Configuration Values
Variable Air Volume Controller
VAV400

General Information

Device Type Variable Air Volume Controller VAV400

Firmware Version VAV400 1.9a

Firmware Release Date 2025-09-22

This document lists all configuration and display values that can be read or configured via the service interface of the VAV400. The visibility of values may depend on several factors. In general, entries that are rarely required are hidden by default. These can be identified by the *Expert Setting* symbol ⬦. To make them visible, activate Expert Mode in the settings of the PC4500.

The type of each parameter can be identified by the symbol preceding it.

🗩 Standard. Basic configuration for commissioning.

🔧 Advanced. Configuration or display values that are less frequently required.

🎓 Expert. These values normally remain unchanged in all standard applications.

In addition, individual parameters or entire groups may be hidden in the configuration software depending on the state of other values. For example, configuration parameters of analog interfaces only appear if these interfaces are present and active in the respective device variant. If such dependencies exist, they are indicated for the corresponding parameter.

Example:

> Availability depends on **Other Parameter** .

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1 Present Values

1.0.1 💬 Volume Flow

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

1.0.2 💬 Pressure Volume Flow

The current differential pressure for the volume flow calculation.

> **Resolution** 0.01 Pa

1.0.3 💬 Pressure Room / Duct

Pressure for pressure control.

> **Resolution** 0.01 Pa

1.0.4 💬 Damper State

Current Damper State

> Availability depends on Actuator Type .

Disconnected *(Default Value)*	The damper actuator is not connected.
Blocked	The damper is blocked.
Steady	The damper position is currently stable.
Opening	The damper is currently opening.
Closing	The damper is currently closing.
Fully Open	The damper is completely opened.
Fully Closed	The damper is completely closed.
Limit Min	The damper is at the lower limit.
Limit Max	The damper is at the upper limit.

1.0.5 💬 Damper Position

The current damper position.

> Availability depends on Actuator Type .

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1.0.6 ⬭ Fan Speed

Current fan speed.

> Availability depends on Actuator Type .

1.0.7 ⬭ Temperature

The current temperature.

> **Resolution** 0.01 °C

1.0.8 ⬭ DIN 1 Value

The current status of the digital input.

> **LOW** *(Default Value)*
>
> **HIGH**

1.0.9 ⬭ DIN 2 Value

The current status of the digital input.

> Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

> **LOW** *(Default Value)*
>
> **HIGH**

1.0.10 ⬭ DIN 3 Value

The current status of the digital input.

> Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

> **LOW** *(Default Value)*
>
> **HIGH**

1.0.11 ⬭ DIN 4 Value

The current status of the digital input.

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Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

LOW *(Default Value)*

HIGH

1.0.12 DIN 5 Value

The current status of the digital input.

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

LOW *(Default Value)*

HIGH

1.0.13 Relay 1 State

Current state of the relay

LOW *(Default Value)*

HIGH

1.0.14 Relay 2 State

Current state of the relay

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

LOW *(Default Value)*

HIGH

1.0.15 Relay 3 State

Current state of the relay

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

LOW *(Default Value)*

HIGH

1.0.16 💬 Relay 4 State

Current state of the relay

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

LOW *(Default Value)*

HIGH

1.0.17 💬 Relay 5 State

Current state of the relay

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

LOW *(Default Value)*

HIGH

1.0.18 💬 Analog Interface 1

The current voltage at the analog interface.

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 HW Version .

Resolution 0.001 V

1.0.19 💬 Analog Interface 2

The current voltage at the analog interface.

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 HW Version .

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| **Resolution** 0.001 V |

1.0.20 💬 Analog Interface 3

The current voltage at the analog interface.

Availability depends on `Expected Module Slot 1` `Expected Module Slot 2` `Expected Module Slot 3` `HW Version` .

| **Resolution** 0.001 V |

1.0.21 💬 Analog Interface 4

The current voltage at the analog interface.

Availability depends on `Expected Module Slot 1` `Expected Module Slot 2` `Expected Module Slot 3` `HW Version` .

| **Resolution** 0.001 V |

1.0.22 💬 Analog Interface 5

The current voltage at the analog interface.

Availability depends on `Expected Module Slot 1` `Expected Module Slot 2` `Expected Module Slot 3` `HW Version` .

| **Resolution** 0.001 V |

1.0.23 💬 Alarm

Current alarm state of the Device (active or inactive)

Inactive *(Default Value)*

Active

1.0.24 💬 Operating Mode

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

> **Day** *(Default Value)*
>
> **Night**
>
> **Override**
>
> **Off**

2 Operating Mode

2.1 General

2.1.1 ⚒ Startup Mode

Defines the operating mode in which the device starts operating after a restart - for example, due to a power failure. In addition to the four operating modes DAY, NIGHT, OVERRIDE and OFF, the „Previous State" option is also available. If this option is selected, the device always returns to the last active state after a restart.

> **Previous State**   Starts in the last operating mode before restarting the device.
>
> **Day** *(Default Value)*
>
> **Night**
>
> **Override**
>
> **Off**

2.1.2 ⚒ Follow Room Operating Mode

Determines how the local operating mode follows the room operating mode.

> **Never** *(Default Value)*   The local operating mode never follows the room operating mode.
>
> **Always Permanent**   The local operating mode always follows the room operating mode permantent (local operating mode can not been different from room operating mode).
>
> **All Change Events**   The local operating mode always follows the changes of the room operating mode.
>
> **Night Change Event**   The local operating mode follows the changes of the room operating mode in night.

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2.2   Day

2.2.1   🔧 Actuator Mode

Determines the function of the actuator in the operating mode day.

Stop (Freeze)	The current actuator position is retained. No control takes place!
Control *(Default Value)*	The actuator is controlled by the control system. Depending on the configured control type, the setpoint volume flow or face velocity is controlled.
Close Completely	The actuator is closed completely (without consideration of actuator limits).
Open Completely	The actuator is opened completely (without consideration of actuator limits).
Upper Limit	The upper actuator limit is the highest actuator position which may be approached during the control process.
Lower Limit	The lower actuator limit is the lowest actuator position which may be approached during the control process.
Modbus	The actuator position is determined by the Modbus data point.
Swing	The actuator alternately opens completely and closes completely (for testing purposes).

2.3   Night

2.3.1   🔧 Actuator Mode

Determines the function of the actuator in the operating mode night.

Stop (Freeze)	The current actuator position is retained. No control takes place!
Control *(Default Value)*	The actuator is controlled by the control system. Depending on the configured control type, the setpoint volume flow or face velocity is controlled.
Close Completely	The actuator is closed completely (without consideration of actuator limits).
Open Completely	The actuator is opened completely (without consideration of actuator limits).
Upper Limit	The upper actuator limit is the highest actuator position which may be approached during the control process.
Lower Limit	The lower actuator limit is the lowest actuator position which may be approached during the control process.

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Modbus	The actuator position is determined by the Modbus data point.
Swing	The actuator alternately opens completely and closes completely (for testing purposes).

2.3.2   Endless Night Mode Duration

Determines whether the night operating mode can be active endlessly (adjustable duration or endless).

Adjustable Duration

Endless *(Default Value)*

2.3.3   Night Mode Duration

Night operating mode is deactivated after the night mode duration has elapsed. Only if night operating mode endless is configured to 'Adjustable duration'.

Availability depends on   Endless Night Mode Duration .

Minimum 0 min
Maximum 5999 min
Default Value 480 min

2.4   Override

2.4.1   Actuator Mode

Determines the function of the actuator in the operating mode override.

Stop (Freeze)	The current actuator position is retained. No control takes place!
Control *(Default Value)*	The actuator is controlled by the control system. Depending on the configured control type, the setpoint volume flow or face velocity is controlled.
Close Completely	The actuator is closed completely (without consideration of actuator limits).
Open Completely	The actuator is opened completely (without consideration of actuator limits).
Upper Limit	The upper actuator limit is the highest actuator position which may be approached during the control process.

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Lower Limit	The lower actuator limit is the lowest actuator position which may be approached during the control process.
Modbus	The actuator position is determined by the Modbus data point.
Swing	The actuator alternately opens completely and closes completely (for testing purposes).

2.4.2 ⚙ Endless Override Mode Duration

Determines whether the override operating mode can be active endlessly (adjustable duration or endless).

Adjustable Duration *(Default Value)*

Endless

2.4.3 ⚙ Mode Duration

Once the maximum override duration has elapsed, the override operating mode is deactivated. Only if operating mode Override endless is configured to Adjustable duration.

Availability depends on Endless Override Mode Duration .

Minimum 0 min

Maximum 5999 min

Default Value 60 min

2.4.4 ⚙ Priority

Determines the priority of the override operating mode in comparison to the night operating mode.

Above 'Night' *(Default Value)*

Below 'Night'

2.5 Off

2.5.1 ⚙ Actuator Mode

Determines the function of the actuator in the operating mode off.

Stop (Freeze)   The current actuator position is retained. No control takes place!

