Emphatec SigNext® - SSR

DC SSR and Current Limiter

Features

- DC solid state relay rated up to 20A
- Includes overcurrent protection with user adjustable threshold
- Digital output when current threshold is exceeded
- Mounts on 32mm and 35mm DIN rails

Other features include a trip alarm output, status LED and a cross connection method that allows 24Vdc to be bussed to multiple modules. The module mounts on both 32mm and 35mm DIN rails and requires only 40mm of rail space.

We're not sure if this is a DC solid state relay with an overcurrent protection feature or an electronic DC circuit breaker with a relay function. Either way, it can control 24Vdc loads rated up to 20A, senses the load current and turns off if the current exceeds a user configurable trip point.

Using a 24Vdc control signal the load current can be turned on and off. The user can set a load current threshold (or trip point) above which the module turns off. Resetting the module after an overcurrent condition can be accomplished 3 ways:
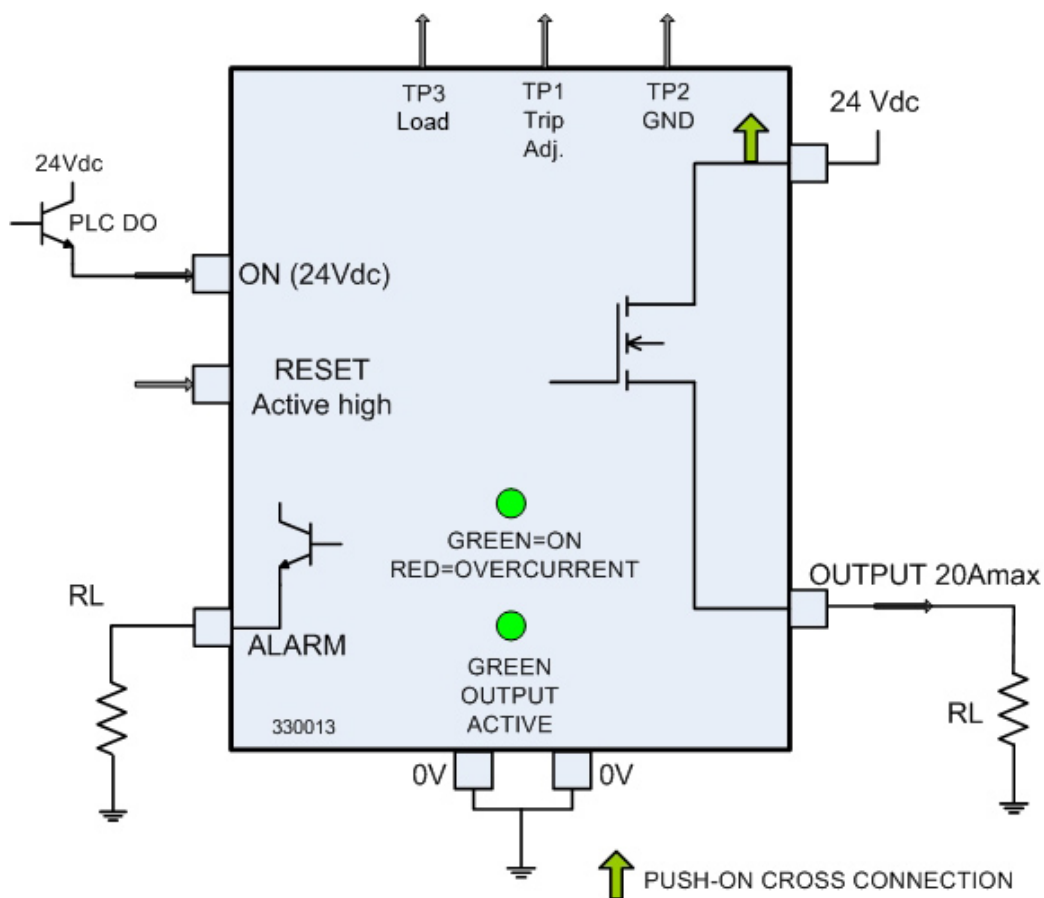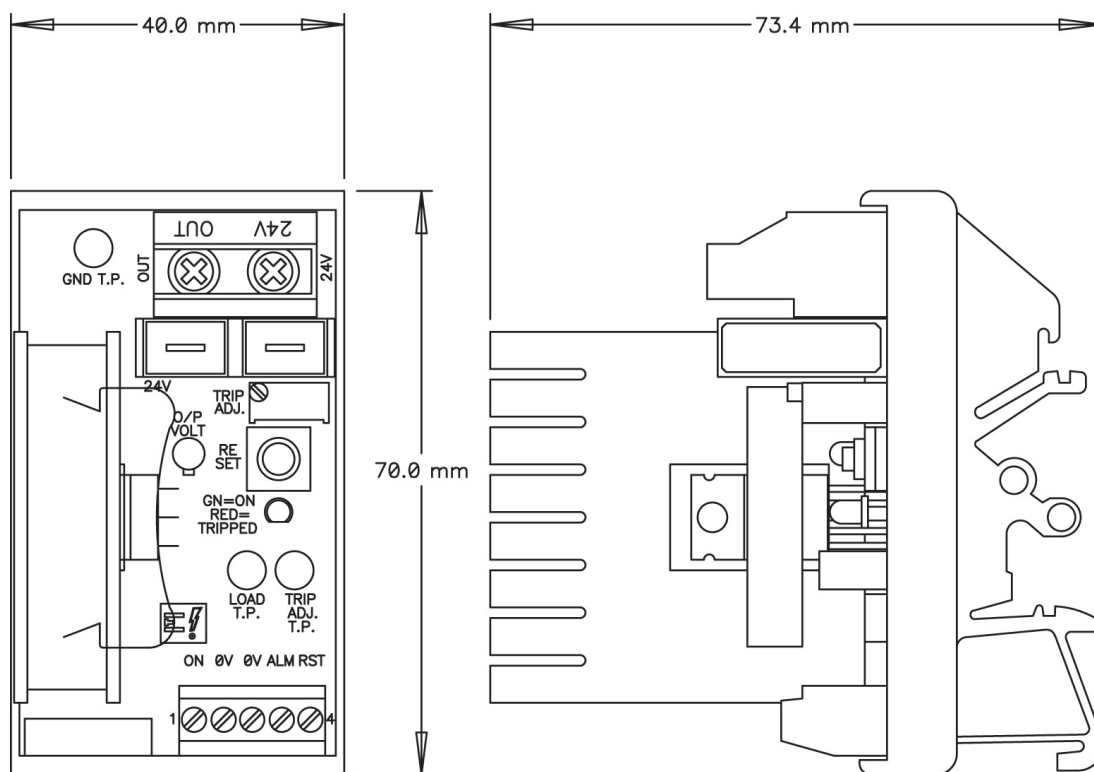
- Pulsing the RST terminal with 24Vdc
- Pressing the on-board reset pushbutton
- Cycling the 24Vdc supply

