

## DIN61 Overcurrent Relay

The DIN61 is a member of Cooper Power Systems' DIN line of industrial relays. The DIN61 offers the following functions:

- Three phase time delayed and instantaneous overcurrent (50/51) protection.
- Ground overcurrent (51G) protection.
- Selectable time overcurrent characteristics.
- Blocking input.
- RS-485 port for communication and programming.

As members of the DIN series of relays, the DIN61 also offers the following features:

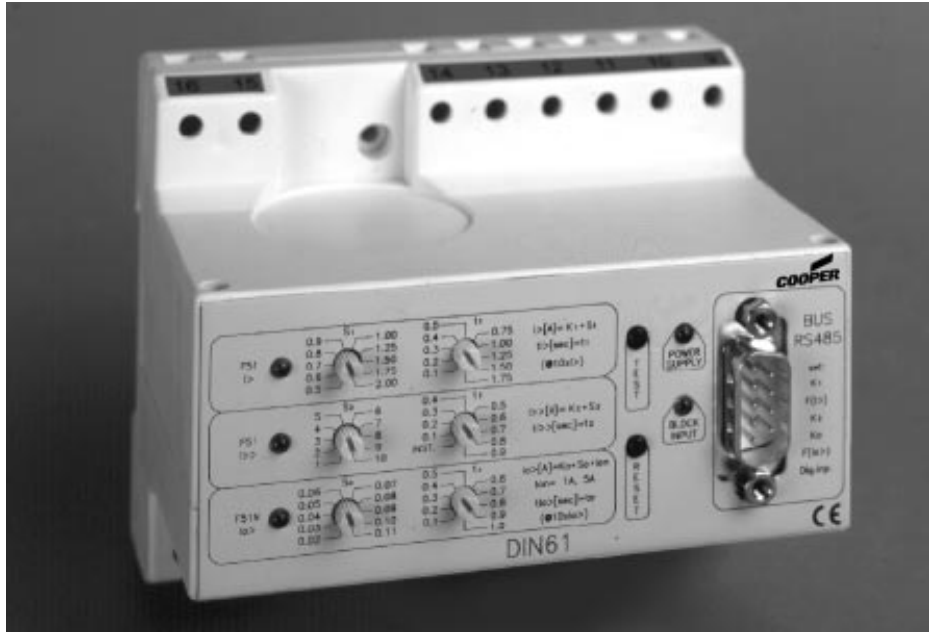
- Standard DIN rail mounting.
- Extremely compact, self contained package.
- Auto-ranging power supplies.
- 5A phase, and 5A or 1A neutral CT inputs.
- Automatic or Manual Reset modes.
- Front panel test button to verify relay operation.
- Built in relay diagnostics.

