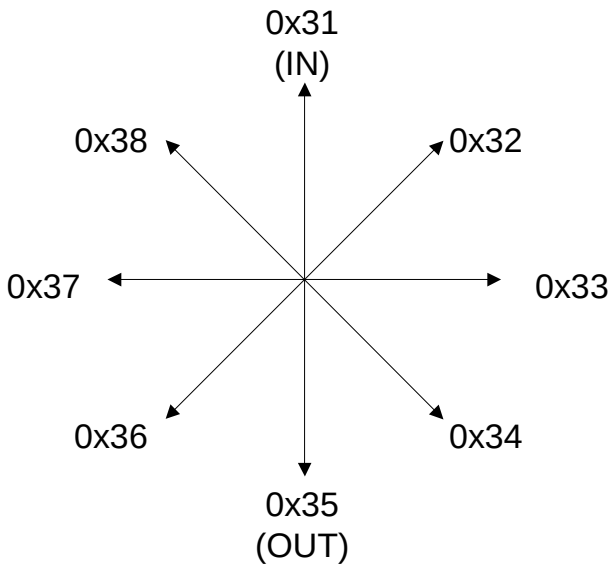


Fig. 1.1 Correspondence Between Passage Detection Direction Property Values and Directions

1.1.39 Stipulations for bed presence sensor class

Class group code : 0x00
Class code : 0x28
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Detection threshold level	0xB0	Specifies detection threshold level (8-step). Detection threshold level 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Bed presence detection status	0xB1	Indicates bed presence detection status. Bed presence detected = 0x41, bed presence not detected = 0x42	unsigned char	1 Byte	–	Get	○	○	

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Detection threshold level

Sets 8 steps of threshold values at which "Bed presence detection status" (EPC = 0xB1) changes to "Bed presence detected". The minimum value is 0x31 and the maximum value is 0x38. No concrete value is specified for each level. If the detection threshold of the real device is higher or lower than the 8-step range, the property of the real device shall be assigned to the property value of the 8 steps specified in this property.

(3) Bed presence detection status

Indicates whether a bed presence is detected or not.

In situations where "Detection threshold level" (EPC = 0xB0) is implemented, the status shall change to "Bed presence detected" when the threshold value set by "Detection threshold level" is exceeded. If the threshold value is not reached, on the other hand, the status shall change to "Bed presence not detected".

1.1.40 Stipulations for open/close sensor class

Class group code : 0x00
Class code : 0x29
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Degree-of-opening detection status	0xE0	Specifies open/close detection status and one of 8 different degrees of opening. Close detected: 0x30; degree-of-opening level: 0x31 to 0x38; open detected but degree-of-opening unknown: 0x39	unsigned char	1 Byte	–	Get			

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Degree-of-opening detection status

Indicates whether a door or window is open or closed, and uses 8 different steps to indicate the degree of opening.

The property value 0x30 indicates that a door or window is closed. If the property value is between 0x31 and 0x38, it indicates that the detection target is open. The property value 0x31 indicates the minimum degree of opening, whereas the property value 0x38 indicates the maximum degree of opening. Here, the terms "closed", "open", and "degree of opening" represent various states detected by an open/close sensor mounted on a door or window. Degrees of opening represented by the values 0x31 to 0x38 should be defined by dividing the difference between the closed state (0x30) and fully open state (0x38) into equal portions.

When the sensor cannot detect the degree of opening, two values shall be used (0x30: closed; 0x39: open) to indicate whether a door/window is open or closed.

Even if the sensor capable of detecting the degree of opening actually detects fewer than or more than 8 steps of opening, its detectable degrees of opening shall be assigned to the 8 property values defined here.

1.1.41 Stipulations for activity amount sensor class

Class group code : 0x00
Class code : 0x2A
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Activity amount level 1	0xE0	Indicates 8 different activity mount levels. The array element number represents a human body ID. 0x31～0x38	unsigned char x Max 128	Max 128 Byte	–	GetM			
Maximum array element count	0xE1	Indicates maximum number of human body IDs that can be registered for activity amount level 1. 0x0001～0x0080 (=1～128)	unsigned short	2 Byte	–	Get			
Activity amount level 2	0xE2	Indicates 8 different activity amount levels. 0x31～0x38	unsigned char	1 Byte	–	Set			
Human body existence information	0xE3	Array element number information retained by activity amount level 1. (See (5) below for details.)	unsigned char x 16	16 Byte	–	Set			

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Activity amount level 1

Indicates 8 different activity amount values. The values 0x31 and 0x38 shall be used as the minimum and maximum values, respectively. However, specific activity amounts for the 8 different levels are not stipulated.

Even if the number of activity amount levels of the real device is less than or greater than 8, the activity amount levels of the real device shall be assigned to the 8 different property values defined here.

The array element number represents a human body ID for identifying an individual.

If the human body ID associated with an array element number is not found, it is concluded that the associated array element does not exist. The array element number range shall be 0x0000 to 0x007F (0 to 127).

(3) Maximum array element count

Indicates the maximum number of human body IDs that can be registered for activity amount level 1.

Eventually, this value is equal to the maximum processable array element number plus 1. Therefore, the property value range shall be 0x0001 to 0x0080 (1 to 128).

(4) Activity amount level 2

Sets 8 different activity amount values. The values 0x31 and 0x38 shall be used as the minimum and maximum values, respectively. However, specific activity amounts for the 8 different levels are not stipulated.

Even if the number of activity amount levels of the real device is less than or greater than 8, the activity amount levels of the real device shall be assigned to the 8 property values defined here.

(5) Human body existence information

A bitmap is used to indicate whether the array element number information is retained for activity amount level 1. In the following 16-byte table, the value 1 shall be set at bit locations that indicate existing array element numbers.

	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
1st byte	0000	0001	0002	0003	0004	0005	0006	0007
2nd byte	0008	0009	000A	000B	000C	000D	000E	000F
3rd byte	0010	0011	0012	0013	0014	0015	0016	0017
4th byte	0018	0019	001A	001B	001C	001D	001E	001F
5th byte	0020	0021	0022	0023	0024	0025	0026	0027
6th byte	0028	0029	002A	002B	002C	002D	002E	002F
7th byte	0030	0031	0032	0033	0034	0035	0036	0037
8th byte	0038	0039	003A	003B	003C	003D	003E	003F
9th byte	0040	0041	0042	0043	0044	0045	0046	0047
10th byte	0048	0049	004A	004B	004C	004D	004E	004F
11th byte	0050	0051	0052	0053	0054	0055	0056	0057
12th byte	0058	0059	005A	005B	005C	005D	005E	005F
13th byte	0060	0061	0062	0063	0064	0065	0066	0067
14th byte	0068	0069	006A	006B	006C	006D	006E	006F
15th byte	0070	0071	0072	0073	0074	0075	0076	0077
16th byte	0078	0079	007A	007B	007C	007D	007E	007F

1.1.42 Stipulations for human body location sensor

Class group code : 0x00
Class code : 0x2B
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Human body detection location 1	0xE0	Indicates human body detection location. The array element number indicates a human body ID. 1st byte: X coordinate; 2nd byte: Y coordinate; 3rd byte: Z coordinate	unsigned char x 3 x Max 128	3 x Max 128 Byte	–	GetM			
Maximum array element count	0xE1	Indicates maximum number of human body IDs that can be registered for human body detection location 1. 0x0001～0x0080 (=1～128)	unsigned short	2 Byte	–	Get			
Human body detection location 2	0xE2	Indicates human body detection location. 1st byte: X coordinate; 2nd byte: Y coordinate; 3rd byte: Z coordinate	unsigned char x 3	3 Byte	–	Get			
Human body existence information	0xE3	Array element number information retained by human body detection location 1. (See (5) below for details.)	unsigned char x 16	16 Byte	–	Get			

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Human body detection location 1

Each array element consists of three data of unsigned char type.

The array element number represents a human body ID that identifies an individual. If the human body ID associated with an array element number is not found, it shall be concluded that no associated array element exists. The array element number range shall be 0x0000 to 0x007F (0 to 127).

For the 1st, 2nd, and 3rd bytes, the three-dimensional human body detection location (X, Y, and Z coordinates) shall be indicated using 255 different values (0x00 to 0xFE).

For X, Y, and Z coordinates, the value 0xFF shall mean that the location cannot be identified or is undefined.

If the human body ID associated with an array element number is not found, it shall

be concluded that the related array element does not exist.

(3) Maximum array element count

Indicates the maximum number of human body IDs that can be registered for human body detection location 1.

Eventually, this value is equal to the maximum processable array element number plus 1. Therefore, the property value range shall be 0x0001 to 0x0080 (1 to 128).

(4) Human body detection location 2

For the 1st, 2nd, and 3rd bytes, the three-dimensional human body detection location (X, Y, and Z coordinates) shall be indicated using 255 different values (0x00 to 0xFE).

For X, Y, and Z coordinates, the value 0xFF shall mean that the location cannot be identified or is undefined.

(5) Human body existence information

A bitmap is used to indicate whether the array element number information is retained for human body location 1. In the following 16-byte table, the value 1 shall be set at bit locations that indicate existing array element numbers.

	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
1st byte	0000	0001	0002	0003	0004	0005	0006	0007
2nd byte	0008	0009	000A	000B	000C	000D	000E	000F
3rd byte	0010	0011	0012	0013	0014	0015	0016	0017
4th byte	0018	0019	001A	001B	001C	001D	001E	001F
5th byte	0020	0021	0022	0023	0024	0025	0026	0027
6th byte	0028	0029	002A	002B	002C	002D	002E	002F
7th byte	0030	0031	0032	0033	0034	0035	0036	0037
8th byte	0038	0039	003A	003B	003C	003D	003E	003F
9th byte	0040	0041	0042	0043	0044	0045	0046	0047
10th byte	0048	0049	004A	004B	004C	004D	004E	004F
11th byte	0050	0051	0052	0053	0054	0055	0056	0057
12th byte	0058	0059	005A	005B	005C	005D	005E	005F
13th byte	0060	0061	0062	0063	0064	0065	0066	0067
14th byte	0068	0069	006A	006B	006C	006D	006E	006F
15th byte	0070	0071	0072	0073	0074	0075	0076	0077
16th byte	0078	0079	007A	007B	007C	007D	007E	007F

1.2 Air conditioner-related Device Class Group

This section specifies detailed codes and properties for each ECHONET object belonging to the air conditioner-related device class group (class group code X1 = 0x01). Table 1.3 shows a list of classes for which detailed specifications are provided. In the stipulations of classes, “Mandatory” means that the device mounting for each class must necessarily mount a combination of its property and service.

Table 1.3 List of Objects of Air Conditioner-related Device Class Group

Group code	Class code	Class name	Remark
0x01	0x30	Home air conditioner	
	0x34	Air conditioner ventilation fan	
	0x35	Air cleaner	
	0x42	Electric heater	

1.2.1 Stipulations for home air conditioner class

Class group code : 0x01
Class code : 0x30
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Operation mode	0xB0	Auto/cooling/heating/dehumidifying /blast/other The following codes are associated with the above modes. 0x41/0x42/0x43/0x44/0x45/0x40	unsigned char	1 Byte	–	Set/Get	○	○	
Temperature auto setting	0xB1	Auto/Non-auto Auto=0x41, Non-auto=0x42	unsigned char	1 Byte	–	Set/Get			
Quick operation setting	0xB2	Normal operation/quick/quiet Normal operation = 0x41 Quick = 0x42 Quiet = 0x43	unsigned char	1 Byte	–	Set/Get			
Set temperature value	0xB3	Set temperature value 0x00～0x32 (0～50°C)	unsigned char	1 Byte	°C	Set/Get	○		
Set value of relative humidity in dehumidifying mode	0xB4	Set value of relative humidity in dehumidifying mode 0x00～0x64 (0～100°C)	unsigned char	1 Byte	%	Set/Get			
Set temperature value in cooling mode	0xB5	Set temperature value in cooling mode 0x00～0x32 (0～50°C)	unsigned char	1 Byte	°C	Set/Get			
Set temperature value in heating mode	0xB6	Set temperature value in heating mode 0x00～0x32 (0～50°C)	unsigned char	1 Byte	°C	Set/Get			
Set temperature value in dehumidifying mode	0xB7	Set temperature value in dehumidifying mode 0x00～0x32 (0～50°C)	unsigned char	1 Byte	°C	Set/Get			
Rated power consumption	0xB8	Rated power consumption in each operation mode of cooling/heating/dehumidifying/blast 0x0000～0xFFFD (0～65533W) Cooling: heating: dehumidifying: blast	unsigned short x 4	8 Byte	W	Get			
Measured value of current consumption	0xB9	Measured value of current consumption 0x0000～0xFFFD (0～6553.3A)	unsigned short	2 Byte	0.1A	Get			
Measured value of room relative humidity	0xBA	Measured value of room relative humidity 0x00～0x64 (0～100°C)	unsigned char	1 Byte	%	Get			
Measured value of room temperature	0xBB	Measured value of room temperature 0x80～0x7D (-127～125°C)	signed char	1 Byte	°C	Get			
Set temperature value of user remote control	0xBC	Set temperature value of user remote control 0x00～0x32 (0～50°C)	unsigned char	1 Byte	°C	Get			

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measure value of blow-off temperature	0xBD	Measured value of blow-off temperature 0x81～0x7D (-127～125°C)	signed char	1 Byte	°C	Get			
Measured value of outdoor temperature	0xBE	Measured value of outdoor temperature 0x81～0x7D (-127～125°C)	signed char	1 Byte	°C	Get			
Air flow rate setting	0xA0	Sets air flow rate level and the air flow rate auto status. Air flow rate shall be specified (8-step). Air flow rate auto status=0x41 Air flow rate level=0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Air flow direction auto setting	0xA1	Sets either "auto" or "non-auto" for "vertical air flow direction " and "horizontal air flow direction". Auto = 0x41, non-auto = 0x42, up-down auto = 0x43, left-right auto = 0x44	unsigned char	1 Byte	–	Set/Get			
Air flow direction swing	0xA3	Air flow direction swing OFF/up-down/left-right/up-down-left-right Air flow direction swing OFF=0x41, Up-down=0x41, Left-right=0x42, Up-down-left-right=0x43	unsigned char	1 Byte	–	Set/Get			
Vertical air flow direction	0xA4	Uses 5 different patterns to indicate direction of up-down air current. Up = 0x41, down = 0x42, center = 0x43, up center = 0x44, down center = 0x45	unsigned char	1 Byte	–	Set/Get			
Horizontal air flow direction	0xA5	Uses 31 patterns to indicate direction of left-right air current. Right = 0x41, left = 0x42, center = 0x43, left-right = 0x44; other patterns are represented by codes indicated in detailed property description table	unsigned char	1 Byte	–	Set/Get			
Ventilating operation setting	0xC0	Indicates ventilating operation (direction). Ventilation ON (exhaust direction) = 0x41, ventilation OFF = 0x42, ventilation ON (intake direction) = 0x43	unsigned char	1 Byte	–	Set/Get			
Humidifying operation setting	0xC1	Indicates humidifying operation status ON/OFF. Humidifying ON＝0x41,OFF＝0x42	unsigned char	1 Byte	–	Set/Get			
Ventilation air flow rate setting	0xC2	Indicates ventilation air flow rate level. Ventilation air flow rate auto = 0x41 Ventilation air flow rate level = 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Humidifying volume setting	0xC4	Indicates humidifying volume level. Humidifying volume auto = 0x41 Humidifying volume level = 0x31～0x38	unsigned char	1 Byte	–	Set/Get			

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Mounted air cleaning method	0xC6	A bitmap indicates mounted method of exercising air cleaning function. Bit 0: Information about electrical dust collection method mounting 0 - Not mounted 1 - Mounted Bit 1: Information about cluster ion method mounting 0 - Not mounted 1 - Mounted	unsigned char	1 Byte	–	Get			
Air cleaning function operation status	0xC7	An 8-byte array indicates air cleaning function ON/OFF status and operating level of each implementation method. Element 0: Operation status of air cleaning function based on electrical dust collection method Element 1: Operation status of air cleaning function based on cluster ion method Elements 2 to 7: Reserved for future use	unsigned char x 8	1 Byte x 8	–	SetM /GetM			
Mounted refresh method	0xC8	A bitmap indicates mounted method for exercising refresh function. Bit 0: Information about minus ion method mounting 0 - Not mounted 1 - Mounted Bit 1: Information about cluster ion method mounting 0 - Not mounted 1 - Mounted	unsigned char	1 Byte	–	Get			
Refresh function operation status	0xC9	An 8-byte array indicates refresh function ON/OFF status and operating level of each mounting method. Element 0: Operation status of refresh function based on minus ion method Element 1: Operation status of refresh function based on cluster ion method Elements 2 to 7: reserved for future use	unsigned char x 8	1 Byte x 8	–	SetM /GetM			
Mounted self-cleaning method	0xCA	A bitmap indicates mounted method for exercising self-cleaning function. Bit 0: Information about ozone cleaning method mounting 0 - Not mounted 1 - Mounted Bit 1: Information about drying method mounting 0 - Not mounted 1 - Mounted	unsigned char	1 Byte	–	Get			

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Self-cleaning function operation status	0xCB	An 8-byte array indicates self-cleaning function ON/OFF status and operating level of each implementation method. Element 0: Operation status of self-cleaning function based on ozone cleaning method Element 1: Operation status of self-cleaning function based on drying method Elements 2 to 7: Reserved for future use	unsigned char x 8	1 Byte x 8	–	SetM /GetM			
ON timer reservation setting	0x90	Reservation ON/OFF Time reservation and relative time reservation both ON = 0x41, reservation OFF = 0x42, time reservation ON = 0x43, relative time reservation ON = 0x44	unsigned char	1 Byte	–	Set/Get			
Set value of ON timer time	0x91	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Set value of ON timer relative time	0x92	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
OFF timer reservation setting	0x94	Reservation ON/OFF Time reservation and relative time reservation both ON = 0x41, reservation OFF = 0x42, time reservation ON = 0x43, relative time reservation ON = 0x44	unsigned char	1 Byte	–	Set/Get			
Set value of OFF timer time	0x95	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Set value of OFF timer relative time	0x96	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Current time setting	0x97	Current time HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Electrical current limit setting	0x87	Indicates electrical current limit setting. (0～100%) 0x00～0x64 (=0～100%)	unsigned char	1 Byte	%	Set/Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

In Announcement at status change

(1) Operation status (inherited from the property of device object super-class)

Indicates the operation/stop status of the home air conditioner. The property value of 0x30/0x31 shall be associated with each both operation and stop.

