



## Motor phase and temperature control relay - 35 mm HWTM2 Part number 84873028



- Control of 3-phase networks : phase sequence, phase failure
- Multi-voltage
- True RMS measurement
- Motor temperature control via PTC probes
- With line break or probe short-circuit detection
- Version with fault latching function and reset / test
- LED status indication

### Part numbers

Type	Functions	Nominal voltage (V)	Phase control voltage range
84873028	HWTM2 Phase sequence, phase failure, motor temperature via PTC probe, test, memory	24 →240 V AC/DC	3 x 208 →3 x 480 V AC

### Specifications

#### Supply

Supply voltage Un	24 V →240 V AC/DC
Voltage supply tolerance	-15 % / +10 %
Operating range	20,4 V →264 V AC/DC
Polarity with DC voltage	No
AC supply voltage frequency	50 / 60 Hz ± 10 %
Galvanic isolation of power supply/measurement	No (current limiting)
Power consumption at Un	4 VA in AC/0,5 W in DC
Immunity from micro power cuts	20 ms / 20,4 V

#### Inputs and measuring circuit

##### 3-phase control

Measurement ranges	3 x 208 →3 x 480 VAC *
Operating range	176 →528 VAC
Frequency of measured signal	50 / 60 Hz ±10 %
Input resistance	602 K $\Omega$ / line

##### Contrôle thermique

Maximum voltage of heat detection circuit	3.6 V (T1-T2 open)
Short-circuit current	7 mA (T1, T2 short-circuited)
Maximum heat detector resistance at 20 °C	1500 $\Omega$
Trip threshold	3100 $\Omega$ ± 10 %
Reset threshold	1650 $\Omega$ ± 10 %
Short-circuit detection range	0 →15 $\Omega$ ± 5 $\Omega$
Resistance measurement temperature drift	± 0,1 % / °C max.
Repetition accuracy with constant parameters	± 0,5 %

##### Timing

Delay on threshold crossing	300 ms max. (phase) 300 ms typical (temperature)
Y1 input response time (Y1-T1 contact) and PB	typically 50 ms
Reset time	10 s max. at 264 V AC
Delay on pick-up	500 ms

##### Output

Type of output	2 NO relays
Type of contacts	No cadmium
Maximum breaking voltage	250 V AC/DC
Max. breaking current	5 A AC/DC
Min. breaking current	10 mA / 5 V AC/DC
Electrical life (number of operations)	1 x 10 <sup>4</sup>
Breaking capacity (resistive)	1250 VA AC
Maximum rate	360 operations/hour at full load
Operating categories acc. to IEC/EN 60947-5-1	AC12, AC13, AC14, AC15, DC12, DC13, DC14
Mechanical life (operations)	30 x 10 <sup>6</sup>

##### Insulation

Nominal insulation voltage IEC/EN 60664-1	400 V
Insulation coordination (IEC/EN 60664-1)	Overvoltage category III : degree of pollution 3
Rated impulse withstand voltage (IEC/EN 60664-1)	4 kV (1,2 / 50 $\mu$ s)
Dielectric strength (IEC/EN 60664-1)	2 kV AC 50 Hz 1 min.

Insulation resistance (IEC/EN 60664-1)	> 500 MΩ / 500 V DC
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**General characteristics**

"Phase" relay status indication	Yellow LED
"Temperature" relay status indication	Yellow LED
Display power supply	Green LED
Casing	35 mm
Mounting	On 35 mm symmetrical DIN rail, IEC/EN 60715
Mounting position	All positions
Material : enclosure plastic type VO to UL94 standard	Incandescent wire test according to IEC 60695-2-11 & NF EN 60695-2-11
Protection (IEC/EN 60529)	Terminal block : IP20 Casing : IP30
Weight	107.1 g
Connecting capacity IEC/EN 60947-1	Rigid : 1 x 4 <sup>2</sup> - 2 x 2.5 <sup>2</sup> mm <sup>2</sup> 1 x 11 AWG - 2 x 14 AWG Flexible with ferrules : 1 x 2.5 <sup>2</sup> - 2 x 1.5 <sup>2</sup> mm <sup>2</sup> 1 x 14 AWG - 2 x 16 AWG
Max. tightening torques IEC/EN 60947-1	0,6 → 1 Nm / 5,3 → 8,8 Lbf.In
Operating temperature IEC/EN 60068-2	-20 → +50 °C
Storage temperature IEC/EN 60068-2	-40 → +70 °C
Humidity IEC/EN 60068-2-30	2 x 24 hr cycle 95 % RH max. without condensation 55 °C
Vibrations according to IEC/EN 60068-2-6	10 → 150 Hz, A = 0.035 mm
Shocks IEC/EN 60068-2-6	5 g

