

TCMF8-WF/EW

Universal fan speed controller with internet gateway



The TCMF8-WF/EW are universal fan speed controllers with Modbus RTU communication and an integrated internet gateway. Multiple AC fans can be regulated via the two TRIAC outputs (phase angle control). Via Modbus RTU communication one or more HVAC sensors or potentiometers can be connected to this controller. Application specific firmware is required. This firmware can be downloaded via SenteraWeb. Typical applications are destratification, air curtain control, heat recovery unit control, etc. These TCMF8 versions have a built-in internet gateway to connect to SenteraWeb.

Key features

- Two analogue inputs: 0–10 / 10–0 VDC / 0–20 / 20–0 mA / PWM
- Minimum and maximum motor voltage is adjustable by trimmers or via Modbus
- This controller requires application specific firmware. Free download is available via www.Senteraweb.eu
- Integrated internet connection (Wi-Fi and / or Ethernet)
- Modbus RTU (RS485) communication
- Kick start or soft start
- RGB-LED on the cover for status indication
- Two TRIAC outputs to regulate AC fan speed
- Two separate TK inputs for thermal motor protection.
- Integrated power supply for connected sensors

Area of use

- Fan speed control in ventilation systems
- For indoor use only

Technical specifications

| | | |
|--|------------------------------|----------------------------|
| Supply voltage (Us) | 85 - 305 VAC / 50 - 60 Hz | |
| Regulated output x 2 | 20–100 % Us | |
| Minimum output voltage selection, Umin | 20–60 % Us | |
| Maximum output voltage selection, Umax | 60–100 % Us | |
| Integrated power supply for external sensors | 24 VDC (Imax 750 mA) | |
| Protection standard | IP54 (according to EN 60529) | |
| Ambient conditions | Operating temperature | -10–60 °C |
| | Relative humidity | 5-95 % rH (non-condensing) |

Modbus registers



The parameters of the unit can be monitored / configured through the 3SModbus software platform. You can download it from the following link:

<https://www.sentera.eu/en/3SMCenter>

For more information about the Modbus registers, please refer to the product Modbus Register Map.

SenteraWeb



The Sentera Internet Gateway is used to connect your installation to the SenteraWeb HVAC cloud and to download the application specific firmware.

Via the SenteraWeb HVAC cloud, it is possible to:

- Easily adjust parameter settings of the connected devices remotely
- Define users and give them access to monitor the installation via a standard web browser
- Log data - create diagrams and export logged data
- Receive alerts or warnings when measured values exceed alert ranges or when errors occur
- Create different regimes for your ventilation system - e.g. day-night regime



Article codes

| Article code | Max. load | Wi-Fi | Ethernet |
|--------------------|-----------|-------|----------|
| TCMF8-302WF | 2 x 3 A | yes | no |
| TCMF8-602WF | 2 x 6 A | yes | no |
| TCMF8-302EW | 2 x 3 A | yes | yes |
| TCMF8-602EW | 2 x 6 A | yes | yes |

Wiring and connections

| | | |
|-----------------------------------|--|--|
| L | Supply voltage, Line | |
| N | Supply voltage, Neutral | |
| PE | Supply voltage, protective earth | |
| U1 | Regulated motor output 1 | |
| U2 | Regulated motor output 2 | |
| TK1, 24 VDC | TK input for thermal protection of motor 1 | |
| TK2, 24 VDC | TK input for thermal protection of motor 2 | |
| A | Modbus RTU (RS485) signal A | |
| /B | Modbus RTU (RS485) signal /B | |
| Ai1, Ai2 | Analogue input 0–10 VDC / 0–20 mA / PWM | |
| GND | Ground | |
| Connections | Cable cross section | max. 2,5 mm ² |
| | Cable gland clamping range | 3–6 mm / 5–10 mm |
| RJ45 socket(s) and terminal block | External Modbus slave devices can receive power supply (24 VDC) via the RJ45 socket or via the terminal block. Do not connect an external 24 VDC power supply to TCMF8 - this will cause permanent damage. | Modbus RTU signal A and /B, 24 VDC and GND |
| Ethernet socket (TCMF8-EW only) | Ethernet LAN connection | |

