DIGITAL PANEL INSTRUMENTS

Digital panel instruments for sophisticated industrial applications. Compact digital displays, bargraphs as well as large-screen displays for microprocessor-controlled signal processing of analog measuring values via 16-bit-A/D - converter: DC V/mA, DC V/mA-differential measurement, DC mV/µA, AC V/A, resistance measurement, recognition of rotationed angles, frequency measurement, temperature measurement PT100, PT1000 and thermocouples.

Advantages:
Multiple inputs per instrument, numerous output options, robust closed front-panel-housings in all Norm sizes, brilliant and reliably readable LED-displays, low-reflecting filter plates.

Inputs on pluggable screw terminals and D-Sub-connector, three- to five-digit displays, bargraphs with 1- or 2-times 10 - 50 segments, user-friendly programmable operating parameters, indicating range and decimal point freely programmable, galvanic insulated supply voltage, dimensional signs on the filter plate, neutral frontal view, custom-designed modifications of type instruments.

Current/voltage | Frequency | ProfiBus L2DP |

02

BCD | Serial | Bargraphs | Large-screen displays

DA08-NXxx/X1xx DA10-NXxx/X1xx

Digital panel instruments for standard signals DC, programmable

Digital displays for monitoring and control with different interfaces and inputs

DC current/voltage (V/mA)
Voltage (mV)
Totalizing counter
LED-displays red or green
3 - 5-digit displays

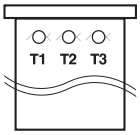
DA08 = Digit height 7.62 mm
DA10 = Digit height 10.0 mm

DA08/DA10-NXxx/X1xx
Case 48 x 24 mm

DA08/DA10-NXxx/X1xx-7
Case 72 x 24 mm

DA08/DA10-NXxx/X1xx-4
Case 48 x 48 mm

Case - topview
front



Technical Data

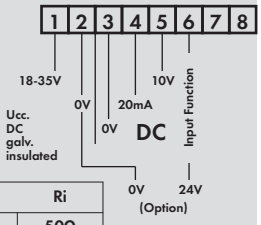
Type	DA08-NAxx/E1xx DA10-NAxx/E1xx	DA08-NAxx/D1xx DA10-NAxx/D1xx	DA08-NZxx/A1xx DA10-NZxx/A1xx
Input	Current/voltage 20mA/ 10V DC	Voltage mV	Totalizing counter
Panel cut-out (mm)			
DA08/DA10-NXxx/X1xx	45 (+0.6) x 22.2 (+0.3) mm	45 (+0.6) x 22.2 (+0.3) mm	45 (+0.6) x 22.2 (+0.3) mm
DA08/DA10-NXxx/X1xx-4	45 (+0.6) x 45.0 (+0.6) mm	45 (+0.6) x 45.0 (+0.6) mm	45 (+0.6) x 45.0 (+0.6) mm
DA08/DA10-NXxx/X1xx-7	68 (+0.7) x 22.2 (+0.3) mm	68 (+0.7) x 22.2 (+0.3) mm	68 (+0.7) x 22.2 (+0.3) mm
Front frame height (mm)	5.25	5.25	5.25
Mounting depth (mm)	DA08-NAxx/E1xx: 91 DA10-NAxx/E1xx: 86 (79)	120	120
Operating elements	On the topside of case	On the topside of case	---
Auxiliary supply	18 - 35 V DC	18 - 35 V DC	18 - 35 V DC
Display/ digit height (mm) DA08	7.62	7.62	7.62
Display/ digit height (mm) DA10	10.0	10.0	10.0
LED-display colour	Red or green	Red or green	Red or green
Power consumption	Max. 1 VA	Max. 2.5 VA	max. 1.5 VA
Measuring range voltage	-10V ...+10V DC	0 - 60/150 mV DC	---
Measuring range current	-19mA ...+20mA DC	---	---
Measuring principle	Dual-Slope-integration	Dual-Slope-integration	---
Conversion rate	Approx.5 measurements/sec.	Approx.5 measurements/sec.	---
Measuring error	+/- 0.01%of measur.value +/- 1digit	+/- 0.01%of measur.value +/1digit	---
Overflow	Flashing of center segments	Flashing of center segments	---
Temperature range	-20°C ...+65°C	-20°C ...+65°C	-20°C ...+65°C
Signal and functional inputs			24V active high L < 7V /H > 10V
Counting input			Frequency max.1kHz
ST segment test			All segments are flashing (Independent of signal inputs)
Reset			Reset to 0 (Independent of signal inputs)

Display messages	
EEP	EEprom under programming
---	Overflow (Flashing of center segments)
⫞⫟	Circuit break indicator (Below measured value)

Resolution	
DA08/DA10-NA**30**/X1xx:	- 199 ...999
DA08/DA10-NA**31**/X1xx:	- 1999 ...+1999
DA08/DA10-NA**40**/X1xx:	- 1999 ...9999
DA08-NA**41**/X1xx:	- 199 ...+19999
DA08-NA**50**/X1xx:	- 19999 ...30000

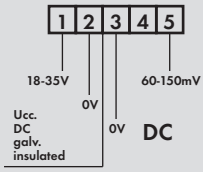
Number of digits	
DA08/DA10-NA**30**/E1xx:	888
DA08/DA10-NA**31**/E1xx:	± 1888
DA08/DA10-NA**40**/E1xx:	8888
DA08-NA**41**/E1xx:	± 18888
DA08-NA**50**/E1xx:	88888
DA08/DA10-NZ**30**/A1xx:	888
DA08/DA10-NZ**40**/A1xx:	8888
DA08-NZ**50**/A1xx:	88888

Pluggable screw terminal
DA08-NAxx/E1xx (Current/voltage)



Input	Ri
4 5	50Ω 150 kΩ

Pluggable screw terminal
DA08-NAxx/D1xx (Current/voltage)



Input	Ri
5	47kΩ

Ordering example

10- Digit height 10mm
A - Current and voltage
4 - 4 digits
E - DC (20mA/10V)
1 - Ucc. 24 V DC
F - Operating input
G - Display colour green
7 - Case 72 x 24 mm

= DA10–NA40/E1FG–7

DA__–N__/_1__–_

Case dimensions:	without indication = 48x24 mm	4 = 48x48 mm	7= 72x24mm		
Display colour:	R = Red	G = Green			
Option:	0 = None	F = Operating input			
Ucc.:	1= 24VDC				
Interface:	E= DC Current/voltage 20mA/10V	D = DC voltage 60/150mV	A = Totalizing counter 24V		
Number of digit:	30 = 3-digit	31= 3-1/2-digit	40 = 4-digit	41 = 4-1/2-digit	50 = 5-digit
Range:	A =Current/voltage or voltage	Z = Counter			
Digit height:	08 = Digit height 7.62 mm	10 = Digit height 10.0 mm			

DA–NA_/E___

DA–NZ_/D___

At DA08-NA/DA10-NA (voltage): Option not applied.
At DA08-NZ/DA10-NZ (summable counter): Displays only available 3-, 4- or 5-digit, Option not applied.

DA08-NSxx/X1x DA10-NSxx/X1x

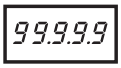
Digital panel instruments for interface-control

Digital displays for monitoring and control with ProfiBus or serial interface

ProfiBus L2DP
Serial interface
LED-displays red or green
3 - 5-digit displays

DA08 = Digit height 7.62 mm
DA10 = Digit height 10.0 mm

DA08/DA10-NSxx/X1x
Case 48 x 24 mm

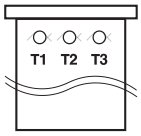


DA08/DA10-NSxx/X1x-7
Case 72 x 24 mm

DA08/DA10-NSxx/X1x-4
Case 48 x 48 mm

Case - topside

front



Technical Data

Type	DA08-NS50/P1x DA10-NS50/P1x	DA08-NSxx/X1x DA10-NSxx/X1x
Input	**ProfiBus L2DP**	**Serial interface**
Panel cut-out (mm)		
DA08/DA10-NSxx/X1x	45 (+0.6) x 22.2 (+0.3) mm	45 (+0.6) x 22.2 (+0.3) mm
DA08/DA10-NSxx/X1x-7	68 (+0.7) x 22.2 (+0.3) mm	68 (+0.7) x 22.2 (+0.3) mm
DA08/DA10-NSxx/X1x-4	45 (+0.6) x 45.0 (+0.6) mm	45 (+0.6) x 45.0 (+0.6) mm
Front frame height (mm)	5.25	5.25
Mounting depth (mm)	91	120
Auxiliary supply	18 - 35 V DC	18 - 35 V DC
Display/ digit height (mm) DA08	7.62	7.62
Display/ digit height (mm) DA10	10.0	10.0
LED-display colour	Red or green	Red or green
Power consumption	Max. 1.8 VA	Max. 1.5 VA
Temperature range	0°C ...+50°C	-20°C ...+65°C
Parallel connection	- - -	Max.32 devices
Baud rate (autom.recognition)	≤12M Baud	- - -
Address (0 ...127)	Adjustable on the top of case	- - -
Protocol	Profibus-DP	- - -
Hardware	SPC 3 Feldbus side galvanic insulated	- - -

Specification Profibus

Telegrams setup ASCII

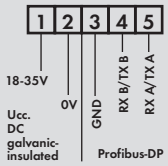
Byte	Description	ASCII	
1.	Digit 1 ≙ 10^0	3xH	
2.	Digit 2 ≙ 10^1	3xH	
3.	Digit 3 ≙ 10^2	3xH	Comma to be inserted anywhere
4.	Digit 4 ≙ 10^3	3xH	
5.	Digit 5 ≙ 10^4	3xH	
6.			

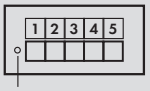
Telegram setup BCD

Byte	Function								Comma	Display
1.	10^1				10^0					
	1	1	1	1	1	1	1	1		
2.	10^3				10^2					
	1	1	1	1	1	1	1	1		
3.	free				10^4					
	X	X	X	X	1	1	1	1		
4.	free				free					
	X	X	X	X	X	X	X	X		
5.	free				free					
	X	X	X	X	X	X	X	X		
6.	free				Comma					Display
	X	X	X	X	0	0	0	0		00000
					0	0	0	1		0000,0
					0	0	1	0		000,00
					0	0	1	0		00,000
					0	1	0	0		0,0000

Pluggable screw terminal for ProfiBus

DA08/DA10-NS50/P1x



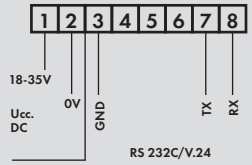


LED Data Exchange Mode

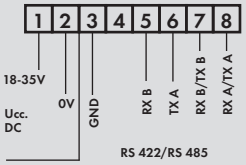
Specification serial interface

Pluggable screw terminal

DA08/DA10-NSxx/A1x



DA08/DA10-NSxx/B1x



Telegram construction ASCII

Function	ASCII	Description
Segment test	$0	Segment test on (up to the next telegram)
Leading zeros	$1	Indication of leading zeros
	$2	Fading out of leading zeros
Flashing sign	$3"28"	"28" is flashing
Flashing display	$4	Flashing on
	$5	Flashing off
Direction of writing	$6	Left → Right
	$7	Right → Left

Number of digits serial interface

DA08/DA10-NS**30**/X1x:	888
DA08/DA10-NS**40**/X1x:	8888
DA08-NS**50**/X1x:	88888

Sign rate

Hex	20	2C	2D	2E	30	31	32	33	34	35	36	37	38	39	3D	41	43	45	46	48	4C	50	55	5D	5F	62	63	64	68	6E	6F	72	75	78	7E
Digit		.	_	.	0	1	2	3	4	5	6	7	8	9	=	A	[	E	F	K	L	P	U	]	_	B	C	D	H	n	o	R	v	0	+

unknown sign: ≡

Ordering example

08 - Digit height 7.62 mm
NS - ProfiBus or serial
50 - Display with 5 digit
P - ProfiBus
1 - Ucc. 24 V DC
R - Display colour red
4 - Case 48 x 48 mm

= DA08–NS50/P1R–4

DA__–NS__/_1_–_

Case dimensions:	without indication = 48x24 mm	4 = 48x48 mm	7 = 72x24 mm
Display colour:	R = Red	G = Green	
Ucc.:	1 = 24VDC		
Interface:	A = RS 232C/V.24	B = RS 422/RS 485	P = ProfiBus L2DP
Number of digit:	30 = 3-digit	40 = 4-digit	50 = 5-digit
Digit height:	08 = Digit height 7.62 mm	10 = Digit height 10.0 mm	

DA__–NS__/___–_

DA__–NS50/P1_

At DA08-NS50/DA10-NS50 (ProfiBus): Display only available with 5-digits

DA12-NA40/X1xx

Digital panel instruments for standard signals DC, programmable

Digital displays for monitoring and control with different interfaces and inputs

DC current/voltage (V/mA)
Connection to shunt (mV/mA)
LED-displays red or green
4-digit displays

DA12 = Digit height 14.0 mm

DA12-NA40/X10x
Case 72 x 24 mm

DA12-NA40/X10x-3
Case 72 x 36 mm

DA12-NA40/X10x-4
Case 72 x 48 mm

DA12-NA40/X10x-7
Case 72 x 72 mm

Technical Data

Type	DA12-NA40/A1xx		DA12-NA40/D1xx	
Input	DC current/voltage V/mA		DC current/voltaje mV/mA	
Panel cut-out (mm)				
DA12-NA40/X1xx	68(+0.7) x 22.2(+0.3) mm		68(+0.7) x 22.2(+0.3) mm	
DA12-NA40/X1xx-3	68(+0.7) x 33.0(+0.6) mm		68(+0.7) x 33.0(+0.6) mm	
DA12-NA40/X1xx-4	68(+0.7) x 45.0(+0.6) mm		68(+0.7) x 45.0(+0.6) mm	
DA12-NA40/X1xx-7	68(+0.7) x 68.0(+0.7) mm		68(+0.7) x 68.0(+0.7) mm	
Front frame height (mm)	5.25		5.25	
Mounting depth (mm)	110		110	
Display/digit height (mm)	14.0		14.0	
LED-display colour	Red or green		Red or green	
Auxiliary supply	18 - 35 V DC		18 - 35 V DC	
Power consumption	Max. 2.5 VA		Max. 2.5 VA	
Measuring ranges voltage	2V/10V/40V/200V DC		60mV/125mV/150mV/300mV	
Measuring ranges current	20mA/200mA DC		0.1mA/1mA DC	
Display max.	Free programmable		Free programmable	
Display zero	Free programmable		Free programmable	
Conversion rate	Approx. 1 measurement/1sec.		Approx. 1 measurement/1sec.	
Measuring principle	Dual-Slope-integration		Dual-Slope-integration	
Measuring error	+/-0.01% of measuring value +/-1 digit/segment		+/-0.01% of measuring value +/-1 digit/segment	
Overflow	Flashing of display segments in the middle		Flashing of display segments in the middle	
Average value	Adjustable from 1-99 measurem.		Adjustable from 1-99 measurem.	
Input resistance	**Clamp**	**Ri**	**Clamp**	**Ri**
	1	100 kΩ	1	100 kΩ
	2	560 kΩ	2	220 kΩ
	3	2.2 MΩ	3	270 kΩ
	4	12 MΩ	4	560 kΩ
	6	100 Ω	6	560 Ω
	7	10 Ω	7	68 Ω
Resolution	-1999 ...9999		-1999 ...9999	

Display messages

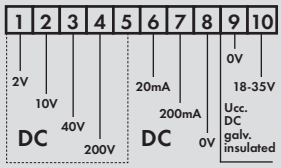
EEP EEprom under programming

---- Overflow
(Flashing of display segments in middle)

Line break indicator
(Undercut of measuring value)

Pluggable screw terminal

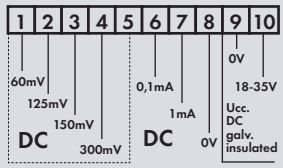
DA12-NA40/A1xx (V/mA)



Bridge for current measurements

Pluggable screw terminal

DA12-NA40/D1xx (V/mA)



Bridge for current measurements

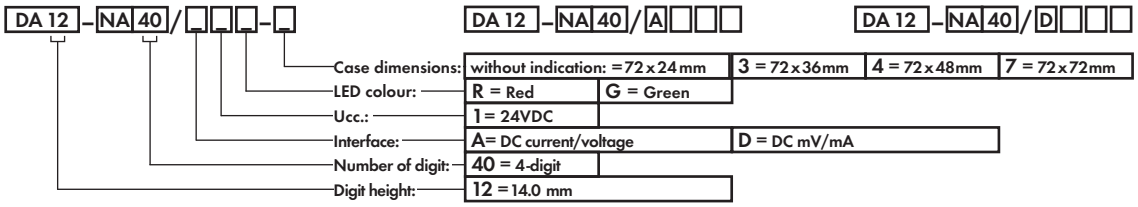
Control elements behind the filter plate

Ordering example

DA12-NA40/....

A - DC current/voltage
1 - Ucc. 24 V DC
G - Display colour green
4 - Case 72 x 48 mm

= DA12–NA40/A10G–4



DA12-NA40: Display only available with 4-digits

DA12-NA40/X1xx

Digital panel meter for standard signals AC, programmable

Digital displays for monitoring and control with different interfaces and inputs

AC current/voltage
Frequency
Driving speed
Rpm
4-digit displays
LED-display red or green

DA12 = Digit height 14.0 mm

DA12-NA40/X10x
Case 72 x 24 mm

DA12-NA40/X10x-3
Case 72 x 36 mm

DA12-NA40/X10x-4
Case 72 x 48 mm

DA12-NA40/X10x-7
Case 72 x 72 mm

Technical Data

Type	DA12-NA40/F1xx	DA12-NA40/I1xx
Input	AC current/voltage V/A	Frequency/driving speed
Panel cut-out (mm)		
DA12-NA40/X1xx	68(+0.7) x 22.2(+0.3) mm	68(+0.7) x 22.2(+0.3) mm
DA12-NA40/X1xx-3	68(+0.7) x 33.0(+0.6) mm	68(+0.7) x 33.0(+0.6) mm
DA12-NA40/X1xx-4	68(+0.7) x 45.0(+0.6) mm	68(+0.7) x 45.0(+0.6) mm
DA12-NA40/X1xx-7	68(+0.7) x 68.0(+0.7) mm	68(+0.7) x 68.0(+0.7) mm
Front frame height (mm)	5.25	5.25
Mounting depth (mm)	110	110
Display/digit height (mm)	14.0	14.0
LED-display colour	Red or green	Red or green
Auxiliary supply	18 - 35 V DC	18 - 35 V DC
Power consumption	Max. 2.5 VA	Max.2.5 VA
Measuring ranges voltage	2V/100V/250V/500V DC	---
Measuring ranges current	3A/6A AC	---
Display max.	Free programmable	Free programmable
Display zero	Free programmable	Free programmable
Conversion rate	Approx. 1 measurement/1sec.	1 ...19 sec. programmable
Measuring principle	Dual-Slope-integr., True RMS	---
Measuring error	+/-0.2% of measuring value +/-1 digit/segment	+/-0.01% of measuring value +/-1 digit/segment
Overflow	Flashing of display segments in the middle	Flashing of display segments in the middle
Average value	Adjustable from 1-99 measurem.	Adjustable from 1-500 measur.
Frequency range	20 Hz - 20 kHz	0.05 ...9.999 kHz

Input resistance	Clamp	Ri
	1	10 kΩ
	2	470 kΩ
	3	1 MΩ
	4	2.2 MΩ
	6	0.02 Ω
	7	0.01 Ω

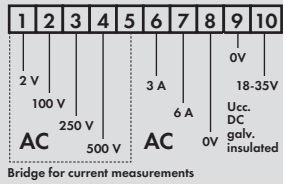
Resolution	0 ...9999 / 0 ...9999

Display messages

EEP	EEprom under programming
----	Overflow (Flashing of display segments in middle)
⫞	Line break indicator (below measured value)

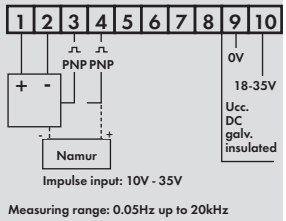
Pluggable screw terminal

DA12-NA40/F1xx (AC current/voltage)



Pluggable screw terminal

DA12-NA40/I1xx (Freq., Dr.sp., speed)



Control elements behind the filter plate

Ordering example

DA12-NA40/....

A - Frequency measurement
1 - Ucc. 24 V DC
G - Display colour green
4 - Case 72 x 72 mm

= DA12-NA40/I10G-7

DA12 - NA40 / _ _ _ - _

DA12 - NA40 / F _ _ _

DA12 - NA40 / I _ _ _

Case size:	without indication = 72 x 24 mm	3 = 72 x 36 mm	4 = 72 x 48 mm	7 = 72 x 72 mm
LED colour:	R = Red	G = Green		
Ucc.:	1 = 24VDC			
Interface:	F = AC current/voltage	I = Frequency measurement		
Number of digit:	40 = 4-digit			
Digit height:	12 = 14.0 mm			

DA12-NA40: Display only available with 4-digits

celsa

DA12-NA40/M1xx

Digital panel instruments for temperature measurement PT100

Digital panel for monitoring and control

PT100 temperature
4-digit display
LED-display red or green

DA12 = Digit height 14.0 mm

DA12-NA40/X1xx
Case 72 x 24 mm

DA12-NA40/X1xx-3
Case 72 x 36 mm

DA12-NA40/X1xx-4
Case 72 x 48 mm

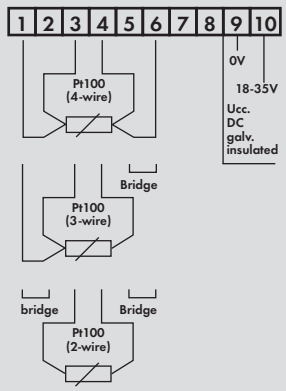
DA12-NA40/X1xx-7
Case 72 x 72 mm

Technical Data

Type	DA12-NA40/M1xx
Input	**PT100 Temperature**
Panel cut-out (mm)	
DA12-NA40/X1xx	68(+0.7) x 22.2(+0.3) mm
DA12-NA40/X1xx-3	68(+0.7) x 33.0(+0.6) mm
DA12-NA40/X1xx-4	68(+0.7) x 45.0(+0.6) mm
DA12-NA40/X1xx-7	68(+0.7) x 68.0(+0.7) mm
Front frame height (mm)	5.25
Mounting depth (mm)	110
Display/digit height (mm)	14.0
LED-display colour	Red or green
Auxiliary supply	18 - 35 V DC
Power consumption	Max. 2.5 VA
Measuring range PT 100	-100.0 up to 199.9°C -200.0 up to 800.0°C -100.0 up to 199.9°F -200.0 up to 1472°F
Conversion rate	Approx. 1 measurement/1sec.
Measuring principle	Dual-Slope-integration
Measuring error	+/-0.01% of measuring value +/-1 digit/segment
Overflow	Flashing of display segments
Resolution	+/- 1K(PT100 200°C:+/- 0.1K)

Pluggable screw terminal

DA12-NA40/M1xx (PT100)



Control elements behind the filter plate

Ordering example

DA12-NA40/M....

M - Temperature measurement
1 - Ucc. 24 V DC
R - Display colour red
3 - Case 72 x 36 mm

= DA12–NA40/M10R–3

DA 12 – NA 40 / M □ □ – □

Case size:	without indication = 72 x 24 mm	3 = 72 x 36 mm	4 = 72 x 48 mm	7 = 72 x 72 mm
LED colour:	R = Red	G = Green		
Ucc.:	1 = 24VDC			
Interface:	M = PT100 temperature			
Number of digit:	40 = 4-digit			
Digit height:	12 = 14.0 mm			

DA 12 – NA 40 / F □ □ □

DA12-NA40: Display only available with 4-digits

DA13-NAxx/Xxxx

Digital panel instruments for standard signals DC, programmable

Digital displays for monitoring and control with different interfaces and inputs

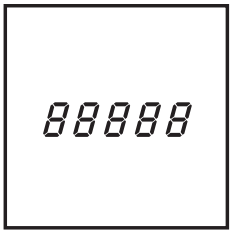
DC current/voltage (V/mA)
Connection to shunt (mV/mA)
LED-display red or green
Up to 5-digit display

DA13 = Digit height 14.0 mm

DA13-NA40/X10x
Case 96 x 24 mm

DA13-NA40/X10x-4
Case 96 x 48 mm

DA13-NA40/X10x-9
Case 96 x 96 mm



Technical Data

Type	DA13-NAxx/Axxx	DA13-NAxx/Dxxx
Input	DC current/voltage V/mA	DC current/voltaje mV/mA
Panel cut-out (mm)		
DA13-NAxx/Xxxx	92(+0.8) x 22.2(+0.6) mm	92(+0.8) x 22.2(+0.6) mm
DA13-NAxx/Xxxx-4	92(+0.8) x 45.0(+0.6) mm	92(+0.8) x 45.0(+0.6) mm
DA13-NAxx/Xxxx-9	92(+0.8) x 92.0(+0.8) mm	92(+0.8) x 92.0(+0.8) mm
Front frame height (mm)	7.5	7.5
Mounting depth (mm)	110	110
Display/digit height (mm)	14.0	14.0
LED-display colour	Red or green	Red or green
Auxiliary supply		
DA13-NAxx/A1xx	18 - 35 V DC	18 - 35 V DC
DA13-NAxx/A2xx	115/230V AC	115/230V AC
Power consumption	Max. 3 VA	Max. 3 VA
Measuring ranges voltage	2V/10V/40V/200V DC	60mV/125mV/150mV/300mV
Measuring ranges current	20mA/200mA	0.1mA/1mA DC
Display max.	Free programmable	Free programmable
Display zero	Free programmable	Free programmable
Conversion rate	Approx. 1 measurement/1sec.	Approx. 1 measurement/1sec.
Measuring principle	Dual-Slope-integration	Dual-Slope-integration
Measurin error	+/-0.01% of measuring value +/-1 digit/segment	+/-0.01% of measuring value +/-1 digit/segment
Overflow	Flashing of display segments	Flashing of display segments
Average value	Adjustable from 1-500 measurem.	Adjustable from 1-500 measur.

Display messages

EEP	EEprom under programming
----	Overflow (Flashing of center segments)
⫞⫟	Line break indicatipon with value failing (Below measured value)

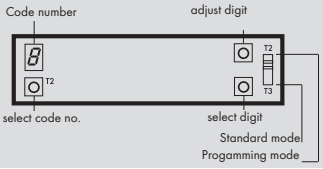
Number of digits

DA13-NA30/Xxxx	888
DA13-NA30/Xxxx	± 8888
DA13-NA40/Xxxx	8888
DA13-NA41/Xxxx	± 18888
DA13-NA50/Xxxx	88888

Resolution

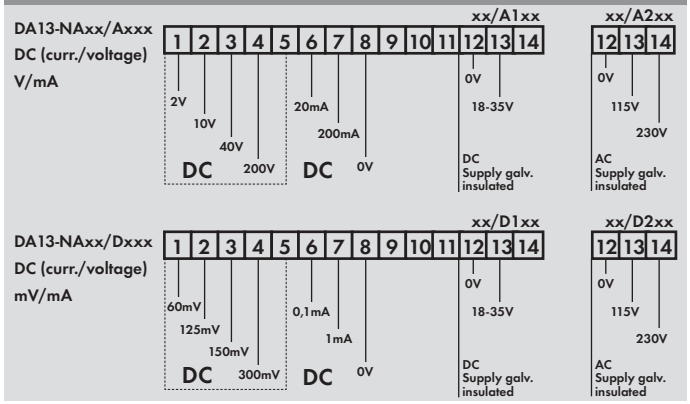
..NA30..	-199	... 999
..NA31..	-1999	...+1999
..NA40	-1999	... 9999
..NA41..	-19999	...+19999
..NA50..	-19999	... 30000

Control elements behind the filter plate



Input resistance	Clamp	Ri	Overload contin.		Overload 3sec.
DA13-NAxx/Axx	1	100 kΩ	50	V	---
	2	560 k Ω	100	V	---
	3	2.2 MΩ	500	V	---
	4	12 MΩ	1000	V	---
	6	100 Ω	70	mA	140 mA
	7	10 Ω	250	mA	500 mA
Input resistance	**Clamp**	**Ri**			
DA13-NAxx/Dxx	1	100 kΩ			
	2	220 kΩ			
	3	270 kΩ			
	4	560 kΩ			
	6	560 Ω			
	7	68 Ω			

Pluggable screw terminal



Ordering example

DA13-NA...

