



Main applications

- Extruders and injection moulding machines for the plastics industry
- Tension control on plastic films, paper, textile machines
- Polymerisation and synthetic fibre production plants
- Filling machines

Main features

- Strain-gauge, potentiometer and d.c. inputs
- PI or PID control
- Fast control response time
- Auto/Man station
- Automatic calibration checking for strain-gauge 6-wires
- Custom linearization with 32 steps available
- Analog retransmission output
- Configurable alarms
- Peak, valley, peak-to-peak memory
- Setpoint increase/decrease through digital inputs for remote control
- Serial line: optoisolated 4-wires Protocol GEF 2301 CENCAL or MODBUS

GENERAL

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Microprocessor controller in 96x96mm format (1/4 DIN).

Manufactured using SMT, it provides an extremely complete operator interface and IP54 faceplate protection (IP65 with protective cover).

The faceplate has a membrane keypad with 6 keys and three 4-digit LED displays for the process variable, setpoint and alphanumeric description of the parameters displayed.

There are also two bargraphs for the deviation between the process variable and the setpoint and the output power and LED's to indicate the alarm states and control states.

The model 2301 is designed for the acquisition of signals that have a high speed of variation.

The input type is selected using a combination of jumpers and keyboard settings and can be a standard linear signal (also with custom linearisation), or the output from a pressure probe, load cell or potentiometer.

There are also two auxiliary analogue inputs for linear signals in voltage or current for use as remote setpoint and reference line speed.

There are also two logic inputs that can be configured for different functions such as alarm memory reset, peak memory

reset, calibration check, enable remote setpoint, hold.

The same functions can also be configured for the faceplate keys.

The instrument performs the functions of memorising the maximum peak value, minimum peak level, peak to peak value. There are two optoisolated analogue outputs for the control signal output and for retransmission of the input signal, remote setpoint, peak value or deviation

The controller has bumpless auto/manual switching and several modes of start-up.

The optional serial communications port can be Current Loop, RS232 or RS422/485, with CENCAL or MODBUS protocol (selectable).

It is possible to read from or write to any of the instruments parameters.

The programming procedure is simplified using a menu structure with different levels that enable the data to be found easily and rapidly.

TECHNICAL DATA

INPUTS

Accuracy 0,2% f.s. \pm 1 digit
Sampling time 2msec

Strain-gauge

350 Ω (for pressure, force, ecc.), sensitivity of 1,5/2/2,5/3/3,3mV/V, positive, symmetrical or negative polarisation.

Potentiometer

> 350 Ω , Ri > 10 M Ω

DC - Linear

0...50mV / -25...25mV / -50...0mV
0...60mV / -30...30mV / -60...0mV
0...100mV / -50...50mV / -100...0mV
0...1V / -500...500mV / -1V...0V
0...10V / -5...5V / -10V...0V

For all voltage inputs

Ri > 1M Ω

0...20mA, Ri = 50 Ω

Custom linearisation with 32 steps available.

Auxiliary inputs

Two analogue remote alarm setpoints can be absolute or relative to the local setpoint.

0...10V, Ri > 1M Ω

0...20mA, Ri = 50 Ω

4...20mA, Ri = 50 Ω

Digital

Optoisolated 1500V.

2 digital inputs with configurable function: reset latch, reset peak memory, calibration check, enable remote setpoint, Hold.
- NPN or PNP 24V/4mA

OUTPUTS

Continuous

D.C. voltage or current analogic output
Isolated 1500V
0...10Vdc, -5...5Vdc, -10...10Vdc
Rload > 500Ω
shortcircuit protection
0...20mA, 4...20mA, Rmax = 500Ω

Relay

With rating 5A/250Vac at $\cos\phi = 1$
(3,5A at $\cos\phi = 0,4$).
Spark suppression on the NO contact.

Logic

Voltage output for SSRs
23Vdc, Rout = 470Ω (20mA, max. 12V).

Analog retransmission

Isolated 1500V.
Retransmission of the input, the peak value, remote setpoints, switch points direct and reverse control output, deviation positive or negative, alarms, configurable scale adjustable from the faceplate.
0...10Vdc; Rload > 500Ω
0...20mA, 4...20mA Rmax = 500Ω
Resolution 4000 steps.
Response time 8 msec.

SERIAL LINE

Optoisolated 4-wires.
The instrument is available with Current Loop interface (1200 baud) or RS485 4-wires (1200...19200 baud).
Protocol:
GEFRAN CENCAL or MODBUS

TRANSMITTER SUPPLY

Isolated 1500V
5, 10 or 15Vdc...200mA or 24Vdc...100mA

POWER SUPPLY

100...240Vac $\pm 10\%$
11...27Vac/dc $\pm 10\%$
50...60Hz; 15VA max
Protection by internal fuse not serviceable by the user

AMBIENT CONDITIONS

Working temperature: 0...50°C
Storage temperature: -20...70°C
Humidity: 20...85%Ur non condensing

CONTROL

Auto-Adaptive PI or PID control, with 20msec response time.
Automatic/Manual station with bumpless function, which avoids a sudden and possibility dangerous change of the output when switching from Manual operation to Automatic.
Programmable power on Auto/Man state.
Programmable gradient limits for setpoint and output power.
Programmable digital filter both for the input and the display.
Peak, valley, peak-valley memory of the input signal called up from faceplate key and indicated by a LED.

ALARMS

- 2 alarms that may be set as absolute, deviation or symmetrical deviation around the setpoint and as high or low alarms.
- The alarm point may be set anywhere in the configured scale with settable limits.
- Hysteresis selectable in engineering units.
- Function: high or low alarms with selectable memory function (LATCH).

