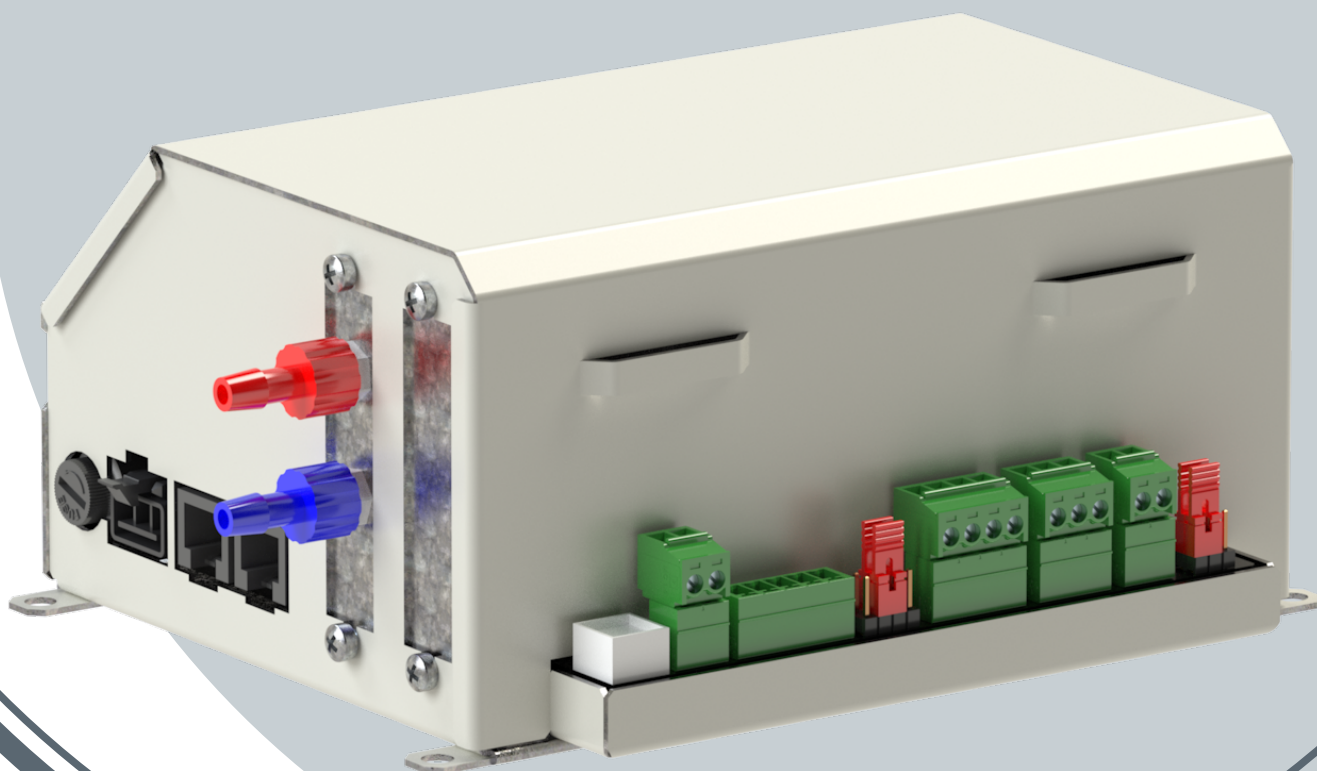




Modbus Datapoint Table

Variable Air Volume Controller

VAV400



SCHAKO Group

1 Modbus General Information

1.1 Register Types

The Modbus specification supports multiple register types. Most SCHNEIDER devices use the *Holding Register* and *Input Register* types. Every holding register can store a 16-bit word (for example, an integer value between 0 and 65535). This value can be read using function code 03 ("Read Holding Registers") and can be modified using function code 06 ("Write Single Register") as well as function code 16 ("Write Multiple Registers").

The second important register type is the *Input Register*. Input registers are read-only and cannot be modified by a client. They represent the current state or a measurement from the device, and can be read using function code 04 ("Read Input Registers").

