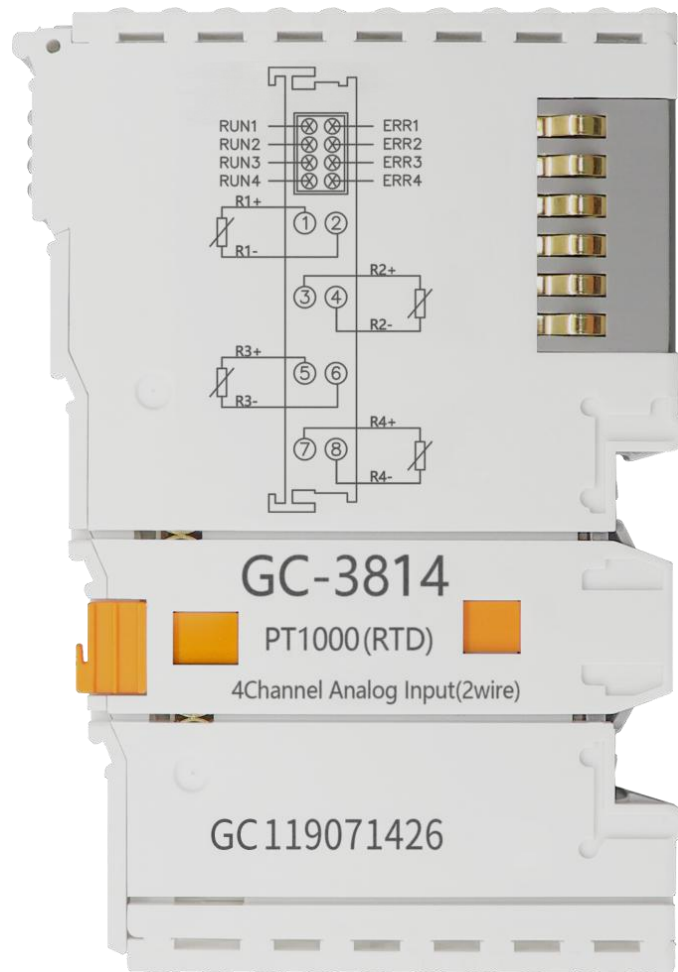


# GC-3814

4-channel PT1000 input module (RTD)

User manual



**Revision History**

| <b>Version</b> | <b>Date</b> | <b>Reason</b>                 |
|----------------|-------------|-------------------------------|
| V1.00          | 2022/01/12  | Create documentation          |
| V1.01          | 2022/03/15  | Add IO module selection table |

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# 1. Introduction

## 1.1 Overview

The GC-3814 module is an I/O module that integrates 4 temperature sensor (PT1000) input channels. This module can be used to collect temperature information in real time and send the collected values to GCAN-PLC-400/510/511 or GCAN-8000/8100 series couplers through the internal bus. This module can be used with any other GC series IO modules to realize the collection and processing of analog data in industrial automation or distributed control system

## 1.2 Properties at a glance

- Input point number:4
- Wiring method : 2-wire
- Sensor type: PT1000
- Measuring temperature range: -200~+500°C
- Measurement resolution : 0.1°C/digit
- Measurement error: ±2°C
- Conversion time : <250ms
- Measuring current flow: less than 0.5mA (depending on load)
- Electrical isolation: 500Vrms
- Powered by GCAN-PLC-400/510/511 or GCAN-8000/8100
- Current consumption : 200mA
- The bit-width input in the process image is 4x2 bytes
- Configuration without address settings, configuration via bus coupler or controller
- Operating temperature range: -40°C~+85°C
- Size: 100mm\* 69mm\*12mm

## 1.3 Typical application

- Directly connect resistive sensors;
- Connect the PT1000 to the bus coupler or controller.

## 2. Installation

This chapter will describe the installation method, wiring method, meaning of the indicator and meaning of the interface of the GC-3814 module.

### 2.1 Module fixing

The installation method of GC-3814 module as shown in Figure 2.1 and a flat-blade screwdriver is needed for auxiliary installation.

