Digital Display for Strain Gauge Units, Potentiometers, DC/DC Sensors and Standard Signals

Model 9180

Code:	9180 E
Manufacturer:	burster
Delivery:	ex stock/4-6 weeks
Warranty:	24 months

Desktop version

Panel-mounted version

- **For measurements of force, pressure and torque using strain gauge sensors**
- **For measurements of positions and angles using potentiometric or DC/DC sensors**
- **For measurement of temperature using Pt 100 or TC**
- **Processing of standard signals ± 1 V/ 5 V/ 10 V/ 0 ... 1 mA, 0 (4) ... 20 mA**
- **Min. or max. peak values via an additional display**
- **TARE and HOLD functions**
- **Configuration of up to 4 setpoint alarms (optional)**
- **RS232- or RS485 (optional)**
- **Analog or BCD output (optional)**
- **Display range - 99999 ... + 99999**
- **Accuracy < 0.1 %**
- **Scalable through teach-in processes or the entry of sensor data**

Application

The model 9180 supports force, pressure and torque sensors operating on the strain gauge principle, as well as the connection of position and angle sensors in potentiometric or DC/DC configuration. It also allows the measurement of process signals ± 1 V/ 5 V/ 10 V or 0 ...1 mA, 0(4) ... 20 mA .The present measured value is indicated on the 14 mm high LED main display, while a second display located directly below provides a reading of the peak value.
Due to the high accuracy of < 0.1 %, the display is particularly suitable for highly accurate measurements. Optionally, it is possible to monitor up to 4 setpoints and deliver the results via relay or transistor outputs. The display can therefore also be used for grouping as well as open and closed loop control. On activation of an external HOLD signal, the present measured value is frozen on the display. The TARE function is useful for balancing out previous loads, for example. The optional serial interface can be used to transfer measured values and perform device settings. Powerful PC software for this is available on request.

Description

State-of-the-art microprocessor technology has allowed the realization of numerous practical, special functions. Our devices provide operator guidance as a standard feature. Self-explanatory abbreviations greatly facilitate this process so that even inexperienced users are soon dispensed from the operating instructions. First, the type of input signal and type of sensor are specified. Interoperable are strain gauge units, potentiometers, process signals 0 ...1 mA, 4 ... 20 mA, ± 1 V and ± 10 V as well as DC/DC sensors. Then, the calibration process is selected.Users can choose between teach-in and calibration in accordance with sensor protocols. The decimal point can be moved as required. The sensor excitation stated in the technical specifications are set automatically on selection of the sensor type, except in case of process signals. A choice of three excitations is available for process signals. Complete electrical isolation of the measurement channel prevents measurement values from being falsified by ground loops.

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www.burster.com · **info@burster.de**

Technical Data

Connectable sensors

Strain gauge

Connection system:		4 wire
Bridge resistance:		120 ... 1000 Ω
Bridge voltage:	15/ 30/ 60/ 300 mV,	selection via menu
Sensor excitation:	10 V/ 120 mA, 5 V/ 120 mA*	automatic selection

Potentiometer

Track resistance:	500 Ω ... 10 kΩ
Sensor excitation:	10 V/ 120 mA, automatic selection 5 V/ 120 mA*

Standard signals, DC/DC sensors and transmitters

Voltage input:	± 1 V/ ± 10 V
Resolution:	0.1 mV or 1 mV
Input resistance:	1 MΩ
Current input:	0 ... 1 mA, 0 (4) ... 20 mA
Resolution:	1 µA
Load:	15 Ω
Transmitters and DC/DC sensors:	10 V/ 120 mA
Excitation:	24 V/ 30 mA 5 V/ 120 mA*

Transmitters can be connected in 2, 3 or 4 wire configuration.

**) if the jumper is set (default setting)*

Standard functions

Peak-value memory

Minimum or maximum value on an auxiliary display, cancellation with RESET via keyboard or digital control input.