1.2 Data Types

1.2.1 Scaled Integers

The interpretation of a register value is not defined by Modbus itself but must be determined using the data point table. Where possible, integer values are used—sometimes with a scaling factor—to fit them into the range of 0 to 65535. For example, most volumetric flow rates in m^3/h can be accurately represented using such an integer without any loss of resolution. In contrast, storing a face velocity in m/s without a scaling factor is impractical because these values are typically between 0 m/s and 1 m/s . In this case, a scaling factor of 0.001 applied to a register value of, for example, 526 yields

$$0.001 \, m/s \times 526 = 0.526 \, m/s.$$

1.2.2 Enumerations

Some values are not continuous but represent discrete states. For each possible value, a predetermined meaning is assigned. The range of values and their corresponding meanings are described in the Descriptions section.

1.2.3 Text

Modbus does not natively support text. However, it is common practice to represent text by encoding two ASCII characters per register and using consecutive registers for longer texts. Since this method is not very efficient, it is used sparingly. For example, Input Registers 1 through 3 encode the firmware version, providing enough space for six ASCII characters.

2 Modbus Data Point Table

Type	Index	Name	Resolution	Unit	Description
Holding Register	1	Night Mode Local	1		(3.1)
Holding Register	2	Override Mode Local	1		(3.2)
Holding Register	3	Off Mode Local	1		(3.3)
Holding Register	4	Night Mode Permanent	1		(3.4)
Holding Register	5	Override Mode Permanent	1		(3.5)
Holding Register	6	Off Mode Permanent	1		(3.6)
Holding Register	7	Button Quit Pressed	1		(3.7)
Holding Register	9	Button On/Off Pressed	1		(3.8)
Holding Register	10	Setpoint Relay 1	1		(3.9)
Holding Register	11	Setpoint Relay 2	1		(3.10)
Holding Register	12	Setpoint Relay 3	1		(3.11)
Holding Register	13	Setpoint Relay 4	1		(3.12)
Holding Register	14	Setpoint Relay 5	1		(3.13)
Holding Register	18	Setpoint Analog Output 1	0.001	V	(3.14)
Holding Register	19	Setpoint Analog Output 2	0.001	V	(3.15)
Holding Register	20	Setpoint Analog Output 3	0.001	V	(3.16)
Holding Register	21	Setpoint Analog Output 4	0.001	V	(3.17)
Holding Register	22	Setpoint Analog Output 5	0.001	V	(3.18)
Holding Register	26	Setpoint Damper	1	%	(3.19)
Holding Register	27	Operating Mode Forced	1		(3.20)
Holding Register	28	Open Sash Request	1		(3.21)
Holding Register	29	Close Sash Request	1		(3.22)
Holding Register	30	Volume Flow Setpoint	1	m ³ /h	(3.23)
Holding Register	32	Volume Flow Setpoint Offset	1	m ³ /h	(3.24)
Holding Register	31	Pressure Setpoint	1	Pa	(3.25)

Type	Index	Name	Resolution	Unit	Description
Input Register	0	Device Type	1		(3.26)
Input Register	1	Version (1/3)	1		(3.27)
Input Register	2	Version (2/2)	1		(3.28)
Input Register	3	Version (3/3)	1		(3.29)
Input Register	4	Alarms and Warnings	1		(3.30)
Input Register	5	Runtime Current [2/2]	45.51039912620034	Day	(3.31)
Input Register	6	Runtime Current [1/2]	1	min	(3.32)
Input Register	7	Total Current [2/2]	45.51039912620034	Day	(3.33)
Input Register	8	Total Current [1/2]	1	min	(3.34)
Input Register	10	Duct Airflow	0.01	m/s	
Input Register	11	Volume Flow	1	m³/h	(3.35)
Input Register	12	Pressure Volume Flow	0.1	Pa	(3.36)
Input Register	13	Pressure Support Jet	0.1	Pa	(3.37)
Input Register	14	Pressure Washer	0.1	Pa	(3.38)
Input Register	15	Temperature	0.1	°C	(3.39)
Input Register	16	Actuator Setpoint	1	%	(3.40)
Input Register	17	Actuator Position	1	%	(3.41)
Input Register	21	Alarm	1		(3.42)
Input Register	22	Buzzer	1		(3.43)
Input Register	23	Operating Mode	1		(3.44)
Input Register	24	Day Mode	1		(3.45)
Input Register	25	Night Mode	1		(3.46)
Input Register	26	Override Mode	1		(3.47)
Input Register	27	Off Mode	1		(3.48)
Input Register	28	DIN 1 Value	1		(3.49)
Input Register	29	DIN 2 Value	1		(3.50)
Input Register	30	DIN 3 Value	1		(3.51)

