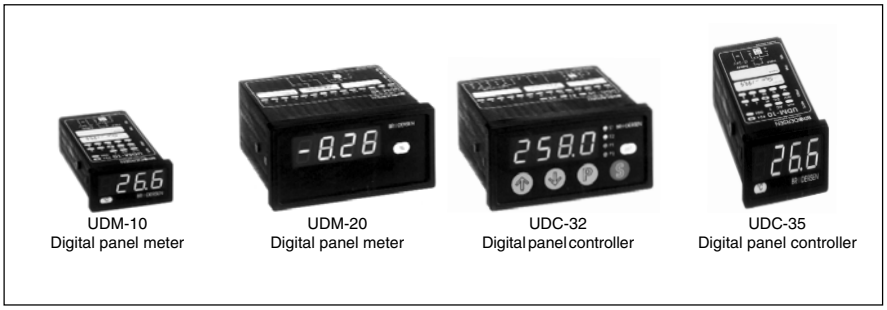
INTRODUCTION

Brodersen digital panel meters and controllers provide clear and accurate display of process values, easily readable at a distance.
The digital panel meters and controllers accept a great variety of input signals, thus applicable in most applications.
For applications including control both on/off, P, PD, PI and PID controllers are available within the product programme.

The compact design, the ease of adjustment and the consistent quality of the entire range of Brodersen products are the hallmarks of a truly unique product programme.



UDM-10
Digital panel meter

UDM-20
Digital panel meter

UDC-32
Digital panel controller

UDC-35
Digital panel controller

SELECTION GUIDE

	Input					Output relays			Dis-play				
	AC/DC voltage	AC/DC current	Temperature	Standard process signals	3-phase mains	1 output relay	2 output relays	3 output relays	LED display	LCD display	Remark	Type	Page
Digital panel meters and controllers	●	●	●	●					●		H x B: 24 x 48 mm	UDM-10	94
	●	●	●	●					●		H x B: 48 x 96 mm	UDM-20	98
	●	●	●	●			●		●		On/off controller H x B 48x96	UDC-32	102
	●	●	●	●				●	●		Prog. On/off, P, PI, PD, PID contr.	UDC-35	106

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DESCRIPTION

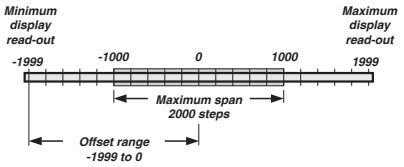
Digital panel meter with 3½-digit LED display.

The panel meter is used for monitoring and measurement of:
- AC/DC voltage.
- AC/DC current.
- Temperature with Pt-100/500/1000, Ni-100, thermistors and thermocouples.
- Standard process signals.

The actual input signal type and measuring range must be specified when the panel meter is ordered.
Splash proof front panel with integrated display in standardized housing (48 x 24 mm) with plug-in terminals at the rear of the panel meter.
Version with galvanic isolation between input signal and power supply.

CALIBRATION/CONFIGURATION

The panel meter for monitoring of standard process signals is fully user adjustable within in the scale limits *-1999* to *1999* with a maximum span of 2000 steps, e.g. a scale from *-1000* to *1000*.

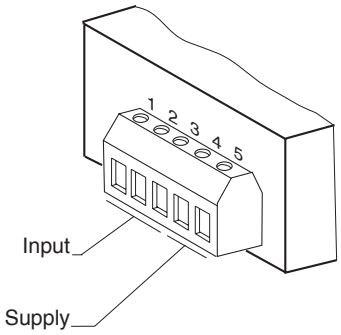


The offset is adjustable within the range *-1999* to *0*.

The decimal point position is selectable _.___ __.__ ___.__ ____

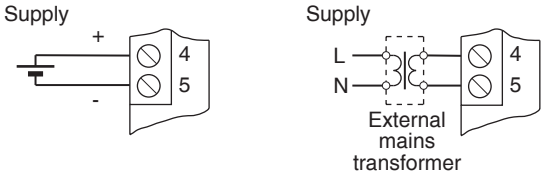
The input range is selectable 0-20mA/0-10V or 4-20mA/2-10V.

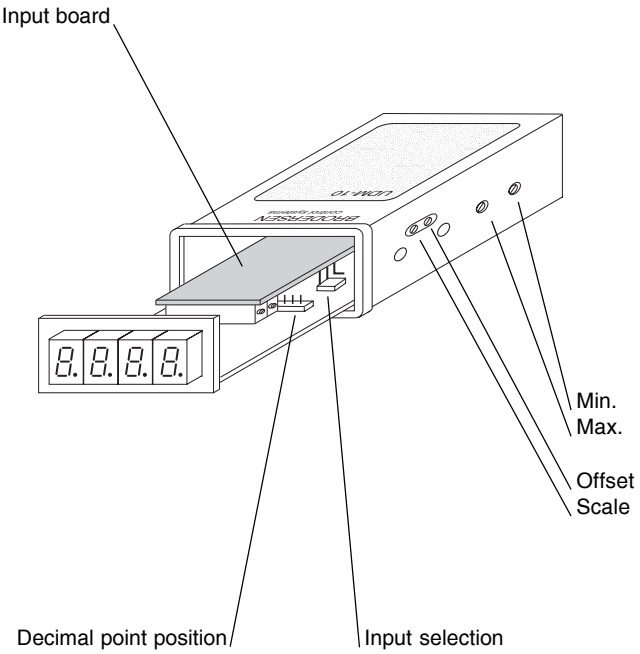
REAR PANEL/CONNECTIONS



Supply voltage

DC AC





Jumper	Display
	1.999
	19.99
	199.9
	1999

Jumper	Input
	0-20mA/0-10V
	4-20mA/2-10V

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VERSION/ORDERING CODES

Type: UDM-10 G24 P1

Supply voltage:
12-24V AC/DC G24

Input:

Current:
DC: DC [3]
0-19.99mA. DC1
0-199.9mA. DC2
0-10.00A. DC3 [1]
0-100.0A. DC4 [1]

