

#### Main applications

- Detection of axis speed / position
- Fast count
- Measurement of period / frequency

#### Main features

- Inputs for Differential, Single Ended, Push Pull, Open Collector encoder
- Intercepts of speed level
- 32 bit counters
- Software configuration of inputs
- Diagnostic LEDs for power supplies and alarm
- Removable terminals supplied
- In Conformity with UL508

#### PROFILE

The R-C3 module has 3 independent 32 bit counters, each with 3 optically isolated digital inputs.

For each counter you can:

- program operating mode: up/down counting, mono and bidirectional encoder, or measurement of period or frequency.
- select the digital filter (from 100Hz up to 400KHz)

Each counter has:

- 3 LEDs to signal state of digital inputs
- 8 pin connector for independent wiring of inputs

If used with encoder, the module (powered externally from a front connector) provides the power supply to the individual connectors and can be configured by encoder type (Differential, Single Ended, Push-Pull, Open Collector).

The module also has interrupts on the level controllable via software.

The R-C3 is installed on the backplanes of the R-BUS(x) series, from which it receives its power supply.

#### TECHNICAL DATA

- 3 encoder and counters inputs at 32 bit
- inputs for Differential, Push-Pull, Single Ended, Open Collector encoder, limiter
- channels are independently configurable.
- filter programmable via software at 20KHz or 400KHz.
- 8..32 VDC inputs, 25 mA maximum
- input isolation >2KV
- overvoltage on inputs for 1ms max. 1kV
- Power supply: via R-BUS(x) 3.3V backplane

#### Diagnostics

- Yellow LED presence of 24V external power supplies
- Red LED Interrupt on
- Red Fail LED, module error

#### Function type

##### ONE-WAY ENCODER operation

- CHA counter input
- CHB determines direction of count  
0 = down, 1 = up
- CHZ resets count at each cycle, CHZ generates interrupt, CHZ off

##### TWO-WAY ENCODER operation

- CHA counter input
- CHB counter input
- CHZ resets count at each cycle, CHZ generates interrupt, CHZ off (programmable SW)

##### COUNTER operation

- CHA counter input
- CHB determines direction of count  
0 = down, 1 = up
- CHZ enables count  
0 = no count, 1 = count

##### PERIOD MEASUREMENT (V. 02) operation

- CHA input
- CHB not used
- CHZ: 0 = measurement off, 1 = measurement on
- The count clock is inside the module

##### SPEED MEASUREMENT (V. 02)

- Calculation autoadaptive to the input.

**FREQUENCY MEASUREMENT**

**(V. 02) operation**

- CHA input
- CHB not used
- CHZ: 0 = measurement off,  
1 = measurement on
- The sampling period is internal to module

**PULSE MEASUREMENT (from V. 02)**

- CHA input
- CHB pulse polarity:  
0 = low pulse    1 = high pulse
- CHZ enable measurement:  
0 = off            1 = on

**Encoders power supply**

24Vdc ± 25% 500mA max. external (fed to front terminals).

\* Power supply is internally distributed to the 3 channels and is configurable at +5V or 24Vdc from outside.

**AMBIENT CONDITIONS**

**Working temperature:** 0...50°C

**Storage Temperature:** -20...70°C

**Humidity:** max. 90% Rh not condensing

**MECHANICAL DATA**

Dimensions: 92x90x25,4mm

Weight: 120 g. max

Attachment: snaps onto R-BUS(x)