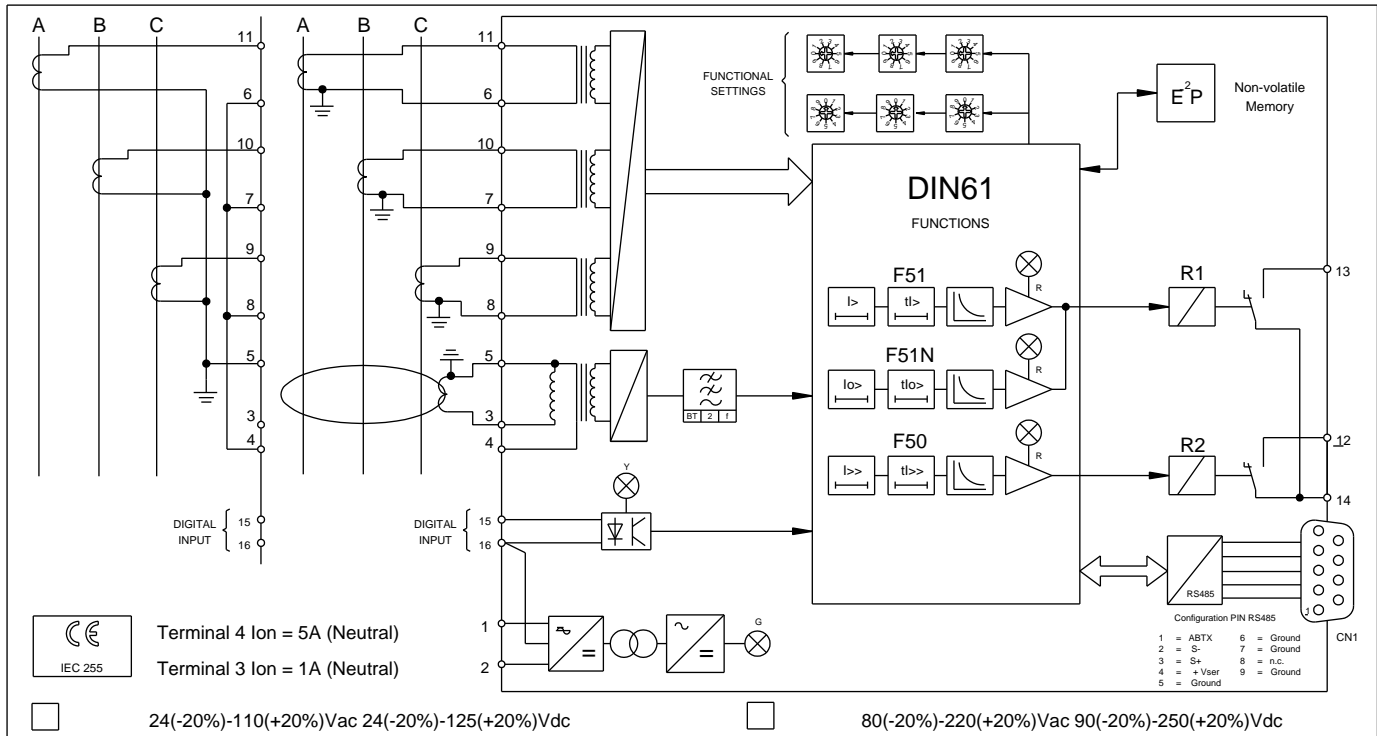
### Applications

The DIN61 is suited for applications where phase and/or ground overcurrent protection is required. The serial communication port allows the relay to be used for remote metering of current values. The compact nature of the DIN61 makes it ideal for dense installations where space is at a premium, or where DIN rail mounted components are desired.

### Phase Overcurrent Protection

Five time overcurrent characteristics are provided which are front panel selectable. These are:





**Figure 2.**  
**Wiring Diagram for the DIN61 Relay**

### Blocking Input

When used as a blocking input, the digital input blocks or delays the trip functions. When the time delay is disabled, the output of the relay will be blocked for as long as the blocking signal is present. When the delay is enabled, the relay will delay the operation of the trip functions by a programmable value. This time delay permits the relay to be used in a backup configuration with downstream relays.

The blocking input may be programmed to block any combination of the relay's overcurrent functions.

### Remote/Automatic Reset

When used as a remote reset input, the digital input controls whether the relay resets automatically as soon as the input value drops below the set pick-up point, or manually. Manual reset may be accomplished by either pressing a button on the front panel, or by a remote external contact.

When the digital input is used in blocking mode, the relay defaults to manual reset.

### Targets

Five LEDs are provided to provide targeting.

- Three red LEDs, one each to indicate a time delayed phase, instantaneous phase, or ground overcurrent. A flashing LED indicates a pick-up condition, a continuously lit LED indicates a trip condition.
- One yellow LED to indicate when the blocking input is active.
- One green LED to indicate the relay status.

### Diagnostics

Complete memory and circuit diagnostics are run upon powering the relay. The revision level of the firmware is displayed at this time.

During normal operation the relay suspends operation every 15 minutes for 10 msec and runs a

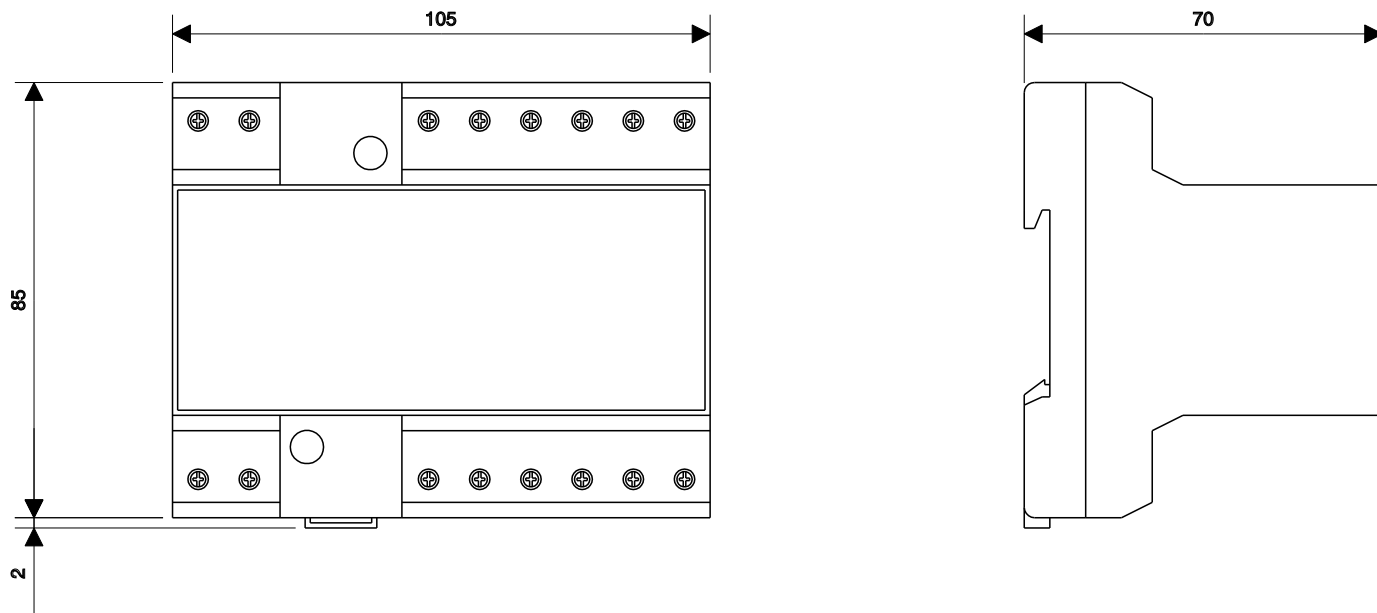
comprehensive set of diagnostics that includes memory checksum, test of the A/D converters by injection of an internally generated reference voltage, and a check of the ALU.

