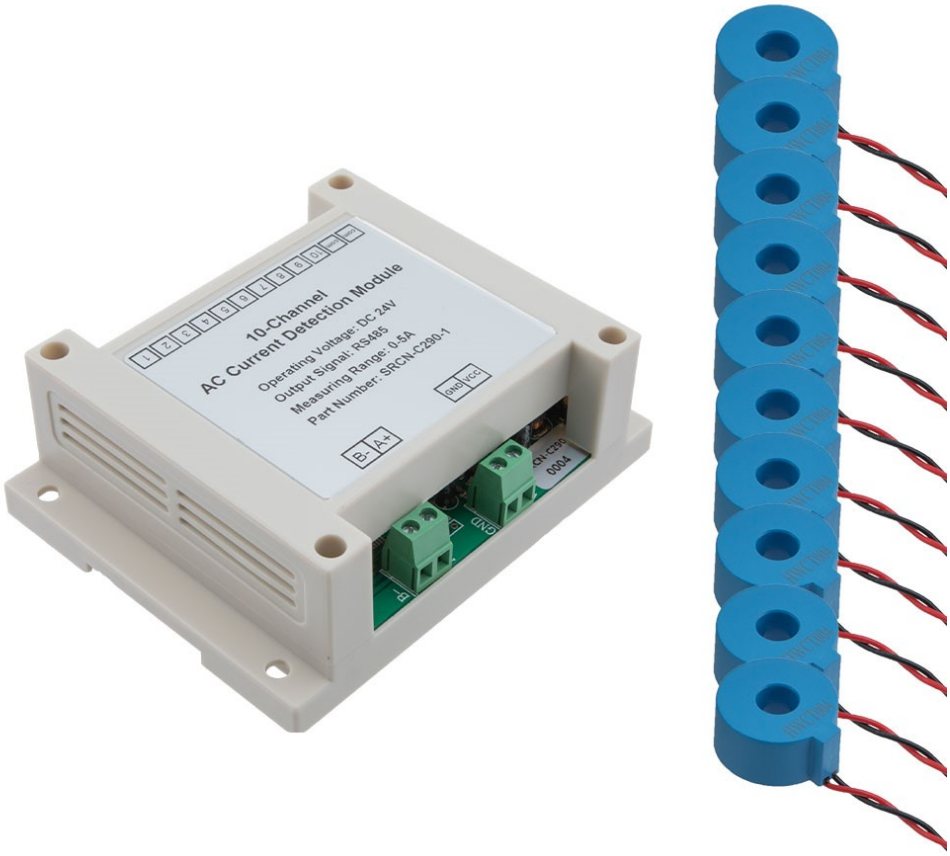
AC CURRENT SENSOR - TEN CHANNEL

User Guide for SRCN-C290-1



Product Description

This module is used to measure and monitor current consumption by utilizing current transformer technology. The module will collect voltage signal, convert and process it into a current value and output the current value with RS485 Modbus RTU protocol. Uses include building automation and facility management systems where acquiring information on energy usage can lead to increased efficiency. They can also detect equipment issues and help prevent damage by detecting over-current and/or short-circuit conditions.

Features

- 10 input channels
- Low power consumption
- CT technology
- RS485 output
- Includes 10 coils
- 35 mm DIN rail or panel mountable

Applications

- Building and facilities management
- HVAC
- Electric fans
- Electric pumps
- Devices requiring over-current & short-circuit protection

Thank you for choosing L-com product. To ensure safe, accurate performance and product longevity, please take a moment to familiarize yourself with this manual before powering the device. Please keep it handy for future reference. In case of any questions regarding the installation or use of product, please call us at 800.341.5266.