AC: AC [3]
0-19.99mA. AC1
0-199.9mA. AC2

Voltage:
DC: DV [3]
0-19.99V. DV1
0-100.0V. DV2

AC: AV [3]
0-19.99V. AV1
0-100.0V. AV2

RTDs:
Pt-100: P [3]
-50.0-199.9°C. P1
-50-850°C. P3

Pt-500: P [3]
-50.0-199.9°C. P51
-50-850°C. P53

Pt-1000: P [3]
-50.0-199.9°C. P11
-50-850°C. P13

Ni-100: N [3]
-50.0-199.9°C. N1

Thermistor (KTY): T [3]
-30.0-100.0°C. T1

Thermocouples:
Fe-CuNi: J [3]
-50-1200°C. J1 [4]

NiCr-Ni: K [3]
-50-1350°C. K1 [4]

PtRh-Pt 10%: S [3]
-50-1750°C. S1 [4]

PtRh-Pt 13%: R [3]
-50-1750°C. R1 [4]

Standard process signalsU: [3]
0-20mA/4-20mA DC and
0-10V/2-10V DC U1

TECHNICAL DATA

Temperature drift:	Max. 0.01% per °C.
Display:	3½-digit LED-type (-1999 to 1999).
Digit height:	10 mm.
Scale:	The scale is adjusted to the actual measuringrange listed in the ordering key, except U1 version with user adjustable scale (-1999 to 1999, max. 2000 steps).
Decimal point:	Selectable _.___ __.__ ___.__ ____
Terminals:	1.5 mm² plug-in screw terminals.
Supply voltage:	12-24V AC/DC (10-30V),
Mains frequency:	45-66Hz.
Consumption:	
G24 version:	0.7VA.
Protection:	
Front:	IP54 (IP65 on request).
Rear:	IP20.
Ambient temperature:	-10-55°C.
Isolation:	
G24 version:	100V AC
Dimensions:	According to DIN 43700.
Front:	48 x 24 mm.
Cut-out:	43.5 x 21.5 mm.
Depth:	80 mm + frame 5 mm + terminals 10mm.
Housing:	
Front:	Plastic.
House:	Self-extinguishing ABS.
Weight:	Approx. 85 g.

NOTES/REMARKS

1) With external shunt (60mV voltage drop) type AAS-010 (0-10.0 A DC) or AAS-100 (0-100 A DC).
2) There is no galvanic isolation between input and supply. External isolation should be provided to prevent damage to the meter when measuring voltage/current or a G24-version with internal isolation should be used.
3) Special range. Please specify input and scale.
4) The specified accuracy is valid within the subranges:
J1: 0 -1100 °C, S1: 150 -1550 °C,
K1: 0 -1150 °C, R1: 150 -1550 °C.

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AC/DC VOLTAGE

DESCRIPTION

Input for direct measurement of AC or DC voltages up to 100V. The AC input is equipped with a full wave rectifier for accurate AC measurement.
The scale of the panel meter is adjusted to the actual measuring range.

Typical applications:
Monitoring systems (over/undervoltage).
Generator monitoring systems.
Battery charge monitor.
Battery monitoring in power back-up systems.

MEASURING RANGES

AC	DC
0-19.99V	0-19.99V
0-100.0V	0-100.0V

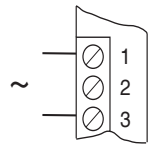
Other ranges are available on request.

Input impedance:
AC: 1kOhm/V.
DC: 1MOhm (>10V).

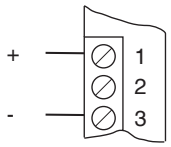
Measuring accuracy:
AC: 0.3% of full scale ± 1 digit.
DC: 0.1 of full scale ± 1 digit.

WIRING DIAGRAMS

AC



DC



AC/DC CURRENT

DESCRIPTION

Input for direct measurement of AC or DC current up to 200mA DC/ AC The measuring range is easily extended by adapting an external shunt.
The AC input is equipped with a full wave rectifier for accurate AC measurement.
The scale of the panel meter is adjusted to the actual measuring range.

Typical applications:
General monitoring applications.
Monitoring/protection of motors.
Battery charge monitor.

MEASURING RANGES

AC	DC	
0-19.99mA	0-19.99mA	
0-199.9mA	0-199.9mA	
	0-10.00A 0-100.0A	with external shunt (60mV voltage drop)

Other ranges are available on request.

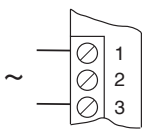
Input impedance: 1V
I max.

60mV with shunt.
I max

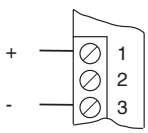
Measuring accuracy:
AC: 0.3% of full scale ± 1 digit.
DC: 0.1% of full scale ± 1 digit.

WIRING DIAGRAMS

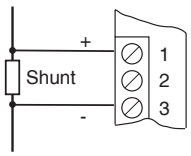
AC



DC



DC with shunt



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TEMPERATURE

DESCRIPTION

Input for all types of temperature sensors, both thermocouples and resistor types, makes the UDM-10 suitable for most temperature moni-toring applications.
The scale of the panel meter is adjusted to the actual measuring range.

Typical applications:
General temperature monitoring.

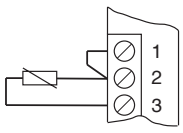
MEASURING RANGES

RTDs/Thermistors			
Pt-100/500/1000	Ni-100		Thermistor(KTY)
-50.0-199.9°C -50-850°C	-50.0-199.9°C		-30.0-100.0°C
Thermocouples			
Fe-CuNi	NiCr-Ni	PtRh-Pt 10%	PtRh-Pt 13%
-50-1200°C	-50-1350°C	-50 -1750°C	-50-1750°C

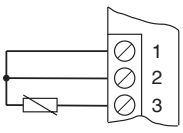
Measuring accuracy:
RTD/thermistor: 0.1% of full scale ±1 digit.
Thermocouples: 1% of full scale ±1 digit [4].

WIRING DIAGRAMS

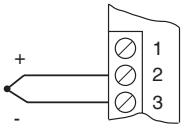
RTD/Thermistor (2-wire)



RTD/Thermistor (3-wire)



Thermocouple



STANDARD PROCESS SIGNAL

DESCRIPTION

The scaling facilities of the UDM-10 makes it ideal as a monitor device for normal standard process signals, e.g. 4-20mA.
Any output from a transmitter can be scaled to engineering units and a unit label can be inserted on front of the panel meter. A sheet with common units is enclosed with the panel meter.