31 - Figures 3- 1/2-digit
A - DC current/voltage
2 - Ucc. 115/230V AC
G - Display colour green
9 - Case 96 x 96 mm

= DA13–NA31/A20G–9

DA 13 – NA __ / _ _ _ _ – _

Case size:	without indication = 96 x 24 mm	4 = 96 x 48 mm	9 = 96 x 96mm	
LED colour:	R = Red	G = Green		
Option:	See page 2/9 and 2/10			
Ucc.:	1 = 24V DC	2= 115/230V AC		
Interface:	A= DC current/voltage	D = DC mV/mA		
Number of digit:	30 = 3-digit	31 = 3-1/2-digit	40 = 4-digit	41 = 4-1/2-digit	50 = 5-digit
Digit height:	13 = 14.0 mm			

DA 13 – NA xx / A _ _ _

without indication = 96 x 24 mm	4 = 96 x 48 mm	9 = 96 x 96mm	
1 = 24V DC	2= 115/230V AC		
A= DC current/voltage	D = DC mV/mA		

DA 13 – NA xx / D _ _ _

without indication = 96 x 24 mm	4 = 96 x 48 mm	9 = 96 x 96mm		
1 = 24V DC	2= 115/230V AC			
D = DC mV/mA				
30 = 3-digit	31 = 3-1/2-digit	40 = 4-digit	41 = 4-1/2-digit	50 = 5-digit
13 = 14.0 mm				

DA13-NAxx/Xxxx

Digital panel instruments for norm signals AC, programmable

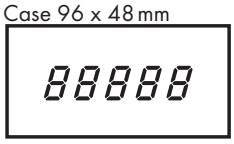
Digital displays for monitoring and control with different interfaces and inputs

- AC current/voltage
- Frequency
- Rpm
- Speed
- 4/5-digit displays
- LED-displays red or green

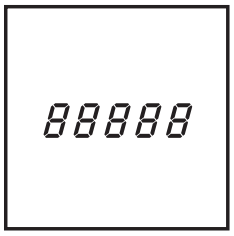
DA13 = Digit height 14.0 mm

DA13-NAxx/Xxxx
Case 96 x 24 mm

DA13-NAxx/Xxx-4
Case 96 x 48 mm



DA13-NAxx/Xxxx-9
Case 96 x 96 mm



Technical Data

Type	DA13-NAxx/Fxxx	DA13-NAxx/Ixxx
Input	AC current/voltage V/A	Frequency/ Rpm
Panel cut-out (mm)		
DA13-NAxx/Xxxx	92(+0.8) x 22.2(+0.6) mm	92(+0.8) x 22.2(+0.6) mm
DA13-NAxx/Xxxx-4	92(+0.8) x 45.0(+0.6) mm	92(+0.8) x 45.0(+0.6) mm
DA13-NAxx/Xxxx-9	92(+0.8) x 92.0(+0.8) mm	92(+0.8) x 92.0(+0.8) mm
Front frame height (mm)	7.5	7.5
Mounting depth (mm)	110	110
Display/digit height (mm)	14.0	14.0
LED-display colour	Red or green	red or green
Auxiliary supply		
DA13-NAxx/A1xx	18 - 35 V DC	18 - 35 V DC
DA13-NAxx/A2xx	115/230V AC	115/230V AC
Power consumption	Max. 3 VA	max. 3 VA
Measuring ranges voltage	2V/10V/250V/500V DC	---
Measuring ranges current	3A/6A AC	0.1mA/1mA DC
Frequency ranges	---	0.05 Hz to 20 Hz
Display max.	Free programmable	Free programmable
Display zero	Free programmable	Free programmable
Conversion rate	Approx. 1 measurement/1sec.	1 ...19 sec. programmable
Measuring principle	Dual-Slope-integration	---
Measuring error	+/-0.02% of measuring value +/-1 digit/segment	+/-0.01% of measuring value +/-1 digit/segment
Overflow	Flashing of display segments	Flashing of display segments
Average value	Adjustable from 1-500 measurem.	---

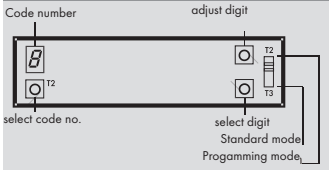
Input resistance	Clamp	Ri
	1	10 kΩ
	2	470 kΩ
	3	1 MΩ
	4	2.2MΩ
	6	0.02 Ω
	7	0.01Ω

Display messages	
EEP	EEprom under programming
---	Overflow (Flashing of center segments)
⊣⊢	Line break indicatipon with value failing (Below measured value)

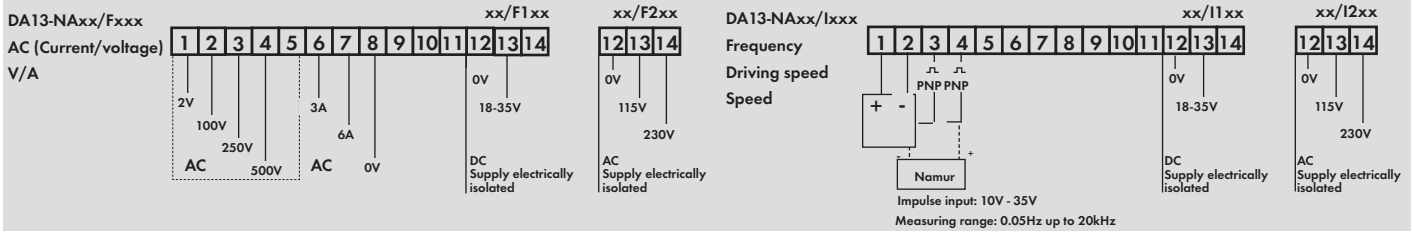
Number of digit	
DA13-NA30/Fxxx	888
DA13-NA40/Fxxx	8888
DA13-NA50/Ixxx	88888

Resolution	
..NA30/F..	999
..NA40/F..	9999
..NA50/F..	0 ...99999

Control elements behind the filter plate



Pluggable screw terminal



Ordering example

DA13-NA...

50 - Figures 5 digit
I - Driving speed
2 - Ucc. 115/230V AC
G - Display colour red
9 - Case 96 x 96 mm

= DA13–NA50/I20G–9

DA 13 – NA __ / _ _ _ _ – _

Case size:	without indication = 96 x 24 mm	4 = 96 x 48 mm	9 = 96 x 96mm
LED colour:	R = Red	G = Green	
Option:	See page 2/9 and 2/10		
Ucc.:	1 = 24V DC	2= 115/230V AC	
Interface:	F= AC current/voltage	I = Frequency/driving speed	
Number of digit:	30 = 3-digit	40 = 4-digit	50 = 5-digit
Digit height:	13 = 14.0 mm		

DA 13 – NA xx / F _ _ _

DA 13 – NA xx / I _ _ _

DA13-NA50/Ixxx: Display only available with 5-digits

DA13-NA31/Mxxx

Digital panel instruments for temperature measurement PT100

Digital display for monitoring and control

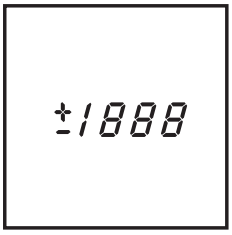
PT100 temperature
3 1/2-digit display
LED-display red or green

DA13 = Digit height 14.0 mm

DA13-NA31/Mxxx
Case 96 x 24 mm

DA13-NA31/Mxxx-4
Case 96 x 48 mm

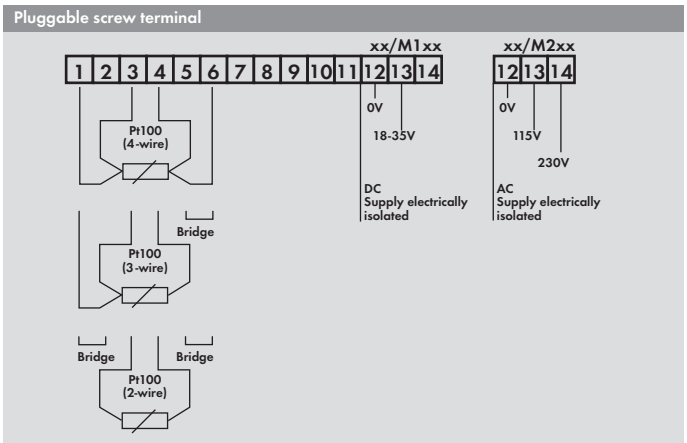
DA13-NA31/Mxxx-9
Case 96 x 96 mm



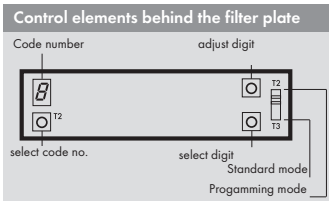
Technical Data

Type	DA13-NA31/Mxxx
Input	**PT100 temperature**
Panel cut-out (mm)	
DA13-NA31/Xxxx	92(+0.8) x 22.2(+0.6) mm
DA13-NA31/Xxxx-4	92(+0.8) x 45.0(+0.6) mm
DA13-NA31/Xxxx-9	92(+0.8) x 92.0(+0.8) mm
Front frame height (mm)	7.5
Mounting depth (mm)	110
Display/digit height (mm)	14.0
LED-display colour	Red or green
Auxiliary supply	
DA13-NAxx/-M1xx	18 - 35 V DC
DA13-NAxx/M2xx	115/230 V AC
Power consumption	max. 3 VA
Measuring ranges PT100	-100.0 up to 199.9°C -200.0 up to 800.0°C -100.0 up to 199.9°F -200.0 up to 1472°F
Conversion rate	Approx. 1 measurement/1sec.
Measuring principle	Dual-Slope-integration
Measuring error	+/-0.02% of measuring value +/-1 digit/segment
Overflow	Flashing of display segments
Resolution	+/- 1K(PT100 200°C:+/- 0.1K)

Pluggable screw terminal



Control elements behind the filter plate



Ordering example

DA13-NA...

40 - Figures 5 digit
1 - Driving speed
2 - Ucc. 115/230V AC
G - Display colour red
9 - Case 96 x 96 mm

= DA13-NA40/I20G-9

DA 13 – NA 31 / M _ _ _ – _

Case size:	without indication = 96 x 24 mm	4 = 96 x 48 mm	9 = 96 x 96mm
LED colour:	R = Red	G = Green	
Option:	See page 2/9 and 2/10		
Ucc.:	1 = 24V DC	2 = 115/230V AC	
Interface:	M = PT100 temperature		
Number of digit:	31 = 3 1/2-digit		
Digit height:	13 = 14.0 mm		

DA13-NA31/Mxxx: Display only available with 3 1/2-digits

celsa

Options: for DA13-NA

Valid for:

DA13-NA__/A__
DA13-NA__/D__
DA13-NA__/G__
DA13-NA__/F__
DA13-NA__/I__
DA13-NA__/L
DA13-NA__/M__

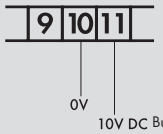
Option: 1

Analogue output 0 - 10V DC

Option: 4

Analogue output 0 - 10V DC, electrically insulated to measuring

connection



Max.+min. values of analogue output depend on min.+max measurements values under code number 1 + 3

Programming

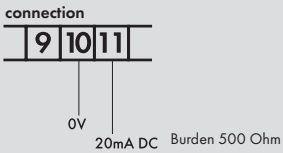
only for: DA13-NA__/L__
DA13-NA__/M__

Code	Display	Description
3	_ _ _	Temperature + analogue output min.value
4	_ _ _	Temperature + analogue output max.value

Option: 2

Analogue output 0/4 - 20 mA DC

connection



Max.+min. values of analogue output depend on min.+max measurements values under code number 1 + 3

Programming

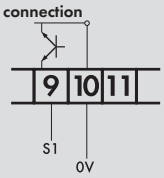
only for: DA13-NA__/L__
DA13-NA__/M__

Code	Display	Description
3	_ _ _	Temperature + analogue output min.value
4	_ _ _	Temperature + analogue output max.value
6	1 _ _	Analogue output DC 0=0-20mA 1=4-20mA

Option: 7

1 Alarm contact open collector

connection



12 Watt max.
max. 30 V (0.5A)

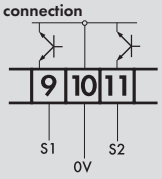
Programming

Code	Display	Description	
7	S1	Upper switching threshold	
8	S1	Lower switching threshold	
9	_ _ 1	0=inactive	1=active
	_ 0 _	Operating current	Max-contact
	_ 1 _	Quiescent current	Max-contact
	_ 2 _	Operating current	Min-contact
	_ 3 _	Quiescent current	Min-contact
0	0 _ _	Display normal if S1 ative	
1	1 _ _	Display is flashing if S1 active	

Option: 8

2 Alarm contacts open collector

connection



12 Watt max.
max. 30 V (0.5A)

Code	Display	Description	
7	S1	Upper switching threshold	
8	S1	Lower switching threshold	
9	_ _ 1	0=inactive	1=active
	_ 0 _	Operating current	Max-contact
	_ 1 _	Quiescent current	Max-contact
	_ 2 _	Operating current	Min-contact
	_ 3 _	Quiescent current	Min-contact
0	0 _ _	Display normal if S1 ative	
1	1 _ _	Display is flashing if S1 active	

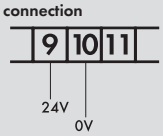
Programming

Code	Display	Description	
A	S2	Upper switching threshold	
B	S2	Lower switching threshold	
C	_ _ 1	0=inactive	1=active
	_ 0 _	Operating current	Max-contact
	_ 1 _	Quiescent current	Max-contact
	_ 2 _	Operating current	Min-contact
	_ 3 _	Quiescent current	Min-contact
0	0 _ _	Display normal if S2 ative	
1	1 _ _	Display is flashing if S2 active	

Option: D

Input for display blank

connection

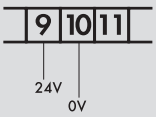


Input:	Active-high, 24V
L-signal:	Display shows present measurement value
H-signal:	Display blank

Option: G

Input segment test

connection

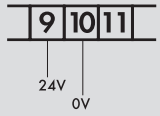


Input:	Active-high, 24V
L-signal:	Display shows present measurement value
H-signal:	All segments and decimal points light

Option: H

Display Hold

connection

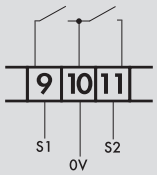


Input:	Active-high, 24V
L-signal:	Display shows present measurement value
H-signal:	Display stores measurement value

Option: R

2 Relais contacts

connection



10 Watt max.
max. 200V (0.05A)
max. 0.5A (20V)

Code	Display	Description	
7	S1	Upper switching threshold	
8	S1	Lower switching threshold	
9	_ _ 1	0= inactive	1=active
	_ 0 _	Operating current	Max-contact
	_ 1 _	Quiescent current	Max-contact
	_ 2 _	Operating current	Min-contact
	_ 3 _	Quiescent current	Min-contact
0	0 _ _	Display normal if S1 ative	
1	1 _ _	Display is flashing if S1 active	

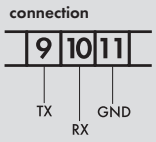
Programming

Code	Display	Description	
A	S2	Upper switching threshold	
b	S2	Lower switching threshold	
C	_ _ 1	0= inactive	1=active
	_ 0 _	Operating current	Max-contact
	_ 1 _	Quiescent current	Max-contact
	_ 2 _	Operating current	Min-contact
	_ 3 _	Quiescent current	Min-contact
0	0 _ _	Display normal if S2 ative	
1	1 _ _	Display is flashing if S2 active	

Option: R

Serial output RS232

connection



Code	Display	Description		
7	_ _ 0	0= 150 Baud	4= 150 Baud	
	_ _ _	1= 300 Baud	5= 4800 Baud	
	_ _ _	2= 600 Baud	6= 9600 Baud	
	_ _ _	3= 1200 Baud	7= 19200 Baud	
	_ 0 _	0= without parity	8 data bits	
	_ _ _	1= party even	7 data bits	
	_ _ _	2= party odd	7 data bits	
	_ _ _	3= party even	8 data bits	
	_ _ _	4= party odd	8 data bits	
8	_ _ _	address of display unit		
	_ 0 0	no address		
	_ _ X	address 10^0		
	_ X _	address 10^1		

Programming

Code	Display	Description	
9	_ _ X	Direction of writing	0= left 1= right
	_ 0 _	0= Serial output off	
	_ _ _	1= digit sign/ value	
	_ _ _	2= STX/ sign/ value/ ETX	
	_ _ _	3= STX/ adr./ sign/ value/ ETX	
	_ _ _	4= SOH/ adr./ STX/ sign/ value/ ETX	
	_ _ _	Transfer instruction	
	0 _ _	off	
	1 _ _	Transfer after received address	
	2 _ _	Transfer after STX/ adr./ ETX received	

Option: S

Min.- Max.- Memory

The buttons T1- T3 are inserted through a filter plate. By activating the T1 longer than 5 seconds a reference measurement is effected. If T1 is activated for a duration of fewer than 5 seconds the up to now saved min.-max.-values are deleted. The value of reference measurement is maintained. Afterwards by T2 (max.-value) and T3 (min.-value) the respective extreme value can be recalled with regard to the reference measurement.

DA13-NSxx/xxx

Digital panel instruments for serial control

Digital displays for monitoring and control with serial interface

Serial
LED-display red or green
2 - 6-digit displays

DA13 = Digit height 14.0 mm

DA13-NS40/Xxx
Case 72 x 24 mm

DA13-NS40/Xxx-4
Case 72 x 48 mm

DA13-NS40/Xxx-9
Case 72 x 72 mm

Without illus. (6-digit display)
DA13-NS60/Xxx = 96x24mm
DA13-NS60/Xxx-4 = 96x48mm
DA13-NS60/Xxx-9 = 96x96mm

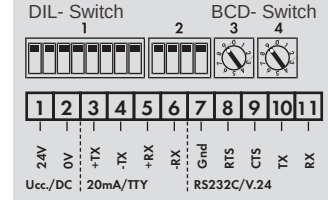
Technical Data

Type	DA13-NS40/Xxx - DA13-NS60/Xxx
Input	**Serial**
Panel cut-out (mm)	
DA13-NS20 /-NS30 /-NS40	68 (+0.7) x 22.2 (+0.3) mm
DA13-NS50 /-NS60	92(+0.8) x 22.2 (+0.6) mm
DA13-NS20- /-NS30- /-NS40/Xxx-4	68 (+0.7) x 45.0(+06) mm
DA13-NS50- /-60/Xxx-4	92(+0.8) x 45.0(+0.6) mm
DA13-NS20- /-NS30- /-NS40/Xxx-9	68 (+0.7) x 68.0(+0.7) mm
DA13-NS50- /-60/Xxx-9	92(+0.8) x 92.0(+0.8) mm
Front frame height (mm)	
DA13-NS20/Xxx – DA13-NS40/Xxx	5.2
DA13-NS50/Xxx – DA13-NS60/Xxx	7.5
Installation depth (mm)	104
Auxiliary supply	18 - 35 V DC
Display/digit height (mm)	14.0
LED-display colour	Red or green
Power consumption	Max. 2.5 VA
Temperature range	-20°C ...+65°C

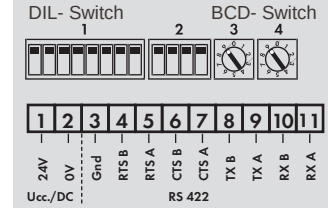
Number of digits	
DA13-NS20/Xxx	88
DA13-NS30/Xxx	888
DA13-NS40/Xxx	8888
DA13-NS50/Xxx	88888
DA13-NS60/Xxx	888888

BCD-switch	
01...98	Fading out from up to 98 leading signs
99	Self test

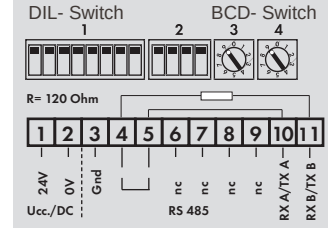
DA13-NS ../A.



DA13-NS ../B.



DA13-NS ../D.



DIL-switch 1				
1.1	1.2	Baud rate	1.5	
off	off	1200 Baud	on	Parity even
on	off	2400 Baud	off	Parity odd
off	on	4800 Baud	1.6	
on	on	9600 Baud	on	STX/ ETX
1.3			off	CR/ LF
on		8 data bits	1.7	Direction of writing
off		7 data bits	on	left > right
1.4			off	right > left
on		with parity bit	1.8	
off		without parity bit	on	20mA/TTY
			off	RS232C/V.24

DIL-switch 2			
2.1			Leading zeros
on			Parity even
off			Parity odd
2.2	2.3	2.4	Addresses
off	off	off	without
on	off	off	1.device
off	on	off	2.device
on	on	off	3.device
off	off	on	4.device
on	off	on	5.device
off	on	on	6.device
on	on	on	7.device

Telegram construction ASCII		
Function	**ASCII**	**Description**
Segment test	$0	Segment test on (up to th next telegram)
Leading zeros	$1	Indication of leading zeros
	$2	Fading out of leading zeros
Flashing sign	$3"28"	"28" is flashing
Flashing display	$4	Flashing on
	$5	Flashing off
Direction of writing	$6	left → right
	$7	right → left

Sign rate

Hex	20	2D	2C	2E	30	31	32	33	34	35	36	37	38	39	3D	41	43	45	46	48	4C	50	55	5D	5F	62	63	64	68	6E	6F	72	75	78	7E
Digit		-	_	.	,	0	1	2	3	4	5	6	7	8	9	=	A	[	E	F	K	L	P	U	]	_	B	C	D	H	N	O	R	V	0	+

unknown sign: =

Ordering example

13 - Digit height 14.0 mm
NS - ProfiBus or serial
60 - Display with 6 digits
B - RS 422 interface
1 - Ucc. 18-35 V DC
R - Display colour red
4 - Case 96 x 48 mm

= DA13–NS60/B1R-4

DA__–NS__/___–_

Case size*:	Without ind..=2x24mm/96x24mm	4 = 72x48mm/96x48mm	9 = 72x72mm/96x96mm		
LED colour:	R = Red	G = Green			
Ucc.:	1 = 18-35VDC				
Interface:	A= RS 232C/V.24 u. 20mA/TTY	B = RS 422	D = RS 485		
Number of digit:	20 = 2-digit	30 = 3-digit	40 = 4-digit	50 = 5-digit	60 = 6-digit
Digit height:	13 = Digit height 14.0 mm				

DA 13 –NS__/____

***Listed case size :** From NS20 up to NS40/NS60

DA13-NSxx/Pxx

Digital panel instruments for ProfiBus L2DP control

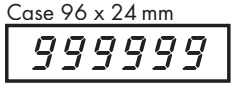
Digital displays for monitoring and control with ProfiBus interface

ProfiBus L2DP
LED-displays red or green
4 or 6-digit display

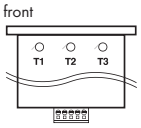
DA13 = Digit height 14.0 mm

DA13-NS40/P1x
Case 72 x 24 mm

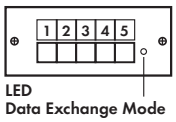
DA13-NS60/P1x
Case 96 x 24 mm



Case - topview



Back view



Option: with Sub-D female connector available.

Technical Data

Type	DA13-NS40/P1x - DA13-NS60/P1x
Input	**ProfiBus L2DP**
Panel cut-out (mm)	
DA13-NS40/P1x	68 (+0.7) x 22.2 (+0.3) mm
DA13-NS60/P1x	92(+0.8) x 22.2 (+0.6) mm
Front frame height (mm)	
DA13-NS40/P1x	5.2
DA13-NS60/P1x	7.5
Installation depth (mm)	91
Auxiliary supply	18 - 35 V DC
Display/digit height (mm)	14.0
LED-display colour	Red or green
Power consumption	Max. 2.5 VA
Temperature range	0°C ...+50°C
Baud rate (autom.recognition)	≤ 12M Baud
Address (0 ...127)	Adjustable at the topside of case
Protocol	ProfiBus-DP
Hardware	SPC 3 field bus site galvanic insulated

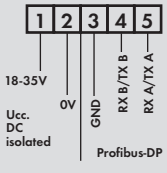
Telegram construction ASCII

Byte	Description	ASCII	
1.	Digit 1 ≙ 10^0	3xH	Add comma at any place.
2.	Digit 2 ≙ 10^1	3xH	
3.	Digit 3 ≙ 10^2	3xH	
4.	Digit 4 ≙ 10^3	3xH	
5.	Digit 5 ≙ 10^4	3xH	
6.	Digit 5 ≙ 10^5	3xH	
7.			
8.	free		

Telegram construction BCD

Byte	Function								Comma	Display
1.	10^1				10^0					
	1	1	1	1	1	1	1	1		
2.	10^3				10^2					
	1	1	1	1	1	1	1	1		
3.	free				10^{04}					
	X	X	X	X	1	1	1	1		
4.	free				free					
	X	X	X	X	X	X	X	X		
5.	free				free					
	X	X	X	X	X	X	X	X		
6.	free				free					
	X	X	X	X	X	X	X	X		
7.	free				free					
	X	X	X	X	X	X	X	X		
8.	free				Comma				Display	
	X	X	X	X	0	0	0	0		000000
					0	0	0	1		00000.0
					0	0	1	0		0000.00
					0	0	1	1		000.000
					0	1	0	0		00,0000
					0	1	0	1		0,00000

Pluggable screw terminal for ProfiBus



Sign rate

Hex	20	2D	2E	30	31	32	33	34	35	36	37	38	39	3D	41	43	45	46	48	4C	50	55	5D	5F	62	63	64	68	6E	6F	72	75	78	7E
Digit		_	.	0	1	2	3	4	5	6	7	8	9	=	A	[	E	F	K	L	P	U	]	_	B	C	D	H	n	o	R	v	°	+

unknown sign

Ordering example

13 - Digit height 14.0 mm
NS - ProfiBus or serial
40 - Display with 4 digits
P - ProfiBus
1 - Ucc. 24 V DC
G - Display colour red

= DA13–NS40/P1G
(The case sizes is the result of the 4-digit display = 72 x 24mm)

DA__–NS__/___

LED colour:	R = Red	G = Green
Ucc.:	1 = 24VDC	
Interface:	P = ProfiBus L2DP	
Number of digit:	40 = 4-digit	60 = 6-digit
Digit height:	13 = Digit height 14.0 mm	

DA 13 – NS__/P__

DBA-EA13/A DBA -EA20/A

Digital bargraph for standard signals, programmable

Digital panel bargraph for monitoring and control with different interfaces and inputs

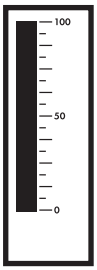
DC current/voltage (V/mA)
Bargraph & digital display
LED-displays red or green

Case 72 x 24 mm

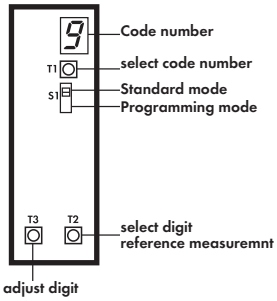
Scale length 25/50 mm

DBA-EA13/AxxxH

DBA-EA20/Axxx

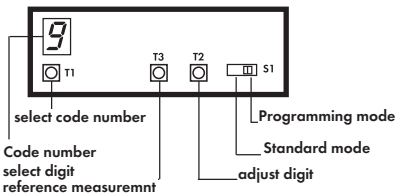


Control elements behind filter plate

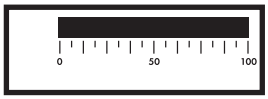


DBA-EA13/AxxxQ

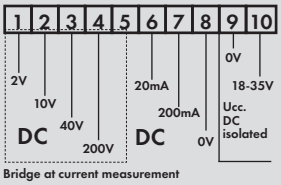
Controls behind front glass



DBA-EA20/AxxxQ



Pluggable screw terminal



Technical Data

Type	DBA-EA13/A		DBA-EA20/A	
Input	DC current/voltage V/mA		DC current/voltage V/mA	
Panel cut-out (mm)	68(+0.7) x 22.2(+0.3) mm		68(+0.7) x 22.2(+0.3) mm	
Front frame height (mm)	5.5		5.5	
Mounting depth (mm)	115		115	
Display/digit height (mm)	7 mm/ 3-digit		7 mm/ 3-digit	
Scale length	25 mm/ 10 segments		50 mm/ 20 segments	
Resolution measuring range	-99 ...999		-99 ...999	
Resolution scale	1 segment Final value of scale refers to the incoming Display max.		1 segment	
LED-display colour	Red or green		Red or green	
Option	Min.- Max.- Memory		Min.- Max.- Memory	
Auxiliary supply	18 - 35 V DC		18 - 35 V DC	
Power consumption	Max. 2.5 VA		max.2.5 VA	
Measuring ranges voltage	2V/10V/40V/200V DC		2V/10V/40V/200V DC	
Measuring ranges current	20mA/200mA DC		20mA/200mA DC	
Display max.	Free programmable		Free programmable	
Display zero	Free programmable		Free programmable	
Conversion rate	Approx. 1 measurement/1sec.		Approx. 1 measurement/1sec.	
Measuring principle	Dual-Slope-integration		Dual-Slope-integration	
Measuring error	+/-0.01% of measuring value +/-1 digit/segment		+/-0.01% of measuring value +/-1 digit/segment	
Overflow	Flashing of tcenter segments and of every 2nd scale segment		Flashing of tcenter segments and of every 2nd scale segment	
Average value	Adjustable from 1-500 measurem.		Adjustable from 1-500 measur.	
Input resistance	**Clamp**	**Ri**	**Clamp**	**Ri**
	1	100 kΩ	1	100 kΩ
	2	580 kΩ	2	580 kΩ
	3	2.2 MΩ	3	2.2 MΩ
	4	10 MΩ	4	10 MΩ
	6	100 Ω	6	100 Ω
	7	10 Ω	7	10 Ω

Display messages

EEP	EEprom under programming	
----	Overflow (Flashing of center segments)	
⊣⊢	Line break indicator (Below measured value)	

Ordering example

DBA-EA...

A - DC current/voltage
20 - 20 segments
1 - Ucc. 24 V DC
0 - Option
R - Display colour red
Q - Horizontal format

= DBA-EA20/A10RQ

DBA – EA__ / A 1 0 _ _ M Addition for Min.-Max.-Memory

DBA – E A__ / A 1 0 _ _ _

Inst. pos.:	H = Vertical	Q = Horizontal
LED colour:	R = Red	G = Green
Option:	See pages 2/20, 2/21 and 2/22	
Ucc.:	1 = 18 - 35V DC	
Number of digit:	13 = 10 segments + 3-dig. LED	20 = 20 segments

DBA-EA23/A DBA -EA23/D

Digital bargraph for standard signals, programmable

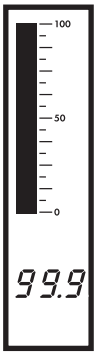
Digital panel bargraph for monitoring and control with different interfaces and inputs

DC current/voltage (V/mA)
Connection to shunt (mV/mA)
Bargraph and digital display
LED-displays red or green

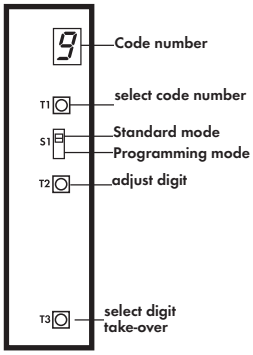
Case 96 x 24 mm

Scale length 50 mm

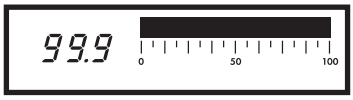
DBA-EA23/XxxxH



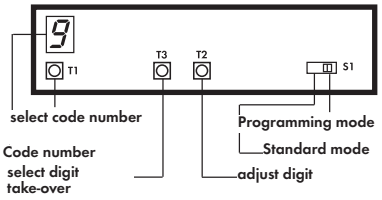
Control elements behind the filter plate



DBA-EA23/XxxxQ



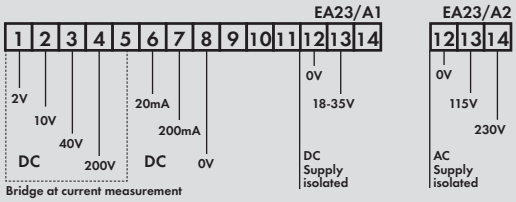
Control elements behind the filter plate



Display messages	
EEP	EEprom under programming
----	Overflow (Display segm. in th. middle are flashing)
⊣⊢	Line break indicatipon with value failing (Below measured value)

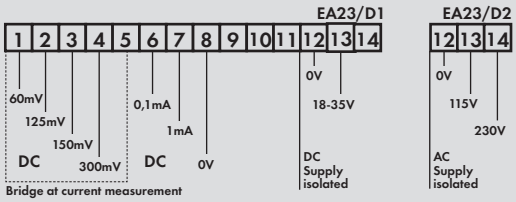
Pluggable screw terminal

DBA-EA23/A1
DC (Curr./voltage)
V/mA



Pluggable screw terminal

DBA-EA23/D1
DC (Curr./Voltage)
mV/mA



Technical Data

Type	DBA-EA23/A		DBA-EA23/D	
Input	DC current/voltage V/mA		DC current/voltage mV/mA	
Panel cut-out (mm)	92(+0.8) x 22.2(+0.6) mm		92(+0.8) x 22.2(+0.6) mm	
Front frame height (mm)	7.5		7.5	
Mounting depth (mm)	115		115	
Display/digit height (mm)	7 mm/ 3-digit		7 mm/ 3-digit	
Scale length	50 mm/ 10 segments		50 mm/ 20 segments	
Resolution measuring range	-99 ...999		-99 ...999	
Resolution scale	1 segment Final value of scale refers to the incoming indicatipn final value		1 segment	
LED-display colour	Red or green		Red or green	
Option	Min.- Max.- Memory		Min.- Max.- Memory	
Auxiliary supply				
DBA-EA.../A1 DBA-EA.../D1	18 - 35 V DC		18 - 35 V DC	
DBA-EA.../A2 DBA-EA.../D2	115/230V AC		115/230V AC	
Power consumption	Max. 2.5 VA		max.2.5 VA	
Measuring ranges voltage	2V/10V/40V/200V DC		60mV/125mV/150mV/300mV	
Measuring ranges current	20mA/200mA DC		0.1mA/ 1mA DC	
Display max.	Free programmable		Free programmable	
Display zero	Free programmable		Free programmable	
Conversion rate	Approx. 1 measurement/1sec.		Approx. 1 measurement/1sec.	
Measuring principle	Dual-Slope-integration		Dual-Slope-integration	
Measuring error	+/-0.01% of measuring value +/-1 digit/segment		+/-0.01% of measuring value +/-1 digit/segment	
Overflow	Flashing of center segments and of every 2nd scale segment		Flashing of center segments and of every 2nd scale segment	
Average value	Adjustable from 1-500 measur.		Adjustable from 1-500 measur.	
Input resistance	**Clamp**	**Ri**	**Clamp**	**Ri**
	1	100 kΩ	1	100 kΩ
	2	560 kΩ	2	220 kΩ
	3	2.2 MΩ	3	270 MΩ
	4	12 MΩ	4	560 MΩ
	6	100 Ω	6	560 Ω
	7	10 Ω	7	68 Ω

Ordering example

DBA-EA23/...

