



#### Main features

- Operator interface with color touch screen display, 3.5"
- Up to 8 PID control loops
- Cascade, ratio and valve PID controls
- Profile programmer with ramps and retention; synchronous and asynchronous
- Up to 200 Programs with 50 segments
- 3 password protected user levels
- Energy meter (kWh)
- Configurable logic operations
- Configurable math functions
- Data Log with Real Time Clock
- Batch Report management
- Open format files (CSV) or encrypted for Data-Log and production batches
- Setting up custom pages
- Management of active and historic alarms
- Active and historical alarm management
- USB for data export and parameter cloning
- Control parameter advanced tuning
- Configurable analogue and digital I/O signals
- HMI/SCADA/PLC data exchange via Ethernet Modbus TCP
- Message language selection
- Compliance with CFR-21 regulation through Audit Trail (SW option in the order code)

#### PROFILE

The 2850T multifunction controller is designed to control the temperature in production processes (heat treatment, kiln and autoclave management, etc.) used in different industrial sectors such as automotive, food, metalworks, etc.

The controllers consist of three elements: the operator interface with touch screen display and keys, the I/O module group for connection to plants and machinery and the connection cable between the interface and the module group.

The **color touch screen display 3,5"** allows the operator to easily and quickly interact with the controller, managing actions and parameters.

Access to the main controller functions and navigation between pages is made easier thanks to its **6 function keys**, some of which are customisable.

**Customized pages** may be configured directly on the display, even without a PC or external software. This option allows you create optimised graphic interfaces to control the machinery used. A graphic symbol library is provided for this purpose (buttons, bargraph, data display, etc.) that can be set and linked to the controller variables. You may also import images, such as representations of the machinery

or of the system's operating diagram, to be used as a background, to make control even more intuitive for operators.

The controller can manage up to 8 PID loops, fully configurable. Each PID can be used as a control for a single loop, a valve or a ratio control, it can be connected to the profile programmer or be used as a cascade controller.

**Tuning** is performed through advanced algorithms that ensure stable and accurate temperature control, avoiding exceeding set limits or having unstable process control even in critical heat or fast motion processes.

The **setpoint profile programmer** allows you to set the programs to manage heat treatment cycles. The profile is the set of segments that describe the setpoint curve. You can create up to 200 programs, stored internally, each of which can contain up to 50 segments.

Each program lets you set up to four setpoint profiles. A descriptive message, 16 input events (IN), 16 outbound events (OUT), the setpoint value and the HBB alarm threshold can be set for each program.

You can launch up to four programs simultaneously, each of which can handle up to 4 synchronous profiles.

The profile programmer can be set in synchronous mode (all profiles are run with

a common time base) or asynchronous (each profile can be run with an independent time base). The asynchronous mode is obtained by running different programs simultaneously.

The available logical operators (AND, OR, Timer, Counter etc.) allow you to create custom **logic operating** sequences integrated with the PID, thus obtaining complete and flexible machine control.

The available **settable mathematical functions** (addition, multiplication, division, minimum or maximum value, algorithms, etc.) can be used associated with process values as analog channels and virtual channels, to manage advanced controls, such as ratio controls or custom mathematical formulas.

The **Data Logger function**, combined with the Real Time Clock (RTC clock with rechargeable buffer battery) stores process data, IN/OUT signals and the status of the alarms in an open file (.CSV format) or encrypted file. The minimum data sampling frequency is 1 second. Saved files can then be exported from the controller via USB or Ethernet network.

The **batch report** option lets you to associate this data with a specific batch produced, to be able to use them in production and quality reports.

A specific application for PC (**Report Utility**) is available for easy management of all data logger data and the production batch reports which allows you to copy and delete files via an Ethernet network between the controller and a PC, manually by the operator or automatically at configurable time. The data stored on the PC can then be displayed in graphical format or a spreadsheet (Excel type) or exported as CSV or PDF files.

For the quick and safe installation of the machinery or plant, use the **recipes** stored in the controller. The recipes, easily retrievable by the operator, can be of two types: **OEM manufacturer recipes**, which contain the machine setup parameters and **production recipes**, which contain single production settings (profile program, logical steps, math functions). The recipes can be easily transferred between different controllers via USB key or Ethernet network.

Controllers offer **complete diagnostics** (probe break down or incorrect connection, total or partial load break down, control loop faults), which helps the operator in

case of controlled machine or process faults.

All **controller alarms** are stored internally and can be viewed as Active alarms and Historical alarms. The relevant message is displayed for each historical alarm with the date and time of the various states (active alarm, ACK, and alarm cleared). The ACK parameter, settable for each alarm, ensures that the active alarm was acknowledged by the operator.

An **internal energy counter**, with configurable offset alarm, provides energy consumption and cost totals.

For **accurate time stamps**, the controller supports the Simple Network Time Protocol (SNTP) service, which continuously updates the controller's date and time from the SNTP server connected via Ethernet network.

The **weekly clock** function lets you automatically start or stop a programmer or a process, without the need of operator intervention.

The clock is based on a settable weekly calendar (day of week and time).

The display **language selection** lets the operator interact with the device in the preferred language, facilitating work.

Secure access to all controller parameters is guaranteed by **3 preconfigured password levels** (Operator, Maintenance technician and OEM manufacturer). In this way, each user can only access the assigned functions and parameters.

You can connect the controller to the factory HMI/SCADA network by using standard **Modbus TCP (Ethernet) connectivity**.

Complete controller configuration is facilitated by use of the PC programming tool GF\_express, which proposes intuitive Wizard pages, permitting easy construction of customized graphic pages and advanced logic.

## DISPLAY AND KEYS

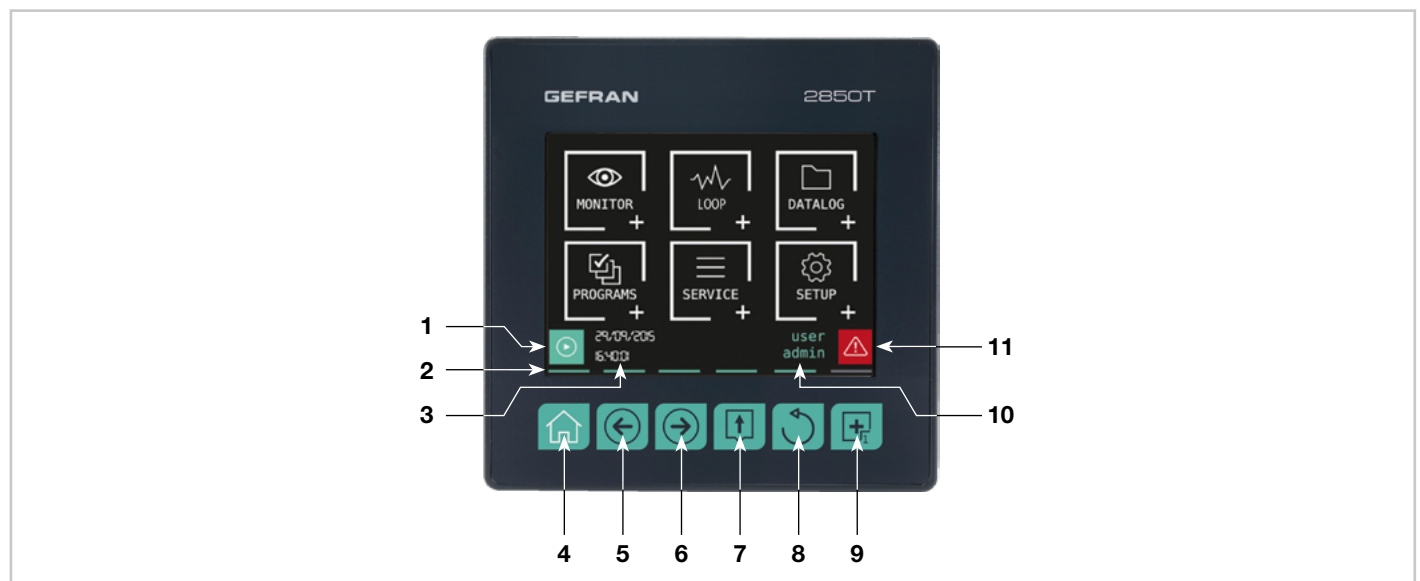
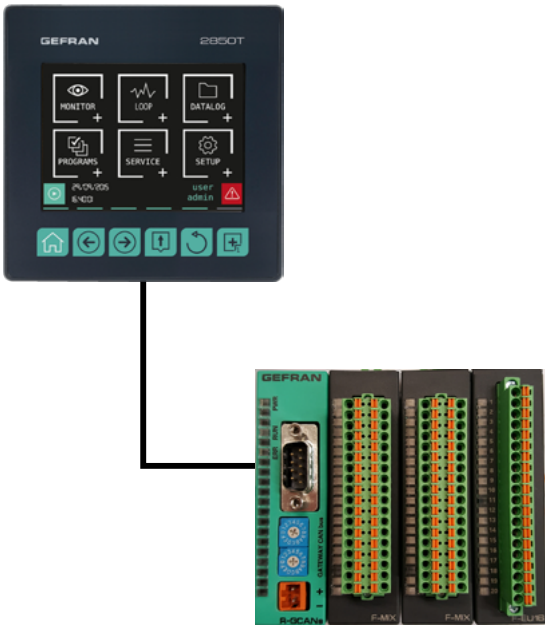