(2) Operation mode

Indicates the auto/cooling/heating/dehumidifying/blast/other settings of the home air conditioner. In the "other" setting, the device is running but no other operation mode is activated. The property value of 0x41/0x42/0x43/0x44/0x45/0x40 shall be associated with each of the above operation modes in this order. Regarding the property values to be implemented, only those to be assumed by the real device mounting this class may be implemented. For example, when the real device mounting this class is not provided with a blast function, the property value 0x45 corresponding to blast need not be implemented.

(3) Temperature auto setting

Indicates the operation status ON/OFF setting when the home air conditioner is operated by the auto temperature setting calculation algorithm of the home air conditioner body without using “Set temperature value” (EPC = 0xB3) as the target value. This property shall take 0x41 for auto status ON and 0x42 for auto status OFF.

(4) Quick operation setting

Indicates the quick/quiet/normal operation status setting. The property value of 0x41/0x42/0x43 is associated with each of the above settings. This property can be set independently of “Operation mode” (EPC = 0xB0), and the quick operation status setting corresponds to quick cooling, quick heating, or powerful operation status. The quick/quiet/normal operation status of this property is a setting status in exclusive relation.

(5) Set temperature value

Indicates the set temperature value in the current “Operation mode” of the air conditioner in °C. If the air conditioner does not have the "temperature auto setting" function, or if the air conditioner having the "temperature auto setting" function is placed in the "non-auto" state, the air conditioner operates on the assumption that the value of this property is the target temperature value. If the target temperature value indicated by this property becomes unknown when the "temperature auto setting" function is placed in the "auto" state, this property shall take the value 0xFD (set temperature value unknown).

(6) Set value of relative humidity in dehumidifying mode

Indicates the set value of relative humidity, when “Operation mode” (EPC = 0xB0) is the dehumidifying mode, in %.

If this property is implemented, setting/referencing is enabled even when the current setting of “Operation mode” (EPC = 0xB0) is not the dehumidifying mode.

(7) Set temperature value in cooling mode

Indicates the set temperature value in °C when “Operation mode” (EPC = 0xB0) is the cooling mode. If this property is implemented, setting/referencing is enabled even when the current setting of “Operation mode” (EPC = 0xB0) is not the cooling mode.

(8) Set temperature value in heating mode

Indicates the set temperature value in °C when “Operation mode” (EPC = 0xB0) is the heating mode. If this property is implemented, setting/referencing is enabled even when the current setting of “Operation mode” (EPC = 0xB0) is not the heating mode.

(9) Set temperature value in dehumidifying mode

Indicates the set temperature value in °C when “Operation mode” (EPC = 0xB0) is the dehumidifying mode. If this property is implemented, setting/referencing is enabled even when the current setting of “Operation mode” (EPC = 0xB0) is not the dehumidifying mode.

(10) Rated power consumption

Indicates the rated power consumption (catalog value) in W in each operation mode of cooling/heating/dehumidifying/blast. The power consumption in each mode shall be 0x0000 to 0xFFFD (0 to 65533 W), and the property value shall begin with the high-order byte in the order of cooling/heating/dehumidifying/blast. When the real device does not support any operation mode as its function, the underflow code 0xFFFE shall be used.

(11) Measured value of current consumption

Indicates the measured value of current consumption of the air conditioner in units of 0.1 A. When an alternating current is targeted, the effective value shall be indicated. The property value range shall be 0x0000 to 0xFFFD (0 to 6553.3 A). When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value falls below the property value range, the underflow code 0xFFFE shall be used.

(12) Measured value of room relative humidity

Indicates the measured value of room humidity in %. The property value range shall be 0x00 to 0x64 (0 to 100%). When the property value of the real device exceeds this property value range, the overflow code 0xFF shall be used. When said value falls below the property value range, the underflow code 0xFE shall be used.

(13) Measured value of room temperature

Indicates the measured value of room temperature in °C. The property value range shall be 0x81 to 0x7D (-127 to 125°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value is below the property value range, the underflow code 0x80 shall be used. If the measured value cannot be returned, the value 0x7E shall be used.

(14) Set temperature value of user remote control

Indicates the up-to-date temperature value set by the home air conditioner user's remote control in °C. This property is used to view the set temperature value entered from the user's remote control when the set temperature value of the home air conditioner is changed from a controller or the like.

(15) Measured value of blow-off temperature

Indicates the measured value of blow-off temperature in °C. The property value range is 0x81 to 0x7D (-127 to 125°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used. If the measured value cannot be returned, the value 0x7E shall be used.

(16) Measured value of outdoor temperature

Indicates the measured temperature value (outdoor temperature) in the installation place of the outdoor equipment in °C. The property value range is 0x81 to 0x7D (-127 to 125°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used. If the measured value cannot be returned, the value 0x7E shall be used.

(17) Air flow rate setting

Indicates the air flow rate level and the air flow rate auto status. The property value of air flow rate auto status shall be 0x41. The air flow rate level shall be set (8-step) and take a property value of 0x31 to 0x38. No concrete value is specified for each air flow rate level, but 0x31 shall be the minimum air flow rate and 0x38 shall be the maximum air flow rate.

(18) Air flow direction auto setting

Indicates whether "auto" or "non-auto" is selected for air flow direction (up-down/left-right).

Complete auto = 0x41, non-auto = 0x42, up-down auto = 0x43, left-right auto = 0x44

(19) Air flow direction swing

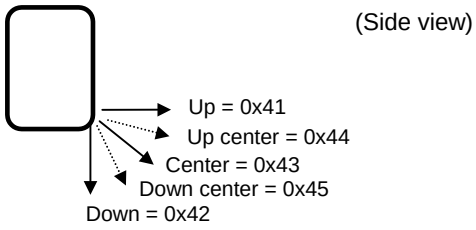
Sets the air flow direction swing to swing OFF/up-down/left-right/up-down and left-right.

Air flow direction swing OFF = 0x31, up-down = 0x41, left-right = 0x42, up-down and left-right = 0x43

(20) Vertical air flow direction

Indicates five different up-down angles of air flow direction.

Up = 0x41, down = 0x42, center = 0x43, up center = 0x44, down center = 0x45



(21) Horizontal air flow direction

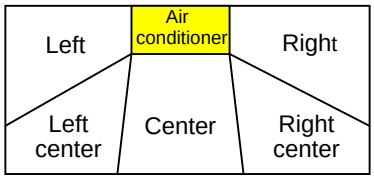
Indicates the left-right air flow direction. As indicated in the table below, five different directions of air current (left, left center, center, right center, and right) are indicated using codes (o: selected direction of air current).

(The codes used in Version 2.01 Release a or earlier (right = 0x41, left = 0x42, center = 0x43, and left-right = 0x44) are reassigned as indicated in the following table.)

Code	Left	Left center	Center	Right center	Right	Remarks
0x41	×	×	×	○	○	Earlier version "Right"
42	○	○	×	×	×	Earlier version "Left"
43	×	○	○	○	×	Earlier version "Center"
44	○	○	×	○	○	Earlier version "Left-right"
51	×	×	×	×	○	
52	×	×	×	○	×	
0x53: Not used (because of 0x41 = earlier version "right")						
54	×	×	○	×	×	
55	×	×	○	×	○	
56	×	×	○	○	×	
57	×	×	○	○	○	
58	×	○	×	×	×	
59	×	○	×	×	○	
5A	×	○	×	○	×	
5B	×	○	×	○	○	
5C	×	○	○	×	×	
5D	×	○	○	×	○	
0x5E: Not used (because of 0x43 = earlier version "center")						
5F	×	○	○	○	○	

Code	Left	Left center	Center	Right center	Right	Remarks
0x60	○	×	×	×	×	
61	○	×	×	×	○	
62	○	×	×	○	×	
63	○	×	×	○	○	
64	○	×	○	×	×	
65	○	×	○	×	○	
66	○	×	○	○	×	
67	○	×	○	○	○	
0x68: Not used (because of 0x42 = earlier version "left")						
69	○	○	×	×	○	
6A	○	○	×	○	×	
0x6B: Not used (because of 0x44 = earlier version "left-right")						
6C	○	○	○	×	×	
6D	○	○	○	×	○	
6E	○	○	○	○	×	
6F	○	○	○	○	○	

The five directions are as indicated at right.



(Top view)

(22) Ventilating operation setting

Sets the ON/OFF status of the ventilation function of a home air conditioner.

Ventilation ON (exhaust direction) = 0x41, ventilation OFF = 0x42, ventilation ON (intake direction) = 0x43

(23) Humidifying operation setting

Sets the operation status ON/OFF of the humidifying function of a home air conditioner.

Humidifying ON = 0x41, humidifying OFF = 0x42

(24) Ventilation air flow rate setting

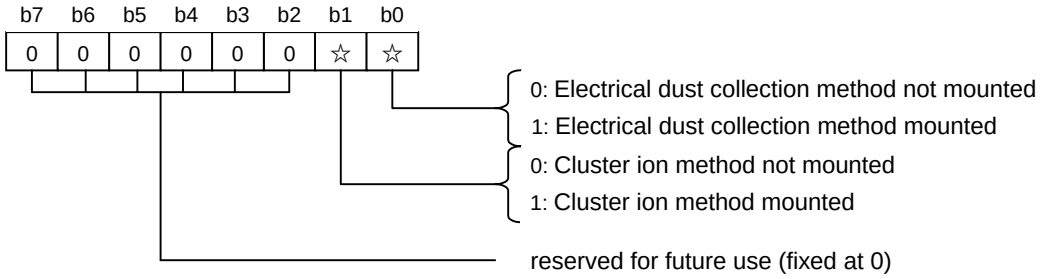
Indicates the ventilation air flow rate level and ventilation air flow rate auto status setting. The property value for the ventilation air flow rate auto status shall be 0x41. 8 different ventilation air flow rate levels shall be set, with the property values 0x31 to 0x38 taken. The specific values for various ventilation air flow rate levels are not stipulated. However, the values 0x31 and 0x38 shall be used as the minimum and maximum ventilation air flow rate level values, respectively.

(25) Humidifying volume setting

Indicates the humidifying volume level and humidifying volume auto status setting. The property value for the humidifying volume auto status shall be 0x41. 8 different humidifying volume levels shall be set, with the property values 0x31 to 0x38 taken. The specific values for various humidifying volume levels are not stipulated. However, the values 0x31 and 0x38 shall be used respectively as the minimum and maximum humidifying volume level values.

(26) Mounted air cleaning method

A bitmap list indicates the mounted method of implementing the air cleaning function. Two implementation methods are stipulated: electrical dust collection and cluster ion methods. Details are given below. Bit 0 indicates that the associated implementation method is not mounted. Bit 1 indicates that the associated implementation method is mounted.



(27) Air cleaning function operation status

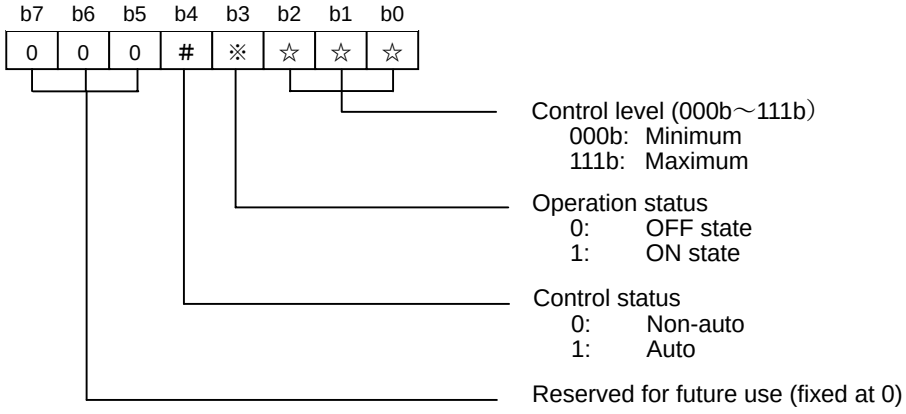
Indicates the air cleaning function operation status (ON/OFF), control status (auto/non-auto), and control level in non-auto control mode of each air cleaning function implementation method. This property is an array consisting of 8 elements. The element numbers correlate to the air cleaning function implementation methods on a one-to-one basis. The relationship between the element numbers and implementation methods is as indicated below:

Element 0: Electrical dust collection method

Element 1: Cluster ion method

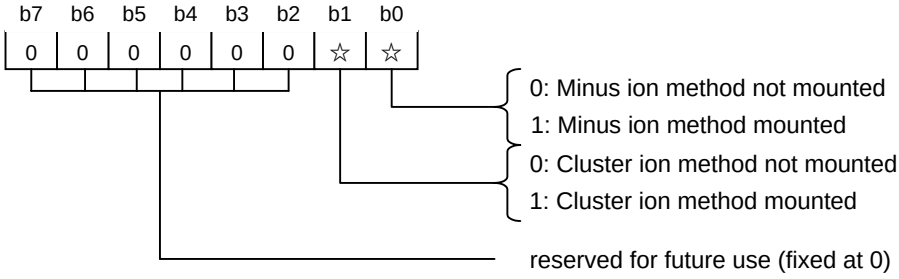
Elements 2 to 7: Reserved for future use

Each element is 1 byte in size. Bits b0 to b2 indicate 8 different control levels (000b to 111b) of the associated method. The specific values for various control levels are not stipulated. However, the values 000b and 111b shall indicate the minimum and maximum control levels, respectively. Bit b3 indicates the ON/OFF status of the associated method. When b3 = 0, the operation status is OFF. When b3 = 1, the operation status is ON. Bit b4 indicates whether the control status of the associated method is "auto" or "non-auto". When b4 = 0, the control status is "non-auto". When b4 = 1, the control status is "auto". When b4 =1 (auto), the control level setting specified by bits b0 to b2 is invalid. Details are shown below:



(28) Mounted refresh method

A bitmap list indicates the mounted method of implementing the refresh function. Two implementation methods are stipulated: minus ion and cluster ion. Details are given below. Bit 0 indicates that the associated implementation method is not mounted. Bit 1 indicates that the associated implementation method is mounted.



(29) Refresh function operation status

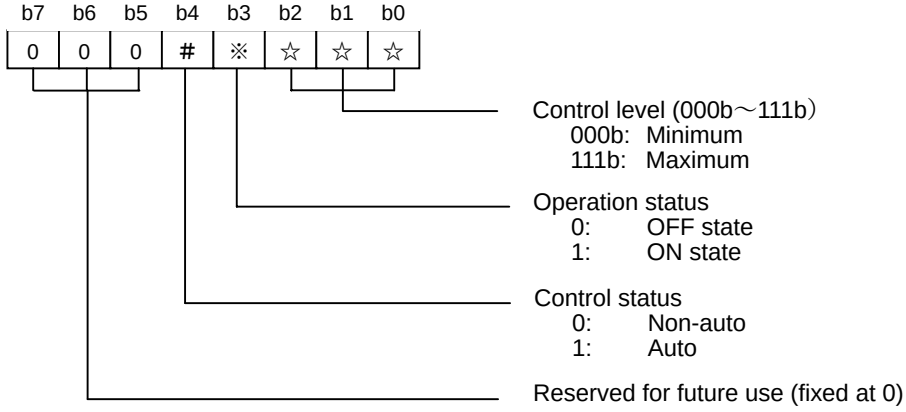
Indicates the refresh function operation status (ON/OFF), control status (auto/non-auto), and control level in non-auto control mode of each refresh function implementation method. This property is an array consisting of 8 elements. The element numbers correlate to the refresh function implementation methods on a one-to-one basis. The relationship between the element numbers and implementation methods is as indicated below:

Element 0: Minus ion method

Element 1: Cluster ion method

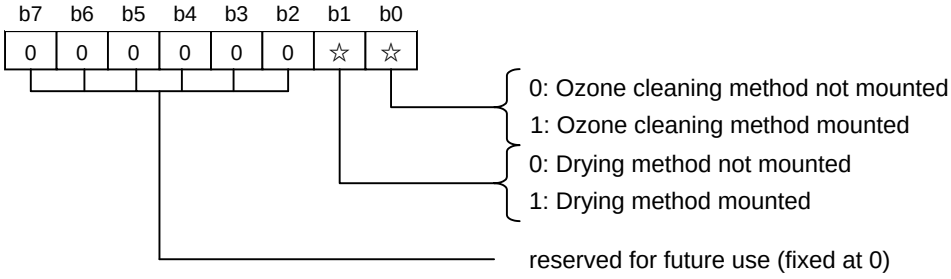
Elements 2 to 7: Reserved for future use

Each element is 1 byte in size. Bits b0 to b2 indicate 8 different control levels (000b to 111b) of the associated method. The specific values for various control levels are not stipulated. However, the values 000b and 111b shall indicate the minimum and maximum control levels, respectively. Bit b3 indicates the ON/OFF status of the associated method. When b3 = 0, the operation status is OFF. When b3 = 1, the operation status is ON. Bit b4 indicates whether the control status of the associated method is "auto" or "non-auto". When b4 = 0, the control status is "non-auto". When b4 = 1, the control status is "auto". When b4 =1 (auto), the control level setting specified by bits b0 to b2 is invalid. Details are shown below:



(30) Mounted self-cleaning method

A bitmap list indicates the mounted method of implementing the self-cleaning function. Two implementation methods are stipulated: ozone cleaning and drying. Details are given below. Bit 0 indicates that the associated implementation method is not mounted. Bit 1 indicates that the associated implementation method is mounted.