D - DC current/voltage mV/mA
1 - Ucc. 24 V DC
0 - Option
R - Display colour red
H - Vertical format

= DBA-EA23/D10RH

DBA – EA 2 3 / _ _ 0 _ _ – M Additon for Min.-Max.-Memory

Inst.pos.:	H = Vertical	Q = Horizontal
LED colour:	R = Red	G = Green
Option:	See pages 2/20, 2/21 and 2/22	
Ucc.:	1 = 24VDC	2 = 115/230VAC
Interface:	A = DC current/voltage	D = DC current/voltage mV/mA
Number of digit:	23 = 20 segments + 3-dig. LED	

DBA-EA23/F DBA -EA23/M

Digital bargraph for alternating current or voltage and temperature, programmable

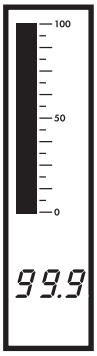
Digital panel bargraph for monitoring and control with different interfaces and inputs

AC current/voltage
Temperature
Bargraph and digital panel
LED-displays red or green

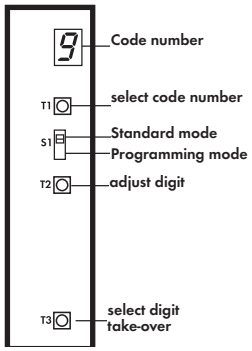
Case 96 x 24 mm

Scale length 50 mm

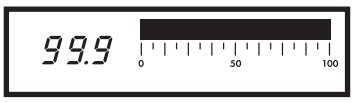
DBA-EA23/XxxxH



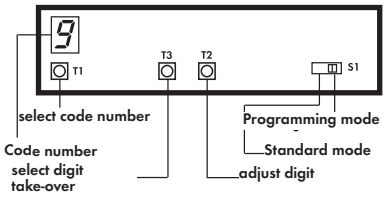
Control elements behind the filter plate



DBA-EA23/XxxxQ

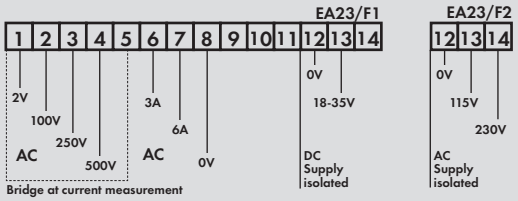


Control elements behind the filter plate



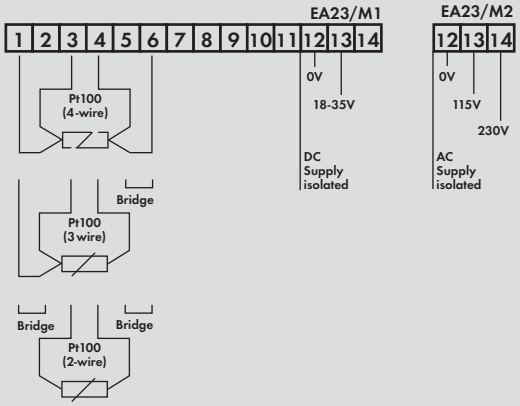
Pluggable screw terminal

DBA-EA23/F1
AC (Curr./voltage)
V/A



Pluggable screw terminal

DBA-EA23/M1
Temperature



Display messages	
EEP	EEprom under programming
----	Overflow (Flashing of display segm. in th. middle)
⊣⊢	Line break indicator (Below measured value)

Input resistance EA23/F	Clamp	Ri
	1	10 kΩ
	2	470 kΩ
	3	1 MΩ
	4	2.2 MΩ
	6	0.02 Ω
	7	0.01 Ω

Technical Data

Type	DBA-EA23/F	DBA-EA23/M
Input	**AC current/voltage**	**Temperature**
Panel cut-out (mm)	92(+0.8) x 22.2(+0.6) mm	92(+0.8) x 22.2(+0.3) mm
Front frame height (mm)	7.5	7.5
Mounting depth (mm)	115	115
Display/digit height (mm)	7 mm/ 3-digit	7 mm/ 3-digit
Scale length	50 mm/ 10 segments	50 mm/ 20 segments
Resolution measuring range	-99 ...999	-99 ...999
Resolution scale	1 segment Final value of scale refers to the incoming indicatipn final value	1 segment
LED-display colour	Red or green	Red or green
Option	Min.- Max.- Memory	Min.- Max.- Memory
Auxiliary supply		
DBA-EA.../F1 DBA-EA.../M1	18 - 35 V DC	18 - 35 V DC
DBA-EA.../F2 DBA-EA.../M2	115/230V AC	115/230V AC
Power consumption	Max. 2.5 VA	Max.2.5 VA
Measuring ranges voltage	2V/10V/40V/200V DC	---
Measuring ranges current	3A/6A AC	---
Measuring ranges PT100	- - - - - - - - - - - -	-19.9 up to 99.9 °C -199 up to 800 °C -19.9 up to 99.9 °F -199 up to 999°F
Display max.	Free programmable	- - -
Display zero	Free programmable	- - -
Conversion rate	Approx. 1 measurement/1sec.	approx. 1 measurement/1sec.
Measuring principle	Dual-Slope-integration, True RMS	Dual-Slope-integration
Measuring error	+/-0.2% of measuring value +/-1 digit/segment	+/-1K(PT100 200°C: +-0.1K +/-1 digit/segment
Overflow	Flashing of center segments and of every 2nd scale segment	Flashing of the middle segments and of every 2nd scale segment
Average value	Adjustable from 1-500 measur.	- - -

DBA – EA 2 3 / _ _ 0 _ _ – M Addition for Min.-Max.-Memory

- Inst. pos.: H = Vertical | Q = Horizontal
- LED colour: R = Red | G = Green
- Option: See pages 2/20, 2/21 and 2/22
- Ucc.: 1 = 24VDC | 2 = 115/230VAC
- Interface: F = AC current/voltage | M = PT100 temperature
- Number of digit: 23 = 20 segments+ 3-dig. LED

DBA-EA30/A DBA -EA30/D

Digital bargraph for standard signals, programmable

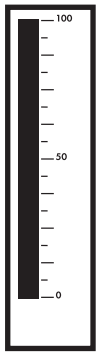
Digital panel bargraph for monitoring and control with different interfaces and inputs

DC current/voltage (V/mA)
Connection to shunt (mV/mA)
LED-displays red or green

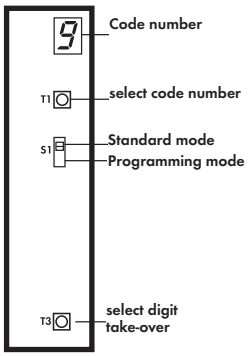
Case 96 x 24 mm

Scale length 75 mm

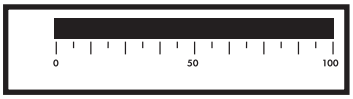
DBA-EA30/XxxxH



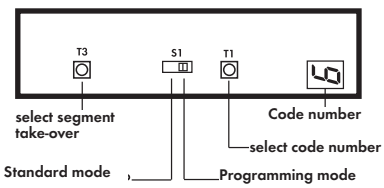
Control elements behind the filter plate



DBA-EA30/XxxxQ



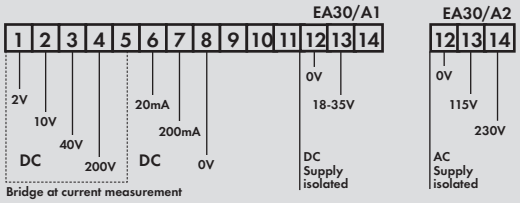
Control elements behind the filter plate



Display messages		
EEP	EEprom under programming	
----	Overflow (Flashing of display segm. in th. middle)	
⊣⊢	Line break indicator (Below measured value)	

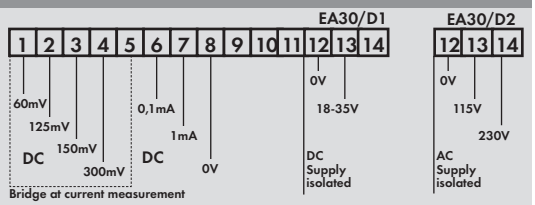
Pluggable screw terminal

DBA-EA30/A1
DC (Curr./voltage)
V/mA



Pluggable screw terminal

DBA-EA30/D1
DC (Curr./voltage)
mV/mA



Technical Data

Type	DBA-EA30/A		DBA-EA30/D	
Input	DC current/voltage V/mA		DC current/voltage mV/mA	
Panel cut-out (mm)	92(+0.8) x 22.2(+0.3) mm		92(+0.8) x 22.2(+0.6) mm	
Front frame height (mm)	7.5		7.5	
Mounting depth (mm)	120		115	
Display/digit height (mm)	- - -		- - -	
Scale length	75 mm/ 30 segments		75 mm/ 30 segments	
Resolution measuring range	- - -		- - -	
Resolution scale	1 segment Final value of scale refers to the incoming indicatipn final value		1 segment	
LED-display colour	Red or green		Red or green	
Option	Min.- Max.- Memory		Min.- Max.- Memory	
Auxiliary supply				
DBA-EA.../A1 DBA-EA.../D1	18 - 35 V DC		18 - 35 V DC	
DBA-EA.../A2 DBA-EA.../D2	115/230V AC		115/230V AC	
Power consumption	Max. 2.5 VA		max.2.5 VA	
Measuring ranges voltage	2V/10V/40V/200V DC		60mV/125mV/150mV/300mV	
Measuring ranges current	20mA/200mA DC		0.1mA/ 1mA DC	
Display max.	Free programmable		Free programmable	
Display zero	Free programmable		Free programmable	
Conversion rate	Approx. 1 measurement/1sec.		Approx. 1 measurement/1sec.	
Measuring principle	Dual-Slope-integration		Dual-Slope-integration	
Measuring error	+/-0.01% of measuring value +/-1 digit/segment		+/-0.01% of measuring value +/-1 digit/segment	
Overflow	Flashing of every 2nd scale segment		Flashing of every 2nd scale segment	
Average value	Adjustable from 1-30 measurem.		Adjustable from 1-30 measurem.	
Input resistance	**Clamp**	**Ri**	**Clamp**	**Ri**
	1	100 kΩ	1	100 kΩ
	2	560 kΩ	2	220 kΩ
	3	2.2 MΩ	3	270 MΩ
	4	10 MΩ	4	560 MΩ
	6	100 Ω	6	560 Ω
	7	10 Ω	7	68 Ω

Ordering example

DBA-EA30/...

D - DC current/voltage mV/mA
2 - Ucc. 115/230 V AC
0 - Option
R - Display colour red
Q - Horizontal format

= DBA-EA30/D20RQ

DBA – EA 30 / _ _ 0 _ _ – M Addition for Min.-Max.-Memory

Inst. pos.:	H = Vertical	Q = Horizontal
LED colour:	R = Red	G = Green
Option:	See pages 2/20, 2/21 and 2/22	
Ucc.:	1 = 24V DC	2 = 115/230VAC
Interface:	A = DC current/voltage	D = DC current/voltage mV/mA
Number of digits:	30 = 30 segments	

DBA-EA30/F DBA -EA30/M

Digital bargraph for alternating current or voltage and temperature, programmable

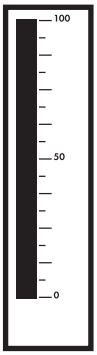
Digital panel bargraph for monitoring and control with different interfaces and inputs

AC current/voltage
Temperature
LED-displays red or green

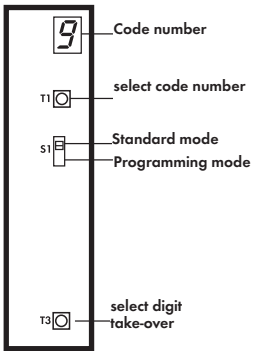
Case 96 x 24 mm

Scale length 75 mm

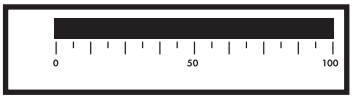
DBA-EA30/XxxxH



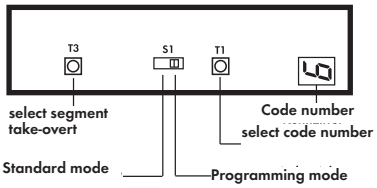
Control elements behind the filter plate



DBA-EA30/XxxxQ

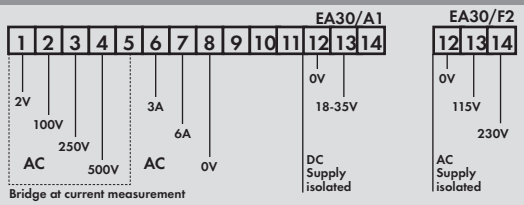


Control elements behind the filter plate



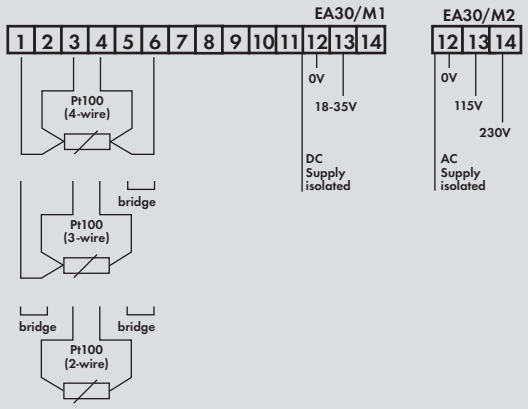
Pluggable screw terminal

DBA-EA30/F1
AC (Curr./voltage)
V/A



Pluggable screw terminal

DBA-EA30/M1
Temperature



Display messages	
EEP	EEprom under programming
----	Overflow (Flashing of display segm. in th. middle)
⊣⊢	Line break indicator (Below measured value)

Technical Data

Type	DBA-EA30/F	DBA13-EA30/M
Input	**AC current/voltage**	**Temperature**
Panel cut-out (mm)	92(+0.8) x 22.2(+0.6) mm	92(+0.8) x 22.2(+0.3) mm
Front frame height (mm)	7.5	7.5
Mounting depth (mm)	115	115
Display/digit height (mm)	- - -	- - -
Scale length	75 mm/ 30 segments	75 mm/ 30 segments
Resolution measuring range	- - -	- - -
Resolution scale	1 segment Final value of scale refers to the incoming indicatipn final value	1 segment
LED-display colour	Red or green	Red or green
Option	Min.- Max.- Memory	Min.- Max.- Memory
Auxiliary supply		
DBA-EA.../F1 DBA-EA.../M1	18 - 35 V DC	18 - 35 V DC
DBA-EA.../M2 DBA-EA.../M2	115/230V AC	115/230V AC
Power consumption	Max. 2.5 VA	Max.2.5 VA
Measuring ranges voltage	2V/100V/200V/500V DC	---
Measuring ranges current	3A/6A AC	---
Measuring ranges PT100	- - - - - - - - - - - -	-19.9 up to 99.9 °C -199 up to 800 °C -19.9 up to 99.9 °F -199 up to 999°F
Display max.	Free programmable	- - -
Display zero	Free programmable	- - -
Conversion rate	Approx. 1 measurement/1sec.	Approx. 1 measurement/1sec.
Measuring principle	Dual-Slope-integration	Dual-Slope-integration
Measuring error	+/-0.2% of measuring value +/-1 digit/segment	+/-1K(PT100 200°C: +-0.1K +/-1 digit/segment
Overflow	Flashing of every 2nd scale segment	Flashing of every 2nd scale segment
Average value	Adjustable from 1-30 measurem.	- - -

Input resistance EA23/F	Clamp	Ri
	1	10 kΩ
	2	470 kΩ
	3	1 MΩ
	4	2.2 MΩ
	6	0.02 Ω
	7	0.01 Ω

DBA – EA 30 / _ _ 0 _ _ – M Addition for Min.-Max.-Memory

- Inst. pos.: H = Vertical | Q = Horizontal
- LED colour: R = Red | G = Green
- Option: See pages 2/20, 2/21 and 2/22
- Ucc.: 1 = 24VDC | 2= 115/230VAC
- Interface: F= AC current/voltage | M = PT100 temperature
- Number of digit: 30 = 30 segments

DBA-EA43/50/A DBA -EA43/50/F

Digital bargraph for norm signals, programmable

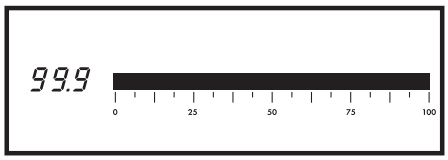
Digital bargraph panels for monitoring and control with different interfaces and inputs

DC current/voltage (V/mA)
AC current/voltage
Bargraph and digital panel
LED-displays red or green

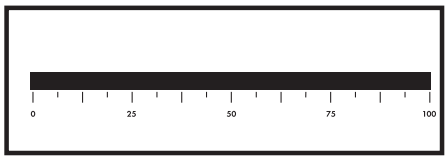
Case 144 x 48 mm

Scale length 100 mm, 125 mm

DBA-EA43/xxxxQ



DBA-EA50/xxxxQ



Control elements behind the filter plate

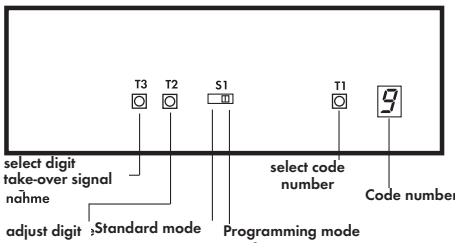
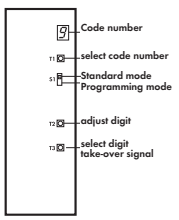


Illustration scaled down

DBA-EA43/xxxxH

DBA-EA50/xxxxH

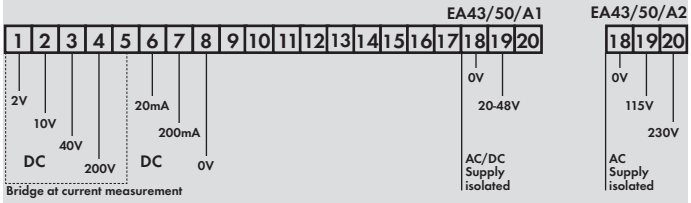
Control elements behind the filter plate



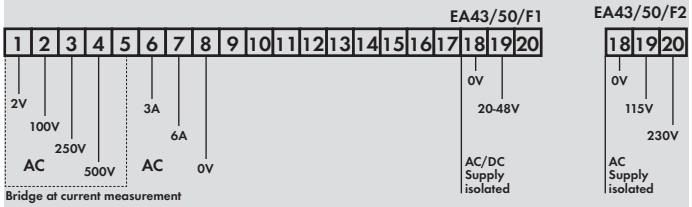
Input resistance	Clamp	Ri
DBA-EA43/A DBA-EA50/A	1	100 kΩ
	2	560 kΩ
	3	2.2 MΩ
	4	12 MΩ
	6	100 Ω
	7	10 Ω

Input resistance	Clamp	Ri
DBA-EA43/F DBA-EA50/F	1	10 kΩ
	2	470 kΩ
	3	1 MΩ
	4	2.2 MΩ
	6	0.02 Ω
	7	0.01 Ω

Pluggable screw terminal DBA-EA43/A – DBA-EA50/A (DC current/voltage)



Pluggable screw terminal DBA-EA43/F – DBA-EA50/F (AC current/voltage)



Technical Data

Type	DBA-EA43/A – DBA-EA50/A	DBA-EA43/F – DBA-EA50/F
Input	DC current/voltage V/mA	AC current/voltage V/A
Panel cut-out (mm)	138(+1.0) x 45(+0.6) mm	138(+1.0) x 45(+0.6) mm
Front frame height (mm)	8.5	8.5
Mounting depth (mm)	115	115
Display/digit height (mm)	7 mm/ 3-digit (only EA43)	7 mm/ 3-digit (only EA43)
Scale length	EA43= 100 mm/40 segments EA50= 125 mm/50 segments	EA43= 100 mm/40 segments EA50= 125 mm/50 segments
Resolution measuring range	1 segment Final value of scale refers to the incoming indicatipn final value	1 segment
Resolution numbers	-199 ...999 (only EA43)	-199 ...999 (only EA43)
LED-display colour	Red or green	Red or green
Option	Min.- Max.- Memory	Min.- Max.- Memory
Auxiliary supply		
DBA-EA.../A1 DBA-EA.../F1	28 - 48 V AC/DC	18 - 35 V DC
DBA-EA.../A2 DBA-EA.../F2	115/230V AC	115/230V AC
Power consumption	Max. 2.5 VA	Max.2.5 VA
Measuring ranges voltage	2V/10V/40V/200V DC	2V/100V/200V/500V AC
Measuring ranges current	20mA/200mA DC	3A/6A AC
Display max.	Free programmable	Free programmable
Display zero	Free programmable	Free programmable
Conversion rate	Approx. 1 measurement/1sec.	Approx. 1 measurement/1sec.
Measuring principle	Dual-Slope-integration	Dual-Slope-integration
Measuring error	+/-0.01% of measuring value +/-1 digit/segment	+/-0.02% of measuring value +/-1 digit/segment
Overflow	Flashing of the middle segments and of every 2nd scale segment	Flashing of the middle segments and of every 2nd scale segment
Average value	Adjustable from 1-500 measur.	Adjustable from 1-30 measurem.

Display messages

EEP	EEprom under programming	
----	Overflow (Flashing of display segm. in th. middle)	
⊣⊢	Line break indicator (Below measured value)	

Ordering example

DBA-EA50/F...

50 - 125 mm luminous row panel
F - AC current/voltage
2 - Ucc. 115/230 V AC
0 - Option
R - Display colour red
H - Vertical

= DBA-EA50/F20RH

DBA – EA__/__0__–M Addition for Min.-Max.-Memory

Inst. pos.:	H = Vertical	Q = Horizontal
LED colour:	R = Red	G = Green
Option:	See pages 2/20, 2/21 and 2/22	
Ucc.:	1= 20-48V AC/DC or 24V DC	2= 115/230VAC
Interface:	A = DC current/voltage	F = AC current/voltage
Number of digit:	43 = 40 segments + 3-dig. LED	50 = 50 segments

DBA-ESxx/P1xx

Digital bargraph for ProfiBus L2DP

Digital panel bargraph for monitoring and control with ProfiBus interface

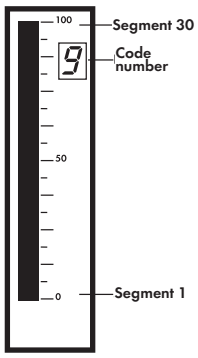
ProfiBus L2DP
LED-displays red or green

Case 96 x 24 mm

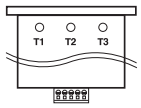
Scale length 50 mm, 75 mm

DBA-ES23/P1xH

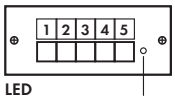
DBA-ES30/P1xH



Case - topview
front

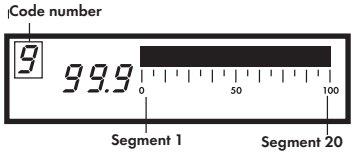


Back view

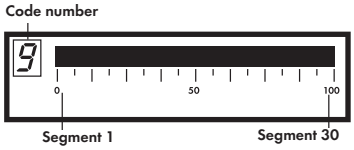


LED
Data Exchange Mode

DBA-ES23/P1xQ



DBA-ES30/P1xQ



Technical Data

Type	DBA-ES30/P1xx	DBA-ES23/P1xx
Input	**ProfiBus L2DP**	**ProfiBus L2DP**
Panel cut-out (mm)	92(+0.8) x 22.2(+0.6) mm	92(+0.8) x 22.2(+0.6) mm
Front frame height (mm)	7.5	7.5
Mounting depth (mm)	91	91
Display/digit height (mm)	75 mm/30 segments	50 mm/20 segments
LED-display colour	Red or green	Red or green
Auxiliary supply	18 - 35 V DC	18 - 35 V DC
Power consumption	Max. 1.8 VA	Max. 1.8 VA
Temperature range	0°C ...+50°C	0°C ...+50°C
Baud rate (autom. recogn.)	≤12MBaud	≤12MBaud
Address (0 ...127)	Adjustable at the topside of case	Adjustable at the topside of case
Protocol	ProfiBus-DP	ProfiBus-DP
Hardware	SPC 3 Feldbus site galvanic insulated	SPC 3 Feldbus site galvanic insulated

Telegram construction BCD

Byte	Function ES30	Function ES30
1.	Segment 8 7 6 5 4 3 2 1	Segment 8 7 6 5 4 3 2 1
2.	Segment 16 15 14 13 12 11 10 9	Segment 16 15 14 13 12 11 10 9
3.	Segment 24 23 22 21 20 19 18 17	free / Segment 20 19 18 17
4.	Segment free free 0 29 28 27 26 25	Digit 10^1 / Digit 10^1
5.	free	free / Digit 10^2
6.	free	free / free
7.	free	free / free
8.	free	free / Comma — Display: 000 / 0,00

Telegram construction ASCII

Byte	Description	ASCII	
1.	Segment 1 - 8	binary	
2.	Segment 9 - 16	binary	
3.	Segment 17 - 20	binary	Add comma at any place.
4.	Digit 1 ≙ 10^0	3xH	
5.	Digit 2 ≙ 10^1	3xH	
6.	Digit 3 ≙ 10^2	3xH	
7.			
8.	free		

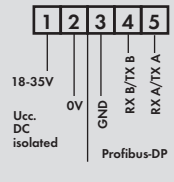
Sign rate

unknown sign

Hex	20	2D	2C	2E	30	31	32	33	34	35	36	37	38	39	3D	41	43	45	46	48	4C	50	55	5D	5F	62	63	64	68	6E	6F	72	75	78	7E
Digit		_	.	.	0	1	2	3	4	5	6	7	8	9	=	A	[	E	F	K	L	P	U	]	_	B	C	D	H	N	O	R	V	0	+

Pluggable screw terminal for ProfiBus

Load resistance
on 4 and 5: 220



Ordering example

DBA-ES23/P1...

23- 20 segments + 3-dig.LED
P - ProfiBus
1 - Ucc. 24 V DC
R - Display colour red
Q - Horizontal

= DBA-ES23/P1RQ

DBA – ES__ / __ 0 __ __

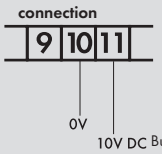
Inst. pos.:	H = Vertical	Q = Horizontal
LED colour:	R = Red	G = Green
Option:	See pages 2/20, 2/21 and 2/22	
Ucc.:	1 = 24V DC	
Interface:	P = ProfiBus L2DP	F = AC current/voltage
Number of digit:	23 = 20 segments + 3-dig. LED	30 = 30 segments

DBA – ES__ / P1___

Options: for DBA-EA

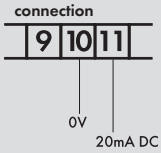
Valid for:
DBA-EA23/A__
DBA-EA30/A__

Option: 1 — Analogue output 0 - 10VDC



Max.+min. values of analogue output depend on min.+max measurements values under code number 1 + 3

Option: 2 — Analogue output 0/4 - 20 mA DC

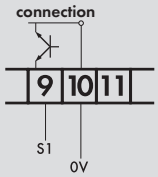


Max.+min. values of analogue output depend on min.+max measurements values under code number 1 + 3

Programming

Code	Display	Description
6	1 _ _	Analogue output DC
		0= 0 - 20mA 1= 4 - 20mA

Option: 7 — 1 Alarm contact open collector



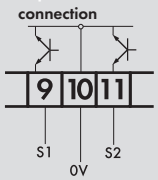
15 Watt max.
max. 30 V (0.5A)

Programming

..EA13, 23,43 ..EA20, 30, 50

Code	Display	Scale	Description	
7	S1		Upper switching theshold	
8	S1		Lower switching threshold	
	_ _ 1		0=inactive	1=active
9	_ 0 _		Operating current	Max-contact
	_ 1 _		Quiescent current	Max-contact
	_ 2 _		Operating current	Min-contact
	_ 3 _		Quiescent current	Min-contact
0	0 _ _		Display normal if S1 ative	
1	1 _ _		Display is flashing if S1 active	

Option: 8 — 2 Alarm contacts open collector



15 Watt max.
max. 30 V (0.5A)

..EA13, 23,43 ..EA20, 30, 50

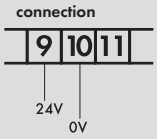
Code	Display	Scale	Description	
7	S1		Upper switching theshold	
8	S1		Lower switching threshold	
	_ _ 1		0=inactive	1=active
9	_ 0 _		Operating current	Max-contact
	_ 1 _		Quiescent current	Max-contact
	_ 2 _		Operating current	Min-contact
	_ 3 _		Quiescent current	Min-contact
0	0 _ _		Display normal if S1 ative	
1	1 _ _		Display is flashing if S1 active	

Programming

..EA13, 23,43 ..EA20, 30, 50

Code	Display	Scale	Description	
A	S2		Upper switching theshold	
b	S2		Lower switching threshold	
	_ _ 1		0=inactive	1=active
C	_ 0 _		Operating current	Max-contact
	_ 1 _		Quiescent current	Max-contact
	_ 2 _		Operating current	Min-contact
	_ 3 _		Quiescent current	Min-contact
0	0 _ _		Display normal if S2 ative	
1	1 _ _		Display is flashing if S2 active	

Option: D — Input for display blank

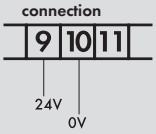


Input:	Active-high, 24V
L-signal:	Display shows present measurement value
H-signal:	Display blank

Option: H

Display-Hold

connection

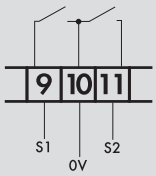


Input:	Active-high, 24V
L-signal:	Display shows present measurement value
H-signal:	Display blank

Option: R

2 Relais contacts

connection



10 Watt max.
max. 200V (0,05A)
max. 0.5A (20V)

..EA13, 23,43 Code	Display	Scale	Description	..EA20, 30, 50
7	S1		Upper switching theshold	
8	S1		Lower switching threshold	
9	_ _ 1		0=inactive	1=active
	_ 0 _		Operating current	Max-contact
	_ 1 _		Quiescent current	Max-contact
	_ 2 _		Operating current	Min-contact
	_ 3 _		Quiescent current	Min-contact
0	0 _ _		Display normal if S1 ative	
1	1 _ _		Display is flashing if S1 active	

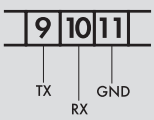
Programming

..EA13, 23,43 Code	Display	Scale	Description	..EA20, 30, 50
A	S2		Upper switching theshold	
b	S2		Lower switching threshold	
C	_ _ 1		0=inactive	1=active
	_ 0 _		Operating current	Max-contact
	_ 1 _		Quiescent current	Max-contact
	_ 2 _		Operating current	Min-contact
	_ 3 _		Quiescent current	Min-contact
0	0 _ _		Display normal if S2 ative	
1	1 _ _		Display is flashing if S2 active	

Option: S

Serial output RS232

connection



Code	Display	Description		
7	_ _ 0	0= 150 Baud	4= 150 Baud	
	_ _ _	1= 300 Baud	5= 4800 Baud	
	_ _ _	2= 600 Baud	6= 9600 Baud	
	_ _ _	3= 1200 Baud	7= 19200 Baud	
	_ 0 _	0= without parity	8 data bits	
	_ _ _	1= party even	7 data bits	
	_ _ _	2= party odd	7 data bits	
	_ _ _	3= party even	8 data bits	
	_ _ _	4= party odd	8 data bits	
8	_ _ _	address of display unit		
	_ 0 0	no address		
	_ _ X	address 10^0		
	_ X _	address 10^1		

Programming

Code	Display	Description
9	_ _ X	Direction of writing 0= left 1= right
	_ 0 _	0= Serial output off
	_ _ _	1= digit sign/ value
	_ _ _	2= STX/ sign/ value/ ETX
	_ _ _	3= STX/ adr./ sign/ value/ ETX
	_ _ _	4= SOH/ adr./ STX/ sign/ value/ ETX
	_ _ _	Transfer instruction
	0 _ _	off
	1 _ _	Transfer after received address
	2 _ _	Transfer after STX/ adr./ ETX received

Option: -M

Min.- Max.- Memory

..EA13, 23, 43 The buttons T1- T3 are inserted through a filter plate. By activating the T1 longer than 5 seconds a reference measurement is effected. If T1 is activated for a duration of fewer than 5 seconds the up to now saved min.-max.-values are deleted. The value of reference measurement is maintained. Afterwards by T2 (max.-value) and T3 (min.-value) the respective extreme value can be recalled with regard to the reference measurement.