**Standards**

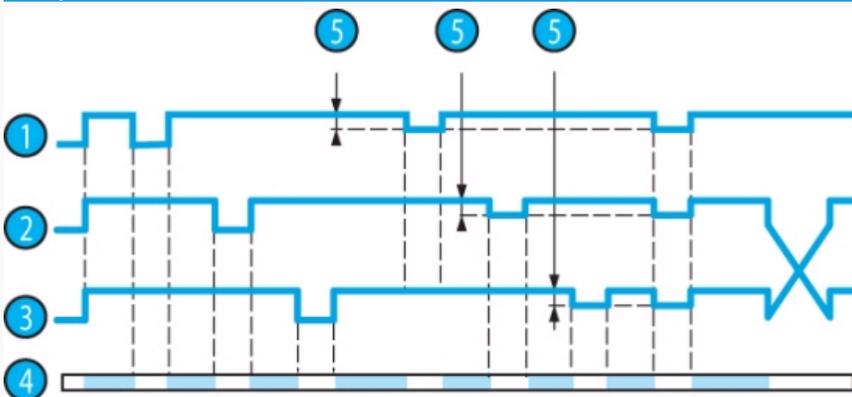
Marking	CE (LVD) 73/23/EEC - EMC 89/336/EEC
Product standard	NF EN 60255-6 / IEC 60255-6 / CEI 60034-11-2 / UL 508 / CSA C22.2 N°14
Electromagnetic compatibility	Immunity EN 61000-6-2/IEC 61000-6-2 Emission EN 61000-6-4/EN 61000-6-3 IEC 61000-6-4/IEC 61000-6-3 Emission EN 55022 class B
Certifications	UL, CSA, GL
Conformity with environmental directives	RoHS, WEEE

**Comments**

**Accessories**

Description	Code
Removable sealable cover for 35 mm casing	84800001

**Principles**



The configuration is taken into account on energisation of the relay HWTM2.

Selecting the operating mode :

Using the selector switch, select one of two modes :

- Thermal control without latching,
- Thermal control with latching.

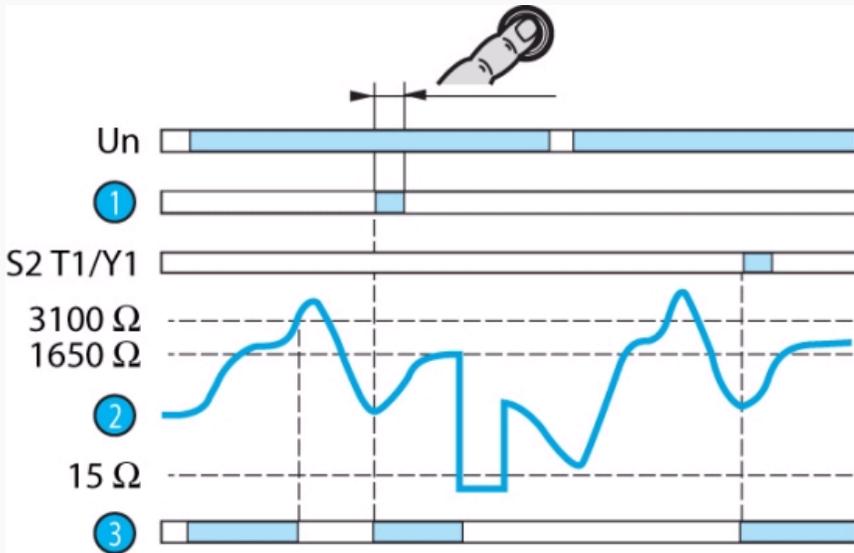
**NB :** On energisation, the switch placed in one of the five intermediate positions keeps the relays in the open contact state and the error is signalled by the LEDs flashing simultaneously.

The mode selector switch position is taken into account on energisation.

Changes made during operation have no effect : the active configuration may therefore be different from that indicated by the switch ; relay HWTM2 operates normally but the change in configuration is signalled by both LEDs flashing simultaneously.

N°	Legend
1	Phase L1
2	Phase L2
3	Phase L3
4	Relay R2

Principles



Version HWTM2 has a rotary switch for configuring the operating mode of the temperature control with or without latching.

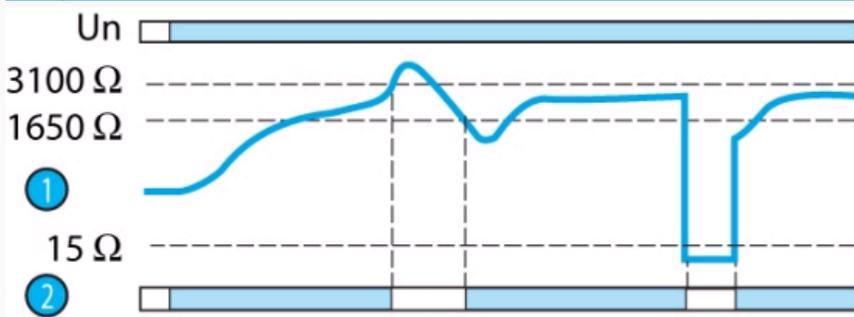
In "memory" mode, when a fault has been recorded, the "temperature" relay latches in the open position.

