



Carrier XCT-7 Variable Refrigerant Flow Controls Owner's Manual

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XCT-7 Variable Refrigerant Flow Controls
Owner's Manual



MODEL NAME:
KNX Gateway
Installation and Owner's Manual
40VCBK17FQEE
1-T-40VCQUE-231020-EN-0

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KNX gateway —40VCBK17FQEE 40VCBK27FQEE 40VCBK37FQEE



40VCBK17/27/37FQEE allows a complete and natural integration of air conditioners with KNX control systems. Compatible with all models of XCT7 line of air conditioners. Each SD outdoor unit, 40VCCR17FQEE required.

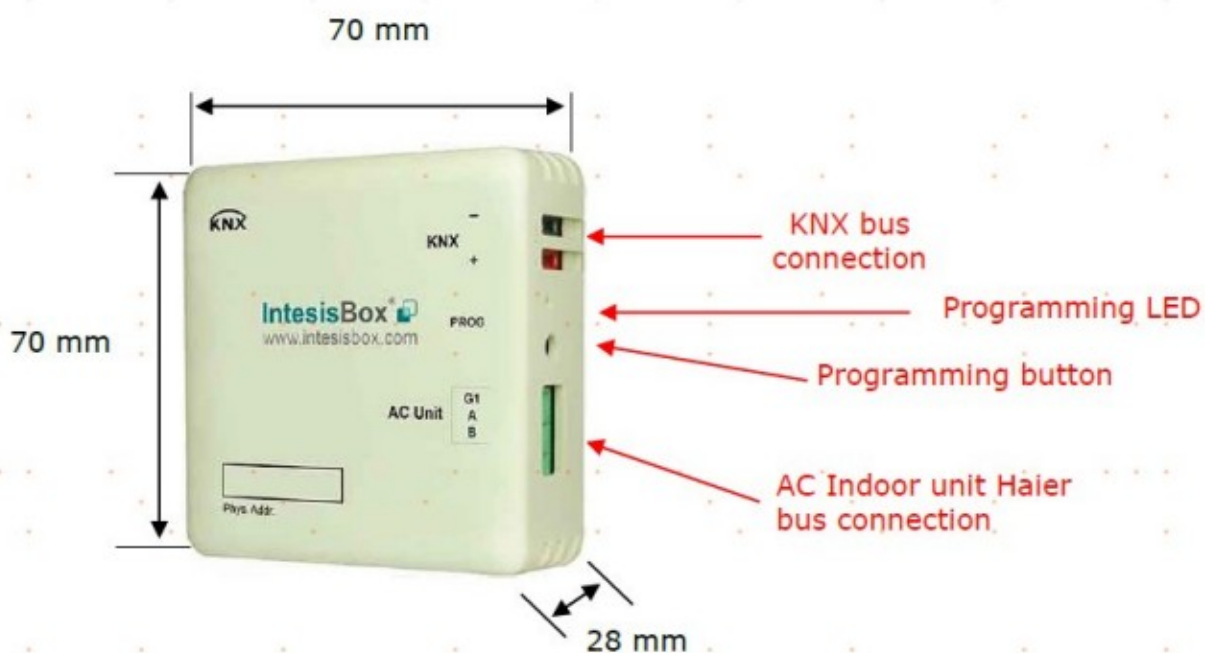
Main features:

Compatible with all models of XCT7 line of air conditioners.

- Reduced dimensions. Installation even inside the A.C. indoor unit.
- Quick and non-visible installation.
- External power not required.
- Direct connection to the KNX EIB bus.
- Direct connection to the AC indoor unit.
- Fully KNX interoperable, configuration from ETS.
- Multiple objects for control (of different types: bit, byte, characters...).
- Control of the AC unit based in the ambient temperature read by the own AC unit, or in the ambient temperature read by any KNX thermostat.
- Total Control and Monitoring of the AC unit from KNX, including monitoring of AC unit's state of internal variables, running hours counter (for filter maintenance control), and error indication and error code.
- AC unit can be controlled simultaneously by the IR remote control of the AC unit and by KNX.
- Max. 8/16/64 indoor units can be connected in one system

Technical Specifications

Enclosure	ABS (UL 94 HB) de 2,5 mm / 1" thick Net dimensions (dxwxh): 70 x 70 x 28 mm / 2.8" x 2.8" x 1.1" Color: Ivory White	Operation Temperature	0°C to +60°C
Weight	42 g.	Stock Temperature	-20°C to +85°C
Power supply	Power is supplied by: 1 x KNX bus (29V DC, 7mA)	Operational Humidity	<90% RH, non-condensing
Terminal Wiring (for low-voltage signals)	For terminal: solid wires or stranded wires (twisted or with ferrule) 1 core: 0.5mm ² ... 2.5mm ² 2 cores: 0.5mm ² ... 1.5mm ² 3 cores: not permitted	Stock Humidity	<90% RH, non-condensing
KNX port	1 x KNX TP1 (EIB) port opto-isolated. Plug-in terminal block (2 poles). TNV-1	Isolation voltage	1500 VDC
AC unit port	1 x Specific connector Plug-in terminal block (3 poles)	Isolation resistance	1000 MΩ
Configuration	Configuration with ETS	Protection	IP20 (IEC60529)
LED indicators	1 x Onboard LED - Operational status		



Connection

Connection of the interface to the AC indoor unit:

Disconnect mains power from the AC unit. Open the front cover of the indoor unit in order to have access to the internal control board. In the control board locate the socket connector marked as ABG1.

