

# Airlinq<sup>®</sup> – Digital BMS Parameters for KNX<sup>®</sup>

Manual

## BASIC INFORMATION

The present document is only valid for air handling units with firmware version 6.1 or newer. The firmware version is specified at index 27.  
KNX integration project file is available at Airmaster's website.

## BASIC CONTROL SETTINGS

Index	BMS Name	BMS Description	Access	Unit	Min	Max	Default	Resolution	Comments
1	Control - Automatic Operation: Start	Activate Automatic Operation at this input. This parameter is typically used to start/stop the air handling unit from the BMS. N.B.: Index 38-42.	[R/W]		0	1	0	1	0 = No / Stop 1 = Yes / Start
2	Control - Automatic Operation: Flow setpoint	Setpoint for desired airflow in case the unit is started by the BMS (index 1). If running by CO <sub>2</sub> sensor, set the basic flow level here, e.g. 40%.	[R/W]	%	0	100	0	1	
3	Control - Automatic Operation: IT setpoint	Setpoint for desired inlet temperature in case the unit is started by the BMS (index 1). Please consult the manual for recommendations.	[R/W]	°C	8	40	19	0,1	
4	Control - Automatic Operation: CO <sub>2</sub> input	1) Leave this input at 0 ppm to allow the unit to run by CO <sub>2</sub> sensor(s) connected directly to the unit. 2) Set this input to -1 ppm to prevent the unit from running by CO <sub>2</sub> sensor(s) connected directly to the unit. 3) In case the BMS system has a CO <sub>2</sub> sensor, connect it to this input. Any ppm value greater than 0 ppm will disable any CO <sub>2</sub> sensor connected directly to the unit. N.B.: CO <sub>2</sub> limits can be adjusted: CO <sub>2</sub> minimum and maximum (index 46 and 47). For further information please consult the manual.	[R/W]	PPM	-1	5000	0	1	
5	Control - Night Cooling: Start	Activate this input to request night cooling. Night cooling will only run when setpoint temperatures are exceeded during the day. The limits are adjustable via Night Cooling: high and low limit (index 48 and 49). For further information please consult the manual.	[R/W]		0	1	0	1	0 = No 1 = Yes
6	Control - Holiday Mode Operation: Start	Activate holiday mode operation at this input.	[R/W]		0	1	0	1	0 = No 1 = Yes
38	Control Basic - Allow Start by Local PIR	PIR sensor is optional. In case the unit has a PIR sensor connected directly, is it allowed to start by it, or shall it only pass on the signal to the BMS system. When the unit is started by a local PIR sensor, index 62 and 63 are used as setpoints for airflow and inlet temperature.	[R/W]		0	1	1	1	0 = No 1 = Yes
39	Control Basic - Allow Start by Local CO <sub>2</sub>	CO <sub>2</sub> sensor is optional. In case the unit has a CO <sub>2</sub> sensor connected directly, is it allowed to start by it, or shall it only pass on the signal to the BMS system. When the unit is started by a local CO <sub>2</sub> sensor, index 62 and 63 are used as setpoints for airflow and inlet temperature.	[R/W]		0	1	1	1	0 = No 1 = Yes
40	Control Basic - Allow Start by Local Timer	Is the unit allowed to start by the build in timer. The timer settings are not available via BMS, only the possibility to enable/disable the timer are available to BMS.	[R/W]		0	1	0	1	0 = No 1 = Yes
41	Control Basic - Allow Start by Local Panel	Control panel is optional. In case the unit has a local control panel connected, is it allowed to start by it. When the unit is started by a local control panel, index 62 and 63 are used as setpoints for airflow and inlet temperature.	[R/W]		0	1	1	1	0 = No 1 = Yes
42	Control Basic - Allow Start by Local External Start	In case the unit has an External Start Signal connected directly, is it allowed to start by it, or shall it only pass on the signal to the BMS system. When the unit is started by a local external start signal, index 62 and 63 are used as setpoints for airflow and inlet temperature.	[R/W]		0	1	1	1	0 = No 1 = Yes