Reach out to us at customerservice@l-com.com and visit our website at www.l-com.com

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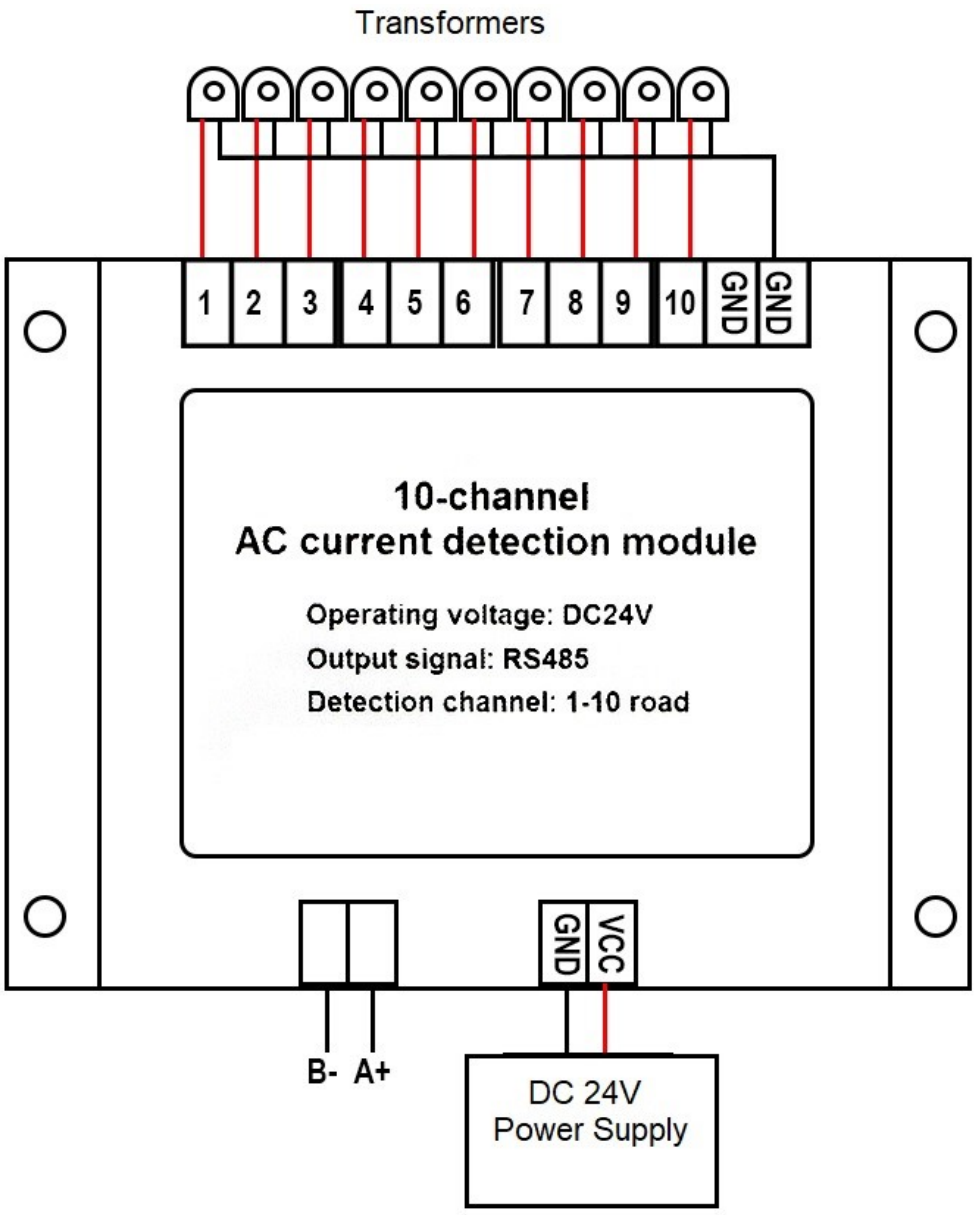
Technical Parameters