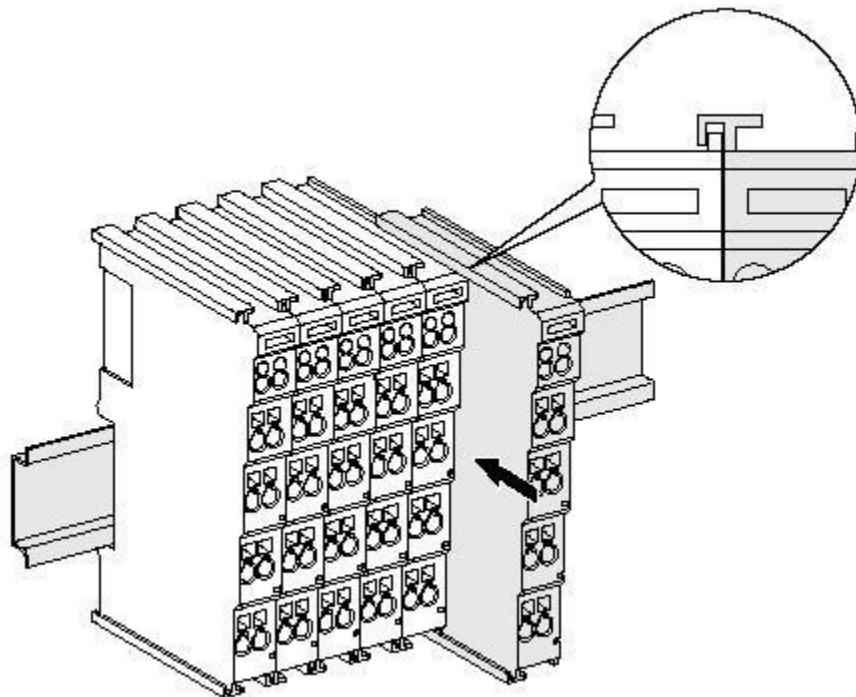


Figure 2.1 Installation of GC-3814 module

First install the GCAN-PLC on the guide rail and plug the GC-3814 along GCAN-PLC's right side , insert the GC-3814 module inwards along the slot as shown in Figure 2.1 until the lock catches and makes a "click" sound.

The GC-3814 module needs to be used with GCAN-PLC-400/510/511 or GCAN-8000/8100 series couplers, and can be powered directly through the coupler, so there is no need to power it separately

### 2.2 Wiring method

The power wiring as shown in figure 2.2. First, use a flat-blade screwdriver to insert into the square hole, hold the top edge of the metal sheet in the square hole, and press toward the hole. Then, insert the wire into the hole. After plugging in, pull out the screwdriver and the wire can be firmly locked in the hole.

