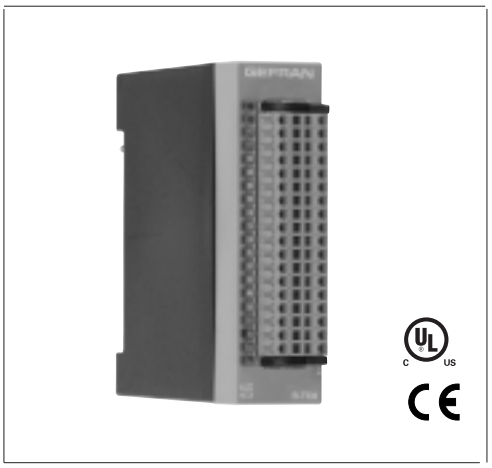
GEFRAN

R-TC8

MODULE 8 TEMPERATURE LOOPS



INSTALLATION AND OPERATION MANUAL

cod. **80131D** / Edit **05** -**11/09** - **ENG**

1 • MAIN FEATURES

- 8 optically isolated inputs for thermocouple, 2 of which are configurable as input for PT100 resistance thermometers
- Thermocouples type J, K, N, R, S, E, L, T
- 16 isolated digital outputs 24Vdc ± 25%
- Protection against polarity inversion, overload, and overheating.
- 1 optically isolated frequency input 1,5kHz
- Software configuration of TC inputs
- Diagnostics LEDs for power supplies, outputs, and alarm
- Removable connector supplied

2 • INSTALLATION AND CONNECTION

This section contains the instructions necessary for correct installation of the GILOGIK II into the machine control panel or the host system and for correct connection of the system power supply, inputs, outputs and interfaces.

Before proceeding with installation read the following warnings carefully!
Remember that lack of observation of these warnings could lead to problems of electrical safety and electromagnetic compatibility, as well as invalidating the warranty.

Qualified staff
the installation and use of the system and components are only reserved at qualified staff.

Conform use
the system and relative components are usable exclusively to the use previewed in the manual
In order to guarantee a correct and sure operation are indispensable that the product comes transported, stored correctly, installed, and controlled second the previewed modalities.
Suitable for use in pollution degree 2 environment.
Open type equipment.

Notes Concerning Electrical Safety and Electromagnetic Compatibility:

- **CE MARKING: EMC Conformity (electromagnetic compatibility)**
  in accordance with EEC Directive 2004/108/CE.
  The GILOGIK II system is mainly designed to operate in industrial environments, installed on the switchboards or control panels of productive process machines or plants.
  Norm of applicable product EN 61131-2
  The Declaration of conformity is available on GEFRAN web: www.gefran.com
- UL listed standard: UL508 file E198546

- **BT Conformity (low tension)**
  in accordance with Directive LVD 2006/95/CE.
  Advice for Correct Installation for EMC

Inputs and outputs connection

- The externally connected circuits must be doubly isolated.
- To connect the analogue inputs the following is necessary:
  - physically separate the input cables from those of the power supply, the outputs and the power connections.
  - use woven and screened cables, with the screen earthed in one point only.

GEFRAN S.p.A. declines all responsibility for any damage to persons or property caused by tampering, neglect, improper use or any use which does not conform to the characteristics of the controller and to the indications given in these Instructions for Use.

3 • TECHNICAL DATA

Inputs

Analogue inputs:

- 8 optically isolated analogue inputs with:
  - 24 bit A/D conversion
  - 20 Hz pass band
  - input impedance > 1MΩ,
  - accuracy exceeding 0.5%
  - acquisition frequency for 8 temperatures / channels: 200ms max.
  - Input isolation up to 2 kV

The inputs are software configurable as follows:

- Input for thermocouples:
  - Available on 8 channels
  - Thermocouple type selectable via software
  - TC J, (0.0 ...1000.0°C/1830.0°F)
  - TC K, (0.0 ... 1300.0°C/2372.0°F)
  - TC N, (0.0 ... 1300.0°C/2372.0°F)
  - TC R, (0.0 ... 1750.0°C/3182.0°F)
  - TC S, (0.0 ... 1750.0°C/3182.0°F)
  - TC E, (-100.0 ... 750.0°C/190.0°F)
  - TC L, (0.0 ... 800.0°C/1472.0°F)
  - TC T, (-200.0 ... 400.0°C/752.0°F)
  - Integrated room temperature compensation
  - Temperatures supplied in tenths of a degree
- Input for PT100 resistance thermometers:
  - Available on 2 channels
  - Resistance thermometer type selectable via software
  - RTD type PT100 2 wires, (-200.0 ... 850.0°C / 1562.0°F)
  - RTD type PT100 3-4 wires, (-200.0 ... 850.0°C / 1562.0°F)
- Input 0…50mV:
  - Available on 8 channels
- Input 0…2V:
  - Available on 8 channels

Digital Inputs

Digital input to measure period and frequency

- Input power supply: 24Vdc ± 25%
- Maximum input voltage 32Vdc, 25mA
- Protection against inversion of polarity
- Input trigger:
  - maximum voltage for "0" (input OFF) = 12Vdc
  - minimum voltage for "1" (input ON) = 15Vdc
- 1,5kHz input filter
- Value supplied in RPM
- Digital input isolation up to 2kV

Digital Outputs

24Vdc ± 25% optically isolated digital outputs

- Organization: 1 group of 16 outputs
- Maximum voltage for outputs 32 V
- Maximum current for output 2 A
- Maximum total current 6 A
- Maximum total current of 4 outputs: 4A
  - group 1: outputs 1, 2, 3, 4
  - group 2: outputs 5, 6, 7, 8
  - group 3: outputs 9, 10, 11,12
  - group 4: outputs 13, 14, 15, 16)
- Outputs protected against overload and overheating.
- Protection trips with current > 2.2A
- Digital output isolation up to 2kV

Over-voltage on inputs and outputs for 1 ms maximum: max. 1kV
Power supply via backplane
R-BUS(x) 3.3V

Diagnostics

- Yellow LED presence 24V external power supplies
- Green LED digital outputs
- Green LED digital input
- Red LED alarm
- Green LED flashing
  - low frequency: works with default parameters
  - high frequency: works with parameters set by master

MECHANICAL DATA

Dimensions: 92x90x25.4 mm
Weight: 130 g. max
Attachment: snaps onto R-BUS(x)
Connector: 36 pins with spring tightening

AMBIENT CONDITIONS

Working temperature: 0...50°C
Storage temperature: -20...70°C
Humidity: max. 90% Rh not condensing
For UL: Maximum surrounding air temperature 50°C

CONFIGURABILITY OF INPUTS

	Input TC J,K,N,R,S,E,L,T	Input RTD 2-wires	Input RTD 3/4-wires	Input 0...50mV	Input 0…2V
Channel 1	√	x	x	√	√
Channel 2	√	x	x	√	√
Channel 3	√	x	x	√	√
Channel 4	√	x	x	√	√
Channel 5	√	√	x	√	√
Channel 6	√	x	- (*)	√	√
Channel 7	√	√	√	√	√
Channel 8	√	x	- (*)	√	√