(31) Self-cleaning function operation status

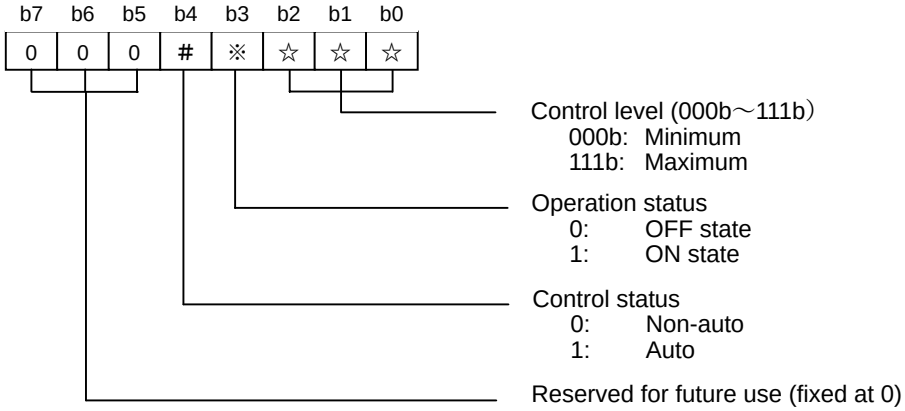
Indicates the self-cleaning function operation status (ON/OFF), control status (auto/non-auto), and control level in non-auto control mode of each self-cleaning function implementation method. This property is an array consisting of 8 elements. The element numbers correlate to the self-cleaning function implementation methods on a one-to-one basis. The relationship between the element numbers and implementation methods is as indicated below:

Element 0: Ozone cleaning method

Element 1: Drying method

Elements 2 to 7: Reserved for future use

Each element is 1 byte in size. Bits b0 to b2 indicate 8 different control levels (000b to 111b) of the associated method. The specific values for various control levels are not stipulated. However, the values 000b and 111b shall indicate the minimum and maximum control levels, respectively. Bit b3 indicates the ON/OFF status of the associated method. When b3 = 0, the operation status is OFF. When b3 = 1, the operation status is ON. Bit b4 indicates whether the control status of the associated method is "auto" or "non-auto". When b4 = 0, the control status is "non-auto". When b4 = 1, the control status is "auto". When b4 =1 (auto), the control level setting specified by bits b0 to b2 is invalid. Details are shown below:



(32) ON timer reservation setting

Sets the ON timer reservation ON/OFF status. This property relates to either "Set value of ON timer time" or "Set value of ON timer relative time".

Time reservation and relative time reservation both ON = 0x41, reservation OFF = 0x42, time reservation ON = 0x43, relative time reservation ON = 0x44

(33) Set value of ON timer time

When the "ON timer reservation setting" is 0x41 or 0x43, this property indicates the time (hour: 0x00 to 0x17 (0 to 23); minute: 0x00 to 0x3B (0 to 59)) at which the air conditioner turns ON. The property value shall sequentially indicate the hour and minute, beginning with the high-order byte.

(34) Set value of ON timer relative time

When the "ON timer reservation setting" is 0x41 or 0x44, this property indicates a time relative to the current time to specify the time at which the air conditioner turns ON. The data format shall be such that the hour and minute values range from 0x00 to 0x17 (0 to 23) and 0x00 to 0x3B (0 to 59), respectively. The property value shall sequentially indicate the hour and minute, beginning with the high-order byte.

(35) OFF timer reservation setting

Sets the OFF timer reservation ON/OFF status. This property relates to either "Set value of OFF timer time" or "Set value of OFF timer relative time".

Time reservation and relative time reservation both ON = 0x41, reservation OFF = 0x42, time reservation ON = 0x43, relative time reservation ON = 0x44

(36) Set value of OFF timer time

When the "OFF timer reservation setting" is 0x41 or 0x43, this property indicates the time (hour: 0x00 to 0x17 (0 to 23); minute: 0x00 to 0x3B (0 to 59)) at which the air conditioner turns OFF. The property value shall sequentially indicate the hour and minute, beginning with the high-order byte.

(37) Set value of OFF timer relative time

When the "OFF timer reservation setting" is 0x41 or 0x44, this property indicates a time relative to the current time to specify the time at which the air conditioner turns OFF. The data format shall be such that the hour and minute values range from 0x00 to 0x17 (0 to 23) and 0x00 to 0x3B (0 to 59), respectively. The property value shall sequentially indicate the hour and minute, beginning with the high-order byte.

(38) Current time setting

Indicates the current time in hours and minutes (hour: 0x00 to 0x17 (0 to 23); minute: 0x00 to 0x3B (0 to 59)). The property value shall sequentially indicate the hour and minute, beginning with the high-order byte. This property is used to set the current time on which the ON timer and OFF timer settings are to be based.

(39) Electrical current limit setting

Retains the electrical current limit value, which represents the maximum permissible current consumption value. The value of this property shall range from 0 to 100 (0x00 to 0x64) and be expressed in percent (%). The prevailing maximum permissible current consumption value is a property-retained percentage of the maximum current consumption rating for the home air conditioner associated with the target object. When the value of this property is 100, it means that no limit is imposed. If the current consumption cannot be limited to the value specified for this property, the current consumption shall be limited to the greatest applicable value smaller than the specified property value.

1.2.2 Stipulations for air conditioner ventilation fan class

Class group code : 0x01
Class code : 0x33
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Set value of room relative humidity	0xB4	Set value of relative humidity at auto ventilating operation. 0x00～0x64, (0～100%)	unsigned char	1 Byte	%	Set/Get			
Ventilation auto setting	0xBF	Auto/Non-auto Auto=0x41, Non-auto=0x42	unsigned char	1 Byte	–	Set/Get			
Measured value of room relative humidity	0xBA	Measured value of room relative humidity 0x00～0x64, (0～100%)	unsigned char	1 Byte	%	Get			
Set value of ventilation air flow rate	0xA0	Sets ventilation air flow rate level and ventilation air flow rate auto status. This property specifies ventilation air flow rate level (8-step). Ventilation air flow rate auto status = 0x41 Ventilation air flow rate level = 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Heat exchanger operation setting	0xE0	Indicates ON/OFF status of heat exchanger. Heat exchanger ON＝0x41, OFF＝0x42	unsigned char	1 Byte	–	Set/Get			
Measured value of CO_2 concentration	0xC0	Indicates measured value of CO_2 concentration in ppm. 0x0000～0xFFFD(0～65533ppm)	unsigned short	2 Byte	ppm	Get			
Smoke (cigarette) detection status	0xC1	Indicates smoke (cigarette) detection status. Smoke (cigarette) detection status found = 0x41 Smoke (cigarette) detection status not found = 0x42	unsigned char	1 Byte	–	Get			

(1) Operation status (inherited from the property of device object super-class)

Indicates the operation/stop status of the air conditioner. The property value of 0x30/0x31 shall be associated with both operation and stop.

(2) Set value of room relative humidity

Sets the set value of room relative humidity in the auto ventilating operation in %. If the measured value of room relative humidity exceeds the set value of room relative humidity when “ventilation auto status” is set to Auto, the “Operation status” goes to ON. The property value range shall be 0x00 to 0x64 (0 to 100%). If the real device's property value is above the property value range, the overflow code 0xFF shall be

used. If the real device's property value is below the property value range, the underflow code 0xFE shall be used.

(3) Ventilation auto setting

Sets either Auto or Non-auto of auto ventilating operation.

Auto = 0x41, Non-auto = 0x42

(4) Measured value of room relative humidity

Sets the measured value of room relative humidity in %. The property value range shall be 0x00 to 0x64 (0 to 100%). When the property value of the real device exceeds this property value range, the overflow code 0xFF shall be used. When said value falls below the property value range, the underflow code 0xFE shall be used.

(5) Set value of ventilation air flow rate

Indicates the ventilation air flow rate level and the ventilation air flow rate auto status. The property value of ventilation air flow rate auto status shall be 0x41. The air flow rate level shall be set (8-step) and take a property value of 0x31 to 0x38. Any concrete value of each air flow rate level is not specified but the 0x31 shall be the minimum air flow rate and 0x38 shall be the maximum air flow rate.

(6) Heat exchange operation setting

Sets ON/OFF as the operation status of the heat exchange function.

Heat exchange function ON = 0x41, OFF = 0x42

(7) Measured value of CO_2 concentration

Indicates the measured value of CO_2 concentration in ppm. The property value range shall be 0x0000 to 0xFFFD (0 to 65533 ppm). When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value falls below the property value range, the underflow code 0xFFFE shall be used.

(8) Smoke (cigarette) detection status

Indicates whether a smoke (cigarette) detection status is found or not. “Smoke (cigarette) detection status found” shall be 0x41 and “Smoke (cigarette) detection status not found” shall be 0x42.

1.2.3 Stipulations for air cleaner class

Class group code : 0x01
Class code : 0x35
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Filter change notice	0xE1	Filter change time notice found/not found Found=0x41, Not found=0x42	unsigned char	1 Byte	–	Get			
Air flow rate setting	0xA0	Sets air flow rate level and air flow rate auto status. The ventilation air flow rate is specified (8-step). Ventilation air flow rate auto status = 0x41 Ventilation air flow rate level =0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Smoke (cigarette) detection status	0xC1	Indicates smoke (cigarette) detection status. Smoke (cigarette) detection status found = 0x41 Smoke (cigarette) detection status not found = 0x42	unsigned char	1 Byte	–	Get			
Optical catalyst operation status	0xC2	Optical catalyst ON/OFF status Optical catalyst ON = 0x41 Optical catalysis OFF = 0x42	unsigned char	1 Byte	–	Set/Get			

(1) Operation status (inherited from the property of device object super-class)
Indicates the operation/stop status of the air cleaner. The property value of 0x30/0x31 shall be associated with both operation and stop.

(2) Filter change notice
Indicates whether notification of filter change is to be made or not. This property shall disclose that the time for air cleaner filter change has come.
The transition from "Filter change time notice found" to "Filter change time notice not found" shall be achievable using the reset switch on the air cleaner body, etc.
Found = 0x41, not found = 0x42

(3) Air flow rate setting
Indicates air flow rate level and air flow rate auto status. The property value of air flow rate auto status shall be 0x41. The air flow rate level shall be set (8-step) and take a property value of 0x31 to 0x38. No concrete air flow rate level is specified, but 0x31 shall be the minimum air flow rate and 0x38 shall be the maximum air flow rate.

(4) Smoke (cigarette) detection status

Indicates whether smoke (cigarette) detection status is found or not. “Smoke (cigarette) detection status found” = 0x41 and “Some (cigarette) detection status not found” = 0x42 shall be specified.

(5) Optical catalyst operation status

Indicates the operation status of the optical catalyst function as ON/OFF. “Optical catalyst ON” = 0x41 and “Optical catalyst OFF” = 0x42 shall be specified.

1.2.4 Stipulations for electric heater class

Class group code : 0x01
Class code : 0x42
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Temperature auto setting	0xB1	Auto/Non-auto Auto=0x41, Non-auto=0x42	unsigned char	1 Byte	–	Set/Get			
Set temperature value	0xB3	Set temperature value 0x00～0x32 (0～50)	unsigned char	1 Byte	°C	Set/Get	○		
Measured value of room temperature	0xBB	Measured value of room temperature 0x81～0x7E (-127～126))	signed char	1 Byte	°C	Get			
Set value of user remote control temperature	0xBC	Set temperature value of user remote control 0x00～0x32 (0～50)	unsigned char	1 Byte	°C	Get			
Air flow rate setting	0xA0	Sets air flow rate level and air flow rate auto status. Air flow rate level is specified (8-step). Air flow rate auto status = 0x41 Air flow rate level = 0x32～0x38	unsigned char	1 Byte	–	Set/Get			
ON timer reservation setting	0x90	Reservation ON/Reservation OFF Reservation ON = 0x41 Reservation OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Set value of ON timer time	0x91	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Set value of ON timer relative time	0x92	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2Byte	–	Set/Get			
OFF timer reservation setting	0x94	Reservation ON/Reservation OFF Reservation ON = 0x41 Reservation OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Set value of OFF timer time	0x95	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Set value of OFF timer relative time	0x96	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Current time setting	0x97	Current time HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2Byte	–	Set/Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the device object super-class property)

Indicates the operation/stop status of the electric heater. The property value of 0x30/0x31 shall be associated with both operation and stop.

(2) Temperature auto setting

Indicates the operation status ON/OFF setting when the electric heater is operated by the auto temperature setting calculation algorithm of the electric heater body without using “Set temperature value” (EPC = 0xB3) as the target value. This property shall take 0x41 for auto status ON and 0x42 for auto status OFF.

(3) Set temperature value

Indicates the set temperature value in the current “operation mode” in °C. If the electric heater does not have the "temperature auto setting" function, or if the electric heater having the "temperature auto setting" function is placed in the "non-auto" (0x42) state, the electric heater operates on the assumption that the value of this property is the target temperature value. If the target temperature value indicated by this property becomes unknown when the "temperature auto setting" function is placed in the "auto" state, this property shall take the value 0xFD (set temperature value unknown).

(4) Measured value of room temperature

Indicates the measured value of room temperature in °C. The property value range shall be 0x81 to 0x7E (-127 to 126°C). When the property value of the real device exceeds this property value range, the overflow code 0x80 shall be used. When said value is below the property value range, the underflow code 0x7E shall be used.

(5) Set value of user remote control temperature

Indicates the up-to-date temperature value set by the user’s remote control in °C. This property is used to refer to the set temperature by the user’s remote control when the set temperature of the electric heater has been changed by the controller.

(6) Air flow rate setting

Indicates the air flow rate level and the air flow rate auto status. The property value of air flow rate auto status shall be 0x41. The air flow rate level shall be set (8-step) and take a property value of 0x31 to 0x38. The concrete value of each air flow rate level is not specified, but 0x31 shall be the minimum air flow rate and 0x38 shall be the maximum air flow rate.

(7) ON timer reservation setting

Sets the reservation ON/OFF of the ON timer. This property is related to “Set value of ON timer time” or “Set value of ON timer relative time”.

Reservation ON = 0x41, reservation OFF = 0x42

(8) Set value of ON timer time

Indicates the electric heater ON time with “ON timer reservation status” ON by hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). The property shall begin with the high-order byte in the order of hour, minute.

(9) Set value of ON timer relative time

Indicates the electric heater ON time with “ON timer time reservation status” ON by the relative time from the current time. The data format shall be hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59), and the property value shall begin with the high-order byte in the order of hour, minute.

(10) OFF timer reservation setting

Sets the reservation ON/OFF of the OFF timer. This property is associated with “Set value of OFF timer time” or “Set value of OFF timer relative time”.

Reservation ON = 0x41, reservation OFF = 0x42

(11) Set value of OFF timer time

Indicates the air conditioner OFF time with “OFF timer reservation status” ON by hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). The property value shall begin with the high-order byte in the order of hour, minute.

(12) Set value of OFF timer relative time

Indicates the air conditioner OFF time by the relative time from the current time with “OFF timer reservation status” ON. The data format shall be hour: 0x00 to 0x17 (2 to 23) and minute: 0x00 to 0x3B (0 to 59). The property value shall begin with the high-order byte in the order of hour, minute.

(13) Current time setting

Indicates the current time by hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). The property value begins from the high-order byte in the order of hour, minute. This property is used to set the current time corresponding to the time to be set by the ON timer and OFF timer.

1.3 Housing/facilities-related Device Class Group

This section specifies detailed codes and properties for each ECHONET object belonging to the housing/facilities-related device class group (class group specification code X1 = 0x02). Table 1.4 shows a list of classes specified in detail in this section. In the class stipulations, “Mandatory” means that the device mounting of each class must necessarily mount a combination of its property and service.

Table 1.4 List of Objects of Housing/Facilities-related Device Class Group

Group code	Class code	Class name	Remark
0x02	0x60	Electric-powered shade	
	0x6B	Off peak electric water heater	
	0x72	Hot water generator	
	0x79	Home solar power generator	
	0x80	Watt-hour meter	
	0x82	Gas meter	
	0x83	LP gas meter	
	0x90	General lighting class	
	0xA0	Buzzer class	

1.3.1 Stipulations for electrically operated shade class

Class group code : 0x02
Class code : 0x60
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Open/close status	0xE0	Open/Close Open=0x41, Close=0x42	unsigned char	1 Byte	–	Set/Get	○	○	
Degree-of-opening level	0xE1	Specifies open/close level (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Set value of shade angle	0xE2	Shade angle value 0x00～0xB4 (0～180degree)	unsigned char	1 Byte	degree	Set/Get			
Shade open/close speed	0xE3	Low/Medium/High Low=0x41, Medium=0x42, High=0x43	unsigned char	1 Byte	–	Set/Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates the operation/stop status of the electrically operated shade. The property value of 0x30/0x31 shall be associated with both operation and stop.

(2) Open/close status

Indicates the open/close status of the electrically operated shade. The open status shall be 0x41, and the close status shall be 0x42.

(3) Degree-of-opening level

This property indicates one of 8 different degrees of electrically operated shade opening when the value of the open/close status property (0xE0) is 0x41 (open). Specific states of the 8 different levels are not stipulated. However, the value 0x31 shall represent the fully open state and the value 0x38 shall represent the state that is nearest the fully closed state (i.e., not fully closed).

(4) Set value of shade angle

Indicates the shade angle in degrees. The indicated angle is based on the indoor side of the electrically operated shade.

When a horizontal shade is in the horizontal position, it is in the 90-degree position. When the indoor side of the horizontal shade is at its highest position, the shade is in the 0-degree position.

When the outdoor side of a vertical shade is at the rightmost position as viewed from an indoor location, the shade is in the 0-degree position. When the outdoor side of a vertical shade is at the leftmost position as viewed from an indoor location, the shade is in the 180-degree position. When the outdoor side of a vertical shade is at an position falling midway between the above two positions, the shade is in the 90-degree position.

