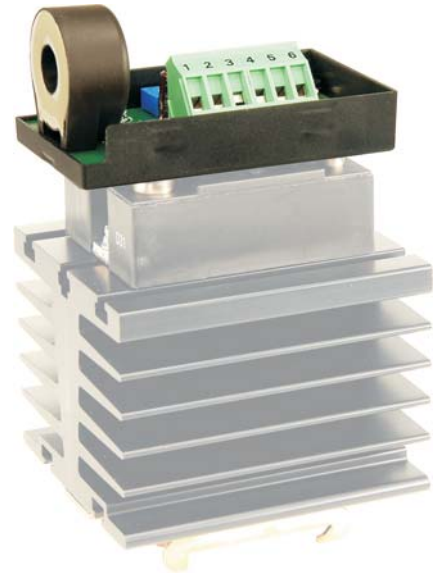


Current Alarm Module H2CM

Monitoring of heating elements and SSR relays in molding tools

Features

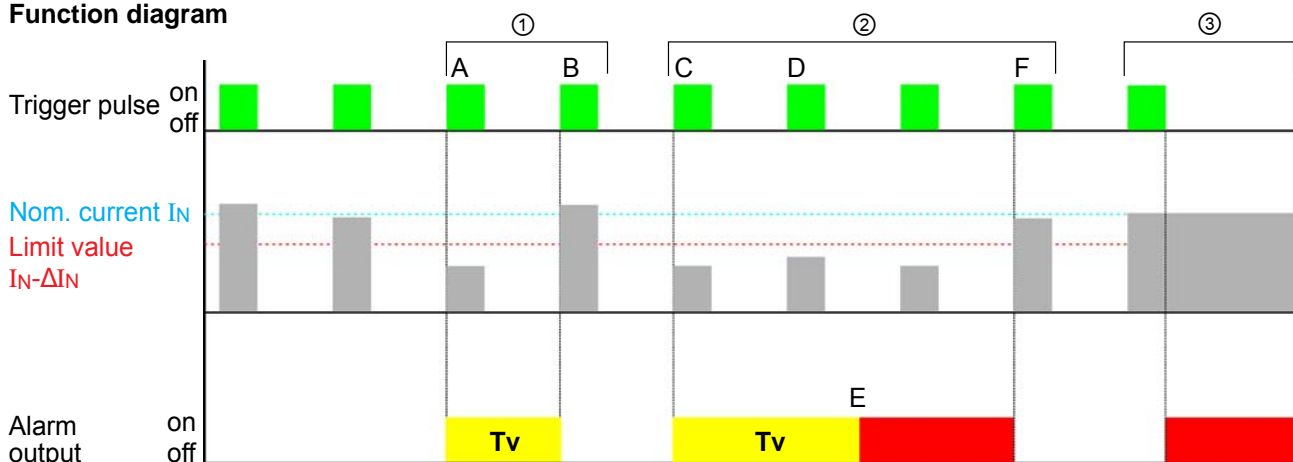
- Teach-in-function for recording the heating current I_N automatically, operating range 1...80 A, 50...60 Hz
- Monitoring the pulse load current
- Monitoring the zero signal load current
- Alarm when heating current falls more than ΔI_N (adj. 0...20 %) below learned up current
- Electronic alarm output, short circuit protected, adjustable alarm delay time
- 3 LED for status indication
- Supply voltage 10 ... 30 V DC
- Mounting of H2CM on the terminals of SSR-relays



General information

H2CM-modules are used for quality supervision in production of plastic parts in injection molding machines, thermoform-machines and even in the production of rubber parts. In temperature control circuits operating with solid state relays (SSR), the H2CM modules watch the correct function of the installed heating elements in a molding tool by measuring the total heating current. Even the correct function of the SSR will be checked continuously.