Typical applications:
General process instrumentation.
Signal monitor with read-out in engineering units.

MEASURING RANGES

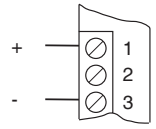
DC
0-20mA/4-20mA and 0-10V/2-10V. The actual input signal is selected via a jumper on the input board of the panel meter.

Measuring accuracy: 0.1% of full scale ± 1 digit.

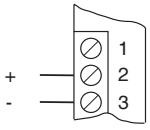
Input impedance:
Voltage: 1Mohm.
Current: 50Ohm.

WIRING DIAGRAMS

Voltage



Current



CONFIGURATION/CALIBRATION

Example: Adjust the panel meter to a scale *-1000* to *1000*, input signal 4-20mA.

1) Remove the front frame, the screw on the under side, and the plug-in terminal and pull out carefully the circuit board. Place jumpers for input signal selection and decimal point position.
Assemble the panel meter and connect the supply voltage.
2) Apply min. signal 4mA and adjust ***Min*** to display read-out *0000*.
3) Apply max. signal 20mA and adjust ***Scale*** (coarse) and ***Max. input*** (fine) to a display read-out of *1999*.
Adjust ***Offset*** to display read-out *1000*.
4) Apply min. signal 4mA and check display read-out is *-1000*. If incorrect, return to step 2 and readjust the panel meter.

The panel meter is now calibrated and ready to use.

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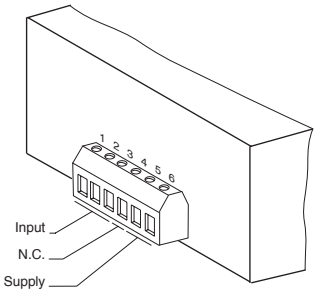
DESCRIPTION

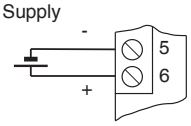
Digital panel meter with 3½-digit LED display.
The panel meter is used for monitoring and measurement of:
• AC/DC voltage.
• AC/DC current.
• Temperature with Pt-100/500/1000, Ni-100, thermistors and thermocouples.
• Standard process signals.
The actual input signal type and measuring range must be specified when the panel meter is ordered.
Splash proof front panel with integrated display in standardized housing (96 x 48 mm) with plug-in terminals at the rear of the panel meter.
Versions with galvanic isolation between input signal and power supply.

REAR PANEL/CONNECTIONS

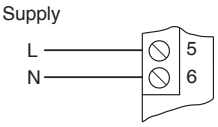


Supply voltage

DC

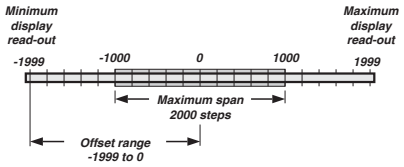


AC



CALIBRATION/CONFIGURATION

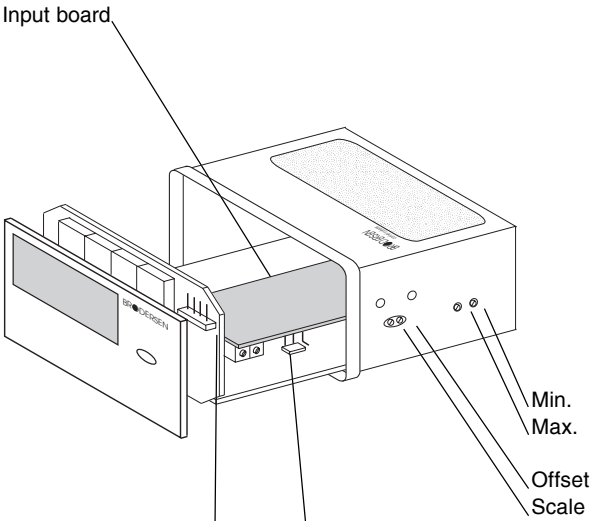
The panel meter for monitoring of standard process signals is fully user adjustable within in the scale limits -1999 to 1999 with a maximum span of 2000 steps, e.g. a scale from -1000 to 1000.



The offset is adjustable within the range -1999 to 0.

The decimal point position is selectable _.___ __.__ ___.__ ____

The input range is selectable 0-20mA/0-10V or 4-20mA/2-10V.



Decimal point position

Jumper	Display
●● ○ ○	1.999
○ ●● ○	19.99
○ ○ ●●	199.9
○ ○ ○ ○	1999

Input selection

Jumper	Input
●● ○	0-20mA/0-10V
○ ●●	4-20mA/2-10V

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VERSION/ORDERING CODES

Type: UDM-20 924 P1

Supply voltage:

24V AC	024
48V AC	048
110/120V AC	115
220/240V AC	230
24V DC	G24

Input:

Current:

DC:	DC [3]
0-19.99mA.	DC1
0-199.9mA.	DC2
0-10.00A.	DC3 [1]
0-100.0A.	DC4 [1]
AC:	AC [3]
0-19.99mA.	AC1
0-199.9mA.	AC2
0-5.00A.	AC3
0-200A.	AC4 [5]
0-500A.	AC5 [6]

Voltage:

DC:	DV [3]
0-19.99V.	DV1
0-199.9V.	DV2
0-500V.	DV3
AC:	AV [3]
0-19.99V.	AV1
0-199.9V.	AV2
0-500V.	AV3

RTDs:

Pt-100:	P [3]
-50.0-199.9°C.	P1
-50-850°C.	P3
Pt-500:	P [3]
-50.0-199.9°C.	P51
-50-850°C.	P53
Pt-1000:	P [3]
-50.0-199.9°C.	P11
-50-850°C.	P13
Ni-100:	N [3]
-50.0-199.9°C.	N1
Thermistor (KTY):	T [3]
-30.0-100.0°C.	T1

Thermocouples:

Fe-CuNi:	J [3]
-50-1200°C.	J1 [4]
NiCr-Ni:	K [3]
-50-1350°C.	K1 [4]
PtRh-Pt 10%:	S [3]
-50-1750°C.	S1 [4]
PtRh-Pt 13%:	R [3]
-50-1750°C.	R1 [4]

Standard process signals U: [3]

0-20mA/4-20mA DC and 0-10V/2-10V DC	U1

TECHNICAL DATA

Temperature drift: Max. 0.01% per °C.