HOLD function

Freezing of the measured value on the main display.
Active: via ext. HOLD signal

TARE function

Balancing out an offset.
The balanced-out value can also be shown on the auxiliary display.
Active: via button or ext. TARE signal

Digital control inputs

RESET, HOLD, TARE, MIN/MAX (optoelectrically isolated)
Active: 24 V

General specifications

Accuracy

Resolution:	15 bit
Measurement error:	0.1 % F.S. ± 3 digits
Temperature coefficient:	50 ppm/K
Warm-up period:	10 minutes

LED display

Main display:	- 99999 ... + 99999, 6 red digits	height 14 mm
Auxiliary display:	- 99999 ... + 99999, 6 green digits	height 8 mm
Decimal point:		programmable

Measurement rate 16/sec.

Environmental conditions

Operating temperature:	0 ... 50 °C
Relative humidity:	< 95 %
Protection class:	Front panel IP 65

Dimensions/weight

Panel-mounted version:

Dimensions (WxHxD):	96x48x120 mm
Installation depth incl. connector:	approx. 150 mm
Cut-out in front panel:	92 x 44 mm
Weight:	600 g
Housing material:	plastic

Desktop version:

Dimensions (WxHxD):	155x90x180 mm
Weight:	1.2 kg
Housing material:	metal/plastic

Electrical connection

Panel-mounted version:	snap-in plug connection
Desktop version:	jacks on the rear panel

Power supply

Desktop version:		115/230 VAC	50 Hz**
Panel-mounted version:		115/230 VAC	50 Hz**
	or	24/ 48 VAC	50 Hz**

***) 60 Hz on request*

Power consumption:	5 VA	without options
	10 VA	with all options

Switchover by means of a jumper

Options

Digital setpoint alarm outputs

2 relay contacts	250 VAC/ 150 VDC/ 8 A, for 2 limiting values or
4 relay contacts	50 VAC/ DC/ 0.2 A, for 4 limiting values or
4 transistors	o.C.NPN, 50 V/ 50 mA for 4 limiting values
	(-VXXX3) or open E. PNP (-VXXX4)
Response time:	250 ... 750 ms, depending on the filter setting

Analog output

Ranges:	Voltage	0 ... 10 V
	Load	> 50 Ω
	Drift	0.2 mV/K
	or	
	Current	4 ... 20 mA
	Load	< 800 Ω
	Drift	0.5 µA/K

(Selection between 0 ... 10 V and 4 ... 20 mA via the menu)

Resolution:	12 bit
Accuracy:	0.1 % F.S.
Cut-off frequency:	4 Hz

Serial interface

RS232 (V.24) or RS485 (half duplex)
Baud rate: 1200 ... 19200
Data transmission rate:
Support by PC software, package see model 9180-P001
10 values/sec at 19200 baud

Networking via RS485 by means of a converter (model 9180-Z001)

BCD interface

Level: 24 V/ TTL
The BCD option excludes all other options.

The options Analog output; RS232 or RS485 (only one);
2 relays, 4 relays or 4 O.C. (only one);
can be used simultaneously.

