

BrandTronik DMM



Processor based, modular structured, hybrid multi-channel measuring system for transducers in strain-gage-technics.

Configurable in hard- and software equipment

- Processbus- modules

- Binary inputs

- Analog outputs

- Ready for calibration

- Clip-on box in acc. to DIN, extendable by hermetic closed field boxes.

Purpose

Supply of strain- gage bridges and conditioning of their output signals in industrial production lines.

Parameter setting for the measuring position.

Measuring of calibrated dimensions, like mass, force, pressure; further output of computed secondary dimensions, like metal strip tension, rope tension, milling force

Bidirectional communication to PLC via processbus interface.

Computing of the measured dimensions under enclosure of measuring point parameters and variables from process by standard and/or application specific software.

Simultaneous, scaled analog output of the measured resp. computed dimension in addition.

Operation

The reference voltage which feeds the connected strain- gage bridge is sensed by the processor and set- up under consideration of transducer and measuring position parameters individually.

The bridge output voltage U_{meas} will be compensated in it's offset.

The ADC in front of the processor receives only the effectiv measuring signal, effecting full bandwidth.

The digital converted sensor signal is now compute

by a measuring point specific algorithm and output numerical and/or analog, either as direct dimension given by the transducer or indirect as calculated dimension, i. e. „strip tension“.

During measuring process appearing process variables can be transfered via the processbus interface to the DMM05 processor, with the purpose, to calculate their influence to the measurement and correct it.

Process variables, which reducing the measuring force and the attached signal level (i. e. decreasing wrap angles of deflector rolls before coil- stations), will be held on a high signal level by controlling the strain- gage bridge voltage as function of the geometric situation.

This feature allows in a disturbend industrial ambient an efficient A to D Converting, to have a good result in valuation of the primary signal.

Safeness in data transit to the PLC is given by the Profibus (or other processbus standards).

Additional 4 binary inputs are available.

The parameter set- up of the application specific software can be made without external equipment too, using 3 push buttons and DOT- Matrix display for stepwise set- up.

In CAL- mode the signalpath from sensor to output can be checked in set- up and function without physical load.

The nominal value of the dimension specified (measuring force direct, strip tension from measuring force; hydraulic pressure direct, milling force from hydraulic pressure; mass direct, mass from hydraulic pressure, etc.) will be output with reference to a transducer specific Calibration- Normal considering it's parameters and those of the measuring position.

Basic design features

Electronic encapsulated in a clip- on housing for mounting rails (dim. W x H x D = 105 x 130 x 70 mm³), connector terminal for transducers and 24 VDC power supply; profibus plug connector, frontpanel with three foil push buttons and DOT matrix display with illumination from background.

Inputs: 2 (for strain gage Wheatstone bridges)
4 binary (24 VDC)
24 VDC, 80 VA, power supply

Outputs: 2 analog 0...10 V, 12 Bit solution, not galvanic isolated
2 strain gage supply voltages, 1...20 V separate adjustable.

Interface: Profibus DP, 1,5 Mbaud or 12 Mbaud; transit rate 60/sec

Options

The modular structured measuring system equipment is configurable in 11 positions.

For equipment definition, an 11 digit equipment code number must be figured. Each digit represents a chosen equipment number (ENO).

Rowing of the *chosen equipment numbers* builds the *equipment code number* as part of the *article number*.

Equipment code number digits	1	2	3	4	5	6	7	8...	11
ENO-row	x	x	x	x	x	x	x	x...	x
Article number 183 DMM05.

Equipment code no.- Digit 1 defines the number of measuring channels
ENO

- 1 = 1 measuring channel
- 2 = 2 measuring channels

Equipment code no.- Digit 2 defines the type of boxing
ENO

- 0 = Clip- on housing, protection class IP 20, dimensions W x H x D = 105 x 130 x 70 mm (refer drawing M 35 051 00) for mounting on rails acc. to DIN in present cubicles or in field boxes as follows.
- S = Steelsheet housing, protection class IP 65, dimensions W x H x D = 330 x 230 x 155 mm (refer drawing M 35 052 00), colour RAL 7035
- E = Stainless steel housing, protection class IP 66, dimensions W x H x D = 300 x 200 x 155 mm (refer drawing M 35 054 00)

Equipment code no.- Digit 3 defines the input signal (sensitivity of the strain gage transducer) for channel 1
ENO

- 1 = 0, 25 mV/V
- 2 = 0, 5 mV/V;
- 3 = 1, 0 mV/V;
- 4 = 2, 0 mV/V;
- A = others by separate definition

Equipment code no.- Digit 4 defines the input signal (sensitivity of the strain gage transducer) for channel 2
ENO

- 1 = 0,25 mV/V
- 2 = 0,5 mV/V;
- 3 = 1,0 mV/V;
- 4 = 2,0 mV/V;
- A = others by separate definition

Equipment code no.- Digit 5 defines the galvanic isolated analog output channel
output channel 1
ENO

- 0 = no galvanic isolation
- 1 = 0...10 V
- 2 = 2...10 V
- 3 = 0...20 mA
- 4 = 4...20 mA
- A = others by separate definition

Equipment code no.- Digit 6 defines the galvanic isolated analog output channel
output channel 2
ENO

- 0 = no galvanic isolation
- 1 = 0...10 V
- 2 = 2...10 V
- 3 = 0...20 mA
- 4 = 4...20 mA
- A = others by separate definition

Equipment code no.- Digit 7 defines the fieldbus module with attached software
ENO

- N = no fieldbus module
- P = Profibus DP
- A = others by separate definition

Equipment code no.- Digit 8 defines the content of the output strings
ENO

- C = Standard (Bytes 0...7 engaged at transit rate 60/sec),
Byte 0, 1: single meas. channel 1;
Byte 2, 3: single meas. channel 2
Byte 4, 5: Means of n single meas. channel 1;
Byte 6, 7: Means of n single meas. channel 1;
A = others by separate definition

Equipment code no.- Digit 9 defines the content of the input strings
ENO

- 1 = Offset- Compensation and CAL mode attached to measuring channel 1, 2
- 2 = Binary bit and / or continual input values (Process-actuals) with definition of there attachment by application- specific software
- A = others by separate definition

Equipment code no.- Digit 10 defines the kind of power supply
ENO

- 0 = 230 VAC/50...60 Hz/power consumption ca. 100 VA; external unit in a clip- on housing
- 1 = 115 VAC/50...60 Hz/power consumption ca. 100 VA; external unit in a clip- on housing
- 2 = 24 VDC/power consumption ca. 80 W, direct connection

Equipment code no.- Digit 11 refers to application specific software equipment
ENO

- 0 = Standard software
- 1 = application specific software with reference to separate measuring point definition.

Order example:

Equipment code number digits	1	2	3	4	5	6	7	8	9	0	1
Chosen equipment nos. ENO	2	S	2	2	1	1	P	2	1	2	0

Article number 183DMM05 2 S 2 2 1 1 P 2 1 2 0

Description:

Appliance with 2 measuring channels;
boxed in steel sheet housing;
Input channels 1 and 2 for nom. sensitivity of 0,5 mV/V;
Analog output channels 1 und 2 with galvanic isolation, range 0...10 V;
Profibus DP,
output string Standard;
Input string for the tasks offset- compensation (Tare) respectively CAL Mode for measuring channel 1, 2;
Voltage supply 24 VDC;
no special software