Working voltage		24 VDC ± 0.5 VDC
Working current		≤ 60 mA
Detection range		0 – 5 A (±2.5% of FS)
Output mode		RS485 Modbus RTU
Temperature drift		±0.02% per °C
Working environment	Temperature	0 – 65 °C
	Humidity	5% – 90% RH
Storage environment	Temperature	5 – 40 °C
	Humidity	15% – 75% RH
Installation mode	Pedestal	Mounting on 35mm DIN rail
	Module	Mounting with screws

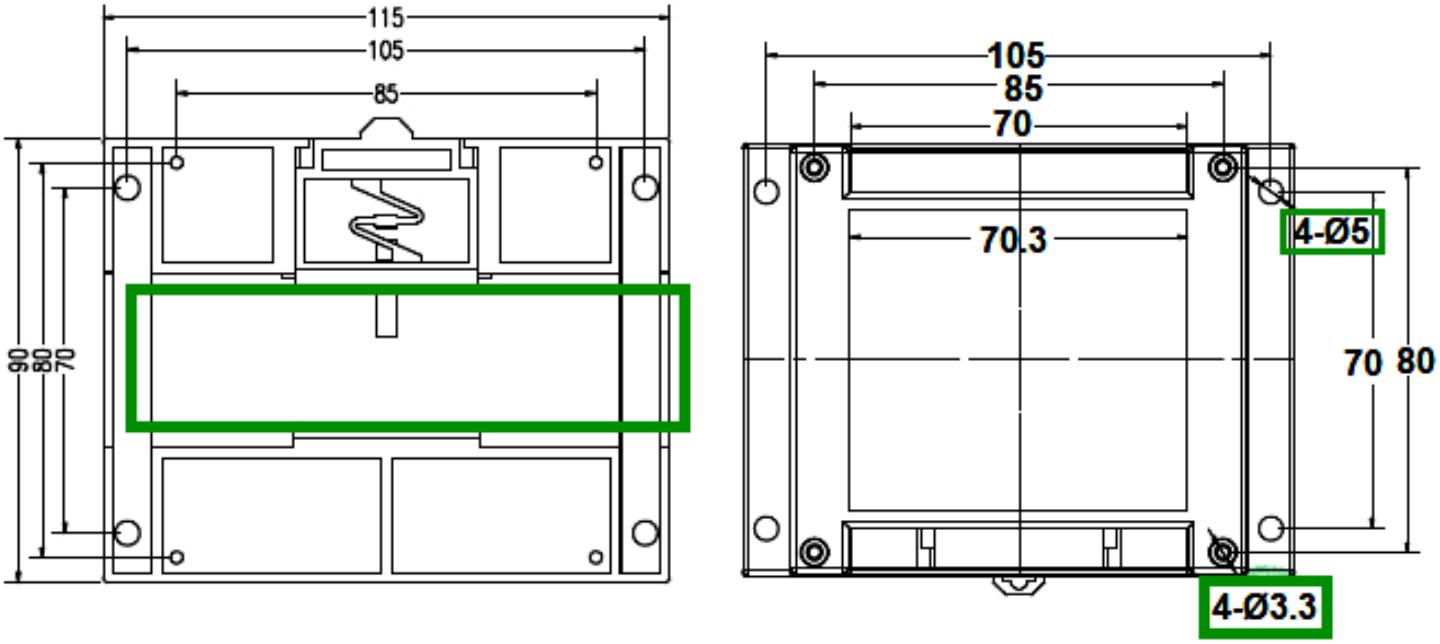
Electrical Diagram



Mounting Diagram

35mm DIN rail mounting: Mount the sensor module onto the DIN rail (dark green) as shown in the below figure.

Wall mounting: Mount the PCB to the enclosure with screws. Mounting hole diameter is 5mm. Refer below figure.



Notes

1. Please ensure any and all wires are connected to the corresponding terminals. Incorrect wiring, such as connecting power supply to RS485 output terminals will damage the device.
2. RS485 to USB adaptor required for computer connection.
3. The modules are tested with pure resistance loads when they leave the factory. If user uses inductive or capacitive loads, the detected current will be offset.