Control	The actuator is controlled by the control system. Depending on the configured control type, the setpoint volume flow or face velocity is controlled.
Close Completely *(Default Value)*	The actuator is closed completely (without consideration of actuator limits).
Open Completely	The actuator is opened completely (without consideration of actuator limits).
Upper Limit	The upper actuator limit is the highest actuator position which may be approached during the control process.
Lower Limit	The lower actuator limit is the lowest actuator position which may be approached during the control process.
Modbus	The actuator position is determined by the Modbus data point.
Swing	The actuator alternately opens completely and closes completely (for testing purposes).

3 Control

3.1 General

3.1.1 🗩 Control Type

It is essential to ensure that all components and sensors required for the selected control type are connected and that the corresponding setpoints have been programmed.

Volume Flow *(Default Value)*	Volume flow control with constant setpoint or setpoint via Modbus or analog. With: Differential pressure sensor.
Room Pressure	Room pressure control with constant setpoint or setpoint via Modbus or analog and optional door contact. With: Differential pressure sensor and on-site door contact.
Pressure Volume Flow Cascade	Pressure volume flow cascade control with constant setpoint or setpoint via Modbus or analog and optional door contact. With: differential pressure sensor for volume flow calculation, differential pressure sensor for room pressure measurement, and on-site door contact.

3.1.2 ⬡ Control Algorithm

Determines the control algorithm used. If the control algorithm is changed, the controller parameters may need to be re-determined.

V1

V2 *(Default Value)*

3.1.3 　 Air Duct Type

Specifies whether the controller is installed in a supply air or exhaust air duct. This information is required for both control purposes and for transmission to the balancing device.

Supply *(Default Value)*	The device is mounted on an air suply duct
Exhaust	The device is mounted on an air exhaust duct

3.1.4 　 Duct Shape

Determines the shape of the duct. This affects how the duct area is calculated.

Unknown *(Default Value)*

Round

Square

Rectangle

3.1.5 　 Duct X

Determines the width or diameter of the duct.

Availability depends on ⬚ Duct Shape .

Minimum 0 mm

Maximum 5000 mm

Default Value 250 mm

3.1.6 　 Duct Y

Determines the height of the duct.

Availability depends on ⬚ Duct Shape .

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Minimum 0 mm

Maximum 5000 mm

Default Value 400 mm

3.1.7 💬 Duct Area Factor

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

Availability depends on [**Duct Shape**] .

Minimum 1 %

Maximum 800 %

Default Value 100 %

3.2 Volume Flow Calculation

3.2.1 💬 Constant of measuring unit (C-Value)

The C-Value is used when calculating the volume flow from a differential pressure, with the formula below.

$$\dot{V} = c \sqrt{\frac{\Delta p}{\rho}}$$

Minimum 0.1

Maximum 4999.9

Default Value 96.0

Resolution 0.1

3.2.2 💬 Air Density

The air density ρ (Rho) is required to calculate the volume flow, see Constant of measuring unit (C-Value).

Minimum 0.50 kg/m³

Maximum 2.00 kg/m³

Default Value 1.20 kg/m³

Resolution 0.01 kg/m³

3.2.3 💬 Pressure Volume Flow

The current differential pressure for the volume flow calculation.

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> **Resolution** 0.01 Pa

3.2.4 💬 Volume Flow

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

3.3 Actuator

3.3.1 💬 Actuator Type

Determines the actuator type (damper, fan or no actuator).

> **Damper** *(Default Value)* A damper motor as an actuator.
>
> **Fan** A fan as actuator. Controlled via analog output with 'Frequency Converter' function.
>
> No actuator selected. The device only monitors the configured setpoints.

3.3.2 💬 Slope Time Upwards

The ramp-up time determines the minimum time the high speed actuator needs to open the control damper from 0 % to 100 %. The ramp time does not determine the control speed but limits the maximum speed of the control damper movement.

> **Minimum** 0 s
>
> **Maximum** 99 s
>
> **Default Value** 3 s

3.3.3 💬 Slope Time Downwards

The ramp-down time determines the minimum time the high speed actuator needs to close the control damper from 100 % to 0 %. The ramp time does not determine the control speed but limits the maximum speed of the control damper movement.

> **Minimum** 0 s
>
> **Maximum** 99 s
>
> **Default Value** 5 s

3.3.4 🔧 Upper Limit

The upper actuator limit is the highest actuator position which may be approached during the control process.

Minimum 0 %

Maximum 100 %

Default Value 100 %

3.3.5 🔧 Lower Limit

The lower actuator limit is the lowest actuator position which may be approached during the control process.

Minimum 0 %

Maximum 100 %

Default Value 0 %

3.3.6 💬 Damper State

Current Damper State

Availability depends on Actuator Type .

Disconnected *(Default Value)*	The damper actuator is not connected.
Blocked	The damper is blocked.
Steady	The damper position is currently stable.
Opening	The damper is currently opening.
Closing	The damper is currently closing.
Fully Open	The damper is completely opened.
Fully Closed	The damper is completely closed.
Limit Min	The damper is at the lower limit.
Limit Max	The damper is at the upper limit.

3.3.7 💬 Damper Position

The current damper position.

Availability depends on Actuator Type .

3.3.8 💬 Fan Speed

Current fan speed.

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Availability depends on ⬭ **Actuator Type** .

3.4 Alarm

3.4.1 ▢ Alarm State

Current alarm state of the Device (inactive, pending, active or silenced)

Inactive *(Default Value)*	The alarm is inactive.
Pending	An alarm source reports an alarm, the alarm delay has not yet expired.
Active	The alarm is active.
Silenced	The alarm is active, but silenced.

3.4.2 ⚒ Alarm Delay Air

An alarm is triggered as soon as the actual value of the controlled variable has been outside the alarm limits for the time set here.

Minimum 1 s
Maximum 60 s
Default Value 10 s

3.4.3 ⚒ Alarm Delay External

An alarm is triggered as soon as a digital input with the external alarm function is active for the time set here.

Minimum 1 s
Maximum 60 s
Default Value 10 s

3.4.4 ⚒ Alarm Delay Temperature

An alarm is triggered as soon as a digital input with the temperature alarm function is active or the temperature has exceeded the alarm value for the time set here.

Minimum 1 s
Maximum 60 s
Default Value 10 s

3.4.5 ⚒ Start Alarm Delay

After switching on the VAV400 volume flow controller, only visual but no acoustic alarms are triggered within the time configured here.

Minimum 5 s

Maximum 900 s

Default Value 30 s

3.4.6 Endless Buzzer Duration

Determines whether the buzzer duration can be endless.

Adjustable Duration *(Default Value)*

Endless

3.4.7 Max Buzzer Duration

The maximum time after which the acoustic alarm is deactivated. Only if buzzer duration endless is configured to 'Adjustable duration'.

Availability depends on Endless Buzzer Duration .

Minimum 0 s

Maximum 900 s

Default Value 60 s

3.5 Volume Flow

3.5.1 Control Factor

Determines the control speed of the volume flow controller. Higher values accelerate the control function, but also increase the risk of overshoot. Lower values lead to slower control, which is more stable in return.

Minimum 0.0001

Maximum 0.9999

Default Value 0.0200

Resolution 0.0001

3.5.2 Control Bias

The control bias of the volume flow controller determines how strongly the controller is slowed down within a close range of the setpoint. Small values lead to increased deceleration. A bias of 0.5 corresponds to a uniform speed independent of the control deviation.

Minimum 0.0001

Maximum 0.6000

Default Value 0.2000

Resolution 0.0001

3.5.3 🔧 Deadband Auto

Determines whether the deadband should be determined automatically.

Manual *(Default Value)*

Automatic

3.5.4 🔧 Deadband

The actual value of the controller must move away from the setpoint by at least this value to move the actuator of a stationary controller. Should be at least as large as the smallest possible value change of the actuator.

Availability depends on ‎ Deadband Auto ‎ .

Minimum 0 m³/h

Maximum 100 m³/h

Default Value 20 m³/h

3.5.5 🔧 Deadband Hysteresis

Hysteresis of the volume flow controller. Within this range the actuator is always kept unchanged. The value is given as a percentage of the deadband, so it must be between 0 % and 100 %.

Availability depends on ‎ Deadband Auto ‎ .

Minimum 0 %

Maximum 100 %

Default Value 50 %

3.6 Pressure

3.6.1 💬 Control Factor

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Minimum 0.0001

Maximum 0.9000

Default Value 0.0020

Resolution 0.0001

3.6.2 💭 Control Bias

Minimum 0.0001

Maximum 0.9000

Default Value 0.2000

Resolution 0.0001

3.6.3 💭 Deadband

Minimum 0.0 Pa

Maximum 20.0 Pa

Default Value 1.0 Pa

Resolution 0.1 Pa

3.6.4 💭 Filter Time

Minimum 0.02 s

Maximum 9.00 s

Default Value 0.20 s

Resolution 0.01 s

4 Setpoints

4.1 Volume Flow

Availability depends on Control Type .

4.1.1 💭 Setpoint Source

Determines from which source the setpoint should be obtained.

Configuration *(Default Value)*

Modbus

Analog

4.1.2 ⬚ Current Setpoint

Shows the current Volume Flow setpoint.