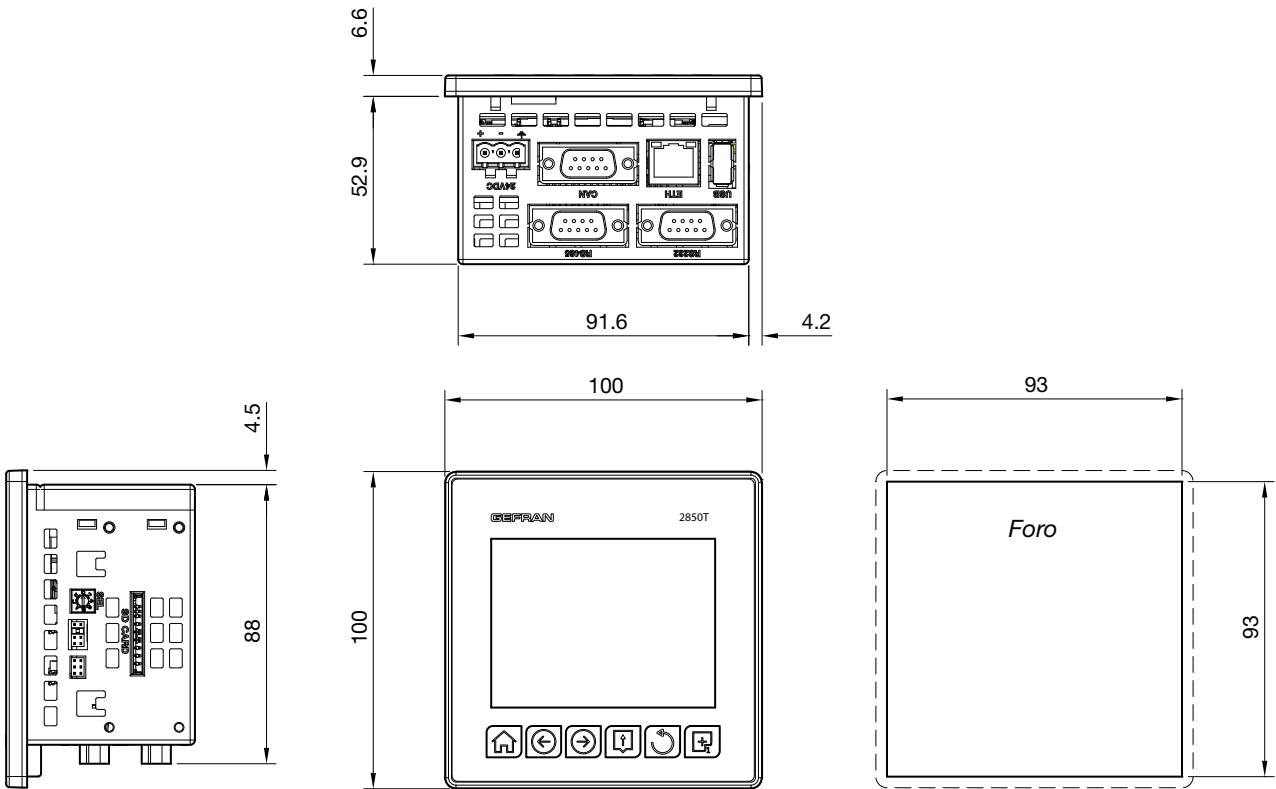
Figure 1 - 2850T display and key description

1. Shortcut icon (the landing page depends on the option chosen):
  - Controller with PROGRAMMER option: go to the Program Monitor page that displays main program information and lets you manage its execution. If the program that is opened is intended for recording only, the simplified interface will open, as in the case of the RECORDER.
  - Regulator with RECORDER option: go to page for starting and stopping recording.
  - Lighted pressed key conformation.
2. Date and time indication.
3. Home page key: return to the main menu.
4. Left Page key: changes the page in the submenus with multiple pages.
5. Right Page key: changes page in the submenus with multiple pages.
6. Group Page key: go to the higher menu level.
7. Back key: return to the previous page.
8. Custom Page 1 button: go to first custom page
9. Authenticated user indication. The login page opens by touching the indication.
10. Alarm Icon: blinks to indicate an alarm; tapping the icon opens the page that lists current alarms.
11. user admin

**HARDWARE ARCHITECTURE**



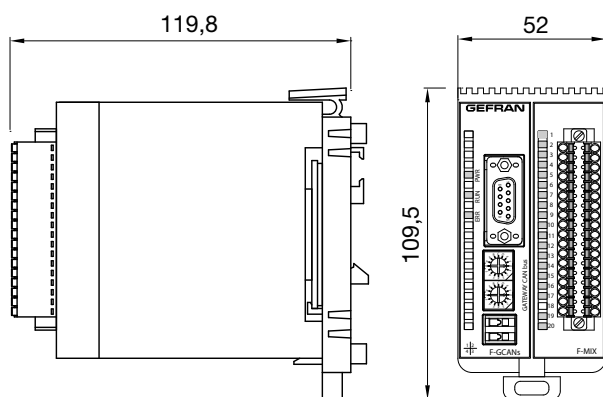
**DIMENSIONS AND DRILLING TEMPLATES**



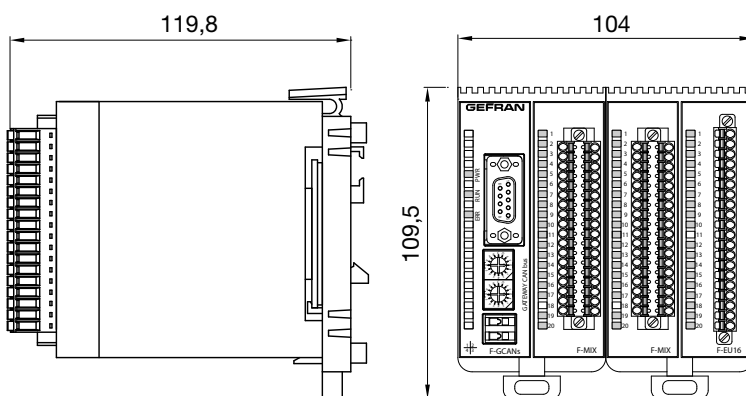
Dimensions in mm

## I/O MODULE DIMENSIONS

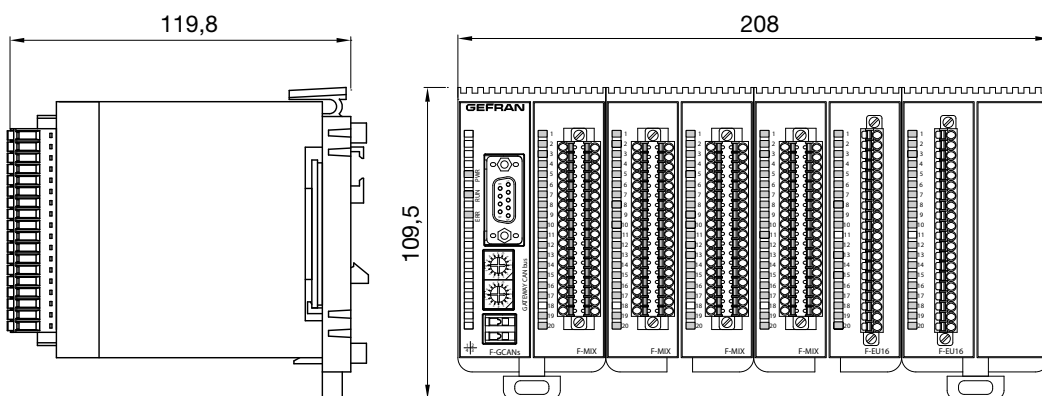
**I/O 2 SLOT**



**I/O 4 SLOT**



**I/O 8 SLOT**



Dimensions in mm

## I/O MODULE COMPOSITIONS

| Composition                        |                                                 | Mod. <sup>1</sup> | Analog |     | Digital |     | Tot.<br>I/O | 2850T code                     |
|------------------------------------|-------------------------------------------------|-------------------|--------|-----|---------|-----|-------------|--------------------------------|
|                                    |                                                 |                   | IN     | OUT | IN      | OUT |             |                                |
| Standard                           | F-GCANs<br>F-MIX                                | 2                 | 4      | 2   | 8       | 8   | 22          | 2850T-xx-04-xx-xx-xx-xx-00-x-x |
|                                    | F-GCANs<br>F-MIX<br>F-MIX                       | 4                 | 8      | 4   | 16      | 16  | 44          | 2850T-xx-08-xx-xx-xx-xx-00-x-x |
| with additional digital expansions | F-GCANs<br>F-MIX<br>F-EU16                      | 4                 | 4      | 2   | 16      | 16  | 38          | 2850T-xx-04-xx-xx-xx-xx-08-x-x |
|                                    | F-GCANs<br>F-MIX<br>F-MIX<br>F-EU16             | 4                 | 8      | 4   | 24      | 24  | 60          | 2850T-xx-08-xx-xx-xx-xx-08-x-x |
|                                    | F-GCANs<br>F-MIX<br>F-EU16                      | 4                 | 4      | 2   | 24      | 24  | 54          | 2850T-xx-04-xx-xx-xx-xx-16-x-x |
|                                    | F-GCANs<br>F-MIX<br>F-MIX<br>F-EU16<br><br><br> | 8                 | 8      | 4   | 32      | 32  | 76          | 2850T-xx-08-xx-xx-xx-xx-16-x-x |