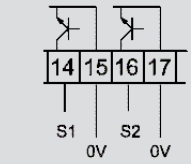
..EA20, 30, 50 The buttons T1- T3 are inserted through a filter plate. By activating the T2 (max.-value) and T3 (min.-value) the respective extreme value is indicated. If T1 is activated the up to now saved min.-max.-values are deleted.

Options: for DBA-EA43 + EA50

Valid for:
DBA-EA43/A__
DBA-EA50/A__

Option: 8 — 2 Alarm contact open collector

connection



15 Watt max.
max. 30V (0.5A)

Code	Display	Scale	Description		Button
7	S1		Upper switching theshold		T3
8	S1		Lower switching threshold		T3
9	_ _ 0		0=inactive		
	_ _ 1		activ (left lower light band)		
	_ _ 2		activ (right upper light band)		T2
	_ 0 _		Operating current	Max-contact	
	_ 1 _		Quiescent current	Max-contact	
	_ 2 _		Operating current	Min-contact	
	_ 3 _		Quiescent current	Min-contact	T3
	0 _ _		Display normal if S1 ative		
	1 _ _		Display is flashing if S1 active		

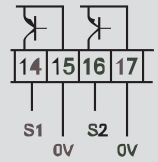
Programming

..EA43 ..EA50

Code	Display	Scale	Description		Button
A	S2		Upper switching theshold		T3
b	S2		Lower switching threshold		T3
C	_ _ 0		0=inactive		
	_ _ 1		activ (left lower light band)		
	_ _ 2		activ (right upper light band)		T2
	_ 0 _		Operating current	Max-contact	
	_ 1 _		Quiescent current	Max-contact	
	_ 2 _		Operating current	Min-contact	
	_ 3 _		Quiescent current	Min-contact	T3
	0 _ _		Display normal if S2 ative		
	1 _ _		Display is flashing if S2 active		

Option: R — 2 Relais contacts

connection



200 Watt max.
max. 250V (0.8A)
max. 4A (50V)

Code	Display	Scale	Description		Button
7	S1		Upper switching theshold		T3
8	S1		Lower switching threshold		T3
9	_ _ 0		0=inactive		
	_ _ 1		activ (left lower light band)		
	_ _ 2		activ (right upper light band)		T2
	_ 0 _		Operating current	Max-contact	
	_ 1 _		Quiescent current	Max-contact	
	_ 2 _		Operating current	Min-contact	
	_ 3 _		Quiescent current	Min-contact	T3
	0 _ _		Display normal if S1 ative		
	1 _ _		Display is flashing if S1 active		

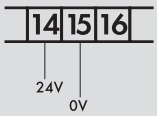
Programming

..EA43 ..EA50

Code	Display	Scale	Description		Button
A	S2		Upper switching theshold		T3
b	S2		Lower switching threshold		T3
C	_ _ 0		0=inactive		
	_ _ 1		activ (left lower light band)		
	_ _ 2		activ (right upper light band)		T2
	_ 0 _		Operating current	Max-contact	
	_ 1 _		Quiescent current	Max-contact	
	_ 2 _		Operating current	Min-contact	
	_ 3 _		Quiescent current	Min-contact	T3
	0 _ _		Display normal if S2 ative		
	1 _ _		Display is flashing if S2 active		

Option: D — Display-Hold

connection



Input:	Active-high, 24V
L-signal:	Display shows present measurement value
H-signal:	Display blank

DA20-NAxx/Xxxx

Digital panel instruments for standard signals, programmable

Digital large panel display for monitoring and control with different interfaces and inputs

DC current/voltage (V/mA)
AC current/voltage
LED-displays red or green
Up to 5-digit displays

DA20 = Digit height 20.0 mm

DA20-NAxx/Axxx
Case 144 x 48mm

DA20-NAxx/Axxx
Case 144 x 72mm

DA20-NAxx/Fxxx
Case 144 x 72mm

DA20-NAxx/Fxxx
Case 144 x 48mm

Technical Data

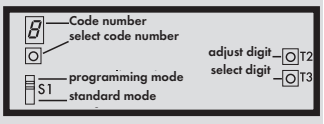
Type	DA20-NAxx/Axxx	DA20-NAxx/Fxxx
Input	DC current/voltage V/mA	DC current/voltaje V/A
Panel cut-out (mm)		
DA20-NAxx/Xxxx	138(+1.0) x 45.0(+0.6) mm	138(+1.0) x 45.0(+0.6) mm
DA20-NAxx/Xxxx-4	138(+1.0) x 68.0(+0.7) mm	138(+1.0) x 68.0(+0.7) mmm
Front frame height (mm)	8.5	8.5
Mounting depth (mm)	115	115
Display/digit height (mm)	20.0	20.0
LED-display colour	Red or green	Red or green
Auxiliary supply		
DA20-NAxx/X1xx	18 - 35 V DC	18 - 35 V DC
DA20-NAxx/X2xx	115/230V AC	115/230V AC
Power consumption	Max. 5 VA	Max. 5 VA
Measuring ranges voltage	2V/10V/40V/200V DC	2V/100V/250V/500V AC
Measuring ranges current	20mA/200mA DC	3A/6A AC
Display max.	Free programmable	Free programmable
Display zero	Free programmable	Free programmable
Conversion rate	Approx. 1 measurement/1sec.	Approx. 1 measurement/1sec.
Measuring principle	Dual-Slope-integration	Dual-Slope-integration, True RMS
Measuring error	+/-0.01% of measuring value +/-1 digit/segment	+/-0.2% of measuring value +/-1 digit/segment
Average value	Adjustable from 1-500 measurem.	Adjustable from 1-500 measur.

Display messages	
EEP	EEprom under programming
----	Overflow (Flashing of display segments in middle)
⊣	Line break indicator (Undercut of measuring value)

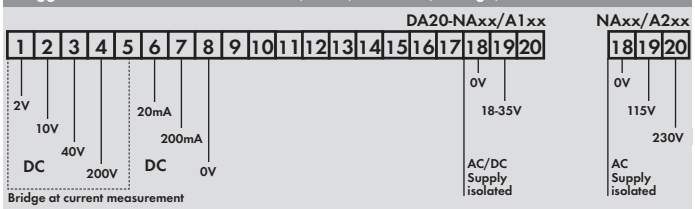
Number of digits	
DA20-NA30/Axxx	888
DA20-NA31/Axxx	± 1888
DA20-NA40/Axxx	8888
DA20-NA41/Axxx	± 18888
DA20-NA50/Axxx	88888
DA20-NA30/Fxxx	888
DA20-NA40/Fxxx	8888

Resolution		
..NA30..	-199	... 999
..NA31..	-1999	...+1999
..NA40	-1999	... 9999
..NA41..	-19999	...+19999
..NA50..	-19999	... 30000

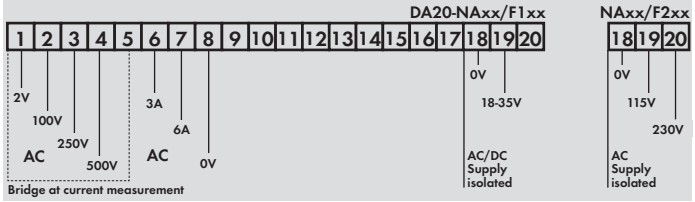
Control elements behind the filter plate



Pluggable screw terminal DA20-NAxx/A (DC current/voltage)



Pluggable screw terminal DA20-NAxx/F (AC current/voltage)



Input resistance	Clamp	Ri
DA20-NAxx/Axx	1	100 kΩ
	2	560 kΩ
	3	2.2 MΩ
	4	12 MΩ
	6	100 Ω
	7	10 Ω

Input resistance	Clamp	Ri
DA20-NAxx/Fxx	1	10 kΩ
	2	470 kΩ
	3	1 MΩ
	4	2.2 MΩ
	6	0.02 Ω
	7	0.01 Ω

Ordering example

DA20-NA...

31 - Figures 3- 1/2-digit
A - DC current/voltage
2 - Ucc. 115/230V AC
G - Display colour green
4 - Case 144 x 72 mm

= DA20–NA31/A20G–4

DA 20 – NA __ / _ _ _ _ – _

DA 20 – NA xx / A _ _ _

DA 20 – NA xx / F _ _ _

Case size:	without indication = 144x48mm	4 = 144x72mm			
LED colour:	R = Red	G = Green			
Option:	See page 2/26				
Ucc.:	1 = 24V DC	2= 115/230V AC			
Interface:	A= DC current/voltage	F = AC current/voltage			
Number of digit:	30 = 3-digit	31 = 3-1/2-digit	40 = 4-digit	41 = 4-1/2-digit	50 = 5-digit
Digit height:	20 = 20.0 mm				

DA20-NAxx/F (AC current/voltage) only available 3 or 4-digits

DA20-NA31/Mxxx

Digital panel instruments for temperature measurement PT100

Digital panels display for monitoring and control

PT100 temperature
3 1/2-digit displays
LED-displays red or green

DA20 = Digit height 20.0 mm

DA20-NAxx/Mxxx
Case 144 x 48mm

DA20-NAxx/Mxxx
Case 144 x 72mm

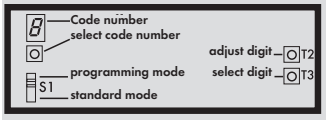
Technical Data

Type	DA20-NA31/Mxxx
Input	**PT100 temperature**
Panel cut-out (mm)	
DA13-NA31/Xxxx	138(+1.0) x 45.0(+0.6) mm
DA13-NA31/Xxxx-4	138(+1.0) x 68.0(+0.7) mm
Front frame height (mm)	8.5
Mounting depth (mm)	115
Display/digit height (mm)	20.0
LED-display colour	Red or green
Auxiliary supply	18 - 35 V DC 115/230V AC
Power consumption	Max. 5 VA
Measuring range PT 100	-100.0 up to 199.9°C -200.0 up to 800.0°C -100.0 up to 199.9°F -200.0 up to 1472°F
Conversion rate	Approx. 1 measurement/1sec.
Measuring principle	Dual-Slope-integration
Measuring error	+/-0.01% of measuring value +/-1 digit/segment
Resolution	+/- 1K(PT100 200°C:+/- 0.1K)

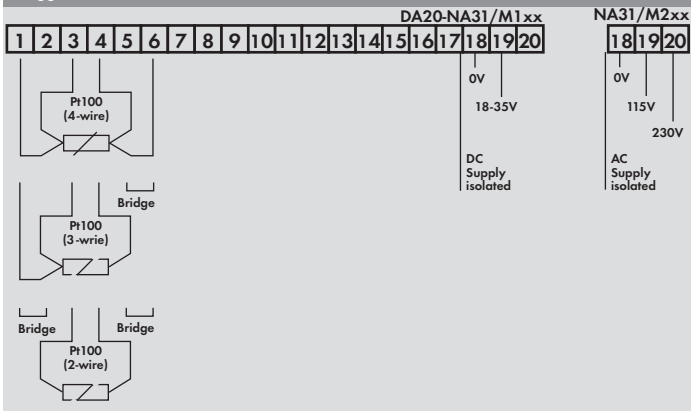
Display messages

EEP	EEprom under programming
----	Overflow (Flashing of display segments in middle)
⊣⊢	Line break indicator (Undercut of measuring value)

Operating elements behind the filter plate



Pluggable screw terminal



Ordering example

DA20-NA31/M...

31 - Figures 3- 1/2-digit
M- PT100
2 - Ucc. 115/230V AC
R - Display colour green

= DA20–NA31/M20R

DA 20 – NA 31 / M _ _ _ – _

Case size:	without indication = 144x48mm		4 = 144x72mm
LED colour:	R = Red	G = Green	
Option:	See page 2/26		
Ucc.:	1 = 24V DC	2= 115/230V AC	
Interface:	M = PT100 temperature		
Number of digit:	31 = 3 1/2-digit		
Digit height:	20 = 20.0 mm		

DA 20 – NA 31 / M _ _ _

DA13-NA31/Mxxx: Display only available 3 1/2-digit

DA25-NAxx/Xxxx

Digital panels for norm signals, programmable

Digital large panel displays for monitoring and control with different interfaces and inputs

DC current/voltage (V/mA)
AC current/voltage
LED-displays red or green
Up to 4-digit displays

DA25 = Digit height 25.0 mm

DA25-NAxx/Axxx
Case 144 x 48mm

DA25-NAxx/Axxx
Case 144 x 72mm

DA25-NAxx/Fxxx
Case 144 x 48mm

DA25-NAxx/Fxxx
Case 144 x 72mm

Technical Data

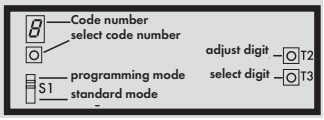
Type	DA25-NAxx/Axxx	DA25-NAxx/Fxxx
Input	DC current/voltage V/mA	AC current/voltaje V/A
Panel cut-out (mm)		
DA25-NAxx/Xxxx	138(+1.0) x 45.0(+0.6) mm	138(+1.0) x 45.0(+0.6) mm
DA25-NAxx/Xxxx-4	138(+1.0) x 68.0(+0.7) mm	138(+1.0) x 68.0(+0.7) mm
Front frame height (mm)	8.5	8.5
Mounting depth (mm)	115	115
Display/digit height (mm)	25.0	25.0
LED-display colour	Red or green	Red or green
Auxiliary supply		
DA25-NAxx/X1xx	18 - 35 V DC	18 - 35 V DC
DA25-NAxx/X2xx	115/230V AC	115/230V AC
Power consumption	Max. 5 VA	Max.5 VA
Measuring ranges voltage	2V/10V/40V/200V DC	2V/100V/250V/500V AC
Measuring ranges current	20mA/200mA DC	3A/6A AC
Display max.	Free programmable	Free programmable
Display zero	Free programmable	Free programmable
Conversion rate	Approx. 1 measurement/1sec.	Approx. 1 measurement/1sec.
Measuring principle	Dual-Slope-integration	Dual-Slope-integration
Measuring error	+/-0.01% of measuring value +/-1 digit/segment	+/-0.2% of measuring value +/-1 digit/segment
Average value	Adjustable from 1-500 measurem.	Adjustable from 1-500 measur.

Display messages	
EEP	EEprom under programming
----	Overflow (Flashing of display segments in middle)
⫩	Line break indicator (Undercut of measuring value)

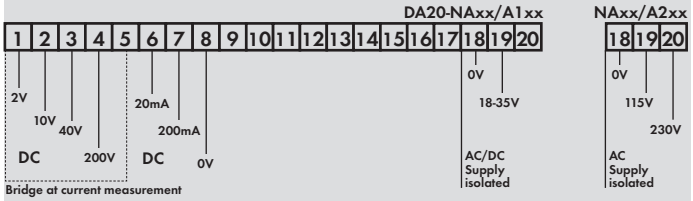
Number of digit	
DA25-NA30/Axxx/Fxxx	888
DA25-NA31/Axxx	± 1888
DA25-NA40/Axxx/Fxxx	8888

Resolution		
..NA30/Axxx	-199	... 999
..NA31/Axxx	-1999	...+1999
..NA40/Axxx	-1999	... 9999
..NA30/Fxxx	0	... 999
..NA40/Fxxx	0	... 9999

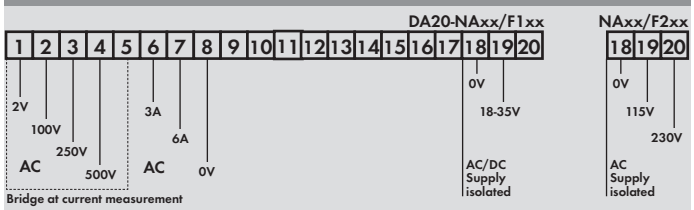
Control elements behind the filter plate



Pluggable screw terminal DA25-NAxx/A (DC current/voltage)



Pluggable screw terminal DA25-NAxx/F (AC current/voltage)



Input resistance	Clamp	Ri
DA25-NAxx/Axx	1	100 kΩ
	2	560 kΩ
	3	2.2 MΩ
	4	12 MΩ
	6	100 Ω
	7	10 Ω

Input resistance	Clamp	Ri
DA25-NAxx/Fxx	1	10 kΩ
	2	470 kΩ
	3	1 MΩ
	4	2.2 MΩ
	6	0.02 Ω
	7	0.01 Ω

Ordering example

DA25-NA...

40 - Figures4-digit
F - DC current/voltage
1 - Ucc. 24 V DC
G - Display colour green
4 - Case 144 x 72 mm

= DA20–NA40/F10G–4

DA 25 – NA__ / ____ - _

Case size:	without indication = 144x48mm		4 = 144x72mm
LED colour:	R = Red	G = Green	
Option:	See page 2/26		
Ucc.:	1 = 24V DC	2 = 115/230V AC	
Interface:	A = DC current/voltage	F = AC current/voltage	
Number of digit:	30 = 3-digit	31 = 3-1/2-digit	40 = 4-digit
Digit height:	25 = 25.0 mm		

DA 20 – NA xx / A___

DA 20 – NA xx / F___

DA25-NAxx/F (AC current/voltage) only available 3 or 4-digits

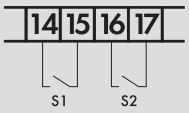
Options: for DA20-NA
DA25-NA
DA40-NA

Valid for:

DA20-NAxx/Axx
DA20-NAxx/Fxx
DA25-NAxx/Axx
DA25-NAxx/Fxx
DA40-NAxx/Axx
DA40-NAxx/Fxx

Option: R — 2 Relais contacts

connection



200 Watt max.
max. 250V (0.8A)
max. 4A (50V)

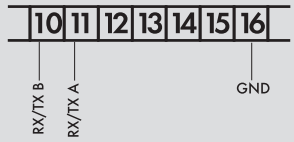
Code	Display	Description	
7	S1	Upper switching theshold	
8	S1	Lower switching threshold	
9	_ _ 1	0=inactive	1=active
	_ 0 _	Operating current	Max-contact
	_ 1 _	Quiescent current	Max-contact
	_ 2 _	Operating current	Min-contact
	_ 3 _	Quiescent current	Min-contact
0	0 _ _	Display normal if S1 ative	
1	1 _ _	Display is flashing if S1 active	

Programming

Code	Display	Description	
A	S2	Upper switching theshold	
b	S2	Lower switching threshold	
C	_ _ 1	0=inactive	1=active
	_ 0 _	Operating current	Max-contact
	_ 1 _	Quiescent current	Max-contact
	_ 2 _	Operating current	Min-contact
	_ 3 _	Quiescent current	Min-contact
0	0 _ _	Display normal if S2 ative	
1	1 _ _	Display is flashing if S2 active	

Option: V — Serial output RS485

connection



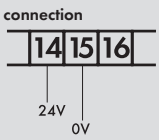
Code	Display	Description	
7	_ _ 0	0= 150 Baud	4= 150 Baud
	_ _ _	1= 300 Baud	5= 4800 Baud
	_ _ _	2= 600 Baud	6= 9600 Baud
	_ _ _	3= 1200 Baud	7= 19200 Baud
	_ 0 _	0= without parity	8 data bits
	_ _ _	1= party even	7 data bits
	_ _ _	2= party odd	7 data bits
	_ _ _	3= party even	8 data bits
	_ _ _	4= party odd	8 data bits
8	_ _ _	address of display unit	
	_ 0 0	no address	
	_ _ X	address 10^0	
	_ X _	address 10^1	

Programming

Code	Display	Description		
9	_ _ X	Direction of writing	0= left	1= right
	_ 0 _	0= Serial output off		
	_ _ _	1= digit sign/ value		
	_ _ _	2= STX/ sign/ value/ ETX		
	_ _ _	3= STX/ adr./ sign/ value/ ETX		
	_ _ _	4= SOH/ adr./ STX/ sign/ value/ ETX		
	_ _ _	Transfer instruction		
	0 _ _	off		
	1 _ _	Transfer after received address		
	2 _ _	Transfer after STX/ adr./ ETX received		

Option: D — Input for display blank

connection



Input:	Active-high, 24V
L-signal:	Display shows measurement value
H-signal:	Display blank

Large panels with digit height up to 300 mm on request.

M1-7S...

Programmable Digital Panel Instrument M1-Current Loop, 48 x 24 mm

Red display of -1999 up to 9999
Minimal installation depth: 27 mm without plug-in terminal
Adjustment via factory default or directly on the sensor signal
Min-/max-value recording
Display flashing at threshold exceedance / undercut
Tara-function
Protection class IP65
10 adjustable setpoints
Programming interlock via access code
Plug-in terminal

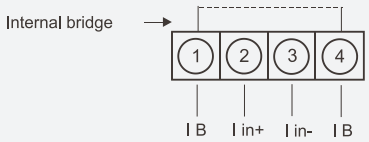
M1-7S
Case 48 x 24 mm

EMV	EN 61326
CE-sign	Conformity to 2004/108/EG
Safety standard	EN 61010

General Technical Data, Type M1-7S

Case	B48 x H24 x D27 mm
Panel cut-out	$45.0^{+0.6}$ x $22.2^{+0.3}$ mm
Fixing	Screw elements for insulation thickness up to 3 mm
Case material	PC Polycarbonate, black
Protection class	Front IP65 standard Rear side IP00
Weight	Approx. 50 g
Connection	Plug terminal; line cross section up to 2.5mm^2
Digit height/Colour	10mm/red
Display range	-1999 to 9999
Setpoints	Optical display flashing
Display/measuring time	0.1 to 0.0 seconds
Input	Min. 3.5 ...max. 21mA (4-20mA)
Measuring error	0.3%v. of measuring range, ±1 digit
Fail of voltage	Approx. 5.1 V
Data life	≥ 100 years; Flash-memory (independent of supply)
Working/Storing temperature	0 to 60°C (-20 to +80°C)
Climatic density	Relative humidity 0-80% on years average without dew

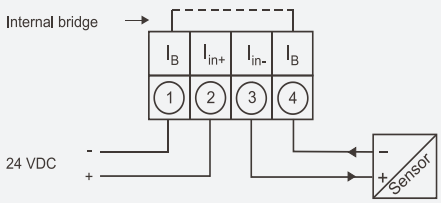
Current loop device



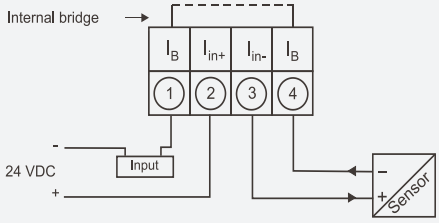
Supply	Order number (without options)
24 V DC	**M1-7VR4A.0001.570BD**

Connection pictures

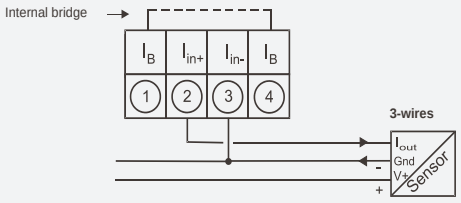
Current loop device in combination with a transmitter in current loop technique:

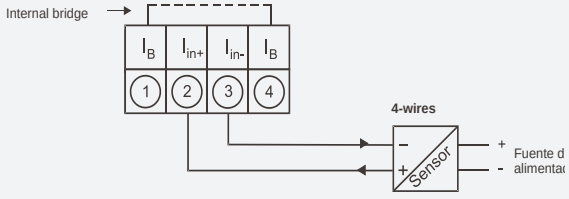


Current loop device in combination with another measuringout with low burden:

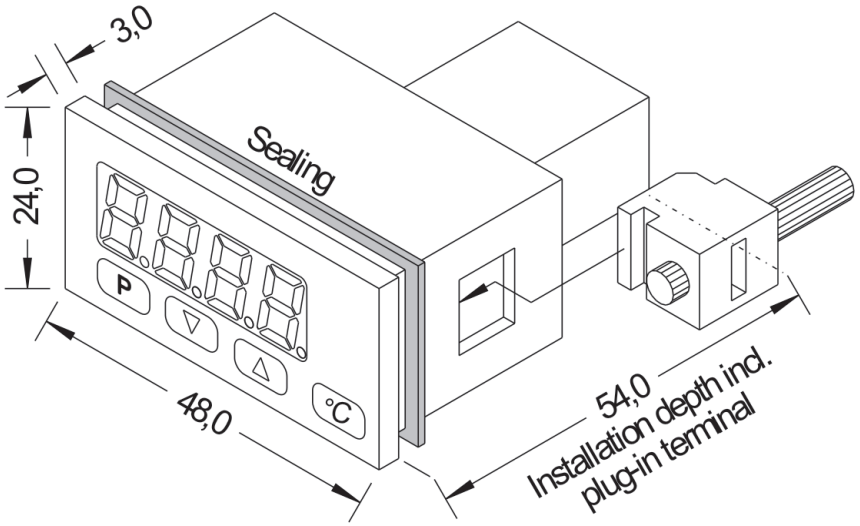


Current loop device with 3/-4 wire sensor:





Dimensions



Ordering code M1-Current Loop 48 x 24 mm

M	1-	7	S	R	4	A.	0	0	0	1.	K	7	0	B	D

Basic type M-Line

Installation depth 1
54mm incl. plug-in terminal

Case size 7
48 x 24 x 27 mm
without plug-in terminal

Display type S
Current loop

Display colour R
Red

Number of digits 4
4-digit

Digit height A
10 mm

Interface 0
without

Dimension D
without

Version B
B

Setpoints 0
without

Protection 7
IP65/plug-in terminal

Supply voltage K
via current

Measuring input 1
Direct current 4-20 mA

Analog output 0
without

Sensor supply 0
without

M1-7V.../ M1-7T...

