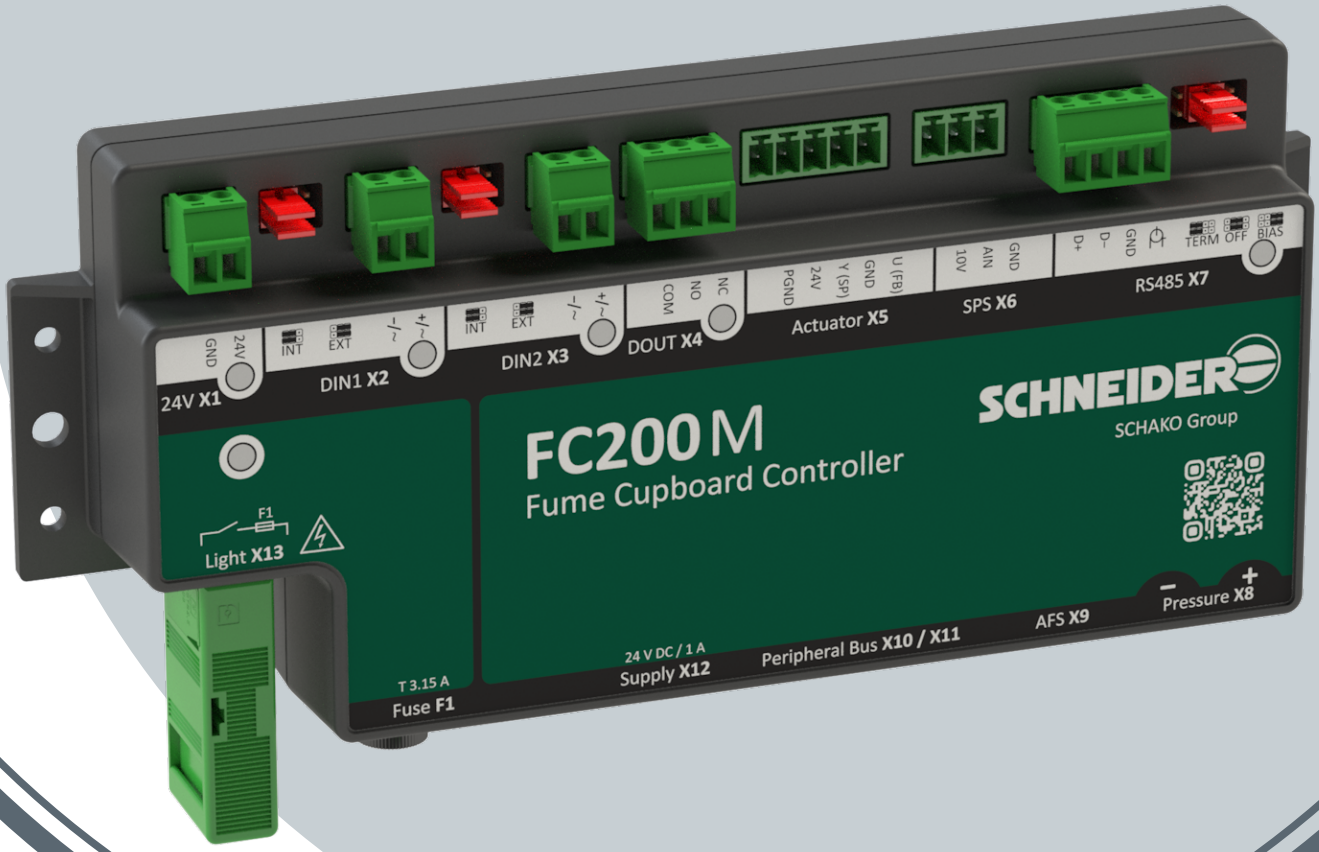

Modbus Datapoint Table

Fume Cupboard Controller FC200

SCHNEIDER
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	0	Light	1		(3.37)
Holding Register	1	Night Mode Local	1		(3.2)
Holding Register	2	Override Mode Local	1		(3.3)
Holding Register	3	Off Mode Local	1		(3.4)
Holding Register	4	Night Mode Permanent	1		(3.5)
Holding Register	5	Override Mode Permanent	1		(3.6)
Holding Register	6	Off Mode Permanent	1		(3.7)
Holding Register	7	Button Quit Pressed	1		(3.8)
Holding Register	8	Button Light Pressed	1		(3.9)
Holding Register	9	Button On/Off Pressed	1		(3.10)
Holding Register	10	Setpoint Relay 1	1		(3.11)
Holding Register	11	Setpoint Analog Output 1	0.001	V	(3.12)
Holding Register	12	Setpoint Analog Output 2	0.001	V	(3.13)
Holding Register	13	Setpoint Damper	1	%	(3.14)
Holding Register	14	Operating Mode Forced	1		(3.15)
Holding Register	15	Open Sash Request	1		(3.16)
Holding Register	16	Close Sash Request	1		(3.17)
Holding Register	17	Volume Flow Setpoint	1	m³/h	(3.18)
Holding Register	18	Pressure Setpoint	1	Pa	(3.19)
Holding Register	19	Volume Flow Setpoint Offset	1	m³/h	(3.20)
Input Register	0	Device Type	1		(3.21)
Input Register	1	Version (1/3)	1		(3.22)
Input Register	2	Version (2/2)	1		(3.23)
Input Register	3	Version (3/3)	1		(3.24)
Input Register	4	Alarms and Warnings	1		(3.25)

Type	Index	Name	Resolution	Unit	Description
Input Register	5	Runtime Current [2/2]	45.51039912620034	Day	(3.26)
Input Register	6	Runtime Current [1/2]	1	min	(3.27)
Input Register	7	Total Current [2/2]	45.51039912620034	Day	(3.28)
Input Register	8	Total Current [1/2]	1	min	(3.29)
Input Register	9	Face Velocity	0.01	m/s	(3.30)
Input Register	10	Duct Airflow	0.1	m/s	
Input Register	11	Volume Flow	1	m³/h	(3.31)
Input Register	12	Pressure Volume Flow	1	Pa	(3.32)
Input Register	13	Actuator Setpoint	1	%	(3.33)
Input Register	14	Actuator Position	1	%	(3.34)