(5) Shade open/close speed

Indicates the open/close speed of the electrically operated shade in three steps: Low, Medium, and High.

1.3.2 Stipulations for Off peak electric water heater class

Group code : 0x02
Class code : 0x6B
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Auto boil-up status	0xB0	Represents auto boil-up ON/OFF status Auto boil-up ON= 0x41 Auto boil-up OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Auto temperature control status	0xB1	Represents auto temperature control ON/OFF status Auto temperature control ON = 0x41 Auto temperature control OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Present heating status	0xB2	Indicates present heating status. Presently heating= 0x41 Not presently heating= 0x42	unsigned char	1 Byte	–	Get			
Water temperature setting value	0xB3	Indicates set value of boil-up hot water temperature in °C. 0x00～0x64 (0～100°C)	unsigned char	1 Byte	°C	Set/Get	O		
Daytime reheating permission setting	0xC0	Indicates whether daytime reheating function is enabled or disabled. Daytime reheating enabled = 0x41 Daytime reheating disabled = 0x42	unsigned char	1 Byte	–	Set/Get			
Water temperature in Tank measurement value	0xC1	Indicates present ℃ of water temperature in Tank 0x00～0x64 (0～100°C)	unsigned char	1 Byte	°C	Get			
Set value of hot water supply temperature	0xD1	Indicates set value of hot water supply temperature in °C. 0x00～0x64 (0～100°C)	unsigned char	1 Byte	°C	Set/Get			
Set value of bath temperature	0xD3	Indicates set value of bath temperature in °C. 0x00～0x64 (0～100°C)	unsigned char	1 Byte	°C	Set/Get			
Heated water quantity setting value	0xE0	Indicates Heated water quantity setting value in % 0x00～0x64 (0～100°C)	unsigned char	1 Byte	%	Set/Get			
Remaining heated water measurement value	0xE1	Indicates remaining heated water measurement value in liters. 0x0000～0xFFFD (0 to 65533 liters)	unsigned short	2 Byte	liters	Get			
Tank capacity	0xE2	Indicates tank capacity in liters. 0x0000～0xFFFD (0 to 65533 liters)	unsigned short	2 Byte	liters	Get			

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Bath auto mode setting	0xE3	Bath auto mode ON/OFF Auto ON = 0x41, auto OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Bath hot water adding operation setting	0xE5	Hot water adding ON/OFF Hot water adding ON = 0x41, hot water adding OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Bath hot water temperature lowering operation setting	0xE6	Temperature lowering ON/OFF Temperature lowering ON = 0x41, temperature lowering OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Bath hot water volume setting 1	0xE7	Indicates bath hot water volume in liters. 0x00～0xFD (0 to 253 liters)	unsigned char	1 Byte	liters	Set/Get			
Bath hot water volume setting 2	0xE8	Specifies bath hot water volume (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			
Bath hot water volume setting 3	0xEE	Indicates bath hot water volume in liters. 0x0000～0xFFFD (0 to 65533 liters)	unsigned short	2 Byte	liters	Set/Get			
ON timer reservation setting	0x90	0x31～0x38 Reservation ON = 0x41, reservation OFF = 0x42	unsigned char	1 Byte	liters	Set/Get			
Set value of ON timer time	0x91	Time (HH:MM) 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Current time setting	0x97	Current time (HH:MM) 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			

(1) Operation status (inherited from the property of device object super-class)

Indicates the operation/stop status of Off peak electric water heater The property value of 0x30/0x31 shall be associated with both operation and stop.

(2) Auto boil-up status

Sets whether the boil-up operation using Off peak electric power is performed automatically or not. The auto boil-up status shall be 0x41 and the non-auto boil-up status shall be 0x42.

(3) Auto temperature control status

Indicates as automatic or non-automatic the temperature value of the electric hot water tank depending on the algorithm etc. Automatic is 0x41. Non-automatic is 0x42.

(4) Present heating status

Indicates whether the electric hot water tank is presently heating or not. Presently heating is 0x41. Not heating is 0x42.

(5) Water temperature setting value

Indicates the ℃ setting value for heating water. The range of property value is 0x00 ~ 0x64 (0 to 100℃). 0xFD is returned when “Water temperature setting value” is unknown or unfixed because “Automatic temperature setting for heating water “

(6) Daytime reheating permission setting

Indicate permission /prohibition for daytime re-heating permission setting. Daytime re-heating permission is 0x41. Daytime re-heating prohibition is 0x42.

(7) Water temperature in Tank measurement value

Indicates the ℃ at present time inside the hot water tank. The range of the property value is 0x00 ~ 0x64(0 ~ 100℃).

(8) Set value of hot water supply temperature

Indicates the temperature setting for the electric water heater supplies to a hot water supply terminal. This temperature setting is expressed in °C. The property value range shall be 0x00 to 0x64 (0 to 100°C).

(9) Set value of bath temperature

Indicates the bath boil-up temperature setting in °C. The property value range shall be 0x00 to 0x64 (0 to 100°C).

(10) Heated water quantity setting value

Sets the percentage of the boil-up hot water volume to the tank capacity. The property value range shall be 0x00 to 0x64 (0 to 100%).

(11) Remaining heated water measurement value

Indicates the volume of hot water remaining in the tank in liters. The property value range shall be 0x0000 to 0xFFFD (0 to 65533 liters). If the real device's property value is above the property value range, the overflow code 0xFFFF shall be used. If the real device's property value is below the property value range, the underflow code 0xFFFE shall be used.

(12) Tank capacity

Indicates the tank capacity in liters. The property value range shall be 0x0000 to 0xFFFD (0 to 65533 liters). If the real device's property value is above the property value range, the overflow code 0xFFFF shall be used. If the real device's property value is below the property value range, the underflow code 0xFFFE shall be used.

(13) Bath auto mode setting

Indicates whether the bath auto mode is ON or OFF. The property value shall be 0x41 (bath auto mode ON) or 0x42 (bath auto mode OFF).

(14) Bath hot water adding operation setting

Indicates whether the bath hot water adding operation is ON or OFF. The property value shall be 0x41 (bath hot water adding operation ON) or 0x42 (bath hot water adding operation OFF).

(15) Bath hot water temperature lowering operation setting

Indicates whether the bath hot water temperature lowering operation is ON or OFF. The value 0x41 indicates that the bath hot water temperature lowering operation is ON. The value 0x42 indicates that the bath hot water temperature lowering operation is OFF. When the bath hot water temperature lowering operation is ON, water will be added to the bath to lower the bath hot water temperature.

(16) Bath hot water volume setting 1

Indicates the bath hot water volume in liters. The property value range shall be 0x00 to 0xFD (0 to 253 L). If the real device's property value is above the property value range, the overflow code 0xFF shall be used. If the real device's property value is below the property value range, the underflow code 0xFE shall be used.

(17) Bath hot water volume setting 2

Sets the bath hot water volume. Eight different levels are available. The values 0x31 and 0x38 represent the minimum and maximum settings, respectively. Specific volume values for the 8 different levels are not stipulated.

(18) Bath hot water volume setting 3

Indicates the bath hot water volume setting in liters. The property value range shall be 0x0000 to 0xFFFD (0 to 65533). If the real device's property value is above the property value range, the overflow code 0xFFFF shall be used. If the real device's property value is below the property value range, the underflow code 0xFFFE shall be used.

(19) ON timer reservation setting

Indicates whether the bath auto mode reservation is ON or OFF. The property value shall be 0x41 (reservation ON) or 0x42 (reservation OFF). This property relates to "Set value of ON timer time".

(20) Set value of ON timer time

When the "ON timer reservation setting" is ON, this property indicates the time at which the bath auto mode setting (EPC = 0xE3) turns ON (0x41). The time indication is given in hours and minutes (hour: 0x00 to 0x17 (0 to 23); minute: 0x00 to 0x3B (0 to 59)). The property value shall sequentially indicate the hour and minute, beginning with the high-order byte.

(21) Current time setting

Indicates the current time in hours and minutes (hour: 0x00 to 0x17 (0 to 23); minute: 0x00 to 0x3B (0 to 59)). The property value shall sequentially indicate the hour and minute, beginning with the high-order byte. This property is used to set the current time on which the ON timer reservation setting is to be based.

1.3.3 Stipulations for hot water generator class

Class group code : 0x02
Class code : 0x72
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Hot water burning status	0xD0	Indicates hot water burning status. Hot water burning status found = 0x41 Hot water burning status not found = 0x42	unsigned char	1 Byte	–	Get	○		
Set value of hot water temperature	0xD1	Indicates set value of hot water temperature in °C. 0x00～0x64 (0～100)	unsigned char	1 Byte	°C	Get/Set			
Hot water Warmer setting	0xD2	Hot water warmer setting Hot water warmer operation = 0x41 Hot water warmer operation resetting = 0x42	unsigned char	1 Byte	–	Get/Set			
Set value of bath temperature	0xE1	Indicates set value of bath temperature in °C. 0x00～0x64 (0～100)	unsigned char	1 Byte	°C	Get/Set			
Bath burning status	0xE2	Indicates bath burning status. Bath burning status found = 0x41 Bath burning status not found=0x42	unsigned char	1 Byte	–	Get	○		
Bath auto mode setting	0xE3	Bath auto mode ON/OFF Auto ON = 0x41 Auto OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Bath additional boil-up operation setting	0xE4	Additional boil-up ON/OFF Additional boil-up ON = 0x41 Additional boil-up OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Bath hot water adding operation setting	0xE5	Hot water addition ON/OFF Hot water addition ON = 0x41 Hot water addition OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Bath water temperature lowering operation setting	0xE6	Hot water temperature lowering ON/OFF Hot water temperature lowering ON = 0x41 Hot water temperature lowering OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Bath hot water volume setting 1	0xE7	Indicates bath hot water volume in liters. 0x00～0xFD (0 to 253 liters)	unsigned char	1 Byte	liters	Set/Get			
Bath hot water volume setting 2	0xE8	Specifies bath hot water volume (8-step). 0x31～0x38	unsigned char	1 Byte	–	Set/Get			

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Bath hot water volume setting 3	0xEE	Indicates bath hot water volume in liters. 0x0000～0xFFFD (0 to 65533 liters)	unsigned short	2 Byte	liters	Set/Get			
Bathroom priority setting	0xE9	Bathroom priority ON/OFF Bathroom priority ON = 0x41, bathroom priority OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Shower hot water supply status	0xEA	Shower hot water supply ON/OFF Shower hot water supply ON = 0x41 Shower hot water supply OFF = 0x42	unsigned char	1 Byte	–	Get			
Kitchen hot water supply status	0xEB	Kitchen hot water supply ON/OFF Kitchen hot water supply ON = 0x41 kitchen hot water supply OFF = 0x42	unsigned char	1 Byte	–	Get			
Hot water warmer ON timer reservation setting	0xEC	Reservation ON/OFF Reservation ON = 0x41, reservation OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Set value of hot water warmer ON timer time	0xED	Timer value (HH:MM) 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
ON timer reservation setting	0x90	Reservation ON/Reservation OFF Reservation ON = 0x41 Reservation OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Set value of ON timer time	0x91	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Set value of ON timer relative time	0x92	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Current time setting	0x97	Current time HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			

(1) Operation status (inherited from the property of device object super-class)

Indicates the operation/stop status of the hot water generator. The property value of 0x30/0x31 shall be associated with both operation and stop.

(2) Hot water burning status

Indicates whether the hot water generator is in the burning status, by “Burning status found”: 0x41 or “Burning status not found”: 0x42.

(3) Set value of hot water temperature

Indicates the temperature setting for the hot water that the hot water generator supplies to a hot water supply terminal. This temperature setting is expressed in °C. The property value range shall be 0x00 to 0x64 (0 to 100°C).

(4) Hot water warmer setting

Indicates the ON/OFF status of hot water warmer status by “Hot water warmer operation”: 0x41 or “Hot water warmer operation resetting”: 0x42.

(5) Set value of bath temperature

Indicates the set value of bath boil-up temperature in °C. The property value range shall be 0x00 to 0x64 (0 to 100°C).

(6) Bath burning status

Indicates whether the bath hot water generator is in the burning status, by “Burning status found”: 0x41 or “Burning status not found”: 0x42.

(7) Bath auto mode setting

Indicates the ON/OFF status of the bath auto mode. The property value shall be 0x41 for Bath auto ON or 0x42 for Bath auto OFF.

(8) Bath additional boil-up operation setting

Indicates the ON/OFF status of the bath additional boil-up operation.

The property value shall be 0x41 for Bath additional boil-up operation ON or 0x42 for Bath additional boil-up operation OFF.

(9) Bath hot water adding operation setting

Indicates the ON/OFF status of the bath hot water adding operation. The property value shall be 0x41 for Bath hot water adding operation ON or 0x42 for Bath hot water adding operation OFF.

(10) Bath water temperature lowering operation setting

Indicates whether the bath hot water temperature lowering operation is ON or OFF. The value 0x41 indicates that the bath hot water temperature lowering operation is ON. The value 0x42 indicates that the bath hot water temperature lowering operation is OFF. When the bath hot water temperature lowering operation is ON, water will be added to the bath to lower the bath hot water temperature.

(11) Bath hot water volume setting 1

Indicates the bath hot water volume setting by liters. The property value range shall be 0x00 to 0xFD (0 to 253 L). When the property value of the real device exceeds this property value range, the overflow code 0xFF shall be used. When said value is below the property value range, the underflow code 0xFE shall be used.

(12) Bath hot water volume setting 2

Sets the bath hot water volume setting (8-step). The property value of 0x31 shall be the minimum value and the property value of 0x38 shall be the maximum value. No concrete value is specified for each level.

(13) Bath hot water volume setting 3

Indicates the bath hot water volume setting in liters. The property value range shall be 0x0000 to 0xFFFD (0 to 65533). If the real device's property value is above the property value range, the overflow code 0xFFFF shall be used. If the real device's property value is below the property value range, the underflow code 0xFFFE shall be used.

(14) Bathroom priority setting

Indicates whether the bathroom priority is ON for the hot water generator. The value 0x41 indicates that the bath priority is ON. The value 0x42 indicates that the bath priority is OFF.

(15) Shower hot water supply status

Indicates whether hot water is being supplied to the shower (i.e., whether the shower is in use). The value 0x41 indicates that the shower hot water supply is ON. The value 0x42 indicates that the shower hot water supply is OFF.

(16) Kitchen hot water supply status

Indicates whether hot water is being supplied to the kitchen. The value 0x41 indicates that the kitchen hot water supply is ON. The value 0x42 indicates that the kitchen hot water supply is OFF.

(17) Hot water warmer ON timer reservation setting

Turns ON/OFF the hot water warmer ON timer reservation. This property relates to "Set value of hot water warmer ON timer time".

(18) Set value of hot water warmer ON timer time

When the "Hot water warmer ON timer reservation setting" is ON, this property indicates the time at which the hot water warmer setting (EPC = 0xD2) turns ON (0x41). The time indication is given in hours and minutes (hour: 0x00 to 0x17 (0 to 23); minute: 0x00 to 0x3B (0 to 59)). The property value shall sequentially indicate the hour and minute, beginning with the high-order byte.

(19) ON timer reservation setting

Sets the ON/OFF status of ON timer reservation. This property is associated with “Set value of ON timer time” or “Set value of ON timer relative time”.

(20) Set value of ON timer time

Indicates the time when “Bath auto mode” (EPC = 0xE3) reaches “Bath auto ON = 0x41 with “ON timer time reservation status” ON, by hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). The property value shall begin with the high-order byte in the order of hour, minute.

(21) Set value of ON timer relative time

Indicates the time when “Bath auto mode” (EPC = 0xE3) reaches “Bath auto ON = 0x41 with “ON timer time reservation status” ON, by the relative time from the current time. The data format shall be hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). The property value shall begin with the high-order byte in the order of hour, minute.

(22) Current time setting

Indicates the current time by hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). The property value shall begin with the high-order type in the order of hour, minute. This property is used to set the current time corresponding to the time to be set by the ON timer and OFF timer.

1.3.4 Stipulations for home solar power generator class

Class group code : 0x02
Class code : 0x79
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Type	0xD0	Indicates type of home solar power generation PV inverter. System-linked type = 0x00 Independent type = 0x01	unsigned char	1 Byte	–	Get			
Instantaneous generated power	0xE0	Indicates instantaneous generated power in W. 0x0000～0xFFFD（0～65533）	unsigned short	2 Byte	W	Get	○		
Integral generated electric energy	0xE1	Indicates integral electric energy in kWh. 0x0～0x3B9AC9FF (0～999,999,999kWh)	unsigned long	4 Byte	KWh	Get	○		
Integral generated electric energy resetting	0xE2	Resets integral generated electric energy by setting 0x00. Reset = 0x00	unsigned char	1 Byte	–	Set			
Integral sold electric energy	0xE3	Indicates integral value of sold power in kWh. 0x0～0x3B9AC9FF (0～999,999,999kWh)	unsigned long	4 Byte	kWh	Get			
Integral sold electric energy resetting	0xE4	Resets integral sold electric energy by setting 0x00. Reset = 0x00	unsigned char	1 Byte	–	Set			

(1) Operation status

Indicates the operation status as a home solar power generation PV inverter. The status where power is supplied to the system side shall be defined as “Operating status”.

(2) Type

Indicates the type of home solar power generation PV inverter.
System-linked type = 0x00, Independent type = 0x01

(3) Instantaneous generated power

Indicates the instantaneous generated power in W. The property value range shall be 0x0000 to 0xFFFD. When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value is below the property value range, the underflow code 0xFFFE shall be used.

(4) Integral generated electric energy

Indicates the integral generated electric energy in kWh. The property value range shall be 0x00000000 to 0x3B9AC9FF (0 to 999,999,999 kWh). When the integral electric energy overflows, the property value shall be incremented again from 0x00000000.