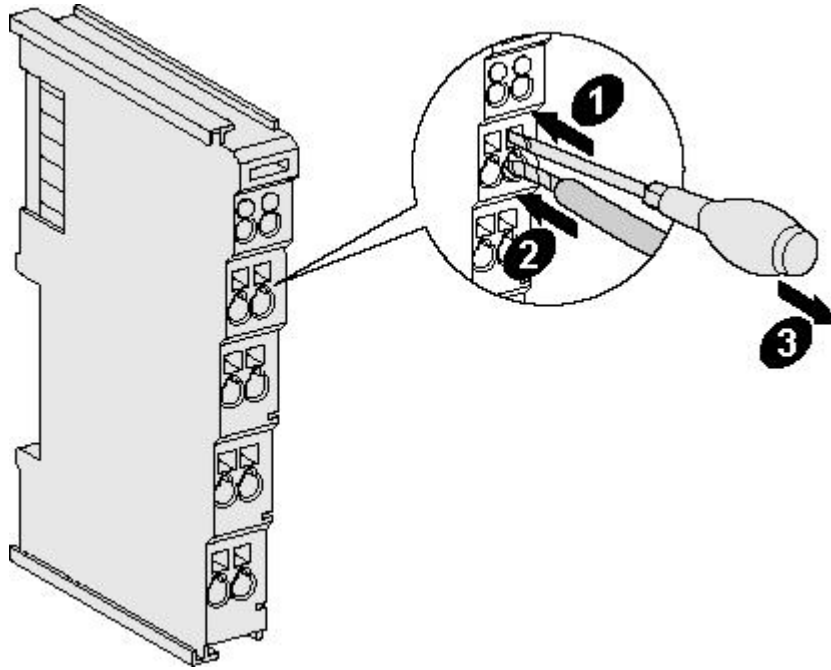


Figure 2.2 Wiring method of GC-3814 module

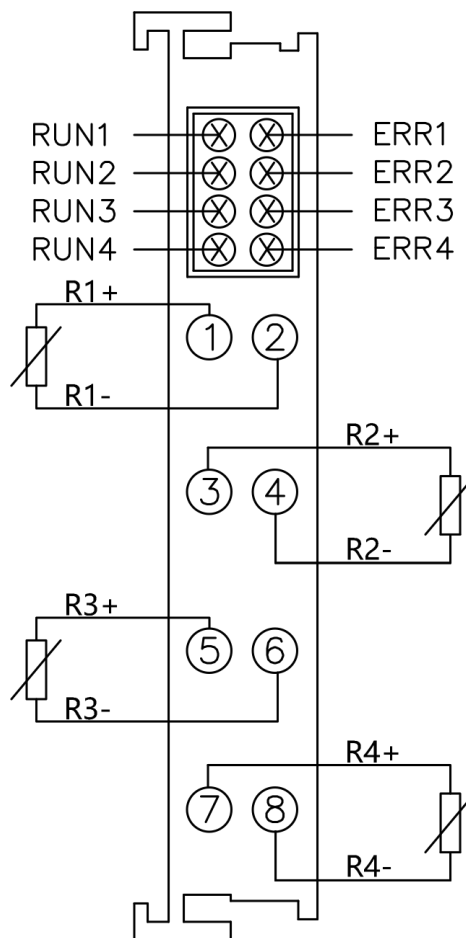


Figure 2.3 GC-3814 Module terminal block

The wiring terminal block of the GC-3814 module is shown in Figure 2.3. GC-3814 contains 4 sets of input points, which can connect up to 4 PT1000 sensors. The serial numbers corresponding to each terminal and their meanings are shown in Table 2.1.

| <b>terminal</b> | <b>No.</b> | <b>meanings</b> |
|-----------------|------------|-----------------|
| +R1             | 1          | +R1input        |
| -R1             | 2          | -R1input        |
| +R2             | 3          | +R2input        |
| -R2             | 4          | -R2input        |
| +R3             | 5          | +R3input        |
| -R3             | 6          | -R3input        |
| +R4             | 7          | +R4input        |
| -R4             | 8          | -R4input        |

Table 2.1 GC-3814 Module Indicators

## 2.3 System status indicator

The GC-3814 module has 4 error indicator lights and 4 running indicator lights to indicate the running status of the equipment. See Table 2.2 for the specific indication functions of the indicator lights. When the indicator light is on, the GC-3814 module status is shown in Table 2.3.

| <b>indicator</b> | <b>color</b> | <b>Indicate status</b> |
|------------------|--------------|------------------------|
| ERR              | red          | error indication       |
| RUN              | green        | Running instructions   |

Table 2.2 GC-3814 Module Indicators

After the GC-3814 module is properly connected to the PT1000, the running indicator will light up.

| <b>indicator</b> | <b>status</b> | <b>Indicate status</b>   |
|------------------|---------------|--|
| ERR              | Always bright | The sensor is not connected or the temperature is out of range |
|                  | not bright    | no errors  |
| RUN              | Always bright | Connect correctly  |
|                  | not bright    | The sensor is not connected or the temperature is out of range |

Table 2.3 GC-3814 module indicator status

## 2.4 Combined with GSCAN-PLC-400/510 /511series

GCAN-PLC-400/510/511 supports five languages for programming. The following takes ST language as an example to introduce how to use GCAN-PLC-400 to program to read the status of the analog input of the GC-3814 module.

In the process of ST programming definition, GC-3814 module needs to define variable type, input signal position, start character, delimiter and so on.

For example: "AI0 AT%I0.0:INT;"

Among them, "0.0" represents the starting address of the first channel, each channel occupies 2 bytes, and the collected temperature corresponds to -32768~+32767, so the starting address of the second channel is I2.0. When the user uses more than one GC-3814 module, the second GC-3814 should be defined from "I8.0", because each 3814 has 4 channels. "%" (percent sign) is the direct variable starter; ":" (colon) is the variable or type separator.

The Boolean is read from the %I0.0 address using the symbol variable AI0. AT represents the address of the variable access and the additional attribute of the variable

## 2.5 Combined with GCAN- 8000 series

The status of the analog input is represented by two bytes.

For example: the node number of the GCAN-IO-8000 module is 1, the input status of channel 1 of the first GC-3814 module is 26°C, and the input status of other channels is not connected to the sensor, then the GCAN-IO-8000 module sends CAN data frame ID is 0x181, data length (DLC is 8, frame data is 0x04, 0x01, 0xFF, 0x7F, 0xFF, 0x7F, 0xFF, 0x7F

The following table lists a common AI state and its corresponding state data.

| AI status    |      |    |                      |    |                      |    |                      |    |
|--------------|------|----|----------------------|----|----------------------|----|----------------------|----|
| channel      | 1    |    | 2                    |    | 3                    |    | 4                    |    |
| status       | 26°C |    | Sensor not connected |    | Sensor not connected |    | Sensor not connected |    |
| CAN bus data | 04   | 01 | FF                   | 7F | FF                   | 7F | FF                   | 7F |



