



#### Main applications

- Pressure controls on extrusion and injection press lines for plastics
- Differential pressure control
- Strength control on textile, paper, plastic film production lines
- Tension control on winding stations
- Control process

#### Main characteristics

- Double configurable input for strain gauge / potentiometer / linear signal / TC / RTD
- Two auxiliary analog inputs
- Differential measurement
- High precision: 0.1 % f.s.  $\pm$  1 digit
- Automatic calibration for 6-wire strain gauge
- Transmitter power supply and strain gauge probe power supply
- PID controls with 8 sets of selectable parameters
- 4 configurable alarms, failsafe function
- up to 3 isolated analog outputs for control and retransmission
- 4 digital inputs
- 4 relay outputs with configurable function
- expansion with 4 configurable digital inputs and/or outputs
- Serial communication interface:
  - RS485/RS 232 MODBUS RTU protocol (optional)
  - Profibus DP Slave (optional)
- Front panel with three 5-digit displays and two bar graphs

#### PROFILE

Single-loop microprocessor controller, 96 x 96 (1/4 DIN) format, appropriate for processes with high variation speed.

Thanks to its extended functions and configurable hardware and software, it provides high applicative flexibility in systems that control and monitor pressure, force, temperature, and differential pressure, and can acquire up to 4 variables.

It has two main analog inputs, configurable for strain gauge / potentiometer / linear signal / TC / RTD (one of which is optional) and two auxiliary analog inputs for linear signals (for example, remote setpoint functions and line speed reference input).

Two isolated analog outputs (one of which is optional) are available for control.

The operator interface, with IP54 protection level (IP65 with protective cover) is equipped with a 6-key soft-touch keyboard, triple 5-digit display (one of which is 2-color), and two bar graphs with configurable function.

Controls and commands can be sent from the front panel or via 4 digital inputs that can be assigned functions such as reset, calibration, man/auto, loc/rem,

hold, raise/lower (motopotentiometer function), parameter set selection, set-point selection.

The instrument has 4 configurable relay outputs as standard.

More extended configurations are available with the following options:

- isolated analog output for retransmission of process, peak, remote set, deviation, alarm setpoint, differential values
- expansion with 4 I/O
- communication interface Modbus RTU
- communication interface Profibus DP (slave)

#### CONTROLLER

Self-adapting PI control or double-action PID (heating/cooling), ratio controller, differential pressure controller, selftuning, continuous or one-shot autotuning, Auto/man, Loc/rem, setpoint gradient, power gradient, dynamic power limits. 8 sets of selectable PID parameters based on setpoint level / PV / deviation or from digital inputs.

#### ALARMS

4 completely configurable alarm setpoints.  
Selectable "failsafe" function.

#### MATH FUNCTIONS

The 2500 controller lets you define two distinct math relations between two analog inputs.

The results can be freely used as setpoints, alarm setpoints, control output, etc...

#### DIGITAL COMMUNICATION

The instrument offers an optional RS485 2/4 wire / RS232 serial interface with MODBUS RTU protocol for access to instrument parameters.

#### CONFIGURATION

The programming procedure is facilitated by the menu structure, with various configuration levels for quick and simple data search.

## TECHNICAL DATA

### OPERATOR INTERFACE

**Display:** n. 3

Configurable from -19999 to 99999 with settable decimal point  
5 digits, 2 colors (R/G) 13mm  
5 digits (G) 10mm  
5 digits (G) 10mm

**Bargraph:** n. 2

with 10/20 red LEDs

**Signal LEDs:** n. 5 red

**Keys:** n. 6

### ANALOG INPUTS

**Accuracy:**

0,1% f.s.  $\pm 1$  digit (0,2% for TC)

**Min. sampling time:**

2 msec for main inputs

10msec for auxiliary inputs

**Resolution:**

• without filter: 100000 steps@2msec

• with digital filter (selectable):

100000 steps@20msec

100000 steps@100msec (50Hz)

**Custom linearization:**

• fixed intervals: 64 sections

• variable intervals: 32 section max.