Input Register	15	Sash Position	1	%	(3.35)
Input Register	16	Sash State	1		(3.36)
Input Register	17	Light	1		(3.37)
Input Register	18	Alarm	1		(3.38)
Input Register	19	Buzzer	1		(3.39)
Input Register	20	Operating Mode	1		(3.40)
Input Register	21	Day Mode	1		(3.41)
Input Register	22	Night Mode	1		(3.42)
Input Register	23	Override Mode	1		(3.43)
Input Register	24	Off Mode	1		(3.44)
Input Register	25	DIN 1 Value	1		(3.45)
Input Register	26	DIN 2 Value	1		(3.46)
Input Register	27	Relay 1 Value	1		(3.47)
Input Register	28	Analog Interface 1	0.001	V	(3.48)
Input Register	29	Analog Interface 2	0.001	V	(3.49)
Input Register	30	Air Controller Type	1		(3.50)
Input Register	31	Duct Area	1		(3.51)

Type	Index	Name	Resolution	Unit	Description
Input Register	32	Duct Area Factor	1		(3.52)
		End of Table			

3 Descriptions

3.1 Light (Holding Register 0)

Returns true if the fume hood cupboard light is enabled. Writing to this register has the same priority as pressing a button locally.

Value Range
0: Off
1: On

3.2 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.

3.3 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.

3.4 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.

3.5 Night Mode Permanent (Holding Register 4)

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

3.6 Override Mode Permanent (Holding Register 5)

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

3.7 Off Mode Permanent (Holding Register 6)

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

3.8 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.

3.9 Button Light Pressed (Holding Register 8)

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

3.10 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.

3.11 Setpoint Relay 1 (Holding Register 10)

Directly sets digital output 1. Only available if Relay 1 is configured to use ”Modbus” as its source.