**ADVANCED CONTROL SETTINGS**

Index	BMS Name	BMS Description	Access	Unit	Min	Max	Default	Resolution	Comments
62	Optional Setting - Default Airflow	Setpoint for desired airflow in case the unit is started by a local PIR, CO <sub>2</sub> , control panel or local external start (index 38, 39, 41, 42).	[R/W]	%	0	100	80	1	The default value is 0 % if the air handling unit is supplied with a CO <sub>2</sub> sensor.
63	Optional Setting - Default Temperature	Setpoint for desired inlet temperature in case the unit is started by a local PIR, CO <sub>2</sub> , control panel or local external start (index 38, 39, 41, 42). Please consult the manual for recommendations.	[R/W]	°C	8	30	19	1	
45	Optional Setting - PIR Afterrun Time	Setpoint for the PIR afterrun time, local connected PIR only.	[R/W]	min	0	1080	30	1	The default value is 5 min if the air handling unit is supplied with a CO <sub>2</sub> sensor.
46	Optional Setting - CO <sub>2</sub> , Minimum	Setpoint for minimum CO <sub>2</sub> limit, when overriding flow by a CO <sub>2</sub> sensor. Consult the manual for further information on CO <sub>2</sub> control.	[R/W]	PPM	400	5000	500	50	
47	Optional Setting - CO <sub>2</sub> , Maximum	Setpoint for maximum CO <sub>2</sub> limit, when overriding flow by a CO <sub>2</sub> sensor. Consult the manual for further information on CO <sub>2</sub> control.	[R/W]	PPM	400	5000	900	50	
43	Optional Setting - High Room Temperature, High limit	Setpoint for the limit that causes the unit to enter "High Room Temperature" operation mode. Consult the manual for further description of the "High Room Temperature" operation mode.	[R/W]	°C	0	50	25	1	
44	Optional Setting - High Room Temperature, Low limit	Setpoint for the limit that causes the unit to exit "High Room Temperature" operation mode. Consult the manual for further description of the "High Room Temperature" operation mode.	[R/W]	°C	0	50	24	1	
48	Optional Setting - Night Cooling: High limit	Setpoint for Night Cooling High Limit, Consult the "Night Cooling" section in the manual for further description.	[R/W]	°C	0	30	26	1	
49	Optional Setting - Night Cooling: Low limit	Setpoint for Night Cooling Low Limit, Consult the "Night Cooling" section in the manual for further description.	[R/W]	°C	0	30	23	1	
50	Optional Setting - Night Cooling: IT setpoint	Inlet Temperature setpoint when running in Night Cooling mode, started from BMS (index 5).	[R/W]	°C	0	30	16	1	
51	Optional Setting - Night Cooling: Flow setpoint	Air flow setpoint when running in Night Cooling mode, started from BMS (index 5).	[R/W]	%	0	100	100	1	
55	Optional Setting - Absolute humidity Min. C Coefficient	Coefficient for absolute humidity calculation.	[R/W]		-99,99	99,99	0	0,01	The default value is 3,6 if the air handling unit is supplied with electronic humidity sensors.
58	Optional Setting - Absolute humidity Max. C Coefficient	Coefficient for absolute humidity calculation.	[R/W]		-99,99	99,99	0	0,01	The default value is 6,1 if the air handling unit is supplied with electronic humidity sensors.
52	Optional Setting - Reboot	Activate this input to reboot the controller by setting the value to 1. The value will automatically return to 0.	[R/W]		0	1	0	1	0 = No 1 = Yes