• self-learning

### INPUT 1, INPUT 2 main inputs

**Strain-gauge:** 350 $\Omega$

Sensitivity 1,5...4mV/V

Jumper power supply: 5/10Vdc 200mA

**Potentiometer:**

$\geq 100\Omega$ ,  $R_i > 10M\Omega$  @ 2,5Vdc

**Linear DC:**

$\pm 50mV$ ... $\pm 10V$ ,  $R_i > 1M\Omega$

0/4...20mA,  $R_i = 50\Omega$

**TC - Thermocouple**

**J** 0...1000°C / 32...1832°F

**K** 0...1300°C / 32...2372°F

**R** 0...1750°C / 32...3182°F

**S** 0...1750°C / 32...3182°F

**T** -200...400°C / -328...752°F

custom -1999...9999

**RTD** 2/3-wires

**PT100** -200...850°C / -328...1562°F

int./ext. cold junction compensation

**INPUT 3** (auxiliary)

**Linear DC:** 0...10V, 0/4...20mA,  $R_i = 50\Omega$

**INPUT 4** (auxiliary)

**Linear DC:** 0...10V, 0/4...20mA,  $R_i = 50\Omega$

### DIGITAL INPUTS

**4 NPN/PNP inputs**

Optically isolated 1500V

NPN (voltage-free contact)

PNP 24Vdc max 5mA

configurable type and function

### DIGITAL EXPANSION I/O(OPT.)

**4 PNP inputs and/or outputs**

Isolated external power supply 24Vdc,  $\pm 25\%$

Input 24Vdc, 5mA

PNP output in external power supply

range, with short circuit protection via

PTC, max. 100mA.

### ANALOG OUTPUTS

**3 isolated outputs** 1500V

0/4...20mA, max 500 $\Omega$  or

$\pm 10V$ , min 500 $\Omega$

resolution higher than 0,03%

configurable type and function

Control **OUT CO1**

Control **OUT CO2** (optional)

Retransmission **OUT W** (optional)

*Not available with option of Profibus communication*

### RELAY OUTPUTS

**4 relay outputs**

NO/NC contact (internally selectable)

5A/250Vac  $\cos\phi = 1$

configurable function

**OUT1, OU2** with terminal C in common

**OUT3, OU4** with terminal C in common

### COMMUNICATION (OPT.)

**Serial interface:**

**RS485** 2/4-wires / **RS232** optically isolated

*Protocol:* MODBUS RTU

**Profibus DP** slave

*Protocol:* Profibus DP VO (slave)

### CONFIGURATION VIA PC

Configuration software for Gefran products: Instruments, Drives; Sensors, Automation.

Compatible with Windows 2000, XP, Vista. CD-ROM with selectable Italian/English language, with kit for PC-instrument serial port connection.

### CONNECTIONS

screws

### POWER SUPPLY

100...240Vac/dc  $\pm 10\%$ ,

20...27Vac/dc  $\pm 10\%$ ,

50/60Hz; 20VA max

Protection via internal fuse, not replaceable by operator.

### PROBE POWER SUPPLY

5/10Vdc - 200mA, 2,5Vdc for potentiometers

### TRANSMITTER POWER SUPPLY

24Vdc  $\pm 5\%$  - 100mA

### WEIGHT

700g

### DIMENSIONS

96x96x167mm

### ACCESSORIES

**Front covers**

standard Gefran (see catalog)

**GF\_eXpress Kit** (GF\_eXK-0-0-0)

Software on CD-ROM, complete with RS232/TTL converter cables for PC and Geflex connection.