Type	Index	Name	Resolution	Unit	Description
Input Register	31	DIN 4 Value	1		(3.52)
Input Register	32	DIN 5 Value	1		(3.53)
Input Register	36	Relay 1 Value	1		(3.54)
Input Register	37	Relay 2 Value	1		(3.55)
Input Register	38	Relay 3 Value	1		(3.56)
Input Register	39	Relay 4 Value	1		(3.57)
Input Register	40	Relay 5 Value	1		(3.58)
Input Register	44	Analog Interface 1	0.001	V	(3.59)
Input Register	45	Analog Interface 2	0.001	V	(3.60)
Input Register	46	Analog Interface 3	0.001	V	(3.61)
Input Register	47	Analog Interface 4	0.001	V	(3.62)
Input Register	48	Analog Interface 5	0.001	V	(3.63)
Input Register	52	MC10 Expansion Slot 1	1		(3.64)
Input Register	53	MC10 Expansion Slot 2	1		(3.65)
Input Register	54	MC10 Expansion Slot 3	1		(3.66)
Input Register	55	MC10 Expansion Slot 4	1		(3.67)
Input Register	57	Air Controller Type	1		(3.68)
Input Register	58	Washer Operating	1		(3.69)
Input Register	59	Washer Alarm	1		(3.70)
Input Register	60	Washer Warning	1		(3.71)
Input Register	61	Washer Pressure filtered	1	Pa	(3.72)
Input Register	62	Duct Area	1	cm ²	(3.73)
Input Register	63	Duct Area Factor	1	%	(3.74)
Input Register	64	Sum Exhaust	1	m ³ /h	(3.75)
Input Register	65	Sum Supply	1	m ³ /h	(3.76)
Input Register	66	Balancing Aggregated Alarm	1		(3.77)
Input Register	67	Balancing Simultaneity Alarm	1		(3.78)

Type	Index	Name	Resolution	Unit	Description
		End of Table			

3 Descriptions

3.1 Night Mode Local (Holding Register 1)

Returns true if Night-mode is requested locally. Writing to this register has the same priority as pressing a button locally.

3.2 Override Mode Local (Holding Register 2)

Returns true if Override-mode is requested locally. Writing to this register has the same priority as pressing a button locally.

3.3 Off Mode Local (Holding Register 3)

Returns true if Off-mode is requested locally. Writing to this register has the same priority as pressing a button locally.

3.4 Night Mode Permanent (Holding Register 4)

If set to true, a prioritized request for Night-mode is issued.

3.5 Override Mode Permanent (Holding Register 5)

If set to true, a prioritized request for Override-mode is issued.

3.6 Off Mode Permanent (Holding Register 6)

If set to true, a prioritized request for Off-mode is issued.

3.7 Button Quit Pressed (Holding Register 7)

Automatically reset to false after true has been read. Writing this register has the same effect as pressing the quit button a function display.

3.8 Button On/Off Pressed (Holding Register 9)

Automatically reset to false after true has been read. Writing this register has the same effect as pressing the On/Off button a function display.

3.9 Setpoint Relay 1 (Holding Register 10)

Directly sets digital output. Only available if Relay is configured to use "Modbus" as its source.