Function diagram



- ① At **A** the heating current falls more than ΔI_N (adj.0...20 %) below the learned up current while triggering the SSR. The error message will be stored and the delay time T_v begins to run. At **B** the heating current exceeds this limit again and the error message will be reset.
- ② At **C** the situation is just like **A**, but it will continue up to **D**. At **E** the delay time T_v runs down and the alarm output is activated. At **F** the heating current exceeds the limit value again and the alarm will be cut off.
- ③ Without a trigger impulse to the SSR any flow of heating current will set the alarm output immediately. In this case the SSR is defect.

Technical data

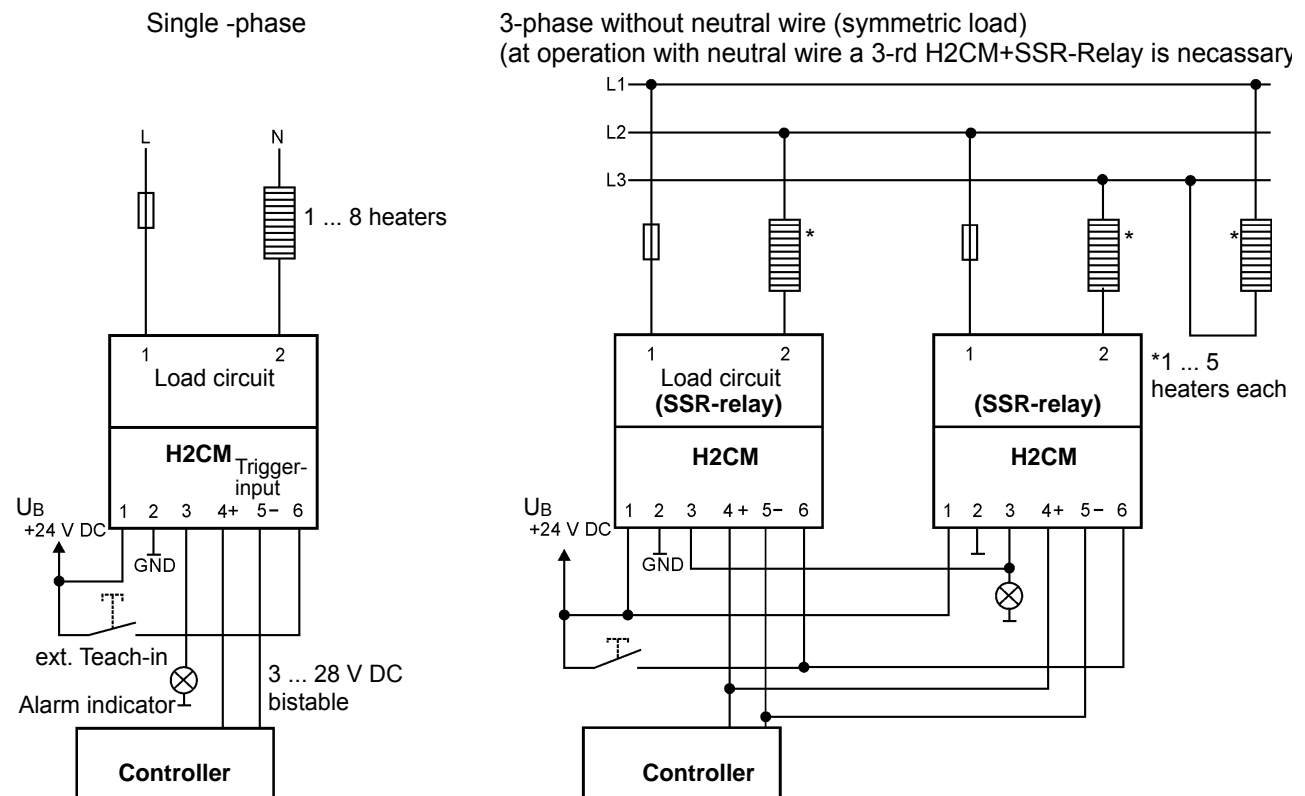
Supply voltage	: 10 ... 30 V DC, max. 5 % ripple voltage
Current consumption	: < 20 mA (with no load)
Working temperature	: -10 ... +60 °C (14 ... 140°F)
CE-conformity	: EN55022; IEC61000-4-2/3/4/5/11
Measuring range	: 1 ... 80 A, 50/60 Hz
Alarm delay time	: 0 ... 60 s adjustable
Trigger input	: via opto coupler, $R_i > 3.3 \text{ k}\Omega$; off level $\leq 1 \text{ V DC}$; on level 3 ... 28 V DC
Teach-in input	: $R_i > 20 \text{ k}\Omega$; off level $\leq 2 \text{ V DC}$; on level 6 ... 30 V DC
Alarm output	: PNP-transistor open collector, max. 50 mA (short circuit protected), via dip-switch detachable
Terminal cover (load)	: acc. German BGV A3 (part of delivery)
Connection (excitation)	: Screw terminals 1.5 mm ² flexi wire or 2.5 mm ² single wire
Mounting	: fits for every SSR-relay, D-type
Dimensions	: 46 x 75 x 32 mm (W x L x H)