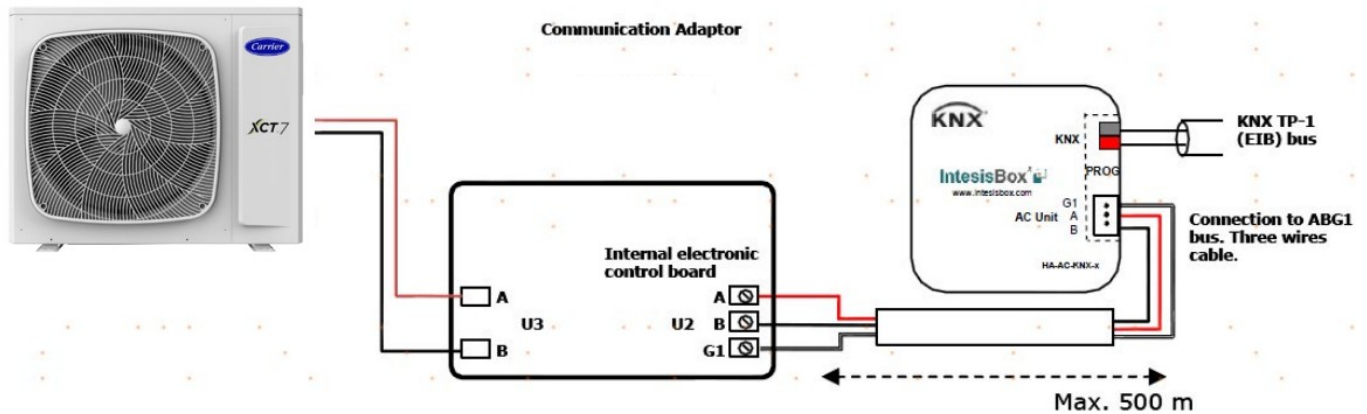
Using a 3-wire cable, connect the ABG1 connector from the 40VCBK17/27/37FQEE to the A B G1 connector of the AC unit's control board.

Fix the 40VCBK17/27/37FQEE inside or outside the AC indoor unit depending on your needs – remember that 40VCBK17/27/37FQEE must be also connected to the KNX bus. Close the AC indoor unit's front cover again.

Connection of the interface to the KNX bus:

Disconnect power of the KNX bus. Connect the interface to the KNX TP-1 (EIB) bus using the KNX standard connector (red/grey) of the interface, respect polarity. Reconnect power of the KNX bus.

Connections diagram:



Each Communication Adaptor connects to a single Outdoor Unit.

The 40VCBK17/27/37FQEE can be connected to more than one Communication Adaptor simultaneously.

NOTE: More than one Communication Adaptor can be present in the installation. Please make sure that the address of the Communication Adaptor is correctly set in the ETS. Check section 4.6 for more information.

Configuration and setup

This is a fully compatible KNX device which must be configured and setup using standard KNX tool ETS.

ETS project for this device can be downloaded from: https://www.intesisbox.com/en/carrier-knx-ac-ha-acknx-8_16_64/gateway/ Please consult the README.txt file, located inside the downloaded zip file, to find instructions on how to install the database.

ETS Parameters

When imported to the ETS software for the first time, the gateway shows the following default parameter configuration:

1.1.1 Interface (multiple indoor units)> General configuration

General configuration	Download latest database entry for this product and its User Manual from:	<input type="text" value="http://www.intesisbox.com"/>
Global Mode configuration	Intesis Product	AC-KNX-8
Global Fan Speed configuration	Number of Indoor Units in ETS	1
Global Temperature configurati...	First Status Update to KNX	ASAP
Control Mode Configuration	Enable object "Error Code [2byte]"	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Addressing of Indoor Units	Enable object "Error Text [14byte]" (2 ASCII-char Error Code)	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
License		

Figure 4.1 Default parameter configuration

With this configuration it's possible to send On/Off (Control_ On/Off), change the AC Mode (Control_ Mode), the Fan Speed (Control_ Fan Speed) and also the Setpoint Temperature (Control_ Setpoint Temperature). The Status_ objects, for the mentioned Control_ objects, are also available to use if needed. Objects Status_ AC Ambient Reference Temperature and Status_ Error/Alarm are shown too.

- ➡ 1: AC01 Control_ On/Off [DPT_1.001] - 0-Off;1-On
- ➡ 3: AC01 Control_ Mode [DPT_20.105] - 0-Aut;1-Hea;3-Coo;9-Fan...
- ➡ 11: AC01 Control_ Fan Speed [DPT_5.001] - Thresholds: 50% an...
- ➡ 17: AC01 Control_ Setpoint Temperature [DPT_9.001] - °C
- ➡ 24: AC01 Status_ On/Off [DPT_1.001] - 0-Off;1-On
- ➡ 26: AC01 Status_ Mode [DPT_20.105] - 0-Aut;1-Hea;3-Coo;9-Fan...
- ➡ 34: AC01 Status_ Fan Speed [DPT_5.001] - 33%, 66% and 100%
- ➡ 40: AC01 Status_ AC Setpoint Temperature [DPT_9.001] - °C
- ➡ 41: AC01 Status_ AC Ambient Reference Temperature [DPT_9.00...
- ➡ 42: AC01 Status_ Error/Alarm [DPT_1.005] - 0-No alarm;1-Alarm
- ➡ 44: AC01 Status_ Error Text [DPT_16.001] - Error Text

4.1 General configuration

Inside this parameter’s dialog it is possible to activate or change the parameters shown in the Figure 4.1.

4.1.1 Download latest database entry for this product and its User Manual from:

The first field shows the URL where to download the database and the user manual for the product.

Download latest database entry for this product and its User Manual from:

<http://www.intesisbox.com>

Figure 4.3 Parameter detail

4.1.2 Intesis Product

This parameter is used to check, before sending the programing, the maximum number of AC units your device supports.

Global Mode configuration

Intesis Product

HA-AC-KNX-8

Figure 4.4 Parameter detail

Select the version of the gateway that you have:

- 40VCBK17FQEE, if you only want to control up to 8 AC unit.
- 40VCBK27FQEE, if you only want to control up to 16 AC units.
- 40VCBK37FQEE, if you only want to control up to 64 AC units

4.1.3 Number of Indoor Units in ETS

This parameter is used to hide/show communication object according to the number of AC units you need to

configure. Value ranges go from 1 to 64.

Number of Indoor Units in ETS

Figure 4.5 Parameter detail

In case you introduce a number higher than the maximum number of units allowed by your license, you will get a warning message. This is just for information and will not block the configuration process. Configurations with more indoor units configured than the ones allowed by the license will not be downloaded correctly.

Intesis Product

Number of Indoor Units in ETS

>> WARNING

Figure 4.6 Parameter detail

4.1.4 First Status Updated to KNX

This parameter defines how fast the status is updated to KNX. Depending on the value selected, more or less priority will be assigned to this action. As there are so many parameters available, it is important to consider carefully how to set this parameter.