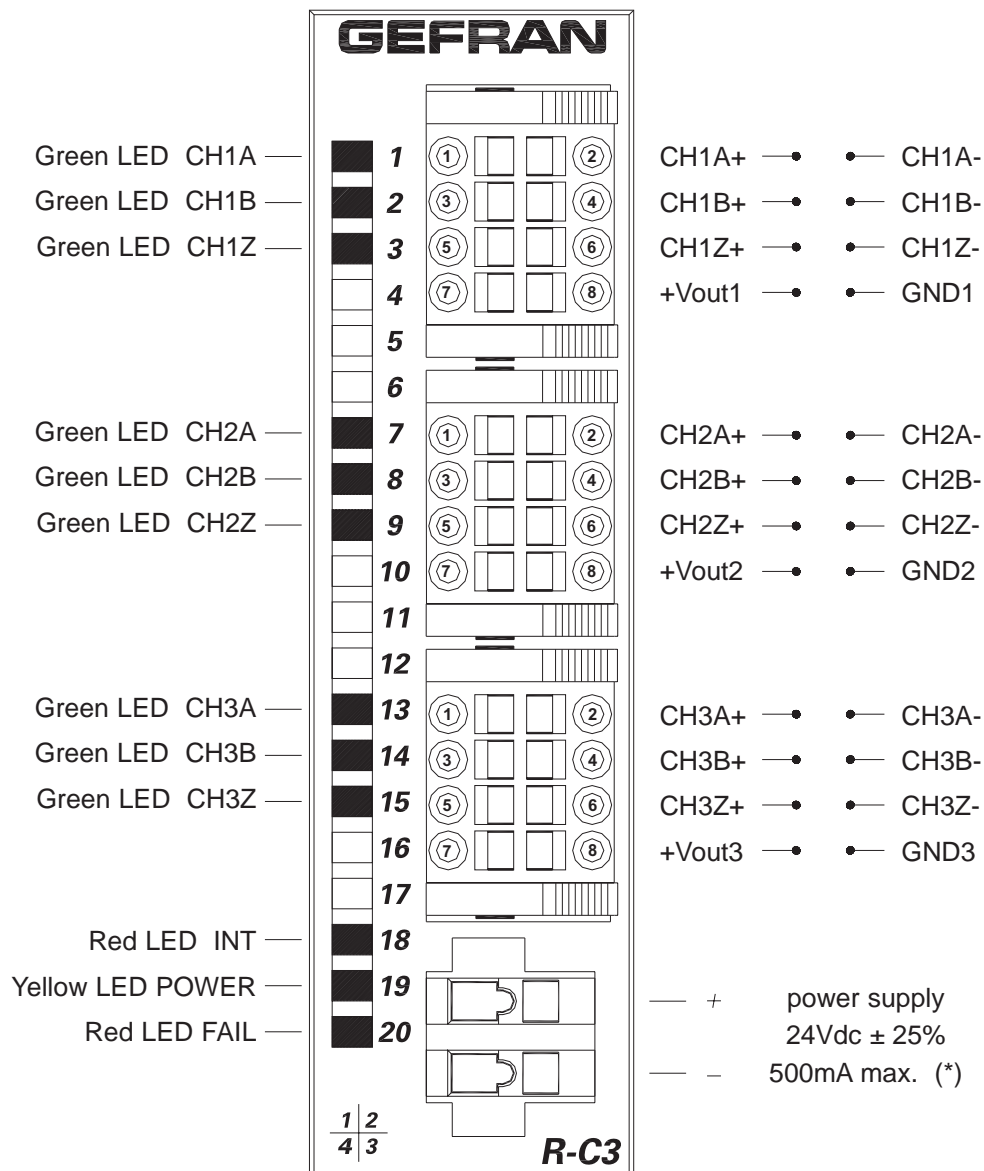
Protection level: IP20

3 connectors: front 8 pin female with spring-mounted lock

**INSTALLATION AND CONNECTIONS**

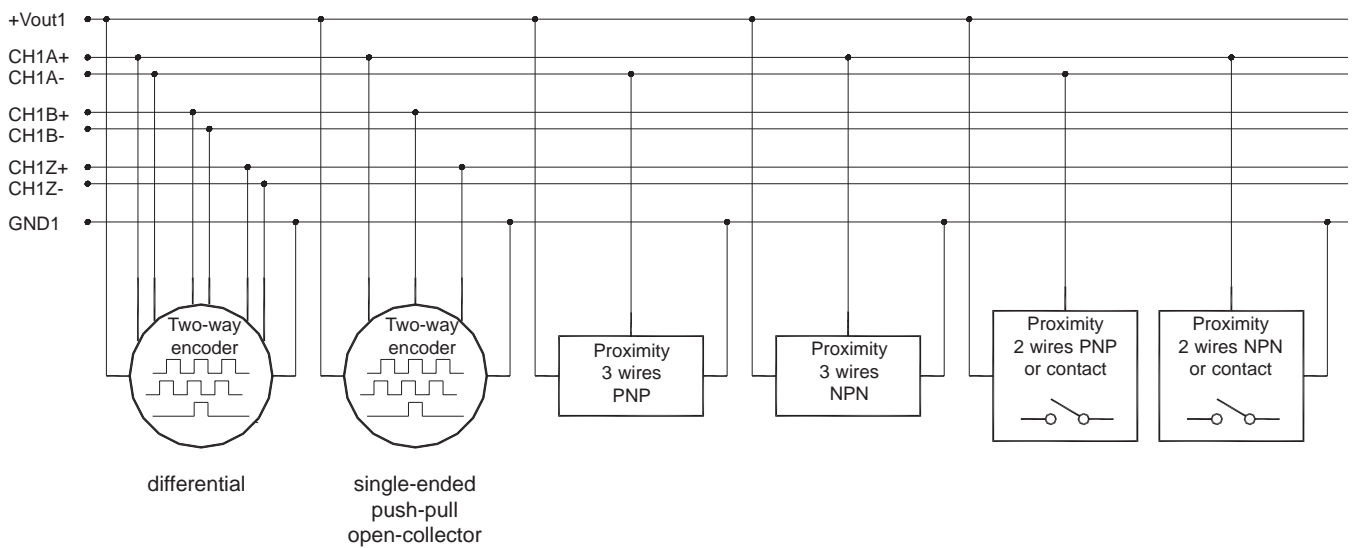
SUPPLY: 24Vdc ± 25% 500mA max, Use cables with 0.5 mm<sup>2</sup> max. Do not apply a lug

INPUTS: Use cables with 0.5 mm<sup>2</sup> cross-section. Do not apply a lug.



(\*) Power supply can drop to 8VDC for specific encoder type

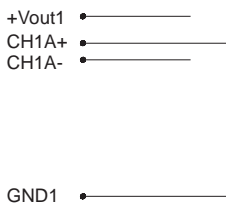
## CONNECTIONS



Use CHA input for one-way encoder

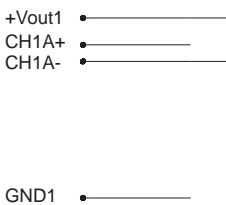
Electrical connections to channels CH2 and CH3 follow the same diagram as channel CH1 above.

Positive polarization (1 logic) of an input



Example:  
to choose forward count if counter function is used.

Negative polarization (0 logic) of an input



Example:  
to choose reverse count if counter function is used.

**ORDER CODE**

module code **R-C3** **F027066** Code

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



Conformity UL508 File no. E198546



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 61161-2** (product standard). The Declaration of conformity is available on GEFTRAN web: [www.gefran.com](http://www.gefran.com)