### Notes

1) Container dimensions in modules  
n/a = composition not available

## TECHNICAL SPECIFICATIONS

### 2850T controller

| OPERATOR INTERFACE   |                            |                                                                                                                                                                                                                                                                                                          |
|----------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DISPLAY              | Type                       | TFT Touch Screen with 4-wire resistive type technology                                                                                                                                                                                                                                                   |
|                      | View area                  | Diagonal: 3,5"                                                                                                                                                                                                                                                                                           |
|                      | Lighting                   | Dimensions (L × H): 70 × 52,5 mm (2.57" × 2.07")                                                                                                                                                                                                                                                         |
|                      | Resolution (pixel)         | Back lit with LED, duration 50.000 hours @ 25 °C (77 °F)                                                                                                                                                                                                                                                 |
|                      | Colors                     | 320 × 240 (QVGA)                                                                                                                                                                                                                                                                                         |
|                      | Max brightness             | 262,000                                                                                                                                                                                                                                                                                                  |
|                      | Contrast                   | 400 cd/m <sup>2</sup>                                                                                                                                                                                                                                                                                    |
|                      | View angle                 | 400:1                                                                                                                                                                                                                                                                                                    |
| KEYBOARD             |                            | Horizontal: 60°                                                                                                                                                                                                                                                                                          |
|                      |                            | Vertical: +45° ... -60°                                                                                                                                                                                                                                                                                  |
| CONTROL FUNCTIONS    |                            |                                                                                                                                                                                                                                                                                                          |
| LOOP<br>(Regulation) | Type                       | Single loop; Cascade (2 consecutive PID: PID1-PID2, PID3-PID4 ...); Ratio; Valve                                                                                                                                                                                                                         |
|                      | PID                        | Number: 8 max<br>Parameter groups: 10 max                                                                                                                                                                                                                                                                |
|                      | Regulation type            | PID<br>ON/OFF<br>Single action heat or cool<br>Double action heat or cool                                                                                                                                                                                                                                |
|                      | Control output             | Type: continuous (0... 100%) or ON/OFF with PWM modulation.<br>Cycle time: constant or optimised (Burst Firing)                                                                                                                                                                                          |
|                      | Valve control              | Open/close for floating type motorized valve<br>Open/close for motorized valve with feedback (potentiometer position control)                                                                                                                                                                            |
|                      | Sampling time              | 25 ms                                                                                                                                                                                                                                                                                                    |
|                      | Tuning                     | Automatic Self Tuning algorithms                                                                                                                                                                                                                                                                         |
|                      | Alarms                     | Number: max 4 associated with each PID<br>Type: maximum, minimum, symmetric, absolute/relative                                                                                                                                                                                                           |
| SETPOINT PROGRAMMER  | Programmer type            | Synchronous and asynchronous setpoint programs<br>Single-segment setpoint or ramp + maintenance profile<br>Integrated function blocks                                                                                                                                                                    |
|                      | Program profile            | From 1 to 4 synchronous profiles                                                                                                                                                                                                                                                                         |
|                      | Program                    | Max number of programs: 200<br>Maximum number of programs running at the same time: 4<br>Available commands: START, HOLD/PAUSE, RESET, END, SKIP<br>Status outputs: RUN, READY, END, HOLD                                                                                                                |
|                      | Segments                   | Setting: time segments (hh: mm / mm: ss / dd: hh) or gradient configuration<br>Maximum number of segments per program: 50<br>Maximum number of ramps and holds per program: 100 (50 ramps - 50 holds)<br>High/low limit threshold configurable for each segment<br>PID group activation for each segment |
|                      | IN profile events          | Max number of settable IN events: 16<br>Acknowledged events: digital IN-resource, digital OUT, system merker                                                                                                                                                                                             |
|                      | OUT profile events         | Max number of settable OUT events: 16<br>ON/OFF while running the profile segment<br>Events acknowledged: digital OUT resource, logic operation, programmer status                                                                                                                                       |
|                      | Simplified configurability | Template<br>Configuring and running the same program on several PIDs simultaneously                                                                                                                                                                                                                      |
|                      | HBB alarm                  | Alarm range configuration per single segment<br>High/low range setpoint                                                                                                                                                                                                                                  |

|                                             |                                      |                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GETLogic</b>                             | Scope                                | Sequential execution of logical and mathematical instructions                                                                                                                                                                                                                                                           |
|                                             | Running sequences                    | 1 for each program (max 4) + 1 global always active                                                                                                                                                                                                                                                                     |
|                                             | Function blocks                      | Max number per program: 400                                                                                                                                                                                                                                                                                             |
|                                             | Logic function blocks                | AND, OR with default logic patterns<br>Set/Reset, Reset/Set<br>Rising edge, trailing edge                                                                                                                                                                                                                               |
|                                             | Timer function blocks                | Excitation delay timer (TON)<br>De-energising delay timer (TOFF)<br>Flip/flop timer                                                                                                                                                                                                                                     |
|                                             | Counter function blocks              | Increasing counter<br>Decreasing counter                                                                                                                                                                                                                                                                                |
|                                             | Basic mathematical function blocks   | + , - , × , : , average, minimum value, maximum value, square root, base 10 logarithm, natural base A logarithm, and raised to the power A, A raised to the power B                                                                                                                                                     |
|                                             | Special mathematical function blocks | Max peak, minimum peak, hold of a value, average of 2 values, minimum/maximum limit of a value                                                                                                                                                                                                                          |
|                                             | Special mathematical function blocks | Selection between two values Greater/Lesser/Equal/Greater-Equal/Lesser-Equal/Different                                                                                                                                                                                                                                  |
|                                             | Process function blocks              | F0 (sterilisation coefficient)                                                                                                                                                                                                                                                                                          |
|                                             | Resources for mathematics operators  | Analog IN/OUT, SP controller, System Log/Real data                                                                                                                                                                                                                                                                      |
|                                             | Resources for logical operators      | Digital In/Out, Alarm Status, System Merker                                                                                                                                                                                                                                                                             |
| <b>DATA LOGGER</b>                          | Scope                                | Continuous configured data recording                                                                                                                                                                                                                                                                                    |
|                                             | Recordable values                    | Max number of analog values: 25<br>Max number of digital events: 50                                                                                                                                                                                                                                                     |
|                                             | Sampling                             | Sampling interval: 1 s ... 1 h<br>Sampling mode: single record with time information (date/time) and values/events/actions detected<br>Closing the sequential log file: automatic every hour/day/week (configurable)                                                                                                    |
|                                             | Data storage                         | File format: CSV<br>Data file encryption: optional<br>Log file name with close date/time indication<br>Storage media: internal memory<br>File export: manual via USB key or manual/automatic via Ethernet via <i>Gefran - DataLog Utility PC</i> application<br>- <i>Report Utility</i>                                 |
|                                             | Graphic display                      | Graph: stored log data trend<br>Max number of viewable curves: 8<br>Data selection by association: 8 curves<br>Single curve scaling<br>Available functions: enable single curve, full scale selection, zoom +/-, scroll +/- and cursor                                                                                  |
| <b>PRODUCTION REPORT<br/>(Batch report)</b> | Scope                                | Synchronous recording when running the program profile                                                                                                                                                                                                                                                                  |
|                                             | Recordable values                    | Max number of analog values: 25<br>Max number of digital events: 50<br>Batch name/description (selectable)<br>Running profile data (selectable)                                                                                                                                                                         |
|                                             | Sampling                             | Sampling interval: 1 s ... 1 h<br>Sampling mode: single record with time information (date/time) and values/events/actions detected                                                                                                                                                                                     |
|                                             | Data storage                         | File format: CSV<br>Data file encryption: optional<br>Log file name with close date/time indication and Job ID reference (optional)<br>Storage media: internal memory<br>File export: manual via USB key or manual/automatic via Ethernet via <i>Gefran - DataLog Utility PC</i> application<br>- <i>Report Utility</i> |
|                                             | Graphic display                      | Graph: stored log data trend<br>Max number of viewable curves: 8<br>Data selection by page: 8 curves<br>Single curve scaling<br>Available functions: enable single curve, full scale selection, zoom +/-, scroll +/- and cursor                                                                                         |

|                                  |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TREND GRAPH<br/>REAL TIME</b> | Scope                        | Continuous recording of data configured without archiving                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                  | Recordable values            | Max number of analog and digital values: 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                  | Graphic display              | Max number of viewable curves by page: 24<br>Number of samples: 5,000<br>Single curve scaling<br>Available functions: enable single curve, full scale selection, zoom +/-, scroll +/- and cursor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>PROGRAM RECIPE</b>            | Data file                    | Programmer profile segment/event configuration<br>Synchronised programmer logic operations<br>Synchronised programmer mathematics functions<br>DataLog/Batch data configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                  | References                   | Descriptive name and ID code (easy loading and activation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                  | Data import and export       | Via USB key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>CONFIGURATION RECIPE</b>      | Types                        | System: number of clocks, home page, program modes ...<br>PID: all single PID configuration parameters<br>GETView: custom page configuration<br>InOut: analog channel range, decimal point configuration, unit of measure configuration<br>Messages: custom text list                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                  | Data import and export       | Via USB key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>GETView</b>                   | Scope                        | Configure custom graphic pages directly from the controller panel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                  | Number of customisable pages | 10 max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                  | Components                   | Available types: <ul style="list-style-type: none"> <li>Led: digital variable with color/text/image change</li> <li>Notes: default text display</li> <li>Text: fixed text display</li> <li>Edit text: text view and edit</li> <li>Progress: display a value as a bar (vertical/horizontal)</li> <li>Data display: display of a numeric value</li> <li>Data edit: view and edit a numeric value</li> <li>Button: change the status of a digital value with status display (color/text/image) and change mode selection (momentary/toggle)</li> <li>System: page change function with default list selection</li> </ul> Maximum number of components of the same type per page: <ul style="list-style-type: none"> <li>Text (Note, Text, Edit text) and numerical (Display date, Edit date): max 40</li> <li>Key: max 20</li> <li>LED: max 20</li> <li>Progress: max 16</li> <li>Image: max 10</li> <li>System: max one link of each type</li> </ul> |
|                                  | Available functions          | Add a new component<br>Edit component parameters<br>Delete a component<br>Move a component<br>Multiple component selection for move or delete<br>Align multiple components left<br>Align multiple components top                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                  | Image functions              | Image conversion tool from the most popular graphic file formats<br>Image file import and export via USB key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                  |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>WEEKLY CLOCK</b>              | Scope                        | Event (ON/OFF) on a weekly or daily basis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                  | Function                     | Configure ON/OFF event status by single day of the week<br>Event time settings in hh:mm<br>Enable the weekly clock<br>Enable weekly repetition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                  | Number                       | 4 max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>MULTILINGUAL</b>              | Scope                        | Change message language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                  | Function                     | UNICODE support<br>Custom message translation<br>File import and export via USB key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                  | Available languages          | Italian (ITA), English (ENG), French (FR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                                                    |                                   |                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DIAGNOSTICS</b>                                 | Scope                             | Controller operating status                                                                                                                                                                                                                                                                                                              |
|                                                    | PID loop                          | Short circuit or probe opening<br>Interrupted or partially interrupted load (HB alarm)                                                                                                                                                                                                                                                   |
|                                                    | Communication                     | Communication status between panel and I/O modules<br>Communication error alarm                                                                                                                                                                                                                                                          |
|                                                    | I/O modules                       | Signal status and single channel values                                                                                                                                                                                                                                                                                                  |
|                                                    | System                            | Disk Full Alarm                                                                                                                                                                                                                                                                                                                          |
| <b>ALARMS</b>                                      | Number                            | 254 max                                                                                                                                                                                                                                                                                                                                  |
|                                                    | Function                          | Alarm message customisation<br>ACK/no ACK selection<br>Real alarm display priority order level settings                                                                                                                                                                                                                                  |
| <b>VARIABLES</b>                                   | Available types                   | Merker (boolean)<br>Retain Merker (boolean)<br>Register (32 bit with sign)<br>Retain Register (32 bit with sign)<br>Real (32 bit)<br>Retain Real (32 bit)<br>String (text message)<br>Function                                                                                                                                           |
|                                                    | Number                            | max 256 per type                                                                                                                                                                                                                                                                                                                         |
| <b>AUDIT TRAIL</b>                                 | complete history of user settings | only with the SW CFR-21 option, the encrypted Audit Trail with all user settings is available.                                                                                                                                                                                                                                           |
| <b>USERS</b>                                       | Levels                            | Number of default levels: 3 (operator, level 0; Maintenance, level 1; OEM manufacturer, level 2)                                                                                                                                                                                                                                         |
|                                                    | Safety                            | Password<br>Automatic timed logout at operator level                                                                                                                                                                                                                                                                                     |
|                                                    | Internal functions                | Add new user                                                                                                                                                                                                                                                                                                                             |
|                                                    | Note                              | User administration with the SW CFR21 option is different and more complex. For further info see the manual specific chapter (cap 7).                                                                                                                                                                                                    |
| <b>REMOTE CONNECTIVITY</b>                         | Modbus TCP                        | Modbus TCP Slave<br>HMI/SCADA/DCS Data exchange systems                                                                                                                                                                                                                                                                                  |
|                                                    | VNC                               | Remote page standard interface<br>Remote machine maintenance                                                                                                                                                                                                                                                                             |
| <b>DATALOG UTILITY PC<br/>(remote application)</b> | Connection                        | Ethernet<br>Server NTP (option)                                                                                                                                                                                                                                                                                                          |
|                                                    | Function                          | Remote DataLog and batch management<br>Encrypted DataLog and batch file decryption<br>Manual controller file copy or deletion<br>Timer Configuration for automatic controller file copy or deletion<br>Data trend graphic display (with graph zoom and scroll)<br>Data display in spreadsheet mode<br>Data export in .CSV or .PDF format |
| <b>GF_eXpress<br/>(PC configuration)</b>           | Connection                        | Ethernet                                                                                                                                                                                                                                                                                                                                 |
|                                                    | Function                          | PID controller configuration read and write<br>Graphic display and setting of parameters useful for Programmer functions<br>Logic and mathematics operation settings and display<br>Creating custom graphic pages                                                                                                                        |
| <b>NON-VOLATILE MEMORY</b>                         | Type                              | FRAM                                                                                                                                                                                                                                                                                                                                     |
|                                                    | Capacity                          | 32 kB retentive variables                                                                                                                                                                                                                                                                                                                |
|                                                    | Write                             | Max number: > 10 <sup>12</sup> cycles<br>Retention: > 10 years @ 55 °C (95 °F),<br>> 55 years @ 35 °C (131 °F)                                                                                                                                                                                                                           |