3.10 Setpoint Relay 2 (Holding Register 11)

Directly sets digital output. Only available if Relay is configured to use "Modbus" as its source.

3.11 Setpoint Relay 3 (Holding Register 12)

Directly sets digital output. Only available if Relay is configured to use "Modbus" as its source.

3.12 Setpoint Relay 4 (Holding Register 13)

Directly sets digital output. Only available if Relay is configured to use "Modbus" as its source.

3.13 Setpoint Relay 5 (Holding Register 14)

Directly sets digital output. Only available if Relay is configured to use "Modbus" as its source.

3.14 Setpoint Analog Output 1 (Holding Register 18)

Directly sets the analog output. Only available if the analog output is configured to use "Modbus" as its source.

3.15 Setpoint Analog Output 2 (Holding Register 19)

Directly sets the analog output. Only available if the analog output is configured to use "Modbus" as its source.

3.16 Setpoint Analog Output 3 (Holding Register 20)

Directly sets the analog output. Only available if the analog output is configured to use "Modbus" as its source.

3.17 Setpoint Analog Output 4 (Holding Register 21)

Directly sets the analog output. Only available if the analog output is configured to use "Modbus" as its source.

3.18 Setpoint Analog Output 5 (Holding Register 22)

Directly sets the analog output. Only available if the analog output is configured to use "Modbus" as its source.

3.19 Setpoint Damper (Holding Register 26)

Directly sets the damper position. Only available if the damper mode is set the "Modbus" for the current Operating Mode.

3.20 Operating Mode Forced (Holding Register 27)

Forces the Operating Mode. Overrides request from all other sources.

3.21 Open Sash Request (Holding Register 28)

Writing this register generates an sash opened button press event. Automatically resets to 0 after end of button press event.

3.22 Close Sash Request (Holding Register 29)

Writing this register generates an sash close button press event. Automatically resets to 0 after end of button press event.

3.23 Volume Flow Setpoint (Holding Register 30)

Overwrites the setpoint volume flow day until the next reboot.

3.24 Volume Flow Setpoint Offset (Holding Register 32)

Defines a volume flow offset, which is added to the volume flow setpoint during day mode.

3.25 Pressure Setpoint (Holding Register 31)

Overwrites the setpoint pressure day until the next reboot.

3.26 Device Type (Input Register 0)

Shows the device type ID.

3.27 Version (1/3) (Input Register 1)

The three Version Input Register show each two ASCII encoded characters of the Firmware Version.

3.28 Version (2/2) (Input Register 2)

The three Version Input Register show each two ASCII encoded characters of the Firmware Version.

3.29 Version (3/3) (Input Register 3)

The three Version Input Register show each two ASCII encoded characters of the Firmware Version.

3.30 Alarms and Warnings (Input Register 4)

Number of active Notification with priority 'Warning' or 'Alarm'.

3.31 Runtime Current [2/2] (Input Register 5)

'Runtime Current [2/2]' x 65536 + 'Runtime Current [1/2]' shows the current uptime since the last reboot.

3.32 Runtime Current [1/2] (Input Register 6)

'Runtime Current [2/2]' x 65536 + 'Runtime Current [1/2]' shows the current uptime since the last reboot.

3.33 Total Current [2/2] (Input Register 7)

'Runtime Total [2/2]' x 65536 + 'Total Runtime [1/2]' shows the total runtime of the device.

3.34 Total Current [1/2] (Input Register 8)

'Runtime Total [2/2]' x 65536 + 'Total Runtime [1/2]' shows the total runtime of the device.

3.35 Volume Flow (Input Register 11)

The current volume flow, determined from the current differential pressure.

3.36 Pressure Volume Flow (Input Register 12)

The current differential pressure.

3.37 Pressure Support Jet (Input Register 13)

The current differential pressure for the support jet monitoring.

3.38 Pressure Washer (Input Register 14)

The analog output scales depending on the current washer pressure.

3.39 Temperature (Input Register 15)

The current temperature.

3.40 Actuator Setpoint (Input Register 16)

The current actuator setpoint in %.

