

D3-CMA1-1-T / D3-CMA1-5-T
P44-CMA1-1-T / P44-CMA1-5-T
1A / 5A AC Current monitor 1Relay
incl 4-20mA or 0-10 V re-transmit
Version 6.10

Operating instructions and Guarantee Certificate
www.iconelectronics.co.za

Description:

This device is used for 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. The hysteresis, start-up and reaction delays are also programmable. The start-up delay may be activated at power-up or when a pre-set load is detected.

Operation:

The relay remains energised while the current remains below the upper and above the lower set points. OVER and UNDER current conditions are indicated by displaying "Hi" and "Lo" respectively. If the start-up or reaction delay is keeping the relay energised during a fault condition, "-r1-" is displayed as a warning. A latch facility is also included. The menu may be reduced or locked to avoid accidental changes from being made. During the start-up and reaction delays the setpoint values are ignored. The start-up delay allows the load to stabilize before monitoring starts. It can be set to start timing out at power-up OR once the pre-set number of amps are detected.

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 set point ("Hi ") (default: Disabled)**
If the input current exceeds this value, the relay de-energises and "Hi" 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 set point ("Lo ") (default: Disabled)**
If the input current drops below this value, the relay de-energises. "Lo" is displayed. To disable this feature, set it to minimum ("diSA" is displayed).
- **Hysteresis ("HySt")**
If the input current has exceeded the "Hi" setting, or dropped below the "Lo" setting, the current must drop, or rise above the applicable limit by this amount before the relay re-energises. This setting is limited to the difference between the "Hi" and "Lo" settings.
- **Start-up delay ("St d") (default: 1 Second)**
The relay is 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-".
- **Start-up delay trigger level ("St.tl") (default: disabled)**
If Disabled "diSA", the start up delay is activated at power-up. If a value is programmed into this parameter, the startup delay only starts timing out when this amount of current is reached.
Eg. When monitoring an AC motor, the start-up delay only starts timing out when the motor is started, even if this device is already powered up. This value's maximum value is limited to 20% of the lowest value programmed into the "Hi" or "Lo" parameters.
Once reached, the current must DROP below 80% of this value in order to reset the device to power-up status, where the relay is held energized until the power up timer is re-activated (by increasing the current past this trigger level), and monitoring starts.
When monitoring "LO" currents, and the load is removed or turned off, the reaction delay must be used to keep the relay from de-energizing while the current drops from the running value to the trigger level reset value (80% of this parameter's value).
- **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", "Lo" and "-r1-" messages during fault conditions.
- **Lower display default value "diSP"**
Select the value to be displayed on the lower LED display. "Hi 1", "Lo 1" or "off"
- **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).
- **Re-transmit output Offset "rt.OS" (default value: programmed display offset value)**
When the display indicates this value, 4mA will be transmitted. (see notes)
- **Re-transmit output SPan "rt.SP" (default value: programmed display span value)**
When the display indicates this value PLUS the offset value ("rt.SP"+"rt.OS"), 20mA is transmitted. (see notes)
- **Reset ("rESt)**
By selecting this option, all values are reset to default. Press "▲" & "▲" to select.

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: $1.6A/\sqrt{2}=1.13 A$ RMS.
Half wave: $1.6A / 2=0.8A$ RMS)

Input voltage: $\pm 15\%$ 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. 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 it for inspection or repair. For further information contact your nearest distributor.

Relay specifications:

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