(5) Integral generated electric energy resetting

Resets integral generated electric energy to zero by setting 0x00.

(6) Integral sold electric energy

Indicates the integral sold electric energy in kWh. The property value range shall be 0x00000000 to 0x3B9AC9FF (0 to 999,999,999 kWh). When the integral electric energy overflows, the property value shall be incremented again from 0x00000000.

(7) Integral sold electric energy resetting

Resets integral generated electric energy to zero by setting 0x00.

1.3.5 Stipulations for electric energy meter class

Class group code : 0x02
Class code : 0x80
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Integral electric energy	0xE0	Indicates integral electric energy in decimal (8 digits). 0x00000000～0x05F5E0FF (0～99,999,999)	unsigned long	4 Byte	0.1 or 0.01 kWh	Get	○		
Integral electric energy unit	0xE2	Indicates number of decimal places of integral electric energy (0xE0). 0x01 to 0x02 (1 to 2 decimal places)	unsigned char	1 Byte	–	Get	○		
Integral electric energy measurement log 1	0xE3	Indicates integral electric energy (8 digits) measurement result log in 30-minute segments for past 24 hours. 0x00000000～0x05F5E0FF (0～99,999,999)	unsigned long x48	192 Byte	0.1 or 0.01 kWh	Get			
Integral electric energy measurement log 2	0xE4	Indicates integral electric energy (8 digits) measurement result log for past 24 hours as one-day data in 30-minute segments. 0x00000000～0x05F5E0FF (0～99,999,999)	unsigned long x48 x45	192 Byte x 45	0.1 or 0.01 kWh	GetM			
Current time setting	0x97	Current time HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Current year/month/day setting	0x98	Current year/month/day YYYY:MM:DD 0～270F:0～0x0C: 0～0x1F (=0～9999):(=0～12):(=0～31)	unsigned char x 4	4 Byte	–	Set/Get			

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Integral electric energy
Indicates the integral electric energy in decimal 8 digits. The unit is indicated by the property “Integral electric energy” (EPC = 0xE2). The unit shall be 0.1 kWh when “Integral electric energy” (EPC = 0xE2) is 0x01, and 0.01 kWh when said property is 0x02. The property value range shall be 0x00000000 to 05F5E0FF (0 to 99,999,999). When the integral electric energy overflows, the property shall be incremented again from 0x00000000.

(3) Integral electric energy unit
Indicates the number of decimal places of the integral electric energy (EPC = 0xE0). When the property value is 0x01, “Integral electric energy” (EPC = 0xE0) shall take the unit of 0.1 kWh. When the property is 0x02, the “Integral electric energy” (EPC = 0xE0) shall take the unit of 0.01 kWh.

(4) Integral electric energy measurement log 1
Indicates the integral electric energy (EPC= 0xE0) measurement result log for past 24 hours in 30-minute segments. The unit is indicated by the property value of “Integral electric energy unit (EPC = 0xE2). When “Integral electric energy unit” (EPC = 0xE2) is 0x01, the unit shall be 0.1 kWh. When “Integral electric energy unit” (EPC = 0xE2) is 0x02, the unit shall be 0.01 kWh. The measured value of integral electric energy for each 30 minutes shall be based on the time to be set in the property name “Time setting” (EPC-0x97). The measured value in units of 8 digits at every 0 minute and 30 minutes shall be the data of 0x00000000 to 05F5E0FF (0 to 99,999,999). The property value shall begin with the high-order byte in time series. For the time data that is not yet measured for the measurement log, 0xFFFFFFFF shall be used.

(5) Integral electric energy measurement log 2
Indicates the integral electric energy value (EPC = 0xE0) measurement result log for past 45 days by specifying one-day data (4 bytes x 48) in 30-minute segments as one array element. The unit is indicated by the property value “Integral electric energy” (EPC = 0xE2). When “Integral electric energy unit” (EPC = 0xE2) is 0x01, the unit shall be 0.1 kWh. When “Integral electric energy unit” (EPC = 0xE2) is 0x02, the unit shall be 0.01 kWh. The measured value of integral electric energy for each 30 minutes shall be based on the time to be set in the property name “Time setting” (EPC-0x97). The measured value in units of 8 digits at every 0 minute and 30 minutes shall be the data of 0x00000000 to 05F5E0FF (0 to 99,999,999). The property value shall be the 45-day data of one array element comprised of one-day data (4 bytes x 48), beginning with the high-order byte in time series from the data of the measured value of integral electric energy at 0 hour 0 minute 45 days ago. For the time data that is not yet measured for the measurement log, 0xFFFFFFFF shall be used.

(6) Current time setting
Indicates the current time by hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). This property shall be used to set the correct time for integral electric energy measurement logging in "Integral electric energy measurement log 1" (EPC = 0xE3) or "Integral electric energy measurement log 2" (EPC = 0xE4).

(7) Current year/month/day setting
Indicates the current year/month/day by year: 0x0000 to 0x270F (0 to 9999), month: 0x00 to 0x0C (0 to 12), and minute: 0x00 to 0x1F (0 to 31). The property value shall begin with the high-order byte in the order of year (2 bytes), month (1 byte), and day (1 byte).

1.3.6 Stipulations for gas meter class

Class group code : 0x02
Class code : 0x82
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Integral gas consumption	0xE0	Indicates integral gas consumption in units of 0.001 m3. 0x0～0x3B9AC9FF (0～999,999.999m^3)	unsigned long	4 Byte	0.001 m^3	Get	○		
Integral gas consumption measurement log	0xE2	Indicates integral gas consumption measurement result log for past 24 hours as data in 30-minute segments. 0x0～0x3B9AC9FF (0～999,999.999m^3)	Unsigned long x 48	192 Byte	0.001 m^3	Get			
Current time setting	0x97	Current time HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON/OFF). In the node mounting this class, if the function of this class is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Integral gas consumption
Indicates the integral gas consumption in units of 0.001 m^3. The property value range shall be 0x00000000 to 0x3B9AC9FF (0 to 999,999,999 m^3). When the integral gas consumption value overflows, the property shall be incremented again from 0x00000000.

(3) Integral gas consumption measurement log
Indicates the gas consumption (EPC= 0xE0) measurement result log for past 24 hours as the data in 30-minute segments. The measured value of integral gas consumption for each 30 minutes shall be based on the time to be set in the property name “Time setting” (EPC-0x97). The measured value in units of 0.1 m^3 at every 0

minute and 30 minutes shall be the data of 0x00000000 to 0x3B9AC9FF (0 to 999,999,999 m^3). The property value shall begin with the high-order byte in time series.

(4) Current time setting

Indicates the current time by hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). The property value shall begin with the high-order byte in the order of hour, minute. This property shall be used to set the correct time for integral gas consumption measurement logging in "Integral gas consumption measurement log" (EPC = 0xE2).

1.3.7 Stipulations for LP gas meter class

Class group code : 0x02
Class code : 0x83
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Integral gas consumption of metering data 1	0xE0	Indicates integral gas consumption in units of 0.0001 m^3. 0～0x005F5E0FF ($0～9,999.9999m^3$)	unsigned long	4 Byte	0.0001 m^3	Get	○		
Integral gas consumption of metering data 2	0xE1	Indicates integral gas consumption in units of 0.001 m^3. 0～0x005F5E0FF ($0～99,999.999m^3$)	unsigned long	4 Byte	0.001 m^3	Get	○		
Error detection of metering data	0xE2	Indicates status where meter detected metering data error. Error detection status found = 0x41 Error detection status not found = 0x42	unsigned char	1 Byte	–	Get		○	
Security data 1	0xE3	Indicates security data to define security information on meter operation by bit allocation. 0～0xFFFFFFFF	unsigned long	4 Byte	–	Get			
Security data 2	0xE4	Indicates security data to define security information on meter operation by bit allocation. 0～0xFFFFFFFF	unsigned long	4 Byte	–	Get			
Center valve shut-off	0xE5	Indicates status where gas shut-off valve of meter has been shut off by center. Center valve shut-off status found = 0x41 Center valve shut-off status not found = 0x42	unsigned char	1 Byte	–	Get		○	
Center valve shut-off recovery permission setting	0xE6	Indicates status where gas shut-off valve of meter has been shut off by center. Center valve shut-off reset enable = 0x41 Center valve shut-off reset not enable = 0x42	unsigned char	1 Byte	–	Get			
Emergency valve shut-off status	0xE7	Indicates status where gas shut-off valve of meter has been shut off. Emergency valve shut-off status found = 0x41 Emergency valve shut-off status not found = 0x42	unsigned char	1 Byte	–	Get			
Shut-off valve open/close status	0xE8	Indicates open/close status of shut-off valve. Shut-off valve open status = 0x41 Shut-off valve close status = 0x42	unsigned char	1 Byte	–	Get			

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Residual volume control warning	0xE9	Indicates status as warning where residual volume is very small. Residual volume control warning level 1 0x31 Residual volume control warning level 2 0x32 Residual volume control warning level 3 0x33 No residual volume control warning 0x42	unsigned char	1 Byte	–	Get		○	
Set value of residual volume control warning level 1	0xEA	Sets “Small residual volume detection level 1”. 0～0xFFFFFF(0～16,777,215)	unsigned char x 3	3 Byte	Liter	Set/Get			
Set value of residual volume control warning level 2	0xEB	Sets “Small residual volume detection level 2”. 0～0xFFFFFF(0～16,777,215)	unsigned char x 3	3 Byte	Liter	Set/Get			
Set value of residual volume control warning level 3	0xEC	Sets “Small residual volume detection level 3”. 0～0xFFFFFF(0～16,777,215)	unsigned char x3	3 Byte	Liter	Set/Get			
Slight leak timer value (gas flow rate continuation)	0xED	Indicates number of days on which gas flow rate is continued. 0～0xFD(0～253) (0 to 253 days)	unsigned char	1 Byte	Day	Get			
Slight leak timer value (without pressure increase)	0xEE	Indicates number of days on which gas leak monitoring is performed without gas pressure increase. 0～0xFD(0～253) (0 to 253 days)	unsigned char	1 Byte	Day	Get			
Shut-off reason log	0xEF	Defines log of reasons for gas shut-off by shut-off valve in 1 byte each with bits assigned. Shows the last three logs. Log 3: log 2: log 1 0xFF: 0xFF: 0xFF	unsigned char x 3	3 Byte	–	Get			
Maximum value of supply pressure data	0xD0	Indicates maximum value of supply pressure data in units of 0.1 kPa. 0x0000～0xFFFD(0～655.33) (0～655.33kPa)	unsigned short	2 Byte	0.01 kPa	Get			
Minimum value of supply pressure data	0xD1	Indicates minimum value of supply pressure data in units of 0.1 kPa. 0x0000～0xFFFD(0～655.33) (0～655.33kPa)	unsigned short	2 Byte	0.01 kPa	Get			
Current value of supply pressure data	0xD2	Indicates current value of supply pressure data in units of 0.01 kPa. 0x0000～0xFFFD(0～655.33) (0～655.33kPa)	unsigned short	2 Byte	0.01 kPa	Get			
Maximum value of block pressure data	0xD3	Indicates minimum value of supply pressure data in units of 0.1 kPa. 0x0000～0xFFFD(0～655.33) (0～655.33kPa)	unsigned short	2 Byte	0.01 kPa	Get			

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Minimum value of block pressure data	0xD4	Indicates minimum value of supply pressure data in units of 0.1 kPa. 0x0000～0xFFFD(0～655.33) (0～655.33kPa)	unsigned short	2 Byte	0.01 kPa	Get			
Current value of block pressure data	0xD5	Indicates current value of block pressure data in units of 0.01 kPa. 0x0000～0xFFFD(0～655.33) (0～655.33kPa)	unsigned short	2 Byte	0.01 kPa	Get			
Number of block pressure/supply pressure error days	0xD6	Indicates number of days on which block pressure/supply pressure errors occurred in 1 byte each. Number of block pressure error days: Number of supply pressure error days: Number of block pressure error times: Number of supply pressure error times	unsigned char x 4	4 Byte	–	Get			
Test call setting	0xD7	Performs test call operation setup. Test call operation ON 0x41 Test call operation OFF 0x42	unsigned char	1 Byte	–	Set/Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the LP gas meter is operating or not (ON/OFF). In the node mounting this class, if the function of the LP gas meter is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Integral gas consumption of metering data 1

Indicates the integral gas consumption in units of 0.0001 m^3. The property value range shall be 0x00000000 to 0x005F5E0FF (0 to 9,999,999 m^3). When the integral gas consumption overflows, the property value shall be incremented again from 0x00000000. Either “Integral gas consumption of metering data 1” (EPC = 0xE0) or “Integral gas consumption of metering data 2” (EPC = 0xE1) shall be necessarily implemented.

(3) Integral gas consumption of metering data 2

Indicates the integral gas consumption in units of 0.001 m^3. The property value range shall be 0x00000000 to 0x005F5E0FF (0 to 99,999,999 m^3). When the integral gas consumption overflows, the property value shall be incremented again from 0x00000000. Either “Integral gas consumption of metering data 1” (EPC = 0xE0) or “Integral gas consumption of metering data 2” (EPC = 0xE1) shall be necessarily implemented.

(4) Error detection of metering data

Indicates that a metering data error was detected. The property shall be 0x41 for “Error detection status found” and 0x42 for “Error detection status not found”.

(5) Security data 1

Indicates the security data to define the security information on meter error detection by bit allocation.

(6) Security data 2

Indicates the security data to define the security information on meter error detection by bit allocation.

(7) Center valve shut-off

Indicates a status where the gas shut-off valve of the meter is shut off by the center. In the status of “Center valve shut-off request found”, no request for opening the shut-off valve will be accepted until a reset permission is given from the center.

(8) Center valve shut-off recovery permission setting

Specifies whether or not to enable the function for recovering from the shut-off state of the meter's gas shut-off valve. The value for enabling the center valve shut-off recovery function shall be 0x41. The value for disabling the center valve shut-off recovery function shall be 0x40.

(9) Emergency valve shut-off status

Indicates that the meter's gas shut-off valve is closed because of emergency. The value 0x41 shall indicate that the emergency valve shut-off status is found. The value 0x42 shall indicate that the emergency valve shut-off status is not found.

(10) Shut-off valve open/close status

Indicates whether the shut-off valve is open or closed. The value 0x41 shall indicate that the shut-off valve is open. The value 0x42 shall indicate that the shut-off valve is closed.

(11) Residual volume control warning

Issues a warning to indicate that the residual volume is very small. The value 0x31 indicates residual volume control warning level 1. The value 0x32 indicates residual volume control warning level 2. The value 0x33 indicates residual volume control warning level 3. The value 0x42 indicates that no residual volume control warning is issued. When the residual volume decreases below a residual volume control warning level setting (the property value for the set value of residual volume control

warning level 1, set value of residual volume control warning level 2, or set value of residual volume control warning level 3), the associated property value shall be taken as stated above. The residual volumes indicated by the three warning levels shall be, in decreasing order, the set value of residual volume control warning level 1, set value of residual volume control warning level 2, and set value of residual volume control warning level 3.

(12) Set value of residual volume control warning level 1

Sets the residual gas volume that changes the value of the residual volume control warning property (0xE9) to residual volume control warning level 1 (0x31). The property value range shall be 0 to 0xFFFFFF (0 to 16,777,215 liters).

(13) Set value of residual volume control warning level 2

Sets the residual gas volume that changes the value of the residual volume control warning property (0xE9) to residual volume control warning level 2 (0x32). The property value range shall be 0 to 0xFFFFFF (0 to 16,777,215 liters).

(14) Set value of residual volume control warning level 3

Sets the residual gas volume that changes the value of the residual volume control warning property (0xE9) to residual volume control warning level 3 (0x33). The property value range shall be 0 to 0xFFFFFF (0 to 16,777,215 liters).

(15) Slight leak timer value (gas flow rate continuation)

Indicates the number of days for which gas has flowed continuously. The property value range shall be 0 to 0xFD (0 to 253 days).

(16) Slight leak timer value (without pressure increase)

Indicates the number of days for which gas leak monitoring has been conducted with no gas pressure increase detected. The property value range shall be 0 to 0xFD (0 to 253 days).

(17) Shut-off reason log

Defines the log of reasons for gas shut-off by the shut-off valve in 1 byte each, with assigned bits. Shows the last three logs. The property value shall be structured so as to sequentially indicate log 3, log 2, and log 1, beginning with the high-order byte. Log 1 shall be the last log. Log 2 shall be the log obtained immediately before log 1. Log 3 shall be the log obtained immediately before log 2.

(18) Maximum value of supply pressure data

Indicates the maximum value of supply pressure data in units of 0.01 Pa. The property value range shall be 0x0000 to 0xFFFD (0 to 655.33 Pa).

(19) Minimum value of supply pressure data

Indicates the minimum value of supply pressure data in units of 0.01 Pa. The property value range shall be 0x0000 to 0xFFFD (0 to 655.33 Pa).

(20) Current value of supply pressure data

Indicates the current value of supply pressure data in units of 0.01 kPa. The property value range shall be 0x0000 to 0xFFFD (0 to 655.33 Pa).

(21) Maximum value of block pressure data

Indicates the maximum value of block pressure data in units of 0.01 Pa. The property value range shall be 0x0000 to 0xFFFD (0 to 655.33 Pa).

(22) Minimum value of block pressure data

Indicates the minimum value of block pressure data in units of 0.01 Pa. The property value range shall be 0x0000 to 0xFFFD (0 to 655.33 Pa).

(23) Current value of block pressure data

Indicates the current value of block pressure data in units of 0.01 Pa. The property value range shall be 0x0000 to 0xFFFD (0 to 655.33 Pa).

(24) Number of block pressure/supply pressure error days

Indicates the number of days on which a block pressure/supply pressure error occurred and the number of such error occurrences. One byte each is used for the number of error days and the number of error occurrences. The property value shall be structured so as to sequentially indicate the number of block pressure error days, the number of supply pressure error days, the number of block pressure error occurrences, and the number of supply pressure error occurrences, beginning with the high-order byte.

