



P44-CMA2-1 / P44-CMA2-5
(1A / 5A) AC Current monitor
2 relay output

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 functionality:

Press the menu "⏏" button repeatedly until the desired setting is reached.

The "▲" and "▼" buttons are used to change the value. "⏏" will display the next menu item. To exit the menu hold "⏏" button for 3 seconds.

Adjustable Parameters:

- **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)

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. Press "▲" & "▲" to select.

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.

Programming Example :

Configure the device to operate with a 250A CT. Display must indicate 0-250.0A

Press "⏏" repeatedly until the display indicates "SCAL".

Use the "▲" & "▼" buttons to change the value to "2500". (ignore decimal pointer)

Press "⏏" to display "dECi".

Use the “▲” & “▼” buttons to change the position of the decimal pointer to the second last position from the right of the display. Press and hold “⏻” for 3 seconds to exit the menu.

Menu options:

Exit the menu before making the following adjustments.

1. Lock / unlock parameters: (default: unlocked)

Press “▼”, then “⏻” and hold the 2 buttons until the desired option is displayed. The display cycles between “Loc” (no changes allowed) & “u.Loc” (parameters may be adjusted)

2. Full / reduced menu (default: Full)

Press “▲”, then “⏻” and hold the 2 buttons until the desired option is displayed. The display cycles between “rEdu” (limited menu) & “Full” (all parameters are accessible)

3. Access Code: (default: no code)

Once options 1 & 2 are set as required, Press “▼” and “▲” simultaneously until “CODE” is displayed. Now use the “▼” and “▲” to enter a code. (1-9999)

Once a code is entered, access to options 1 & 2 is not permitted. To clear the code & reset option 1 & 2 to default, re-enter the same code again. If the code is forgotten. Press and hold “▼” and “▲” until “CODE” is displayed while re-applying power to the device. To exit without setting a code, press “⏻” while “CodE” & “diSA” is displayed.

Please 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.
- Certain settings are reset to default when the device is re-configured or the Scale is changed. Before commissioning, re-check all settings to ensure they are correct. (use full menu)
- Even though the device seems to operate correctly, the relay 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 0.7A 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 $8/\sqrt{2}=5.65A$ 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 $1.6/\sqrt{2}=1.13A$ RMS.
If a half wave signal is applied, the device will only read accurately up to $1.6/2=0.8A$ RMS.
- During fault conditions, the lower display will alternate between the violated parameter and its value.

Specifications:

Accuracy:	1% of full scale (sinusoidal inputs. see notes) Typically 0.5% at 25 °C.
Scale:	5 to 5000
Peak instantaneous current:	5A device: 8A Full wave: $8/\sqrt{2}=5.65A$ RMS. Half wave: $8A/2=4A$ RMS 1A device: 1.6A Full wave: $1.6A/\sqrt{2}=1.13A$ RMS. Half wave: $1.6A/2=0.8A$ RMS)
Input voltage:	±15% of rated voltage
Led indication:	Relay status
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. www.iconelectronics.co.za

Relay specifications:

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