| GENERAL DATA             |                                                |                                                                                                                                                                                                       |
|--------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VOLTAGE                  | Operating voltage                              | 24 VDC ±25%                                                                                                                                                                                           |
|                          | Current absorption                             | 300 mA max                                                                                                                                                                                            |
|                          | Dissipated power                               | 7.5 W max                                                                                                                                                                                             |
|                          | Protections                                    | For polarity exchange<br>For short circuit                                                                                                                                                            |
|                          | Connection                                     | Removable 3-pin polarised connector<br>Screw terminals, max 2,5 mm <sup>2</sup> (0.0038 in <sup>2</sup> ) (13 AWG) cable section                                                                      |
| BUFFER BATTERY           | Type                                           | MI2032, not replaceable                                                                                                                                                                               |
|                          | Specifications                                 | Rechargeable Li-Al, 3 V 65 mAh                                                                                                                                                                        |
|                          | Duration                                       | 10 years.<br>High temperatures can reduce battery life.                                                                                                                                               |
|                          | Power reserve in the absence of current        | > 20 months                                                                                                                                                                                           |
|                          | Ethernet (ETH)                                 | Connector: RJ45<br>Speed: 10 / 100 Mbit/s<br>Signals: Green LED = connection, yellow LED = data transfer<br>Protocols: FTP (File Transfer Protocol), Modbus TCP/IP Master/Slave                       |
|                          | USB                                            | Connector: type A<br>Type: Host Port<br>Version: 2.0 Full Speed<br>Current: 100 mA max<br>File system for USB key (Flash Drive): FAT32                                                                |
| ENVIRONMENTAL CONDITIONS | Indoor                                         | Use                                                                                                                                                                                                   |
|                          | Operating temperature                          | 0 ... +55 °C (32.. 131 °F) (according to IEC 68-2-14)                                                                                                                                                 |
|                          | Storage temperature                            | -20 ... +70 °C (-4.... 158 °F) (according to IEC 68-2-14)                                                                                                                                             |
|                          | Relative humidity                              | Max 95% RH non condensing (according to IEC 68-2-3)                                                                                                                                                   |
| PROTECTION RATING        |                                                | IP 65 on the front (according to IEC 68-2-3)                                                                                                                                                          |
| ASSEMBLY                 | Positioning                                    | On panel, front pull-out                                                                                                                                                                              |
|                          | Installation requirements                      | Installation category: III<br>Pollution rating: 2<br>Insulation: double                                                                                                                               |
| DIMENSIONS               | (L × H × D)                                    | 100 × 100 × 59,5 mm (3.94" × 3.94" × 2.34") max                                                                                                                                                       |
| WEIGHT                   |                                                | 0.25 kg (0.55 lb)                                                                                                                                                                                     |
| EC REGULATIONS           | EMC conformity (electromagnetic compatibility) | Compliance with the 2014/30/EU Directive<br>EMC Emission: EN 61000-6-4<br>EMC Immunity: EN 61131-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11 |
|                          | LV conformity (Low Voltage)                    | Compliance with the 2014/35/EU Directive<br>LVD safety: EN 61010-1                                                                                                                                    |
| UL REGULATIONS           |                                                | Compliance with UL508 standard                                                                                                                                                                        |

## F-GCANs communications module

| GENERAL DATA             |                                                |                                                                                                                                                                                                       |
|--------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VOLTAGE                  | Operating voltage                              | 24 VDC $\pm$ 25%                                                                                                                                                                                      |
|                          | Current absorption                             | 2 A max                                                                                                                                                                                               |
|                          | Dissipated power                               | 2.5 W                                                                                                                                                                                                 |
|                          | Connection                                     | Polarised connector with spring terminals, cable 1 mm <sup>2</sup> (0.0015 in <sup>2</sup> ) (17 AWG) max                                                                                             |
| CONNECTIONS              | CAN                                            | Connector: DB9<br>Protocol: CANopen 2.0B, level CAN DS301 v.3.0, v4.0                                                                                                                                 |
| SIGNAL ELEMENTS          | Error                                          | Red LED                                                                                                                                                                                               |
|                          | Running                                        | Green LED                                                                                                                                                                                             |
|                          | Voltage                                        | Yellow LED                                                                                                                                                                                            |
| ENVIRONMENTAL CONDITIONS | Indoor                                         | Use                                                                                                                                                                                                   |
|                          | Operating temperature                          | 0 ... +55 °C (32.... 131 °F)                                                                                                                                                                          |
|                          | Storage temperature                            | -20 ... +70 °C (-4 .... 158 °F)                                                                                                                                                                       |
|                          | Relative humidity                              | max 95% RH non-condensing                                                                                                                                                                             |
| PROTECTION RATING        |                                                | IP20                                                                                                                                                                                                  |
| ASSEMBLY                 | Positioning                                    | Vertical                                                                                                                                                                                              |
|                          | Mount                                          | On DIN 35 mm (1.38") rail                                                                                                                                                                             |
| DIMENSIONS               | (L x H x D)                                    | 25.4 x 92 x 90 mm (1" x 3.62" x 3.54")                                                                                                                                                                |
| WEIGHT                   |                                                | 0.15 kg (0.33 lb)                                                                                                                                                                                     |
| EC REGULATIONS           | EMC conformity (electromagnetic compatibility) | Compliance with the 2014/30/EU Directive<br>EMC Emission: EN 61000-6-4<br>EMC Immunity: EN 61131-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11 |
| UL REGULATIONS           |                                                | Compliance with UL508 standard                                                                                                                                                                        |

## F-MIX module

| INPUTS |                                  |                                                                                  |               |            |            |
|--------|----------------------------------|----------------------------------------------------------------------------------|---------------|------------|------------|
| ANALOG | Number                           | 4 configurable + 2 by amperometric transformer                                   |               |            |            |
|        | Sensor type                      | TC, RTD (PT100, PT1000), IR sensor, linear DC                                    |               |            |            |
|        | Single-ended voltage input       | Voltage: 0...10 V, 0...2,5 V<br>Impedance: >5 MΩ (channel 1: > 50 MΩ)            |               |            |            |
|        | Differential voltage input       | Voltage: 0...60 mV<br>Impedance: >5 MΩ                                           |               |            |            |
|        | Current input                    | Current: 0...20 mA, 4...20 mA<br>Load: 100 Ω                                     |               |            |            |
|        | Potentiometer input              | Potentiometer resistance: 100 Ω min.<br>Impedance: >5 MΩ (channel 1: > 50 MΩ)    |               |            |            |
|        | Extensometer input               | Voltage: -5...35 mV, -10...130 mV<br>Impedance: > 5 MΩ                           |               |            |            |
|        | TC input (thermocouple)          | Thermocouple: J, K, R, S, T, N, C, D, E, B, L (CJ internal)<br>Impedance: > 5 MΩ |               |            |            |
|        | RTD input (thermoresistance)     | Number of wires: 2, 3 or 4<br>Thermoresistance: PT100, PT1000                    |               |            |            |
|        | Input from a current transformer | rms current: 0...50 mA RMS<br>Frequency: 50/60 Hz<br>Impedance: 50 Ω             |               |            |            |
|        | Temperature unit of measure      | ° C or ° F, selectable                                                           |               |            |            |
|        | Probe voltage                    | Voltage: stabilized 10 VDC or 1 VDC, selectable<br>Current: 130 mA max           |               |            |            |
|        | Resolution                       | 16 bit                                                                           |               |            |            |
|        | Format and resolution            | <i>Input type</i>                                                                | <i>Number</i> | <i>Min</i> | <i>Max</i> |
|        |                                  | Voltage 0...10 V                                                                 | <i>Number</i> | 0          | 65535      |
|        |                                  | Voltage 0...2,5 V                                                                | <i>Number</i> | 0          | 65535      |
|        |                                  | Voltage 0...60 mV                                                                | <i>Number</i> | 0          | 65535      |
|        |                                  | Current 0...20 mA                                                                | <i>Number</i> | 0          | 65535      |
|        |                                  | Current 4...20 mA                                                                | <i>Number</i> | 13107      | 65535      |
|        |                                  | Potentiometer                                                                    | <i>Number</i> | 0          | 65535      |
|        |                                  | Extensometer -5...35 mV                                                          | <i>Number</i> | 0          | 65535      |
|        |                                  | Extensometer -10...130 mV                                                        | <i>Number</i> | 0          | 65535      |
|        |                                  | J thermocouple                                                                   | °C            | -210,0     | 1200,0     |
|        |                                  |                                                                                  | °F            | -346       | 2192       |
|        |                                  | K thermocouple                                                                   | °C            | -270,0     | 1372,0     |
|        |                                  |                                                                                  | °F            | -454       | 2501       |
|        |                                  | R thermocouple                                                                   | °C            | -50,0      | 1768,0     |
|        |                                  |                                                                                  | °F            | 32         | 3182       |
|        |                                  | S thermocouple                                                                   | °C            | -50,0      | 1768,0     |
|        |                                  |                                                                                  | °F            | -58        | 3214       |
|        |                                  | T thermocouple                                                                   | °C            | -270,0     | 400,0      |
|        |                                  |                                                                                  | °F            | -454       | 752        |
|        |                                  | N thermocouple                                                                   | °C            | -270,0     | 1300,0     |
|        |                                  |                                                                                  | °F            | -454       | 2372       |
|        |                                  | C thermocouple                                                                   | °C            | 0,0        | 2300,0     |
|        |                                  |                                                                                  | °F            | 32         | 4172       |
|        |                                  | D thermocouple                                                                   | °C            | 0,0        | 2300,0     |
|        |                                  |                                                                                  | °F            | 32         | 4523       |
|        |                                  | E thermocouple                                                                   | °C            | -270,0     | 1000,0     |
|        |                                  |                                                                                  | °F            | -454       | 1832       |
|        |                                  | B thermocouple                                                                   | °C            | 44,0       | 1800,0     |
|        |                                  |                                                                                  | °F            | 32         | 3272       |
|        |                                  | L thermocouple                                                                   | °C            | -200,0     | 900,0      |
|        |                                  |                                                                                  | °F            | -328       | 1652       |
|        |                                  | RTD PT100                                                                        | °C            | -200,0     | 850,0      |
|        |                                  |                                                                                  | °F            | -328       | 1562       |
|        |                                  | RTD PT1000                                                                       | °C            | -200,0     | 850,0      |
|        |                                  |                                                                                  | °F            | -328       | 1562       |
|        |                                  | TA                                                                               | mA            | 0,0        | 50,0       |