- If set to “ASAP”, all status communication objects will send its value (if needed).
- If set to “Slow”, all status communication objects will send its value (if needed), but slower than in the previous option (ASAP).
- If set to “Super Slow”, all status communication objects will send its value (if needed), but slower than in the previous option (Slow).

First Status Update to KNX

Figure 4.7 Parameter detail

4.1.5 Enable object “Error Code [2byte]”

This parameter shows/hides the Status_ Error Code communication object which shows the indoor unit errors, if occurred, in numeric format.

Enable object "Error Text [14byte]"
(2 ASCII-char Error Code) ☐ Disabled ☒ Enabled

44: AC01 Status_ Error Text [DPT_16.001] - Error Text

Figure 4.8 Communication object and parameter detail

o If set to “Disabled” the object will not be shown.

o If set to “Enabled” the Status_ Error Code [2byte signed value] object will appear.

This object can be read and also sends the indoor unit error, if occurred, in numeric format. If a “0” value is shown that means no error.

4.1.6 Enable object “Error Text Code [14byte]”

This parameter shows/hides the Status_ Error Text Code communication object which shows the indoor unit errors, if occurred, in text format.

Enable object "Error Text [14byte]"
(2 ASCII-char Error Code)

☐ Disabled ☒ Enabled

44: AC01 Status_ Error Text [DPT_16.001] - Error Text

Figure 4.9 Communication object and parameter detail

o If set to "Disabled" the object will not be shown.

o If set to "Enabled" the Status_ Error Text Code object will appear.

This object can be read and also sends the indoor unit error, if occurred, in text format. The errors shown have the same format as in the remote controller and in the error list from the indoor unit manufacturer. If the object's value is empty, that means there is no error.

4.2 Global mode configuration

1.1.1 Interface (multiple indoor units)> Global Mode Configuration

General configuration	Enable use of "Operating Mode" objects (for control and status)	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Global Mode configuration	Enable use of "Mode Cool/Heat" objects (for control and status)	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Global Fan Speed configuration	Enable use of +/- object for Mode	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Global Temperature configuration	Enable use of bit-type Mode objects (for control)	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Control Mode Configuration	Enable use of bit-type Mode objects (for status)	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Addressing of Indoor Units	Enable use of Text object for Mode	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
License		

Figure 4.10 Default Mode Configuration dialog

All the parameters in this section are related with the different mode properties and communication objects

3: Control_ Mode [DPT_20.105 - 1byte] - 0-Aut;1-Hea;3-Coo;9-Fan;14-Dry

26: Status_ Mode [DPT_20.105 - 1byte] - 0-Aut;1-Hea;3-Coo;9-Fan;14-Dry

The byte-type communication object for Mode works with the DTP_20.105. Auto mode will be enabled with a "0" value, Heat mode with a "1" value, Cool mode with a "3" value, Fan mode with a "9" value and Dry mode with a "14" value.

4.2.1 Enable use of "Operating Mode" objects

This parameter shows/hides the Control_ and Status_ Mode Operating Mode communication objects.

2: Control_ Operating Mode [DPT_20.102 - 1byte] - 0-Aut;1-Com;2-Stan;3-Eco;4-Pro

25: Status_ Operating Mode [DPT_20.102 - 1byte] - 0-Aut;1-Com;2-Stan;3-Eco;4-Pro

4.2.2 Enable use of Mode Heat/Cool objects

This parameter shows/hides the Control_ and Status_ Mode Cool/Heat communication objects.

4: Control_ Mode Cool/Heat [DPT_1.100 - 1bit] - 0-Cool;1-Heat

27: Status_ Mode Cool/Heat [DPT_1.100 - 1bit] - 0-Cool;1-Heat

o If set to "Disabled" the objects will not be shown.

- o If set to "Enabled" the Control_ and Status_ Mode Cool/Heat objects will appear.
- When a "1" value is sent to the Control_ communication object, Heat mode will be enabled in the indoor unit, and the Status_ object will return this value.
- When a "0" value is sent to the Control_ communication object, Cool mode will be enabled in the indoor unit, and the Status_ object will return this value.

4.2.3 Enable use of + / - object for Mode

This parameter shows/hides the Control_ Mode +/- communication object which let's you change the indoor unit mode by using two different datapoint types.

10: Control_ Mode +/- [DPT_1.008 - 1bit] - 0-Up;1-Down

o If set to "Disabled" the object will not be shown.

o If set to "Enabled" the Control_ Mode +/- object and a new parameter will appear.



Figure 4.11 Parameter detail

. DPT type for +/- Mode Object

This parameter lets choose between the datapoints 0-Up / 1-Down [DPT_1.008] and 1- Decrease / 1-Increase [DPT_1.007] for the Control_ Mode +/- object. The sequence followed when using this object is shown below:



Keep in mind that depending on the indoor unit you have and the available features, Auto mode and Dry mode may not be present.

4.2.4 Enable use of bit-type Mode objects (for control)

This parameter shows/hides the bit-type Control_ Mode objects.

- 5: Control_ Mode Auto [DPT_1.002 - 1bit] - 1-Set AUTO operating mode
- 6: Control_ Mode Heat [DPT_1.002 - 1bit] - 1-Set HEAT operating mode
- 7: Control_ Mode Cool [DPT_1.002 - 1bit] - 1-Set COOL operating mode
- 8: Control_ Mode Fan [DPT_1.002 - 1bit] - 1-Set FAN operating mode
- 9: Control_ Mode Dry [DPT_1.002 - 1bit] - 1-Set DRY operating mode

o If set to "no" the objects will not be shown.

o If set to "yes" the Control_ Mode objects for Auto, Heat, Cool, Fan and Dry will appear. To activate a mode by using these objects a "1" value has to be sent.

4.2.5 Enable use of bit-type Mode objects (for status)

This parameter shows/hides the bit-type Status_ Mode objects.

- 28: Status_Mode Auto [DPT_1.002 - 1bit] - 1-AUTO is active
- 29: Status_Mode Heat [DPT_1.002 - 1bit] - 1-HEAT is active
- 30: Status_Mode Cool [DPT_1.002 - 1bit] - 1-COOL is active
- 31: Status_Mode Fan [DPT_1.002 - 1bit] - 1-FAN is active
- 32: Status_Mode Dry [DPT_1.002 - 1bit] - 1-DRY is active

o If set to “no” the objects will not be shown.

o If set to “yes” the Status_Mode objects for Auto, Heat, Cool, Fan and Dry will appear. When enabled, a mode will return a “1” through its bit-type object.