4.1.3 ⬚ Volume Flow

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

4.1.4 ⬚ Unit

Determines the unit in which the volume flow value is displayed.

m³/h *(Default Value)*

l/s

4.1.5 ⬚ Day

Setpoint value for volume flow control in day operating mode.

Availability depends on Setpoint Source .

Minimum 0 m³/h

Maximum 49999 m³/h

Default Value 480 m³/h

4.1.6 ⬚ Night

Setpoint value for volume flow control in night operating mode.

Availability depends on Setpoint Source .

Minimum 0 m³/h

Maximum 49999 m³/h

Default Value 200 m³/h

4.1.7 ⬚ Override

Setpoint value for volume flow control in override operating mode.

Availability depends on Setpoint Source .

Minimum 0 m³/h

Maximum 49999 m³/h

Default Value 800 m³/h

4.1.8 Off

Setpoint value for volume flow control in off operating mode.

Availability depends on Setpoint Source .

Minimum 0 m³/h

Maximum 49999 m³/h

Default Value 0 m³/h

4.1.9 Cascade minimum offset

Determines the minimum offset by which the pressure controller may change the volume flow setpoint.

Availability depends on Control Type .

Minimum -4000 m³/h

Maximum 0 m³/h

Default Value -200 m³/h

4.1.10 Cascade maximum offset

Determines the maximum offset by which the pressure controller may change the volume flow setpoint.

Availability depends on Control Type .

Minimum 0 m³/h

Maximum 4000 m³/h

Default Value 200 m³/h

4.1.11 Alarm Quota

Percentage deviation from the setpoint value of the volume flow control from which an alarm is triggered.

Minimum 0 %

Maximum 50 %

Default Value 3 %

4.2   Pressure

Availability depends on **Control Type** .

4.2.1 ⬛ Setpoint Source

Determines from which source the setpoint should be obtained.

Configuration *(Default Value)*

Modbus

Analog

4.2.2 ⬛ Current Setpoint

Shows the current pressure setpoint.

Resolution 0.01 Pa

4.2.3 ⬛ Pressure

The current differential pressure.

Resolution 0.01 Pa

4.2.4 ⬛ Unit

Determines the unit in which the pressure value is displayed.

Pa *(Default Value)*

mbar

4.2.5 ⬛ Day

Setpoint value for pressure control in day operating mode.

Availability depends on **Setpoint Source** .

Minimum -499 Pa

Maximum 499 Pa

Default Value 30 Pa

4.2.6 💬 Night

Setpoint value for pressure control in night operating mode.

Availability depends on Setpoint Source .

Minimum -499 Pa

Maximum 499 Pa

Default Value 10 Pa

4.2.7 💬 Override

Setpoint value for pressure control in override operating mode.

Availability depends on Setpoint Source .

Minimum -499 Pa

Maximum 499 Pa

Default Value 50 Pa

4.2.8 💬 Off

Setpoint value for pressure control in off operating mode.

Availability depends on Setpoint Source .

Minimum -499 Pa

Maximum 499 Pa

Default Value 0 Pa

4.2.9 💬 Alarm Quota

Percentage deviation from the setpoint value of the pressure control from which an alarm is triggered.

Minimum 0 %

Maximum 50 %

Default Value 10 %

5 MC10 Modules

5.0.1 ⚙ Expected Module Slot 1

Expected MC10 expansion module in this slot. Only if the expected MC10 module matches the one actually present will it be used.

MC10-PSM-6B (0 Pa - 300 Pa) *(Default Value)*	MC10 Expansion module with a differential pressure sensor 0 Pa to 300 Pa.
MC10-PSM-5B (+/-150 Pa)	MC10 Expansion module with a differential pressure sensor +/- 150 Pa.
MC10-PSM-2B (0 Pa - 1000 Pa)	MC10 Expansion module with a differential pressure sensor 0 Pa to 1000 Pa.
MC10-PSM-0D (+/-2500 Pa)	MC10 Expansion module with a differential pressure sensor +/- 2500 Pa.
MC10-PSM-7E (+/-500 Pa)	MC10 Expansion module with a differential pressure sensor +/- 500 Pa.
MC10-PSM-5F (+/-150 Pa)	MC10 Expansion module with a differential pressure sensor +/- 150 Pa.
MC10-PSM-8F (+/-400 Pa)	MC10 Expansion module with a differential pressure sensor +/- 400 Pa.
MC10-PSM-9F (+/-1000 Pa)	MC10 Expansion module with a differential pressure sensor +/- 1000 Pa.
MC10-MOD (Modbus)	MC10 Expansion module with a Modbus server interface.
MC10-PTC (Temperature)	MC10 Expansion module for connection of PTC temperature sensors.
MC10-DI3 (3x DIN)	MC10 Expansion module with 3 Digital Inputs.
MC10-AO1 (1x Analog Output)	MC10 Expansion module with one analog voltage or current output.
MC10-AIO3 (3x Analog Input/Output)	MC10 Expansion module with 3 analog voltage or current inputs or outputs.
MC10-AO2 (2x Analog Output)	MC10 Expansion module with 2 analog voltage outputs.
MC10-RTC (Real Time Clock)	
MC10-DO2 (2x Relay)	MC10 Expansion module with 2 Relays with changeover resp. working contact (SPDT).
MC10-DO3 (3x Relay)	MC10 Expansion module with 3 Relays with working contact.

5.0.2 ⚙ Expected Module Slot 2

Expected MC10 expansion module in this slot. Only if the expected MC10 module matches the one actually present will it be used.

(Default Value)

MC10-PSM-6B (0 Pa - 300 Pa)	MC10 Expansion module with a differential pressure sensor 0 Pa to 300 Pa.
MC10-PSM-5B (+/-150 Pa)	MC10 Expansion module with a differential pressure sensor +/- 150 Pa.
MC10-PSM-2B (0 Pa - 1000 Pa)	MC10 Expansion module with a differential pressure sensor 0 Pa to 1000 Pa.
MC10-PSM-0D (+/-2500 Pa)	MC10 Expansion module with a differential pressure sensor +/- 2500 Pa.
MC10-PSM-7E (+/-500 Pa)	MC10 Expansion module with a differential pressure sensor +/- 500 Pa.
MC10-PSM-5F (+/-150 Pa)	MC10 Expansion module with a differential pressure sensor +/- 150 Pa.
MC10-PSM-8F (+/-400 Pa)	MC10 Expansion module with a differential pressure sensor +/- 400 Pa.
MC10-PSM-9F (+/-1000 Pa)	MC10 Expansion module with a differential pressure sensor +/- 1000 Pa.
MC10-MOD (Modbus)	MC10 Expansion module with a Modbus server interface.
MC10-PTC (Temperature)	MC10 Expansion module for connection of PTC temperature sensors.
MC10-DI3 (3x DIN)	MC10 Expansion module with 3 Digital Inputs.
MC10-AO1 (1x Analog Output)	MC10 Expansion module with one analog voltage or current output.
MC10-AIO3 (3x Analog Input/Output)	MC10 Expansion module with 3 analog voltage or current inputs or outputs.
MC10-AO2 (2x Analog Output)	MC10 Expansion module with 2 analog voltage outputs.
MC10-RTC (Real Time Clock)	
MC10-DO2 (2x Relay)	MC10 Expansion module with 2 Relays with changeover resp. working contact (SPDT).
MC10-DO3 (3x Relay)	MC10 Expansion module with 3 Relays with working contact.

5.0.3 🔧 Expected Module Slot 3

Expected MC10 expansion module in this slot. Only if the expected MC10 module matches the one actually present will it be used.

(Default Value)

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

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

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

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

MC10-PSM-7E (+/-500 Pa)	MC10 Expansion module with a differential pressure sensor +/- 500 Pa.
MC10-PSM-5F (+/-150 Pa)	MC10 Expansion module with a differential pressure sensor +/- 150 Pa.
MC10-PSM-8F (+/-400 Pa)	MC10 Expansion module with a differential pressure sensor +/- 400 Pa.
MC10-PSM-9F (+/-1000 Pa)	MC10 Expansion module with a differential pressure sensor +/- 1000 Pa.
MC10-MOD (Modbus)	MC10 Expansion module with a Modbus server interface.
MC10-PTC (Temperature)	MC10 Expansion module for connection of PTC temperature sensors.
MC10-DI3 (3x DIN)	MC10 Expansion module with 3 Digital Inputs.
MC10-AO1 (1x Analog Output)	MC10 Expansion module with one analog voltage or current output.
MC10-AIO3 (3x Analog Input/Out-put)	MC10 Expansion module with 3 analog voltage or current inputs or outputs.
MC10-AO2 (2x Analog Output)	MC10 Expansion module with 2 analog voltage outputs.
MC10-RTC (Real Time Clock)	
MC10-DO2 (2x Relay)	MC10 Expansion module with 2 Relays with changeover resp. working contact (SPDT).
MC10-DO3 (3x Relay)	MC10 Expansion module with 3 Relays with working contact.

5.0.4 ▢ Auto Configure Slots

Automatically configures the configuration values for the expected module slot with the currently inserted module.

6   Relays

6.1   #1

6.1.1 ▢ Function

Determines the function of the relay.