Communication Protocol

Communication mode: RS485 transmission, Modbus RTU protocol, CRC calibration method (low in front).

Serial return data time: 300 ms. Reading speed is not more than 500 ms.

Communication Format

Baud rate	9600
Data bits	8
Stop bits	1
Parity	None

ID Read Command

When the device ID is unknown, use bellow commands to read out the ID. Command format of the device in single machine state is as follows:

The response data format is as follows:

Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	CRC_L	CRC_H
00	00	00	00	00	01	C1	DB

It shows that the ID of the device is: 01

Fixed	Fixed	Data length	Fixed	ID	CRC_L	CRC_H
00	00	02	00	01	44	00

Modify ID Command

In order to prevent the device from being unable to read data in RS485 networks because of address conflicts, it is necessary to modify the address when the device is not connected to the network. For the two cases of known ID and unknown ID, modify the ID command format as follows:

When ID is known, the ID is known to be 01, and the address is modified to 02.

Original ID	Function code	ID register		Register number		CRC_L	CRC_H
01	06	00	64	00	02	49	D4

The response data format is as follows:

Original ID	Function code	Data length	Retain	New ID	CRC_L	CRC_H
01	06	02	00	02	39	49

Note: Returns the above data format, indicating that the address has been modified successfully.

When the ID is unknown, the address is modified to 02.

Omnipotent address	Function code	ID register		Register number		CRC_L	CRC_H
FA	06	00	64	00	02	5C	5F

The response data format is as follows:

Original ID	Function code	Data length	Retain	New ID	CRC_L	CRC_H
FA	06	02	00	02	DC	9D

Note: Returns the above data format, indicating that the address has been modified successfully.

Transmitter out of factory default ID: 01. Modify ID range: 1-247.

The format of the data read command is as follows:

ID	Function code	Register start address		Register number		CRC_L	CRC_H
01	03	00	00	00	0A	C5	CD

The data return format is as follows:

	Data definition	**Explain**
01	ID	-
03	Function code	-
14	Data length	-
00	Data 1 data high	The first current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 0064 / 100 = 1 A
64	Data 1 data low	
00	Data 2 data high	Second circuit current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 0032 / 100 = 0.5 A
32	Data2 data low	
00	Data 3 data high	Third circuit current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 0010 / 100 = 0.16 A
10	Data 3 data low	
00	Data 4 data high	Fourth circuit current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 0060 / 100 = 0.96 A
60	Data 4 data low	
01	Data 5 data high	Fifth circuit current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 012C / 100 = 3 A
2C	Data 5 data low	
00	Data 6 data high	Sixth circuit current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 0005 / 100 = 0.05 A
05	Data 6 data low	

00	Data 7 data high	Seventh circuit current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 0044 / 100 = 0.68 A
44	Data 7 data low	
00	Data 8 data high	Eighth circuit current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 0096 / 100 = 1.5 A
96	Data 8 data low	
00	Data 9 data high	Ninth Circuit Current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 0032 / 100 = 0.5 A
32	Data 9 data low	
00	Data 10 data high	Tenth circuit current data, Unit: A Calculation method: (data high * 256 + data low) / 100 = 0 x 0088 / 100 = 1.36 A
88	Data 10 data low	
53	CRC_L	The CRC check byte length is all bytes before CRC_L, Select A001 or 8005 reverse orders.
2F	CRC_H	

According to the starting address and register number of different registers, the current values of different channels can be read out. When reading one of the data, use the corresponding register to start the address, the number of registers is 00 01. The initiating address of the memory device corresponds to the current channel as follows:

Register start address	**Corresponding current channel**
00 00	First channel
00 01	Second channel
00 02	Third channel
00 03	Fourth channel
00 04	Fifth channel
00 05	Sixth channel
00 06	Seventh channel
00 07	Eighth channel
00 08	Ninth channel
00 09	Tenth channel