GEFRAN

2500

HIGH PERFORMANCE CONTROLLER

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. ± 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*

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*

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, setpoint 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. ±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: 350Ω
Sensitivity 1,5...4mV/V
Jumper power supply: 5/10Vdc 200mA
Potentiometer:
≥ 100Ω, Ri > 10MΩ @ 2,5Vdc
Linear DC:
±50mV...±10V, Ri > 1MΩ
0/4...20mA, Ri = 50Ω
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, Ri = 50Ω

INPUT 4 (auxiliary)
Linear DC: 0...10V, 0/4...20mA, Ri = 50Ω

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, ±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 500Ω or
±10V, min 500Ω
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 cosφ = 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

TTL service interface, connectable to PC via “Winstrum” kit

CONNECTIONS

screws

POWER SUPPLY

100...240Vac/dc ±10%,
20...27Vac/dc ±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 ±5% - 100mA

WEIGHT

700g

DIMENSIONS

96x96x167mm

ACCESSORIES

Front covers
standard Gefran (see catalog)
Winstrum Kit
TTL/RS232 interface wires + CD ROM

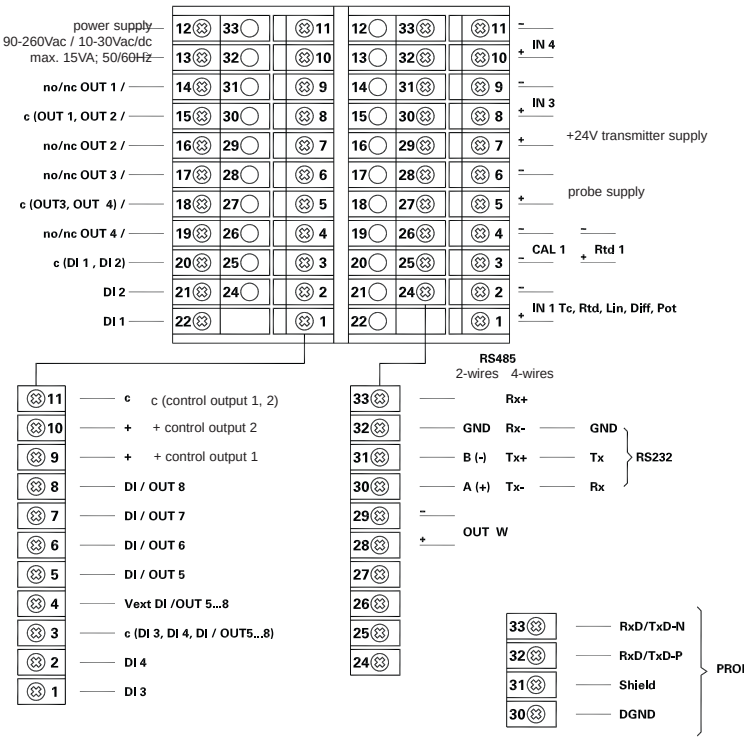
DESCRIPTION FACEPLATE

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

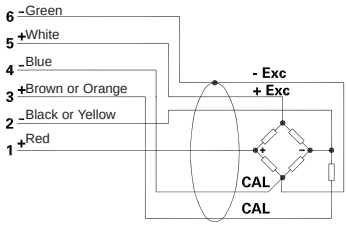
IP54 front panel protection (IP65 available)