4.2.6 Enable use of Text object for Mode

This parameter shows/hides the Status_Mode Text communication object.

- 33: Status_Mode Text [DPT_16.001 - 14byte] - ASCII String

o If set to “no” the object will not be shown.

o If set to “yes” the Status_Mode Text object will appear. Also, in the parameters, will be shown five text fields, one for each mode, that will let modify the text string displayed by the Status_Mode Text when changing mode.

Enable use of Text object for Mode

☐ Disabled ☒ Enabled

> String when mode is AUTO

AUTO

> String when mode is HEAT

HEAT

> String when mode is COOL

COOL

> String when mode is FAN

FAN

> String when mode is DRY

DRY

Figure 4.12 Parameter detail

4.3 Global Fan Speed Configuration dialog

1.1.1 AC interface (multiple indoor units) > Global Fan Speed configuration

General configuration	DPT object type for fan speed	<input checked="" type="radio"/> Scaling [DPT_5.001] <input type="radio"/> Enumerated [DPT_5.010]
Global Mode configuration	Enable use of "Fan Speed Man/Auto" objects (for control and status)	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Global Fan Speed configuration	Enable use of +/- object for Fan Speed	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Global Temperature configuration	Enable use of bit-type Fan Speed objects (for control)	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Control Mode Configuration	Enable use of bit-type Fan Speed objects (for status)	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Addressing of Indoor Units	Enable use of Text object for Fan Speed	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
License		

Figure 4.13 Default Fan Speed Configuration dialog

All the parameters in this section are related with the Fan Speed properties and communication objects.

4.3.1 DPT object type for fan speed

With this parameter is possible to change the DPT for the Control_ Fan Speed and Status_ Fan Speed byte-type communication objects. Datapoints Scaling (DPT_5.001) and Enumerated (DPT_5.010) can be selected.

o When "Enumerated [DPT 5.010]" is selected, Control_ Fan Speed and Status_ Fan Speed communication objects for this DPT will appear. Also, depending on the number of fan speeds selected, these objects will be different.

11: AC01 Control_ Fan Speed [DPT_5.010] - Speed values: 1,2,3

34: AC01 Status_ Fan Speed [DPT_5.010] - Speed values: 1,2,3

The first fan speed will be selected if a "1" is sent to the Control_ object. The second one will be selected sending a "2", and the last one sending a "3".

The Status_ object will always return the value for the fan speed selected.

Important: If a "0" value is sent to the Control_ object, the minimum fan speed will be selected. If a value bigger than "3" is sent to the Control_ object, then the maximum fan speed will be selected.

o When "Scaling [DPT 5.001]" is selected, Control_ Fan Speed and Status_ Fan Speed communication objects for this DPT will appear. Also, depending on the number of fan speeds selected, these objects will be different.

11: Control_ Fan Speed / 3 Speeds [DPT_5.001 - 1byte] - Thresholds: 50% and 83%

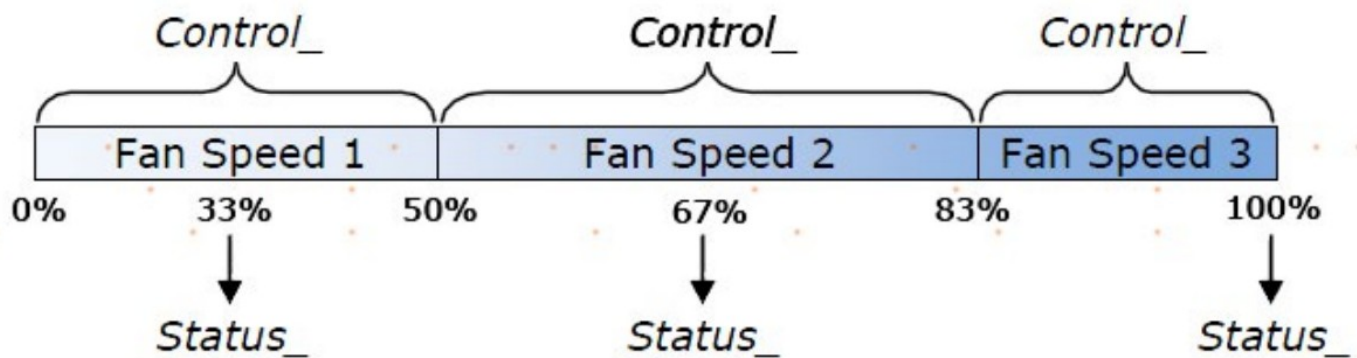
34: Status_ Fan Speed / 3 Speeds [DPT_5.001 - 1byte] - 33%, 66% and 100%

When a value between 0% and 49% is sent to the Control_ object the first fan speed will be selected.

When a value between 50% and 83% is sent to the Control_ object, the second speed will be selected.

When a value between 84% and 100% is sent to the Control_ object, the third speed will be selected.

The Status_ object will return a 33% when the first speed is selected, a 67% for the second one and a 100% for the third one.



4.3.2 Enable use of “Fan Speed Man/Auto” objects (for Control and Status)

This parameter shows/hides the Control_ Fan Speed Man/Auto and Status_ Fan Speed Man/Auto communication object which lets you set the Fan Speed into Manual or Auto mode.

- 12: AC01 Control_ Fan Speed Man/Auto [DPT_1.002] - 0-Manual...
- 35: AC01 Status_ Fan Speed Man/Auto [DPT_1.002] - 0-Manual;...

4.3.3 Enable use of +/- object for Fan Speed

This parameter shows/hides the Control_ Fan Speed +/- communication object which lets you increase/decrease the indoor unit fan speed by using two different datapoint types.

- 16: Control_ Fan Speed +/- [DPT_1.008 - 1bit] - 0-Up;1-Down

If set to “no” the object will not be shown.

- If set to “yes” the Control_ Fan Speed +/- object and a new parameter will appear.