Display: 3½ -digit LED-type (-1999 to 1999).
Digit height: 14 mm.

Scale: The scale is adjusted to the actual measuring range listed in the ordering key, except U1 version with user adjustable scale (-1999 to 1999, max. 2000 steps).

Decimal point: Selectable _.__ __.__ __.__ __.__

Terminals: 1.5 mm² plug-in screw terminals.

Supply voltage: 24V DC (19.2-28.8V),
24V AC (19.2-28.8),
48V AC (38.4-57.6),
110/120V AC (88-132V),
220/240V AC (176-264V).

Mains frequency: 45-66Hz.

Consumption: 2VA.

Protection:
Front: IP54 (IP65 on request).
Rear: IP20.

Ambient temperature: -10-55°C.

Isolation:
AC supply voltage versions: 4kV AC according to EN 60950 class II.
12, 24, 48 V d.c: 500V.

Dimensions: According to DIN 43700.
Front: 96 x 48 mm.
Cut-out: 91 x 43 mm.
Depth: 88 mm + frame 7 mm + terminals 10 mm.

Housing:
Front: Plastic.
House: Self-extinguishing ABS.

Weight: Approx. 250-370 g.

NOTES/REMARKS

1) With external shunt (60mV voltage drop) type AAS-010 (0-10.0 A DC) or AAS-100 (0-100 A DC).
3) Special range. Please specify input and scale.
4) The specified accuracy is valid within the subranges:
J1: 0 -1100 °C. S1: 150 -1550 °C,
K1: 0 -1150 °C. R1: 150 -1550 °C.
5) With external current transformer type AAT-200.1 (I_1/I_2=200A/1A).
6) With external current transformer type AAT-500.1 (I_1/I_2=500A/1A).

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AC/DC VOLTAGE

DESCRIPTION

Input for direct measurement of AC or DC voltages up to 500V. The AC input is equipped with a full wave rectifier for accurate AC measurement.
The scale of the panel meter is adjusted to the actual measuring range.

Typical applications:
Monitoring systems (over/undervoltage).
Generator monitoring systems.
Batterry charge monitor.
Battery monitoring in power back-up systems.

MEASURING RANGES

AC	DC
0-19.99V	0-19.99V
0-199.9V	0-199.9V
0-500V	0-500V

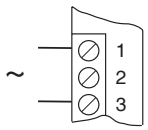
Other ranges are available on request.

Input impedance:
AC: 1kOhm/V.
DC: 1MOhm (>10V).

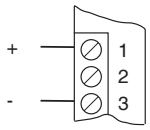
Measuring accuracy:
AC: 0.3% of full scale ± 1 digit.
DC: 0.1% of full scale ± 1 digit.

WIRING DIAGRAMS

AC



DC



AC/DC CURRENT

DESCRIPTION

Input for direct measurement of AC or DC current up to 200mA DC or 5A AC The measuring range is easily extended by adapting an external shunt or current transformer.
The AC input is equipped with a full wave rectifier for accurate AC measurement.
The scale of the panel meter is adjusted to the actual measuring range.

Typical applications:
General monitoring applications.
Monitoring/protection of motors.
Battery charge monitor.

MEASURING RANGES

AC		DC	
0-19.99mA		0-19.99mA	
0-199.9mA		0-199.9mA	
0-5.00A			
0-200A 0-500A	with external current transformer (1A sec.)	0-10.00A 0-100.0A	with external shunt (60mV voltage drop)

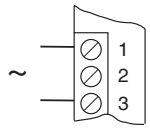
Other ranges are available on request.

Input impedance: 1V
I max.
60mV with shunt.
I max

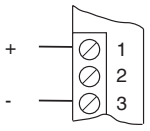
Measuring accuracy:
AC: 0.3% of full scale ± 1 digit.
DC: 0.1% of full scale ± 1 digit.

WIRING DIAGRAMS

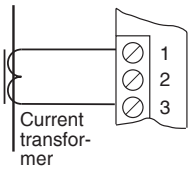
AC



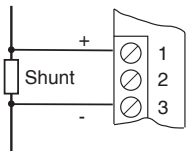
DC



AC with current transformer



DC with shunt



TEMPERATURE

DESCRIPTION

Input for all types of temperature sensors, both thermocouples and resistor types, makes the UDM-20 suitable for most temperature moni-toring applications.
The scale of the panel meter is adjusted to the actual measuring range.

Typical applications:
General temperature monitoring.

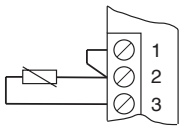
MEASURING RANGES

RTDs/Thermistors			
Pt-100/500/1000	Ni-100	Thermistor (KTY)	
-50.0-199.9°C -50-850°C	-50.0-199.9°C	30.0-100.0°C	
Thermocouples			
Fe-CuNi	NiCr-Ni	PtRh-Pt 10%	PtRh-Pt 13%
-50-1200°C-	50-1350°C	-50 -1750°C	-50-1750°C

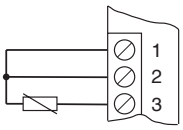
Measuring accuracy:
RTD/thermistor: 0.1% of full scale ±1 digit.
Thermocouples: 1% of full scale ±1 digit [4].

WIRING DIAGRAMS

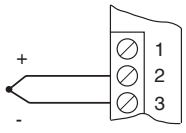
RTD/Thermistor (2-wire)



RTD/Thermistor (3-wire)



Thermocouple



STANDARD PROCESS SIGNAL

DESCRIPTION

The scaling facilities of the UDM-20 makes it ideal as a monitor device for normal standard process signals, e.g. 4-20mA.
Any output from a transmitter can be scaled to engineering units and a unit label can be inserted on front of the panel meter. A sheet with common units is enclosed with the panel meter.

Typical applications:
General process instrumentation.
Signal monitor with read-out in engineering units.

MEASURING RANGES

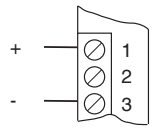
AC
0-20mA/4-20mA and 0-10V/2-10V. The actual input signal is selected via a jumper on the input board of the panel meter.

Measuring accuracy: 0.1% of full scale ± 1 digit.