CONNECTION DIAGRAMS

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



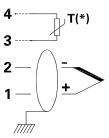
Strain-gauge **IN1**



Input in current

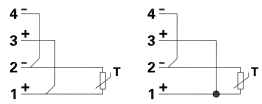
Input in voltage

Thermocouple

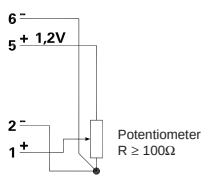


(*) PT100 for possible external cold junction compensation

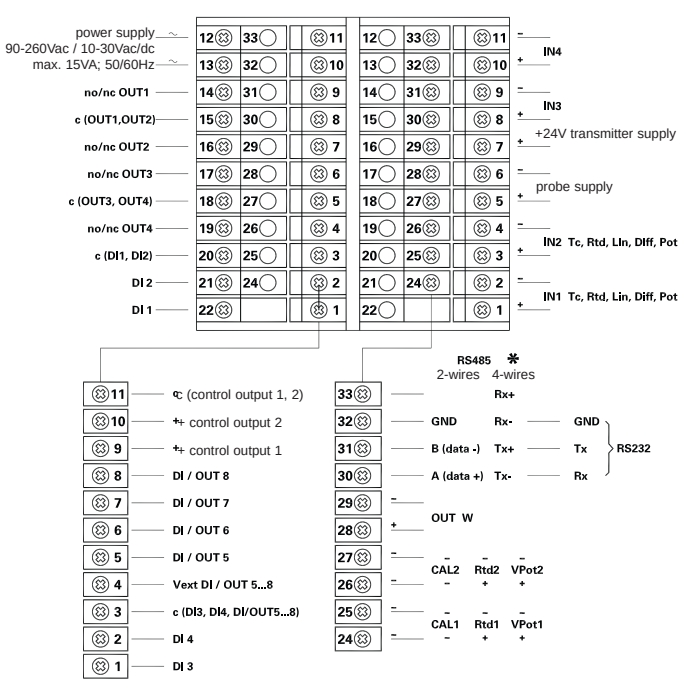
Resistance Thermometer



Potentiometer



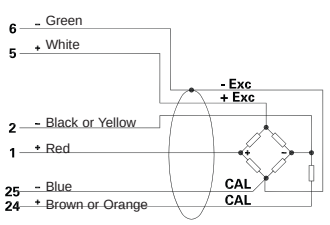
Model with double main input
Model: 2500 - 1 - X - X - X - X - X



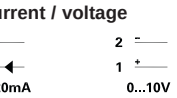
***** For Profibus connections, please refer to single input model

IN1

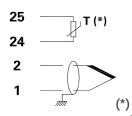
Strain-gauge



Input in current / voltage

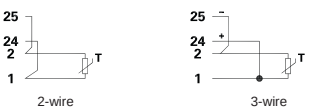


Thermocouple

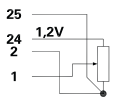


(*) PT100 for possible external cold junction compensation

Resistance Thermometer

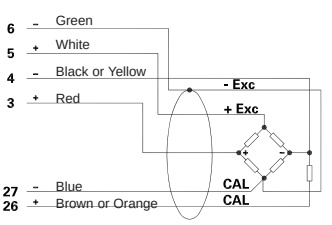


Potentiometer

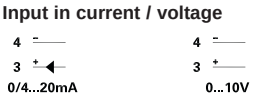


IN2

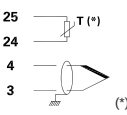
Strain-gauge



Input in current / voltage

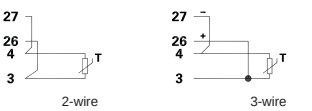


Thermocouple

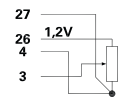


(*) PT100 for possible external cold junction compensation

Resistance Thermometer

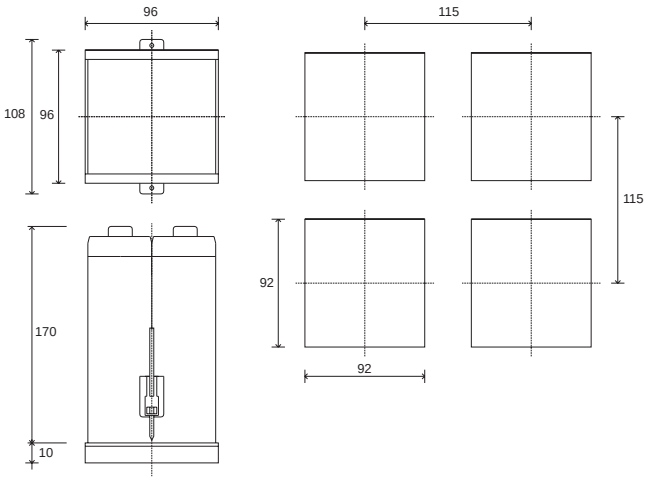


Potentiometer



Apply user's manual warnings for a correct installation

DIMENSIONS AND CUT OUT



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

ORDER CODE

MODEL	
	2500

2nd MAIN INPUT	
None	0
Strain-gauge / TC / RTD / Potentiometer / Linear	1

AUXILIARY DIGITAL I/Os (5...8)	
None	0
In/Out 5...8	1

CONTROL OUTPUT 2	
None	0
Continuous ±10V (0/4...20mA)	1

POWER SUPPLY	
0	20...27VAC/DC
1	100...240VAC/DC

DIGITAL COMMUNICATION	
0	None
2	RS485
3	RS232
P	Profibus DP (not available in presence of option "W")

RETRANSMISSION OUTPUT	
0	None
W	Analog 0/4...20mA (0...10V) (not available in presence of digital communication "Profibus DP")

Please, contact GEFRAN 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.

c UL us	Conformity C/UL/US File no. E216851
CE	In conformity to ECC 89/336/CEE and 73/23/CEE with reference to standards: **EN 61000-6-2** (immunity in industrial environment) - **EN 61000-6-3** (emission in residential environment) - **EN 61010-1** (safety)

GEFRAN

GEFRAN spa via Sebina, 74 - 25050 Provaglio d'Iseo (BS)
Tel. 03098881 - fax 0309839063 - Internet: http://www.gefran.com