Function

In heating circuits operating with zero-voltage switching solid state relays (SSR) the power will be controlled via duty ratio. The current monitoring of the H2CM operates with active trigger control of the SSR. At any electric half-wave the load current will be measured with the built-in current transformer and compared with the teachend-in value I_N . When load current falls more than ΔI_N (adj. 0...20 %) below the teachend-in current, an error will be stored in the H2CM. At any following duty cycle the H2CM check, whether the load current is still below the limit or not. If the error is still present, the alarm output will be activated at the end of the delay time T_v (0...60 s). If not, the error message will be reset.

Additionally the H2CM supervises the correct function of the SSR. In case of current flow without triggering the SSR, the alarm output will be activated undelayed.

Connection examples



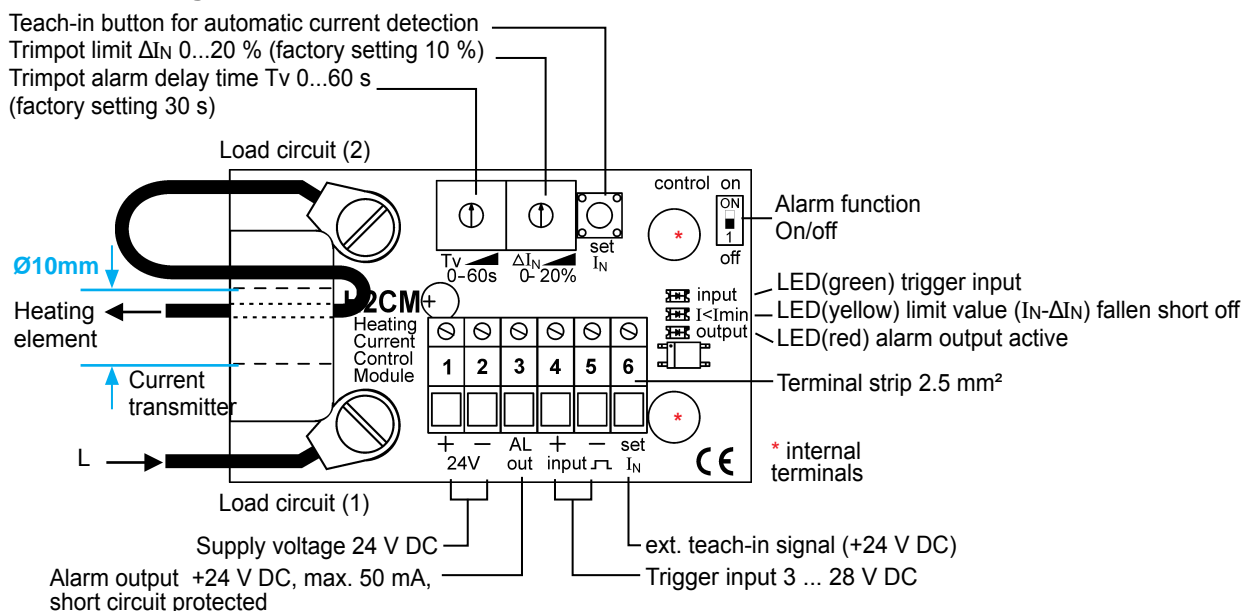
Starting up

1. Set DIP-switch "control" on the H2CM to position "off" in order to disable alarm output while running the teach-in procedure.
2. Start the teach-in procedure by pressing the "set I_N " button or by an external signal to terminal 3 (operation with more than 1 module possible) for more than 1 s.