The trip point is adjusted using a multi-turn potentiometer. How does the user know what trip current level they have set it for? There are 2 methods. The first is to connect a voltmeter between 2 test points (mini-banana plug jacks) and calculating the trip point using the equation $V_{TEST} = I_{TRIP} \times 0.185$. A more accurate method involving applying a known load current and adjusting the trip point to an actual measured value is also possible (see "Adjustment" section on reverse).

Ordering Data

Type	Order Number
Emphatec SligNext® - SSR DC SSR and Current Limiter	330013

Technical Data

Emphatec SigNext® - SSR : DC SSR and Current Limiter	
Order Number	**330013**
Supply Voltage:	24Vdc nominal, 20-28Vdc
Current:	20A max. via screw terminals 15A max. via push-on terminals
Wire size:	26-10AWG via screw terminals 16-14AWG using female crimp terminal
Output (load) voltage:	supply voltage - V_{DROP} across output
VDROP across output:	=10mW nominal x I_{LOAD} (0.14V @ 20A)
Continuous current:	=supply current max. (automatic turn-off if $I_{LOAD} \geq$ 25A nominal, red "TRIP" LED is not energized in automatic off mode)
Surge current:	25A max.
Type:	mosfet
Wire size:	26-10 AWG via screw terminals
Alarm voltage:	24Vdc nominal sourcing via "TRP" terminal
Alarm current:	50mA max.
Alarm function:	Active while unit is in overcurrent trip condition
Wire size:	26-12AWG
Control voltage:	24Vdc±10%
Control current:	2mA max.
Control function:	Energizing "ON" terminal turns SSR on (active high)
Wire size:	26-12AWG
Current trip point threshold:	0.5-20A
Function:	Output is switched off and remains off (latched) until module is reset