TCMF8-WF/EW

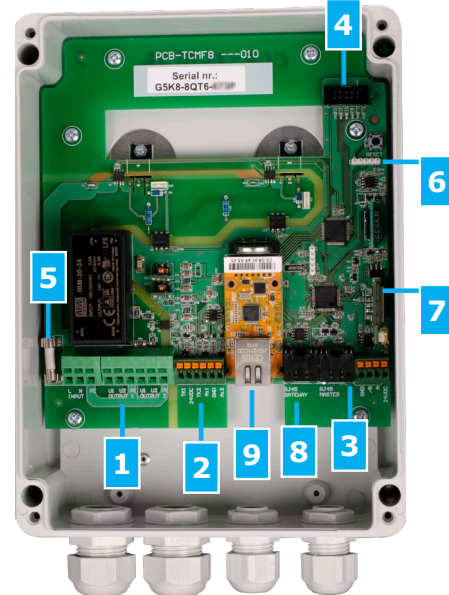
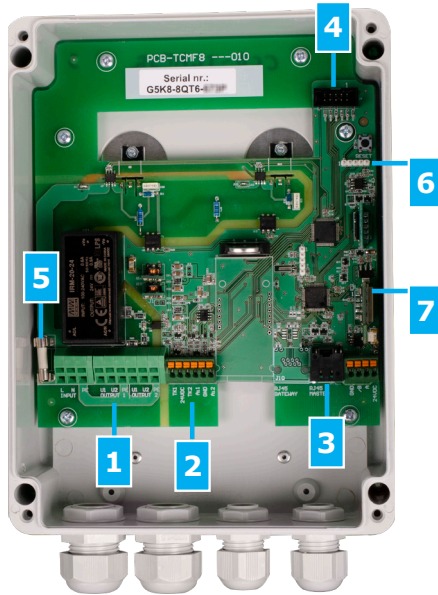
Universal fan speed controller with internet gateway



Legend

TCMF8-WF

TCMF8-EW



1 - Terminal block power supply and regulated outputs



Connect the supply voltage to the input (L, N, PE). Connect the AC fans to the outputs taking into account the maximum current.

2 - Terminal block analogue inputs and thermal protection



If applicable, analogue input signals and motor TK contacts (thermal motor protection) can be connected via this terminal block.

3 - RJ45 socket and terminal block PoM



External Modbus slave devices can receive power supply (24 VDC) via the RJ45 socket or via the terminal block. Do not connect an external 24 VDC power supply to TCMF8 - this will cause permanent damage. Modbus RTU communication can be connected via the RJ45 socket, via the terminal block or via both..

4 - LED's connector

To connect LED's on cover of casing with circuit board.

5 - Fuse



TCMF8-302EW
TCMF8-302WF
TCMF8-602EW
TCMF8-602WF

(5*20 mm) T 8,0 A H 250 VAC

(5*20 mm) T 12,5 A H 250 VAC

6 - PROG header, P1



Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters



Put a jumper onto pins 3 and 4 and restart the power supply to enter bootloader mode

7 - Wi-Fi reset tact switch



Press and hold the reset tact-switch for 2 seconds to remove the actual Wi-Fi network connection. After the Wi-Fi network reset, the default IP-address is restored: 192.168.1.123.

8 - RJ45 socket



To connect a Modbus master device.
ATTENTION! Do not connect external power supply to this RJ45 socket.

9 - Ethernet



To connect the installation to SenteraWeb via a LAN cable

TCMF8-WF/EW

Universal fan speed controller with internet gateway



LED Indications

| | |
|------------------------------|---|
| Green | Active internet connection OK (Senteraweb gateway successfully communicates with the SenteraWeb Broker – sending/receiving data and parameter values of connected slave devices to SenteraWeb and downloading firmware updates in order to flash connected slave devices) |
| Red | Indicates system error (connection to SenteraWeb has been lost). |
| Red and pink (fast blinking) | Uploading firmware update for Senteraweb gateway part is in progress. |
| Blue (long-blink) | Bootloader mode activated, but firmware update process is still not in progress. |