|                |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ANALOG</b>  | Accuracy            | <p>TC input (*) (**)<br/> Calibration: &lt; ±(0,25% of value read in °C + 0,1 °C / 0,2 °F)<br/> Linearisation 1,8 % of value read<br/> Cold joint: &lt; ±1 °C (34,7 °F) at 25 °C (77 °F)<br/> room temperature<br/> Cold joint compensation &gt; 30:1 rejection at room temperature change</p> <p>RTD input<br/> Calibration: &lt; ±(0.15% of value read + 0.4 °C / 0,72 °F)<br/> Linearisation: 0.1% of value read<br/> Thermal shift: &lt; ±(0.005% of the value read in °C + 0.015°C / 0,072 °F) /°C starting from 25 °C (77 °F) room temperature</p> <p>Linear inputs:<br/> Calibration: &lt; 0.1% full scale<br/> Thermal shift: &lt; ±0.005% full scale /°C starting from 25 °C (77 °F) room temperature</p> <p>CT input<br/> Calibration : &lt;0,5% full scale<br/> Thermal shift : &lt;+/- 0,01% full scale/°C starting from 25°C (77 °F)</p> |
|                | Conversion time     | 5 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                | Protection          | Polarity inversion<br>Power surge: max 1 kV per 1 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                | Electric insulation | Channel-bus: 2.0 kV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                | Diagnostics         | Module state: LED and software                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>DIGITAL</b> | Number              | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                | Voltage             | Rated: 24 VDC (according to EN 61131-2 type 1 and type 3)<br>Max: 32 V, 10 mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                | Switch limit        | Low level: ≤ 8 VDC<br>High level: ≥ 11 VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                | Protection          | Polarity inversion<br>Power surge: max 1 kV per 1 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                | Electric insulation | Channel-bus: 2.0 kV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                | Diagnostics         | Module state: LED and software<br>Channel state: LED and software                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

(\*) For TC S valid with T>100°C; for TC B valid with T>200°C

(\*\*) With TC input J / K / N / S Factory Calibration 0.1% of value read according to AMS2750

|                |                             |                                                                                                                                                                           |        |        |       |            |
|----------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|-------|------------|
| <b>ANALOG</b>  |                             |                                                                                                                                                                           |        |        |       |            |
| <b>OUTPUTS</b> | Number                      | 2                                                                                                                                                                         |        |        |       |            |
|                | Voltage output single-ended | ±10 V, 15 mA max                                                                                                                                                          |        |        |       |            |
|                | Current output              | 0...20 mA, 4...20 mA<br>Max load: 600 Ω                                                                                                                                   |        |        |       |            |
|                | Resolution                  | 16 bit                                                                                                                                                                    |        |        |       |            |
|                | Format and resolution       | Output type                                                                                                                                                               | Number | Min    | Max   | Resolution |
|                |                             | ±10 V                                                                                                                                                                     | Number | -32768 | 32767 | 0.3 mV     |
|                |                             | 0...20 mA                                                                                                                                                                 | Number | 0      | 32767 | 0.6 µA     |
|                |                             | 4...20 mA                                                                                                                                                                 | Number | 6550   | 32767 | 0.6 µA     |
|                | Accuracy                    | Calibration precision: ±0,1% full scale @ 25 °C (77 °F)                                                                                                                   |        |        |       |            |
|                | Conversion time             | 5 ms                                                                                                                                                                      |        |        |       |            |
|                | Adjustment time             | 100 µs                                                                                                                                                                    |        |        |       |            |
|                | Protection                  | Short circuit: ±10 V<br>Overload ±10 V: 16 mA max per each channel<br>Open circuit 0...20 mA / 4...20 mA: Alarm status for open circuit<br>Power surge: max 1 kV per 1 ms |        |        |       |            |
|                | Electric insulation         | Channel-channel: No<br>Channel-bus: 2.0 kV                                                                                                                                |        |        |       |            |
|                | Diagnostics                 | Module state: LED and software<br>Channel state: LED and software                                                                                                         |        |        |       |            |
| <b>DIGITAL</b> | Number                      | 8                                                                                                                                                                         |        |        |       |            |
|                | Voltage                     | 24 VDC ±25%                                                                                                                                                               |        |        |       |            |
|                | Current                     | Single output: 1 A max<br>Total outputs: 4 A max                                                                                                                          |        |        |       |            |
|                | Groups                      | 1 group with 8 outputs                                                                                                                                                    |        |        |       |            |
|                | Protection                  | Short circuit<br>Overload per output @ I ≥ 2,2 A for 500 ms min.<br>Over temperature<br>Power surge: max 1 kV per 1 ms                                                    |        |        |       |            |
|                | Electric insulation         | Channel-bus: 2.0 kV                                                                                                                                                       |        |        |       |            |
|                | Diagnostics                 | Module state: LED and software<br>Channel state: LED and software                                                                                                         |        |        |       |            |

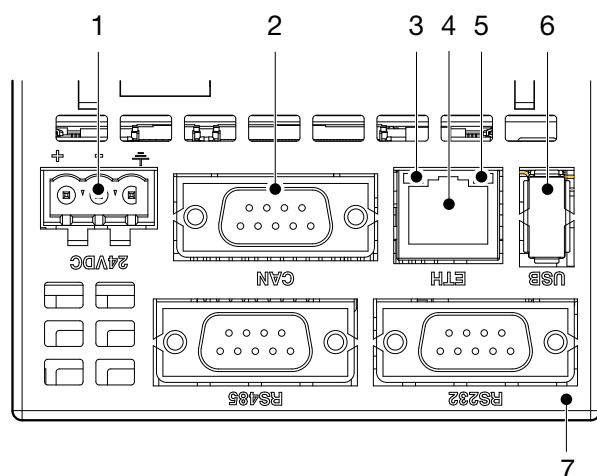
| <b>GENERAL DATA</b>             |                       |                                                                                                                                                                                              |
|---------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CHANNELS</b>                 | Number                | 24                                                                                                                                                                                           |
| <b>VOLTAGE</b>                  | Operating voltage     | 24 VDC ±25%                                                                                                                                                                                  |
|                                 | Current absorption    | 150 mA max                                                                                                                                                                                   |
|                                 | Dissipated power      | 7.8 W                                                                                                                                                                                        |
| <b>CONNECTIONS</b>              | Connector             | Front 36 pole<br>Wire connection with self-locking spring terminals, max cable section 0,2...1,5 mm <sup>2</sup> (24...15 AWG)                                                               |
| <b>ENVIRONMENTAL CONDITIONS</b> | Indoor                | Use                                                                                                                                                                                          |
|                                 | Operating temperature | 0 ... +55 °C (32 ...131 °F)                                                                                                                                                                  |
|                                 | Storage temperature   | -20 ... +70 °C (-4 ...158 °F)                                                                                                                                                                |
|                                 | Relative humidity     | max 95% RH non-condensing                                                                                                                                                                    |
| <b>PROTECTION RATING</b>        |                       | IP20                                                                                                                                                                                         |
| <b>ASSEMBLY</b>                 | Positioning           | Vertical                                                                                                                                                                                     |
|                                 | Mount                 | On DIN 35 mm (1.38") rail                                                                                                                                                                    |
| <b>DIMENSIONS</b>               | (L × H × D)           | 25,4 × 92 × 90 mm (1" × 3.62" × 3.54")                                                                                                                                                       |
| <b>WEIGHT</b>                   |                       | 0.13 kg (0.29 lb)                                                                                                                                                                            |
| <b>CERTIFICATIONS</b>           |                       | CE, UL<br>If the appropriate calibration is performed in the field, the Controller meets the requirements of standard AMS2750 and may be used in applications requiring the NADCAP directive |

