

#### Main applications

- Plastics extrusion line and injection presses
- Synthetic fiber polymerization and production plants
- Rubber vulcanization plants
- Cold rooms and test benches
- Dryers for ceramics and construction elements
- Chemical and pharmaceutical industry
- Furnaces
- Food processing plants
- Painting plants
- Water treatment plants
- Plants for the iron and steel industry

#### 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  $\pm$  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

#### PROFILE

The R-TC8 module has a processor with 8 optically isolated temperature inputs configurable via software, plus 16 digital outputs for temperature control.

The 8 inputs are configurable for type J, K, N, R, S, E, L, T, thermocouple, for PT100 resistance thermometers (2 and 3 - 4) wires as voltage input 0...50mV or 0...2V.

Acquisition time is less than 200 ms for the 8 channels.

Temperatures are supplied in tenths of a degree.

The module has 16 digital optoisolated outputs at 24 VDC, type PNP, with maximum current of 2 A per channel, used typically for heating and/or cooling.

Any available outputs can also be used to control the machine cycle. All outputs have current recycle circuitry for inductive loads, and are protected against short-circuit, overload, and overheating.

There is also a 24 VDC type NPN digital input to measure the period of the applied signal.

Maximum input frequency is 1 kHz.

The module is installed on the R-BUS(x) from which it receives its power supply

#### TECHNICAL DATA

##### Analogue inputs:

8 optically isolated analogue inputs with:

- 24 bit A/D conversion
- 20 Hz pass band
- input impedance > 1M $\Omega$ ,
- 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

- 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

**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

**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

**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

**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

**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

## INSTALLATION AND CONNECTIONS

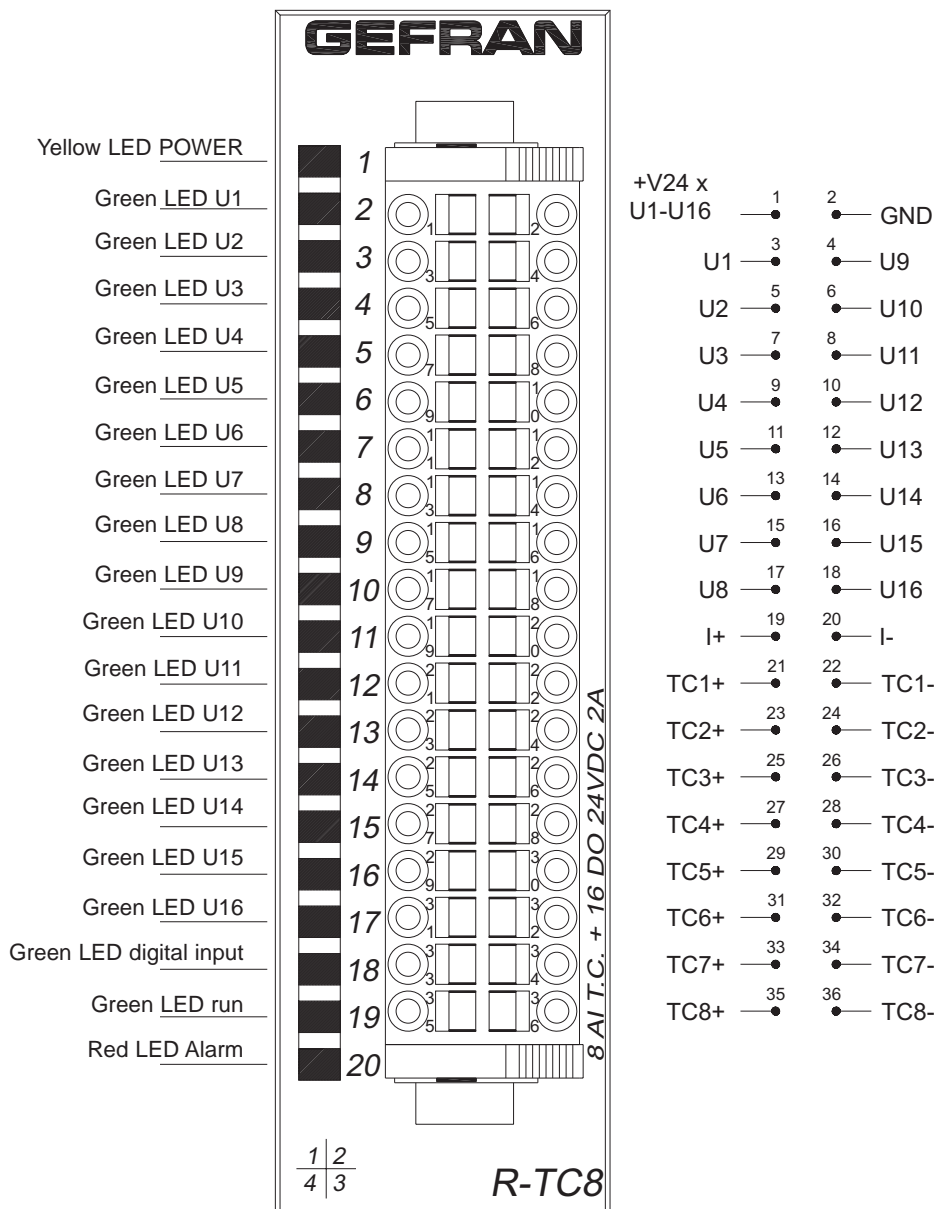
The connections of the module call for:

External power supplies:

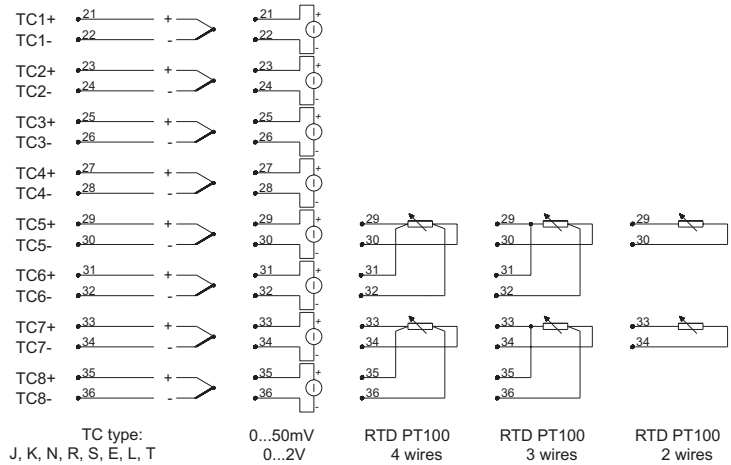
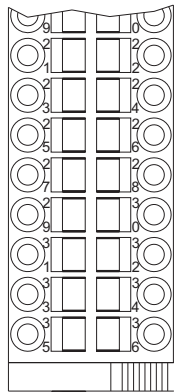
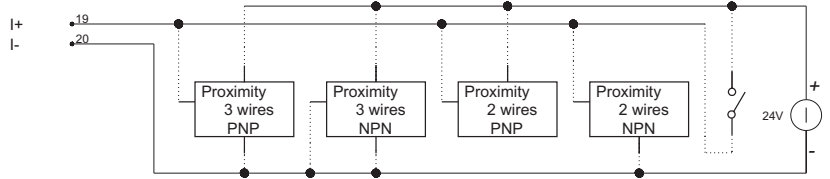
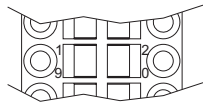
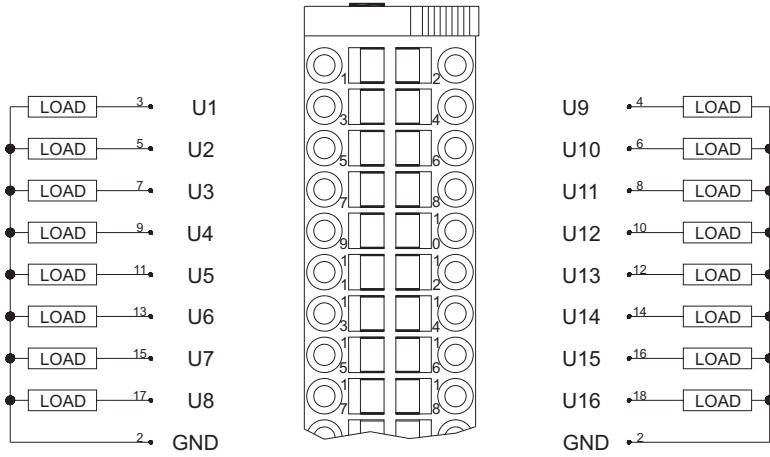
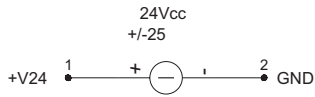
- 24Vdc  $\pm 25\%$  200mA max. plus the current needed to load the outputs. Use unipolar cable with max section 1 mm<sup>2</sup>. Do not attach lug.
- Potentiometer:  
use 3-pole shielded cable with max section 0.5 mm<sup>2</sup>. Do not attach lug. Connect shield directly to ground plate and as close 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<sup>2</sup>. 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<sup>2</sup>, Do not attach lug

### NOTE:

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



# CONNECTIONS



## ORDER CODE

module code **R-TC8** **F026944** Code

GEFRAN spa reserves the right to make aesthetic or functional changes at any time and without notice



The instrument conforms to the European Directives 2004/108/CE and 2006/95/CE with reference to the generic standards:  
 - EN 61000-6-2 (immunity in industrial environments) - EN 61000-6-3 (emission in residential environments) - EN 61010-1 (safety)  
 - EN 61131-2 (product standard). The Declaration of conformity is available on GEFTRAN web: [www.gefran.com](http://www.gefran.com)