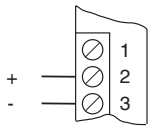
Input impedance:
Voltage: 1Mohm.
Current: 50Ohm.

WIRING DIAGRAMS

Voltage



Current



CONFIGURATION/CALIBRATION

Example: Adjust the panel meter to a scale -1000 to 1000 , input signal 4-20mA.

1) Remove the front frame and the plug-in terminal and pull out carefully the circuit board. Place jumpers for input signal selection and decimal point position.
Assemble the panel meter and connect the supply voltage.
2) Apply min. signal 4mA and adjust Min to display read-out 0000.
3) Apply max. signal 20mA and adjust Scale (coarse) and Max. input (fine) to a display read-out of 1999.
Adjust Offset to display read-out 1000.
4) Apply min. signal 4mA and check display read-out is -1000. If incorrect, return to step 2 and readjust the panel meter.

The panel meter is now calibrated and ready to use.

15.09

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DESCRIPTION

Digital panel controller with 4-digit LED display.

The panel controller is used for control and measurement of:
- AC/DC voltage.
- AC/DC current.
- Temperature with Pt-100/500/1000, Ni-100, thermistors and thermo-couples. The temperature measurement is fully linearized by the built-in microprocessor.
- Standard process signals.

The actual input signal type and measuring range must be specified when the panel controller is ordered.

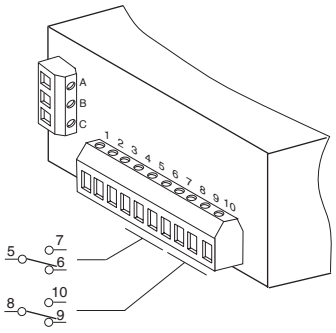
Splash proof front panel with integrated display, LED indicators and 4 button keypad for programming and adjustment.

The panel controller is microprocessor based and fully programmable from the keypad:
- Output relay mode selection with 6 different output modes.
- Scale minimum/maximum.
- Decimal point position.
- Setpoint (1 or 2).
- Hysteresis (below or above setpoint).
- Correction of read-out (in case of deviation between actual measuring value and read-out).
- Display update time (0-10.0 sec.).
- On delay, output relay 1 & 2 individually (0-100.0 sec.).
- Release delay, output relay 1 & 2 individually (0-100.0 sec.).

The settings are stored in an EEPROM and accidental change of preprogrammed settings is avoided through the keyboard lock facility.
One or two output relays (UDC-32) with LED indication of energized relay.
Standardized housing (96 x 48 mm) with plug-in terminals at the rear.
Versions with galvanic isolation between input signal and power supply.

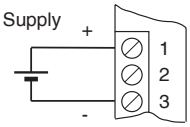
REAR PANEL/CONNECTIONS

Rear panel

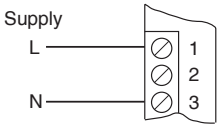


Supply voltage

DC

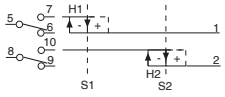
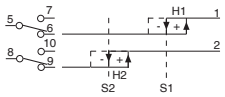
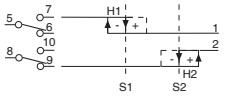
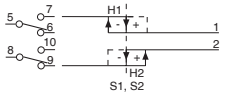
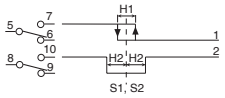
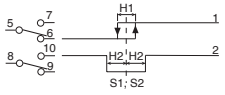


AC



OUTPUT RELAY MODES

The two output relays can be programmed to perform one of 6 functions*).

Mode	Function	Application example
A1		**Two level heater** Relay 1: High level. Relay 2: Basic level. 2 separate setpoints.
A2		**Two level indicator** Relay 1: Level 1. Relay 2: Level 2. 2 separate setpoints.
A3		**Alarm** Relay 1: Lower limit. Relay 2: Upper limit. 2 separate setpoints.
B1		**Heating/cooling** Relay 1: Controls heating. Relay 2: Controls cooling. Common setpoint.
C 1		**Heating/alarm** Relay 1: Controls heating. Relay 2: Alarm low and highlimit. Common setpoint.
C2		**Cooling/alarm** Relay 1: Controls cooling Relay 2:Alarm low and high limit. Common setpoint.

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VERSION/ORDERING CODES

Type: UDC-32 2 230 P1

Output relay:
2 output relays. 2

Supply voltage:
24V AC 024
48V AC 048
110/120V AC 115
220/240V AC 230
24V DC G24

Input:

Current:
DC: DC 3)
0-99.99mA. DC1
0-200.0mA. DC2
0-10.00A. DC3 1)
0-100.0A. DC4 1)

AC: AC 3)
0-200.0mA. AC2
0-5.000A. AC3 4)

Voltage:
DC: DV 3)
0-99.99V. DV2
0-500.0V. DV3

AC: AV 3)
0-99.99V. AV2
0-500.0V. AV3

RTDs:
Pt-100: P 3)
-19.95-99.95°C. P1
-50.0-300.0°C. NP2
-50-850°C. P3

Pt-500: P 3)
-19.95-99.95 °C. P51
-50.0-300.0 °C. P52
-50-850 °C. P53

Pt-1000: P 3)
-19.95-99.95 °C. P11
-50.0-300.0 °C. P12
-50 -850 °C. P13

Ni-100: N 3)
-50.0-300.0°C. NP2

Thermistor (KTY): T 3)
-30.0-100.0°C. T1

Thermocouples:
Fe-CuNi: J 3)
-50-1200°C. J1

NiCr-Ni: K 3)
-50-1350°C. K1

PtRh-Pt 10%: S 3)
-50-1750°C. S1

PtRh-Pt 13%: R 3)
-50-1750°C. R1

Standard process signals: 3)
0-20mA DC/0-10V DC U1

TECHNICAL DATA

Temperature drift: Max. 0.01% per °C.

Hysteresis: Adjustable inside the defined scale, above or below setpoint.

Display:
Digit height: 4 digit LED-type (-1999 to 9999).
Update time: 14 mm.
Programmable 0-10sec, 0.1sec. resolution.

Scale: Programmable scale min. and max. within the limits of the display (-1999 to 9999).