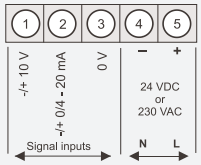
Programmable Digital Panel Instrument 48 x 24 mm

Red display of -1999 up to 9999 (optional green, orange or blue displays)
Minimal installation depth: 27 mm without plug-in terminal
Adjustment via factory default or directly on the sensor signal
Min-/max-value recording
10 adjustable setpoints
Display flashing at threshold exceedance / undershooting
Tara-function
Programming interlock via access code
Protection class IP65
Plug-in terminal

M1-7V.../ M1-7T
Case 48 x 24 mm

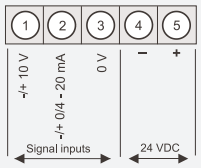
EMV	EN 61326
CE-Sign	Conformity to 2004/108/EG
Safety	EN 61010

Direct current, direct voltage



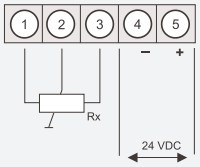
Supply	Order number (without options)
24V DC (galvanically insulated)	**M1-7VR4A.0001.770BD**

Direct voltage (Shunt)



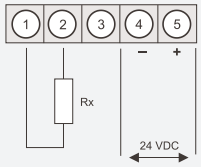
Supply	Order number (without options)
24V DC (galvanically insulated)	**M1-7VR4A.0002.770BD**

Potentionmeter 0-100 % (>1 kΩ ... <1000 kΩ)



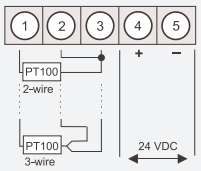
Supply	Order number (without options)
24V DC (galvanically insulated)	**M1-7VR4A.0005.770BD**

Resistance (1kΩ, 10kΩ, 100kΩ or 1000kΩ)



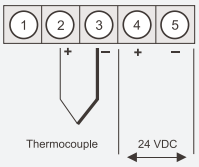
Supply		Order number (without options)
24V DC	(Measuring range 1 kΩ)	**M1-7VR4A.0806.770BD**
24V DC	(Measuring range 10 kΩ)	**M1-7VR4A.0506.770BD**
24V DC	(Measuring range 100 kΩ)	**M1-7VR4A.0606.770BD**
24V DC	(Measuring range 1MΩ)	**M1-7VR4A.0706.770BD**

PT100 (2-/3-wire) -200°C...850°C



Supply	Order number (without options)
24V DC	**M1-7TR4A.030C.770BD**

Thermocouple Type B, E, J, K, L, N, R, S, T

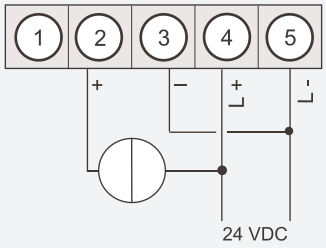


Supply	Order number (without options)
24V DC	**M1-7TR4A.040X.770BD**

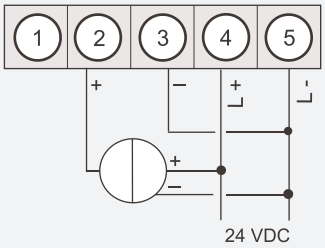
OPTIONS	Availability
Blue LED	
Orange LED	
Green LED	

Connection examples

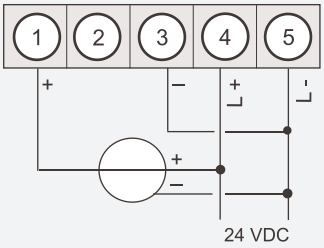
M1 in combination with a 2-wire-sensor 4-20 mA



M1 in combination with a 3-wire-sensor 0/4-20 mA



M1 in combination with a 3-wire-sensor 0-10 V



Ordering code M1-Standard 48 x 24 mm

M	1-	7	V	R	4	A.	0	0	0	1.	7	7	0	B	D

Basic type M-Line

Installation depth
54mm incl. plug-in terminal — 1

Case size
48 x 24 x 27 mm
BxHxTl — 7

Display type
Temperature — T
V, A, Ohm — V

Display colour
Blue — B
Green — G
Red — R
Orange — Y

Number of digits
4-digit — 4

Digit height
10 mm — A

Digital input
without — 0

Dimension
D — without4-digit

Version
B — B

Setpoints
0 — No setpoints

Protection
7 — IP65/plug in terminal

Supply voltage
7 — 24V DC galv.insulated

Measuring input
1 — Direct current, direct voltage
2 — Shunt
5 — Potentionmeter
6 — Resistance
C — PT100/2-3wire
X — Thermocouple
Type B, E, J, K, L, N, R, S, T

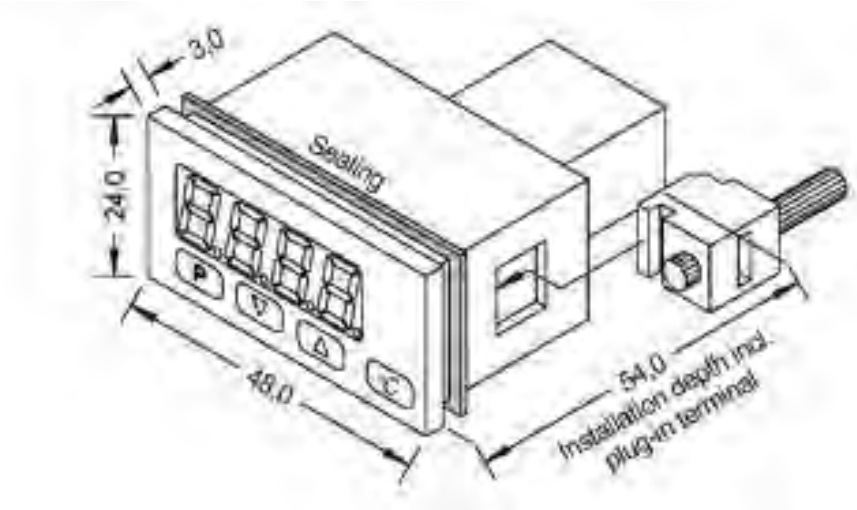
Analog output
0 — without

Sensor supply
0 — without

Temperature device
3 — PT100-/2-3wire
4 — Thermocouple

Resistance
8 — 1 kΩ
5 — 10 kΩ
6 — 100 Ω
7 — 1 MΩ

Dimensions



Technical Data

Dimensions			
	Case	B48 x H24 x D27 mm, (including plug-in terminal D=54 mm)	
	Panel cut-out	45.0 $^{+0,8}$ x 22.2 $^{+0,6}$ mm	
	Fixing	Screw elements for insulation thickness up to 3 mm	
	Case material	PC Polycarbonate, black	
	Sealing material	EPDM, 65 Shore, black	
	Protection class	At the front IP65 Standard Backside IP00	
	Weight	Approx. 20 g	
	Connection	Plug-in terminal; line cross-section up to 2.5 mm²	
Display			
	Display	4-digit	
	Digit height	10 mm	
	Segment colour	Red (standard), optional available in green, blue and orange	
	Display range	-1999 to 9999	
	Setpoints	Optical display flashing	
	Overflow/Underflow	Horizontal bars at the top/ horizontal baras at the bottom	
	Display time/Measuring time	0.1 to 10.0 seconds	
Measuring input			
M1-7VR4B.0001... Direct current/ Direct voltage	Span Measuring range Input resistance Measuring error Temperature drift Measuring time/principle Resolution	-12 ...12 V 0-10 VDC Ri at ~200 kΩ 0.1% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx. 18Bit at 1s measuring time	/-22 ...24 mA /0/4-20 mA Ri at ~100 Ω /0.1% of measuring range, +/- 1 Digit
Measuring input			
M1-7VR4B.0002... Shunt	Span Measuring range Input resistance Measuring error Temperature drift Measuring time/principle Resolution	-5 ...80 mV 0 ...60 mV Ri at ~12 kΩ 0.1% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx. 18Bit at 1s measuring time	/-10 ...180 mV /0 ...150 mV Ri at ~30 kΩ /0.1% of measuring range, +/- 1 Digit
Measuring input			
M1-7VR4B.0005... Potentionmeter	Span Measuring range Measuring error Temperature drift Measuring time/principle Resolution	>1 kΩ ...1000 kΩ 0-100% 0.1% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx. 18Bit at 1s measuring time	
Measuring input			
M1-7VR4B.0x06... Resistance	Span Measuring range Measuring error Temperature drift Measuring time/principle Resolution	0...1,1 kΩ, 0...11 kΩ , 0...110 kΩ, 0...1100 kΩ 0...1kΩ, 0...10 kΩ, 0...100 kΩ, 0...1000 kΩ 0.5% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx. 18Bit at 1s measuring time	
Measuring input			
M1-7TR4B.030C... PT100	Measuring range Measuring error Temperature drift Measuring time/principle Resolution	-200 ...850°C/ -328 ...1562°F 0.1% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx.0.1°C or 0.1°F	
Measuring input			
M1-7TR4B.040X... Thermocouple	Measuring range Measuring error Temperature drift Measuring time/principle Resolution Characteristic curve error Reference junction	Type L -200...900°C Type J -210...1200°C Type K -270...1372°C 2K, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion 0.1°C > +/- 1 kΩ Semiconductor sensor	Type B 80...1820°C Type S -50...1768°C Type N -270...1300°C
Power pack			
	Supply	24 VDC +/- 10%, galvanic insulated (max.1 VA)	
Memory			
	EEPROM Data life	≥ 100 years	
Ambient conditions			
	Working temperature Storing temperature Climatic density	0 to +60°C -20 to +80 Relative humidity 0-85% on years average without dew	

M1-6S...

Programmable Digital Panel Instrument M1-Current Loop, 72 x 36 mm

- Red display of -1999 up to 9999
- Minimal installation depth: 25 mm without plug-in terminal
- Min-/max-value recording
- Adjustment via factory default or directly on the sensor signal
- Display flashing at threshold exceedance/ undershooting
- Tara-/ offset value calibration
- 10 adjustable setpoints
- Programming interlock via access code
- Protection class IP65 at the front
- Plug-in terminal

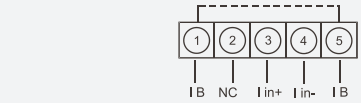
M1-S
Case 72 x 36mm

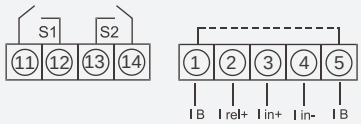
EMV	EN 61326
CE-sign	Conformity to 2004/108/EG
Safety standard	EN 61010

General Technical Data, Type M1-S

Case	B72 x H36 x D26 mm (incl. plug-interminal D=38mm)
Panel cut-out	$68.0^{+0.7}$ x $33.0^{+0.6}$mm
Fixing	Screw elements for insulation thickness up to 3 mm
Case material	PC, Polycarbonate, black
Protection class	Front IP65 standard Rear side IP00
Weight	Approx. 100 g
Connection	Plug terminal; line cross section up to $2.5mm^2$
Digit height/Segment Colour	14mm/ red
Display range	-1999 to 9999
Setpoints	Optical display flashing
Display/measuring time	0.1 to 0.0 seconds
Input	Min. 3.5 ...max. 21mA (4-20mA)
Measuring error	0.3%v. of measuring range, ±1 digit
Fail of voltage	Approx. 5.1 V without switching outputs Approx. 8.0 V with switching outputs
Data life	≥ 100 years; Flash-memory (independent of supply)
Working/Storing temperature	0 to 60°C/ -20 to +80°C
Climatic density	Relative humidity 0-80% on years average without dew

Current loop device





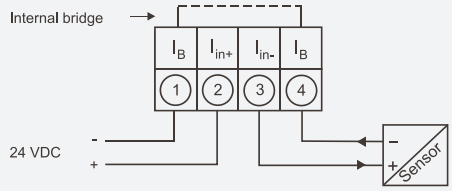
Order number (without options)

M1-6SR4B.0001.K70AD

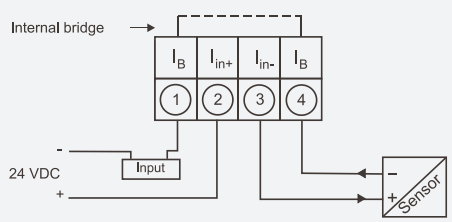
M1-6SR4B.0001.K72AD

Connection pictures

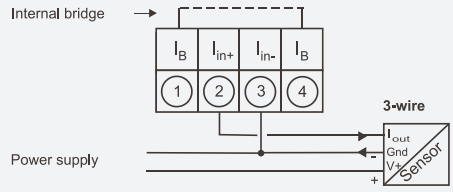
Current loop device in combination with a transmitter in current loop technique:

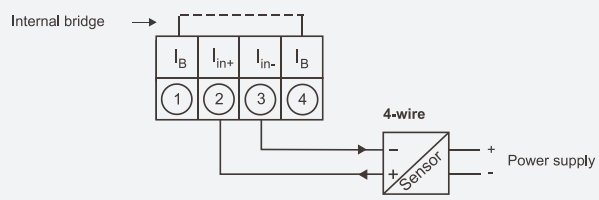


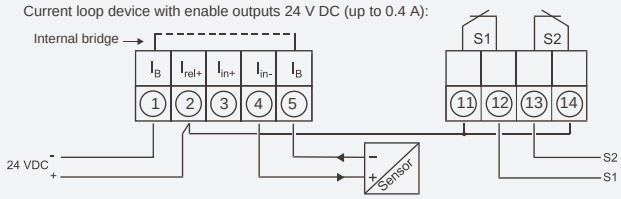
Current loop device in combination with another measuringout with low burden:



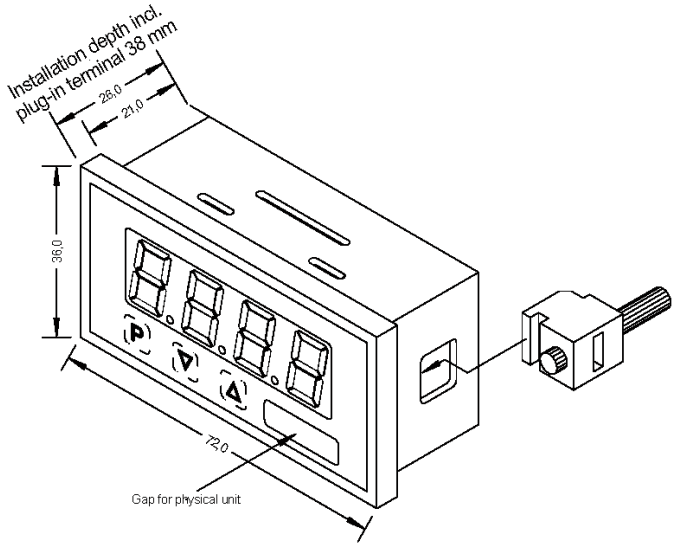
Current loop device in combination with a 3-/4-wire sensor:







Dimensions



Ordering code M1-Current Loop 72 x 36 mm

M 1- 6 S R 4 B. 0 0 0 1. K 7 0 A D

Basic type M-Line

Installation depth
37mm incl. plug-in terminal — 1

Case size
72 x 36 x 2 mm — 6

Display type
Current loop — S

Display colour
Red — R

Number of digits
4-digit — 4

Digit height
14 mm — B

Interface
without — 0

Dimension
physical unit (free choice) — D

Version
A — A

Setpoints
0 without
2 PhotoMOS-outputs

Protection
1 without keypad, operation on the back
7 IP65/plug terminal

Supply voltage
via current — K

Measuring input
Direct current 4-20 mA — 1

Analog output
without — 0

Sensor supply
without — 0

M1-6V.../ M1-6T...

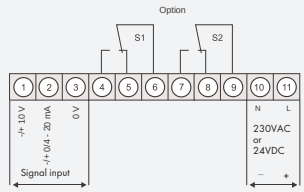
Programmable Digital Panel Instrument 72 X 36 mm

- Red display of -1999 up to 9999 (optional green, orange or blue displays)
- Mimimal installation depth: 97 mm without plug-in terminal
- Min-/max-value recording
- 10 adjustable setpoints
- Display flashing at threshold exceedance / undershooting
- Tara-function
- Adjustment via factory default or directly on the sensor signal
- Programming interlock via access code
- Protection class IP65
- Plug-in terminal

M1-6V.../ M1-6T
Case 72 x 36 mm

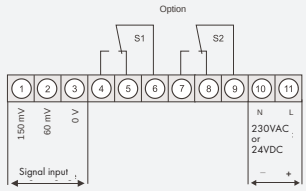
EMV	EN 61326
CE-Sign	Conformity to 2004/108/EG
Safety	EN 61010

Direct current, direct voltage



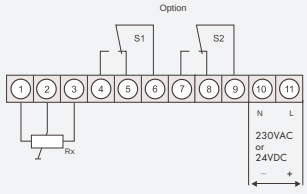
Supply	Order number (without options)
230V AC	**M1-6VR4B.0001.570AD**
24V DC	**M1-6VR4B.0001.770AD**

Direct voltage (Shunt)



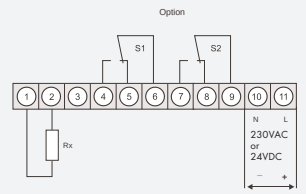
Supply	Order number (without options)
230V AC	**M1-6VR4B.0002.570AD**
24V DC	**M1-6VR4B.0002.770AD**

Potentionmeter 0-100 % (>1 kΩ... <1000 kΩ)



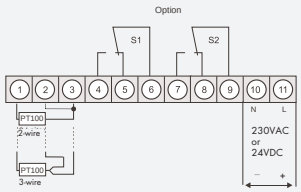
Supply	Order number (without options)
230V AC	**M1-6VR4B.0005.570AD**
24V DC	**M1-6VR4B.0005.770AD**

Resistance (1kΩ, 10kΩ, 100kΩ or 1000kΩ)



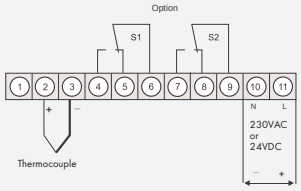
Supply		Order number (without options)
230V AC	(Measuring range 1 kΩ	**M1-6VR4B.0806.570AD**
24 V DC	(Measuring range 1 kΩ)	**M1-6VR4B.0806.770AD**
230V AC	(Measuring range 10 kΩ)	**M1-6VR4B.0506.570AD**
24 V DC	(Measuring range 10 kΩ)	**M1-6VR4B.0506.770AD**
230V AC	(Measuring range 100 kΩ)	**M1-6VR4B.0606.570AD**
24 V AC	(Measuring range 100 kΩ)	**M1-6VR4B.0606.770AD**
230V AC	(Measuring range 1000 kΩ)	**M1-6VR4B.0706.570AD**
24 V DC	(Measuring range 1000 MΩ)	**M1-6VR4B.0706.770AD**

PT100 (2-/3-wire) -200°C...850°C



Supply	Order number (without options)
230V AC	**M1-6TR4B.030C.570AD**
24V DC	**M1-6TR4B.030C.770AD**

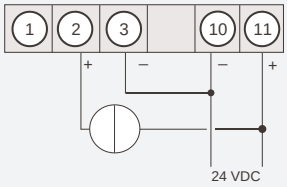
Thermocouple Type B, E, J, K, L, N, R, S, T



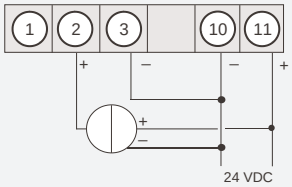
Supply	Order number (without options)
230V AC	**M1-6TR4B.040X1.570AD**
24V DC	**M1-6TR4B.040X1.770AD**

Connection examples

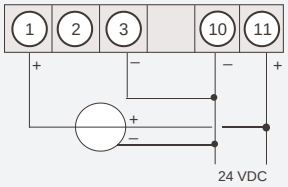
M1 in combination with a 2-wire sensor 4-20 mA



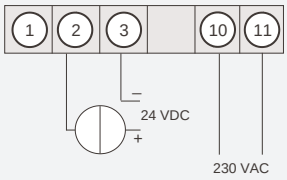
M1 in combination with a 3-wire sensor 0/4-20 mA



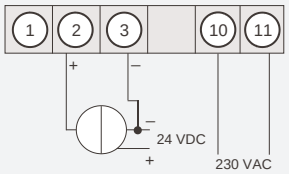
M1 in combination with a 3-wire sensor 0-10 V



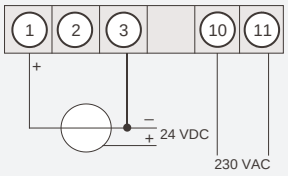
2-wire sensor 4-20 mA



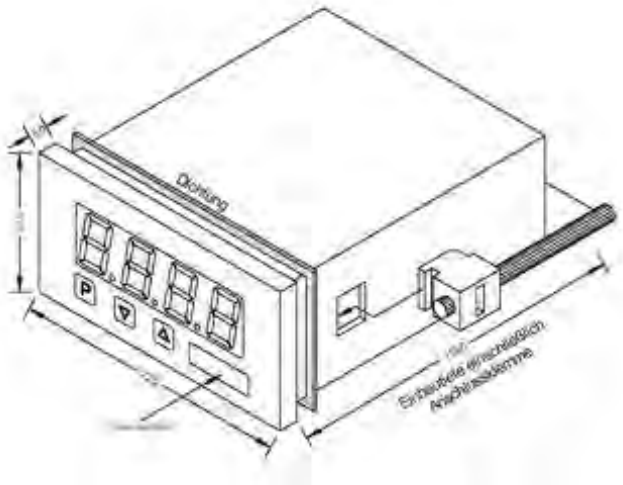
3-wire sensor 0/4-20 mA



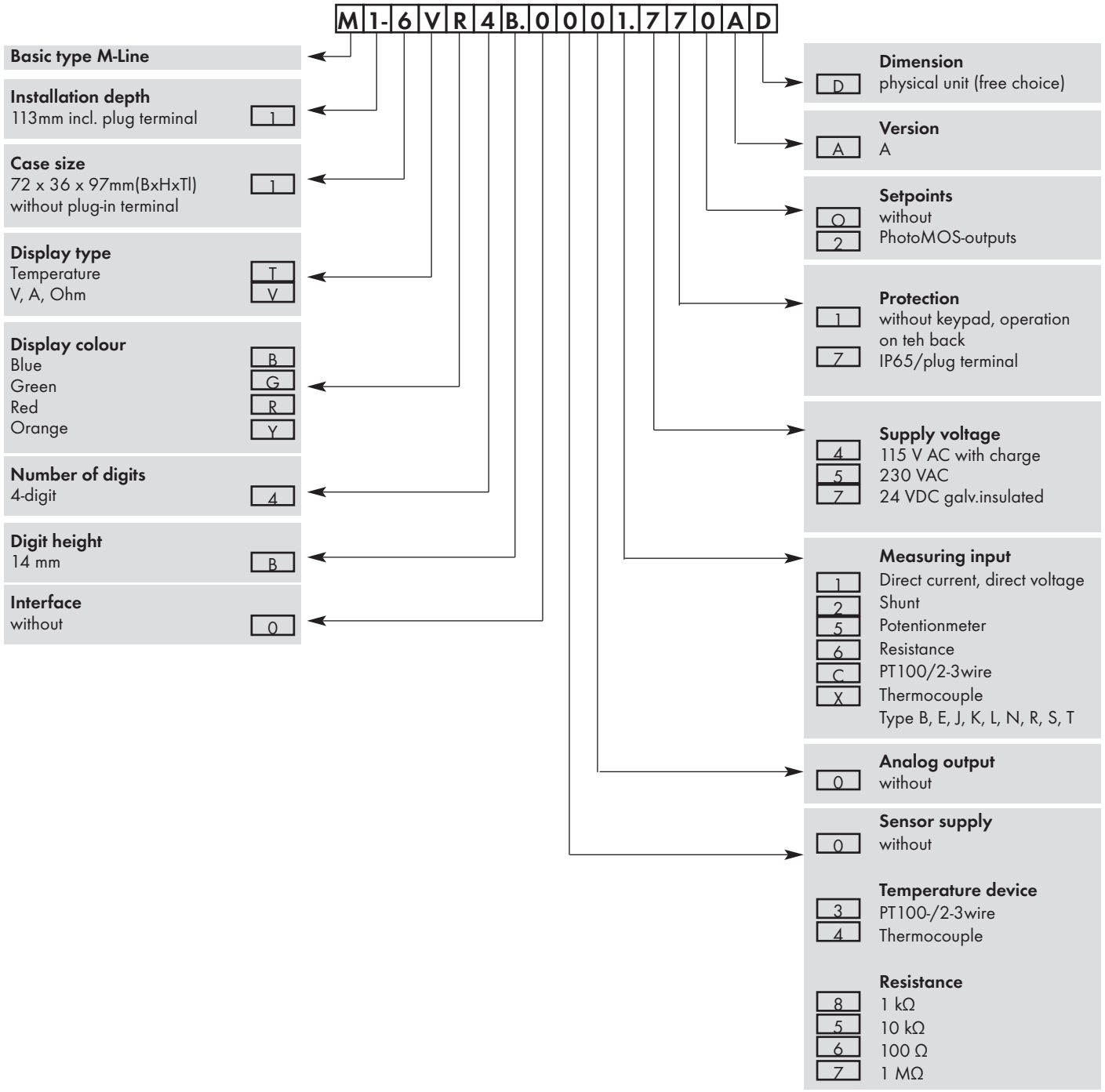
3-wire sensor 0-10 V



Dimensions



Ordering code M1-Standard 72 X 36 mm



OPTIONS	Availability
Blue LED	
Orange LED	
Green LED	

Technical Data

Dimensions			
	Case	B72 x H36 x D97 mm, (including plug-in terminal D=113 mm)	
	Panel cut-out	68.0 $^{+0.7}$ x 33.0 $^{+0.6}$ mm	
	Fixing	Screw elements for insulation thickness up to 3 mm	
	Case material	PC Polycarbonate, black	
	Sealing material	EPDM, 65 Shore, black	
	Protection class	At the front IP65 Standard	
		Backside IP00	
	Weight	Approx. 200 g	
	Connection	Plug-in terminal; line cross-section up to 2.5 mm^2	
Display			
	Display	4-digit	
	Digit height	14 mm	
	Segment colour	Red (standard), optional available in green, blue and orange	
	Display range	-1999 to 9999	
	Setpoints	Optical display flashing	
	Overflow/Underflow	Horizontal bars at the top/ horizontal baras at the bottom	
	Display time/Measuring time	0.1 to 10.0 seconds	
Measuring input			
M1-6VR4B.0001...	Span	-12 ...12 V	/-22 ...24 mA
Direct current/	Measuring range	0-10 VDC	/0/4-20 mA
Direct voltage	Input resistance	Ri with ~200 kΩ	Ri with ~100 Ω
	Measuring error	0.1% of measuring range, +/- 1 Digit	/0.1% of measuring range, +/- 1 Digit
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx. 18Bit at 1s measuring time	
Measuring input			
M1-6VR4B.0002...	Span	-5 ...80 mV	/-10 ...180 mV
Shunt	Measuring range	0 ...60 mV	/0 ...150 mV
	Input resistance	Ri at ~12 kΩ	Ri at ~30 kΩ
	Measuring error	0.2% of measuring range, +/- 1 Digit	/0.2% of measuring range, +/- 1 Digit
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx. 18Bit at 1s measuring time	
Measuring input			
M1-6VR4B.0005...	Span	>1 kΩ ...1000 kΩ	
Potentionmeter	Measuring range	0-100%	
	Measuring error	0.5% of measuring range, +/- 1 Digit	
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx. 18Bit at 1s measuring time	
Measuring input			
M1-6VR4B.0x06...	Span	0...1,1 kΩ, 0...11 kΩ , 0...110 kΩ, 0...1100 kΩ	
Resistance	Measuring range	0...1kΩ , 0...10 kΩ, 0...100 kΩ, 0...1000 kΩ	
	Measuring error	0.1% of measuring range, +/- 1 Digit	
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx. 18Bit at 1s measuring time	
Measuring input			
M1-6TR4B.030C...	Measuring range	-200 ...850°C/ -328 ...1562°F	
PT100	Measuring error	0.1% of measuring range, +/- 1 Digit	
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx.0.1°C or 0.1°F	
Measuring input			
M1-6VR4B.040X...	Measuring range	Type L -200...900°C / Type B 80...1820°C / Type E -270... 1000°C	
Thermocouple		Type J -210...1200°C / Type S -50...1768°C / Type T -270...400°C	
		Type K -270...1372°C / Type N -270...1300°C / Type R -50...1768°C	
	Measuring error	2K, +/- 1 Digit	
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	0.1°C	
	Characteristic curve error	< +/- 1 kΩ	
	Reference junction	Thermistor	
Power pack			
	Supply	230 VAC +/- 10% (max. 6VA)	
		24 VDC +/- 10%, galvanic insulated (max.1 VA)	
Memory			
	EEPROM		
	Data life	≥ 100 years	
Ambient conditions			
	Working temperature	0 to +60°C	
	Storing temperature	-20 to +80	
	Climatic density	Relative humidity 0-85% on years average without dew	

M1-3S...

Programmable Digital Panel Instrument M1-Current Loop, 96 x 24 mm

- Red display of -1999 up to 9999
- Minimal installation depth: 37 mm without plug terminal
- Min-/max-value recording
- Adjustment via factory default or directly on the sensor signal
- Display flashing at threshold exceedance / undershooting
- Tara- / offset value calibration
- 10 adjustable setpoints
- Programming interlock via access code
- Protection class IP65
- Plug terminal

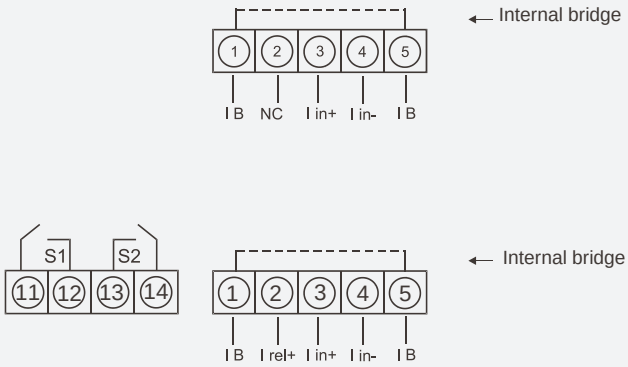
M1-3S
Case 96 x 24 mm

EMV	EN 61326
CE-sign	Conformity to 2004/108/EG
Safety standard	EN 61010

General Technical Data, Type M1-3S

Case	B96 x H24 x D37 mm, (incl. Plug terminal D = 63 mm)
Panel cut-out	92.0 $^{+0.8}$ x 22.2 $^{+0..3}$ mm
Fixing	Screw elements for insulation thickness up to 3 mm
Case material	PC, black colour, Polycarbonate
Protection class	Front IP65 standard Rearside IP00
Weight	Approx. 100 g
Connection	Plug terminal; line cross section up to 2.5mm^2
Digit height/ Segment Colour	14mm/red
Display range	-1999 to 9999
Switchpoint	Optical display flashing
Display/measuring time	0.1 to 0.0 seconds
Input	Min. 3.5 ...max. 21mA (4-20mA)
Measuring error	0.3%v. of measuring range, +- 1 digit
Fail of voltage	Approx. 5.1 V without switching outputs Approx. 8.0 V with swithcing outputs
Setpoints	Potentialfree PhotoMOS-outputs Max. switching voltage 30 VDC/AC Max. steady current 0,4 A Electric strength AC: 400 V permanent, 1800 V for 1 minute
Data life	> 100 years Flash-memory (independent of supply)
Working/Storing temperature	0 to 60°C (-20 to +80°C)
Climatic density	Relative humidity 0-80% on years average without dew

Current loop device

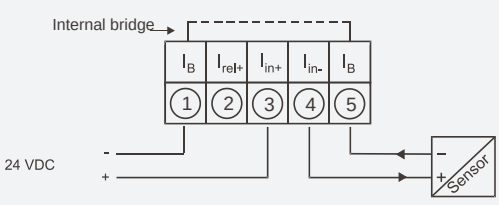


Outputs; at interfere with switching outputs using measuring input Irel., please.