Adjustment:	Via "Trip Adj." Potentiometer, trip point can be determined by measuring the voltage between test points (black=0V, red=VTEST); VTEST=ITRIP x 0.185. Some typical values are as follows: ITRIP VTEST 1.0 0.185 Vdc 2.0 0.370 2.5 0.463 3.0 0.555 5.0 0.925 7.5 1.388 10 1.850 12 2.220 15 2.775 20 3.700 An alternative and more accurate adjustment method is to apply the desired load current to the output, measuring the voltage at the white "Load T.P." Test point and setting the trip adj. voltage to the Load T.P. Voltage + 10%
Switching time:	<120ms (total time to detect I_{LOAD}>I_{TRIP} and to switch off mosfet output)
Reset:	Via pushbutton or "RST" terminal (24Vdc @ 5mA). Cycling the supply will also reset the module.
Reset terminal wire size:	26-12AWG
Status LED's "ON"	Indicates supply voltage is present green = control is energized, red = unit is latched off (ALM terminal is active)
Status LED's "TRIP":	green = control is energized, red = unit is latched off (ALM terminal is active)
Mounting:	32mm or 35mm DIN rail
Operating temperature:	-20°C to +70°C
Approvals:	cULus Listing E256770

40.0 mm — 73.4 mm — 70.0 mm

GND T.P. OUT OUT 24V 24V

24V TRIP ADJ. O/P VOLT RE SET GN=ON RED= TRIPPED LOAD T.P. TRIP ADJ. T.P.

ON 0V 0V ALM RST

1 4

TP3 Load   TP1 Trip Adj.   TP2 GND   24 Vdc

24Vdc   PLC DO

ON (24Vdc)

RESET Active high

GREEN=ON RED=OVERCURRENT

RL   ALARM   GREEN OUTPUT ACTIVE

330013

OUTPUT 20Amax

RL

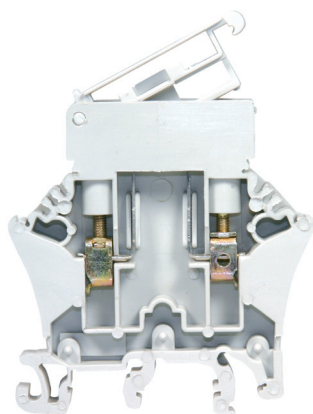0V   0V

PUSH-ON CROSS CONNECTION
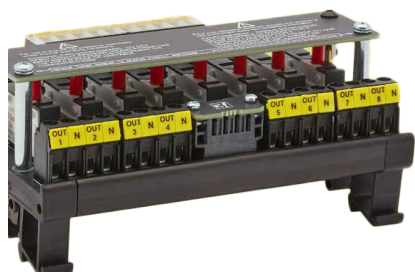
Other Overcurrent Protection Products

Emphatec SigNext® 8 Channel Circuit Breaker Module

- 8 circuit breakers in a 35mm wide package
- remote on/off and manual reset
- intended for 24Vdc applications

Emphatec DePro® BC5F
Class 1 Division 2 Certified Fuse Terminal

- accepts 5 x 20mm fuse up to 10A
- combifoot; mounts on 15, 32 and 35mm DIN rails

Emphatec DePro® CBM8
Supplemental Circuit Breaker Module

- 8 supplemental breakers with common or independent inputs
- 24Vdc and 120Vac versions
- Provision for quick connection to Emphatec DePro FMON monitoring module
- C1D2 certified for short circuit protection

Subject to technical changes

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