Once the temperature is correct again, the relay can be unlatched (reset) either by pressing the "Test/Reset" button (for at least 50 ms), or by closing a volt-free contact (for at least 50 ms) between terminal Y1 and T1 (without load in parallel).

Relay HWTM2 can also be reset more abruptly by switching off and on again several times in succession (see reset time).

N°	Legend
①	Test / Reset
②	Resistance between terminals T1 and T2
③	Relay R1

Principles



Latching (HWTM2)

The HWTM2 version has a rotary switch which can be used to configure the temperature control operating mode with or without latching.

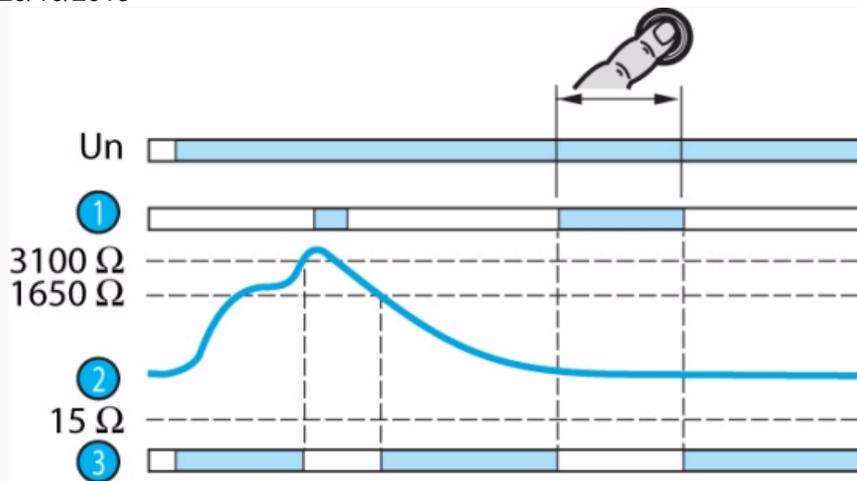
In "memory" mode, when a fault has been recorded, the "temperature" relay latches in the open position.

Once the temperature has returned to a correct value, the relay can be unlatched (reset), either by pressing the "Test/Reset" pushbutton (50 ms minimum), or by closing (50 ms minimum) a volt-free contact between terminals Y1 and T1 (without parallel load).

The HWTM2 can also be reset, more abruptly, by switching it off and on again several times in succession (see reset time).

N°	Legend
①	Resistance between terminals T1 and T2
②	Relay R1

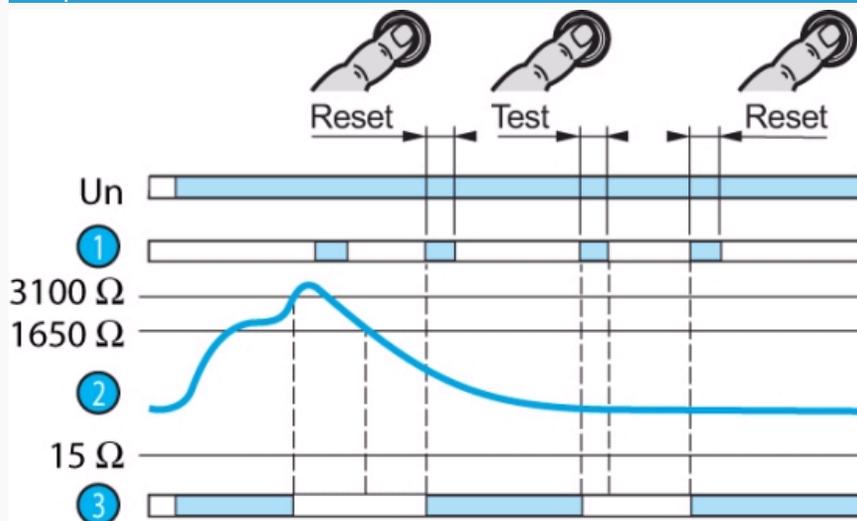
Principles



Version HWTM2 has a "test/reset" button for checking the operating state of the temperature control : When the temperature is normal, pressing the "test/reset" button simulates overheating, the yellow LED is extinguished and the contact of the "temperature" output relay opens ; if "memory" mode is active, the fault indication is latched (the button must be released for at least 50 ms, then pressed again to reset the function).