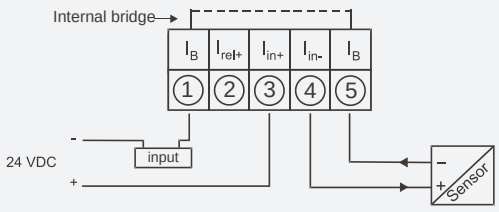
Order number (without options)
M1-3SR4B.0001.K70AD
M1-3SR4B.0001.K72AD

Connection pictures

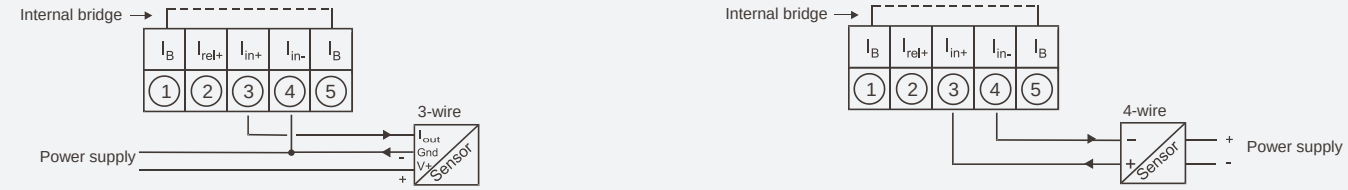
Current loop display in combination with a transmitter in current loop technique:



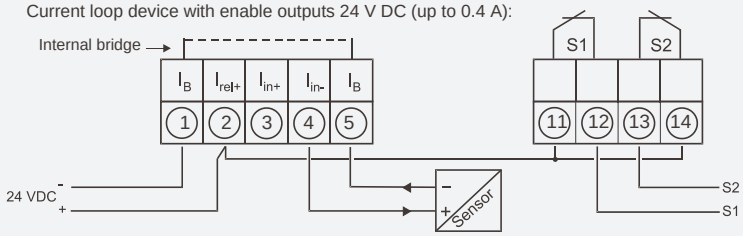
Current loop display in combination with another measuringout with low burden:



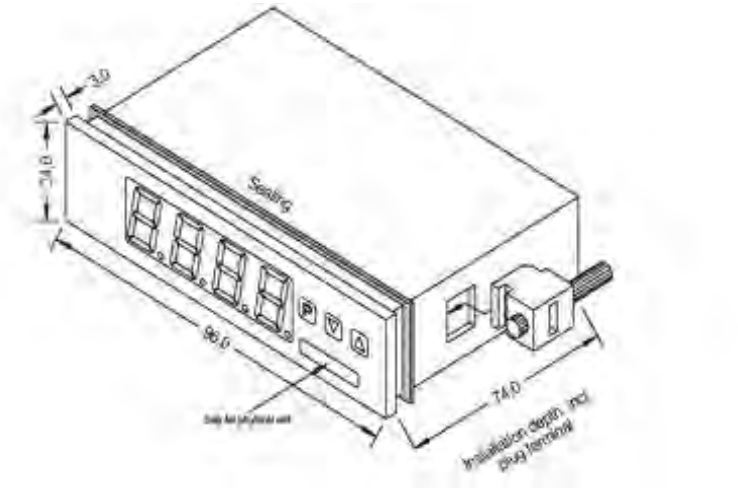
Current loop device in combination with a 3-/4 wire sensor:



Current loop device with enable outputs 24 V DC (up to 0.4 A):



Dimensions



Ordering code M1-Current Loop 96 x 24 mm

M	1-	3	S	R	4	B.	0	0	0	1.	K	7	0	A	D

Basic type M-Line

Installation depth
63mm incl. plug-in terminal — 1

Case size
96 x 24 x 37 mm
without plug-in terminal — 3

Display type
Current loop — S

Display colour
Red — R

Number of digits
4-digit — 4

Digit height
14 mm — B

Interface
without — 0

Dimension
physical unit — D

Version
A — A

Setpoints
0 without
2 Photo MOS-outputs

Protection
IP65/plug terminal — 7

Supply voltage
via current — K

Measuring input
Direct current 4-20 mA — 1

Analog output
without — 0

Sensor supply
without — 0

M1-3V.../ M1-3T

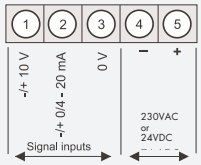
Programmable Digital Panel Instrument 96 x 24 mm

Red display of -1999 up to 9999 (optional green, orange or blue display)
Minimal installation depth: 57 mm without plug-in terminal
Min-/max-value recording
10 adjustable setpoints
Display flashing at threshold exceedance / undershooting
Tara-function
Programming interlock via access code
Protection class IP65 at the front
Plug-in terminal
Adjustment via factory default or directly on the sensor signal

M1-3V
Case 96 X 24 mm

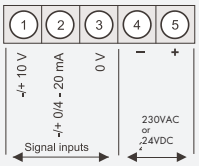
EMV	EN 61326
CE-Sign	Conformity to 2004/108/EG
Safety	EN 61010

Direct current, direct voltage



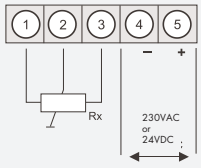
Supply	Order number (without options)
230V AC	**M1-3VR4B.0001.570AD**
24V DC	**M1-3VR4B.0001.770AD**

Direct voltage (Shunt)



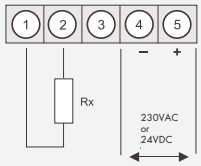
Supply	Order number (without options)
230V AC	**M1-3VR4B.0002.570AD**
24V DC	**M1-3VR4B.0002.770AD**

Potentionmeter 0-100 % (1 kΩ ...100 kΩ)



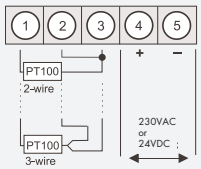
Supply	Order number (without options)
230V AC	**M1-3VR4B.0005.570AD**
24V DC	**M1-3VR4B.0005.770AD**

Resistance (1kΩ, 10kΩ, 100kΩ or 1000kΩ)



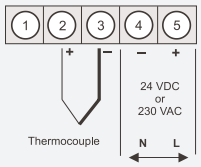
Supply		Order number (without options)
230V AC	(Measuring range 1 kΩ)	**M1-3VR4B.0806.570AD**
24 V DC	(Measuring range 1 kΩ)	**M1-3VR4B.0806.770AD**
230V AC	(Measuring range 10 kΩ)	**M1-3VR4B.0506.570AD**
24 V DC	(Measuring range 10 kΩ)	**M1-3VR4B.0506.770AD**
230V AC	(Measuring range 100 kΩ)	**M1-3VR4B.0606.570AD**
24 V DC	(Measuring range 100 kΩ)	**M1-3VR4B.0606.770AD**
230V AC	(Measuring range 1000 kΩ)	**M1-3VR4B.0706.570AD**
24 V DC	(Measuring range 1000 MΩ	**M1-3VR4B.0706.770AD**

PT100 (2-/3-wire) -200°C...850°C



Supply	Order number (without options)
230V AC	**M1-3TR4B.030C.570AD**
24V DC	**M1-3TR4B.030C.770AD**

Thermocouple Type B, E, J, K, L, N, R, S, T



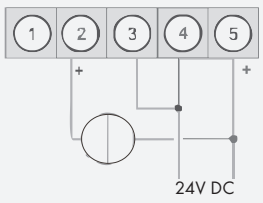
Supply	Order number (without options)
230V AC	**M1-3TR4B.040X1.570AD**
24V DC	**M1-3TR4B.040X1.770AD**

OPTIONS	Availability
Blue LED	
Orange LED	
Green LED	

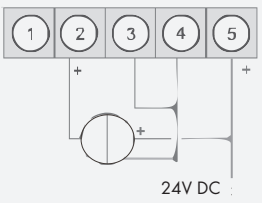
Connection examples

M1 devices with direct current/ direct voltage input

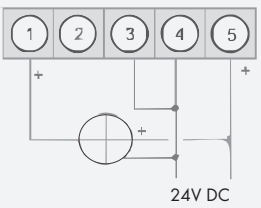
M1 in combination with a
2-wire sensor of 4-20 mA



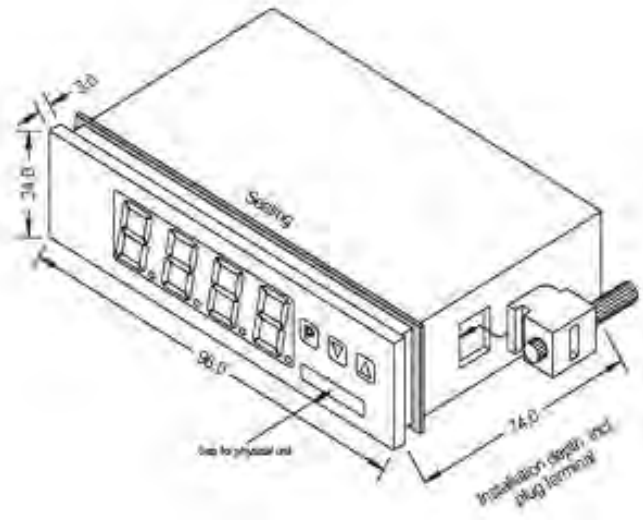
M1 in combination with a
3-wire sensor of 0/4-20 mA



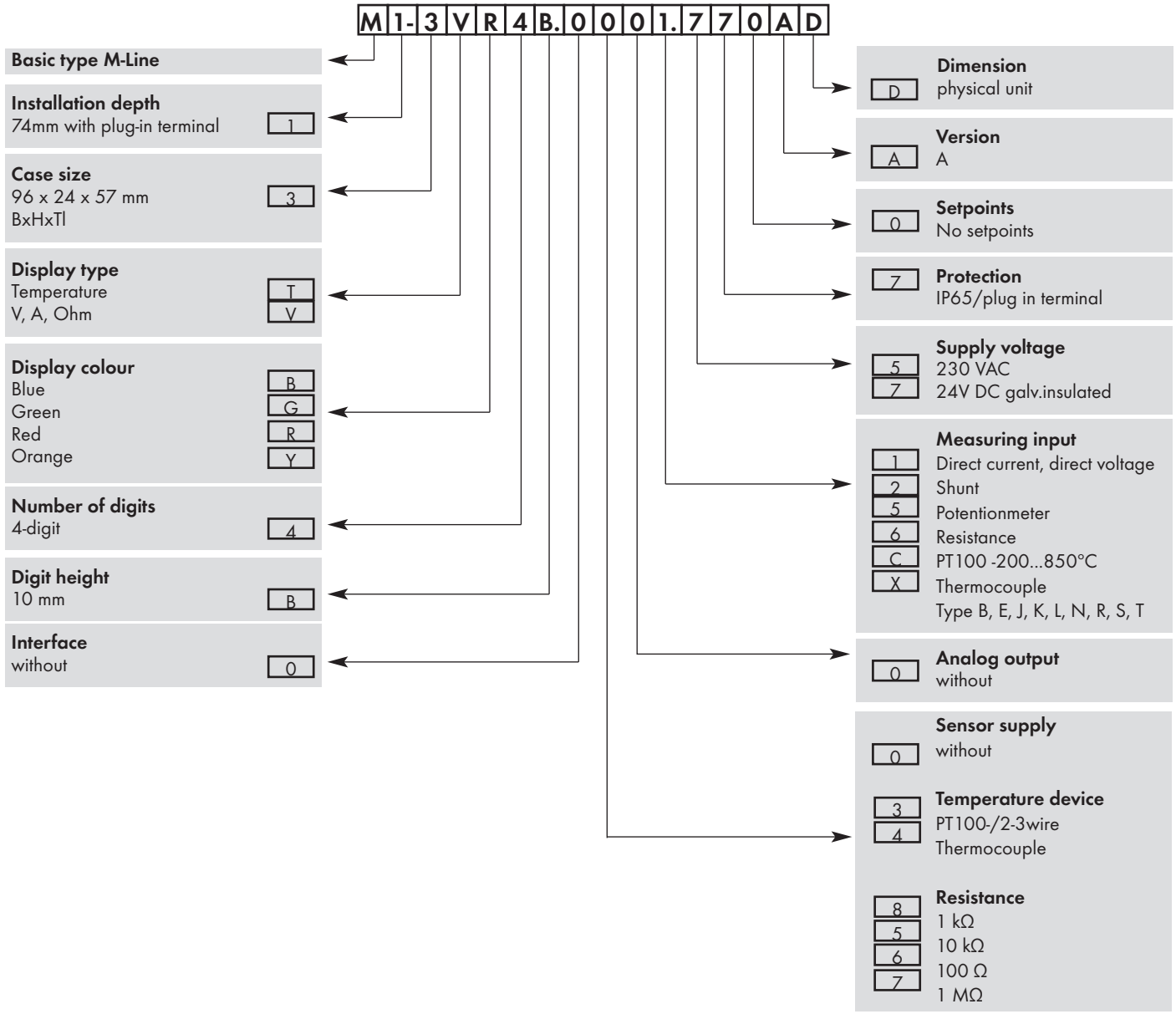
M1 in combination with a
3-wire sensor of 0-10 V



Dimensions



Ordering code M1-Standard 48 x 24 mm



Technical Data

Dimensions			
	Case	B96 x H24 x D57 mm, (including plug-in terminal D=74 mm)	
	Panel cut-out	92.0 $^{+0,8}$ x 22.2 $^{+0.3}$ mm	
	Fixing	Screw elements for insulation thickness up to 3 mm	
	Case material	PC Polycarbonate, black	
	Sealing material	EPDM, 65 Shore, black	
	Protection class	At the front IP65 Standard Backside IP00	
	Weight	Approx.50 g	
	Connection	Plug-in terminal; line cross-section up to 2.5 mm²	
Display			
	Display	4-digit	
	Digit height	14 mm	
	Segment colour	Red (standard), optional available in green, blue and orange	
	Display range	-1999 to 9999	
	Setpoints	Optical display flashing	
	Overflow/Underflow	Horizontal bars at the top/ horizontal baras at the bottom	
	Display time/Measuring time	0.1 to 10.0 seconds	
Measuring input			
M1-3VR4B.0001... Direct current/ Direct voltage	Span Measuring range Input resistance Measuring error Temperature drift Measuring time/principle Resolution	-12 ...12 V 0 -10 V Ri at ~200 kΩ 0.1% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx. 18Bit at 1s measuring time	/-22 ...24 mA /0/4-20 mA Ri at ~100 Ω /0.1% of measuring range, +/- 1 Digit
Measuring input			
M1-3VR4B.0002... Shunt	Span Measuring range Input resistance Measuring error Temperature drift Measuring time/principle Resolution	-5 ...80 mV 0 ...60 mV Ri at ~12 kΩ 0.2% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx. 18Bit at 1s measuring time	/-10 ...180 mV /0 ...150 mV Ri at ~30 kΩ /0.2% of measuring range, +/- 1 Digit
Measuring input			
M1-3VR4B.0005... Potentionmeter	Span Measuring range Measuring error Temperature drift Measuring time/principle Resolution	>1 kΩ ...1000 kΩ 0-100% 0.1% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx. 18Bit at 1s measuring time	
Measuring input			
M1-3VR4B.0x06... Resistance	Span Measuring range Measuring error Temperature drift Measuring time/principle Resolution	0...1,1 kΩ, 0...11 kΩ , 0...110 kΩ, 0...1100 kΩ 0...1kΩ , 0...10 kΩ, 0...100 kΩ, 0...1000 kΩ 0.5% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx. 18Bit at 1s measuring time	
Measuring input			
M1-3TR4B.030C... PT100	Measuring range Measuring error Temperature drift Measuring time/principle Resolution	-200 ...850°C/ -328 ...1562°F 0.2% of measuring range, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion Approx.0.1°C or 0.1°F	
Measuring input			
M1-3TR4B.040X... Thermocouple	Measuring range Measuring error Temperature drift Measuring time/principle Resolution Characteristic curve error Reference junction	Type L -200...900°C Type J -210...1200°C Type K -270...1372°C 2K, +/- 1 Digit 100ppm/K 0.1 ...10.0 seconds/ U/F-conversion 0.1°C > +/- 1 kΩ Semiconductor sensor	Type B 80...1820°C Type S -50...1768°C Type N -270...1300°C
			Type E -270... 1000°C Type T -270...400°C Type R -50...1768°C
Power pack			
	Supply	230 VAC +/- 10% (max. 9 VA) 24 VDC +/- 10%, galvanic insulated (max.1 VA)	
Memory			
	EEPROM Data life	 ≥ 100 years	
Ambient conditions			
	Working temperature Storing temperature Climatic density	0 up to +60°C -20 up to +80°C Relative humidity 0-85% on years average without dew	

M1-1S...

Programmable Digital Panel M1-Current Loop, 96 x 48 mm

- Red display of -1999 up to 9999
- Minimal installation depth: 25 mm without plug-in terminal
- Min-/max-value recording
- Adjustment via factory default or directly on the sensor signal
- Display flashing at threshold exceedance / undershooting
- Tara- / offset value calibration
- 10 adjustable setpoints
- Programming interlock via access code
- Protection class IP65
- Plug-in terminal

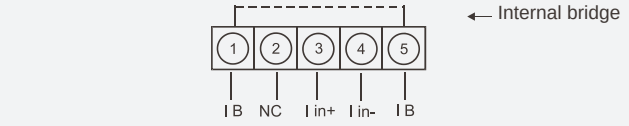
M1-1S
Case 96 x 48 mm

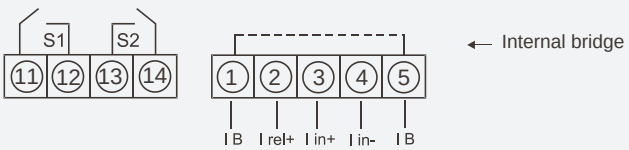
EMV	EN 61326
CE-sign	Conformity to 2004/108/EG
Safety standard	EN 61010

General Technical Data, Type M1-1S

Case	B96 x H48 x D25 mm, (incl. Plug terminal D = 38 mm)
Panel cut-out	92.0 $^{+0.8}$ x 45.0 $^{+0.6}$ mm
Fixing	Screw elements for insulation thickness up to 3 mm
Case material	PC, Polycarbonate, black
Protection class	Front IP65 standard Rearside IP00
Weight	Approx. 100 g
Connection	Plug terminal; line cross section up to 2.5mm^2
Digit height/ Segment Colour	14mm/red
Display range	-1999 to 9999
Setpoints	Optical display flashing
Display/measuring time	0.1 to 0.0 seconds
Input	Min. 3.5 ...max. 21mA (4-20mA)
Measuring error	0.3% of measuring range, +- 1 digit
Fail of voltage	Approx. 5.1 V without switching outputs Approx. 8.0 V with swithcing outputs
Setpoints	Potentialfree PhotoMOS-outputs Max. switching voltage 30 VDC/AC Max. steady current 0,4 A Electric strength AC: 400 V permanent, 1800 V for 1 minute
Data life	≥ 100 years Flash-memory (independent of supply)
Working/Storing temperature	0 to 60°C (-20 to +80°C)
Climatic density	Relative humidity 0-80% on years average without dew

Current loop device



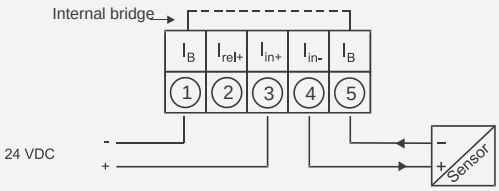


Outputs; at interfere with switching outputs using measuring input Irel., please.

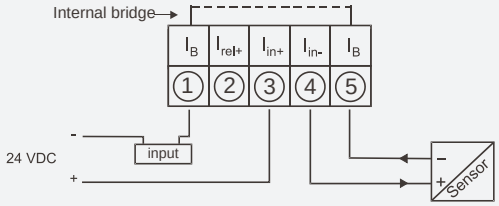
Order number (without options)
M1-1SR4B.0001.K70AD
M1-1SR4B.0001.K72AD

Connection pictures (our examples show devices with setpoints)

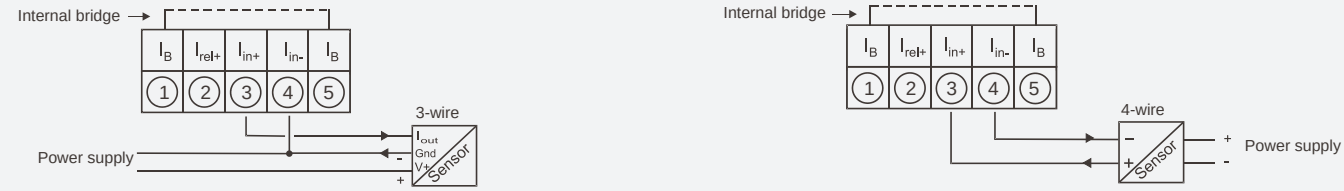
Current loop display in combination with a transmitter in current loop technique:



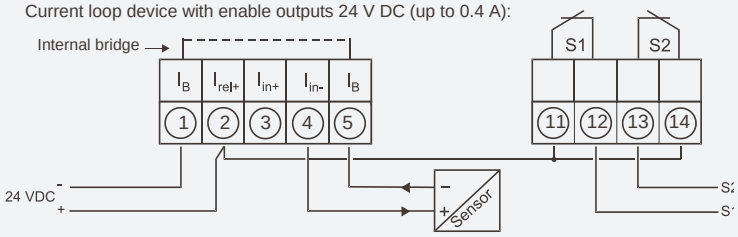
Current loop display in combination with another measuringout with low burden:



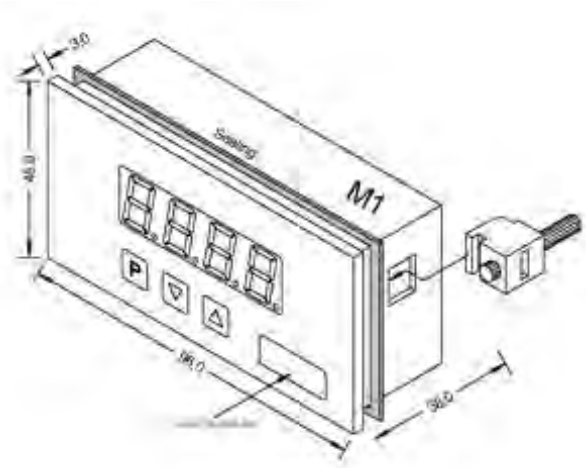
Current loop device in combination with a 3-/4 wire sensor:



Current loop device with enable outputs 24 V DC (up to 0.4 A):



Dimensions



Ordering code M1-Current Loop 96 x 48 mm

M	1-	1	S	R	4	B.	0	0	0	1.	K	7	0	A	D

Basic type M-Line

Installation depth 38mm incl. plug-in terminal — 1

Case size 96 x 48 x 25 mm without plug-in terminal — 3

Display type Current loop — S

Display colour Red — R

Number of digits 4-digit — 4

Digit height 14 mm — B

Interface without — 0

Dimension physical unit — D

Version A — A

Setpoints without / Photo MOS-outputs — 0 / 2

Protection IP65/plug terminal — 7

Supply voltage via current — K

Measuring input Direct current 4-20 mA — 1

Analog output without — 0

Sensor supply without — 0

M1-1V.../ M1-1T...

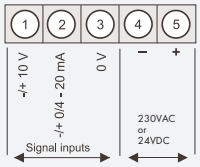
Programmable Digital Panel 96 x 48 mm

Red display of -1999 up to 9999 (optional green, orange or blue display)
Minimal installation depth: 25 mm without plug-in terminal
Min-/max-value recording
10 adjustable setpoints
Display flashing at threshold exceedance / undershooting
Tara-function
Adjustment via factory default or directly on the sensor signal
Programming interlock via access code
Protection class IP65
Plug-in terminal

M1-1V
Case 96 X 48 mm

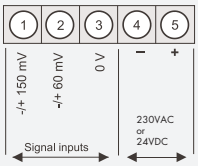
EMV	EN 61010
CE-Sign	Conformity to 2004/108/EG
Safety	EN 61326

Direct current, direct voltage



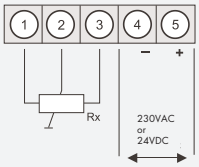
Supply	Order number (without options)
230 V AC	**M1-1VR4B.0001.570BD**
24V DC	**M1-1VR4B.0001.770BD**
	Further supply voltage see options

Direct voltage (Shunt)



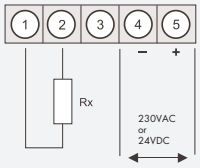
Supply	Order number (without options)
230 V AC	**M1-1VR4B.0002.570BD**
24V DC	**M1-1VR4B.0002.770BD**

Potentionmeter 0-100 % (1 kΩ ... 100 kΩ)



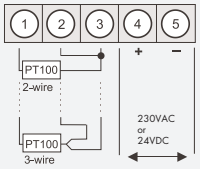
Supply	Order number (without options)
230 V AC	**M1-1VR4B.0005.570BD**
24V DC	**M1-1VR4B.0005.770BD**

Resistance (1kΩ, 10kΩ, 100kΩ or 1000kΩ)



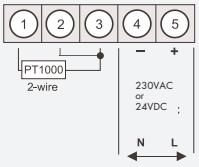
Supply		Order number (without options)
230V AC	(Measuring range 1 kΩ)	**M1-1VR4B.0806.570BD**
24 V DC	(Measuring range 1 kΩ)	**M1-1VR4B.0806.770BD**
230V AC	(Measuring range 10 kΩ)	**M1-1VR4B.0506.570BD**
24 V DC	(Measuring range 10 MΩ)	**M1-1VR4B.0506.770BD**
230V AC	(Measuring range 100 kΩ)	**M1-1VR4B.0606.570BD**
24 V DC	(Measuring range 100 kΩ)	**M1-1VR4B.0606.770BD**
230V AC	(Measuring range 1000 kΩ)	**M1-1VR4B.0706.570BD**
24 V DC	(Measuring range 1000 MΩ)	**M1-1VR4B.0706.770BD**

PT100 (2-/3-wire) -200°C...850°C/-328°F...1562°F



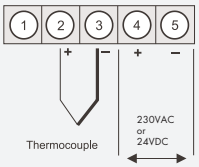
Supply	Order number (without options)
230 V AC	**M1-1TR4B.030C.570BD**
24V DC	**M1-1TR4B.030C.770BD**

PT1000 (2-wire) -200°C...850°C/-328°F...1562°F



Supply	Order number (without options)
230 V AC	**M1-1TR4B.060C.570BD**
24V DC	**M1-1TR4A.060C.770BD**

Thermocouple Type B, E, J, K, L, N, R, S,T

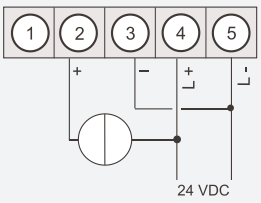


Supply	Order number (without options)
230 V AC	**M1-1TR4B.040X.570BD**
24V DC	**M1-1TR4B.040X.770BD**

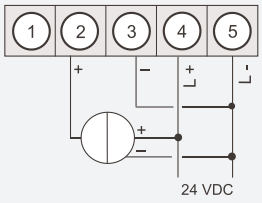
Connection examples

M1 devices with direct current / direct voltage input

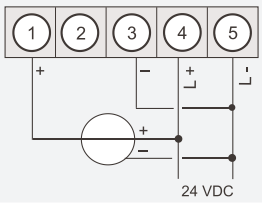
M1 in combination with a 2-wire-sensor 4-20 mA



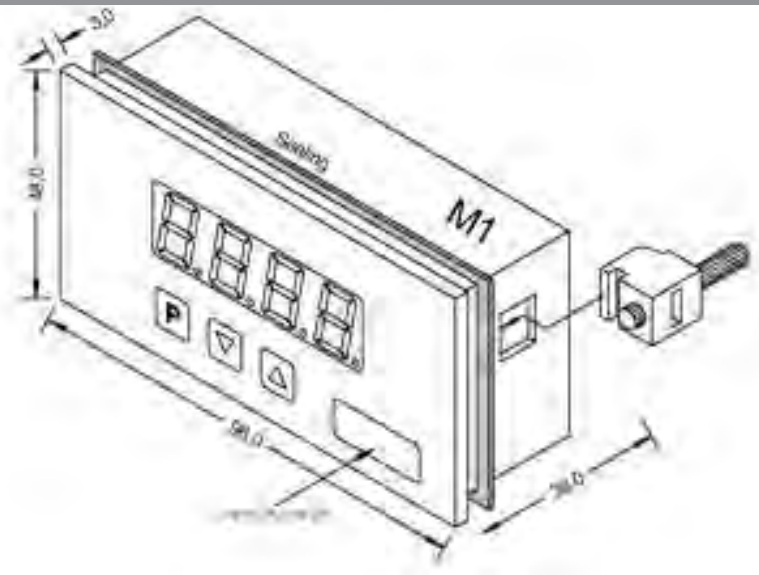
M1 in combination with a 3-wire-sensor 0/4-20 mA



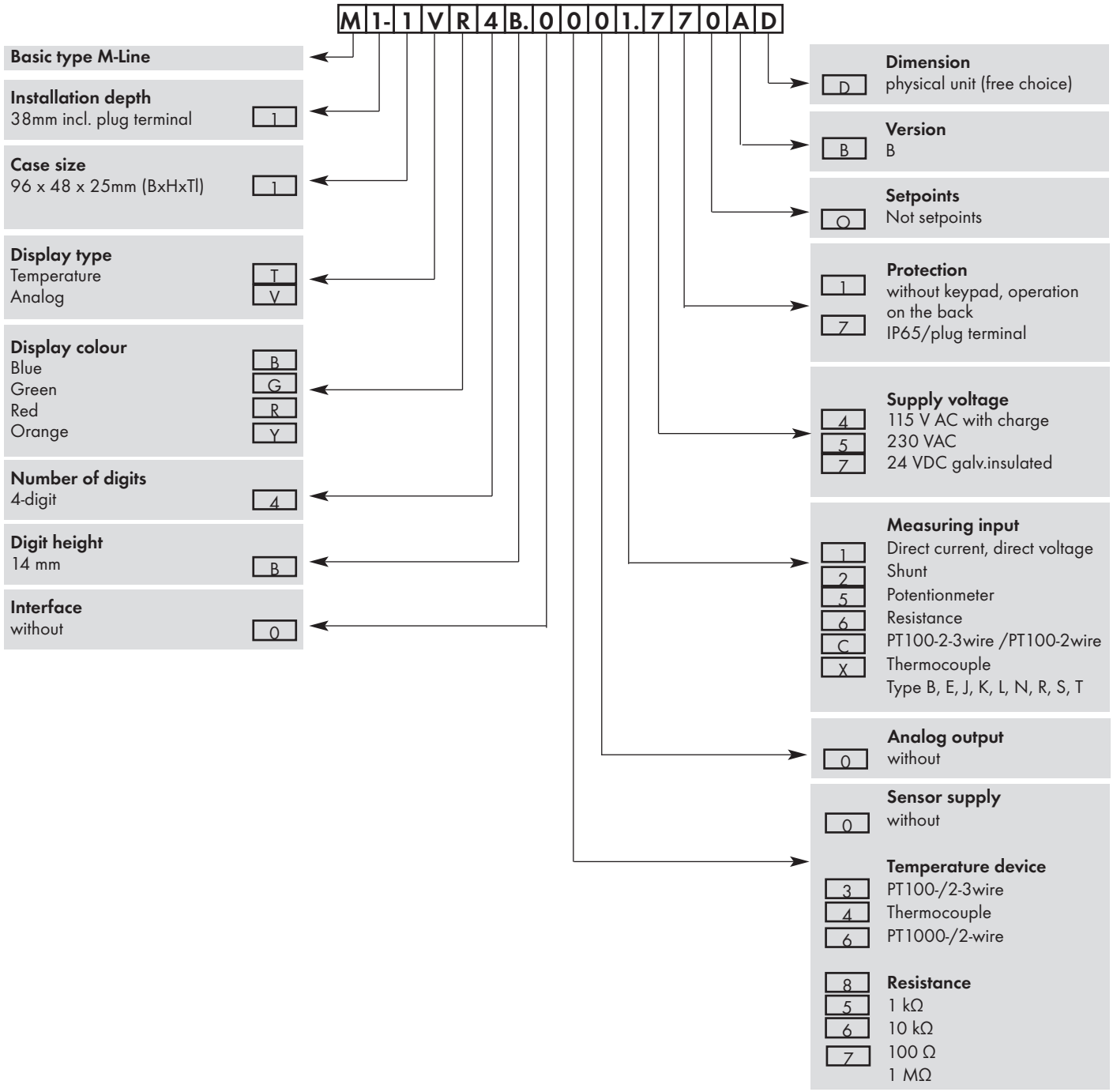
M1 in combination with a 3-wire-sensor 0-10 V



Dimensions



Ordering code M1-Standard 96 x 48 mm



OPTIONS	Availability
Blue LED	
Orange LED	
Green LED	
S260 measuring input up to 50 VDC / measuring error 0.6% of final value	
S100 measuring input up to100 VDC / measuring error 0.6 % of final value	

Technical Data

Dimensions			
	Case	B96 x H48 x D25 mm, (including plug-in terminal D=38 mm)	
	Panel cut-out	92.0 $^{+0.8}$ x 45.0 $^{+0.6}$ mm	
	Fixing	Screw elements for insulation thickness up to 3 mm	
	Case material	PC Polycarbonate, black	
	Sealing material	EPDM, 65 Shore, black	
	Protection class	At the front IP65 Standard	
		Backside IP00	
	Weight	Approx.100 g	
	Connection	Plug-in terminal; line cross-section up to 2.5 mm²	
Display			
	Display	4-digit	
	Digit height	14 mm	
	Segment colour	Red (standard), optional available in green, blue and orange	
	Display range	-1999 to 9999	
	Setpoints	Optical display flashing	
	Overflow/Underflow	Horizontal bars at the top/ horizontal baras at the bottom	
	Display time/Measuring time	0.1 to 10.0 seconds	
Measuring input			
M1-1VR4B.0001...	Span	-12 ...12 V	/-22 ...24 mA
Direct current/	Measuring range	0-10 VDC	/0/4-20 mA
Direct voltage	Input resistance	Ri at ~200 kΩ	Ri at ~100 Ω
	Measuring error	0.1% of measuring range, +/- 1 Digit	/0.1% of measuring range, +/- 1 Digit
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx. 18Bit at 1s measuring time	
Measuring input			
M1-1VR4B.0002...	Span	-5 ...80 mV	/-10 ...180 mV
Shunt	Measuring range	0 ...60 mV	/0 ...150 mV
	Input resistance	Ri at ~12 kΩ	Ri at ~30 kΩ
	Measuring error	0.2% of measuring range, +/- 1 Digit	/0.2% of measuring range, +/- 1 Digit
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx. 18Bit at 1s measuring time	
Measuring input			
M1-1VR4B.0005...	Span	>1 kΩ ...1000 kΩ	
Potentionmeter	Measuring range	0-100%	
	Measuring error	0.5% of measuring range, +/- 1 Digit	
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx. 18Bit at 1s measuring time	
Measuring input			
M1-1VR4B.0x06...	Span	0...1,1 kΩ, 0...11 kΩ, 0...110 kΩ, 0...1100 kΩ	
Resistance	Measuring range	0...1kΩ, 0...10 kΩ, 0...100 kΩ, 0...1000 kΩ	
	Measuring error	0.1% of measuring range, +/- 1 Digit	
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx. 18Bit at 1s measuring time	
Measuring input			
M1-1TR4B.030C...	Measuring range	-200 ...850°C/ -328 ...1562°F	
PT100	Measuring error	0.1% of measuring range, +/- 1 Digit	
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx.0.1°C or 0.1°F	
Measuring input			
M1-1TR4B.060C...	Measuring range	-200 ...850°C/ -328 ...1562°F	
PT1000	Measuring error	0.2% of measuring range, +/- 1 Digit	
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	Approx.0.1°C or 0.1°F	
Measuring input			
M1-3TR4B.040X...	Measuring range	Type L -200...900°C / Type B 80...1820°C / Type E -270... 1000°C	
Thermocouple		Type J -210...1200°C / Type S -50...1768°C / Type T -270...400°C	
		Type K -270...1372°C / Type N -270...1300°C / Type R -50...1768°C	
	Measuring error	2K, +/- 1 Digit	
	Temperature drift	100ppm/K	
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion	
	Resolution	0.1°C	
	Characteristic curve error	≤ +/- 1 kΩ	
	Reference junction	Semiconductor sensor	
Power pack			
	Supply	230 VAC +/- 10% (max. 9 VA)	
		24 VDC +/- 10%, galvanic insulated (max.1 VA)	
Memory			
	EEPROM		
	Data life	≥ 100 years	
Ambient conditions			
	Working temperature	0 to +60°C	
	Storing temperature	-20 to +80	
	Climatic density	Relative humidity 0-85% on years average without dew	

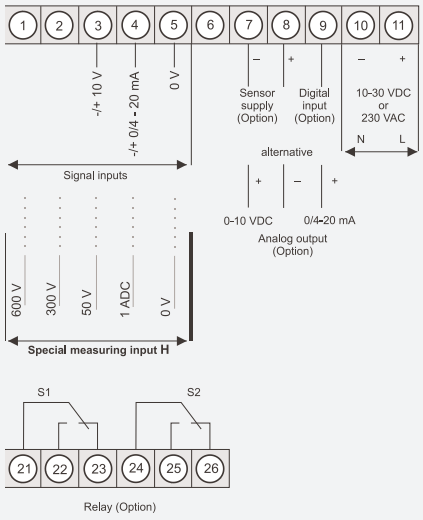
M2-1V.../ M2-1T...