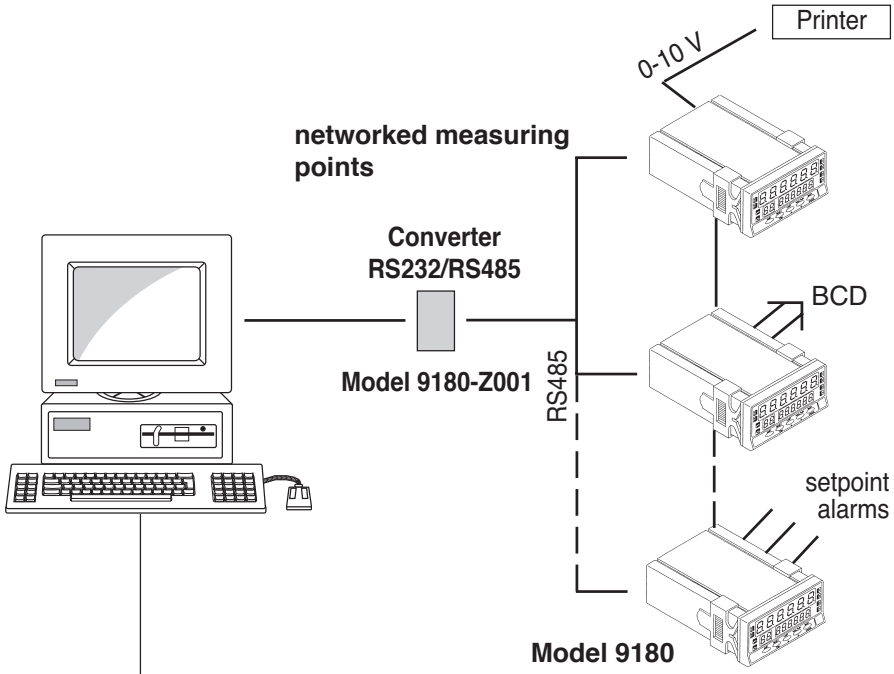
Calibration

Two basic procedures are possible; in both cases, one display value is allocated to two input variables each (two-point calibration):

1. In the teach-in mode, the two input variables are applied physically as measurement signals to the input. These are assigned to the corresponding display values by pressing an enter key.

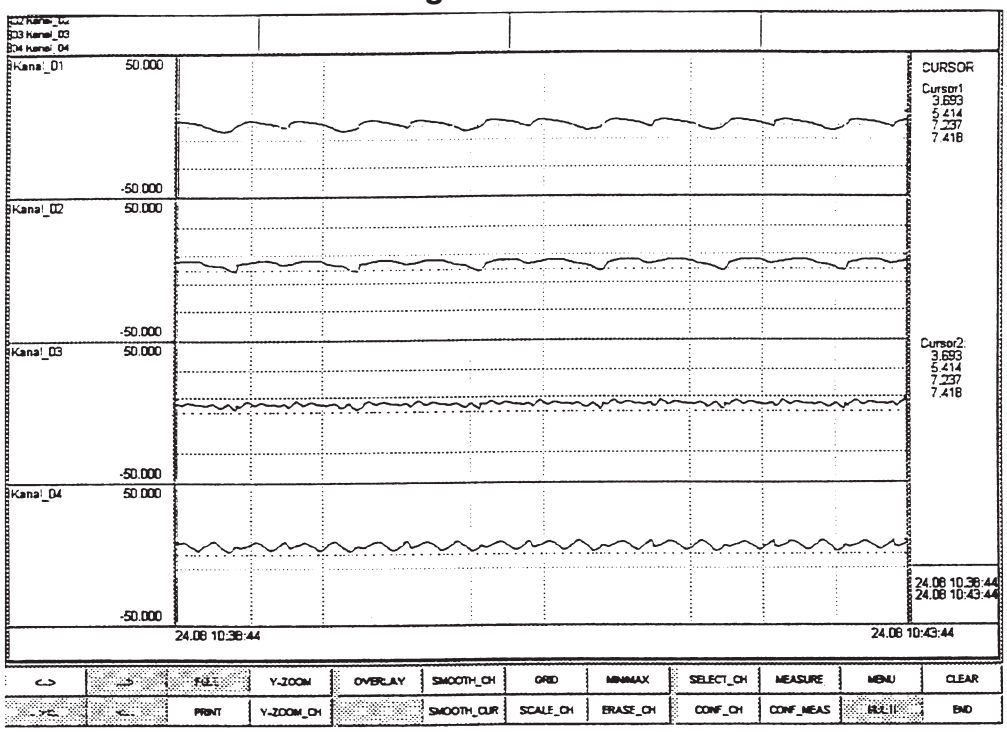
2. During calibration in accordance with the sensor protocol, the two signals are not applied physically, but read off from the sensor protocol and entered via the keyboard.