(25) Test call setting

Performs test call operation setup. When "Test call operation ON" (0x41) is set for this property, a test call is originated. however, if "Test call operation OFF" (0x42) is set, the test call stops.

1.3.8 Stipulations on general lighting class

Class group code : 0x02
Class code : 0x90
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
		Value range (decimal notation)							
Illuminance level	0xB0	Indicates illuminance level in %.	unsigned char	1 Byte	%	Set/Get			
		0x00～0x64(0～100%)							

(1) Operation status (inherited from the property of device object super-class)

Operation status ON

When the illuminance level property (0xB0) does not exist: Illuminated.

When the illuminance level property (0xB0) exists: The illuminance level is reflected in the lighting device's illuminance.

Operation status OFF

Extinguished.

(2) Illuminance level

Indicates the illuminance level in %. Even if the illuminance level setting of the real device is less than or greater than the % unit, the property of the real device shall be assigned to the property value in % specified by this property.

1.3.9 Stipulations for buzzer class

Class group code : 0x02
Class code : 0xA0
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Sound generation setting	0xB1	Indicates buzzer sound generation setting. Buzzer enabled = 0x41, buzzer disabled = 0x42	unsigned char	1 Byte	–	Set/Get			
Buzzer sound type	0xE0	Indicates 8 different types of buzzer sound. 0x31～0x38	unsigned char	1 Byte	–	Set/Get			

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON or OFF).
In the node mounting this class, if the function of this class starts operating concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (operation status ON).

(2) Sound generation setting
Indicates the buzzer sound generation setting.
The value 0x41 shall be used when the buzzer is enabled. The value 0x42 shall be used when the buzzer is disabled.

(3) Buzzer sound type
Indicates the types of buzzer sound.
The relationship between specific values and sound types is not stipulated.

1.4 Cooking/Household-related Device Class Group

This section specifies detailed codes and properties for each ECHONET object belonging to the cooking/household-related device class group (class group specification code X1 = 0x03). Table 1.5 shows a list of classes specified in detail in this section. In the stipulations of classes, “Mandatory” means that the device mounting of each class must necessarily mount a combination of its property and service.

Table 1.5 List of Objects of Cooking/Household-related Device Class Group

Class group code	Class code	Class name	Remark
0x03	0xB2	Electric hot water pot	
	0xB7	Refrigerator	
	0xB8	Electronic oven	
	0xBB	Rice cooker	
	0xC5	Washing machine	

1.4.1 Stipulations for electric hot water pot

Class group code : 0x03
Class code : 0xB2
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Cover open/close status	0xB0	Cover open/close status Cover open = 0x41, cover closed = 0x42	unsigned char	1 Byte	–	Get			
No-water warning	0xB1	Notifies that electric hot water pot is emptied of water. No-water condition found = 0x41 No-water condition not found = 0x40	unsigned char	1 Byte	–	Get		○	
Boil-up setting	0xB2	Boil-up setting Boil-up start - 0x41 Boil-up stop/warmer = 0x42	unsigned char	1 Byte	–	Set/Get			
Boil-up/warmer mode setting	0xE0	Indicates citric acid cleaning, normal warmer, or power-saving warmer mode. Citric acid cleaning = 0x41, normal warmer = 0x42, power-saving warmer = 0x43	unsigned char	1 Byte	–	Set/Get			
Set value of warmer temperature	0xE1	Indicates set value of warmer temperature in °C. 0x00～0x64 (0～100)	unsigned char	1 Byte	°C	Set/Get			
Hot water discharge status	0xE2	Hot water discharge status Hot water discharged = 0x41, hot water not discharged = 0x42	unsigned char	1 Byte	–	Get		○	
Lock status	0xE3	Hot water discharge lock status Locked = 0x41, unlocked = 0x42	unsigned char	1 Byte	–	Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)
Indicates whether the function native to this class is operating or not (ON or OFF). In the node mounting this class, if the function of this class starts operating concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (operation status ON).

(2) Cover open/close status
Indicates whether the electric hot water pot (electric thermos) cover is open or closed. The value 0x41 shall be used to indicate that the cover is open. The value 0x42 shall be used to indicate that the cover is closed.

(3) No-water warning

The value of this property shall change from 0x40 to 0x41 when the electric hot water pot is emptied of water. When the electric hot water pot is charged with cold or hot water, the property value shall change from 0x41 to 0x40.

(4) Boil-up setting

Sets the boil-up start and boil-up stop/warmer states. These two states correspond to the property values 0x41 and 0x42, respectively. The value of this property shall automatically change to 0x42 when the electric hot water pot terminates its boil-up operation.

(5) Boil-up/warmer mode setting

Indicates the boil-up/warmer mode setting for the electric hot water pot (citric acid cleaning, normal warmer, or power-saving warmer mode).

The property values 0x41, 0x42, and 0x43 correspond to these operation modes, respectively. For the property values to be implemented, only the property values related to the functions incorporated in the real device mounting this class need be implemented.

(6) Set value of warmer temperature

Indicates the set value of warmer temperature in °C.

The property value range shall be 0x00 to 0x64 (0 to 100°C).

(7) Hot water discharge status

Indicates the hot water discharge status: hot water discharged = 0x41 or hot water not discharged = 0x42. More specifically, the value 0x41 indicates that hot water is being discharged because a hot water discharge procedure is performed by a human, whereas the value 0x42 indicates that no hot water is being discharged.

(8) Lock status

Indicates whether the electric hot water pot (electric thermos) is locked. The value 0x41 indicates that the electric hot water pot is locked. The value 0x42 indicates that the lock is released.

1.4.2 Stipulations for refrigerator class

Class group code : 0x03
Class code : 0xB7
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Door open/close status	0xB0	Door open/close status Door open = 0x41, Door close = 0x42	unsigned char	1 Byte	–	Get			
Door open warning	0xB1	Door open warning status Door open warning found = 0x41 Door open warning not found = 0x42	unsigned char	1 Byte	–	Get		○	
Set value of refrigerating compartment's temperature	0xE2	Set value of refrigerating compartment's temperature 0x81～0x7E (－127～126℃)	signed char	1 Byte	℃	Set/Get			
Set value of freezing compartment's temperature	0xE3	Set value of freezing compartment's temperature 0x81～0x7E (－127～126℃)	signed char	1 Byte	℃	Set/Get			
Set value of subzero-fresh compartment's temperature	0xE4	Set value of subzero-fresh compartment's temperature 0x81～0x7E (－127～126℃)	signed char	1 Byte	℃	Set/Get			
Set value of vegetable compartment's temperature	0xE5	Set value of vegetable compartment's temperature 0x81～0x7E (－127～126℃)	signed char	1 Byte	℃	Set/Get			
Measured value of refrigerating compartment's temperature	0xD1	Set value of refrigerating compartment's temperature 0x81～0x7E (－127～126℃)	signed char	1 Byte	℃	Get			
Measured value of freezing compartment's temperature	0xD2	Set value of freezing compartment's temperature 0x81～0x7E (－127～126℃)	signed char	1 Byte	℃	Get			
Measured value of subzero-fresh compartment's temperature	0xD3	Set value of subzero-fresh compartment's temperature 0x81～0x7E (－127～126℃)	signed char	1 Byte	℃	Get			
Measured value of vegetable compartment's temperature	0xD4	Set value of vegetable compartment's temperature 0x81～0x7E (－127～126℃)	signed char	1 Byte	℃	Get			
Measured value of current consumption	0xDA	Measured value of current consumption 0x0000～0xFFFD (0～6553.3A)	unsigned char	2 Byte	0.1A	Get			
Rated power consumption	0xDC	Rated power consumption 0x0000～0xFFFD (0～65533W)	unsigned char	2 Byte	W	Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the refrigerator is operating or not (ON/OFF). In the node mounting this class, if the function of the refrigerator is started concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Door open/close status

Indicates whether a door is open or closed. For the door open status, 0x41 shall be used. For the door close status, 0x42 shall be used. If the refrigerator has two or more doors, it is concluded that the refrigerator is in the door open status when at least one door is open. Note that refrigerator drawers are also counted as doors.

(3) Door open warning

Indicates whether a door open warning status is found or not. When a door open warning status is found, 0x41 shall be used. When a door open warning status is not found, 0x42 shall be used.

(4) Set value of refrigerating compartment's temperature

Indicates the set value of refrigerating compartment's temperature in °C. The property value range shall be 0x81 to 0x7E (-127 to 126°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used.

(5) Set value of freezing compartment's temperature

Indicates the set value of freezing compartment's temperature in °C. The property value range shall be 0x81 to 0x7E (-127 to 126°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used.

(6) Set value of subzero-fresh compartment's temperature

Indicates the set value of subzero-fresh compartment's temperature in °C. The property value range shall be 0x81 to 0x7E (-127 to 126°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used.

(7) Set value of vegetable compartment's temperature

Indicates the set value of vegetable compartment's temperature in °C. The property value range shall be 0x81 to 0x7E (-127 to 126°C). When the property value of the

real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used.

(8) Measured value of refrigerating compartment's temperature

Indicates the measured value of refrigerating compartment's temperature in °C. The property value range shall be 0x81 to 0x7E (-127 to 126°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used.

(9) Measured value of freezing compartment's temperature

Indicates the measured value of freezing compartment's temperature in °C. The property value range shall be 0x81 to 0x7E (-127 to 126°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used.

(10) Measured value of subzero-fresh compartment's temperature

Indicates the measured value of subzero-fresh compartment's temperature in °C. The property value range shall be 0x81 to 0x7E (-127 to 126°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used.

(11) Measured value of vegetable compartment's temperature

Indicates the measured value of vegetable compartment's temperature in °C. The property value range shall be 0x81 to 0x7E (-127 to 126°C). When the property value of the real device exceeds this property value range, the overflow code 0x7F shall be used. When said value falls below the property value range, the underflow code 0x80 shall be used.

(12) Measured value of current consumption

Indicates the present current consumption of the refrigerator in units of 0.1 A. If an alternating current is targeted, the effective value shall be indicated. The property value range shall be 0x0000 to 0xFFFD (0 to 6553.3 A). When the property value of the real device exceeds this property value range, the overflow code 0xFFFF shall be used. When said value falls below the property value range, the underflow code 0xFFFE shall be used.

(13) Rated power consumption

Indicates the rated power consumption (catalog value) in W. The property value range shall be 0x0000 to 0xFFFD (0 to 65533 W).

1.4.3 Stipulations for electronic oven class

Class group code : 0x03
Class code : 0xB8
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Door open/close status	0xB0	Door open/close status Door open = 0x41, Door close = 0x42	unsigned char	1 Byte	–	Get			
Heating setting	0xB2	Heating setting Heating start/restart = 0x41, Heating suspension = 0x42, Heating completion/stop = 0x43	unsigned char	1 Byte	–	Get			
Heating mode	0xE0	Indicates heating mode of microwave oven heating/ microwave oven defrosting/oven/grill/toast. Microwave oven heating = 0x41, Microwave oven defrosting = 0x42, Oven = 0x43, Grill = 0x44, Toast = 0x45	unsigned char	1 Byte	–	Set/Get			
Auto heating setting	0xE1	Auto heating setting Auto = 0x41, Manual = 0x42	unsigned char	1 Byte	–	Set/Get			
Electronic oven heating level setting	0xE2	Sets auto heating temperature level by 5 steps. 0x31～0x35	unsigned char	1 Byte	–	Set/Get			
Set value of electronic oven heating temperature	0xE3	Indicates set value of oven heating temperature (in units of 0.1°C). 0xF554～0x7FFF(－2732～32766) (－273.2～3276.6℃)	signed short	2 Byte	0.1°C	Set/Get			
Set value of finish temperature	0xE4	Indicates set value of finish temperature (in units of 0.1°C). 0xF554～0x7FFF(－2732～32766) (－273.2～3276.6℃)	signed short	2 Byte	0.1°C	Set/Get			
Set value of heating time	0xE5	Sets heating time by HH:MM:SS. 0～0x17 : 0～0x3B : 0～0x3B (=0～23) : (=0～59) : (0～59)	unsigned char x3	3 Byte	–	Set/Get			
Residual heating time	0xE6	Indicates heating time by HH:MM:SS. 0～0x17 : 0～0x3B : 0～0x3B (=0～23) : (=0～59) : (0～59)	unsigned char x3	3 Byte	–	Set/Get			

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the electronic oven is in a heating operation enable status (including a waiting status for heating operation or heating operation status) or not (ON/OFF). In the node mounting this class, if the function of the electronic oven is put in a heating operation enable status concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (Operation status ON).

(2) Heating setting

Sets the electronic oven heating status (heating start/restart, heating suspension, or heating completion/stop). The property values 0x41, 0x42, and 0x43 correspond to these states, respectively.

(3) Heating mode

Indicates the microwave oven heating/microwave oven defrosting/oven/grill/toast setting of the electronic oven. The property value of 0x41/0x42/0x43/0x44/0x45 shall be associated with the respective operation mode. Regarding the property values to be implemented, only those to be assumed by the real device mounting this class may be implemented. For example, when the real device mounting this class is not provided with an oven function, the property value 0x43 corresponding to oven does not need to be implemented.

(4) Auto heating setting

Indicates the operation status ON/OFF setting when the electronic oven is operated by the heating time set by the sensor of the electronic oven body without using “Set value of heating time” (EPC = 0xE5) as the target value. The value 0x41 shall be used to indicate auto heating. The value 0x42 shall be used to indicate manual heating.

(5) Electronic oven heating level setting

Sets the heating temperature level by 5 steps when “Auto heating setting” (EPC = 0xE1) is set to Auto heating status ON. No concrete status is specified for each level, but 0x33 shall be the standard temperature, 0x31 shall be the lowest heating temperature and 0x35 shall be the highest heating temperature.

(6) Set value of electronic oven heating temperature

Indicates the set value of oven heating temperature in units of 0.1°C. The property value range shall be 0xF554 to 0x7FFE (-273.2°C to 3276.6°C). When the property value of the real device exceeds this property value range, the overflow code 0x7FFF shall be used. When said value falls below the property value range, the underflow code 0x8000 shall be used.

(7) Set value of finish temperature

Indicates the set value of finish temperature in units of 0.1°C. The property value range shall be 0xF554 to 0x7FFE (-273.2°C to 3276.6°C). When the property value of the real device exceeds this property value range, the overflow code 0x7FFF shall be used. When said value falls below the property value range, the underflow code 0x8000 shall be used.

(8) Set value of heating time

Indicates the heating time by hour: 0x00 to 0x17 (0 to 23), minute: 0x00 to 0x3B (0 to 59), and second: 0x00 to 0x3B (0 to 59). The property value shall begin with the high-order byte in the order of hour, minute, and second. This property is the set value of heating time when “Auto heating setting” (EPC = 0xE1) is set to Manual. If the "auto heating setting" function is set for auto heating so that the heating time is unknown, the value 0xFDFDFD shall be taken.

(9) Residual heating time

Indicates the residual heating time by hour: 0x00 to 0x17 (0 to 23), minute: 0x00 to 0x3B (0 to 59), and second: 0x00 to 0x3B (0 to 59). The property value shall begin with the high-order byte in the order of hour, minute, second.

1.4.4 Stipulations for rice cooker class

Class group code : 0x03
Class code : 0xBB
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Cover open/close status	0xB0	Indicates whether the cover is open or closed. Cover open = 0x41, Cover closed = 0x42	unsigned char	1 Byte	–	Get			
Rice cooking status	0xB1	Indicates rice cooking status. Stop = 0x41, Preheating = 0x42, Rice cooking = 0x43, Steaming = 0x44, Rice cooking completion = 0x45	unsigned char	1 Byte	–	Get			
Rice cooking control setting	0xB2	Indicates rice cooking control setting. Rice cooking start/restart = 0x41, Rice cooking suspension = 0x42	unsigned char	1 Byte	–	Set/Get			
Warmer setting	0xE1	Indicates whether warmer function is enabled. Warmer enabled = 0x41, Warmer disabled = 0x42	unsigned char	1 Byte	–	Set/Get			
Inner pot removal status	0xE5	Indicates whether inner pot is removed or not. Removed = 0x41, Not removed = 0x42	unsigned char	1 Byte	–	Get			
Cover removal status	0xE6	Indicates whether cover is removed. Removed = 0x41, Not removed = 0x42	unsigned char	1 Byte	–	Get			
Rice cooking reservation setting	0x90	Indicates whether rice cooking reservation is ON or OFF. Reservation ON = 0x41, Reservation OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Set value of rice cooking reservation setting time	0x91	Timer value (HH:MM) 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Set value of rice cooking reservation setting relative time	0x92	Timer value (HH:MM) 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Set value of current time	0x97	Current timevalue (HH:MM) 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			

(1) Operation status (inherited from the property of device object super-class)

Indicates whether the function native to this class is operating or not (ON or OFF). In the node mounting this class, if the function of this class starts operating concurrently with the start of node operation, this property may be implemented at a fixed value of 0x30 (operation status ON).

(2) Cover open/close status

Indicateswhether the rice cooker cover is open or closed. The value 0x41 shall be used to indicate that the cover is open. The value 0x42 shall be used to indicate that the cover is closed.

(3) Rice cooking status

Indicates the rice cooking status.

The values to be used shall be 0x41 for rice cooking stop, 0x42 for preheating, 0x43 for rice cooking, 0x44 for steaming, and 0x45 for rice cooking completion.

(4) Rice cooking control setting

Indicates the rice cooking control setting (rice cooking start/restart or rice cooking suspension).

The values to be used shall be 0x41 for rice cooking start/restart and 0x42 for rice cooking suspension.

(5) Warmer setting

Indicates the warmer setting.

The value 0x41 shall be used to indicate that the warmer function is enabled. The value 0x42 shall be used to indicate that the function is disabled.

(6) Inner pot removal status

Indicates whether the inner pot is removed.