Programmable Digital Panel 96 x 48 mm

- Red display of -1999 up to 99999 (optional green, orange, blue or tricolour display)
- Minimal installation depth: 70 mm without plug-in terminal
- Min-/max-memory
- 30 additional adjustable setpoints (parameter driven)
- Display flashing at threshold exceedance / undercut
- Zero key for actuation of tara- /hold-function
- Permanent min-/max-value recording
- Adjustment via factory default or directly on the sensor signal
- Volume measurement (totalizator)
- mathematical functions like reciprocal value, square root, square and rounding
- Programming interlock via access code
- Protection class IP65 at the front
- Plug-in terminal
- Two relay outputs optional
- Analog output or sensor supply optional
- Digital input optional

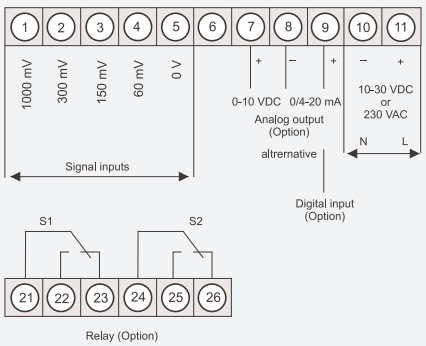
M2-1V.../ M2-1T...
Case 96 x 48 mm

Direct current, direct voltage



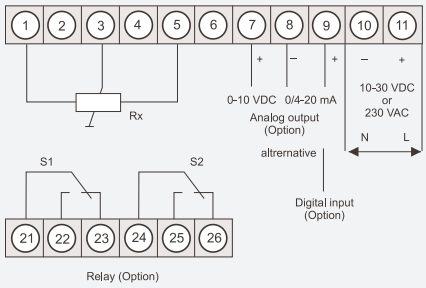
Supply	Order number (without options)
230 VAC	**M2-1VR5B.0001.570BD**
10 - 30 VDC	**M2-1VR5B.0001.670BD**
230 VAC	**M2-1VR5B.0H01.570BD**
Special measuring input:	**600V, 300V, 50V, 1 A AC**

Direct voltage (Shunt)



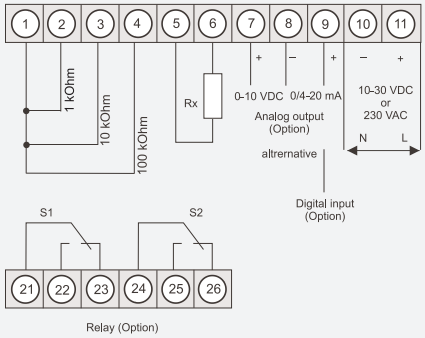
Supply	Order number (without options)
230 VAC	**M2-1VR5B.0002.570BD**
10 - 30 VDC	**M2-1VR5B.0002.670BD**

Potentiometer 0 -100 % (> 1kΩ ... <1000 kΩ)



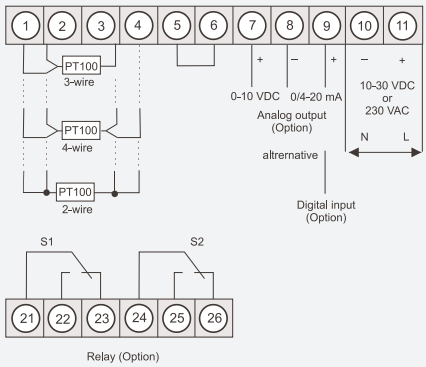
Supply	Order number (without options)
230 VAC	**M2-1VR5B.0005.570BD**
10 - 30 VDC	**M2-1VR5B.0005.670BD**

Resistance (1 kΩ, 10 kΩ or 100 kΩ)



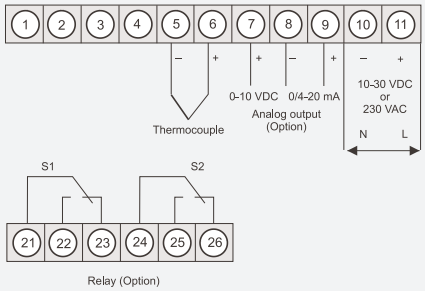
Supply	Order number (without options)
230 VAC	**M2-1VR5B.0006.570BD**
10 - 30 VDC	**M2-1VR5B.0006.670BD**

PT100 (4-wire) -200°C...850°C/ -358°F...1562°F



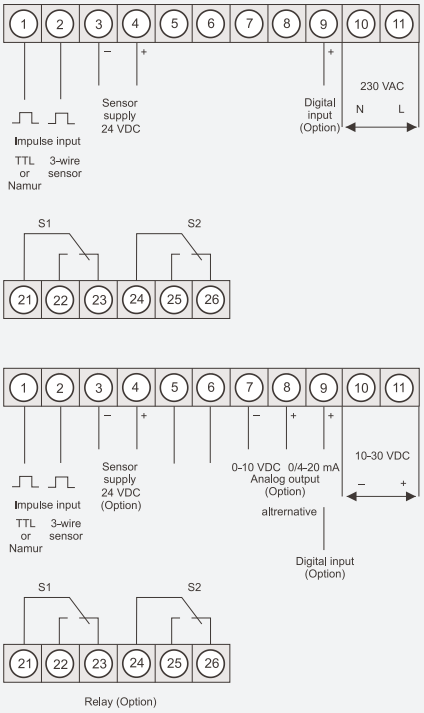
Supply	Order number (without options)
230 VAC	**M2-1VR5B.010C.570BD**
10 - 30 VDC	**M2-1VR5B.010C.670BD**
230 VAC	**M2-1VR5B.020C.570BD**
10 - 30 VDC	**M2-1VR5B.020C.670BD**
Special measuring input:	**PT100-2-wire**

Thermocouple Type L, J, K, B, S, N. E, T, R



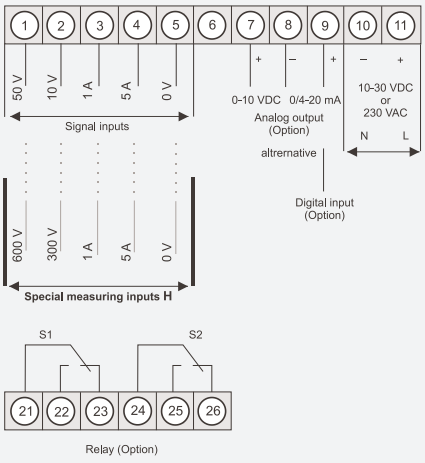
Supply	Order number (without options)
230 VAC	**M2-1TR5B.040X.570BD**
10 - 30 VDC	**M2-1TR5B.040X.670BD**

Frecuency (0,01 Hz to 999,99 Hz)



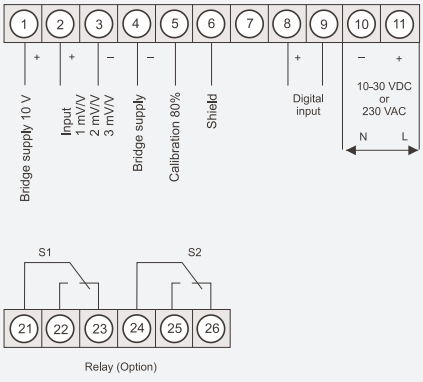
Supply	Order number (without options)
230 VAC	**M2-1FR5B.0007.570BD**
10 - 30 VDC	**M2-1FR5B.0007.670BD**

AC voltage, alternating current (true RMS)



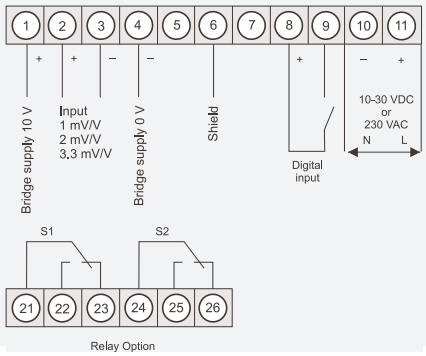
Supply	Order number (without options)
230 VAC 10 - 30 VDC	**M2-1VR5B.0004.570BD** **M2-1VR5B.0004.670BD**
230 VAC **Special measuring input:**	**M2-1VR5B.0H04.570BD** **600V, 300V, 5A, 1 AC**

DMS 4-wire with calibration



Supply	Order number (without options)
230 VAC 10 - 30 VDC	**M2-1MR5B.020X.570BD** **M2-1MR5B.020X.670BD**

Weighing technology



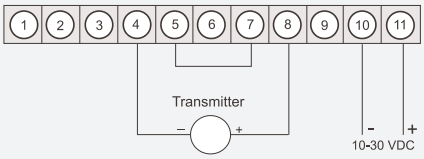
Supply	Order number (without options)
230 VAC	**M2-1WR5B.020X.570BD**
10 - 30 VDC	**M2-1WR5B.020X.670BD**

OPTIONS	Availability										
	Diret current/-voltage	*H Direct current/-voltage*	*Shunt*	*Potentiometer*	*Resistance*	*PT100*	*Thermo couple*	*Frequency*	*AC-RMS*	*DMS-4-wire*	*Weighing technology*
Blue LED											
Orange LED											
Green LED											
Tricolour (red-green-orange)											
Digital input											
Sensor supply 24 VDC / 50 mA at a device supply of 230 VAC											
Sensor supply 24 VDC / 50 mA at a device supply of 24 VDC											
Sensor supply 10 VDC / 50 mA at a device supply of 230 VAC											
Sensor supply 10 VDC / 50 mA at a device supply of 24 VDC											
Analog output 0-10 VDC, 0/4-20 mA at a device supply of 230 VAC											
Analog output 0-10 VDC, 0/4-20 mA at a device supply of 24 VDC											
2 Relay outputs											
Voltage supply 24 VAC or 115 VAC											
Dimension strip custom-made											

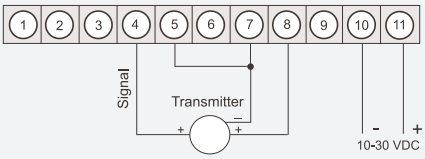
Connection examples

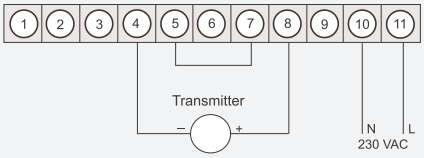
M2-devices with a direct current/direct voltage input and sensor supply

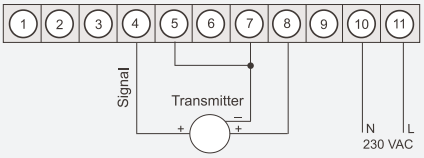
2-wire sensor: 4-20 mA



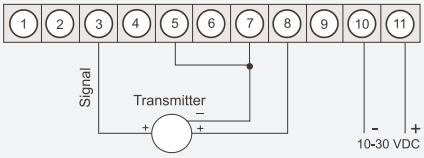
3-wire sensor: 0-20 mA

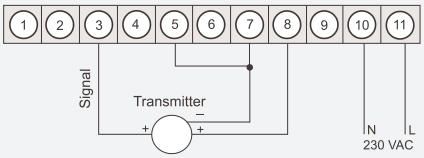






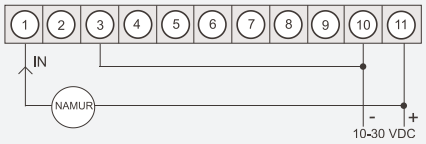
3.wire sensor: 0-10 V



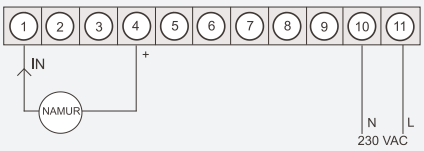


M2-devices with frequency or impulse output

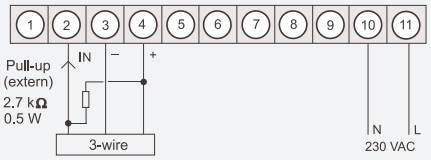
Namur



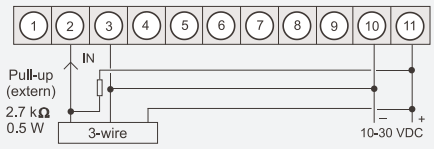
Namur



3-wire NPN

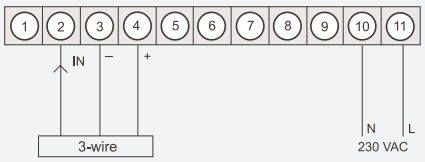


3-wire NPN



3-wire PNP

3-wire PNP



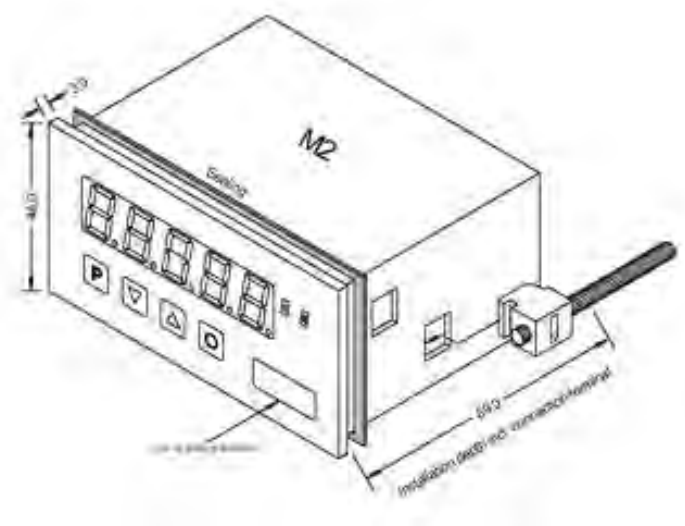
Technical Data

Dimensions					
	Case	B96 x H48 x D70 mm, (including plug-in terminal D=89 mm)			
	Panel cut-out	92.0 $^{+0.8}$ x 45.0 $^{+0.6}$ mm			
	Fixing	Screw elements for insulation thickness up to 3 mm			
	Case material	PC Polycarbonate, black			
	Sealing material	EPDM, 65 Shore, black			
	Protection class	At the front IP65 Standard Backside IP00			
	Weight	Approx.200 g			
	Connection	Plug-in terminal; line cross-section up to 2.5 mm²			
Display					
	Display	5-digit			
	Digit height	14 mm			
	Segment colour	Red (standard), optional available in green, blue and orange			
	Display range	-1999 to 9999			
	Setpoints	Optical display flashing			
	Overflow/Underflow	Horizontal bars at the top/ horizontal baras at the bottom			
	Display time/Measuring time	0.1 to 10.0 seconds			
Measuring input					
M2-1VR5B.0001... Direct current/ Direct voltage	Span	-12 ...12 V	/-22 ...24 mA		
	Measuring range	0-10 VDC	/0/4-20 mA		
	Input resistance	Ri at ~200 kΩ	Ri at ~100 Ω		
	Measuring error	0.1% of measuring range, +/- 1 Digit	/0.1% of measuring range, +/- 1 Digit		
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	Approx. 18Bit at 1s measuring time			
Measuring input					
M2-1VR5B.0H01... H Direct current/ Direct voltage	Span	6-600VDC	0-300VDC	0-50VDC	0-1ADC
	Input resistance	Ri at ~2 MΩ	Ri at ~1 MΩ	Ri at ~200 kΩ	Ri at ~0.2 Ω
	Measuring error	0.5% of measuring range, +/- 1 Digit			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	Approx. 18Bit at 1s measuring time			
Measuring input					
M2-1VR5B.0002... Shunt	Span	-5 ...75mV	-15 ...180mV	-30 ...360mV	-100 ...1200mV
	Measuring range	0 ...60 mV	0 ...150mV	0 ...300mV	0 ...1000mV
	Input resistance	Ri at ~12 kΩ	Ri at ~60 kΩ	Ri at ~30 kΩ	Ri at ~200 kΩ
	Measuring error	0.2% of measuring range, +/- 1 Digit/		0.2% of measuring range, +/- 1 Digit	
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	Approx. 18Bit at 1s measuring time			
Measuring input					
M2-1VR5B.0005... Potentionmeter	Span	>1 kΩ ...1000 kΩ			
	Measuring range	0-100%			
	Measuring error	0.2% of measuring range, +/- 1 Digit			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	Approx. 18Bit at 1s measuring time			
Measuring input					
M2-1VR5B.0x06... Resistance	Span	0...1,1 kΩ, 0...11 kΩ , 0...110 kΩ			
	Measuring range	0...1kΩ , 0...10 kΩ, 0...100 kΩ			
	Measuring error	0.5% of measuring range, +/- 1 Digit			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	Approx. 18Bit at 1s measuring time			
Measuring input					
M2-1TR5B.030C... PT100	Measuring range	-200 ...850°C/ -328 ...1562°F			
	Measuring error	0.1% of measuring range, +/- 1 Digit			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	approx.0.1°C or 0.1°F			
Measuring input					
M2-1TR5B.040C... Thermocouple	Measuring range	Type L -200...900°C Type J -210...1200°C Type K -270...1372°C	Type B 80...1820°C Type S -50...1768°C Type N -270...1300°C	Type E -270... 1000°C Type T -270...400°C Type R -50...1768°C	
	Measuring error	2K, +/- 1 Digit			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	0.1°C			
	Characteristic curve error	> +/- 1 kΩ			
	Reference junction	Thermistor			

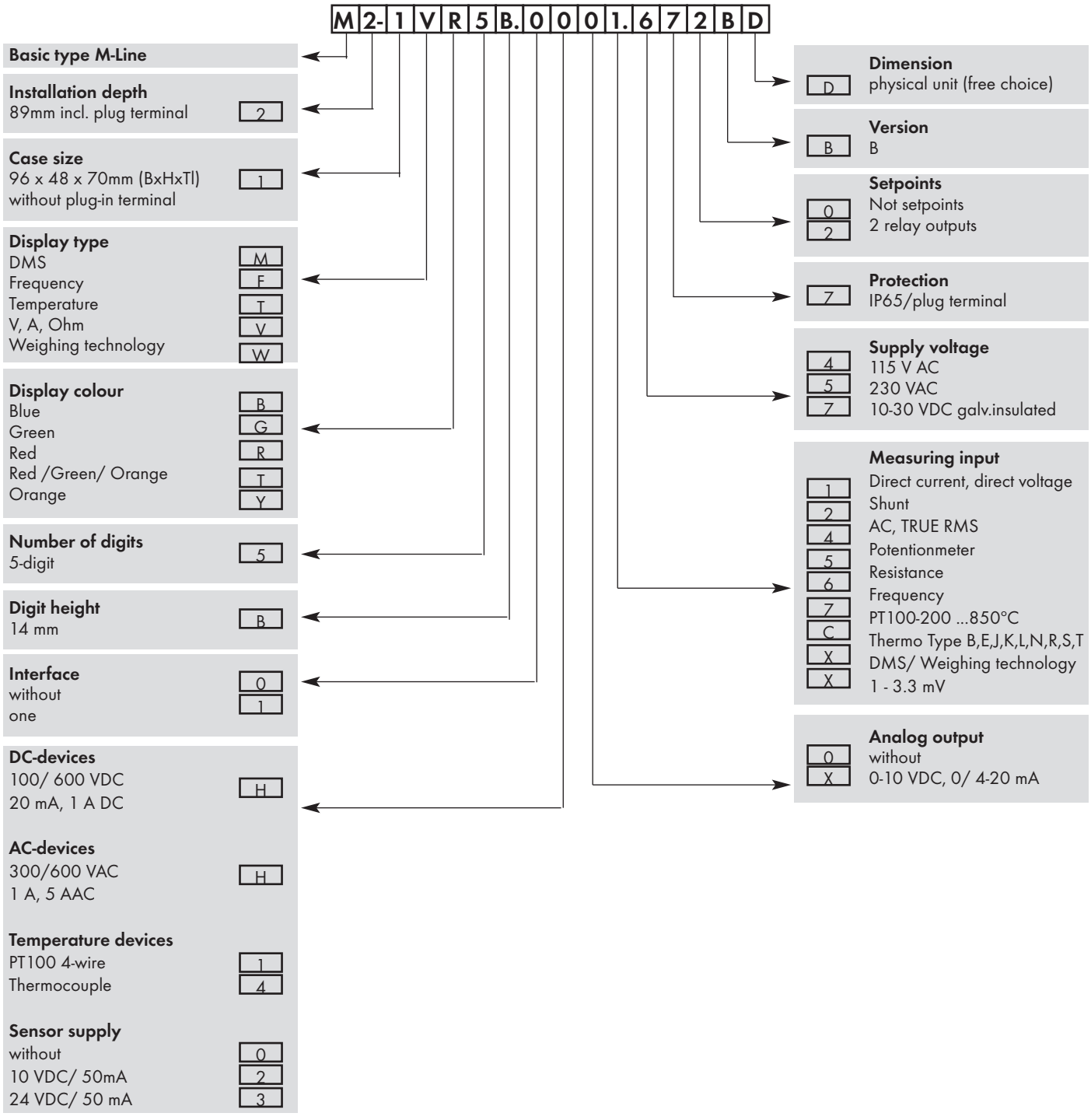
Technical Data

Measuring input					
M2-1FR5B.0007... Frequency	Signal Impluse resistance Input frequency Measuring error	Impulse input, TTL, Namur, 3-wire initiator PNP/ NPN Ri at 24V/ 4 kΩ High/ Low level > 15V/ < 4V High/ Low TTL level > 4,6V/ < 1,9V 0.01 Hz selectable up to 999.99 kHz 0.05% of measuring range			
Measuring input					
M2-1VR5B.0004... AC voltage	Measuring range Input resistance Measuring error Temperature dirft Measuring time/ principle Resolution	50 VDC Ri at ~200 kΩ 0.5% of measuring range at 50 Hz...1 kHz up to crest factor 4 For input signals of 1...100% of final value 100 ppm/K 0.1...10.0 seconds / U/F-conversion Approx. 18 Bit at 1s measuring time	10 VDC Ri at ~40 kΩ	5 AAC Ri at~0,05 Ω	1 AAC Ri at~0,2 Ω
Measuring input					
M2-1VR5B.0H04... H AC voltage	Measuring range Input resistance Measuring error Temperature drift Measuring time/ principle Resolution	600 VAC Ri at~2 MΩ 0.5% of measuring range at 50 Hz...1 kHz up to crest factor 4 For input signals of 1...100 % of final value 100 ppm/K 0.1...10.0 seconds / U/F-conversion Approx. 18 Bit at 1s measuring time	300 VAC Ri at ~1 MΩ	5 AAC Ri at~0.05 Ω	1 AAC Ri at ~200 Ω
Measuring input					
M2-1MR5B.020X... M2-1WR5B.020X...	Sensor sensitivity	1 mV/V, 2 mV/V, 3.3 mV/V			
Output					
	Relay Switching cycle Analog output Sensor supply Bridge supply	With change-over contact 250 V / 2 AAC, 30 V / 2 ACDC 0.5 * 10^5 at max. contact load 5* 10^6 mechanically Separation in accordance with DIN EN50178 / Specifications in accordance with DIN EN 60255 0-10 VDC, 0/4-20 mA (16 Bit) switchable 24 VDC / 50 mA 10 VDC / 20 mA 10 VDC / 20-40 mA / 250-500 Ω			
Digital input					
	Input	< 2.4 V/OFF; 10 V ON; max.30 VDC Ri at~5 kΩ			
Power pack					
	Supply	230 VAC +/- 10% (max. 10 VA) 10 - 30 VDC galvanic insulated (max.4 VA)			
Memory					
	EEPROM Data life	≥ 100 years			
Ambient conditions					
	Working temperature Storing temperature Climatic density	0 to +60°C -20 to +80 Relative humidity 0-85% on years average without dew			

Dimensions



Ordering code M2-Digital display standard

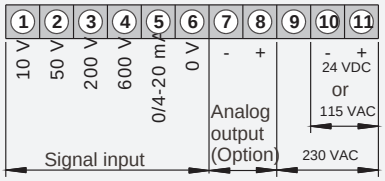


M2-2VR4C

Programmable Digital Panel 96 x 96 mm

Digit: 20 mm
Colour: Red
Range of display: -999...9999
Case: black, made of LEXAN 500R
Protection class: IP65 (front), IP00 (back)
Dimensions: 96 x 96 mm, depth 75 mm, including plug-in terminal
Supply: 230 VAC
Sensor supply: 24 V / 50 mA
Measuring input: 0-10 VDC, 0/4-20 mA
2 relay outputs
10 point linearization
Offset allowance
Tara- / Hold-function

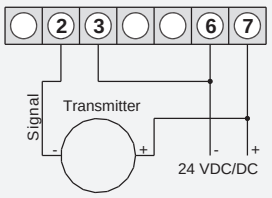
M2-2VR4C
Case 96 x 96 mm



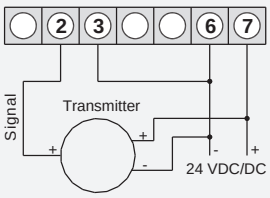
Order number (without options)
M2-2VR4C.0301.572AD

Connection pictures by use of sensor supply

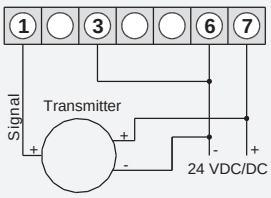
2-wire sensor 4-20 mA



3-wire sensor 0-20 mA



3-wire sensor 0-5 V/ 0-10 V



Technical Data

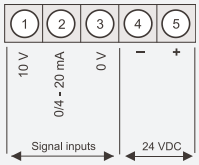
Dimensions					
	Case	B96 x H96 x D75 mm, (including plug-in terminal)			
	Installation depth	49mm absolute case depth; 69mm including plu-in terminal			
	Panel cut-out	91.0 $^{+0.6}$ x 91.0 $^{+0.6}$ mm			
	Wall thickness	Up to 10mm			
	Fixing	Fastening element, fixable via screws			
	Material	LEXAN 500R, black			
	Weight	Approx.370 g			
	Connection	Removable screw terminal; line cross section up to 2.5 mm^2			
	Installations grate	Horizontally 120mm/ vertically 120mm recommended			
Display					
	Digit height	20 mm			
	Segment colour	Red			
	Display range	-999 to 9999			
	Setpoints	One LED per set points			
	Overflow/Underflow	Horizontal bars at the top/ horizontal baras at the bottom			
	Display time	0.1 to 10.0 seconds			
Inputs		Measuring range	Ri approx	Measuring error	Digit
	Measuring range	0...10V	150 kΩ	0.1%	+/- 1
	Input resistance	0....5 V	150 kΩ	0.1%	+/- 1
	Measuring error	0...20 mA	150 Ω	0.1%	+/- 1
	(at measuring time = 1 second)	4...20 mA	150 Ω	0.1%	+/- 1
	Temperature drift	all measuring input	100ppm/K		
	Measuring time = display time	0.1 ...10.0 seconds			
	Measuring principe	Voltage-Frequency converter			
	Resolution	Approx. 20Bit			
	(at measuring time = 1 second)				
Outputs					
	Relay	Change-over contact			
	Switching cycle	230 VAC 5 A / 30 VDC 2 A (cos = 1); with ohm resistive burden			
		0.5*10^5 at max. contact rating			
		5*10^6 mechanically			
		Separation according to DIN EN 50178			
		Specification according to DIN EN 60255			
	Supply	24 VDC; 50 mA			
	(galvanic insulated)				
Power pack					
	Voltage	230 VAC/ 50/ 60 Hz/+/- 10%			
	(galvanic insulated)				
	Power consumption	max. 8 VA			
Memory					
	EEPROM				
	Data life	> 20 years			
Ambient conditions					
	Working temperature	0 to +60°C			
	Storing temperature	-20 to +80			
	Climatic density	Relative humidity 0-85% on years average without dew			
EMV					
	DIN 61326				
CE-sign					
	Conformity according to 2004/108/ EG				
Safety standard					
	DIN 61010				