Decimal point: Programmable _.___ __.__ ___.__ ____

Indicators:
S1/S2 (green): Output relay activated.
P1/P2 (red): Programming of parameters.

Output relay: UDC-32: 2 SPDT.
Load (cosφ= 1): Max. 380V AC/2A, 240V AC/5A, 30V DC/5A.
Mechanical lifetime: Min. 10 x 10^6 operations.
Electrical lifetime: Min. 100.000 operations at max. load.
On -/release delay: Individually programmable 0-100.0sec, 0.1sec. resolution.

Terminals: 1.5 mm^2 plug-in screw terminals.

Supply voltage: 24V DC (19.2-28.8V),
24V AC (19.2-28.8V),
48V AC (38.4-57.6V),
110/120V AC (88-132V),
220/240V AC(176-264V).

Mains frequency: 45-66Hz.

Consumption: 3VA.

Protection:
Front: IP54 (IP65 on request),
Rear: IP20.

Ambient temperature:-10-55°C.

Isolation:
AC versions: 4kV AC according to EN 60950 class II.
12, 24, 48V DC: 500V.

Dimensions: According to DIN 43700.
Front: 96 x 48 mm.
Cut-out: 91 x 43 mm.
Depth: 88 mm + frame 7 mm + terminals 10 mm.

Housing:
Front: Plastic.
House: Self-extinguishing ABS.

Weight: 300-415 g.

NOTES/REMARKS

1) With external shunt type AAS-010 (0-10.0 A DC) or type AAS-100 (0-100 A DC).
3) Special range. Please specify input.
4) Extended measuring range can be obtained by using external current transformer.

02.98

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AC/DC VOLTAGE

DESCRIPTION

Input for direct measurement of AC or DC voltages up to 500V. The AC input is equipped with a true RMS rectifier for accurate ACmeasurement.
The facilities of the UDC-32 with two setpoints and output relays with programmable time delay and hysteresis make the UDC-32 suited for advanced voltage monitoring and control.

Typical applications:
Monitoring and alarm systems (over/undervoltage).
Generator control systems.
Battery charge control.
Battery monitoring and control in power back-up systems.

MEASURING RANGES

AC	DC
0-99.99V	0-99.99V
0-500.0V	0-500.0V

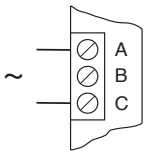
Other ranges are available on request.

Input impedance:
AC: 1kOhm/V.
DC: 1MOhm (>10V).

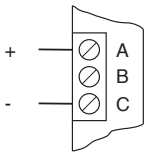
Measuring accuracy:
AC: 0.3% of full scale ± 1 digit.
DC: 0.1% of full scale ± 1 digit.

WIRING DIAGRAMS

AC



DC



AC/DC CURRENT

DESCRIPTION

Input for direct measurement of AC or DC current up to 200mA DC or 5A AC The measuring range is easily extended by adapting an external shunt or current transformer.
The AC input is equipped with a true RMS rectifier for accurate AC measurement.
The facilities with two setpoints/output relays, programmable time delay and hysteresis make the UDC-32 suitable for advanced current monitoring and control.

Typical applications:
General alarm and monitoring applications.
Monitoring/protection of motors.
Battery charge control.
Overload protection.

MEASURING RANGES

AC		DC	
0-200.0mA		0-99.99mA	
0-5.000A		0-200.0mA	
0-200A 0-500A	with external current transformer (1A sec.)	0-10.00A 0-100.0A	with external shunt (60mVvoltage drop)

Other ranges are available on request.

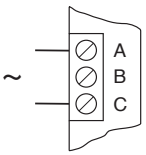
Input impedance: 1V
I max.

60mV with shunt.
I max

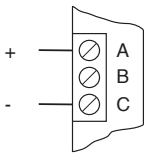
Measuring accuracy:
AC: 0.3% of full scale ± 1 digit.
DC: 0.1% of full scale ± 1 digit.

WIRING DIAGRAMS

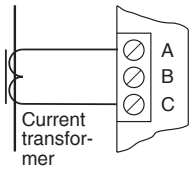
AC



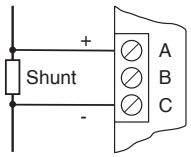
DC



AC with current transformers



DC with shunt



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TEMPERATURE

DESCRIPTION

Input for all types of temperature sensors, both thermocouples and resistor types.
High measuring accuracy is obtained over a wide temperature range by the microprocessor's compensation for nonlinearity in the sensor signal.
The two output relays and the extensive programming facilities make the UDC-32 suitable for most temperature control and monitoring applications.

Typical applications:
General temperature control and monitoring applications.
Wide range temperature measurement with high accuracy.
Temperature with separate control and alarm output.

MEASURING RANGES

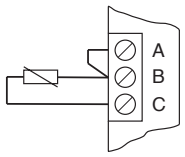
RTDs/Thermistors			
Pt-100/500/1000	Ni-100		Thermistor (KTY)
- 19.95- 99.95°C -50.0-300.0°C -50-850°C	-50.0-300.0°C		30.0-100.0°C
Thermocouples			
Fe-CuNi	NiCr-Ni	PtRh-Pt 10%	PtRh-Pt 13%
-50-1200°C	-50-1350°C	-50 -1750°C	-50-1750°C

Measuring accuracy: 0.1% of full scale ±1 digit.

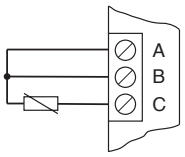
Resolution: Min. 0.5°C.

WIRING DIAGRAMS

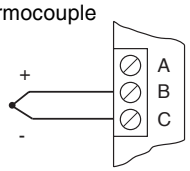
RTD/Thermistor (2-wire)



RTD/Thermistor (3-wire)



Thermocouple



STANDARD PROCESS SIGNAL

DESCRIPTION

The programming facilities of the UDC-32 make it ideal as monitor or control device for normal standard process signals, e.g. 4-20mA. Any output from a transmitter can be scaled to engineering units by using the scale and correction facilities in the UDC-31/32.
The flexibility of the 2 output relays enables the UDC-32 to perform any type of control or monitoring related to the process signal. Time delays and hysteresis are programmable.

Typical applications:
General process instrumentation.
Signal converter and monitor with 2-level control output.