**SENSOR SIGNALS**

Index	BMS Name	BMS Description	Access	Unit	Min	Max	Default	Resolution	Comments
11	Sensor - CO2 output	CO <sub>2</sub> sensor is optional. The CO <sub>2</sub> concentration from a CO <sub>2</sub> sensor connected directly to the unit. N.B.: Automatic Operation: CO2 input (Index 4). N.B.: Allow Start by Local CO2 (index 39).	[R]	PPM	0	5000	0	1	
12	Sensor - PIR output	Motion sensor (PIR) is optional. The PIR signal includes the afterrun time (index 45). In case a PIR signal without afterrun time is preferred, set the afterrun time to 0. N.B.: Allow Start by Local PIR (index 38).	[R]		0	1	0	1	0 = Off 1 = On
13	Sensor - External Start output	Indicates if the hardware input "External Start" is activated or not. N.B.: Allow Start by Local External Start (index 42).	[R]		0	1	0	1	0 = Off 1 = On
14	Sensor - Room Temperature	Room temperature, measured in the extraction air.	[R]	°C	-49	100	0	0,1	
15	Sensor - Inlet Temperature	Inlet Temperature, measured at the inlet opening.	[R]	°C	-49	100	0	0,1	
20	Sensor - Outside Temperature at Ventilation Unit	Outside Temperature, measured at the air handling unit.	[R]	°C	-49	100	0	0,1	
21	Sensor - Exhaust Temperature at Ventilation Unit	Exhaust temperature, measured at the air handling unit, near the heat exchanger.	[R]	°C	-49	100	0	0,1	
16	Sensor - Outside Temperature	Cooling module is optional. Outside temperature, measured at the cooling module. Used for both ON/OFF and inverter controlled cooling modules.	[R]	°C	-49	100	0	0,1	
18	Sensor - Condenser Temperature	ON/OFF controlled cooling module is optional. Condenser Temperature. The Condenser is a part of the cooling module.	[R]	°C	-49	100	0	0,1	
19	Sensor - Evaporator Temperature	ON/OFF controlled cooling module is optional. Evaporator Temperature. The Evaporator is a part of the cooling module.	[R]	°C	-49	100	0	0,1	
76	Sensor - Evaporator In Temperature	Inverter controlled cooling module is optional. Evaporator temperature, inlet. The evaporator is a part of the comfort cooling unit.	[R]	°C	-49	100	0	0,1	
77	Sensor - Evaporator Out Temperature	Inverter controlled cooling module is optional. Evaporator temperature, outlet. The evaporator is a part of the comfort cooling unit.	[R]	°C	-49	100	0	0,1	
78	Sensor - Hotgas Temperature	Inverter controlled cooling module is optional.	[R]	°C	-49	100	0	0,1	
22	Sensor - Relative Humidity, outside	Humidity sensor is optional: Humidity measured in the supply air.	[R]	%	0	100	0	1	
23	Sensor - Relative Humidity, inside	Humidity sensor is optional: Humidity measured in the extraction air.	[R]	%	0	100	0	1	
33	SysInfo - Supply Flow	Flow measurement is optional. Measured supply airflow.	[R]	m³/h	0	10000	0	1	
34	SysInfo - Extraction Flow	Flow measurement is optional. Measured extraction airflow.	[R]	m³/h	0	10000	0	1	
37	SysInfo - Airhandling Unit Energy Meter	Energy meter is optional. The energy meter measure the energy consumption of the air handling unit.	[R]	Wh	0	4294967295	0	1	
73	SysInfo - Cooling Unit Power Consumption	Energy meter and cooling module are optional. The energy meter measure the energy consumption of the cooling module.	[R]	Wh	0	4294967295	0	1	