Enable use of +/- object for Fan Speed ☐ Disabled ☒ Enabled

> Fan speed +/- operation ☒ 0-Decrease / 1-Increase [DPT_1.007] ☐ 0-Up / 1-Down [DPT_1.008]

> Sequence for +/- object S1 > S2 > ... > SN

Figure 4.14 Parameter detail

- Fan speed +/- operation

This parameter lets choose between the datapoints 0-Up / 1-Down [DPT_1.008] and 0-Decrease / 1-Increase [DPT_1.007] for the Control_ Fan Speed +/- object.

- Sequence for +/- object

This parameter lets choose between the different modes available:

Enable use of +/- object for Fan Speed ☐ Disabled ☒ Enabled

> Fan speed +/- operation ☒ 0-Decrease / 1-Increase [DPT_1.007] ☐ 0-Up / 1-Down [DPT_1.008]

> Sequence for +/- object S1 > S2 > ... > SN

- S1>S2>...>SN

Select this option if you don't have Auto mode and you don't want roll-over to be enabled.

- S1>S2>...>SN>S1>...

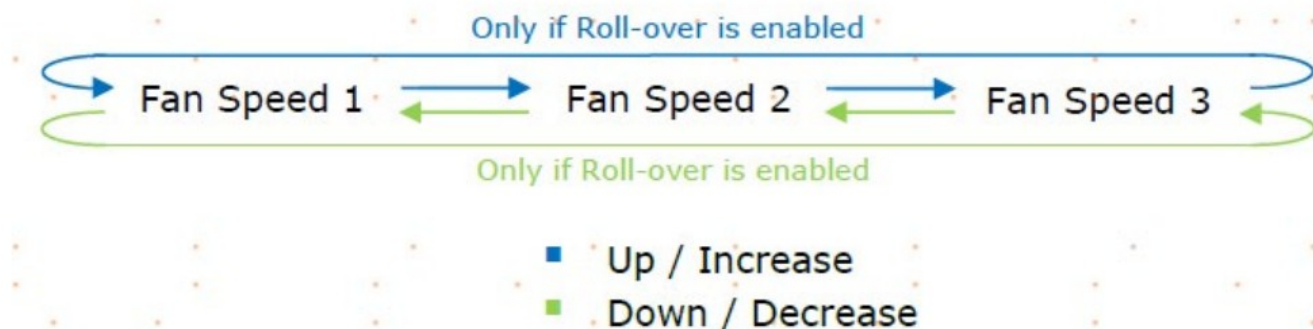
Select this option if you don't have Auto mode and you want roll-over to be enabled.

- Auto>S1>S2>....>SN

Select this option if you have Auto mode and you don't want roll-over to be enabled.

- Auto>S1>S2>....>SN>Auto>S1>...

Select this option if you have Auto mode and you want roll-over to be enabled.



4.3.4 Enable use of bit-type Fan Speed objects (for Control)

This parameter shows/hides the bit-type Control_ Fan Speed objects.

- 13: Control_ Fan Speed 1 [DPT_1.002 - 1bit] - 1-Set Fan Speed 1
- 14: Control_ Fan Speed 2 [DPT_1.002 - 1bit] - 1-Set Fan Speed 2
- 15: Control_ Fan Speed 3 [DPT_1.002 - 1bit] - 1-Set Fan Speed 3

o If set to "no" the objects will not be shown.

o If set to "yes" the Control_ Fan Speed objects for Speed 1, Speed 2 and Speed 3 (if available) will appear. To activate a Fan Speed by using these objects a "1" value has to be sent.

4.3.5 Enable use of bit-type Fan Speed objects (for Status)

This parameter shows/hides the bit-type Status_ Fan Speed objects.

- 36: Status_ Fan Speed 1 [DPT_1.002 - 1bit] - 1-Fan in speed 1
- 37: Status_ Fan Speed 2 [DPT_1.002 - 1bit] - 1-Fan in speed 2
- 38: Status_ Fan Speed 3 [DPT_1.002 - 1bit] - 1-Fan in speed 3

o If set to "no" the objects will not be shown.

o If set to "yes" the Status_ Fan Speed objects for Speed 1, Speed 2 and Speed 3 (if available) will appear. When a Fan Speed is enabled, a "1" value is returned through its bit- type object.

4.3.6 Enable use of Text object for Fan Speed

This parameter shows/hides the Status_ Fan Speed Text communication object.

- 39: Status_ Fan Speed Text [DPT_16.001 - 14byte] - ascii string

o If set to "no" the object will not be shown.

o If set to "yes" the Status_ Fan Speed Text object will appear. Also, in the parameters, will be shown two (or three, depending on the number of fan speeds selected) text fields, one for each Fan Speed, that will let modify the text string displayed by the Status_ Fan Speed Text when changing a fan speed.

Enable use of Text object for Fan Speed ☐ Disabled ☒ Enabled

> String when fan speed is AUTO

> String when fan speed is 1

> String when fan speed is 2

> String when fan speed is 3

Figure 4.15 Parameter detail

4.4 Global temperature configuration

1.1.1 AC interface (multiple indoor units) > Global Temperature configuration

General configuration	Enable use of +/- object for Setpoint <input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Global Mode configuration	Ambient temp. ref. is provided from KNX (carefully read User Guide if enabled) <input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Global Fan Speed configuration	

[Global Temperature configur...](#)

Control Mode Configuration
Addressing of Indoor Units
License

Figure 4.20 Default Temperature Configuration dialog

All the parameters in this section are related with the Temperature properties and communication objects.

4.4.1 Enable use of +/- obj for Setpoint

This parameter shows/hides the Control_ Setpoint Temp +/- communication object which lets you change the indoor unit setpoint temperature by using two different datapoint types.

18: Control_ Setpoint Temp +/- [DPT_1.008 - 1bit] - 0-Up;1-Down

- o If set to "no" the object will not be shown.
- o If set to "yes" the Control_ Setpoint Temp +/- object and a new parameter will appear.

Enable use of +/- object for Setpoint ☐ Disabled ☒ Enabled

> Setpoint +/- operation ☒ 0-Decrease / 1-Increase [DPT_1.007] ☐ 0-Up / 1-Down [DPT_1.008]

Figure 4.23 Parameter detail

. DPT type for +/- Setp Temp object

This parameter lets choose between the datapoints 0-Up / 1-Down [DPT_1.008] and 1- Decrease / 1-Increase [DPT_1.007] for the Control_ Setpoint Temp +/- object.