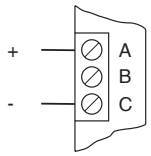
MEASURING RANGE

DC
0-20mA/0-10V.
Other standard process signals within these limits can be used as the scale of the controller is fully programmable. **Measuring accuracy:** 0.1% of full scale ± 1 digit.

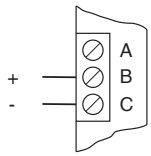
Input impedance:
Voltage: 1Mohm.
Current: 50Ohm.

WIRING DIAGRAMS

Voltage



Current



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DESCRIPTION

Digital panel controller with three output relays. The controller is microprocessor based and fully programmable from the keypad.

Controller function:
• P, PI, PD, PID regulator with pulse width controlled output relay.
• Heating/cooling controller plus alarm relay.
• 3 individual on/off controllers.

The panel controller operates with the following input signals:
• AC/DC voltage.
• AC/DC current.
• Temperature with Pt-100/500/1000, Ni-100, thermistors and thermocouples. The temperature measurement is fully linearized by the built-in microprocessor.
• Standard process signals.
The actual input signal type and measuring range must be specified when the panel controller is ordered.

Programmable facilities:
• Controller function (P, PI, PD, PID or on/off).
• Auto tune.
• 1, 2 or 3 setpoints.
• Setpoint hysteresis (below or above setpoint).
• Alarm point (symmetrical, below or above setpoint).
• Alarm point hysteresis.
• Input delay (0-10.0 sec.)
• Temperature measuring unit (°C or °F).
• Scale minimum/maximum.
• Decimal point position.
• Correction for temperature sensor tolerances.
• Display update time (0.2-10.0 sec.).
• Output relay mode selection with 4 different output modes.
• Delay, output relay 1,2 and 3 individually (0-50.0 sec.).
The settings are stored in an EEPROM and accidental change of preprogrammed settings is avoided through the keypad lock facility.

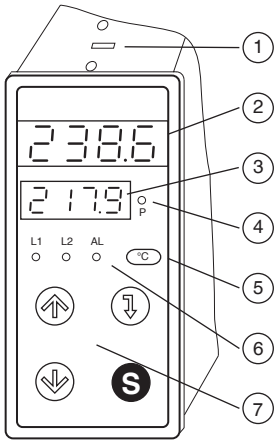
3 output relays with LED indication of energized relay.

Compact design featuring splash proof front panel with integrated displays, LED indicators and 4 button keypad for programming and adjustment.

96 x 48 mm DIN housing with plug-in screw terminals at the rear.

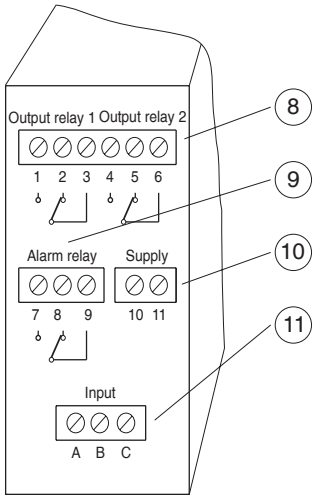
Versions for AC/DC supply voltage with galvanic isolation between input signal and power supply.

FRONT PANEL



1. Keypad lock switch. 2. LED display - actual input. 3. LED display - setpoint. 4. Programming indicator. 5. Unit label. 6. LED indications for energized outputs. 7. 4-button keypad for programming and programming information.

REAR PANEL/CONNECTIONS



8. Output relay 1 & 2 connector. 9. Alarm relay connector. 10. Supply voltage connector. 11. Input signal connector.

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VERSION/ORDERING CODES

Type: UDC-35 230 P1

Supply voltage:

24V AC	024
48V AC	048
110/120V AC	115
220/240V AC	230
24V DC	G24

Input:

Current:

DC:	DC [3]
0-99.99mA.	DC1
0-200.0mA.	DC2
0-10.00A./0-100.0A	DC3 [1]
AC:	AC [3]
0-200.0mA.	AC2
0-5.000A.	AC3 [4]

Voltage:

DC:	DV [3]
0-99.99V.	DV2
0-500.0V.	DV3
AC:	AV [3]
0-99.99V.	AV2
0-500.0V.	AV3

RTDs:

Pt-100:	P [3]
-19.95-99.95°C.	NP1
-50.0-300.0°C.	NP2
-50-850°C.	P3
Pt-500:	P [3]
-19.95-99.95 °C.	P51
-50.0-300.0 °C.	P52
-50-850 °C.	P53
Pt-1000:	P [3]
-19.95-99.95 °C.	P11
-50.0-300.0 °C.	P12
-50 -850 °C.	P13
Ni-100:	N [3]
-19.95-99.95°C.	NP1
-50.0-300.0°C.	NP2
Thermistor (KTY):	T [3]
-30.0-100.0°C.	T1

Thermocouples:

Fe-CuNi:	J [3]
-50-1200°C.	J1
NiCr-Ni:	K [3]
-50-1350°C.	K1
PtRh-Pt 10%:	S [3]
-50-1750°C.	S1
PtRh-Pt 13%:	R [3]
-50-1750°C.	R1

Standard process signals U: [3]
0-20mA DC /0-10V DC U1

TECHNICAL DATA

Temperature drift: Max. 0.01% per °C.

Hysteresis: Adjustable inside the defined scale, above or below setpoint.

Displays: 4 digit LED-types (-1999 to 9999).
Digit height: 10 mm (upper), red, 7 mm (lower), green.
Update time: Programmable 0.2-10.0 sec.

Scale: Versions for voltage, current and standard process signals have fully programmable scale min. and max. (-1999 to 9999).

Decimal point: Programmable

Indicators:
1/2 (green/yellow): Output relay 1, 2 energized.
A (red): Alarm relay (output relay 3) energized.
- (red): Programming of parameters.

Output relays 1 & 2: SPDT.
Load (cosφ= 1): Max. 380V AC/2A, 240V AC/5A, 30V DC 5A.
Mechanical lifetime: Min. 10 x 10^6 operations.
Electrical lifetime: Min. 100,000 operations at max.load.
Delay: Individually programmable 0-50.0sec.