### 3. Technical Specifications

| <b>Wiring method</b>             |  |
|----------------------------------|--|
| Wiring method                    | 2-wire   |
| <b>Interface characteristics</b> |  |
| Input point number               | 4  |
| Sensor type                      | PT1000   |
| Measuring temperature range      | -200~+500°C                                    |
| Measurement resolution           | 0.1°C/digit                                    |
| Conversion time                  | <250ms   |
| Measuring current flow           | 0.5mA  |
| Measurement error                | <±2°C  |
| Power supply                     | Powered by GCAN-PLC, current consumption 100mA |
| <b>Environmental testing</b>     |  |
| Operating temperature            | -40°C~+85°C                                    |
| Permissible relative humidity    | 95%RH, no condensation                         |
| EMC test                         | EN 55024:2011-09<br>EN 55022:2011-12           |
| Vibration/shock resistance       | EN 60068-2-6/EN 60068-2-27/29                  |
| EMC resistance burst/<br>ESD     | EN 61000-6-2 /EN 61000-6-4                     |
| Protection class                 | IP 20  |
| <b>Basic information</b>         |  |
| Dimensions                       | 100mm *69mm *12mm                              |
| Weight                           | 50g  |

## 4. Disclaimer

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## 5. Module selection table

GCAN-PLC-400 series products consist of a programmable main control module, several GC series IO modules and a terminal resistance module. GC series IO modules currently include five categories: digital input, digital output, analog input, analog output, and communication extension. The specific selection table is shown in **Table 5.1**.

| I/O                      | Type         | Characteristic         | Signal                | Channel   |
|--------------------------|--------------|------------------------|-----------------------|-----------|
| PLC<br>Control<br>module | GCAN-PLC-400 | CPU:168M               | -                     | -         |
|                          | GCAN-PLC-510 | CPU:400M               | -                     | -         |
|                          | GCAN-PLC-511 | CPU:400M (2CAN)        | -                     | -         |
| Digital<br>input         | GC-3814      | Digital input (PNP)    | 24V DC                | 8-channel |
|                          | GC-1018      | Digital input (NPN)    | 24V DC                | 8-channel |
|                          | GC-1502      | Counter (200kHz max)   | -                     | 2-channel |
| Digital<br>output        | GC-2008      | Digital output (PNP)   | 24V DC                | 8-channel |
|                          | GC-2018      | Digital output (NPN)   | 24V DC                | 8-channel |
|                          | GC-2204      | relay output           | -                     | 4-channel |
|                          | GC-2302      | PWM (20Hz~200kHz)      | -                     | 2-channel |
| Analog<br>input          | GC-3604      | Voltage input, 16 bits | -5~+5V                | 4-channel |
|                          | GC-3624      | Voltage input, 16 bits | 10V~+10V              | 4-channel |
|                          | GC-3644      | Current input, 16 bits | 0-20mA                | 4-channel |
|                          | GC-3654      | Current input, 16 bits | 4-20mA                | 4-channel |
|                          | GC-3664      | Voltage input, 16 bits | 0~+5V                 | 4-channel |
|                          | GC-3674      | Voltage input, 16 bits | 0~+10V                | 4-channel |
|                          | GC-3804      | 2-wire PT100, 16 bits  | Thermal<br>resistance | 4-channel |
|                          | GC-3822      | 3-wire PT100, 16 bits  | Thermal<br>resistance | 2-channel |

|                |                   |                                       |              |           |
|----------------|-------------------|---------------------------------------|--------------|-----------|
|                | GC-3844/3854/3864 | K type / S type / T type thermocouple | Thermocouple | 4-channel |
| Analog output  | GC-4602           | Voltage output, 16 bits               | -5V~+5V      | 2-channel |
|                | GC-4622           | Voltage output, 16 bits               | -10V~+10V    | 2-channel |
|                | GC-4642           | Current output, 16 bits               | 0-20mA       | 2-channel |
|                | GC-4652           | Current output, 16 bits               | 4-20mA       | 2-channel |
|                | GC-4662           | Voltage output, 16 bits               | 0~5V         | 2-channel |
|                | GC-4672           | Voltage output, 16 bits               | 0~10V        | 2-channel |
|                | GC-4674           | Voltage output, 12 bits               | 0~10V        | 4-channel |
| Special module | GC-6101           | RS232/RS485 extension                 | -            | -         |
|                | GC-6201           | GPRS extension                        | -            | -         |
|                | GC-6221           | 4G extension                          | -            | -         |
|                | GC-6501           | WiFi extension                        | -            | -         |

**Table 5.1** Selection table

## Sales and service



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