N°	Legend
①	Test / Reset
②	Resistance between terminals T1 and T2
③	Relay R1

**Principles**



**Using the "test/reset" button**

Version HWTM2 has a "test/reset" button for checking the operating state of the temperature control and resetting it after latching in "memory" mode.

For both functions, the button must be pressed and released for 50 ms.

When the temperature is normal, pressing the "test/reset" button simulates overheating, the contact of the "temperature" output relay opens and the "no fault" LED is extinguished.

If "memory" mode is inactive, the "fault" indication is maintained as long as the button is pressed.

If "memory" mode is active, the "fault" indication is latched. The button must be released, then pressed again to reset the function.

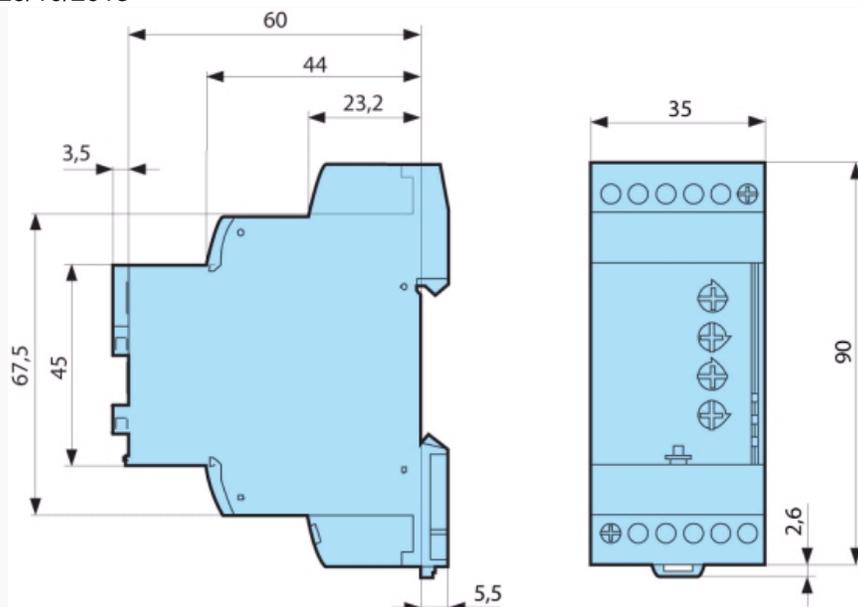
In "memory" mode, if a fault has been detected and the temperature is now correct again, the "temperature" relay can be unlatched (reset) with the "test/reset" button'.

As long as the temperature is abnormal, i.e. as long as the resistance of the thermal detector circuit is greater than 3,100 Ω or, having exceeded 3,100 Ω it has not fallen back to below 1,650 Ω, pressing the "test/reset" button has no effect.

N°	Legend
①	Test / Reset
②	Resistance between terminals T1 and T2
③	Relay R1

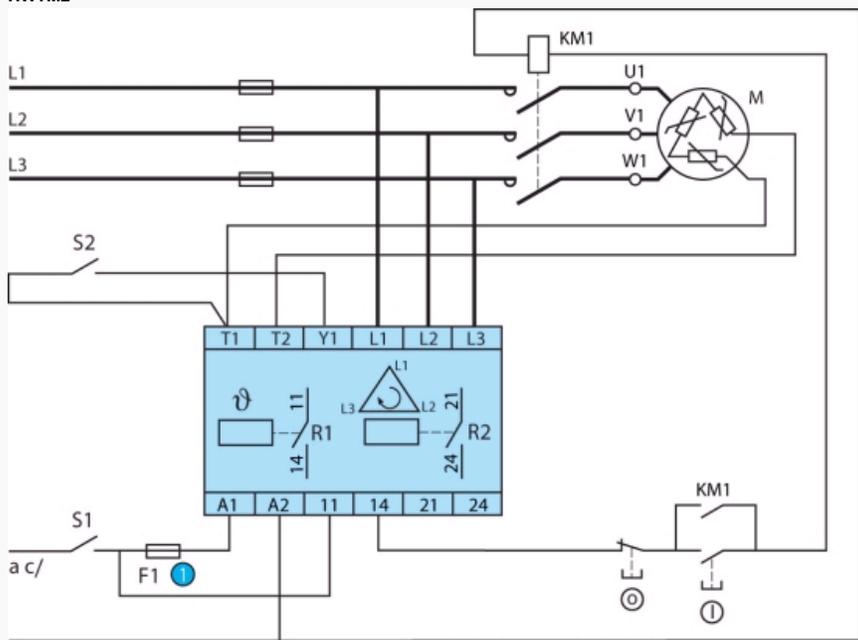
**Dimensions (mm)**

HWTM2



**Connections**

**HWTM2**



N°	Legend
1	1 A fast-blow fuse or cut-out

**Product adaptations**



- Customisable colours and labels