Alarm/output relay A/3: SPDT.
Load: Max. 30V/0.5A.
Mechanical lifetime: Min. 10 x 10^6 operations.
Electrical lifetime: Min. 100,000 operations at max. load.
Delay: Programmable 0-50.0sec.

Terminals: 1.5 mm^2 plug-in screw terminals.

Supply voltage:

24V AC	(19.2-28.8V),
48V AC	(38.4-57.6V),
110/120V AC	(88-132V),
220/240V AC	(176-264V).
24V DC	(19.2-28.8V)

Mains frequency: 45-66Hz.

Consumption: 3VA.

Protection:
Front: IP54 (IP65 on request).
Rear: IP20.

Ambient temperature: -10-55°C.

Isolation:
AC versions: 4kV AC according to IEC class II.
G- versions: 500V.

Dimensions: According to DIN 43700.
Front: 96 x 48 mm.
Cut-out: 91 x 43 mm.
Depth: 88 mm + frame 7 mm + terminals 10 mm.
Housing: Self-extinguishing ABS.
Weight: 300-415 g.

NOTES/REMARKS

1) With external shunt type AAS-010 (0-10.0A DC) or type AAS-100 (0-100A DC).
3) Special range. Please specify input.
4) Extended measuring range can be obtained by using external current transformer, see accessories page 133.

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AC/DC VOLTAGE

DESCRIPTION

Input for direct measurement of AC or DC voltages up to 500V. The AC input is equipped with a true RMS rectifier for accurate AC measurement.
The facilities of the UDC-35 make it suitable for advanced voltage monitoring and control.

Typical applications:
Advanced control, monitoring and alarm applications.
Generator control systems.
Battery charge control.
Battery monitoring and control in power back-up systems.

MEASURING RANGES

AC	DC
0-99.99V	0-99.99V
0-500.0V	0-500.0V

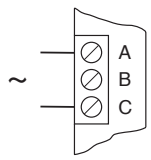
Other ranges are available on request.

Input impedance:
AC: 1kOhm/V.
DC: 1MOhm (>10V).

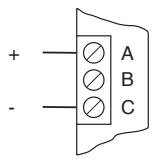
Measuring accuracy:
AC: 0.3% of full scale ± 1 digit.
DC: 0.1% of full scale ± 1 digit.

WIRING DIAGRAMS

AC



DC



AC/DC CURRENT

DESCRIPTION

Input for direct measurement of AC or DC current up to 200mA DCor 5A AC The measuring range is easily extended by adapting an external shunt or current transformer.
The AC input is equipped with a true RMS rectifier for accurate AC measurement.
The facilities of the UDC-35 make it suitable for advanced current monitoring and control.

Typical applications:
Advanced control, monitoring and alarm applications.
Monitoring/protection of motors.
Battery charge control.
Overload protection.

MEASURING RANGES

AC		DC	
0-200.0mA		0-99.99mA	
0-5.000A		0-200.0mA	
0-200A 0-500A	with external current transformer (1A sec.)	0-10.00A 0-100.0A	with external shunt (60mV voltage drop)

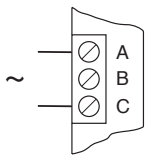
Other ranges are available on request.

Input impedance:
1V / I max
60mV / I max with shunt.

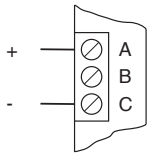
Measuring accuracy:
AC: 0.3% of full scale ± 1 digit.
DC: 0.1% of full scale ± 1 digit.

WIRING DIAGRAMS

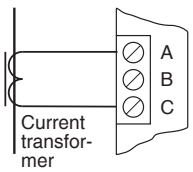
AC



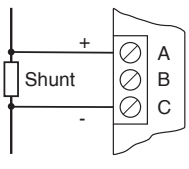
DC



AC with current transformer



DC with shunt



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TEMPERATURE

DESCRIPTION

Input for all types of temperature sensors, both thermocouples and resistor types.
High measuring accuracy is obtained over a wide temperature range by the microprocessor's compensation for nonlinearity in the sensor signal.
The extensive programming facilities make the UDC-35 suitable for all temperature control and monitoring applications.

Typical applications:
2 point temperature regulator with alarm.
Advanced temperature control, monitoring and alarm applications.
Wide range temperature measurement with high accuracy.
Temperature with separate control and alarm outputs.

MEASURING RANGES

RTDs/Thermistors		
Pt-100/500/1000	Ni-100	Thermistor (KTY)
-19.95-99.95°C - 50.0-300.0°C - 50-850°C	-19.95-99.95°C -50.0-300.0°C	-30.0-100.0°C

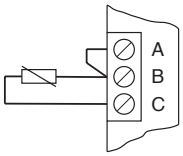
Thermocouples			
Fe-CuNi	NiCr-Ni	PtRh-Pt 10%	PtRh-Pt 13%
- 50-1200°C	-50-1350°C	-50 -1750°C	-50-1750°C

Measuring accuracy: 0.1% of full scale ±1 digit.

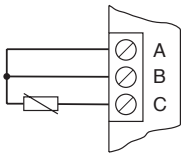
Resolution: Min. 0.5°C.

WIRING DIAGRAMS

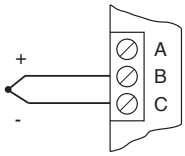
RTD/Thermistor (2-wire)



RTD/Thermistor (3-wire)



Thermocouple



STANDARD PROCESS SIGNAL

DESCRIPTION

The programming facilities of the UDC-35 make it ideal as monitoring or control device for standard process signals, e.g. 4-20mA.
Any output from a transmitter can be scaled to engineering units by using the scaling facilities of the UDC-35.
The flexibility of the UDC-35 enables it to perform any type of control or monitoring related to the process signal.

Typical applications:
General process instrumentation and control.

MEASURING RANGES

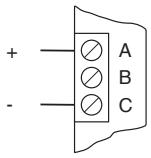
DC
0-20mA/0-10V. Other standard process signals within these limits can be used as the scale of the controller is fully programmable.

Measuring accuracy: 0.1% of full scale ± 1 digit.

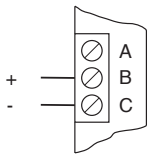
Input impedance:
Voltage: 1MOhm.
Current: 50Ohm.

WIRING DIAGRAMS

Voltage



Current



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