3.41 Actuator Position (Input Register 17)

The current actuator position in %.

3.42 Alarm (Input Register 21)

Current alarm state of the Device (active or inactive)

3.43 Buzzer (Input Register 22)

Current state of the buzzer (active or inactive)

3.44 Operating Mode (Input Register 23)

Displays the current operating mode (Day, Night, Override, Off).

Value Range
0: Day
1: Night
2: Override
3: Off

3.45 Day Mode (Input Register 24)

Shows if the operating mode is in day mode.

3.46 Night Mode (Input Register 25)

Shows if the operating mode is in night mode.

3.47 Override Mode (Input Register 26)

Shows if the operating mode is in override mode.

3.48 Off Mode (Input Register 27)

Shows if the operating mode is in off mode.

3.49 DIN 1 Value (Input Register 28)

The current status of the digital input.

3.50 DIN 2 Value (Input Register 29)

The current status of the digital input.

3.51 DIN 3 Value (Input Register 30)

The current status of the digital input.

3.52 DIN 4 Value (Input Register 31)

The current status of the digital input.

3.53 DIN 5 Value (Input Register 32)

The current status of the digital input.

3.54 Relay 1 Value (Input Register 36)

Current state of the relay

3.55 Relay 2 Value (Input Register 37)

Current state of the relay

3.56 Relay 3 Value (Input Register 38)

Current state of the relay

3.57 Relay 4 Value (Input Register 39)

Current state of the relay

3.58 Relay 5 Value (Input Register 40)

Current state of the relay

3.59 Analog Interface 1 (Input Register 44)

The current voltage at the analog interface.

3.60 Analog Interface 2 (Input Register 45)

The current voltage at the analog interface.

3.61 Analog Interface 3 (Input Register 46)

The current voltage at the analog interface.

3.62 Analog Interface 4 (Input Register 47)

The current voltage at the analog interface.

3.63 Analog Interface 5 (Input Register 48)

The current voltage at the analog interface.

3.64 MC10 Expansion Slot 1 (Input Register 52)

Show which MC10 expansion module is slotted.

Value Range

0: -

161: MC10-PSM-6B (0 Pa - 300 Pa) MC10 Expansion module with a differential pressure sensor 0 Pa to 300 Pa.

162: MC10-PSM-5B (+/-150 Pa) MC10 Expansion module with a differential pressure sensor +/- 150 Pa.

163: MC10-PSM-2B (0 Pa - 1000 Pa) MC10 Expansion module with a differential pressure sensor 0 Pa to 1000 Pa.

164: MC10-PSM-0D (+/-2500 Pa) MC10 Expansion module with a differential pressure sensor +/- 2500 Pa.

166: MC10-PSM-7E (+/-500 Pa) MC10 Expansion module with a differential pressure sensor +/- 500 Pa.

168: MC10-PSM-5F (+/-150 Pa) MC10 Expansion module with a differential pressure sensor +/- 150 Pa.

167: MC10-PSM-8F (+/-400 Pa) MC10 Expansion module with a differential pressure sensor +/- 400 Pa.

169: MC10-PSM-9F (+/-1000 Pa) MC10 Expansion module with a differential pressure sensor +/- 1000 Pa.

224: MC10-MOD (Modbus) MC10 Expansion module with a Modbus server interface.

208: MC10-PTC (Temperature) MC10 Expansion module for connection of PTC temperature sensors.

194: MC10-DI3 (3x DIN) MC10 Expansion module with 3 Digital Inputs.

176: MC10-AO1 (1x Analog Output) MC10 Expansion module with one analog voltage or current output.

177: MC10-AIO3 (3x Analog Input/Output) MC10 Expansion module with 3 analog voltage or current inputs or outputs.

178: MC10-AO2 (2x Analog Output) MC10 Expansion module with 2 analog voltage outputs.

225: MC10-RTC (Real Time Clock)

192: MC10-DO2 (2x Relay) MC10 Expansion module with 2 Relays with changeover resp. working contact (SPDT).