Measuring Data Acquisition and Evaluation



Measurement data recording

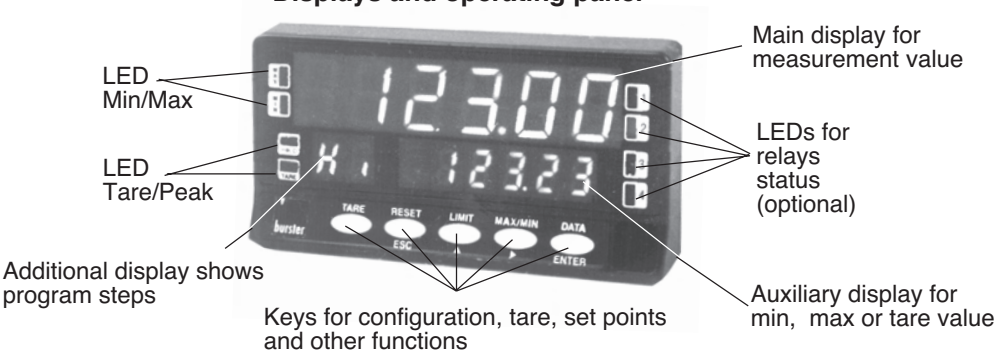
Software 9180-P001



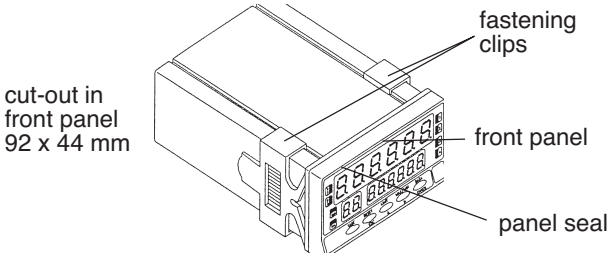
- Acquires measuring data of up to 31 amplifier modules
- Saving to ASCII-file
- Up to 31 measuring curves can be shown simultaneously
- Cursor surveyance
- Min-, max-, mean and peak values for each curve
- Print function a.s.o.

9180-E

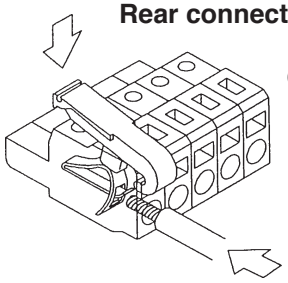
Displays and operating panel



Dimensions mounting



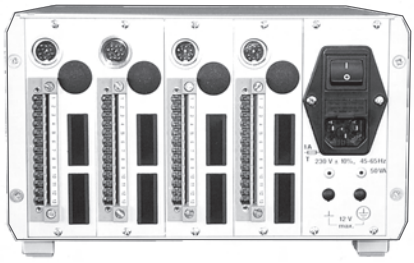
Rear connection



Multichannel measurement systems forn channels in desktop housing (please enquire)

Front view:
Up to 16 panel-meters in one common 19"-housing possible.

Back view:
All sockets for sensors, control signals and serial interfaces are completely installed.



Order Information

Amplifier Module

Version	**model 9180 - V**	**0 0 0 0**

Options:

Housing and power supply

Panel-mounted version, 115/230 V-50 Hz[1)]	0
Panel-mounted version, 24V/48 V-50 Hz[1)]	1
Desktop version, 115/230 V-50 Hz[1)]	3
Desktop version, 24V/48 V-50 Hz[1)]	6

Analog output

without	0
0 ... 10 V / 4 ... 20 mA	1

Interface

without	0
RS232 [1)]	1
RS485 [1)]	2
BCD [3)]	3

setpoint alarm outputs

without	0
2 relays	1
4 relays	2
4 transistor open C. n-switched	3
4 transistor open E. p-switched	4
Supply frequency 60 Hz	

[1)] - 50Hz is standard, supply frequency 60 Hz is optional.
[2)] - including configuration software 9180-P005.
[3)] - Important! The BCD option does not allow any additional options (limiting value or analog output) and is not available as desktop version either.

Accessories

Customer-specific calibration based on one sensor **model 91ABG**

(Please specify the calibration data precisely!)

If calibration data are not communicated, it will be calibrated like the standard sensor-specified.

Strain gauge simulator model 9405
please refer to data sheet 9405-E
in the Sensors & Process instruments catalog

Data acquisition software **model 9180-P001**
Measurement of values from up to 16 devices and
- graphic display on screen
- digital, numerical and pointer display
- tabular display
- data saving in selectable formats
- printing function

Data cable **model 9900-K333**
for connection of digital display and PC

Converter RS232/RS485 **model 9180-Z001**
with RS485 application for maximum 32 participants

Indicator for angle of rotation,
numbers of revolutions and impulses **on inquires**