3.12 Setpoint Analog Output 1 (Holding Register 11)

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

3.13 Setpoint Analog Output 2 (Holding Register 12)

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

3.14 Setpoint Damper (Holding Register 13)

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

3.15 Operating Mode Forced (Holding Register 14)

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

Value Range
0: None No operating mode forced.
1: Day
2: Night
3: Override
4: Off

3.16 Open Sash Request (Holding Register 15)

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

3.17 Close Sash Request (Holding Register 16)

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

3.18 Volume Flow Setpoint (Holding Register 17)

Overrides the Volume Flow Working Height Setpoint configuration parameter until the next reboot.

3.19 Pressure Setpoint (Holding Register 18)

Overrides the Pressure Day Setpoint configuration parameter.

3.20 Volume Flow Setpoint Offset (Holding Register 19)

Sets an Offset to the Volume Flow Setpoint in operating mode day

3.21 Device Type (Input Register 0)

Shows the device type ID.

Value Range
0: Unknown
16: FC500
32: VAV500
48: LCO500
64: VCP500
80: DPC500
96: DPO500
112: RMC700
144: ICM500
160: FC600
176: FC400
192: FM400
208: VAV400
224: S200
225: FC200
226: FM200
227: VAV200

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

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

3.23 Version (2/2) (Input Register 2)

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

3.24 Version (3/3) (Input Register 3)

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

3.25 Alarms and Warnings (Input Register 4)

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

3.26 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.

3.27 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.

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

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

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

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

3.30 Face Velocity (Input Register 9)

The current face velocity, measured with the connected airflow sensor.

3.31 Volume Flow (Input Register 11)

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

3.32 Pressure Volume Flow (Input Register 12)

The current differential pressure, measured with the integrated differential pressure sensor.

3.33 Actuator Setpoint (Input Register 13)

The current actuator setpoint in %.

3.34 Actuator Position (Input Register 14)

The current actuator position in %.

3.35 Sash Position (Input Register 15)

The current sash position, measured with the connected sash position sensor.

3.36 Sash State (Input Register 16)

The current sash state.

Value Range
0: Unknown The position sensor is not calibrated or the configuration is incorrect.
1: Not Connected The position sensor is not connected.
2: Broken The position sensor is outside the calibrated range, cable may have broken.
3: Closed The sash is completely closed.
4: Below Working Height The sash is not closed, but under working height.
5: Working Height The sash is at working height.
6: Above Working Height The sash is above working height.

3.37 Light (Input Register 17)

The current status of the fume hood cupboard light relay (on or off).

Value Range
0: Off
1: On

3.38 Alarm (Input Register 18)

Current alarm state of the Device (active or inactive)

Value Range
0: Inactive
1: Active

3.39 Buzzer (Input Register 19)

Current state ot the buzzer (aktive or inactive)

Value Range
0: Inactive
1: Active

3.40 Operating Mode (Input Register 20)

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

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

3.41 Day Mode (Input Register 21)

Shows if the operating mode is in day mode.

Value Range
0: Inactive
1: Active

3.42 Night Mode (Input Register 22)

Shows if the operating mode is in night mode.

Value Range
0: Inactive
1: Active

3.43 Override Mode (Input Register 23)

Shows if the operating mode is in override mode.

Value Range
0: Inactive
1: Active

3.44 Off Mode (Input Register 24)

Shows if the operating mode is in off mode.

Value Range
0: Inactive
1: Active

3.45 DIN 1 Value (Input Register 25)

The current status of digital input 1.

Value Range
0: Inactive
1: Active

3.46 DIN 2 Value (Input Register 26)

The current status of digital input 2.

Value Range
0: Inactive
1: Active

3.47 Relay 1 Value (Input Register 27)

Current state of relay 1

Value Range
0: Inactive
1: Active

3.48 Analog Interface 1 (Input Register 28)

The current voltage at the analog interface 1.

3.49 Analog Interface 2 (Input Register 29)

The current voltage at the analog interface 2.

3.50 Air Controller Type (Input Register 30)

Shows the air controller type of the device.

Value Range
0: Unknown
1: Independent Exhaust The device determines the exhaust air volume independently.
2: Controlled Exhaust The device is given the exhaust air volume.
3: Controlled Supply The device is given the supply air volume.
4: Independent Supply The device determines the supply air volume independently.

3.51 Duct Area (Input Register 31)

Shows the area of the duct.

3.52 Duct Area Factor (Input Register 32)

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

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:

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