## F-EU16 module

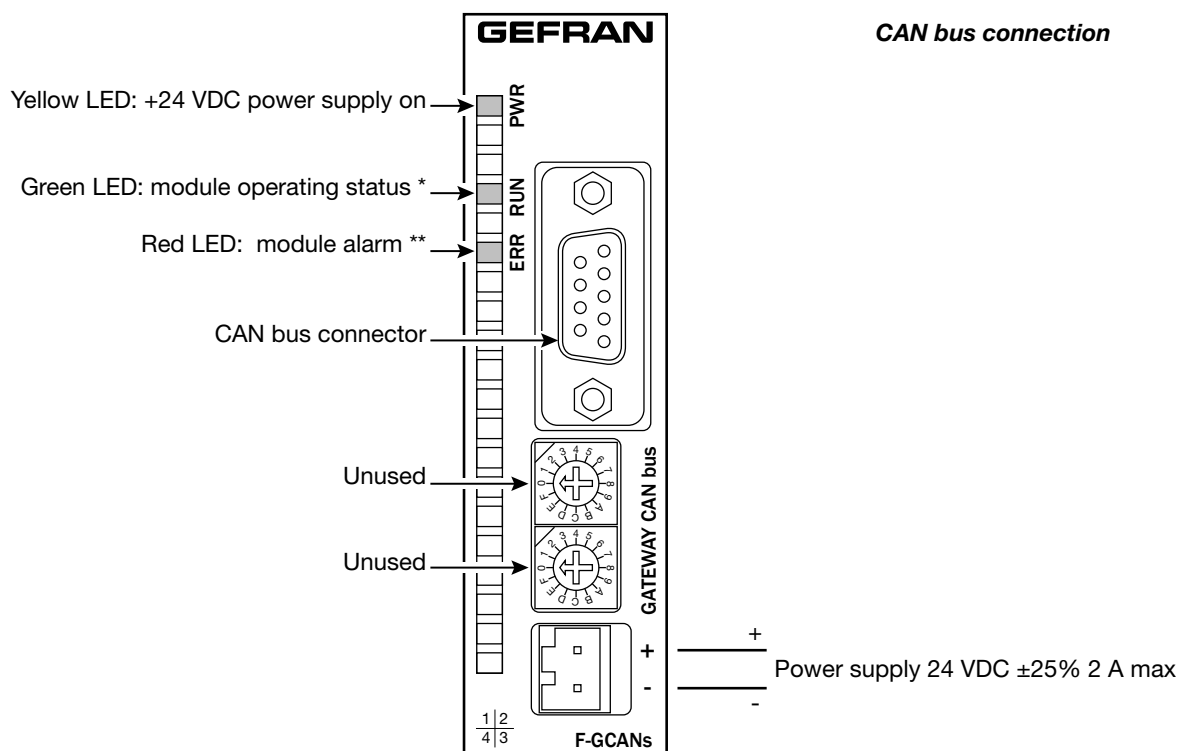
| <b>INPUTS</b>                   |                       |                                                                                                                                |
|---------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>DIGITAL</b>                  | Number                | 8                                                                                                                              |
|                                 | Voltage               | Rated: 24 VDC (according to EN 61131-2 type 1 and type 3)<br>Max: 32 V, 25 mA                                                  |
|                                 | Switch limit          | Low level: $\leq 8$ VDC<br>High level: $\geq 11$ VDC                                                                           |
|                                 | Filter                | Hardware: 100 Hz or 5 kHz selectable from software                                                                             |
|                                 | Protection            | Polarity inversion<br>Power surge: max 1 kV per 1 ms                                                                           |
|                                 | Electric insulation   | Channel-bus: 2.0 kV                                                                                                            |
|                                 | Diagnostics           | Module state: LED and software<br>Channel state: LED and software                                                              |
| <b>ANALOG</b>                   |                       |                                                                                                                                |
| <b>DIGITAL</b>                  | Number                | 8                                                                                                                              |
|                                 | Groups                | 2 group with 4 outputs                                                                                                         |
|                                 | Voltage               | 24 VDC $\pm 25\%$                                                                                                              |
|                                 | Current               | Single output: 2 A max<br>Single group: 5 A max<br>Total outputs: 8 A max                                                      |
|                                 | Protection            | Short circuit<br>Overload per output @ $I \geq 2,2$ A for 500 ms min.<br>Over temperature<br>Power surge: max 1 kV per 1 ms    |
|                                 | Electric insulation   | Channel-bus: 2.0 kV                                                                                                            |
|                                 | Diagnostics           | Module state: LED and software<br>Channel state: LED and software                                                              |
| <b>GENERAL DATA</b>             |                       |                                                                                                                                |
| <b>CHANNELS</b>                 | Number                | 16                                                                                                                             |
| <b>VOLTAGE</b>                  | Operating voltage     | 24 VDC $\pm 25\%$                                                                                                              |
|                                 | Current absorption    | 8 A max                                                                                                                        |
|                                 | Dissipated power      | 9 W                                                                                                                            |
| <b>CONNECTIONS</b>              | Connector             | Front 26 pole<br>Wire connection with self-locking spring terminals, max cable section 0,2...1.5 mm <sup>2</sup> (24...15 AWG) |
| <b>ENVIRONMENTAL CONDITIONS</b> | Indoor                | Use                                                                                                                            |
|                                 | Operating temperature | 0 ... +55 °C (32 ... 131 °F)                                                                                                   |
|                                 | Storage temperature   | -20 ... +70 °C (-4 ... 158 °F)                                                                                                 |
|                                 | Relative humidity     | max 95% RH non-condensing                                                                                                      |
| <b>PROTECTION RATING</b>        |                       | IP20                                                                                                                           |
| <b>ASSEMBLY</b>                 | Positioning           | Vertical                                                                                                                       |
|                                 | Mount                 | On DIN 35 mm (1.38") rail                                                                                                      |
| <b>DIMENSIONS</b>               | (L × H × D)           | 25.4 × 92 × 90 mm (1" × 3.62" × 3.54")                                                                                         |
| <b>WEIGHT</b>                   |                       | 0.13 kg (0.29 lb)                                                                                                              |
| <b>CERTIFICATIONS</b>           |                       | CE, UL                                                                                                                         |

## CONNECTION DIAGRAM

### Interface connection diagram



### F-GCANs communication module connection diagram

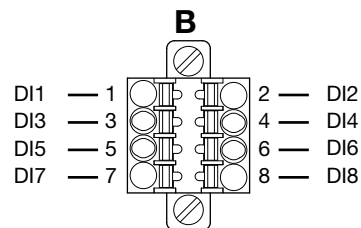
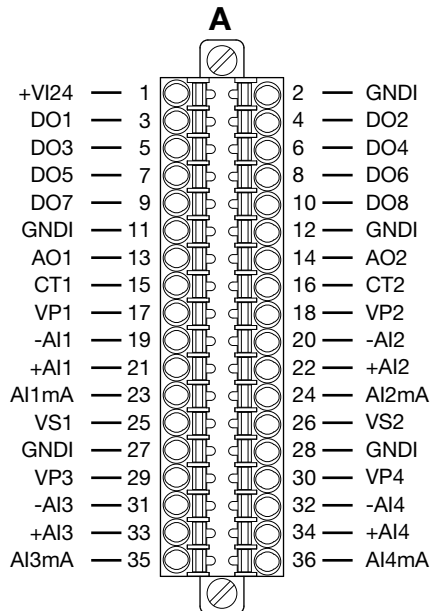
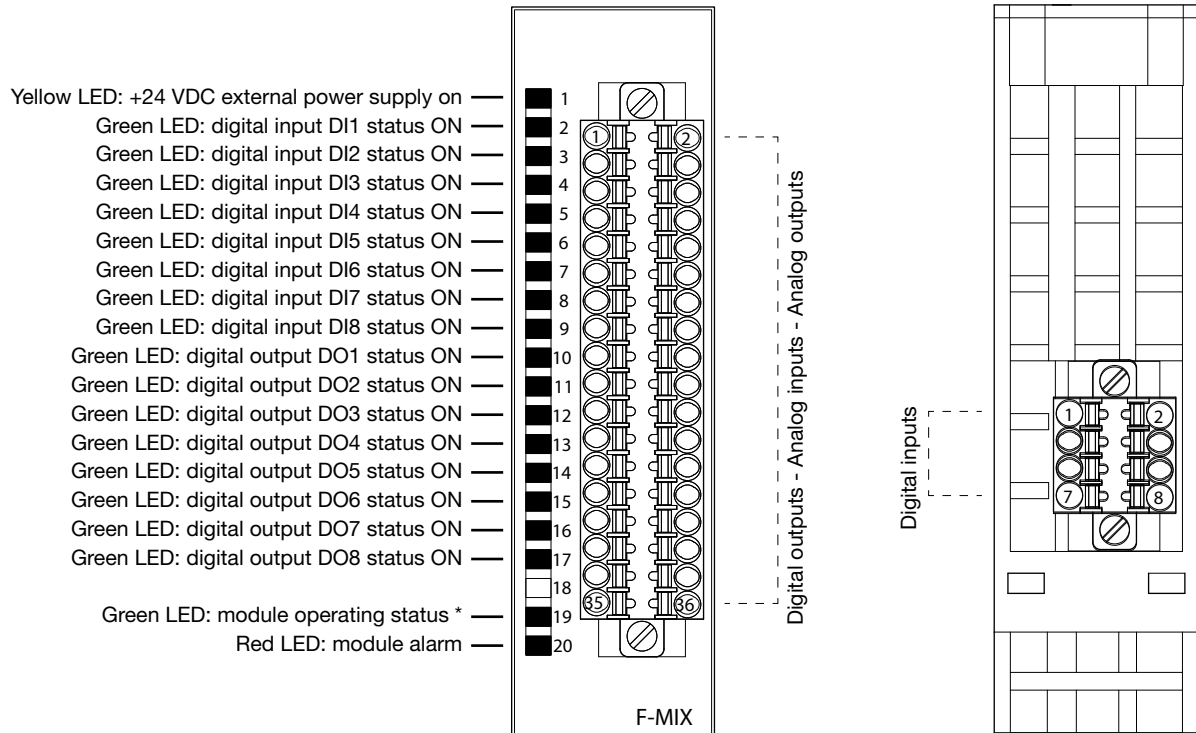