**SYSTEM INFORMATION**

Index	BMS Name	BMS Description	Access	Unit	Min	Max	Default	Resolution	Comments
24	SysInfo - System Operating Mode	This output indicates the system operating mode for the air handling unit.	[R]		0	255	0	1	0 = Stopped 1 = Starting 2 = Auto / Running 3 = Stopping 4 = Filter Test Running 5 = Filter Calibration 6 = Night Cooling 7 = Holiday Mode 8 = Manual Mode
35	SysInfo - Actual Inlet Temperature setpoint	The actual inlet temperature setpoint may vary from requested value, thus the actual setpoint is available here.	[R]	°C	0	100	0	0,1	
36	SysInfo - Actual Flow Setpoint	The actual air flow setpoint may vary from requested value, thus the actual setpoint is available here, e.g. due to CO <sub>2</sub> override.	[R]	%	0	100	0	1	
30	SysInfo - Pre Heater percent	Preheating surface is optional. Percentage heat output relative to maximum.	[R]	%	0	100	0	1	
28	SysInfo - Comfort Heater percent	Comfort heating surface is optional. Percentage heat output relative to maximum.	[R]	%	0	100	0	1	
29	SysInfo - Comfort Cooling percent	Comfort cooling module is optional. Percentage cooling output relative to maximum.	[R]	%	0	100	0	1	
32	SysInfo - Bypass Damper percent	Bypass damper is optional. Percentage bypass position relative to maximum.	[R]	%	0	100	0	1	0 = full heat recovery
25	SysInfo - System Operating Mode	This output indicates the system condition for the air handling unit.	[R]		-32768	32767	0	1	N.B.: Convert to binary representation Bit 0 = [Low Temp Process Inactive Active] Bit 1 = [High Temp Process Inactive Active] Bit 2 = [Condensation Process Inactive Active] Bit 3 = [Non Critical Hardware Fault False True] Bit 4 = [Condenser Overheated False True] Bit 5 = [Compressor Locked False True] Bit 6 = [Filter Change Needed False True] Bit 7 = [High Room Temp False True] Bit 8 = [Abnormal Filter Test Calibration Result False True] Bit 9 = [Manual Override Active False True] Bit 10 = [Comfort Cool Defrost Warning False True] Bit 11 = [Comfort Cool Condensation Warning False True] Bit 12 = [Boost Mode Active False True] Bit 13 = [Comfort Cool Hotgas Warning False True] Bit 14 = [Comfort Cool Pressure Warning False True] Bit 15 = [Group Master Not Available Warning False True]
26	SysInfo - System Condition	This output indicates system alarms for the air handling unit.	[R]		-32768	32767	0	1	N.B.: Convert to binary representation Bit 0 = [Low Temp Alarm False True] Bit 1 = [Condensation Alarm False True] Bit 2 = [Filter Alarm False True] Bit 3 = [Critical Hardware Fault False True]

**SYSTEM INFORMATION**

Index	BMS Name	BMS Description	Access	Unit	Min	Max	Default	Resolution	Comments
72	SysInfo - Hardware errors	This output indicates the hardware status of the the air handling unit and cooling module.	[R]		0	4294967295	0		N.B.: Convert to binary representation Bit 0 = [Room Temperaturesensor OK Fault] Bit 1 = [Inlet Temperaturesensor OK Fault] Bit 2 = [Outside Temperaturesensor OK Fault] Bit 3 = [General Purpose Temperaturesensor OK Fault] Bit 4 = [Condenser Temperaturesensor OK Fault] Bit 5 = [Evaporator Temperaturesensor OK Fault] Bit 6 = [Exhaust Temperaturesensor Ventilation Unit OK Fault] Bit 7 = [Outside Temperaturesensor Ventilation Unit OK Fault] Bit 8 = [Supplyflow Sensor 1 OK Fault] Bit 9 = [Supplyflow Sensor 2 OK Fault] Bit 10 = [Extractionflow Sensor OK Fault] Bit 11 = [CO2 Sensor OK Fault] Bit 12 = [Supply Fan OK Fault] Bit 13 = [Extraction Fan OK Fault] Bit 14 = [Evaporator In Temperaturesensor OK Fault] Bit 15 = [Evaporator Out Temperaturesensor OK Fault] Bit 16 = [Hotgas Temperaturesensor OK Fault] Bit 17 = [Comfort Cooling Connection Lost OK Fault] Bit 18 = [Comfort Cooling Stepdriver  OK Fault] Bit 19 = [Comfort Cooling Frequency Inverter OK Fault] Bit 20 = [Humidity Supply Air Sensor OK Fault] Bit 21 = [Humidity Extraction Air Sensor OK Fault] Bit 22 = [Humidity Sensor Settings OK Fault]
27	SysInfo - Software Version	Software version installed in the air handling unit.	[R]		0	32	6	0,001	

