Digital Display
For strain gauge units, potentiometers, DC/DC sensors and standard signals
Model 9180

Application
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 potentiometer or DC/DC configuration. It also allows the measurement of process signals ± 1 V / 10 V / 0 ... 1 mA, 0(4) ... 20 mA. The current 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. The display is particularly suitable for highly accurate measurements due to the high accuracy of 0.1%. It is also possible to monitor up to 4 limit values and provide the results via relay or transistor outputs. Thus the process value display can be used for classification, process and control tasks. The current measured value is frozen on the display by activating an external HOLD signal. 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 is available for this on request.

Description
State-of-the-art microprocessor technology has allowed the realization of numerous special functions for practical use. Menu guidance of device setup is standard. Self-explanatory abbreviations greatly facilitate this process so that even inexperienced users can manage without operating instructions. First, the user specifies the type of input signal or sensor. Strain gauge, potentiometer or process signals 0 ... 1 mA, 4 ... 20 mA or ± 1 V, ± 10 V as well as DC/DC sensors can be selected. Then the calibration process is selected. Users can choose between teach-in or calibration depending on the sensor protocol. The decimal point can be moved as required. The sensor excitation stated in the technical specifications is set automatically upon selection of the sensor type except with 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.

- Up to 8 sensor parameters can be saved (optional)
- For force, pressure or torque measurements using strain gauge sensors
- For distance or angle measurements with potentiometer or DC/DC sensors
- Processing of standard signals ± 1 V / 10 V / 0 ... 1 mA, 0(4) ... 20 mA
- Min. or max. peak values via an additional display
- TARE and HOLD function
- Generation of up to 4 limit signals (optional)
- RS232 or RS485 (optional)
- Analog output (optional)
- Measurement accuracy < 0.1 %
- Scaling possible using teach-in procedure or by entering sensor data directly
- Convenient configuration and evaluation software DigiVision

New !
Evaluation optional via Ethernet
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, automatic
                5 V/120 mA*

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

Standard signals, DC/DC sensors and transmitters
Voltage input: ± 1 V/ ±10 V
Resolution: 0.1 mV respectively 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 (opto-electrically)
Active: 24 V
Response time ≤ 10 ms

General specifications
Accuracy
Resolution: 15 Bit
Measurement error: 0.1 % v. E. ± 3 digits
Temperature coefficient: 50 ppm/K
Warm-up period: 10 minutes

LED display
Main display: - 99999 ... + 99999, height 14 mm
Auxiliary display: - 99999 ... + 99999, height 8 mm
Decimal point: programmable

Measurement rate
16/sec.

Environmental conditions
Operating temperature: 0 ... 50 °C
Relative humidity: < 95 %
Protection class: Front panel IP65

Dimensions/weight
Panel-mounted version:
Dimensions (W x H x D): 96 x 48 x 120 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 (W x H x D): 155 x 90 x 210 mm
Weight: 1.2 kg
Housing material: metal/plastic

Electrical connection
Panel-mounted version: snap-in plug connection
Desktop version: 12 pole jacks for plug 9941

Power supply
Desktop version: 115/230 V AC, 50/60 Hz
Panel-mounted version: 115/230 V DC, 50/60 Hz
or 24/48 V AC, 50/60 Hz

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

Options
Digital set point 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 open C. switching n or open E. switching P,
50 V/ 50 mA for 4 limits each,
opto-decoupled
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
Potential separation to signal input
Accuracy: 0.1 % F.S.
Signal response time: 60 ms

Serial interface
RS232 (V.24) or RS485 (half duplex)
Baud rate: 1200 ... 19200
Data transmission rate: 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) and
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.

The CAD drawing (3D/2D) for this device can be imported online
directly into your CAD system.
For further information about the burster traceparts cooperation refer
to data sheet 80-CAD-EN.
Measuring Data Acquisition and Evaluation

Digivision 9180-P100 Configuration and Analysis Software

- Comfortable device finder
- Instrument parameterization
- Instrument data adopted automatically eg. scaling, limit settings
- Back-up function for instrument data
- Simultaneous display of up to 16 measurement channels
- Different measurement rates can be combined
- Different triggers can be set: global or channel-specific

- Creation of instrument groups
- Report finder for location group reports and individual reports
- Documenting individual measurement curves with various options e.g. serial number, batch counter, day counter
- Export function to Excel
- Communication with a controller unit (PLC, etc.) via RS232 or Ethernet

Parameterizing of devices

16 measurement channels

Archive viewer

Excel file
Displays and Operating Panel

- Mains display for measurement value
- LEDs for relays status (optional)
- Auxiliary display for min, max or tare value
- Additional display shows program steps
- Keys for configuration, tare, limiting

Dimensions Mounting

- Cut-out in front panel 92 x 44 mm
- Fastening clips
- Front panel
- Panel seal

Rear Connection

- Clamping connection

Multichannel Measurement Systems for any Numbers of Channels in Desktop Housing (please enquire)

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

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

Order Code

Digital indicator

Version   model 9180 - V
8 sensor parameters
Options on extra charge:
Housing and power supply
Panel-mounted version 115/230V-50/60 Hz-0
Panel-mounted version 24/48V-50/60 Hz-1
Desktop version 115/230V-50/60 Hz-3
Desktop version 24/48V-50/60 Hz-6

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

Interface
without 0
RS232 1
RS485 2
BCD 3

Set point alarm outputs
without 0
2 relays 1
4 relays 2
4 transistor open C. n-switched 3
4 transistor open E. p-switched 4

Accessories

- Instrument calibration for one sensor ordered with the instrument or using sensor data provided by the customer (e.g. sensitivity, display range of correct reading, excitation voltage or sensor test certificate) (Please specify the calibration data precisely!) Model 91ABG
- If calibration data not communicated, it will be calibrated as standard sensor-specified.
- Strain gauge simulator Model 9405
  See data sheet 76-9405 in section 7 of the Sensors and Process Instruments catalog.
- DigiVision 9180-P100 configuration and analysis software for device series 9180
  Enables an easy storage of device data, graphical visualization, storage and logging of measurement data Model 9180-P100
- Converter RS232/RS485 Cartridge with RS485 applications for maximum 32 participants mains adapter included Model 9180-Z001
- Indicator for angle, pulses or rotation on request
- Data cable
  for connection of desktop version and PC Model 9900-K333
  for connection of panel version and PC Model 9180-K001
  Interface adapter USB-RS232 Model 9900-K361
  Networking via RS232 requires Ethernet Model 9900-K453

- Important! The BCD option does not allow any additional options (limiting value or analog output) and is not available as desktop version either.