The relay provide a manual test routines which may be run at any time from the front panel. The routine performs the same 15 minute test an in addition checks the target LEDs and the output relays.

### Ordering Information

For the DIN61 Relay with low range power supply, use catalog number PRDIN61JL.

For the DIN61 Relay with high range power supply, use catalog number PRDIN61JH.



**Figure 3.**  
**DIN61 Relay (All Dimensions in Millimeters)**

**TABLE 1**  
**Functional Specifications**

<b>Instantaneous (High Set) Phase Overcurrent (50)</b>	
Pick-Up Range.....	1 - 10 pu rated secondary phase input current in 10 steps
Time Delay .....	0.1 - 0.9 seconds in 9 steps or instantaneous
<b>Phase Overcurrent (51)</b>	
Time Overcurrent Characteristics .....	Definite Time
.....	Long Definite Time
.....	Standard Inverse
.....	Very Inverse
.....	Extremely Inverse
Pick-Up Range.....	0.5 - 2.0 pu rated secondary phase input current in 10 steps
Time Delay in Definite Time Mode.....	0.1 - 1.75 seconds in 10 steps
Time Delay in Long Definite Time Mode .....	1.0 - 17.5 seconds in 10 steps
Time Delay in Inverse Characteristic Modes .....	0.1 to 1.75 seconds in 10 steps <sup>1</sup>
<b>Ground Overcurrent (51)</b>	
Time Overcurrent Characteristics .....	Same as for the phase overcurrent
Pick-Up Range.....	0.02 - 0.11 pu rated secondary ground input current <sup>2</sup> in 10 steps
Time Delay in Definite Time Mode.....	0.1 - 1.0 seconds in 10 steps
Time Delay in Long Definite Time Mode .....	1 - 10 seconds in 10 steps
Time Delay in Inverse Characteristic Modes .....	0.1 to 1.0 seconds in 10 steps <sup>1</sup>
<b>Blocking Input</b>	
Time Delay Mode.....	0.1 - 0.5 seconds in 0.1 second steps
Block Mode .....	Operation blocking while input is present

<sup>1</sup> The time delay is specified at a pickup value of 10x the set pick-up level.

<sup>2</sup> Nominal 1A and 5A neutral current CT inputs are provided on the DIN61.

**TABLE 2**  
**Electrical Specifications**

<b>Reference Standards</b> .....	IEEE C37, IEC 255, 801, CEI 41-1
<b>Dielectric Test Voltage</b> .....	2000V, 1 min
<b>Impulse test Voltage</b> .....	5kV common mode, 1kV differential mode - 1.2x50 $\mu$ s
<b>Immunity to high frequency bursts</b> .....	1000V common mode, 500V differential mode at 100kHz
.....	2500V common mode, 1000V differential mode at 1 MHz
<b>Immunity to electrostatic discharge</b> .....	15 kV
<b>Immunity to sinusoidal wave burst</b> .....	100V over 0.1 to 1.0 MHz
<b>Immunity to radiated EM field</b> .....	10V/m over 20 to 1000MHz
<b>Immunity to 50-60 Hz magnetic field</b> .....	1000A/m
<b>Immunity to impulse magnetic field</b> .....	1000A/m, 8x20 $\mu$ s
<b>Resistance to vibration and shock</b> .....	10 - 500 Hz, 1g
<b>Rated phase input current</b> .....	5A
<b>Rated neutral (residual) input current</b> .....	1A or 5A
<b>Current overload on all input circuits</b> .....	200A for 1 second, 10A continuous
<b>Burden on current inputs</b> .....	2 milli-ohms for phase inputs
.....	3 milli-ohms for 1A neutral input
.....	10 milli-ohms for 5A neutral input
<b>Average power supply consumption</b> .....	2.5VA
<b>Output Relay Characteristics</b>	
Nominal Rating .....	5A, 250VAC
Maximum switching power .....	1250VA
Maximum switching current .....	5A (resistive)
Maximum switching voltage.....	250VAC - 110VDC
Maximum make current .....	0.2A @ 110VDC
<b>Power Supply</b>	
Low range supply option.....	24 - 110 VAC (-20% / +15%)
.....	24 - 125 VDC (-20% / +20%)
High range supply option.....	80 - 220 VAC (-20% / +15%)
.....	90 - 250 VDC (-20% / +20%)
Operation temperature.....	-20°C to +60°C
Storage temperature.....	-30°C to +80°C



P.O. Box 1640, Waukesha, WI 53187  
<http://www.cooperpower.com/>