193: MC10-DO3 (3x Relay) MC10 Expansion module with 3 Relays with working contact.

3.65 MC10 Expansion Slot 2 (Input Register 53)

Show which MC10 expansion module is slotted.

Value Range

0: -

161: MC10-PSM-6B (0 Pa - 300 Pa) MC10 Expansion module with a differential pressure sensor 0 Pa to 300 Pa.

162: MC10-PSM-5B (+/-150 Pa) MC10 Expansion module with a differential pressure sensor +/- 150 Pa.

163: MC10-PSM-2B (0 Pa - 1000 Pa) MC10 Expansion module with a differential pressure sensor 0 Pa to 1000 Pa.

164: MC10-PSM-0D (+/-2500 Pa) MC10 Expansion module with a differential pressure sensor +/- 2500 Pa.

166: MC10-PSM-7E (+/-500 Pa) MC10 Expansion module with a differential pressure sensor +/- 500 Pa.

168: MC10-PSM-5F (+/-150 Pa) MC10 Expansion module with a differential pressure sensor +/- 150 Pa.

167: MC10-PSM-8F (+/-400 Pa) MC10 Expansion module with a differential pressure sensor +/- 400 Pa.

169: MC10-PSM-9F (+/-1000 Pa) MC10 Expansion module with a differential pressure sensor +/- 1000 Pa.

224: MC10-MOD (Modbus) MC10 Expansion module with a Modbus server interface.

208: MC10-PTC (Temperature) MC10 Expansion module for connection of PTC temperature sensors.

194: MC10-DI3 (3x DIN) MC10 Expansion module with 3 Digital Inputs.

176: MC10-AO1 (1x Analog Output) MC10 Expansion module with one analog voltage or current output.

177: MC10-AIO3 (3x Analog Input/Output) MC10 Expansion module with 3 analog voltage or current inputs or outputs.

178: MC10-AO2 (2x Analog Output) MC10 Expansion module with 2 analog voltage outputs.

225: MC10-RTC (Real Time Clock)

192: MC10-DO2 (2x Relay) MC10 Expansion module with 2 Relays with changeover resp. working contact (SPDT).

193: MC10-DO3 (3x Relay) MC10 Expansion module with 3 Relays with working contact.

3.66 MC10 Expansion Slot 3 (Input Register 54)

Show which MC10 expansion module is slotted.

Value Range

0: -

161: MC10-PSM-6B (0 Pa - 300 Pa) MC10 Expansion module with a differential pressure sensor 0 Pa to 300 Pa.

162: MC10-PSM-5B (+/-150 Pa) MC10 Expansion module with a differential pressure sensor +/- 150 Pa.

163: MC10-PSM-2B (0 Pa - 1000 Pa) MC10 Expansion module with a differential pressure sensor 0 Pa to 1000 Pa.

164: MC10-PSM-0D (+/-2500 Pa) MC10 Expansion module with a differential pressure sensor +/- 2500 Pa.

166: MC10-PSM-7E (+/-500 Pa) MC10 Expansion module with a differential pressure sensor +/- 500 Pa.

168: MC10-PSM-5F (+/-150 Pa) MC10 Expansion module with a differential pressure sensor +/- 150 Pa.

167: MC10-PSM-8F (+/-400 Pa) MC10 Expansion module with a differential pressure sensor +/- 400 Pa.

169: MC10-PSM-9F (+/-1000 Pa) MC10 Expansion module with a differential pressure sensor +/- 1000 Pa.

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208: MC10-PTC (Temperature) MC10 Expansion module for connection of PTC temperature sensors.

194: MC10-DI3 (3x DIN) MC10 Expansion module with 3 Digital Inputs.

176: MC10-AO1 (1x Analog Output) MC10 Expansion module with one analog voltage or current output.

177: MC10-AIO3 (3x Analog Input/Output) MC10 Expansion module with 3 analog voltage or current inputs or outputs.

178: MC10-AO2 (2x Analog Output) MC10 Expansion module with 2 analog voltage outputs.