## DESCRIPTION FACEPLATE

**A** - Process variable display, digit height 13 mm, 2-color (green/red)

**B - C** - Data display, digit height 10 mm, green

**D** - Control output percentage indicator (red)

**E** - "FUNCTION" button

**F** - "LOWER" button

**G** - "RAISE" button

**H** - "MAN/AUTO" button

**I** - "CAL-RST" button

**L** - "PEAK" button

**M** - Alarm setpoint signals, MANR, REM, CAL, red LEDs

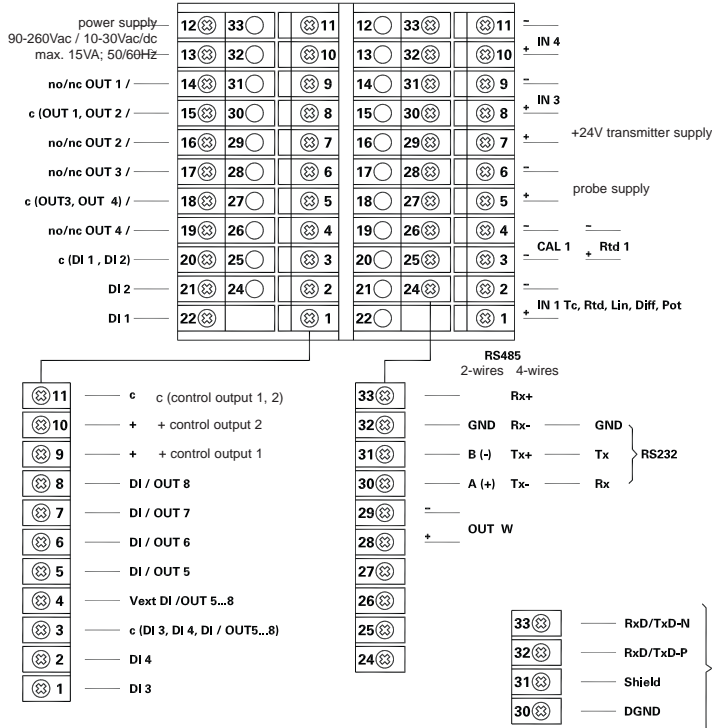
**N** - Deviation indicator, red LEDs



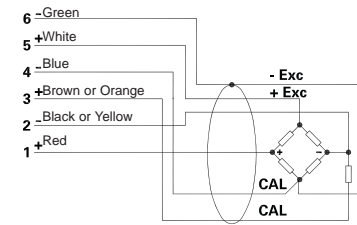
IP54 front panel protection (IP65 available)