The value 0x41 shall be used to indicate that the inner pot is removed. The value 0x42 shall be used to indicate that the inner pot is not removed.

(7) Cover removal status

Indicates whether the cover is removed.

Here, the expression "the cover is removed" indicates that at least a part of a removable cover whose removal is detectable is removed. The value 0x41 shall be used to indicate that the cover is removed. The value 0x42 shall be used to indicate that the cover is not removed.

(8) Rice cooking reservation setting

Indicates whether the rice cooking reservation is ON or OFF.

The value 0x41 shall be used to indicate that the rice cooking reservation is ON. The value 0x42 shall be used to indicate that the rice cooking reservation is OFF.

(9) Set value of rice cooking reservation setting time

When the "Rice cooking reservation setting" is ON (0x41), this property indicates the time at which rice cooling starts according to the "Rice cooking control setting" or the "Rice cooking status" changes to the "Rice cooking completion" state. The time indication is given in hours and minutes (hour: 0x00 to 0x17 (0 to 23); minute: 0x00 to 0x3B (0 to 59)). The property value shall sequentially indicate the hour and minute, beginning with the high-order byte.

(10) Set value of rice cooking reservation setting relative time

When the "Rice cooking reservation setting" is ON (0x41), this property indicates a time relative to the current time to specify the time at which rice cooling starts according to the "Rice cooking control setting" or the "Rice cooking status" changes to the "Rice cooking completion" state. The data format shall be such that the hour and minute values range from 0x00 to 0x17 (0 to 23) and 0x00 to 0x3B (0 to 59), respectively. The property value shall sequentially indicate the hour and minute, beginning with the high-order byte.

(11) Set value of current time

Indicates the current time in hours and minutes (hour: 0x00 to 0x17 (0 to 23); minute: 0x00 to 0x3B (0 to 59)). The property value shall sequentially indicate the hour and minute, beginning with the high-order byte. This property is used to set the current time on which the "Set value of rice cooking reservation timer time" is to be based.

1.4.5 Stipulations for washing machine class

Class group code : 0x03
Class code : 0xC5
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Door/cover open/close status	0xB0	Indicates door/coveropen/close status. Door/cover open = 0x41, Door/cover closed = 0x42	unsigned char	1 Byte	–	Get			
Washing setting	0xB2	Washing setting Washing start/restart = 0x41, washing suspension = 0x42, washing stop = 0x43	unsigned char	1 Byte	–	Set/Get			
Washing transition status	0xE1	Washing transition status Washing = 0x41, Rinsing = 0x42, Spin drying = 0x43, Suspension = 0x44, Washing completion/stop = 0x45	unsigned char	1 Byte	–	Get			
Residual washing time	0xE6	Indicates residual washing time by HH:MM:SS. 0～0x17: 0～0x3B : 0～0x3B (=0～23):(=0～59):(=0～59)	unsigned char x 3	3 Byte	–	Get			
ON timer reservation setting	0x90	Reservation ON/Reservation OFF Reservation ON = 0x41, Reservation OFF = 0x42	unsigned char	1 Byte	–	Set/Get			
Set value of ON timer time	0x91	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Set value of ON timer relative time	0x92	Timer value HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			
Current time setting	0x97	Current time HH:MM 0～0x17: 0～0x3B (=0～23):(=0～59)	unsigned char x 2	2 Byte	–	Set/Get			

(1) Operation status (inherited from the property of device object super-class)

Indicates the ON/OFF status of the washing machine operation. This property indicates whether the washing machine includes the washing status for washing operation and washing operation status or not (ON/OFF).

(2) Door/cover open/close status

Indicates the open/close status of the door/cover of the washing machine. The value 0x41 shall be used for the open status of the door/cover. The value 0x42 shall be used for the close status of the door/cover.

(3) Washing setting

Sets the washing machine status (Washing start/restart, Washing suspension, or Washing stop). The respective property values shall be associated with 0x41, 0x42, and 0x43.

(4) Washing transition status

Indicates the washing state transition by Washing, Rinsing, Spin drying, Suspension, and Washing completion/stop. The respective property values shall be associated with 0x41, 0x42, 0x43, 0x44 and 0x45.

(5) Residual washing time

Indicates the residual washing time by hour: 0x00 to 0x17 (0 to 23), minute: 0x00 to 0x3B (0 to 59), and second: 0x00 to 0x3B (0 to 59).The property value shall begin with the high-order byte in the order of hour, minute, and second.

(6) ON timer reservation setting

Sets the ON/OFF status of ON timer reservation. This property shall be associated with “Set value of ON timer time” or “Set value of ON relative time”.

(7) Set value of ON timer time

Indicates the washing machine ON time with "ON timer time setting"ON by hour: 0x00 to 0x17 (0 to 23), and minute: 0x00 to 0x3B (0 to 59).The property value shall begin with the high-order byte in the order of hour and minute.

(8) Set value of ON timer relative time

Indicates the washing machine ON time with "ON timer reservation setting"ON by hour: 0x00 to 0x17 (0 to 23), and minute: 0x00 to 0x3B (0 to 59).The property value shall begin with the high-order byte in the order of hour and minute.

(9) Current time setting

Indicates the current value by hour: 0x00 to 0x17 (0 to 23) and minute: 0x00 to 0x3B (0 to 59). The property value shall begin with the high-order byte in the order of hour, minute. This property is used to set the current time corresponding to the time to be set by the ON timer and OFF timer.

1.5 Health-related device class group

This section specifies detailed codes and properties for each ECHONET object belonging to the health-related device class group (class group specification code X1 = 0x04). Table 1.6 shows a list of classes specified in detail in this section. In the stipulations of classes, “Mandatory” means that the device mounting of each class must necessarily mount a combination of its property and service.

Table 1.6 List of Objects of Health-related Device Class Group

Group code	Class code	Class name	Remark
0x04	0x01	Weighing machine	

1.5.1 Stipulations for weighing machine class

Class group code : 0x04
Class code : 0x01
Instance code : 0x01～0x7F (0x00: All-instance specification code)

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Unit	Access rule	Man-datory	Announce-ment at status change	Remark
Measured value of body weight	0xE0	Indicates measured value of body weight in units of 0.1 kg. 0x0000～0xFFFD (0～6553.3kg)	unsigned short	2 Byte	0.1 kg	Get			
Measured value of body fat	0xE1	Indicates measured value of body fat in units of 0.1%. 0x0000～0x03E8 (0～100.0%)	unsigned short	2 Byte	0.1%	Get			

(1) Operation status (inherited from the property of device object super-class)
Indicates the ON/OFF status of the weighing machine operation.

(2) Measured value of body weight
Indicates the measured body weight in units of 0.1 kg.

(3) Measured value of body fat
Indicates the measured value of body fat in units of 0.1%.

1.6 Management/Operation-related Device Class Group

This section specifies detailed codes and properties for each ECHONET object belonging to the management/operation-related device class group (class group specification code X1 = 0x05). Table 1.7 shows a list of classes specified in detail in this section. In the stipulations of classes, “Mandatory” means that the device mounting of each class must necessarily mount a combination of its property and service.

Table 1.7 List of Objects of Management/Operation-related Device Class Group

Class group code	Class code	Class name	Remark
0x05	0xFC	Secure communication shared key setup node	Detailed in Part 2.

Annex 1 ECHONET Properties: Basic Specifications (Excerpt from Part 2, Section 9.2)

This section will discuss the specifications common to all ECHONET object classes of which details are provided in this section and in Part II, Chapter 9 in relation to ECHONET properties.

Annex 1.1 ECHONET Property Value Data Types (Excerpt from Part 2, Paragraph 9.2.1)

The ECHONET property value is expressed as an unsigned integer when the value is a non-negative integer value; it is expressed as a signed integer when the value is an integer value containing negatives.

When the value is a small value, it is handled as a fixed point type; when the value is a non-negative small value, it is represented as an unsigned integer; and when the value is a small value containing negatives, it is represented as a signed integer. Data types and sizes are specified individually for each property.

Although property data size is specified individually for each property, property value data of 2 bytes or larger comprises ECHONET Communication Middleware data as ECHONET property value data (EDT) beginning from the significant byte.

Annex 1.2 Property Value Range (Excerpt from Part 2, Paragraph 9.2.2)

The definition range for the ECHONET properties specified in this section and in Part 2, Paragraph 9.2.2, and the treatment of property values when the corresponding actual device property value operating range differs therefrom, are specified below.

(1) When the actual device property value operating range corresponding to the ECHONET property is smaller than the ECHONET property definition range and the actual device property value assumes the upper or lower limit value, the upper or lower limit value of the operating range are considered to be the property values.

Assuming that the ECHONET property definition range is 0x00-0xFD (0℃–253℃) and the corresponding actual device operating range is 0x0A–0x32 (10℃-50℃), when the actual device property value is the upper limit (50℃) of the operating range, the upper limit value 0x32 (50℃) of the actual device operating range is considered to be the ECHONET property value, and when the actual device property value is the lower limit value (10℃), the lower limit value 0x0A (10℃) is considered to be the ECHONET property value.

(2) When the actual device property value operating range corresponding to the ECHONET property is larger than the ECHONET property definition range and the actual device property value assumes a value outside the ECHONET property definition range, a code showing an underflow or overflow becomes the property value.

Assuming that the ECHONET property definition range is 0x00-0xFD (0℃–253℃) and the corresponding actual device operating range is -10℃ to 300℃, when the actual device property value assumes a value below the ECHONET property definition range, the underflow code 0xFE becomes the property value; when the actual device property value assumes a value above the ECHONET property definition range, the overflow code 0xFF

becomes the property value.

Table F.1 Data Types, Data Sizes, and Overflow/Underflow Codes

Data type	Data size	Underflow	Overflow
Signed char	1 Byte	0x80	0x7F
Signed short	2 Byte	0x8000	0x7FFF
Signed long	4 Byte	0x80000000	0x7FFFFFFF
Unsigned char	1 Byte	0xFE	0xFF
Unsigned short	2 Byte	0xFFFE	0xFFFF
Unsigned long	4 Byte	0xFFFFFFFE	0xFFFFFFFF

Annex 1.3 Required Class Properties (Transcribed from Part 2, Section 9.2.3)

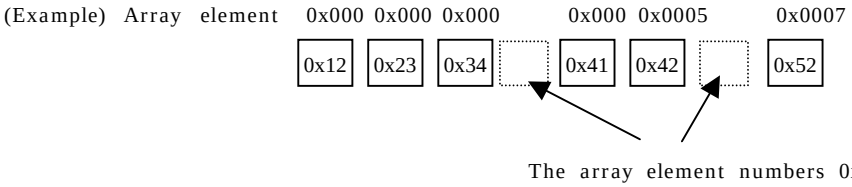
In the class property specifications described here, the properties indicated as "Mandatory" must be implemented when implementing the given class.

In addition, actual devices need not implement functions corresponding to all codes listed in the property content value range for a required property; they must implement only those codes corresponding to the functions they possess.

In the "Announcement at status change" column in a property list, the "o" mark denotes mandatory processing when the property is implemented. When a property marked in this manner is implemented and its status changes, an announcement (property value notification service data transmission with an intra-domain broadcast specified) must be made.

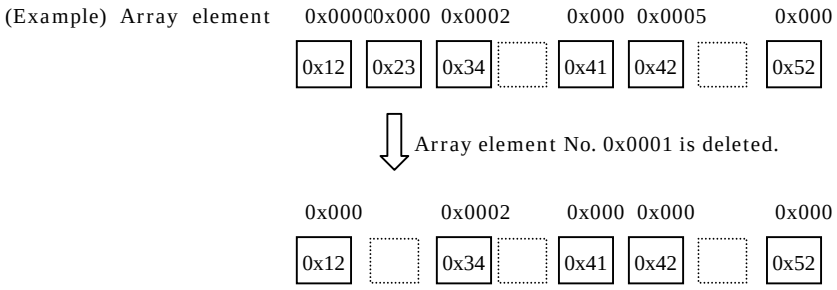
Annex 1.4 Array (Excerpt from Part 2, Paragraph 9.2.4)

ECHONET properties can be described as an array. Array elements are stipulated by an array element number, which ranges from 0x0000 to 0xFFFF. Array elements may be noncontiguous. The data type of each array element must be unique within a property.

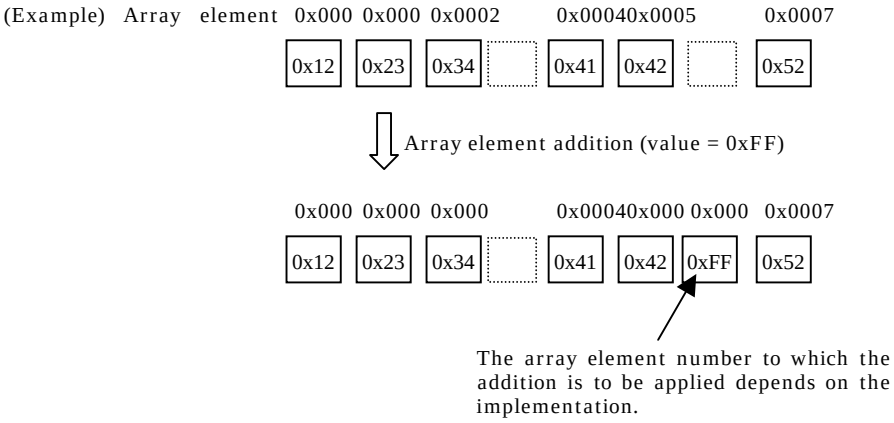


For the property value element-stipulated write service (ESV = 0x64, 0x65), property value element-stipulated read service (ESV = 0x66), property value element-stipulated notification service (ESV = 0x67), and property value element-stipulated deletion service (ESV = 0x6A, 0x6B), the " response not possible " is returned if the array element does not exist. In the case of the property value element-stipulated addition service (ESV=0x68, 0x69), the "process not possible" response is returned if the array element already exists.

The property value element-stipulated deletion service deletes a specified array element but does not shift subsequent elements forward.



The property value element addition service (ESV = 0x6D, 0x6E) does not specify the array element number to which an element addition is to be applied. Such a target array element number depends on the implementation.



Annex 2 Device Object Super Class Specifications (Excerpt from Part 2, Section 9.3)

This section will provide detailed specifications for the property configurations shared by all device object classes in the class groups corresponding to device objects (class group codes 0x00–0x06). These specifications will be presented as the device object super class.

Annex 2.1 Overview of Device Object Super Class Specifications (Excerpt from Part 2, Paragraph 9.3.1)

The “Operating status” (EPC=0x80) property of the device object super class implements the “Get” access rule for all device object classes, signifying that it can be referenced from other nodes. Similarly, the “Status change announcement property map” (EPC=0x9D), “Fault status” (EPC=0x88), “Set properties map” (EPC=0x9E), and “Get properties map” (EPC=0x9F) properties also implement the “Get” access rule, signifying that they can be referenced.

Table F.2 lists the device object super class properties.

Table F.2 List of Device Object Super Class Configuration Properties

Property name	EPC	Contents of property Value range (decimal notation)	Data type	Data size	Access rule	Man-datory	Announce-ment at status change	Remark
Operating status	0x80	Indicates ON/OFF status. ON = 0x30, OFF = 0x31	unsigned char	1 Byte	Set Get	 ○	○	
Installation location	0x81	Indicates ECHONET instance installation location. See Annex 2.3, "Installation Location Property".	unsigned char	1 Byte	Set/Get	◯	○	
Specification version information	0x82	Indicates applicable specification version. 1st byte: Indicates major version number (digits to the left of the decimal point) in binary notation. 2nd byte: Indicates minor version number (digits to the right of the decimal point) in binary notation. 3rd byte: Indicates order of release in ASCII notation. 4th byte: Reserved for future use (fixed at 0x00).	unsigned char	4 Byte	Get	◯		
Fault status	0x88	Indicates encountered abnormality (sensor trouble, etc.). Fault encountered = 0x41, no fault encountered = 0x42	unsigned char	1 Byte	Get	○	○	
Fault content	0x89	Fault description 0x0000〜0x03E8 (0〜1000)	unsigned short	2 Byte	Get			
Manufacturer code	0x8A	Stipulated in 3 bytes. (To be specified by ECHONET Consortium)	unsigned char	3	Get	○		
Place-of-business code	0x8B	Stipulated in 3-byte place-of-business code. (Specified individually by each manufacturer)	unsigned char	3	Get			
Product code	0x8C	Stipulated in ASCII code. (Specified individually by each manufacturer)	unsigned char	12	Get			
Serial number	0x8D	Stipulated in ASCII code. (Specified individually by manufacturers)	unsigned char	12	Get			
Date of manufacture	0x8E	Stipulated in 4 bytes. Indicates date in YYMD format (1 byte per character). YY: Year (07CF for 1999) M: Month (0C for December) D: Day (14 for 20th)	unsigned char	4	Get			
SetM property map	0x9B	See Part 2, Appendix 2.	unsigned char	Max. 17	Get	○		
GetM property map	0x9C	See Part 2, Appendix 2.	unsigned char	Max. 17	Get	○		
Status change announcement property map	0x9D	See Part 2, Appendix 2.	unsigned char	Max. 17	Get	○		
Set property map	0x9E	See Part 2, Appendix 2.	unsigned char	Max. 17	Get	○		
Get property map	0x9F	See Part 2, Appendix 2.	unsigned char	Max. 17	Get	○		

Note: In Announcement at status change, ○ denotes mandatory processing when the property is implemented.

Annex 2.2 Operating Status Property (Transcribed from Part 2, Section 9.3.2)

The device object super class "Operating status" property indicates the operating status (ON/OFF) of the functions unique to each class in the actual device. In nodes implementing each device object class, when the functions unique to each class begin operation along with the node, this property can be implemented with a fixed value of 0x30. (However, the operating status of node communication functions is indicated in the node profile object "Operating status" property.)

Annex 2.3 Installation Location Property (Excerpt from Part 2, Paragraph 9.3.3)

The installation location property specifies with 1-byte bitmap data the location where the device is installed. This is a mandatory property that can be rewritten. When there has been a change to the value, the changed value must be general broadcast within the domain.