The relay may be energised or disenergised in the alarm condition.
Special configuration of the relay outputs to indicate breaking of sensor wires.
The low alarm can be excluded at the power-on until the process variable has exceeded the alarm point.
The alarm relay will trip only when to process variable subsequently returns below the alarm point.
Response time:
for AL1 and AL2 = 2msec

WEIGHT

700g

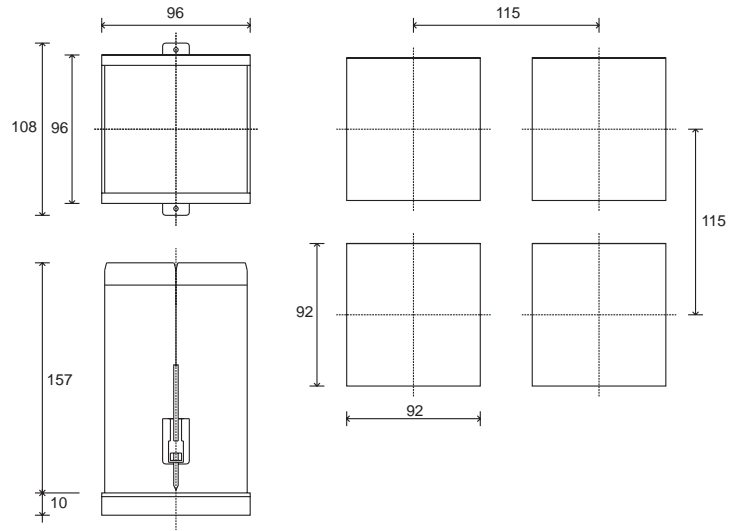
FACEPLATE DESCRIPTION

- A** - Indication of process variable, green digits h. 14mm
- B - C** - Auxiliary display, green digits h. 10mm
- D** - Output power display
- E** - FUNCTION key
- F** - LOWER key
- G** - RAISE key
- H** - MAN/AUTO key
- I** - CAL/RST key
- L** - PEAK key
- M** - Status LEDs, MAN, REM, CAL (red led)
- N** - Deviation display, red LEDs

IP54 faceplate protection (IP65 available)

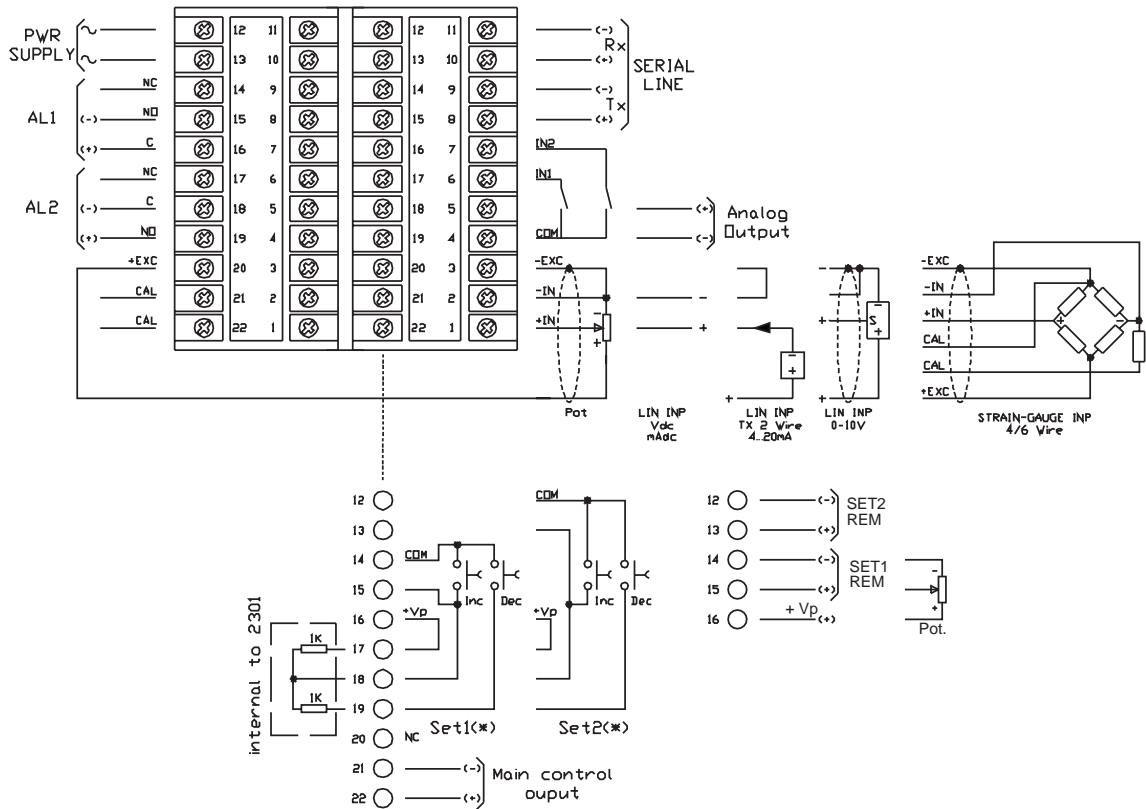


DIMENSIONS AND CUT-OUT



Dimensions: 96x96mm (1/4 DIN), depth 157mm

CONNECTION DIAGRAM



Motopotentiometer function

(*Set2 alternative to Set1)



Apply users' manual warnings for a correct installation

ORDER CODE

2301



VERSION	
Controller + 2SPR	SI
Controller + 2SPR + W	SW

DIGITAL COMMUNICATION	
None	0
Current Loop	1
RS485	2

ALARM OUTPUTS	
2 relay outputs	2R
2 logic outputs	2D

POWER SUPPLY	
11...27Vac/dc	0
100...240Vac	1

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



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

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