	The relay is not active.
Mode Day	The relay is active when the device is in operating mode Day.
Mode Night	The relay is active when the device is in operating mode Night.
Mode Override	The relay is active when the device is in operating mode Override.

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Mode Off	The relay is active when the device is in operating mode Off.
Alarm Pending	The relay is active if the control value is outside the permissible alarm limit.
Alarm *(Default Value)*	The relay is active when the alarm is active.
Buzzer	Current state ot the buzzer (aktive or inactive)
Damper Actuator Active	The relay is active when the actuator is active and therefore the setpoint has not yet been reached.
Damper Actuator Blocked	The relay is active if an actuator blockage has been detected.
Modbus	
Balancing Alarm	Returns true if balancing alarm is active (aggregation of all remote device alarm states)

6.1.2 ☐ Connector Name

The connector name of the relay.

6.1.3 ☐ Polarity

Determines the polarity of the relay.

Normal *(Default Value)*
Inverted

6.2 #2

Availability depends on Expected Module Slot 1   Expected Module Slot 2   Expected Module Slot 3 .

6.2.1 ☐ Function

Determines the function of the relay.

	The relay is not active.
Mode Day	The relay is active when the device is in operating mode Day.
Mode Night *(Default Value)*	The relay is active when the device is in operating mode Night.
Mode Override	The relay is active when the device is in operating mode Override.
Mode Off	The relay is active when the device is in operating mode Off.

Alarm Pending	The relay is active if the control value is outside the permissible alarm limit.
Alarm	The relay is active when the alarm is active.
Buzzer	Current state ot the buzzer (aktive or inactive)
Damper Actuator Active	The relay is active when the actuator is active and therefore the setpoint has not yet been reached.
Damper Actuator Blocked	The relay is active if an actuator blockage has been detected.
Modbus	
Balancing Alarm	Returns true if balancing alarm is active (aggregation of all remote device alarm states)

6.2.2 💬 Connector Name

The connector name of the relay.

6.2.3 💬 Polarity

Determines the polarity of the relay.

Normal *(Default Value)*
Inverted

6.3 #3

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

6.3.1 💬 Function

Determines the function of the relay.

(Default Value)	The relay is not active.
Mode Day	The relay is active when the device is in operating mode Day.
Mode Night	The relay is active when the device is in operating mode Night.
Mode Override	The relay is active when the device is in operating mode Override.
Mode Off	The relay is active when the device is in operating mode Off.
Alarm Pending	The relay is active if the control value is outside the permissible alarm limit.

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Alarm	The relay is active when the alarm is active.
Buzzer	Current state ot the buzzer (aktive or inactive)
Damper Actuator Active	The relay is active when the actuator is active and therefore the setpoint has not yet been reached.
Damper Actuator Blocked	The relay is active if an actuator blockage has been detected.
Modbus	
Balancing Alarm	Returns true if balancing alarm is active (aggregation of all remote device alarm states)

6.3.2 ⬜ Connector Name

The connector name of the relay.

6.3.3 ⬜ Polarity

Determines the polarity of the relay.

Normal *(Default Value)*
Inverted

6.4 #4

Availability depends on ⬡Expected Module Slot 1⬡ ⬡Expected Module Slot 2⬡ ⬡Expected Module Slot 3⬡ .

6.4.1 ⬜ Function

Determines the function of the relay.

(Default Value)	The relay is not active.
Mode Day	The relay is active when the device is in operating mode Day.
Mode Night	The relay is active when the device is in operating mode Night.
Mode Override	The relay is active when the device is in operating mode Override.
Mode Off	The relay is active when the device is in operating mode Off.
Alarm Pending	The relay is active if the control value is outside the permissible alarm limit.
Alarm	The relay is active when the alarm is active.

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Buzzer	Current state ot the buzzer (aktive or inactive)
Damper Actuator Active	The relay is active when the actuator is active and therefore the setpoint has not yet been reached.
Damper Actuator Blocked	The relay is active if an actuator blockage has been detected.
Modbus	
Balancing Alarm	Returns true if balancing alarm is active (aggregation of all remote device alarm states)

6.4.2 ⬭ Connector Name

The connector name of the relay.

6.4.3 ⬭ Polarity

Determines the polarity of the relay.

Normal *(Default Value)*
Inverted

6.5 #5

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

6.5.1 ⬭ Function

Determines the function of the relay.

(Default Value)	The relay is not active.
Mode Day	The relay is active when the device is in operating mode Day.
Mode Night	The relay is active when the device is in operating mode Night.
Mode Override	The relay is active when the device is in operating mode Override.
Mode Off	The relay is active when the device is in operating mode Off.
Alarm Pending	The relay is active if the control value is outside the permissible alarm limit.
Alarm	The relay is active when the alarm is active.
Buzzer	Current state ot the buzzer (aktive or inactive)

Damper Actuator Active	The relay is active when the actuator is active and therefore the setpoint has not yet been reached.
Damper Actuator Blocked	The relay is active if an actuator blockage has been detected.
Modbus	
Balancing Alarm	Returns true if balancing alarm is active (aggregation of all remote device alarm states)

6.5.2 🗩 Connector Name

The connector name of the relay.

6.5.3 🗩 Polarity

Determines the polarity of the relay.

Normal *(Default Value)*

Inverted

7 Digital Inputs

7.1 General

7.1.1 🗩 Door Contact Delay

Determines the follow-up time of the digital input door contact sensor. The Control only starts again after the time configured here.

Minimum 0 s
Maximum 900 s
Default Value 10 s

7.2 #1

7.2.1 🗩 Function

Determines the function of the digital input.

No function selected.

Mode Off *(Default Value)*	Digital input active means that request operating mode off.
Mode Night	Digital input active means that request operating mode night.
Mode Override	Digital input active means that request operating mode override.
PIR	Digital input active means that a person is in front of the fume hood.
External Alarm	Digital input active means that an external alarm is present.
Temperature Alarm	Digital input active means that a temperature alarm is present.
Door Contact	Digital input active means that the door is open.
Quit	Digital input active means that button quit is pressed.
Room Mode permanently Off (switch)	Digital input active means that request room operating mode off.
Room Mode permanently Night (switch)	Digital input active means that request room operating mode night.
Room Mode permanently Override (switch)	Digital input active means that request room operating mode override.
Room Mode switch to Off (button)	Digital input switch to active means that the room operating mode should switch to off.
Room Mode switch to Night (button)	Digital input switch to active means that the room operating mode should switch to night.
Room Mode switch to Override (button)	Digital input switch to active means that the room operating mode should switch to override.
Room Mode switch to Day (button)	Digital input switch to active means that the room operating mode should switch to day.
Room Mode toggle Day/Night	Digital input switch to active means that the room operating mode should switch to day or night.
Room Mode toggle Day/Override	Digital input switch to active means that the room operating mode should switch to day or override.
Room Mode toggle Day/Off	Digital input switch to active means that the room operating mode should switch to day or off.
Exhaust Volume Flow Switchable	Digital input active means that die switchalbe exhaust is active and should be taken into account in the balance.

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7.2.2   Connector Name

The connector name of the digital input.

7.2.3   Polarity

Determines the polarity of the digital input.

Normal *(Default Value)*

Inverted

7.3   #2

Availability depends on [**Expected Module Slot 1**] [**Expected Module Slot 2**] [**Expected Module Slot 3**] .

7.3.1   Function

Determines the function of the digital input.

(Default Value)	No function selected.
Mode Off	Digital input active means that request operating mode off.
Mode Night	Digital input active means that request operating mode night.
Mode Override	Digital input active means that request operating mode override.
PIR	Digital input active means that a person is in front of the fume hood.
External Alarm	Digital input active means that an external alarm is present.
Temperature Alarm	Digital input active means that a temperature alarm is present.
Door Contact	Digital input active means that the door is open.
Quit	Digital input active means that button quit is pressed.
Room Mode permanently Off (switch)	Digital input active means that request room operating mode off.
Room Mode permanently Night (switch)	Digital input active means that request room operating mode night.
Room Mode permanently Override (switch)	Digital input active means that request room operating mode override.

Room Mode switch to Off (button)	Digital input switch to active means that the room operating mode should switch to off.
Room Mode switch to Night (button)	Digital input switch to active means that the room operating mode should switch to night.
Room Mode switch to Override (button)	Digital input switch to active means that the room operating mode should switch to override.
Room Mode switch to Day (button)	Digital input switch to active means that the room operating mode should switch to day.
Room Mode toggle Day/Night	Digital input switch to active means that the room operating mode should switch to day or night.
Room Mode toggle Day/Override	Digital input switch to active means that the room operating mode should switch to day or override.
Room Mode toggle Day/Off	Digital input switch to active means that the room operating mode should switch to day or off.
Exhaust Volume Flow Switchable	Digital input active means that die switchalbe exhaust is active and should be taken into account in the balance.

7.3.2 ⬭ Connector Name

The connector name of the digital input.

7.3.3 ⬭ Polarity

Determines the polarity of the digital input.

Normal *(Default Value)*
Inverted

7.4 #3

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

7.4.1 ⬭ Function

Determines the function of the digital input.