3. The H2CM activates the mounted SSR-relay for about 5 s. The heating elements warm up. Then the heating current (load current) will be measured and stored in the H2CM as nominal current I_N .
4. If nominal current I_N is less than 1 A and more than 80 A the teach-in procedure will be aborted. All LED's on the H2CM are flashing with 5 Hz. A short actuation of the "set I_N " button will reset the error-message.

Note: For load currents <1 A wrap 2 or more windings through the current-transformer.

5. With trimpot ΔI_N the span between teach-in value I_N and the limit value can be adjusted. Factory setting is 10 %. With factory setting the alarm will be activated if the actual heating current is less than 90 % of the teach-in-current I_N .
6. Set DIP-switch "control" on the H2CM to position "on" to start regular monitoring operation

Connection diagram



Ordering code:

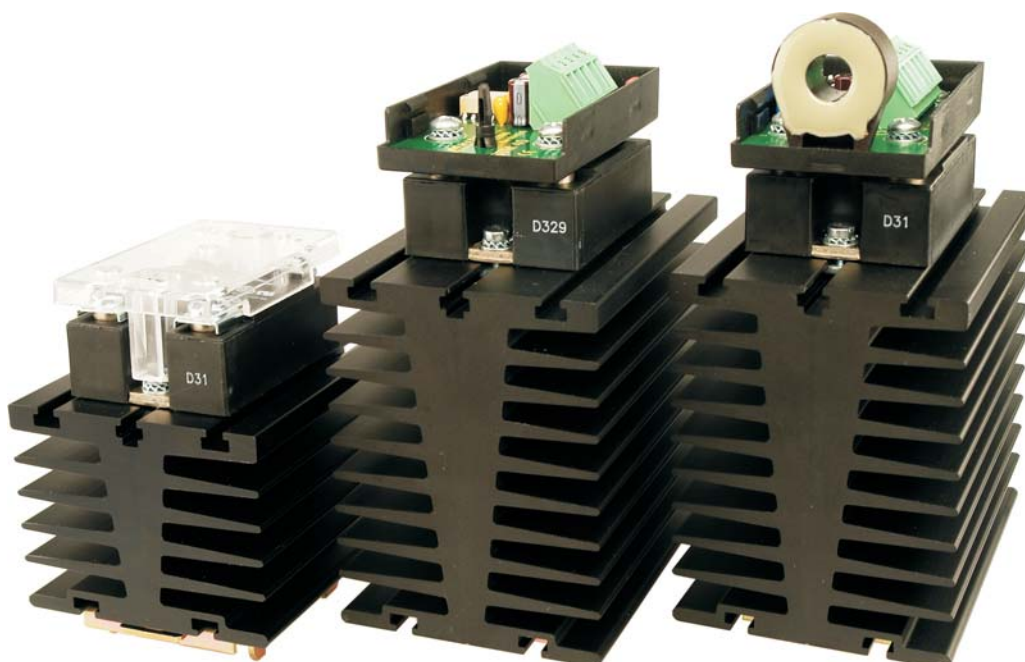
H2CM - 1. - 2.

- 1. Terminal screws** (part of delivery) fitting for SSR-relays with
- | | |
|-------|---------------------|
| US | US thread 6-32/8-32 |
| M3/M4 | DIN thread M3/M4 |
| M3/M5 | DIN thread M3/M5 |

- 2. Option**
- | | |
|----|-----------------|
| 00 | without options |
|----|-----------------|

Accessories

Request or SSR-relays, heat-sinks, power modules and additional control modules data sheets.



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