MB1

Processor-based bargraph vertical or horizontal 96 x 24

Red display, optional green or orange
30 point bargraph display
Adjustable via HEX switch and push-button
pre-adjusted input for standard signals 0-10 V and 0/4-20 mA ex works
free adjustment on the input signal
Different display types adjustable as bar, dot/point or curtain
Free choice of direction and display of centre
Control of bightness level in stages
Protection class IP65
Plug-in terminal

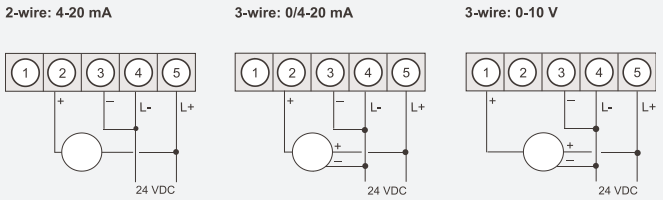
Direct current, direct voltage



Supply		Order number (without options)
24 VDC	Horizontal	MB1-33RHO.0001.770AD
	Vertical	MB1-33RVO.0001.770AD

OPTIONS	Availability
Green bargraph display	
Orange bargraph display	
Multicolour	

Connection pictures

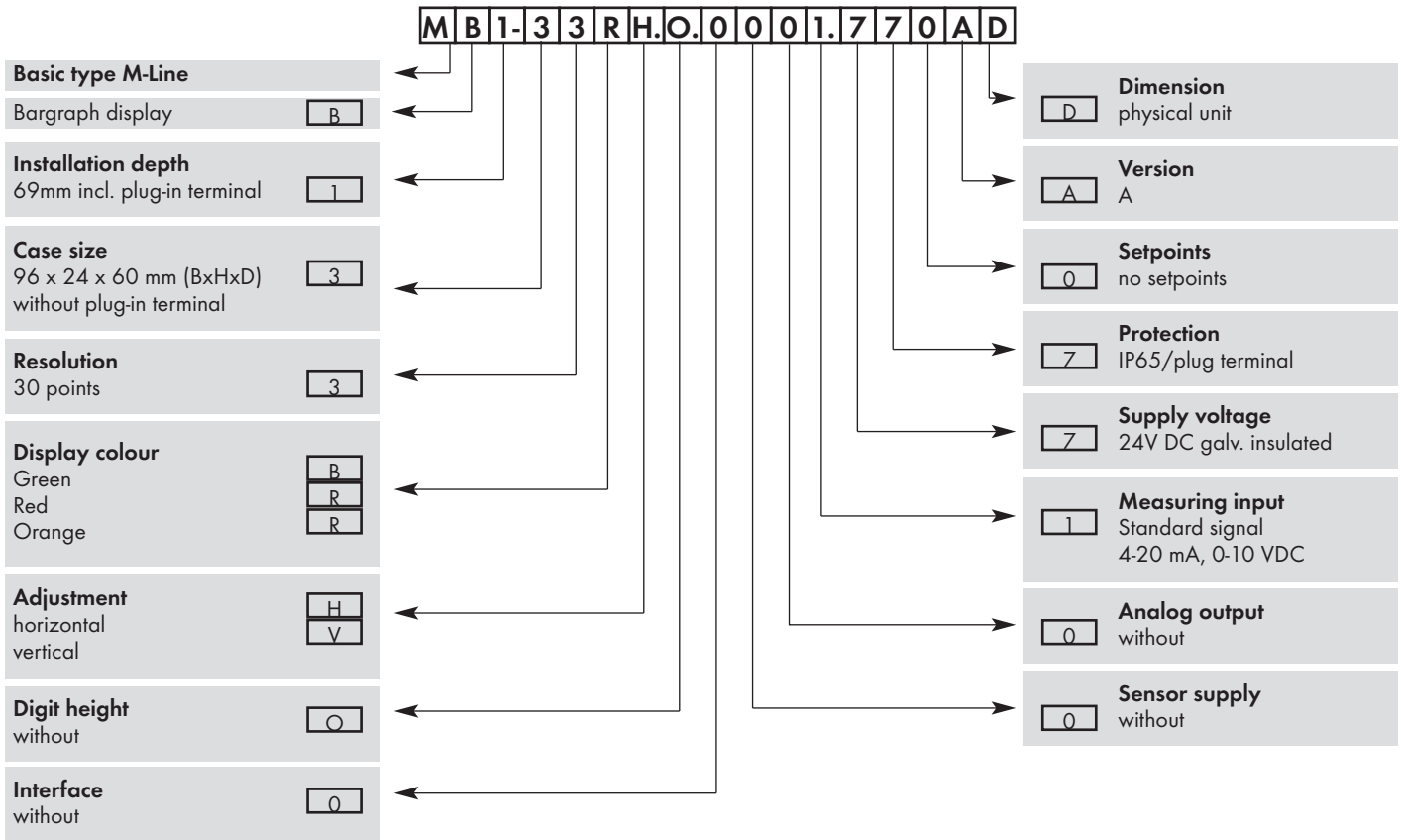


Dimensions

Technical Data

Dimensions			
	Case	B96 x H24 x D60 mm, (D=69mm including plug-in terminal)	
	Panel cut-out	92.0 $^{+0.8}$ x 22.0 $^{+0.3}$ mm	
	Fixing	Screw elements for insulation thickness up to 3mm	
	Case material	PC Polycarbonate, black UL94V-0	
	Sealing material	EPDM, 65 Shore	
	Protection class	Front IP65 standard Frontside IP00	
	Weight	Approx. 0.1k g	
	Connection	Plug-in terminal; line cross section up to 2.5mm^2	
Display			
	Bargraph	30 points	
	Bargraph segment	4mm	
	Segment colour	Red, optionally green or orange	
	Display range	30 points bargraph display	
	Overflow/Underflow	Flashing on the two bargraph elements at the top/ flashing of the two bargraph elements at the bottom	
	Display time	Approx. 100ms	
Measuring input			
	Span	-12 ...12 V	/-22 mA ...24 mA
	Measuring range	0 ...10 V	/0/ 4 ...20 mA
	Input resistance	Ri at ~200 kΩ	Ri at ~100 Ω
	Measuring error	0.5% of final value, +/- 1 Digit	/0.5% of final value, +/- 1 Digit
	Temperature drift	100ppm/K	
	Measuring time	Approx. 100 ms	
	Measuring principle	U/F converter	
	Resolution	Approx. 14 Bit at 0.1s measuring time	
Power pack			
	Voltage	24 VDC, +/- 10%, 2 A	
Memory			
	EEPROM		
	Data life	≥ 100 years	
Ambient conditions			
	Working temperature	0 to +60°C	
	Storing temperature	-20 to +80	
	Climatic density	Relative humidity 0-85% on years average without dew	
EMV			
	DIN 61326		
CE-sign			
	Conformity according to 2004/108/ EG		
Safety standard			
	DIN 61010; EN 60664-1		

Ordering code MB1Baragraph



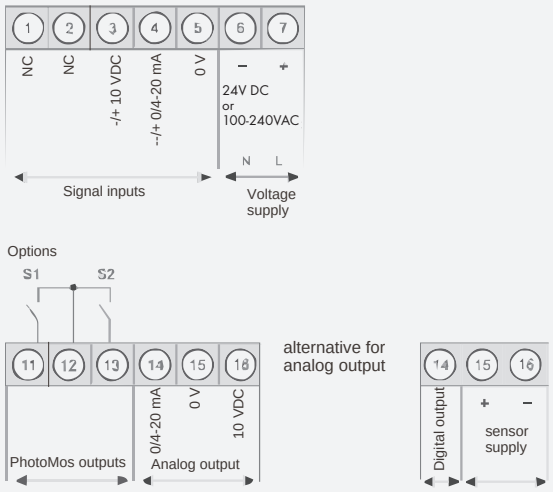
M3-7V.../M3-7T

Programmable Digital Panel 48 x 24 mm

Red display of -1999 up to 99999 (optional green, orange or blue display)
Minimal installation depth: 90 mm without plug-in terminal
Min-/max-memory
30 additional adjustable setpoints
Display flashing at threshold exceedance / undershooting
Hold -and tara- function
Permanent min-/max-value recording
Adjustment via factory default or directly on the sensor signal
Volume measurement (totalizator)
Mathematical functions like reciprocal value, square root, square, rounding
Programming interlock via access code
Protection class IP65 at the front
Pluggable screw terminal
Optional: 2 PhotoMos-outputs
Optional: Analog output or sensor supply
Optional: Digital input

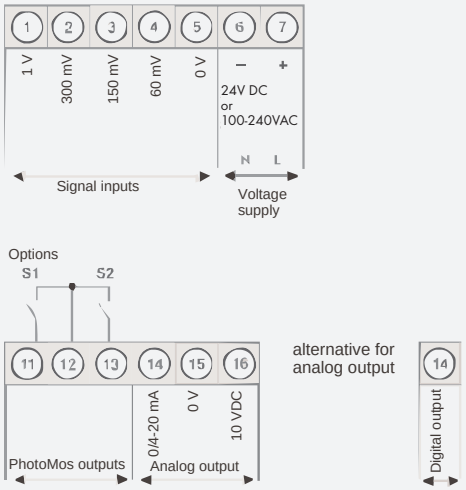
M3-7V...
Case 48 X 24 mm

Direct current, direct voltage



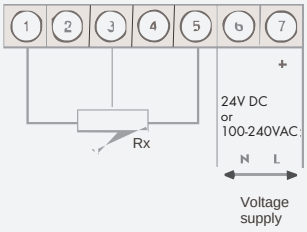
Supply	Order number (without options)
100-240 VAC 24 VDC	**M3-7VR5A.0001.S70AD** **M3-7VR5A.0001.770AD**

Direct voltage (Shunt)

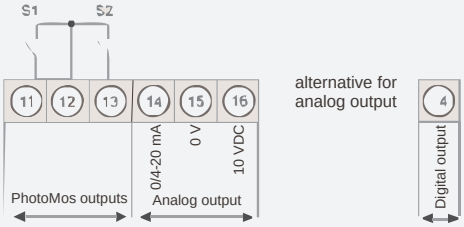


Supply	Order number (without options)
100-240 VAC 24 VDC	**M3-7VR5A.0002.S70AD** **M3-7VR5A.0002.770AD**

Potentiometer 0 -100 % (>1 kΩ ... <1000 kΩ)

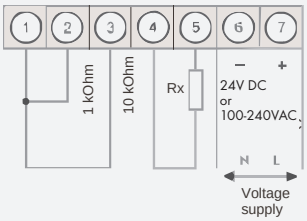


Options

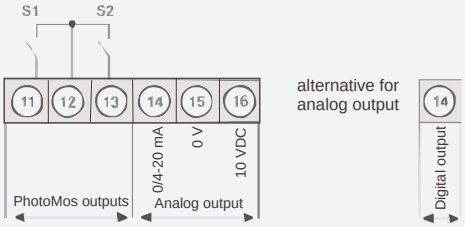


Supply	Order number (without options)
100-240 VAC	**M3-7VR5A.0005.S70AD**
24 VDC	**M3-7VR5A.0005.770AD**

Resistance (1 kΩ or 10 kΩ)

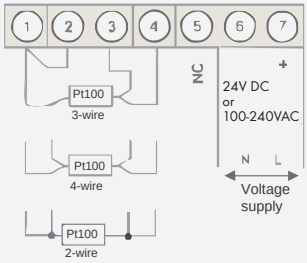


Options

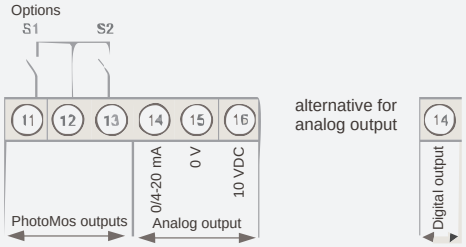


Supply	Order number (without options)
100-240 VAC	**M3-7VR5A.0006.S70AD**
24 VDC	**M3-7VR5A.0006.770AD**

PT100(2-/3-/4-wire) -200°C..850°C/-328°F..1562°F

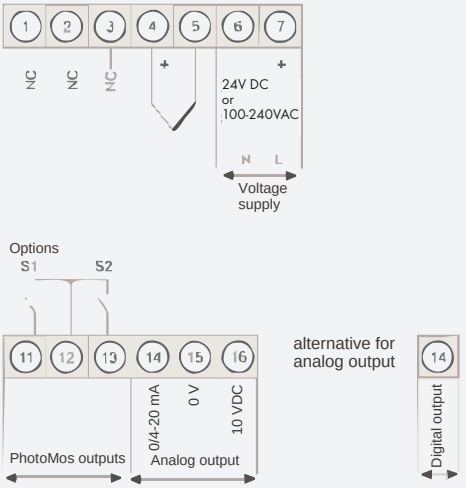


Options



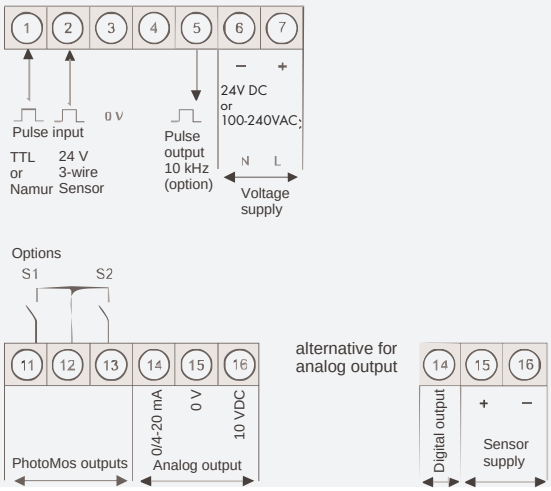
Supply	Order number (without options)
PT100 2-/4-wire	**M3-7TR5A.010C.S70AD**
100-240 VAC	**M3-7TR5A.010C.770AD**
24 VDC	
PT100 3-wire	**M3-7TR5A.030C.S70AD**
100-240 VAC	**M3-7TR5A.030C.770AD**
24 VDC	

Thermocouple Type L, J, K, B, S, N. E, T, R



Supply	Order number (without options)
100-240 VAC	**M3-7TR5A.040X.S70AD**
24 VDC	**M3-7TR5A.040X.770AD**

Frequency (0.01 Hz to 999.99 kHz)

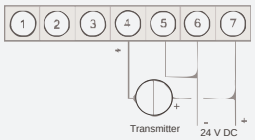


Supply	Order number (without options)
100-240 VAC	**M3-7FR5A.0007.S70AD**
24 VDC	**M3-7FR5A.0007.770AD**

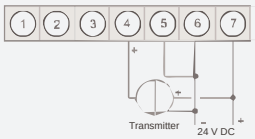
Connection pictures

M3 devices with current input/ volatge input

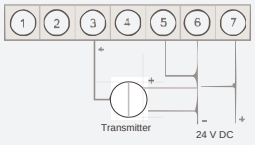
M3 in combination with a 2-wire sensor 4-20 mA



M3 in combination with a 3-wire sensor 0/4-20 mA



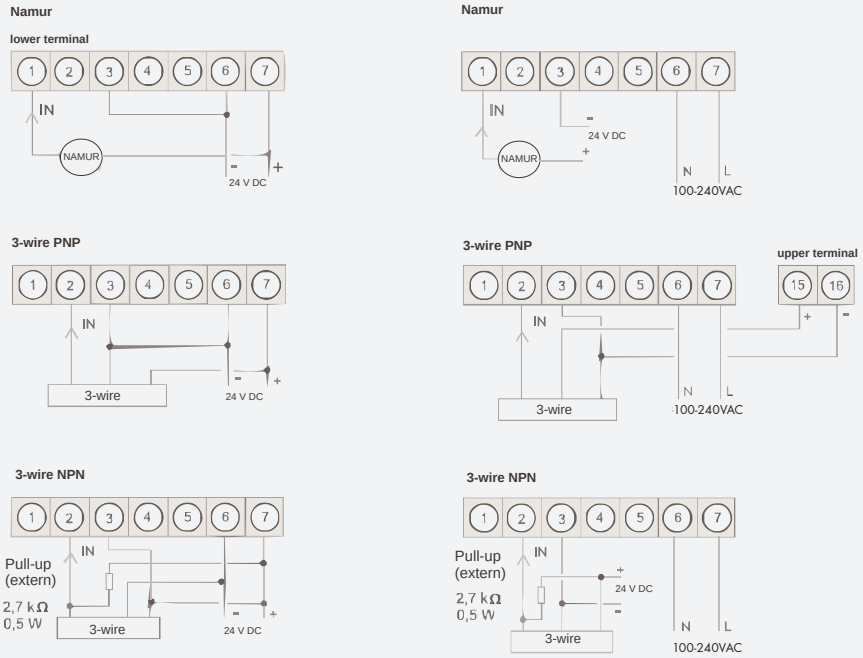
M3 in combination with a 3-wire sensor 0-10 V



M3 devices with current input/ volatge input and sensor supply

Connection pictures

M3 devices with frequency input/ pulse input



OPTIONS	Availability						
	Diret current/-voltage	*Shunt*	*Potentiometer*	*Resistance*	*PT100*	*Thermo couple*	*Frequency*
Blue LED							
Orange LED							
Green LED							
Digital input							
Sensor supply 10 VDC / 20 mA incl. digital input at a device supply of 24 VAC							
Sensor supply 24 VDC / 50 mA incl. digital input at a device supply of 24 VAC							
Sensor supply 24 VDC / 50 mA incl. digital input and impulse output at a device supply of 24 VAC							
Analog output 0-10 VDC, 0/4-20 mA at a device supply of 24 VAC							
2 PhotoMos outputs							
Without keypad, operation on the back							
Voltage supply 24VDC or 100-240 VAC							

Technical Data

Dimensions					
	Case	B48 x H24 x D90 mm, (including plug-in terminal D=109 mm)			
	Panel cut-out	45.0 $^{+0.6}$ x 22.2 $^{+0.3}$ mm			
	Fixing	Screw elements for wall thickness up to 3 mm			
	Case material	PC Polycarbonate, black			
	Sealing material	EPDM, 65 Shore, black			
	Protection class	At the front IP65 Standard			
		At the back IP00			
	Weight	Approx. 200 g			
	Connection	Plug-in terminal; line cross-section up to 2.5 mm^2			
Display					
	Display	5-digit			
	Digit height	10 mm			
	Segment colour	Red (standard), optional available in green, blue and orange			
	Display range	-19999 to 99999			
	Setpoints	Optical display flashing			
	Overflow/Underflow	Horizontal bars at the top/ horizontal baras at the bottom			
	Display time/Measuring time	0.1 to 10.0 seconds			
Measuring input					
M3-7VR5A.0001...	Span	-12 ...12 V	/-22 ...24 mA		
Direct current/	Measuring range	0-10 VDC	/0/4-20 mA		
Direct voltage	Input resistance	Ri at ~200 kΩ	Ri at ~100 Ω		
	Measuring error	0.1% of measuring range, +/- 1 Digit	/0.1% of measuring range, +/- 1 Digit		
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	Approx. 18Bit at 1s measuring time			
Measuring input					
M3-7VR5A.0002...	Span	-5 ...75mV	-15 ...180mV	-30 ...360mV	-100 ...1200mV
Shunt	Measuring range	0 ...60 mV	0 ...150mV	0 ...300mV	0 ...1000mV
	Input resistance	Ri at ~12 kΩ	Ri at ~60 kΩ	Ri at ~30 kΩ	Ri at ~200 kΩ
	Measuring error	0.2% of measuring range, +/- 1 Digit /			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	Approx. 18Bit at 1s measuring time			
Measuring input					
M3-7VR5B.0005...	Span	>1 kΩ ...1000 kΩ			
Potentionmeter	Measuring range	0-100%			
	Measuring error	0.2% of measuring range, +/- 1 Digit			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	Approx. 18Bit at 1s measuring time			
Measuring input					
M3-7VR5A.0x06...	Span	0...1,1 kΩ, 0...11 kΩ			
Resistance	Measuring range	0...1kΩ , 0...10 kΩ			
	Measuring error	0.1% of measuring range, +/- 1 Digit			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	Approx. 18Bit at 1s measuring time			
Measuring input					
M3-7TR5A.010C...	Measuring range	-200 ...850°C/ -328 ...1562°F			
PT100	Measuring error	0.1% of measuring range, +/- 1 Digit			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Resolution	0.1°C or 0.1°F			
Measuring input					
M3-7TR5A.040X...	Measuring range	Type L -200...900°C	Type B 80...1820°C	Type E -270... 1000°C	
Thermocouple		Type J -210...1200°C	Type S -50...1768°C	Type T -270...400°C	
		Type K -270...1372°C	Type N -270...1300°C	Type R -50...1768°C	
	Measuring error	2K, +/- 1 Digit			
	Temperature drift	100ppm/K			
	Measuring time/principle	0.1 ...10.0 seconds/ U/F-conversion			
	Characteristic line error	< +/- 1K			
	Resolution	0.1°C			
	Reference junction	Thermistor			
Measuring input					
M3-7FR5A.0007...	Signal	Pulse input, TTL, Namur, 3-wire initiator PNP/ NPN			
Frequency	Input resistance	Ri at 24V/ 4 kΩ			
		High/ Low level > 1.5V/ < 4V			
		High/ Low TTl level >4.6V/ <1.9V			
	Input frequency	0.01 Hz selectable up to 999.99 kHz			
	Measuring error	0.05% of measuring range			
Output					
	PhotoMos	Closer contact: 30VDC/ AC, 0.4A			
	Pulse output	Max. 10 KHz (only with frequency metering)			
	Analog output	0-10 VDC, 0/4-20 mA (16 Bit) switchable			
	Sensor supply	24 VDC/ 50 mA			
		10 VDC/ 20 mA			

Technical Data

Digital input		
	Input	< 2.4 V/OFF; 10 V ON; max.30 VDC Ri at~5 kΩ
Power pack		
	Supply	100-240 VAC 50/60 Hz / DC +/- 10% (max.5 VA) 24 VDC +/- 10%, galvanic insulated (max.4 VA)
Memory		
	EEPROM Data life	 ≥ 100 years
Ambient conditions		
	Working temperature Storing temperature Climatic density	0 to +50°C -20 to +80 Relative humidity 0-85% on years average without dew
CE-sign		
	Conformity to 2004/ 108/ EG	
EMV		
	EN 61326	
Safety standard		
	EN 61010	

Ordering code M3-Digital display standard

M 3- 7 V R 5 A. 0 0 0 1. 7 7 0 A D

Basic type M-Line

Installation depth
109mm incl. plug terminal — 3

Case size
48 x 24 x 90 mm (BxHxTl) — 1

Display type
Frequency — F
Temperature — T
V, A, Ohm — V

Display colour
Blue — B
Green — G
Red — R
Orange — Y

Number of digits
5-digit — 5

Digit height
10 mm — A

Interface
without — 0
one — 1

Temperature devices
PT100 4-wire — 1
Thermocouple — 4

Sensor supply
without — 0
10 VDC/ 20mA (incl. digital input) — 2
24 VDC/ 50 mA (incl. digital input) — 3
24 VDC/ 50 mA (incl. pulse in 10 kHz, only with frequency devices)

Dimension
D — physical unit

Version
A — A

Setpoints
0 — Not setpoints
2 — 2 PhotoMos-outputs

Protection
1 — without keypad operation on the back
7 — IP65/ pluggable terminal

Supply voltage
7 — 24 VDC galv.insulated
S — 100-240 VAC

Measuring input
1 — Direct current, direct voltage
2 — Shunt
5 — Potentionmeter
6 — Resistance
7 — Frequency
C — PT100 -200 ...850°C
X — Thermo Type B,E,J,K,L,N,R,S,T

Analog output
0 — without
X — 0-10 VDC, 0/ 4-20 mA

celsa

PVE4

Programmable Digital Panel Instrument 72 x 36 mm

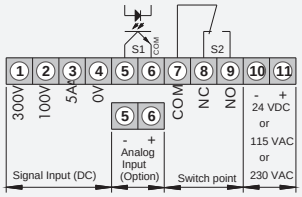
Digital processor-controlled panel meter

Isolated
2 free scalable setpoints/hysteresis
analog output galvanic insulated
Min/Max memory

Digit height 14,0 mm

PVE4
Case 72 x 36 mm

Alternating voltage, alternating current



Supply		Order number (without options)
230 VAC	Stantard	**PVE 4.004.6522C**
	True effective value RMS	**PVE 4.104.6522C**
115 VAC	Standard	**PVE 4.004.6422C**
	True effective value RMS	**PVE 4.104.6422C**
24 V DC (galvanic insulated)	Standard	**PVE 4.004.6722C**
	True effective value RMS	**PVE 4.104.6722C**

Options PVE

	PVE 4.004.... Alternating current
Green LED	●
Protection IP54 at the front	●
Protection IP65 at the front	●
Plug-in terminal	●
With analog output there is no setpoint S1!	●
Analog output 0-10 V DC/ 12 bit (supply voltage 230/ 115 V AC)	●
Analog output 0-20 mA/ load 500Ω/ 12 bit (supply voltage 230/ 115 V AC)	●
Analog output 4-20 mA/ load 500Ω/ 12 bit (supply voltage 230/ 115 V AC)	●
Analog output 0-10 V DC/ 12 bit (supply voltage 24 V DC galvanic insulated)	●
Analog output 0-20 mA/ load 500Ω/ 12 bit (supply voltage 24 V DC galvanic insulated)	●
Analog output 4-20 mA/ load 500Ω/ 12 bit (supply voltage 24 V DC galvanic insulated)	●
The analogue output is galv.insulated from the measuring input!	●
Dimension strips selectable (max. 7signs)	●
Measuring range 1 A on demand (S108)	●
Other power supplies on demand	●

Ordering code PVE

Digital panel instrument with microprocessor based technology and 2 setpoints (standard)

P	V	E	4	0	0	4	6	5	2	2	C

Basic model

Voltage metering — V

Internal index — E

Number of digits
4-digits — 4

Sensor supply
no sensor supply — 0

Alternating voltage, current
Standard — 0
True effective RMS — 1

Outputs
no output — 0
0-10 V — 1
0-20 mA — 2
4-20 mA — 3

Internal index

Setpoints (standard) — 2
1 relay output
1 open collector output

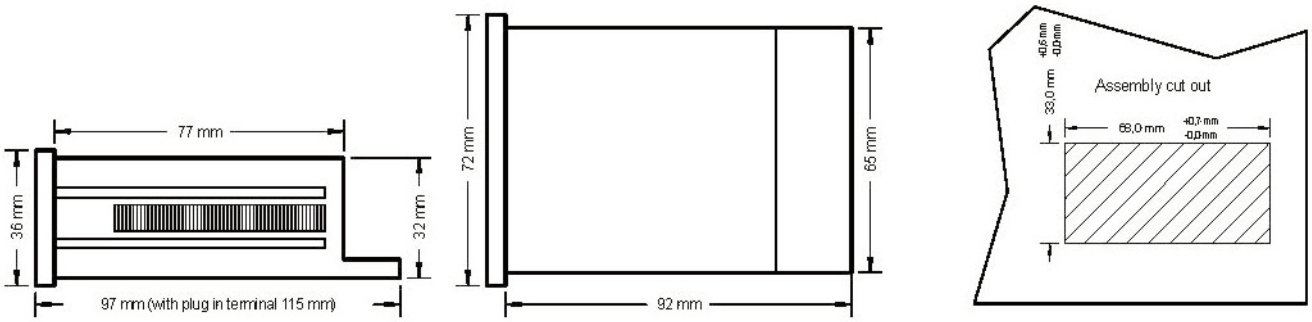
Mechanical options
1 — Plug-in terminal, protection IP65
2 — Plug-in terminal, protection IP40
4 — Plug-in terminal, protection IP54
7 — Plug-in terminal, foil keyboard IP65
8 — Plug-in terminal, foil keyboard IP40
9 — Plug-in terminal, foil keyboard IP54

Power supply
4 — 115 VAC
5 — 230 VAC
7 — 24 VDC (galvanic insulated)

Size of case — 6
72 x 36

Measuring input — 4
Alternating voltage, alternating current

Dimensions



Technical Data

Dimensions		
	Housing	B72 x H36 x D97 mm, (including plug-in terminal D=115 mm)
	Panel cut-out	$68.0^{+0.7}$ x $33.0^{+0.6}$ mm
	Fixing	Special quick plastic clamp proper to fix in wall up to 50 mm
	Housing material	PC/ABS-plastic blend, UL94V-0, black
	Protection class	At the front IP40
		At the back IP00
	Weight	Approx. 200 g
	Connection	at the rear via terminals up to 2.5 mm^2
Input		
PVE4.004....	Measuring range	100V, 300V, 5A - Optional 1A
Alternating current/		all range selectable via connection terminal
Alternating voltage	Input resistance	Ri with 100V= ~1MΩ 1A= ~276m Ω
		300V= ~4MΩ 5A= ~56m Ω
Output		
For all versions	Relay outputs	charge 240 VAC/ 0.25A - 24VDC/ 1A, with ohm resistive burden
	(Switching cycle)	$2*10^5$ at max. contact rate
		$10*10^5$ mechanically
	Open collector	Supply by customers (U_B= 5-35V (I_{max}= 100A with $U_{CE\ sat}$)
	Analog output	0-10 VDC (12 Bit)
		0-20 mA (12 Bit) load max. 500Ω
		4-20 mA (12 Bit) load max. 500Ω
		The analog output is galvanic insulated from the measuring input!
Accuracy		
PVE4.0x4...	Resolution	-999...9999 Digit
	Measuring fault	+/- 1.0% of final value, +/- 1 digit
	Measuring principle (input)	precision rectifier - effective value with sine waveform only
	Frequeny range	Nominal precision 40Hz up to 1000Hz
PVE4.1x4...	Measuring fault	+/- 0.7% of final value, +/- 1 digit, crest factor 3
	Measuring principle (input)	True effective value RMS
	Frequeny range	Nominal precision 40Hz up to 1000Hz
PVE4.004...		I ~ 200 ppm/K / U ~ 100 ppm/K
For AC versions	Measuring principle	Voltage/ frequency converter
Power unit		
	Supply voltage	230/ 115 VAC +/- 10% (50-60Hz), 24 VDC +/- 10% galvanic insulated
	Power consumption	max. 3VA
Indication		
	Display	LED with 7 segments, 14mm high, red
		4-digit = indication 9999
For all versions	Ovrflow	indication of 4 transversal bars
For all versions	Indication time	from 0.1 up to 10 seconds adjustable
Ambient conditions		
	Working temperature	0 up to +60°C
	Storing temperature	-20 up to +80°C