(Default Value)	No function selected.
Mode Off	Digital input active means that request operating mode off.
Mode Night	Digital input active means that request operating mode night.
Mode Override	Digital input active means that request operating mode override.
PIR	Digital input active means that a person is in front of the fume hood.
External Alarm	Digital input active means that an external alarm is present.
Temperature Alarm	Digital input active means that a temperature alarm is present.
Door Contact	Digital input active means that the door is open.
Quit	Digital input active means that button quit is pressed.
Room Mode permanently Off (switch)	Digital input active means that request room operating mode off.
Room Mode permanently Night (switch)	Digital input active means that request room operating mode night.
Room Mode permanently Override (switch)	Digital input active means that request room operating mode override.
Room Mode switch to Off (button)	Digital input switch to active means that the room operating mode should switch to off.
Room Mode switch to Night (button)	Digital input switch to active means that the room operating mode should switch to night.
Room Mode switch to Override (button)	Digital input switch to active means that the room operating mode should switch to override.
Room Mode switch to Day (button)	Digital input switch to active means that the room operating mode should switch to day.
Room Mode toggle Day/Night	Digital input switch to active means that the room operating mode should switch to day or night.
Room Mode toggle Day/Override	Digital input switch to active means that the room operating mode should switch to day or override.
Room Mode toggle Day/Off	Digital input switch to active means that the room operating mode should switch to day or off.
Exhaust Volume Flow Switchable	Digital input active means that die switchalbe exhaust is active and should be taken into account in the balance.

7.4.2 ⬭ Connector Name

The connector name of the digital input.

7.4.3 ⬭ Polarity

Determines the polarity of the digital input.

Normal *(Default Value)*
Inverted

7.5 #4

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

7.5.1 ⬭ Function

Determines the function of the digital input.

(Default Value)	No function selected.
Mode Off	Digital input active means that request operating mode off.
Mode Night	Digital input active means that request operating mode night.
Mode Override	Digital input active means that request operating mode override.
PIR	Digital input active means that a person is in front of the fume hood.
External Alarm	Digital input active means that an external alarm is present.
Temperature Alarm	Digital input active means that a temperature alarm is present.
Door Contact	Digital input active means that the door is open.
Quit	Digital input active means that button quit is pressed.
Room Mode permanently Off (switch)	Digital input active means that request room operating mode off.
Room Mode permanently Night (switch)	Digital input active means that request room operating mode night.
Room Mode permanently Override (switch)	Digital input active means that request room operating mode override.

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Room Mode switch to Off (button)	Digital input switch to active means that the room operating mode should switch to off.
Room Mode switch to Night (button)	Digital input switch to active means that the room operating mode should switch to night.
Room Mode switch to Override (button)	Digital input switch to active means that the room operating mode should switch to override.
Room Mode switch to Day (button)	Digital input switch to active means that the room operating mode should switch to day.
Room Mode toggle Day/Night	Digital input switch to active means that the room operating mode should switch to day or night.
Room Mode toggle Day/Override	Digital input switch to active means that the room operating mode should switch to day or override.
Room Mode toggle Day/Off	Digital input switch to active means that the room operating mode should switch to day or off.
Exhaust Volume Flow Switchable	Digital input active means that die switchalbe exhaust is active and should be taken into account in the balance.

7.5.2 Connector Name

The connector name of the digital input.

7.5.3 Polarity

Determines the polarity of the digital input.

Normal *(Default Value)*

Inverted

7.6 #5

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

7.6.1 Function

Determines the function of the digital input.

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(Default Value)	No function selected.
Mode Off	Digital input active means that request operating mode off.
Mode Night	Digital input active means that request operating mode night.
Mode Override	Digital input active means that request operating mode override.
PIR	Digital input active means that a person is in front of the fume hood.
External Alarm	Digital input active means that an external alarm is present.
Temperature Alarm	Digital input active means that a temperature alarm is present.
Door Contact	Digital input active means that the door is open.
Quit	Digital input active means that button quit is pressed.
Room Mode permanently Off (switch)	Digital input active means that request room operating mode off.
Room Mode permanently Night (switch)	Digital input active means that request room operating mode night.
Room Mode permanently Override (switch)	Digital input active means that request room operating mode override.
Room Mode switch to Off (button)	Digital input switch to active means that the room operating mode should switch to off.
Room Mode switch to Night (button)	Digital input switch to active means that the room operating mode should switch to night.
Room Mode switch to Override (button)	Digital input switch to active means that the room operating mode should switch to override.
Room Mode switch to Day (button)	Digital input switch to active means that the room operating mode should switch to day.
Room Mode toggle Day/Night	Digital input switch to active means that the room operating mode should switch to day or night.
Room Mode toggle Day/Override	Digital input switch to active means that the room operating mode should switch to day or override.
Room Mode toggle Day/Off	Digital input switch to active means that the room operating mode should switch to day or off.
Exhaust Volume Flow Switchable	Digital input active means that die switchalbe exhaust is active and should be taken into account in the balance.

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7.6.2 💬 Connector Name

The connector name of the digital input.

7.6.3 💬 Polarity

Determines the polarity of the digital input.

> **Normal** *(Default Value)*
>
> **Inverted**

8 Sensors

8.1 Pressure

8.1.1 💬 Pressure Sensor 1 Function

Determines the function of the differential pressure sensor 1.

> The pressure value is not used.
>
> **Volume Flow** *(Default Value)*
>
> **Room Pressure**

8.1.2 🔧 Pressure Sensor 1 Invert

Determines whether the measured pressure of the differential pressure sensor should be inverted.

> **Not Inverted** *(Default Value)*
>
> **Inverted**

8.1.3 💬 Pressure Sensor 2 Function

Determines the function of the differential pressure sensor 2.

> *(Default Value)* The pressure value is not used.
>
> **Volume Flow**
>
> **Room Pressure**

8.1.4 ⚒ Pressure Sensor 2 Invert

Determines whether the measured pressure of the differential pressure sensor should be inverted.

Not Inverted *(Default Value)*

Inverted

8.1.5 💬 Calibrate Pressure Sensors

Starts the pressure sensor zero point calibration, for all sensors as required.

8.2 Temperature

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

8.2.1 💬 Sensor Type

Indicates which temperature sensor is connected and which temperature characteristic is to be used.

(Default Value)

PT1000

NI1000_TK6180

NI1000_TK5000

KTY81_110

KTY81_121

RAW

8.2.2 💬 Temperature

The current temperature.

Resolution 0.01 °C

8.2.3 ⚒ Correction Offset

Determines the temperature correction offset, which is added to the measured value and can be used for calibration.

> **Minimum** -10.0 °C
>
> **Maximum** 10.0 °C
>
> **Default Value** 0.0 °C
>
> **Resolution** 0.1 °C

8.2.4 ▭ Alarm Value

Determines the temperature above which a temperature alarm is triggered.

> **Minimum** 0 °C
>
> **Maximum** 200 °C
>
> **Default Value** 60 °C

8.2.5 ▭ Warning Value

Determines the temperature above which a temperature warning is triggered.

> **Minimum** 0 °C
>
> **Maximum** 200 °C
>
> **Default Value** 50 °C

8.2.6 ▭ Change to Override on Temperature Warning

Determines whether the system switches to override operating mode when the temperature warning value is exceeded. After the temperature falls below the warning threshold and the hysteresis again and the override run-on time has elapsed, the system automatically switches back to the previous operating mode.

> **Off** *(Default Value)*
>
> **On**

8.2.7 ▭ Override Time

Determines the run-on time of the override operating mode after the temperature has fallen below the warning value again.

> **Minimum** 0 s
>
> **Maximum** 600 s
>
> **Default Value** 0 s

8.2.8 ▭ Override Hysteresis

Determines the value by which the temperature must be lower than the warning value in order to switch back to the original operating mode after a change to the override operating mode.

Configuration Values | Analog Interfaces

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Minimum 0 °C

Maximum 40 °C

Default Value 0 °C

9 Analog Interfaces

9.1 #1

Availability depends on **Expected Module Slot 1** **Expected Module Slot 2** **Expected Module Slot 3** **HW Version** .

9.1.1 Type

Determines the type of the analog interface.

(Default Value)	The analog interface is disabled.
Voltage Output	The analog interface is used as a voltage output (0 to 10 V).
Current Output	The analog interface is used as a current output (4 to 20 mA).
Voltage Input	The analog interface is used as a voltage input (0 to 10 V).
Current Input	The analog interface is used as a current input (4 to 20 mA).

9.1.2 Connector Name

The connector name of the analog interface.

9.1.3 Output Function

Determines the analog output function of this analog interface if voltage output or current output is selected for analog interface type.

Availability depends on **Type** .

(Default Value)	No function selected.
Volume Flow Present Value	The analog output scales depending on the current volume flow.
Volume Flow Setpoint	The analog output scales depending on the current volume flow setpoint.
Pressure	The analog output scales depending on the current pressure.