225: MC10-RTC (Real Time Clock)

192: MC10-DO2 (2x Relay) MC10 Expansion module with 2 Relays with changeover resp. working contact (SPDT).

193: MC10-DO3 (3x Relay) MC10 Expansion module with 3 Relays with working contact.

3.67 MC10 Expansion Slot 4 (Input Register 55)

Show which MC10 expansion module is slotted.

Value Range

0: -

161: MC10-PSM-6B (0 Pa - 300 Pa) MC10 Expansion module with a differential pressure sensor 0 Pa to 300 Pa.

162: MC10-PSM-5B (+/-150 Pa) MC10 Expansion module with a differential pressure sensor +/- 150 Pa.

163: MC10-PSM-2B (0 Pa - 1000 Pa) MC10 Expansion module with a differential pressure sensor 0 Pa to 1000 Pa.

164: MC10-PSM-0D (+/-2500 Pa) MC10 Expansion module with a differential pressure sensor +/- 2500 Pa.

166: MC10-PSM-7E (+/-500 Pa) MC10 Expansion module with a differential pressure sensor +/- 500 Pa.

168: MC10-PSM-5F (+/-150 Pa) MC10 Expansion module with a differential pressure sensor +/- 150 Pa.

167: MC10-PSM-8F (+/-400 Pa) MC10 Expansion module with a differential pressure sensor +/- 400 Pa.

169: MC10-PSM-9F (+/-1000 Pa) MC10 Expansion module with a differential pressure sensor +/- 1000 Pa.

224: MC10-MOD (Modbus) MC10 Expansion module with a Modbus server interface.

208: MC10-PTC (Temperature) MC10 Expansion module for connection of PTC temperature sensors.

194: MC10-DI3 (3x DIN) MC10 Expansion module with 3 Digital Inputs.

176: MC10-AO1 (1x Analog Output) MC10 Expansion module with one analog voltage or current output.

177: MC10-AIO3 (3x Analog Input/Output) MC10 Expansion module with 3 analog voltage or current inputs or outputs.

178: MC10-AO2 (2x Analog Output) MC10 Expansion module with 2 analog voltage outputs.

225: MC10-RTC (Real Time Clock)

192: MC10-DO2 (2x Relay) MC10 Expansion module with 2 Relays with changeover resp. working contact (SPDT).

193: MC10-DO3 (3x Relay) MC10 Expansion module with 3 Relays with working contact.

3.68 Air Controller Type (Input Register 57)

Shows the air controller type of the device.

3.69 Washer Operating (Input Register 58)

Returns true if washer is operating (washer operating digital input function).

3.70 Washer Alarm (Input Register 59)

Returns true if washer alarm is active.

3.71 Washer Warning (Input Register 60)

Returns true if washer warning is active.

3.72 Washer Pressure filtered (Input Register 61)

Shows the current filtered washer pressure.

3.73 Duct Area (Input Register 62)

Shows the area of the duct.

3.74 Duct Area Factor (Input Register 63)

Shows the factor with which the duct area should influence the balancing.

3.75 Sum Exhaust (Input Register 64)

The current sum of the balanced exhaust volume flow.

3.76 Sum Supply (Input Register 65)

The current sum of the balanced supply volume flow.

3.77 Balancing Aggregated Alarm (Input Register 66)

Returns true if balancing alarm is active (aggregation of all remote device alarm states)

3.78 Balancing Simultaneity Alarm (Input Register 67)

An alarm is triggered as soon as the balanced exhaust volume flow is greater than the balancing simultaneity value for the time set here.



The information and data contained in this documentation have been compiled to the best of our knowledge and in accordance with the current state of the art (subject to technical changes). The currently valid version applies. The proven properties of SCHNEIDER products are based on the use of the products recommended in this documentation. Diverging situations and individual cases are not taken into account, so that we cannot assume any warranty and liability.

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Do you have any questions? We look forward to your message:

Tel. +49 6171 88479-0

info@schneider-elektronik.de