Standards



- Low Voltage Directive 2014/35/EC
 - EN 60529:1991 Degrees of protection provided by enclosures (IP Code) Amendment AC:1993 to EN 60529
 - EN 60730-1:2011 Automatic electrical controls for household and similar use - Part 1: General requirements
 - EN 62311:2008 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
 - EN 60950-1:2006 Information technology equipment - Safety - Part 1: General requirements Amendments AC:2011, A11:2009, A12:2011, A1:2010 and A2:2013 to EN 60950-1
- EMC Directive 2014/30/EC
 - EN 60730-1:2011 Automatic electrical controls for household and similar use - Part 1: General requirements
 - EN 61000-3-2:2014 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
 - EN 61000-6-2:2005 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments Amendment AC:2005 to EN 61000-6-2
 - EN 61000-6-3:2007 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments Amendments A1:2011 and AC:2012 to EN 61000-6-3
 - EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
 - EN 55011:2009 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement Amendment A1:2010 to EN 55011
 - EN 55024:2010 Information technology equipment - Immunity characteristics - Limits and methods of measurement
- RoHS Directive 2011/65/EU
 - EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
- Radio equipment Directive 2014/53/EU:
 - EN 300 328 V2.1.1 Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU
- ETSI EN 301 489-1 V2.1.1 (2017-02) ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1:
 - Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU
- ETSI EN 301 489-17 V3.1.1 (2017-02) ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17:
 - Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

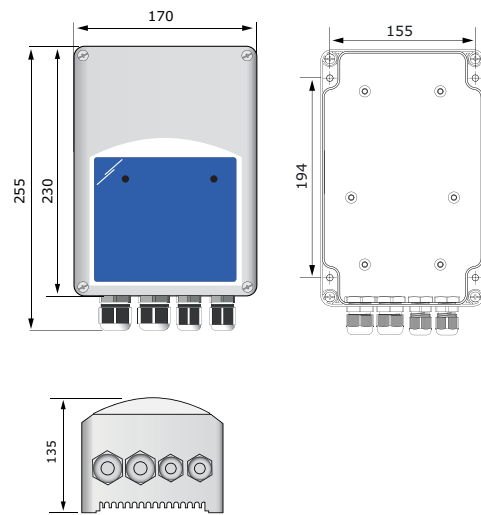
Download and Install Sentera Solution Firmware



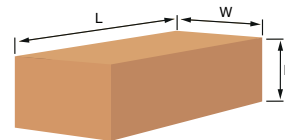
This product requires application dedicated firmware, which can be downloaded from the Sentera website: Select your application via www.sentera.eu/en/solutions.

First, connect all required products. Then connect your installation to www.senteraweb.eu via the Sentera internet gateway. Click "Link to solution" and enter the solution code to download the selected firmware into the connected devices. After the download there is the possibility to use the installation stand alone or to keep it connected to SenteraWeb and use the SenteraWeb features.

Fixing and dimensions



Packaging



| Article | Packaging | Length [mm] | Width [mm] | Height [mm] | Net weight | Gross weight |
|-------------|--------------|-------------|------------|-------------|------------|--------------|
| TCMF8-302EW | Unit (1 pc.) | 260 | 170 | 140 | 1,15 kg | 1.40 kg |
| TCMF8-602EW | Unit (1 pc.) | 260 | 170 | 140 | 1.40 kg | 1.65 kg |
| TCMF8-302WF | Unit (1 pc.) | 260 | 170 | 140 | 1,15 kg | 1.40 kg |
| TCMF8-602WF | Unit (1 pc.) | 260 | 170 | 140 | 1.40 kg | 1.65 kg |

Global trade item numbers (GTIN)

| Packaging | Unit (1 pc.) | Pallet |
|-------------|----------------|----------------|
| TCMF8-302EW | 05401003018675 | 05401003701324 |
| TCMF8-602EW | 05401003018705 | 05401003701355 |
| TCMF8-302WF | 05401003018682 | 05401003701331 |
| TCMF8-602WF | 05401003018712 | 05401003701362 |

TCMF8-WF/EW

Universal fan speed controller with internet gateway



Application example: destratification