**LOCAL CONTROL PANEL**

Index	BMS Name	BMS Description	Access	Unit	Min	Max	Default	Resolution	Comments
74	SysInfo - Panel Flow Request	Local control panel is optional. Flow percent requested by the user via a local control panel. N.B.: Panel Flow Function (index 59).	[R]	%	0	100	0	1	0 = no request from user
59	Control Basic - Panel Flow Function	This value defines how the air handling unit respond to a change of the airflow setpoint by the user via a local control panel. "Direct": The airflow setpoint can temporarily be overridden from a local control panel. "None": The airflow setpoint can not be overridden from a local control panel. "D-BMS": A change of the airflow setpoint from a local control panel will be shown at index 74, but will not affect the actual flow setpoint directly. N.B.: Manual Override Time (index 64).	[R/W]		0	2	1	1	0 = Direct 1 = None 2 = D-BMS
64	Optional Setting - Manual Override Time	This value defines for how long time an override of the airflow setpoint from a local control panel will be stored in the controller.	[R/W]	hour(s)	0	18	12	1	

**SERVICE AND FILTER INFORMATION**

Index	BMS Name	BMS Description	Access	Unit	Min	Max	Default	Resolution	Comments
31	SysInfo - Filter, remaining service life [days]	Estimated remaining service life of the filters in days calculated by the average daily operating hours since last service.	[R]	days	0	1000	0	1	
71	SysInfo - Remaining Service Life [Hours]	Remaining service life of filters in operating hours.	[R]	hour(s)	0	65535	0	1	
70	SysInfo - Remaining Service Life [%]	Estimated remaining service life of filters in %.	[R]	%	0	101	0	1	0 = filter change required 100 = clean filters
61	Control Basic - Reset Filter Status	The filter monitoring must be reset after a filter change. Set the value to 1 to reset filter status. The value will automatically return to 0 when filter status has been reset.	[R/W]		0	1	0	1	0 = No 1 = Yes
65	Optional Setting - Filter Test Mode	This parameter defines the filter test mode. "Timer": Filter monitoring using an hour counter. "Tacho": Electronic flow monitoring. "Timer and tacho": Filter monitoring using an hour counter and electronic flow monitoring.	[R/W]		0	3	3	1	0 = Off 1 = Timer (default for air handling units with AQC-L) 2 = Tacho 3 = Timer And Tacho (default for air handling units with AQC-P)
66	Optional Setting - Life Span Warning	This value defines the operating hours before activating a filter warning at index 25.	[R/W]	hour(s)	0	8760	1500	1	The default value is 4000 h for CV and DV product series.
67	Optional Setting - Life Span Alarm	This value defines the operating hours before activating a filter alarm at index 26.	[R/W]	hour(s)	0	8760	2000	1	The default value is 5000 h for CV and DV product series.
68	Optional Setting - Filter Max Life Time	This value defines the maximum filter life time and for how many months the air handling unit can operate after a service reset before activating a filter alarm (index 26). The max life time alarm can be disabled by setting the value to 0.	[R/W]	month(s)	0	48	14	1	
69	Optional Setting - Filter Warning Period	This value defines the period for a filter warning at index 25 before the filter alarm activates. By using the default value of this parameter the filter warning at index 25 is activated 2 months before the maximum filter life time expires (index 68).	[R/W]	month(s)	0	12	2	1	
60	Control Basic - Run Filter Calibration	Set the value to 1 to run a filter calibration. The value will automatically return to 0 when the calibration process has finished. N.B.: Do only run a filter calibration with clean filters. N.B.: Do only run a filter calibration at the first start of an air handling unit with AQC-P control box by non standard installation e.g. on reduction of the duct size, when using more than 1 m of duct or when installing with elbows. N.B.: A new filter calibration shall be performed if the filter class is changed (from M5 to F7 etc.) during a service routine of the air handling unit with AQC-P control box.	[R/W]		0	1	0	1	0 = No 1 = Yes

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