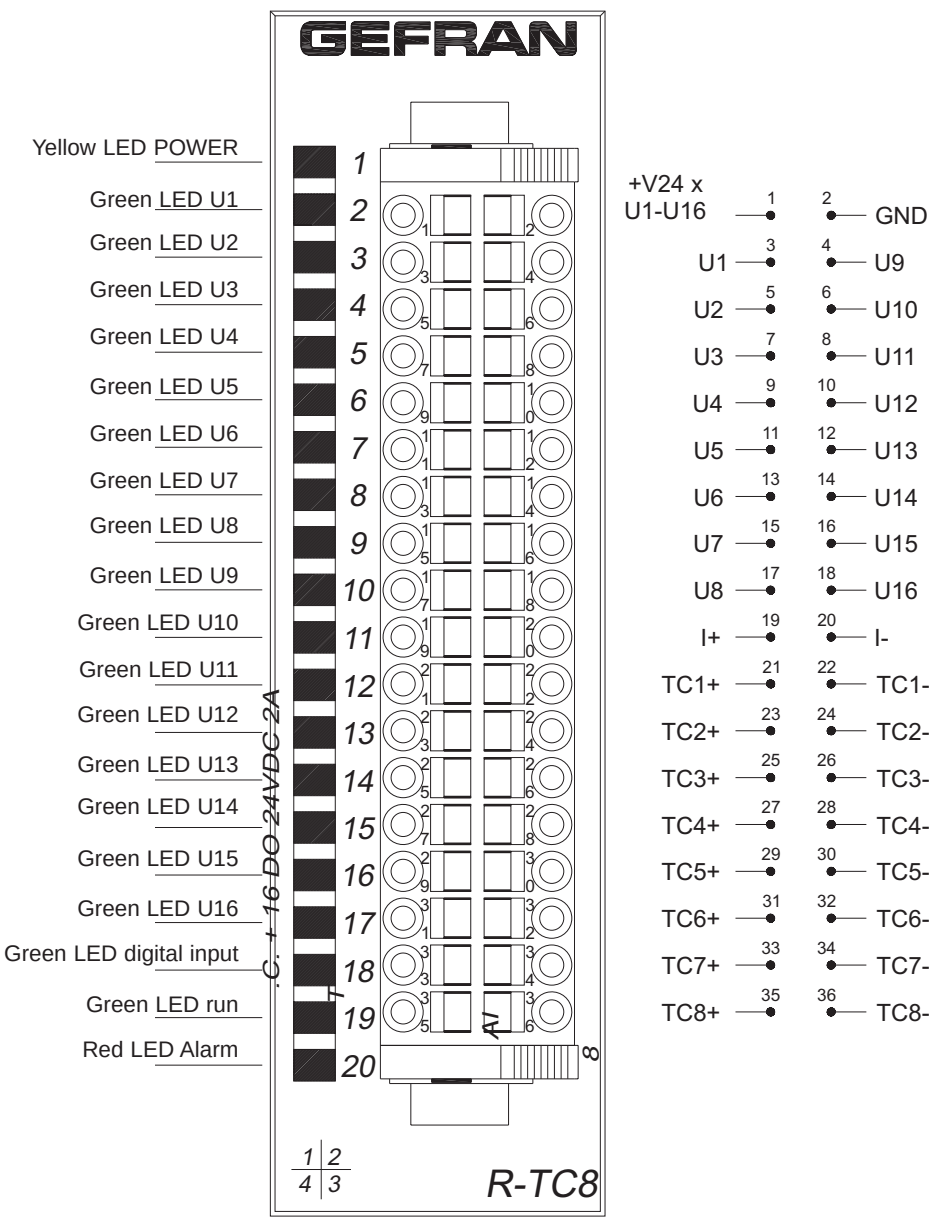
(*) = Channel disabled if RTD 3-4 wires is selected on previous channel
x = Channel can be used in any configuration other than RTD

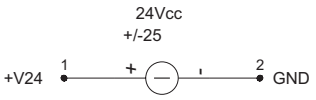
4 • INSTALLATION AND CONNECTIONS

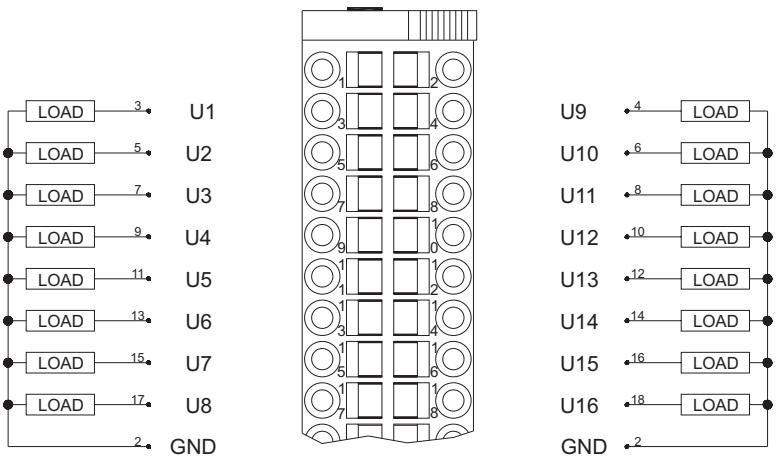
The connections of the module call for:
External power supplies:

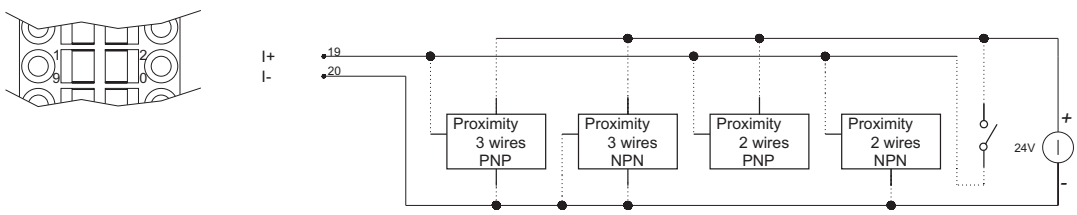
- 24Vdc ±25% 200mA max.plus the current needed to load the outputs. Use unipolar cable with max section 1 mm^2. Do not attach lug.
- Potentiometer:
  use 3-pole shielded cable with max section 0.5 mm^2. Do not attach lug. Connect shield directly to ground plate and as close as possible to the module.
- Thermocouple:
  In case of isolated thermocouples, ground the negative pole of the input as close as possible to the module. Do not attach lug.
- Linear analog input:
  use 2-pole shielded cable with max section 0.5 mm^2. Do not attach lug. Connect shield directly to ground plate and as close as possible to the module.
- Digital outputs:
  use cable with max section 0,5mm^2, Do not attach lug

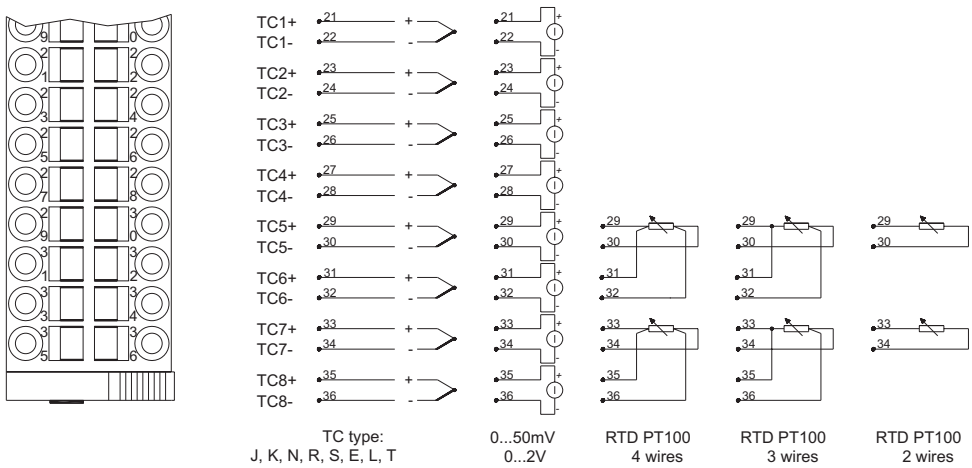
NOTE:
The shield of the analog inputs / outputs must be connected near the module and directly to the ground plate.




24Vcc
+/-25
+V24
1
+
-
2
GND


LOAD 3 U1
LOAD 5 U2
LOAD 7 U3
LOAD 9 U4
LOAD 11 U5
LOAD 13 U6
LOAD 15 U7
LOAD 17 U8
2 GND
U9 4 LOAD
U10 6 LOAD
U11 8 LOAD
U12 10 LOAD
U13 12 LOAD
U14 14 LOAD
U15 16 LOAD
U16 18 LOAD
GND 2


I+ 19
I- 20
Proximity 3 wires PNP
Proximity 3 wires NPN
Proximity 2 wires PNP
Proximity 2 wires NPN
24V
+
-


TC1+ 21
TC1- 22
TC2+ 23
TC2- 24
TC3+ 25
TC3- 26
TC4+ 27
TC4- 28
TC5+ 29
TC5- 30
TC6+ 31
TC6- 32
TC7+ 33
TC7- 34
TC8+ 35
TC8- 36
TC type:
J, K, N, R, S, E, L, T
0...50mV
0...2V
RTD PT100
4 wires
RTD PT100
3 wires
RTD PT100
2 wires