# CONNECTION DIAGRAMS

## Model with single main input Model: 2500 - 0 - X - X - X - X - X



### Strain-gauge



### IN1

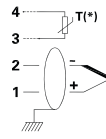
### Input in current



### Input in voltage

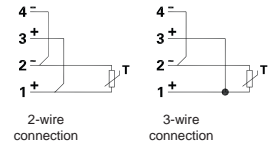


### Thermocouple

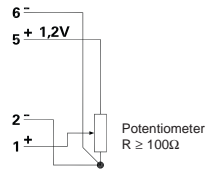


(\*) PT100 for possible external cold junction compensation

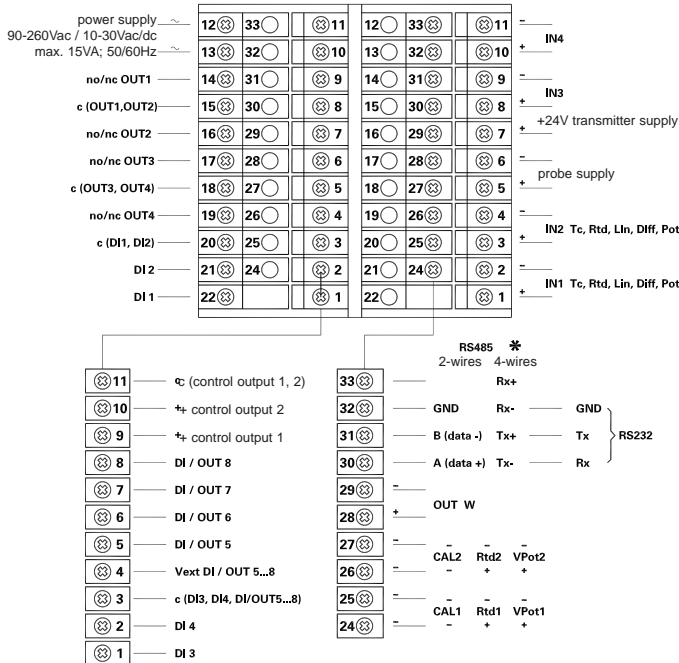
### Resistance Thermometer



### Potentiometer

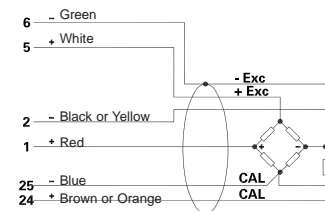


## Model with double main input Model: 2500 - 1 - X - X - X - X - X



### IN1

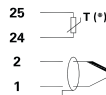
### Strain-gauge



### Input in current / voltage

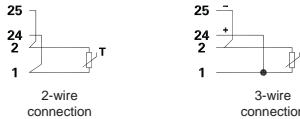


### Thermocouple

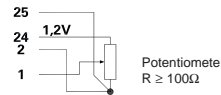


(\*) PT100 for possible external cold junction compensation

### Resistance Thermometer

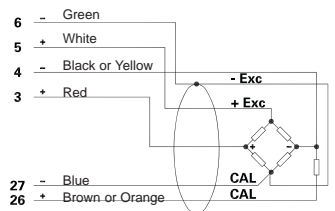


### Potentiometer



### IN2

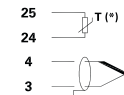
### Strain-gauge



### Input in current / voltage

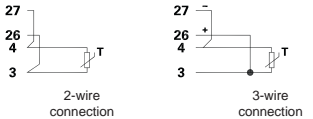


### Thermocouple

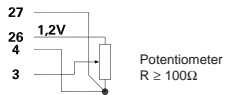


(\*) PT100 for possible external cold junction compensation

### Resistance Thermometer



### Potentiometer

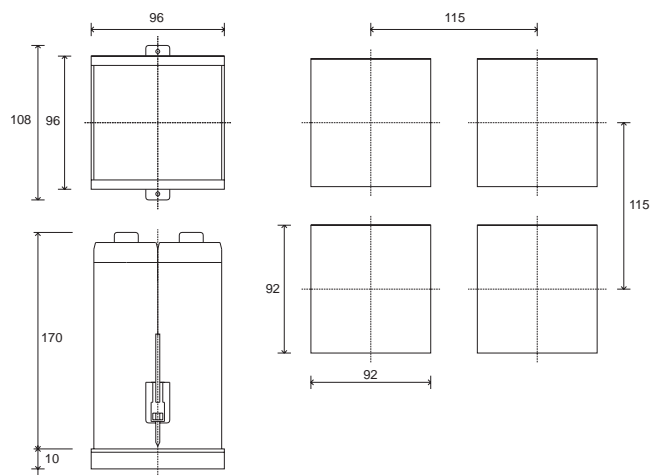


\* For Profibus connections, please refer to single input model



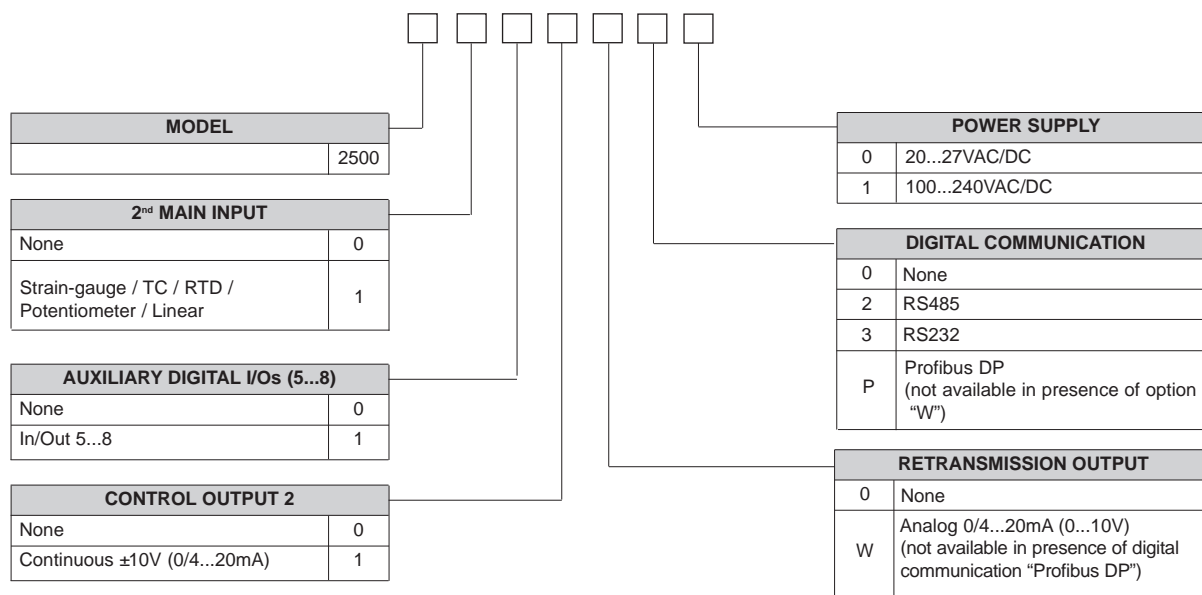
Apply user's manual warnings for a correct installation

## DIMENSIONS AND CUT OUT





Dimensions: 96x96mm (1/4 DIN), depth 167mm

## ORDER CODE



Please, contact GEFTRAN sales people for the codes availability.

GEFRAN spa reserves the right to make any kind of design or functional modification at any moment without prior notice.

|   |  |
|---|--|
|  | Conformity C/UL/US File no. E216851  |
|   | The instrument conforms to the European Directives 2004/108/CE and 2006/95/CE with reference to the generic standards: <b>EN 61000-6-2</b> (immunity in industrial environment) - <b>EN 61000-6-3</b> (emission in residential environment) - <b>EN 61010-1</b> (safety) |

# Gefran 2500: Process Controller, Data Sheet



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