\*) on = module on  
 flashing = module not on

\*\*) on = generic error  
 flashing = communication error

# F-MIX module connection diagrams

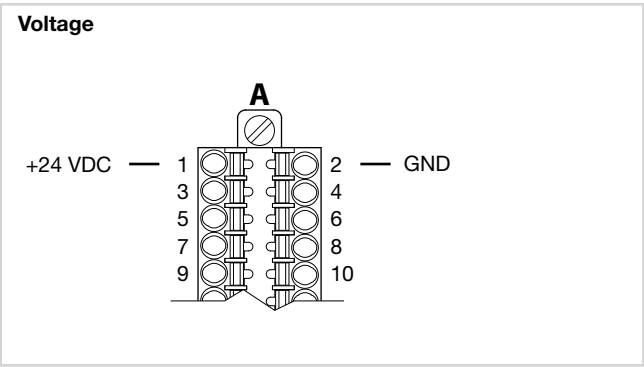
## General layout



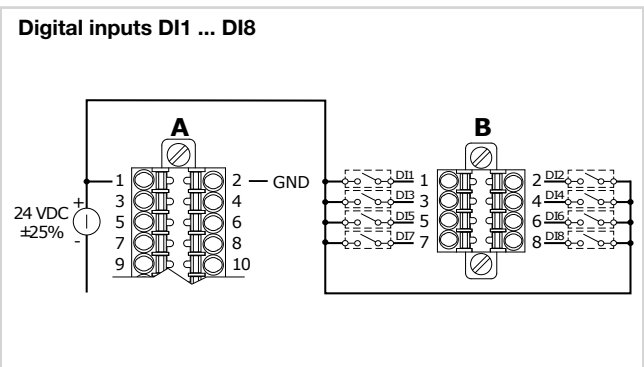
DI = Digital input  
 DO = Digital output  
 AI = Analog input  
 AO = Analog output  
 +VI24 = 24 V voltage  
 GNDI = 0 V voltage  
 CT = input from a current transformer  
 VP = Potentiometer power  
 VS = Extensometer input

\*) Fast flashing = module on  
 slow flashing = module awaiting configuration (not operating)

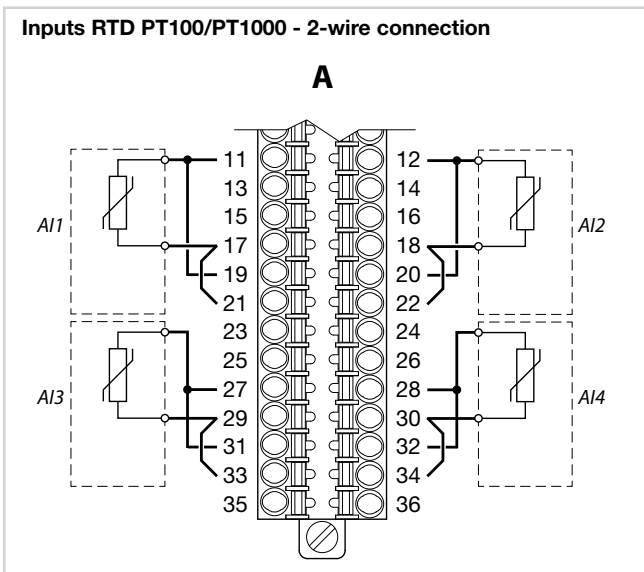
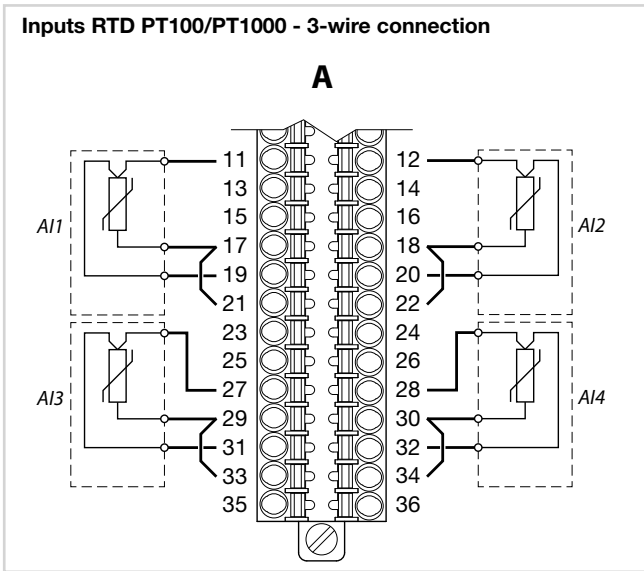
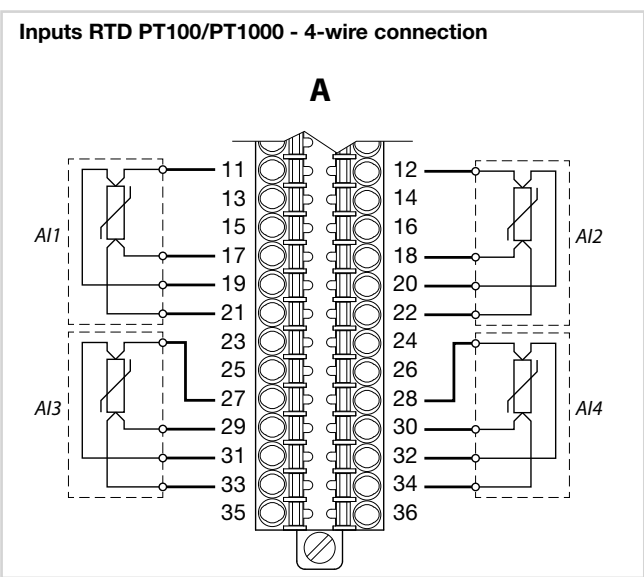
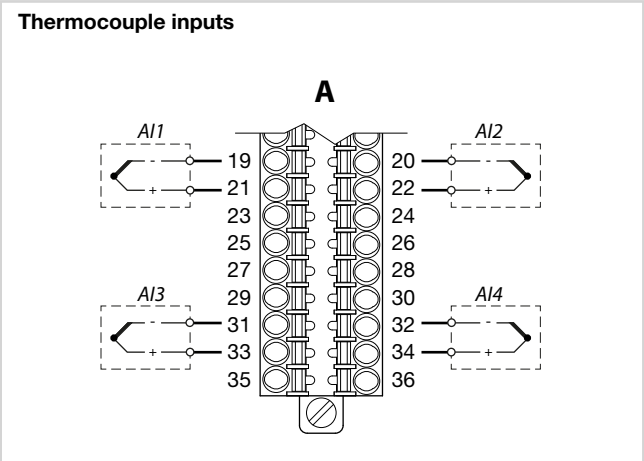
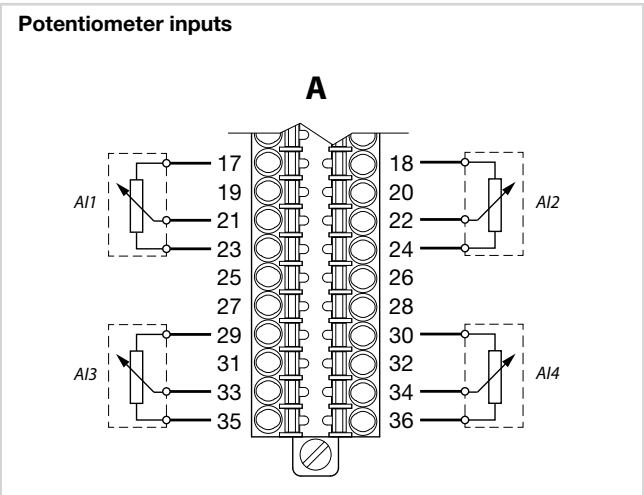
1.1.1. Voltage