The 8 bits of the installation location property are assigned with a freely-defined designation bit, an installation location code, and a location number. When all bits are zero, however, this is a special code indicating that the installation location has not been set. When all bits are 1, this is a special code indicating that the installation location is unfixed.

An explanation of each of the bits follows. Table F.3 shows the relationships between the installation location, freely-defined designation bit, installation location code, and location number.

Freely-defined designation bit (b7)

This comprises a single b7 bit. When b7=1, the installation location code and location number can be freely defined.

When b7=0, the installation location code and location number indicate the installation location of the device as specified in Table F.3.

Installation location code (b3-b6)

This comprises 4 bits, b3 through b6. When b7=1, it can be freely defined. When b7=0, it indicates the type of the installation location of the device as specified in Table F.3.

Location number (b0-b2)

This comprises 3 bits, b0 through b2. When b7=1, it can be freely defined. When b7=0, it is used to distinguish among 2 or more spaces of the same type when there are 2 or more such spaces. For example, when there are 2 bathrooms, they can be distinguished from each other by assigning the location number 001b to the first floor bathroom and 010b to the second floor bathroom.

When b7=0 and the location number field is 000b, it indicates that the installation location property has been initialized assuming that a device will be installed in the installation location shown by the installation location code (“location number not set.”)

When the installation location property has been initialized without assuming a device installation location type, the value must be the “installation location not set” code (0x00). When it is inappropriate to set a particular type for the device installation location, the installation location property value must be the “installation location unfixed” code (0xFF).

0x01 through 0x07 shall be reserved for future use.

Table F.3 Relationship between Installation Location Space Name and Assigned Bit

Type of installation location	MSB Freely defined designation bit	Installation location code				Location number		LSB
	b7	b6	b5	b4	b3	b2	b1	b0
Living room	0	0	0	0	1	"000b"～"111b" ("000b" means that the location number has not been set.)		
Dining room	0	0	0	1	0			
Kitchen	0	0	0	1	1			
Bathroom	0	0	1	0	0			
Toilet	0	0	1	0	1			
Washbowl	0	0	1	1	0			
Corridor	0	0	1	1	1			
Room	0	1	0	0	0			
Stairs	0	1	0	0	1			
Hall	0	1	0	1	0			
Spare room	0	1	0	1	1			
Garden/exterior	0	1	1	0	0			
Carport	0	1	1	0	1			
Veranda/Balcony	0	1	1	1	0			
Others	0	1	1	1	1			
Freely defined*	1	"0000000b" through "1111110b"						
Installation location not set	1	1	1	1	1	1	1	1
Installation location unfixed	1	1	1	1	1	1	1	1
Reserved for future use	1	"00000001b" through "00000111b"						

* "Freely defined" locations are provided mainly for use in stores and small and medium-sized buildings. They can be freely defined by vendors, or their operation specifications may be established in accordance with individual application systems.

Annex 2.4 Specification Version Information Property (Transcribed from Part 2, Section 9.3.4)

Indicates the applicable specification version number with a 2-byte binary value and the order of APPENDIX release with a 1-byte ASCII code.

The first byte indicates the major version number (digits to the left of the decimal point). The second byte indicates the minor version number (digits to the right of the decimal point). The third byte indicates the order of release. To indicate Version 2.10 Release a, for instance, the contents of the first, second, and third bytes are 0x02 (2), 0x0A (10), and 0x61 (a), respectively.

The fourth byte, which is reserved for future expansion, is fixed at 0x00 in this Version.

Annex 2.5 Fault Status Property (Excerpt from Part 2, Paragraph 9.3.5)

The "fault status" property of the device object super class indicates the occurrence of an error in an actual device. The property code used as a property value is 0x41 when an error exists or 0x42 when no error exists.

Annex 2.6 Fault Content Property (Transcribed from Part 2, Section 9.3.6)

The value of the fault content property will be assigned using the codes shown in Table F.4.

Table F.4 Fault Content Property Value Assignment

Fault content property value (decimal)	Fault content	
0x0000 (0)	No error	No error
0x0001 (1)		Turn off operating/power switch or unplug device and restart
0x0002 (2)		Press reset button and restart
0x0003 (3)		Improper settings
0x0004 (4)		Replenish
0x0005 (5)		Clean (filter, etc.)
0x0006 (6)		Replace battery
0x0007～0x0009 (7～9)		Reserved for future use
0x000A～0x0013 (10～19)	Error	Abnormal phenomenon/safety device operation
0x0014～0x001D (20～29)		Switch fault
0x001E～0x003B (30～59)		Sensor fault
0x003C～0x0059 (60～89)		Functional component fault
0x005A～0x006E (90～110)		Control board fault
0x006F～0x03E8		Available to user
0x03E9～0xFFFF	Reserved for future use	

Annex 2.7 Manufacturer Code Property (Excerpt from Part 2, Paragraph 9.3.7)

The property value of the manufacturer code property uses 3-byte codes to indicate individual manufacturers. The ECHONET Consortium assigns a manufacturer-specific property value to each ECHONET Consortium member.

Annex 2.8 Place-of-Business Code Property (Excerpt from Part 2, Paragraph 9.3.8)

The property value of the place-of-business code property uses 3-byte codes to indicate the place of business of an individual manufacturer. The property value of the place-of-business code property is not stipulated by the ECHONET Consortium, but instead will be stipulated by individual manufacturers.

Annex 2.9 Product Code Property (Excerpt from Part 2, Paragraph 9.3.9)

The property value of the product code property uses 12-byte ASCII codes to indicate products of various manufacturers. The property value of the product code property is not stipulated by the ECHONET Consortium, but instead will be stipulated by individual manufacturers.

Annex 2.10 Serial Number Property (Excerpt from Part 2, Paragraph 9.3.10)

The property value of the serial number property uses 12-byte ASCII codes to indicate product serial numbers of various manufacturers. The property value of the serial number property is not stipulated by the ECHONET Consortium, but instead will be stipulated by individual manufacturers.

Annex 2.11 Date-of-Manufacture Property (Excerpt from Part 2, Paragraph 9.3.11)

The property value of the date-of-manufacture property uses four bytes to indicate the dates of manufacture of various manufacturers' products. Specifically, it uses two bytes to indicate the year and one byte each to indicate the month and day.

Annex 2.12 Property Map Property (Excerpt from Part 2, Paragraph 9.3.12)

The device object super class provides five property maps, which define the information for describing the services that can be offered by the properties disclosed by the objects.

Four of the five property maps, namely, the "Set property map", "Get property map", "SetM property map", and "GetM property map", provide information indicating the relationship between the properties disclosed by the implemented objects and access rules (see Part 2, Section 4.2.8; hereinafter referred to as ARs) stipulated as product specifications.

The "status change announcement property map" indicates that an intra-domain general broadcast is performed when the property value changes.

The map description formats are shown in Appendix 2 to Part II.

The property maps are defined as stated below:

(1) Set property map

This property map indicates the properties relating to the "Set" AR.

(2) Get property map

This property map indicates the properties relating to the "Get" AR.

(3) SetM property map

This property map indicates the properties relating to the "SetM" AR.

(4) GetM property map

This property map indicates the properties relating to the "GetM" AR.

(5) Status Change Announcement property map

This property map lists the properties that are set for a general broadcast of changes in their values. In addition to the intra-domain general broadcast stipulated in the "Status Change Announce" column for ECHONET specifications for various object properties supported by product specifications, properties for making a "status change announcement" uniquely in compliance with product specifications are included as well. This property map does not include a status notification that is set by the "communication definition object for specifying the status notification method" for system operation purposes, which is stated later.

No associated property maps are stipulated for the "AddM", "DelM", "AddMS", "Anno", "AnnoM", and "CheckM" ARs.

Annex 3 List of EOJ Class Group Codes (Excerpt from Tables 4.1 to 4.8 in Part 2)

Table F.5 List of Class Group Codes

Class group code	Class Group name	Remarks
0x00	Sensor-related device class group	

0x01	Air conditioner-related device class group	
0x02	Housing/facility-related device class group	Lighting included
0x03	Cooking/housework-related device class group	
0x04	Health-related device class group	
0x05	Management/control-related device class group	
0xC6	AV device class group	
0x05～0x0C	Reserved for future use	
0x0D	Service class group	
0x0E	Profile class group	
0x0F	User definition class group	
0x10～0x1F	Communication definition class group for stipulation of status notification method	
0x20～0x2F	Communication definition class group for stipulation of setting control reception method	
0x30～0x3F	Communication definition class group for linked settings (action settings)	
0x40～0x4F	Communication definition class group for linked settings (trigger settings)	
0x50～0x5F	Secure communication access property setting class	
0x60～0x7F	Reserved for future use	

Table F.6 List of Class Codes for Class Group Code (X1 = 0x00)

Class code	Class name	DETAILED SPECIFICATIONS	Remarks
0x00	Reserved for future use		
0x01	Gas leak sensor	○	
0x02	Crime prevention sensor	○	
0x03	Emergency button	○	
0x04	First-aid sensor	○	
0x05	Earthquake sensor	○	
0x06	Electric leak sensor	○	
0x07	Human detection sensor	○	
0x08	Visitor sensor	○	
0x09	Call sensor	○	
0x0A	Condensation sensor	○	
0x0B	Air pollution sensor	○	
0x0C	Oxygen sensor	○	
0x0D	Illumination sensor	○	
0x0E	Sound sensor	○	
0x0F	Mailing sensor	○	
0x10	Weight sensor	○	
0x11	Temperature sensor	○	
0x12	Humidity sensor	○	
0x13	Rain sensor	○	
0x14	Water level sensor	○	
0x15	Bathwater level sensor	○	
0x16	Bath heating status sensor	○	
0x17	Water leak sensor	○	
0x18	Water overflow sensor	○	
0x19	Fire sensor	○	
0x1A	Cigarette smoke sensor	○	
0x1B	CO_2 sensor	○	
0x1C	Gas sensor	○	
0x1D	VOC sensor	○	
0x1E	Differential pressure sensor	○	
0x1F	Air speed sensor	○	
0x20	Odor sensor	○	
0x21	Flame sensor	○	
0x22	Electric energy sensor	○	
0x23	Current value sensor	○	
0x24	Daylight sensor		
0x25	Water flow rate sensor	○	

Class code	Class name	DETAILED SPECIFICATIONS	Remarks
0x26	Micromotion sensor	○	
0x27	Passage sensor	○	
0x28	Bed presence sensor	○	
0x29	Open/close sensor	○	
0x2A	Activity amount sensor	○	
0x2B	Human body location sensor	○	
0x2C～0xFF	Reserved for future use		

Note: The "o" mark indicates that property configuration and other detailed specifications can be found in the APPENDIX.

Table F.7 List of Class Codes for Class Group Code (X1 = 0x01)

Class code	Class name	DETAILED SPECIFICATIONS	Remarks
0x00～0x2F	Reserved for future use		
0x30	Home air conditioner	○	
0x31	Cold air blower		
0x32	Fan		
0x33	Ventilation fan		
0x34	Air conditioner ventilation fan	○	
0x35	Air cleaner	○	
0x36	Cold air fan		
0x37	Air circulator		
0x38	Dehumidifier		
0x39	Humidifier		
0x3A	Ceiling fan		
0x3B	Electric kotatsu		
0x3C	Electric heating pad		
0x3D	Electric blanket		
0x3E	Space heater		
0x3F	Panel heater		
0x40	Electric carpet		
0x41	Floor heater		
0x42	Electric heater	○	
0x43	Fan heater		
0x44	Recharger		
0x45	Commercial package indoor air conditioner unit		
0x46	Commercial package outdoor air conditioner unit		
0x47	Commercial package air conditioner heat storage unit		
0x48	Commercial fan coil unit		
0x49	Commercial air conditioner chiller unit		
0x50	Commercial air conditioner boiler unit		
0x51	Commercial air conditioner VAV		
0x52	Commercial air conditioner air handling unit		
0x53	Unit cooler		
0x54	Commercial condensing unit		
0x55～0xFF	Reserved for future use		

Note: The "o" mark indicates that property configuration and other detailed specifications can be found in the APPENDIX.

Table F.8 List of Class Codes for Class Group Code (X1 = 0x02)

Class code	Class name	DETAILED SPECIFICATIONS	Remarks
0x00～0x5F	Reserved for future use		
0x60	Electrically operated shade	○	
0x61	Electrically operated shutter		
0x62	Electrically operated curtain		
0x63	Electrically operated storm window		
0x64	Electrically operated garage door		
0x65	Electrically operated skylight		
0x66	Awning		
0x67	Garden sprinkler		
0x68	Fire sprinkler		
0x69	Fountain		
0x6A	Instantaneous water heater		
0x6B	Off peak electric water heater	○	
0x6C	Solar water heater		
0x6D	Circulation pump		
0x6E	Bidet-equipped toilet (with electrically warmed seat)		
0x6F	Electric lock		
0x70	Gas line valve		
0x71	Home sauna		
0x72	Hot water generator	○	
0x73	Bathroom dryer		
0x74	Home elevator		
0x75	Electrically operated room divider		
0x76	Horizontal transfer		
0x77	Electrically operated clothes-drying pole		
0x78	Septic tank		
0x79	Home solar power generation	○	
0x7A～0x7F	Reserved for future use		
0x80	Electric energy meter	○	
0x81	Water meter		
0x82	Gas meter	○	
0x83	LP gas meter	○	
0x84	Clock		
0x85	Automatic door		
0x86	Commercial elevator		
0x87～0x8F	Reserved for future use		

0x90-0x98(*1)	General lighting	○	Includes chandeliers, table lamps, indirect lighting, recessed lighting, spotlights, pendants, ceiling lights, and wall light
0x99-0x9C(*2)	Emergency lighting		Includes guide lights, emergency lights, safety lights, and burglar prevention lights
0x9D	Equipment light		
0xA0	Buzzer	○	
0x9E-0x9F 0xA1-0xFF	Reserved for future use		

Note: The "o" mark indicates that property configuration and other detailed specifications can be found in the APPENDIX.

Table F.9 List of Class Codes for Class Group Code (X1 = 0x03)

Class code	Class name	DETAILED SPECIFICATIONS	Remarks
0x00～0xAF	Reserved for future use		
0xB0	Coffee maker		
0xB1	Coffee mill		
0xB2	Electric hot water pot	○	
0xB3	Electric range		
0xB4	Toaster		
0xB5	Juicer/mixer		
0xB6	Food processor		
0xB7	Refrigerator/freezer	○	
0xB8	Electronic oven	○	
0xB9	Electric cooking implements		
0xBA	Oven		
0xBB	Rice cooker	○	
0xBC	Electrically operated rice cooker		
0xBD	Dishwasher		
0xBE	Dish dryer		
0xBF	Electric rice cake maker		
0xC0	Food warmer		
0xC1	Rice mill		
0xC2	Bread machine		
0xC3	Slow cooker		
0xC4	Electric pickler		
0xC5	Washing machine	○	
0xC6	Clothes dryer		
0xC7	Electric iron		
0xC8	Pants press		
0xC9	Futon dryer		
0xCA	Shoe/accessory dryer		
0xCB	Electric vacuum (centrally operated units included)		
0xCC	Disposer		
0xCD	Electronic mosquito killer		
0xCE	Commercial showcase		
0xCF	Commercial refrigerator		
0xD0	Commercial food warming case		
0xD1	Commercial fryer		
0xD2	Commercial microwave oven		
0xD3～0xFF	Reserved for future use		

Note: The "o" mark indicates that property configuration and other detailed specifications can be found in the APPENDIX.

Table F.10 List of Class Codes for Class Group Code (X1 = 0x04)

Class code	Class name	DETAILED SPECIFICATIONS	Remarks
0x00	Reserved for future use		
0x01	Weighing machine	○	
0x02	Thermometer		
0x03	Sphygmomanometer		
0x04	Blood sugar measuring unit		
0x05	Body fat measuring unit		
0x06～0xFF	Reserved for future use		

Note: The "o" mark indicates that property configuration and other detailed specifications can be found in the APPENDIX.

Table F.11 List of Class Codes for Class Group Code (X1 = 0x05)

Class code	Class name	DETAILED SPECIFICATIONS	Remarks
0x00～0xFC	Reserved for future use		
0xFC	Secure communication shared key setup node	●	Detailed specifications for this class are given in Part 2, Paragraph 9.9.1
0xFD	Switch		
0xFE	Portable terminal		
0xFF	Controller		

(Note) ●: Details, including property configuration, are specified in Part 2.

Table F.12 List of Class Codes for Class Group Code (X1 = 0x0E)

Class code	Class name	DETAILED SPECIFICATIONS	Remarks
0x00～0xEF	Reserved for future use		
0xF0	Node profile	●	Detailed specifications for this class are given in Part 2, Paragraph 9.11.1
0xF1	Router profile	●	Detailed specifications for this class are given in Part 2, Paragraph 9.11.2
0xF2	ECHONET communication processing block profile	●	Detailed specifications for this class are given in Part 2, Paragraph 9.11.3
0xF3	Protocol difference absorption processing block profile	●	Detailed specifications for this class are given in Part 2, Paragraph 9.11.4
0xF4	Lower-layer communication software profile	●	Detailed specifications for this class are given in Part 2, Paragraph 9.11.5
0xF5～0xFF	Reserved for future use		

(Note) ●: Details, including property configuration, are specified in Part 2.

(*1) Separate class codes were assigned to chandeliers, table lamps, indirect lighting, recessed lighting, spotlights, pendants, ceiling lights, and wall lights in Version 2.10 and the preceding versions, but these are collectively treated as “general lighting” in Version 2.11 and succeeding versions.

(*2) Separate class codes were assigned to guide lights, emergency lights, safety lights, and burglar prevention lights in Version 2.10 and the preceding versions, but these are collectively treated as “emergency lighting” in Version 2.11 and succeeding versions.