Variable Air Volume Controller VAV400 | 10/2025   46

Damper Position	The analog output scales depending on the current damper position.
Modbus	The analog output outputs the value set via Modbus.
Frequency Converter	The analog output controls a frequency converter instead of a damper actuator.
Sum Exhaust	The analog output scales depending on the current balancing sum exhaust volume flow.
Sum Supply	The analog output scales depending on the current balancing sum supply volume flow.
Controlled Supply	The analog output scales depending on an supply volume flow specified by the balance. The analog output specifies the supply volume flow for one controlled supply.
Controlled Exhaust	The analog output scales depending on an exhaust volume flow specified by the balance. The analog output specifies the exhaust volume flow for one controlled exhaust.

9.1.4 ⬛ Input Function

Determines the analog input function of this analog interface if voltage input or current input is selected for analog interface type.

Availability depends on ⬚**Type** .

(Default Value)	No function selected.
Volume Flow Offset	The analog input specifies the volume flow offset in day mode.
Volume Flow Setpoint	The analog input specifies the volume flow setpoint.
Pressure Setpoint	The analog input specifies the pressure setpoint.
Exhaust Device	The analog input indicates the volume flow of an exhaust device to be balanced.
Pressure	The analog input specifies a pressure value, which can be used for volume flow calculation, support jet monitoring or washer monitoring.
Supply Device	The analog input indicates the volume flow of an supply device to be balanced.

9.1.5 ⬛ Voltage/Current Minimum

Determines the minimum voltage respectively current of the analog interface.

> Availability depends on Type .

Minimum 0.000 V

Maximum 10.000 V

Default Value 0.000 V

Resolution 0.001 V

9.1.6 Voltage/Current Maximum

Determines the maximum voltage respectively current of the analog interface.

> Availability depends on Type .

Minimum 0.000 V

Maximum 10.000 V

Default Value 10.000 V

Resolution 0.001 V

9.1.7 Value Minimum

Determines the value at which the minimum voltage respectively minimal current is reached.

> Availability depends on Type .

Minimum 0

Maximum 40000

Default Value 0

9.1.8 Value Maximum

Determines the value at which the maximum voltage respectively the maximum current is reached.

> Availability depends on Type .

Minimum 0

Maximum 40000

Default Value 100

9.1.9 Filter Time

Determines the filter time for the analog input. A higher filter time filters the anlog signal more strongly, but changes are also delayed.

Availability depends on **Type** .

Minimum 100 ms

Maximum 9999 ms

Default Value 500 ms

9.2   #2

Availability depends on **Expected Module Slot 1** **Expected Module Slot 2** **Expected Module Slot 3** **HW Version** .

9.2.1   Type

Determines the type of the analog interface.

(Default Value)	The analog interface is disabled.
Voltage Output	The analog interface is used as a voltage output (0 to 10 V).
Current Output	The analog interface is used as a current output (4 to 20 mA).
Voltage Input	The analog interface is used as a voltage input (0 to 10 V).
Current Input	The analog interface is used as a current input (4 to 20 mA).

9.2.2   Connector Name

The connector name of the analog interface.

9.2.3   Output Function

Determines the analog output function of this analog interface if voltage output or current output is selected for analog interface type.

Availability depends on **Type** .

(Default Value)	No function selected.
Volume Flow Present Value	The analog output scales depending on the current volume flow.
Volume Flow Setpoint	The analog output scales depending on the current volume flow setpoint.
Pressure	The analog output scales depending on the current pressure.

Damper Position	The analog output scales depending on the current damper position.
Modbus	The analog output outputs the value set via Modbus.
Frequency Converter	The analog output controls a frequency converter instead of a damper actuator.
Sum Exhaust	The analog output scales depending on the current balancing sum exhaust volume flow.
Sum Supply	The analog output scales depending on the current balancing sum supply volume flow.
Controlled Supply	The analog output scales depending on an supply volume flow specified by the balance. The analog output specifies the supply volume flow for one controlled supply.
Controlled Exhaust	The analog output scales depending on an exhaust volume flow specified by the balance. The analog output specifies the exhaust volume flow for one controlled exhaust.

9.2.4 ⬚ Input Function

Determines the analog input function of this analog interface if voltage input or current input is selected for analog interface type.

Availability depends on **Type** .

(Default Value)	No function selected.
Volume Flow Offset	The analog input specifies the volume flow offset in day mode.
Volume Flow Setpoint	The analog input specifies the volume flow setpoint.
Pressure Setpoint	The analog input specifies the pressure setpoint.
Exhaust Device	The analog input indicates the volume flow of an exhaust device to be balanced.
Pressure	The analog input specifies a pressure value, which can be used for volume flow calculation, support jet monitoring or washer monitoring.
Supply Device	The analog input indicates the volume flow of an supply device to be balanced.

9.2.5 ⬚ Voltage/Current Minimum

Determines the minimum voltage respectively current of the analog interface.

> Availability depends on [**Type**] .

Minimum 0.000 V

Maximum 10.000 V

Default Value 0.000 V

Resolution 0.001 V

9.2.6 Voltage/Current Maximum

Determines the maximum voltage respectively current of the analog interface.

> Availability depends on [**Type**] .

Minimum 0.000 V

Maximum 10.000 V

Default Value 10.000 V

Resolution 0.001 V

9.2.7 Value Minimum

Determines the value at which the minimum voltage respectively minimal current is reached.

> Availability depends on [**Type**] .

Minimum 0

Maximum 40000

Default Value 0

9.2.8 Value Maximum

Determines the value at which the maximum voltage respectively the maximum current is reached.

> Availability depends on [**Type**] .

Minimum 0

Maximum 40000

Default Value 100

9.2.9 Filter Time

Determines the filter time for the analog input. A higher filter time filters the anlog signal more strongly, but changes are also delayed.

Availability depends on **Type** .

Minimum 100 ms

Maximum 9999 ms

Default Value 500 ms

9.3   #3

Availability depends on **Expected Module Slot 1** **Expected Module Slot 2** **Expected Module Slot 3** **HW Version** .

9.3.1 Type

Determines the type of the analog interface.

(Default Value)	The analog interface is disabled.
Voltage Output	The analog interface is used as a voltage output (0 to 10 V).
Current Output	The analog interface is used as a current output (4 to 20 mA).
Voltage Input	The analog interface is used as a voltage input (0 to 10 V).
Current Input	The analog interface is used as a current input (4 to 20 mA).

9.3.2 Connector Name

The connector name of the analog interface.

9.3.3 Output Function

Determines the analog output function of this analog interface if voltage output or current output is selected for analog interface type.

Availability depends on **Type** .

(Default Value)	No function selected.
Volume Flow Present Value	The analog output scales depending on the current volume flow.
Volume Flow Setpoint	The analog output scales depending on the current volume flow setpoint.
Pressure	The analog output scales depending on the current pressure.

Damper Position	The analog output scales depending on the current damper position.
Modbus	The analog output outputs the value set via Modbus.
Frequency Converter	The analog output controls a frequency converter instead of a damper actuator.
Sum Exhaust	The analog output scales depending on the current balancing sum exhaust volume flow.
Sum Supply	The analog output scales depending on the current balancing sum supply volume flow.
Controlled Supply	The analog output scales depending on an supply volume flow specified by the balance. The analog output specifies the supply volume flow for one controlled supply.
Controlled Exhaust	The analog output scales depending on an exhaust volume flow specified by the balance. The analog output specifies the exhaust volume flow for one controlled exhaust.

9.3.4 ⬜ Input Function

Determines the analog input function of this analog interface if voltage input or current input is selected for analog interface type.

Availability depends on Type .

(Default Value)	No function selected.
Volume Flow Offset	The analog input specifies the volume flow offset in day mode.
Volume Flow Setpoint	The analog input specifies the volume flow setpoint.
Pressure Setpoint	The analog input specifies the pressure setpoint.
Exhaust Device	The analog input indicates the volume flow of an exhaust device to be balanced.
Pressure	The analog input specifies a pressure value, which can be used for volume flow calculation, support jet monitoring or washer monitoring.
Supply Device	The analog input indicates the volume flow of an supply device to be balanced.

9.3.5 ⬜ Voltage/Current Minimum

Determines the minimum voltage respectively current of the analog interface.

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> Availability depends on **Type** .

Minimum 0.000 V

Maximum 10.000 V

Default Value 0.000 V

Resolution 0.001 V

9.3.6 Voltage/Current Maximum

Determines the maximum voltage respectively current of the analog interface.

> Availability depends on **Type** .

Minimum 0.000 V

Maximum 10.000 V

Default Value 10.000 V

Resolution 0.001 V

9.3.7 Value Minimum

Determines the value at which the minimum voltage respectively minimal current is reached.

> Availability depends on **Type** .

Minimum 0

Maximum 40000

Default Value 0

9.3.8 Value Maximum

Determines the value at which the maximum voltage respectively the maximum current is reached.

> Availability depends on **Type** .

Minimum 0

Maximum 40000

Default Value 100

9.3.9 Filter Time

Determines the filter time for the analog input. A higher filter time filters the anlog signal more strongly, but changes are also delayed.

Availability depends on [**Type**] .

