TCMF8-WF/EW

HVAC controller for AC fans 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 angel 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)

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

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

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 mm²
	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

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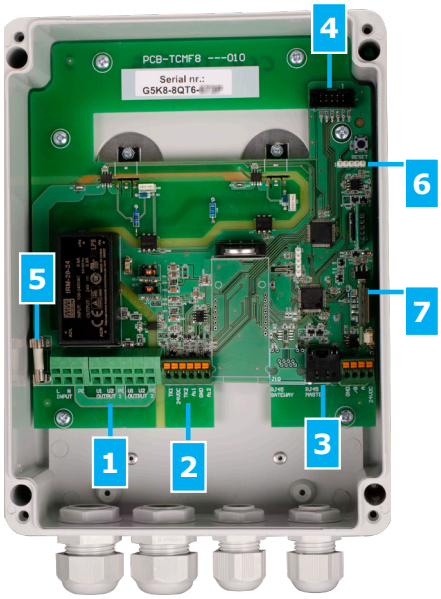
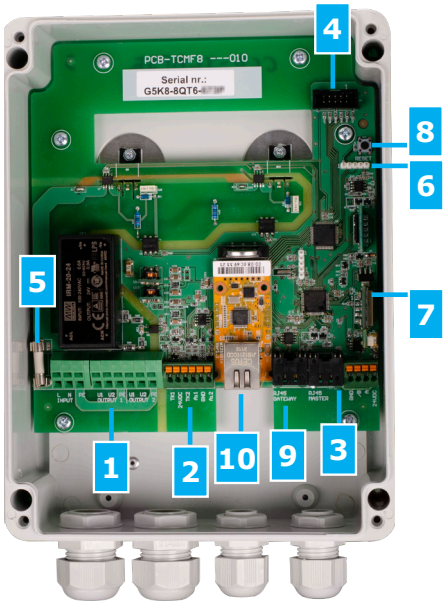
Legend

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	(5*20 mm) T 8,0 A H 250 VAC
		TCMF8-302WF	
		TCMF8-602EW	(5*20 mm) T 12,5 A H 250 VAC
		TCMF8-602WF	
6 - PROG header, P1	1 2 3 4 5		Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters
	1 2 3 4 5		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 - Wi-fi reset tact switch (EW only)	Push and hold for 4 seconds to perform a reset of the Wi-fi module. After the reset, the unit is traceable as Wi-fi network (XIG) and the configuration page for internet access is accesible via URL: 192.168.1.123 with password 123456789		
9 - RJ45 socket			To connect a Modbus master device. ATTENTION! Do not connect external power supply to this RJ45 socket.
10 - Ethernet			To connect the installation to SenteraWeb via a LAN cable

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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

CE

- 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

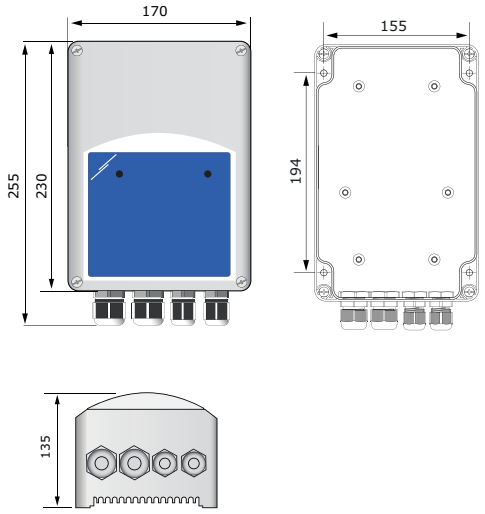
Download and Install Sentera Solution Firmware

SenteraWeb

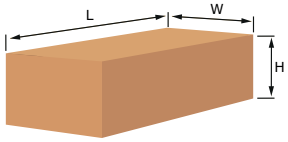
This product requires application dedicated firmware, which can be downloaded from the Sentera website: Select your application via www.sentera.eu/en/solutions.

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)

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

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Application example: destratification