4.4.2 Ambient Ref. Temp. is provided from KNX

This parameter shows/hides the Control_ Ambient Temperature communication object which lets you use an ambient temperature reference provided by a KNX device.

19: Control_ Ambient Temperature [DPT_9.001 - 2byte] - °C

- o If set to “no” the object will not be shown.
- o If set to “yes” the Control_ Ambient Temperature object will appear. Meant to be enabled when you want the temperature provided by a KNX sensor to be the reference ambient temperature for the air conditioner. Then, the following formula applies for the calculation of real Control_ Setpoint Temperature sent of the AC unit:
“AC Setp. Temp” = “Ambient ref. Temp” – (“KNX Amb. Temp.” – “KNX Setp Temp.”)

- AC Setp. Temp: AC indoor unit setpoint temperature
- Ambient Ref. Temp: AC indoor unit return temperature
- KNX Amb. Temp.: Ambient temperature provided from KNX
- KNX Setp. Temp: Setpoint temperature provided from KNX

As an example, consider the following situation:

User wants: 19°C (“KNX Setp. Temp.”)

User sensor (a KNX sensor) reads: 21°C (“KNX Amb Temp.”) Ambient temp. read by system is: 24°C (“Ambient Ref. Temp”)

In this example, the final setpoint temperature that 40VCBK17/27/37FQEE will send out to the indoor unit (shown in “Setp. Temp.”) will become 24°C – (21°C – 19°C)

= 22°C. This is the setpoint that will actually be requested to unit.

This formula will be applied as soon as the Control_ Setpoint Temperature and Control_ Ambient Temperature objects are written at least once from the KNX installation. After that, they are kept always consistent.

Note that this formula will always drive the AC indoor unit demand in the right direction, regardless of the operation mode (Heat, Cool or Auto).

4.5 Control Mode configuration

1.1.1 AC interface (multiple indoor units) > Control Mode Configuration

General configuration	Enable use of Control Mode objects	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Global Mode configuration	Initial state of Control Mode	<input type="radio"/> Initial state for each Indoor Unit might differ <input checked="" type="radio"/> Apply same initial state to all Indoor Units
Global Fan Speed configuration	> Initial state of Control Mode	(Do not initialize)
Global Temperature configurati...		
Control Mode Configuration		
Addressing of Indoor Units		
License		

Figure 4.20 Control Mode Configuration dialog

All the parameters in this section are related with the Mode properties and communication objects.

4.5.1 Enable use of Control Mode objects (for Control and Status)

This parameter shows/hides the Control_ Control Mode and Status_ Control Mode communication objects which lets you change the indoor unit control: No Central, LIFO (Last Input First Output), Central Controller and Lock Central Controller.

- ↕ 20: AC01 Control_ Control Mode No Central [DPT_1.002] - 1-Set...
- ↕ 21: AC01 Control_ Control Mode LIFO [DPT_1.002] - 1-Set LIFO...
- ↕ 22: AC01 Control_ Control Mode Central [DPT_1.002] - 1-Set CE...
- ↕ 23: AC01 Control_ Control Mode Lock [DPT_1.002] - 1-Set LOCK...
- ↕ 45: AC01 Status_ Control Mode No Central [DPT_1.002] - 1-NO...
- ↕ 46: AC01 Status_ Control Mode LIFO [DPT_1.002] - 1-LIFO mode...
- ↕ 47: AC01 Status_ Control Mode Central [DPT_1.002] - 1-CENTRA...
- ↕ 48: AC01 Status_ Control Mode Lock [DPT_1.002] - 1-LOCK mod...

- If set to “no” the objects will not be shown.
- If set to “yes” the Control_ and Status_ Control Mode objects for No Central, LIFO (Last Input First Output), Central Controller, Lock Central Controller will appear.

4.5.1 Initial state of Control Mode

This parameter sets the initial value for the Control Mode: No Central, LIFO (Last Input First Output), Central Controller, Lock Central Controller or Do not initialize.

Initial state of Control Mode

☒ Initial state for each Indoor Unit might differ
☐ Apply same initial state to all Indoor Units

> Initial state of Control Mode in AC01
> Initial state of Control Mode in AC02
> Initial state of Control Mode in AC03
> Initial state of Control Mode in AC04
> Initial state of Control Mode in AC05

(Do not initialize)
NO CENTRAL
LIFO
CENTRAL
LOCK
(Do not initialize) ✓
(Do not initialize)

Figure 4.24 Parameter detail

- If set to “Apply same initial state to all Indoor Units”, the parameter option selected will apply to all indoor units.
- If set to “Initial state for each Indoor Unit might differ”, you will be able to set this parameter for each Indoor Unit individually.

4.6 Addressing of Indoor Units

1.1.1

Interface (multiple indoor units) > Addressing of Indoor Units

General configuration

Global Mode configuration

Global Fan Speed configuration

Global Temperature configurati...

Control Mode Configuration

Addressing of Indoor Units

License

----- AC01 -----

Modbus GW address of AC01

1

↑

↓

IDU index (in Modbus GW) of AC01

0

↑

↓

----- AC02 -----

Modbus GW address of AC02

1

↑

↓

IDU index (in Modbus GW) of AC02

1

↑

↓

----- AC03 -----

Modbus GW address of AC03

1

↑

↓

IDU index (in Modbus GW) of AC03

2

↑

↓

----- AC04 -----

Modbus GW address of AC04

1

↑

↓

IDU index (in Modbus GW) of AC04

3

↑

↓

----- AC05 -----

Modbus GW address of AC05

1

↑

↓

IDU index (in Modbus GW) of AC05

4

↑

↓

Figure 4.24 Parameter detail

In this section you will be able to set the AC addressing for each AC unit present in the installation.

- Modbus GW address of ACxx refers to the address of the Communication Addapters.
- IDU index (in Modbus GW) of ACxx refers to the AC system address of the Indoor Unit.

4.7 License

1.1.1

AC interface (multiple indoor units) > License

General configuration

Global Mode configuration

Global Fan Speed configuration

Global Temperature configurati...

Control Mode Configuration

Addressing of Indoor Units

License

Activation Code

Figure 4.24 Parameter detail

Use this section to introduce the migration code in case you need to update your box from another version different from the factory default one.