Minimum   100 ms

Maximum   9999 ms

Default Value   500 ms

9.4   #4

Availability depends on [**Expected Module Slot 1**] [**Expected Module Slot 2**] [**Expected Module Slot 3**] [**HW Version**] .

9.4.1   Type

Determines the type of the analog interface.

(Default Value)	The analog interface is disabled.
Voltage Output	The analog interface is used as a voltage output (0 to 10 V).
Current Output	The analog interface is used as a current output (4 to 20 mA).
Voltage Input	The analog interface is used as a voltage input (0 to 10 V).
Current Input	The analog interface is used as a current input (4 to 20 mA).

9.4.2   Connector Name

The connector name of the analog interface.

9.4.3   Output Function

Determines the analog output function of this analog interface if voltage output or current output is selected for analog interface type.

Availability depends on [**Type**] .

(Default Value)	No function selected.
Volume Flow Present Value	The analog output scales depending on the current volume flow.
Volume Flow Setpoint	The analog output scales depending on the current volume flow setpoint.
Pressure	The analog output scales depending on the current pressure.

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Damper Position	The analog output scales depending on the current damper position.
Modbus	The analog output outputs the value set via Modbus.
Frequency Converter	The analog output controls a frequency converter instead of a damper actuator.
Sum Exhaust	The analog output scales depending on the current balancing sum exhaust volume flow.
Sum Supply	The analog output scales depending on the current balancing sum supply volume flow.
Controlled Supply	The analog output scales depending on an supply volume flow specified by the balance. The analog output specifies the supply volume flow for one controlled supply.
Controlled Exhaust	The analog output scales depending on an exhaust volume flow specified by the balance. The analog output specifies the exhaust volume flow for one controlled exhaust.

9.4.4 Input Function

Determines the analog input function of this analog interface if voltage input or current input is selected for analog interface type.

> Availability depends on Type .

(Default Value)	No function selected.
Volume Flow Offset	The analog input specifies the volume flow offset in day mode.
Volume Flow Setpoint	The analog input specifies the volume flow setpoint.
Pressure Setpoint	The analog input specifies the pressure setpoint.
Exhaust Device	The analog input indicates the volume flow of an exhaust device to be balanced.
Pressure	The analog input specifies a pressure value, which can be used for volume flow calculation, support jet monitoring or washer monitoring.
Supply Device	The analog input indicates the volume flow of an supply device to be balanced.

9.4.5 Voltage/Current Minimum

Determines the minimum voltage respectively current of the analog interface.

Availability depends on Type .

Minimum 0.000 V

Maximum 10.000 V

Default Value 0.000 V

Resolution 0.001 V

9.4.6 Voltage/Current Maximum

Determines the maximum voltage respectively current of the analog interface.

Availability depends on Type .

Minimum 0.000 V

Maximum 10.000 V

Default Value 10.000 V

Resolution 0.001 V

9.4.7 Value Minimum

Determines the value at which the minimum voltage respectively minimal current is reached.

Availability depends on Type .

Minimum 0

Maximum 40000

Default Value 0

9.4.8 Value Maximum

Determines the value at which the maximum voltage respectively the maximum current is reached.

Availability depends on Type .

Minimum 0

Maximum 40000

Default Value 100

9.4.9 Filter Time

Determines the filter time for the analog input. A higher filter time filters the anlog signal more strongly, but changes are also delayed.

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Availability depends on Type .

Minimum 100 ms

Maximum 9999 ms

Default Value 500 ms

9.5   #5

Availability depends on Expected Module Slot 1   Expected Module Slot 2   Expected Module Slot 3

 HW Version .

9.5.1   Type

Determines the type of the analog interface.

(Default Value)	The analog interface is disabled.
Voltage Output	The analog interface is used as a voltage output (0 to 10 V).
Current Output	The analog interface is used as a current output (4 to 20 mA).
Voltage Input	The analog interface is used as a voltage input (0 to 10 V).
Current Input	The analog interface is used as a current input (4 to 20 mA).

9.5.2   Connector Name

The connector name of the analog interface.

9.5.3   Output Function

Determines the analog output function of this analog interface if voltage output or current output is selected for analog interface type.

Availability depends on Type .

(Default Value)	No function selected.
Volume Flow Present Value	The analog output scales depending on the current volume flow.
Volume Flow Setpoint	The analog output scales depending on the current volume flow setpoint.
Pressure	The analog output scales depending on the current pressure.

Damper Position	The analog output scales depending on the current damper position.
Modbus	The analog output outputs the value set via Modbus.
Frequency Converter	The analog output controls a frequency converter instead of a damper actuator.
Sum Exhaust	The analog output scales depending on the current balancing sum exhaust volume flow.
Sum Supply	The analog output scales depending on the current balancing sum supply volume flow.
Controlled Supply	The analog output scales depending on an supply volume flow specified by the balance. The analog output specifies the supply volume flow for one controlled supply.
Controlled Exhaust	The analog output scales depending on an exhaust volume flow specified by the balance. The analog output specifies the exhaust volume flow for one controlled exhaust.

9.5.4 ⬚ Input Function

Determines the analog input function of this analog interface if voltage input or current input is selected for analog interface type.

Availability depends on **Type** .

(Default Value)	No function selected.
Volume Flow Offset	The analog input specifies the volume flow offset in day mode.
Volume Flow Setpoint	The analog input specifies the volume flow setpoint.
Pressure Setpoint	The analog input specifies the pressure setpoint.
Exhaust Device	The analog input indicates the volume flow of an exhaust device to be balanced.
Pressure	The analog input specifies a pressure value, which can be used for volume flow calculation, support jet monitoring or washer monitoring.
Supply Device	The analog input indicates the volume flow of an supply device to be balanced.

9.5.5 ⬚ Voltage/Current Minimum

Determines the minimum voltage respectively current of the analog interface.

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> Availability depends on Type .

Minimum 0.000 V

Maximum 10.000 V

Default Value 0.000 V

Resolution 0.001 V

9.5.6 Voltage/Current Maximum

Determines the maximum voltage respectively current of the analog interface.

> Availability depends on Type .

Minimum 0.000 V

Maximum 10.000 V

Default Value 10.000 V

Resolution 0.001 V

9.5.7 Value Minimum

Determines the value at which the minimum voltage respectively minimal current is reached.

> Availability depends on Type .

Minimum 0

Maximum 40000

Default Value 0

9.5.8 Value Maximum

Determines the value at which the maximum voltage respectively the maximum current is reached.

> Availability depends on Type .

Minimum 0

Maximum 40000

Default Value 100

9.5.9 Filter Time

Determines the filter time for the analog input. A higher filter time filters the anlog signal more strongly, but changes are also delayed.

Availability depends on Type .

Minimum 100 ms

Maximum 9999 ms

Default Value 500 ms

10   Modbus

10.1   General

10.1.1   Function

Determines the function of the Modbus interface.

	The Modbus interface is disabled.
Server *(Default Value)*	The Modbus interface is configured as a server.
Client	The Modbus interface is configured as a client.

10.1.2   Use Automatic Device ID

Determines whether the device automatically gets to the Modbus device ID via Modbus.

Availability depends on Function .

Static Device ID

Automatic Device ID *(Default Value)*

10.1.3   Device ID

The device ID or device address must be unique within the Modbus network. Values from 1 - 247 are available.

Availability depends on Function   Use Automatic Device ID .

Minimum 1

Maximum 247

Default Value 1

10.1.4 ⬭ Automatic Device ID

The device ID obtained automatically via Modbus.

Availability depends on **Function** **Use Automatic Device ID** .

10.1.5 ⬭ Baud Rate

The baud rate (transmission speed) of the Modbus interface. This must be uniform in the Modbus network.

1200

2400

4800

9600

19200 *(Default Value)*

38400

57600

115200

10.1.6 ⬭ Parity

Determines the presence and function of the parity bit during transmission. This bit helps detecting faulty transmissions.

None	No Parity and two Stopbits
Even *(Default Value)*	Parity Even and one Stopbit.
Odd	Parity Odd and one Stopbit.

10.1.7 ⬭ Broadcast

Modbus allows communication via broadcasts. This is useful e.g. to switch the operating mode of all devices in the network with a single transmission. If this feature is not desired or leads to any incompatibility with devices of other manufacturers, it can be deactivated.

Availability depends on **Function** .

No

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> **Yes** *(Default Value)*

10.1.8 ⚒ Device Config over Modbus

It is possible to change all configuration parameters of the device via Modbus. This is useful e.g. if the serial configuration interface is no longer physically accessible or if parameters are to be changed globally across many devices. If this feature is not desired, it can be deactivated.

Availability depends on **Function** .

> **No**
>
> **Yes** *(Default Value)*

10.1.9 💬 Update Interval

The interval at which the Modbus client queries the data points of the individual connected servers. If the polling takes longer than the time set here, the next cycle starts later.

Availability depends on **Function** .

> **Minimum** 100 ms
>
> **Maximum** 9999 ms
>
> **Default Value** 500 ms

10.1.10 💬 Client Load

The percentage utilization of the Modbus client. Not only the actual bus load is taken into account, but also the internal processing times and any timeouts.

Availability depends on **Function** .