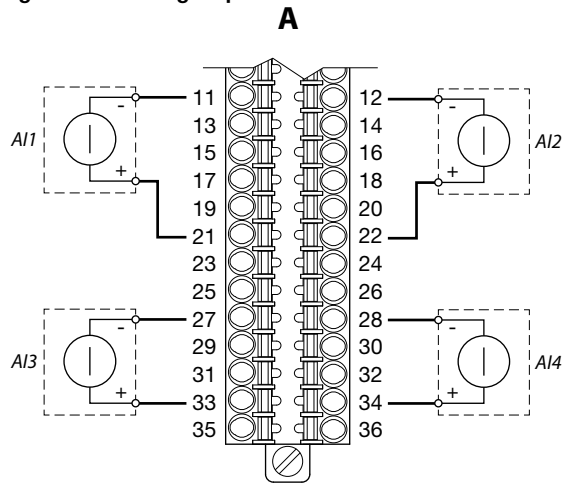
1.1.2. Digital inputs



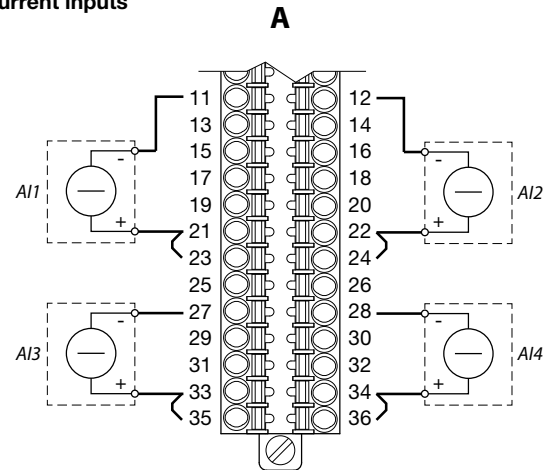
1.1.3. Analog inputs



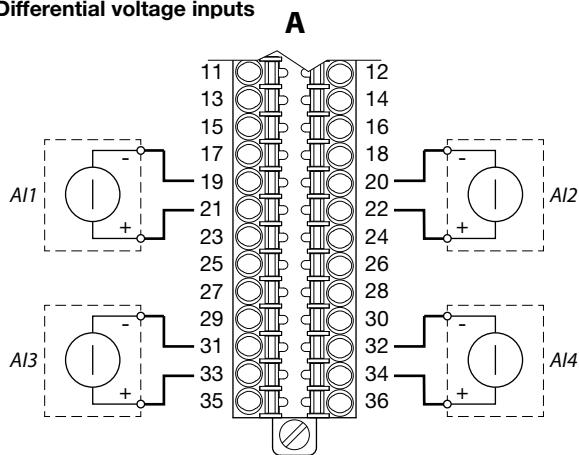
### Single-ended voltage inputs



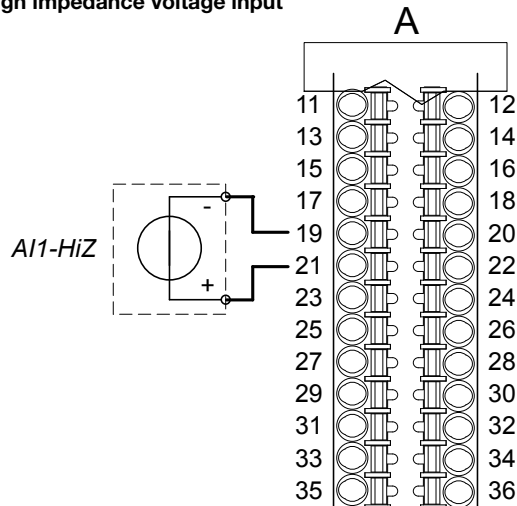
### Current inputs



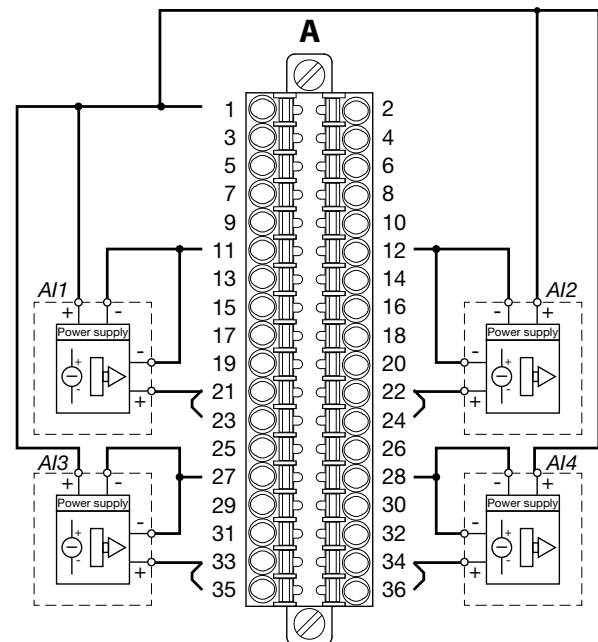
### Differential voltage inputs



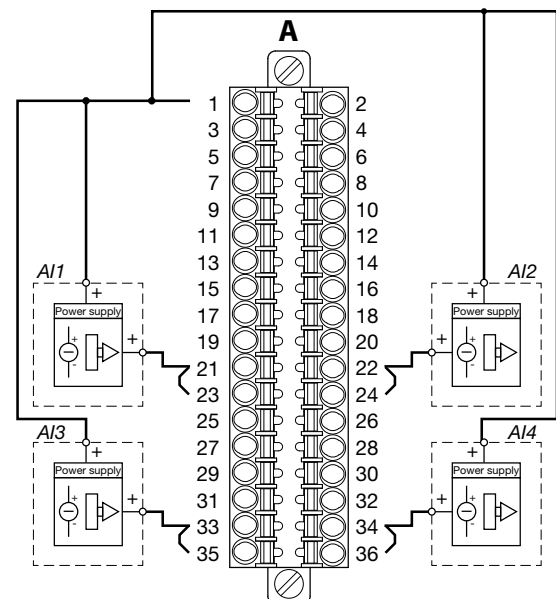
### High impedance voltage input



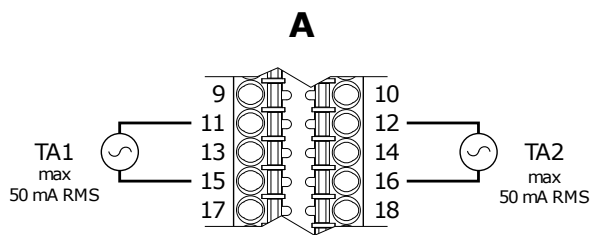
### Amplified current transducer inputs - 4-wire connection



### Amplified current transducer inputs - 2-wire connection

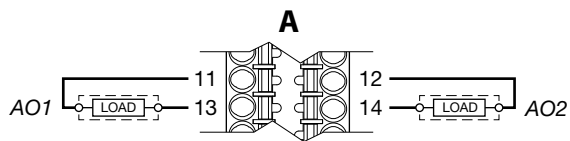


#### Current transformer inputs



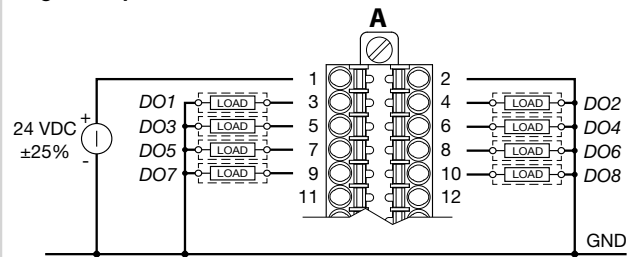
#### 1.1.4. Digital outputs

#### Analog outputs AO1 ... AO8



#### 1.1.5. Analog outputs

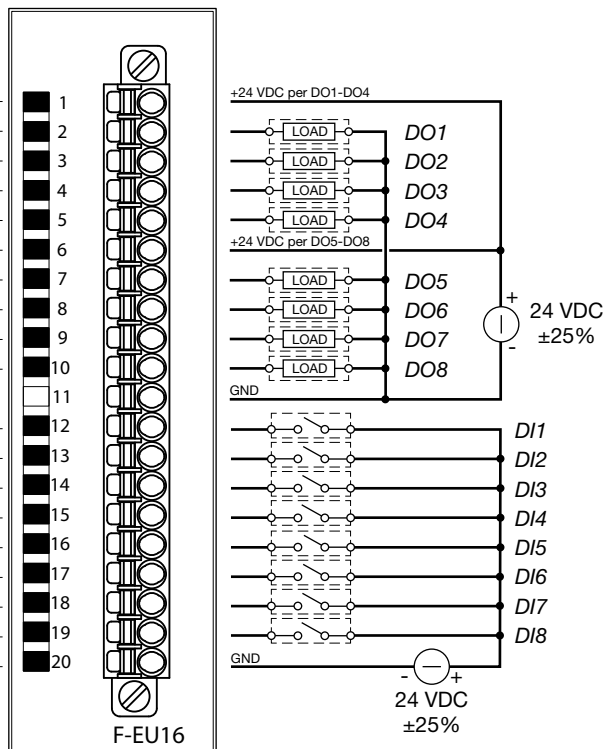
#### Digital outputs DO1 ... DO8



### 1.1. F-EU16 digital I/O module connection diagram

Yellow LED: power supply for DO1-DO4 on — 1  
 Green LED: output DO1 status ON — 2  
 Green LED: output DO2 status ON — 3  
 Green LED: output DO3 status ON — 4  
 Green LED: output DO4 status ON — 5  
 Yellow LED: power supply for DO5-DO8 on — 6  
 Green LED: output DO5 status ON — 7  
 Green LED: output DO6 status ON — 8  
 Green LED: output DO7 status ON — 9  
 Green LED: output DO8 status ON — 10

Green LED: input DI1 status ON — 12  
 Green LED: input DI2 status ON — 13  
 Green LED: input DI3 status ON — 14  
 Green LED: input DI4 status ON — 15  
 Green LED: input DI5 status ON — 16  
 Green LED: input DI6 status ON — 17  
 Green LED: input DI7 status ON — 18  
 Green LED: input DI8 status ON — 19  
 Red LED: module alarm — 20



## ORDER CODES

**Order code:** **2850T** - **A** - **B** - **C** - **D** - **E** - **F** - **G** - **H** - **I** - **L**

| Version (A)                                      |    |
|--------------------------------------------------|----|
| PID multiloop controller                         | 0C |
| Recorder                                         | 0S |
| PID multiloop controller + Recorder              | CS |
| PID multiloop controller + Programmer + Recorder | PS |

| HW configuration (B)                                                        |    |
|-----------------------------------------------------------------------------|----|
| 4 analog inputs + 2 analog outputs + 8 digital inputs + 8 digital outputs   | 04 |
| 8 analog inputs + 4 analog outputs + 16 digital inputs + 16 digital outputs | 08 |

| SW Options (C) |    |
|----------------|----|
| None           | 00 |
| CFR21          | 01 |

| Smart function (D)                          |    |
|---------------------------------------------|----|
| No                                          | 00 |
| SD Data Storage + SD Card 1 GB <sup>1</sup> | 01 |

| Reserved to Gefran (L) |   |
|------------------------|---|
|                        | 0 |

| Reserved to Gefran (I) |   |
|------------------------|---|
|                        | 0 |

| I/O digital expansions (H)             |    |
|----------------------------------------|----|
| No                                     | 00 |
| 8 digital inputs + 8 digital outputs   | 08 |
| 16 digital inputs + 16 digital outputs | 16 |

| Reserved to Gefran (G) |    |
|------------------------|----|
|                        | 00 |

| GETView (F) |    |
|-------------|----|
| No          | 00 |
| Yes         | GV |

| GETLogic (E) |    |
|--------------|----|
| No           | 00 |
| Yes          | GL |

- 1) SD option includes a 1 GB SD Card  
The SD option is not available for the Multiloop model (0C)

## Code examples

[illegible]

**ACCESSORIES**

| Code           |           | Description                                                       |
|----------------|-----------|-------------------------------------------------------------------|
| <b>F067612</b> |           | 2 m communication cable                                           |
| <b>F068066</b> |           | 10 m communication cable                                          |
| <b>F069369</b> | F-MIX     | Module 4 AI + 2 AO + 8 DI + 8 DO                                  |
| <b>F067224</b> | F-EU16    | Module 8 DI + 8 DO                                                |
| <b>F035293</b> | F-GCANs   | CANOpen communication module                                      |
| <b>F057679</b> | USB_PEN1G | 1 GB USB key                                                      |
| <b>F029933</b> | GT_USBPAN | A-A USB extension with panel mount, IP65 cap and fastening screws |
| <b>F057777</b> | SD_CARD1G | 1 GB SD Card                                                      |

|            |                                                                                                                                                                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EAC</b> | Conformity TC RU C-IT.ГР01.B.01459                                                                                                                                                                                                           |
| <b>UL</b>  | Conformity C/UL/US File no. E216851                                                                                                                                                                                                          |
| <b>CE</b>  | EMC (electromagnetic compatibility): conforms to directiv 2014/30/EU with reference to standard EN 61326-1<br>emission in industrial environment class A<br>Safety LVD: conforms to directiv 2014/35/EU with reference to standard EN61010-1 |

**GEFRAN**

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