Error Codes

Error Code in KNX Object	Error in Remote Controller	Category	Error Name
1	1	Indoor Unit	Indoor ambient temp.sensor TA (Tas) failure
2	2		Indoor gas pipe temp. sensor TC1 failure
3	3		Indoor liquid pipe temp. sensor TC2 failure
4	4		Dual heat source sensor TW failure
5	5		Indoor EEPROM failure
6	6		Communication between indoor and outdoor failure
7	7		Communication between indoor and wired controller failure
8	8		Indoor float switch failure
9	9		Indoor address repeated failure
10	10		Reserved
11	11		Reserved
12	12		No 50 Hz zero passage signal
13	13		Coil sensor TC3 failure
14	14		DC motor failure
15	15		Indoor ambient temp.sensor TA (Taf) failure
16	16		–
17	17	Outdoor Unit	–
18	18		–
19	19		–
20	20		Defrosting temp. sensor Tdef1 failure Defrosting temp. sensor Tdef2 failure
21	21		Ambient temp. sensor Ta failure
22	22		Suction temp. sensor Ts1 failure Suction temp. sensor Ts2 failure Suction temp. sensor Tsacc failure Suction temp. sensor Tsuc failure
23	23		Discharging temp. sensor Tdi failure Discharging temp. sensor Td1 failure Discharging temp. sensor Td2 failure

24	24	Outdoor Unit	Oil temp. sensor Toilp failure Oil temp. sensor Toil failure
25	25		Inlet temp. of heat exchanger Toci1 failure Inlet temp. of heat exchanger Toci2 failure indoor communication failure
26	26		Reduce the number of indoor units failure Increase the number of indoor units failure
27	27		Oil temp. too high protection (Toil) Oil temp. too high protection (Toi2)
28	28		High pressure sensor Pd1 failure High pressure sensor Pd2 failure
29	29		Low pressure sensor Ps failure
30	30		High pressure switch HPSi failure High pressure switch HPS1 failure High pressure switch HPS2 failure
31	31		Liquid pipe pressure PI failure
32	32		Outlet temp. of subcooler Tsco failure Liquid pipe SC temp. of subcooler Tliqsc failure
33	33		EEPROM (AT24C04) failure
34	34		Discharging temp. too high protection (Tdi) Discharging temp. too high protection (Td1) Discharging temp. too high protection (Td2)
35	35		4-way valve reversing failure 4-way valve reversing failure
36	36		<u>Oil temp. too low protection (Toil) Oil temp. too low protection (Toi2)</u>
37	37		Lack of phase of 3N power supply or wrong phase sequence
38	38		High pressure sensor Pd too low protection
39	39		Low pressure sensor Ps too low protection Compression ratio too high protection Compression 1 ratio too low protection Compression 2 ratio too low protection
40	40		High pressure sensor Pd1 too high protection High pressure sensor Pd2 too high protection
41	41		Water temp. Twi too low protection Water temp. Twi too high protection
42	42		Frost protection of water system Water system out of water freeze protection Water flow of Water system is too small to protect
43	43		Discharging temp. sensor Tdi too low protection Discharging temp. sensor Td1 too low protection Discharging temp. sensor Td2 too low protection
44	44		Low pressure sensor PS too high protection
45	45		Communication among outdoors failure
46	46		Communication with inverter board 1 failure Communication with inverter board 2 failure
47	47		—

48	48		Unloading valve SV1 failure
49	49		—

50	50		
51	51		—
52	52		—
53	53		Current detector CT1 failure
54	54		Communication with Thermal storage module failure
55	55		Thermal storage module LEV failure
56	56		Thermal storage module too hot failure
57	57		Communication between Thermal storage module and host computer
58	58		Thermal storage module Tc1 temp. sensor failure
59	59		Thermal storage module Tc2 temp. sensor failure
60	60		Reserved
61	61		Reserved
62	62		Reserved
63	63		Thermal storage module DIP setting failure
64	64		CT1 over current CT2 over current
65	65		—
66	66		—
67	67		Communication with motor driving board failure
68	68		—
69	69		—
70	70		—
71	71		Left DC motor blocked Right DC motor blocked
72	72		Left DC motor reversed Right DC motor reversed
73	73		Left DC motor current too high Right DC motor current too high
74	74		—
75	75		No pressure drop between high pressure and low one Pressure too low between high pressure and low one
76	76		Incorrect outdoor address or capacity setting
77	77		Oil equalization protection among outdoors
78	78		Lack of refrigerant in cooling Lack of refrigerant in heating
79	79		Incorrect wiring

Outdoor Unit

80	80	Indoor and outdoor do not match
81	81	Model temp. too high protection
82	82	Compressor current protection
83	83	Wrong model selection
84	84	—
85	85	—
86	86	—
87	87	—
88	88	—
89	89	—
90	90	—
91	91	—
92	92	—
93	93	—
94	94	—
95	95	—
96	96	—

97	97	—
98	98	—
99	99	Program self-test failure
100	100	DC motor driving board IPM alarm
101	101	DC motor driving board detecting out of control
102	102	DC motor driving board EEPROM faulty
103	103	DC motor driving board over current or current detector damaged
104	104	Voltage too low protection of DC motor driving board
105	105	Voltage too high protection of DC motor driving board
106	106	DC motor driving board blocked
107	107	Protection of motor rate over Limitation
108	108	—
109	109	—
110	110	model 1 Over current model 2 Over current
111	111	Compressor 1 out of control Compressor 2 out of control

112	112	Outdoor Unit	Radiator of model 1 temp. too high Radiator of model 2 temp. too high
113	113		model 1 overload
			model 2 overload
114	114		Voltage too low of model 1 Voltage too low of model 2
115	115		Voltage too high of model 1 Voltage too high of model 2
116	116		Communication abnormal with model 1 Communication abnormal with model 2
117	117		Model 1 Over current (software) Model 1 Over current (software)
118	118		Model 1 startup failure Model 2 startup failure
119	119		Current Detecting Circuit Abnormal of transducer 1 Current Detecting Circuit Abnormal of transducer 2
120	120		Power supply of transducer 1 abnormal Power supply of transducer 2 abnormal
121	121		Power supply of inverter board 1 is abnormal Power supply of inverter board 2 is abnormal
122	122		Radiator temp. sensor of transducer 1 abnormal Radiator temp. sensor of transducer 2 abnormal
123	123		–
124	124		–
125	125		Compressor 1 frequency not match Compressor 2 frequency not match
126	126		–
127	127		MCU reset abnormal
128	128		MCU Program needs to be upgraded
0	N/A	KNX interface	No error
65535 (-1)	N/A	KNX interface	Indoor Units not ready for communication
65436 (-100)	N/A	KNX interface	License Error / indoor unit not supported by current license
65336 (-200)	N/A	KNX interface	Overconsumption error in EXY bus

In case you detect an error code not listed, contact your nearest technical support service for more information on the error meaning.