> **Resolution** 0.1 %

10.2 Device Search

10.2.1 💬 Clear and Search Devices

The list of Modbus servers found is deleted, the automatically assigned IDs are reset and a new search is started. Both servers with a static ID and servers with an automatic ID are searched for.

Availability depends on **Function** .

10.2.2 💬 Search Devices

A new search is started, the devices already found remain saved, the automatically assigned IDs are not reset. Both servers with a static ID and servers with an automatic ID are searched for.

Availability depends on **Function** .

10.2.3 💬 Device Search State

Status of the Modbus device search and the automatic address assignment process.

Availability depends on **Function** .

Unknown *(Default Value)*

Scanning

Searching new Devices

Assigning Addresses

Indentify Devices

Done

10.2.4 💬 Number of connected Devices

Number of Modbus devices in the network that were found during a search. Regardless of whether they are currently accessible.

Availability depends on **Function** .

10.3 MC10 Expansion Card

10.3.1 💬 Device ID

Determines the Modbus device id of the Modbus interface on the MC10 expansion card. The device ID or device address must be unique within the Modbus network. Values from 1 - 247 are available.

Availability depends on **Expected Module Slot 1** **Expected Module Slot 2** **Expected Module Slot 3** .

Minimum 1

Maximum 247

Default Value 1

10.3.2 💬 Baud Rate

The baud rate (transmission speed) of the Modbus interface on the MC10 expansion card. This must be standardized in the Modbus network.

Availability depends on [**Expected Module Slot 1**] [**Expected Module Slot 2**] [**Expected Module Slot 3**] .

1200

2400

4800

9600

19200 *(Default Value)*

38400

57600

115200

10.3.3 💬 Parity

Determines the motion and function of the parity bit during transmission of the Modbus interface on the MC10 expansion card. This bit helps detecting faulty transmissions.

Availability depends on [**Expected Module Slot 1**] [**Expected Module Slot 2**] [**Expected Module Slot 3**] .

None	No Parity and two Stopbits
Even *(Default Value)*	Parity Even and one Stopbit.
Odd	Parity Odd and one Stopbit.

10.3.4 🛠 Broadcast

Determines whether Modbus broadcast packets will be handled by the Modbus MC10 expansion card. Modbus allows communication via broadcasts. This is useful e.g. to switch the operating mode of all devices in the network with a single

transmission. If this feature is not desired or leads to any incompatibility with devices of other manufacturers, it can be deactivated.

> Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

> **No**
>
> **Yes** *(Default Value)*

11 Balancing

> Availability depends on Function .

11.1 Settings

11.1.1 Exhaust Volume Flow Day

Determines the minimum exhaust for balancing in day mode. The volume flow rate specification of the controlled exhaust devices is increased by the amount that this value is reached.

> **Minimum** 0 m³/h
>
> **Maximum** 50000 m³/h
>
> **Default Value** 1000 m³/h

11.1.2 Exhaust Volume Flow Night

Determines the minimum exhaust for balancing in night mode. The volume flow rate specification of the controlled exhaust devices is increased by the amount that this value is reached.

> **Minimum** 0 m³/h
>
> **Maximum** 50000 m³/h
>
> **Default Value** 500 m³/h

11.1.3 Exhaust Volume Flow Override

Determines the minimum exhaust for balancing in override mode. The volume flow rate specification of the controlled exhaust devices is increased by the amount that this value is reached.

Minimum 0 m³/h

Maximum 50000 m³/h

Default Value 1500 m³/h

11.1.4 Exhaust Volume Flow Off

Determines the minimum exhaust for balancing in off mode. The volume flow rate specification of the controlled exhaust devices is increased by the amount that this value is reached.

Minimum 0 m³/h

Maximum 50000 m³/h

Default Value 0 m³/h

11.1.5 Exhaust Volume Flow Constant

Determines the volume flow that is to be included in the balance via constant exhaust loads.

Minimum -5000 m³/h

Maximum 5000 m³/h

Default Value 0 m³/h

11.1.6 Exhaust Volume Flow Switchable

Determines the volume flow with which the switchable exhaust is to be included in the balance.

Minimum -5000 m³/h

Maximum 5000 m³/h

Default Value 0 m³/h

11.1.7 Volume Flow Offset

Determines the volume flow that the supply should be greater than the exhaust.

Minimum -5000 m³/h

Maximum 5000 m³/h

Default Value -50 m³/h

11.2 Simultaneity

11.2.1 Simultaneity (Exhaust Maximum)

Determines the value of the maximum exhaust volume flow. An alarm is triggered if this value is exceeded.

> **Minimum** 0 m³/h
>
> **Maximum** 50000 m³/h
>
> **Default Value** 0 m³/h

11.2.2 Simultaneity Alarm Hysteresis

Specifies the hysteresis of the simultaneity alarm. The status of the alarm is not changed in the hysteresis range around the alarm value.

> **Minimum** 0 m³/h
>
> **Maximum** 10000 m³/h
>
> **Default Value** 100 m³/h

11.2.3 Simultaneity Alarm Delay

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

> **Minimum** 0 s
>
> **Maximum** 120 s
>
> **Default Value** 0 s

11.3 Present Values

11.3.1 Operating Mode Balancing

The current Operating Mode of the Balancing.

> **Day** *(Default Value)*
>
> **Night**
>
> **Override**
>
> **Off**

11.3.2 Sum Exhaust

The current sum of the balanced exhaust volume flow.

11.3.3 Sum Supply

The current sum of the balanced supply volume flow.

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11.3.4 💬 Exhaust Offset

The current difference between the sum exhaust and sum supply.

11.4 Time Control

Availability depends on Expected Module Slot 1 Expected Module Slot 2 Expected Module Slot 3 .

11.4.1 💬 Day Light Saving Time Rule

Determines according to which day light saving time regulation the time is changed.

European *(Default Value)*

11.4.2 💬 Nightmode End Time

Determines the time at which the device changes back in daymode from nightmode.

Minimum -

Maximum -

Default Value 360 min

11.4.3 💬 Nightmode Starting Time

Determines the time at which the device changes in nightmode.

Minimum -

Maximum -

Default Value 1080 min

11.4.4 💬 Nightmode control days

Determines the days of the week on which the device switches to night mode and back again. This means that the device does not switch back to day mode on unselected days, but remains in night mode.

None *(Default Value)*

Mo-Fr

Mo-Sa

Mo-Su

12   Service

12.0.1   💬 Password User Interface

Sets a new password for the user interface.

Minimum 0

Maximum 9999

Default Value 0

12.0.2   💬 Language

Determines the display language of the device.

English *(Default Value)*

German

Spanish

French

Turkish

Polish

12.0.3   🎓 Demo Mode

Determines whether the device is in demo mode. In demo mode, the volume flow and airflow values are simulated and the real values are not monitored.

Off *(Default Value)*

On

12.0.4   💬 Firmware Version

The currently installed firmware version.

12.0.5   💬 Serial Number Device

The unique serial number of the device set at the factory.

12.0.6   💬 Build Nr

The Build Nr of the current Firmware Version

12.0.7   💬 HW Version

FC400-M *(Default Value)*

FC400-A

FM400-M

FM400-A

VAV400-M

VAV400-A

FC400-M

FC400-A

12.0.8 Endless Service Interval

Determines whether the service interval can be endless and therefore no service reminder and warning is generated.

Adjustable Duration *(Default Value)*

Endless

12.0.9 Service Interval

Determines the runtime of the device after which a service should take place.

Availability depends on Endless Service Interval .

Minimum 0 days

Maximum 9999 days

Default Value 365 days

12.0.10 Service Reminder

Defines the time from which a reminder is to be sent before the service interval expires that a service will soon be required.

Minimum 0 days

Maximum 9999 days

Default Value 30 days

12.0.11 💬 **Reset Service Timer**

12.0.12 💬 **Factory Reset**

Resets the device to factory settings. All settings will be lost and the device must be recommissioned.

12.0.13 💬 **Reboot**

Triggers a restart of the device.

13 Runtime

13.0.1 💬 **Current Runtime**

Current uptime since last restart.

13.0.2 💬 **Total Runtime**

Total operating hours of the device.

13.0.3 💬 **Time in Day Mode**

Number of operating hours in day operating mode.

13.0.4 💬 **Time in Night Mode**

Number of operating hours in night operating mode.

13.0.5 💬 **Time in Override Mode**

Number of operating hours in override operating mode.

13.0.6 💬 **Time in Off Mode**

Number of operating hours in off operating mode.

13.0.7 💬 **Time since last Change**

Number of operating hours that have elapsed since the last configuration change.

13.0.8 💬 **Runtime Damper Actuator**

Total actuator activity time (no standstill).

13.0.9 💬 **Time until Service**

Number of operating hours until the next service is due.

> **Resolution** 0.000694444444444444 days

13.0.10 　　 Time since Service

Number of operating hours that have elapsed since last service.

> **Resolution** 0.000694444444444444 days

13.0.11 　　 Time Service is overdue

Number of operating hours that have elapsed since service is required.

> **Resolution** 0.000694444444444444 days

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

Tel. +49 6171 88479-0

info@schneider-elektronik.de