D4-CMA2-1A / P49-CMA2-1A
D4-CMA2-5A / P49-CMA2-5A
AC current monitor

Operating instructions and Guarantee Certificate

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Description:

This device provides OVER and / or UNDER current protection. The display may be scaled to any value from 5 to 5000 and the decimal pointer set to any position. This allows the device to be configured for any primary CT current with up to 3 decimal places. Each relay is controlled via separate upper, lower and hysteresis set-points. The relays may therefore be configured for both over and / or under, or one for over and the other for under current protection. Programmable 'start-up' and 'reaction' delays are included.

Operation:

The relays remain energised while the current remains below the upper and above the lower set points. The device indicates OVER and UNDER current conditions by displaying "r1.Hi", "r2.Hi", "r1.Lo", "r2.Lo". If the start-up or reaction delay is keeping a relay energised during a fault condition, "-r1-" or "-r2-" is displayed as a warning. A latch facility is also included. The menu may be reduced to stop accidental changes to more advanced settings. The settings may also be locked. When this is done, the settings may be viewed, but not changed.

Menu function:

All adjustments are made via the three front mounted buttons. Press the "MENU" button repeatedly until the desired setting is reached, press "SELECT" to display the current value of the selected setting, or sub menu (if applicable). The "+" and "-" buttons are used to change the value. "ENTER" will return the device to the menu. The "BACK" button will exit the menu.

Menu options:

- Scale ("SCAL") (default: 100 (1A device), 500 (5A device)

  This value will be displayed when the input is at its maximum. (Usually set to the primary current of the CT).

- Decimal Pointer ("dECi") (default: 5.00)

  Set the position of the decimal pointer (xxxx, xxx.x, xx.xx, x.xxx)

- Upper limit for relay 1 ("Hi 1") (default: Disabled)

  If the input current exceeds this value, relay 1 is de-energised and "Hi 1" is displayed. To disable this feature, set it to maximum. "diSA" is displayed. The maximum value of this setting depends on the scale setting.

- Lower limit for relay 1 ("Lo 1") (default: Disabled)

  If the input current drops below this value, relay 1 is de-energised. "Lo 1" is displayed. To disable this feature, set it to minimum (-1). "diSA" is displayed.

- Hysteresis for relay 1 ("HyS.1")

  If the input current has exceeded the "Hi 1" setting, or dropped below the "Lo 1" setting, the current must drop, or rise above the applicable limit by this amount before relay 1 re-energises. This setting is limited to the difference between the "Hi 1" and "Lo 1" settings.

- Upper limit for relay 2 ("Hi 2") (default: Disabled)
- Lower limit for relay 2 ("Lo 2") (default: Disabled)
- Hysteresis for relay 2 ("HyS.2")
- Start-up delay ("St d") (default: 1 Second)

  The relays are energised upon start-up. The device does NOT monitor the input current until the start-up delay has lapsed. This feature is used to allow for over/under-current conditions following a power-up. If a fault occurs during this time, the display indicates "-r1-" and or "-r2-".

- Reaction delay ("rE d") (Default: 0 seconds)

  This function is similar to the start-up delay. The device will tolerate over or under current conditions for this period of time once monitoring has commenced.

- Status Indication ("indi") (Default: on)

  This setting enables / disables the "Hi 1", "Lo 1", "Hi 2", "Lo 2", "-r1-" and "-r2-" messages during fault conditions.

- Calibration ("CAL") (Default: 100%)

  This function may be used re-calibrate the device. The reading may be adjusted from 90% to 110%. Use this setting to correct possible CT errors. (to increase overall system accuracy).

- Reset ("rESt)

  By selecting this option, all values are reset to default.

Latch facility:

If the latch pins are shorted, the relay will not re-energise after fault conditions (until the short is removed or the device is reset), even if the input current is within the pre-set limits.

Lock adjustment & full / reduced menu:

When not in a menu or sub-menu, press and hold "+" and "-". After 3 seconds the display will show "Lo.UL" (lock / unlock). If the keys are released at this point, the lock settings feature will be activated (settings may be viewed, but not changed). If the keys are held for an additional 2 seconds, the display will show "Fu.rE" (full/ reduced) menu will be activated. To toggle the lock feature, or full / reduced menu, repeat the above procedure.

Example:

Configure the device to display 100.0 when the input is at maximum (100A CT). Set the maximum current for relay 1 to 60A.

Press "MENU" to display "SCAL". Press "SELECT". Use the "+" and "-" buttons to change the value to 1000. Press "MENU" to display "dECi". Press "SELECT". Press "+" until the display indicates "100.0". Press "MENU" to display "Hi 1". Press "SELECT". Use the "+" and "-" buttons to change the value to "60.0". Press "ENTER" to return to the menu. "Lo 1" is displayed. Press "BACK". To remove the decimal pointer, change the scale to 100 ("SCAL"), and remove the decimal pointer. ("dECi")

Note:

- If the input rises above 110% of the maximum input rating for more than 5 seconds, the relay is de-energised. "O.Cur" is displayed.
- The latch pins MUST BE ISOLATED FROM THE INPUT.
- As a power saving feature, the display dimms if settings are not being made.
- Certain settings are reset to default when the device is re-configured. Before commissioning, re-check all settings to ensure they are correct. (use full menu)
- Even though the device seems to operate correctly, the relays will not energise if the supply is below the minimum operating voltage.
- This device is most accurate when operated at 25 °C , and the input is at 60% of the rated input value. (3A with a 5A device, or 0.6A with a 1A device). I.e. Select a CT with a primary current rating of approximately 1.6 times the value of the current to be monitored.
- 5A DEVICE: The peak instantaneous current must be limited to 8A. If a full wave signal is applied, the device will accurately up to $8/\sqrt{2}=5.65$A RMS. If a half wave signal is applied, the device will only read accurately up to 8/2=4A RMS.
- 1A DEVICE: The peak instantaneous current must be limited to 1.6A. If a full wave signal is applied, the device will accurately up to $1.6/\sqrt{2}=1.13$A RMS. If a half wave signal is applied, the device will only read accurately up to 1.6/2=0.8A RMS.

Specifications:

Accuracy:	1% of full scale @ 25 °C (sin inputs. see notes)
Scale:	5 to 5000 (in steps of 5)
Peak instantaneous current:	5A device: 8A (Full wave:8A/$\sqrt{2}$=5.65A RMS. Half wave:8A/2=4A RMS) 1A device: 1.6A (Full wave:1.6A/$\sqrt{2}$=1.13 A RMS. Half wave:1.6A /2=0.8A RMS)
Input voltage:	±15% of rated voltage
Response time:	<1.1 sec
Start-up delay	1 to 100 sec (0.5 sec intervals)
Reaction delay	0 to 100 sec (0.5 sec intervals)

12 Month guarantee:

Our product is guaranteed for a 12 (twelve) month period from date of purchase. This guarantee is valid for defects arising from failure during specified conditions. This guarantee does not cover damage due to abuse, tampering or improper installation. Our company does not accept liability for any consequential damage or loss arising from product malfunction. Should this product prove to be defective, kindly return for inspection or repair. For further information contact your nearest distributor.

Relay specifications:

Contact rating:	10A 250 VAC 2500VA (Resistive)
Mechanical life:	30 million operations
Electrical life:	250 000 operations (at maximum load)