Appendix A – Communication Objects Table

SECTION	OBJECT NUM		LENG	DATAPOINT TYPE	FLAGS	

N	BER	NAME	TH	DPT_NAME	DPT_ID	R	W	T	U	FUNCTION
On/Off	1	Control_On/Off	1 bit	DPT_Switch	1.001		W	T		0 – Off; 1-On
Mode	2	Control_Operating Mode	1 byte	DPT_HVAC Mode	20.102		W	T		0 – Auto; 1 – Com; 2 – Stan; 3 – Eco; 4 – Pro
	3	Control_Mode	1 byte	DPT_HVAC Control	20.105		W	T		0 – Auto; 1 – Heat; 3 – Cool; 9 – Fan; 14 – Dry
	4	Control_Mode Cool/Heat	1 bit	DPT_Cool/Heat	1.1		W	T		0 – Cool; 1 – Heat
	5	Control_Mode Auto	1 byte	DPT_Scaling	5.001		W	T		1 – Auto
	6	Control_Mode Heat	1 byte	DPT_Scaling	5.001		W	T		1 – Heat
	7	Control_Mode Cool	1 bit	DPT_Bool	1.002		W	T		1 – Cool
	8	Control_Mode Fan	1 bit	DPT_Bool	1.002		W	T		1 – Dry
	9	Control_Mode Dry	1 bit	DPT_Bool	1.002		W	T		1 – Fan
	10	Control_Mode +/-	1 bit	DPT_Step	1.007		W			0 – Decrease; 1 – Increase
		Control_Mode +/-	1 bit	DPT_UpDown	1.008		W			0 – Up; 1 – Down
Fan Speed	11	Control_Fan Speed / 3 Speeds	1 byte	DPT_Scaling	5.001		W	T		0%-49% – Speed 1; 50%-83% – Speed 2; 84%-100% Speed 3
		Control_Fan Speed / 3 Speeds	1 byte	DPT_Enumerated	5.01		W	T		1 – Speed 1; 2 – Speed 2; 3 Speed 3
	12	Control_Fan Speed Man/Auto	1 bit	DPT_Bool	1.002		W	T		0 – Manual; 1 – Auto
	13	Control_Fan Speed 1	1 bit	DPT_Bool	1.002		W	T		1 – Fan Speed 1

Mode	27	Status_ Mode Cool/Heat	1 bit	DPT_Heat/Cool	1.1	R		T		0 – Cool; 1 – Heat
	28	Status_ Mode Auto	1 bit	DPT_Bool	1.002	R		T		1 – Auto
	29	Status_ Mode Heat	1 bit	DPT_Bool	1.002	R		T		1 – Heat
	30	Status_ Mode Cool	1 bit	DPT_Bool	1.002	R		T		1 – Cool
	31	Status_ Mode Fan	1 bit	DPT_Bool	1.002	R		T		1 – Fan
	32	Status_ Mode Dry	1 bit	DPT_Bool	1.002	R		T		1 – Dry
	33	Status_ Mode Text	14 byte	DPT_String_8859_1	16.001	R		T		ASCII String

Fan Speed	34	Status_ Fan Speed / 3 Speeds	1 byte	DPT_Scaling	5.001	R		T		33% – Speed 1; 67% – Speed 2; 100% – Speed 3
		Status_ Fan Speed / 3 Speeds	1 byte	DPT_Enumerated	5.01	R		T		1 – Speed 1; 2 -Speed 2; 3- Speed 3
	35	Status_ Fan Speed Manual/Auto	1 bit	DPT_Bool	1.002	R		T		0 – Manual; 1 – Auto
	36	Status_ Fan Speed 1	1 bit	DPT_Bool	1.002	R		T		1 – Speed 1
	37	Status_ Fan Speed 2	1 bit	DPT_Bool	1.002	R		T		1 – Speed 2
	38	Status_ Fan Speed 3	1 bit	DPT_Bool	1.002	R		T		1 – Speed 3
	39	Status_ Fan Speed Text	14 byte	DPT_String_8859_1	16.001	R		T		ASCII String
Temperature	40	Status_ AC Setpoint Temp	2 byte	DPT_Value_Temp	9.001	R		T		16°C to 32°C
	41	Status_ AC Ambient Ref Temp	2 byte	DPT_Value_Temp	9.001	R		T		°C value in EIS5 format
	42	Status_ Error/ Alarm	1 bit	DTP_Alarm	1.005	R		T		0 – No Alarm ; 1 – Alarm


Error	43	Status_ Err or Code	2 byte	Enumerated		R		T		0 – No Error; Any other se e user's man ual
	44	Status_ Err or Text code	14 byt e	DPT_ String _8859_1	16.001	R		T		2 char Error; Empty – non e
Control Mode	45	Control_ Co ntrol Mode No Central	1 bit	DPT_Bool	1.002		W	T		1 – No Centr al Controller
	46	Control_ Co ntrol Mode LIFO	1 bit	DPT_Bool	1.002		W	T		1 – Last Input First Output (LIFO)
	47	Control_ Co ntrol Mode Central	1 bit	DPT_Bool	1.002		W	T		1 – Central C ontroller
	48	Control_ Co ntrol Mode Lock	1 bit	DPT_Bool	1.002		W	T		1 – Lock Cen tral Controller

NOTE: This addressing corresponds to the first AC indoor unit of the configuration. Communication objects for the rest of AC units are consecutively listed .

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.



Documents / Resources

 <p>Carrier Installation and Owner's Manual XCT-7</p>	<p>Carrier XCT-7 Variable Refrigerant Flow Controls [pdf] Owner's Manual XCT-7 Variable Refrigerant Flow Controls, XCT-7, Variable Refrigerant Flow Controls, Refrigerant Flow Controls, Flow Controls</p>
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