CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

Digital Panel Meters

- DC or AC Current and Voltage
- Temperature and Resistance
- Frequency and Speed

Control

Digital Panel Meters for Industrial Monitoring and Control

In many automation and process control applications it is important to visually monitor and control variables such as temperature, pressure, vibration etc. A digital panel meter can perform these functions and more - it can provide analog and/or serial re-transmission of the measured value for feedback or data-logging purposes.

Carlo Gavazzi offers a complete range of digital panel meters from very basic indicators with no outputs (DI Series) to more complex types (UDM Series), which provide new features, such as the new multi-color alarm display (also called the "traffic light" function) and the 16-point linearization feature for non-linear input signals. With its modular design, the new UDM Series offers great flexibility by providing any input/output combination.

The range includes a new cost-effective Universal Signal Conditioner (USC Series), which is a DIN rail mounted, modular device. By sharing the same input/output modules as the UDM Series, it offers a tremendous number of measuring and control capabilities with a very limited number of modules being required.

The Characteristics

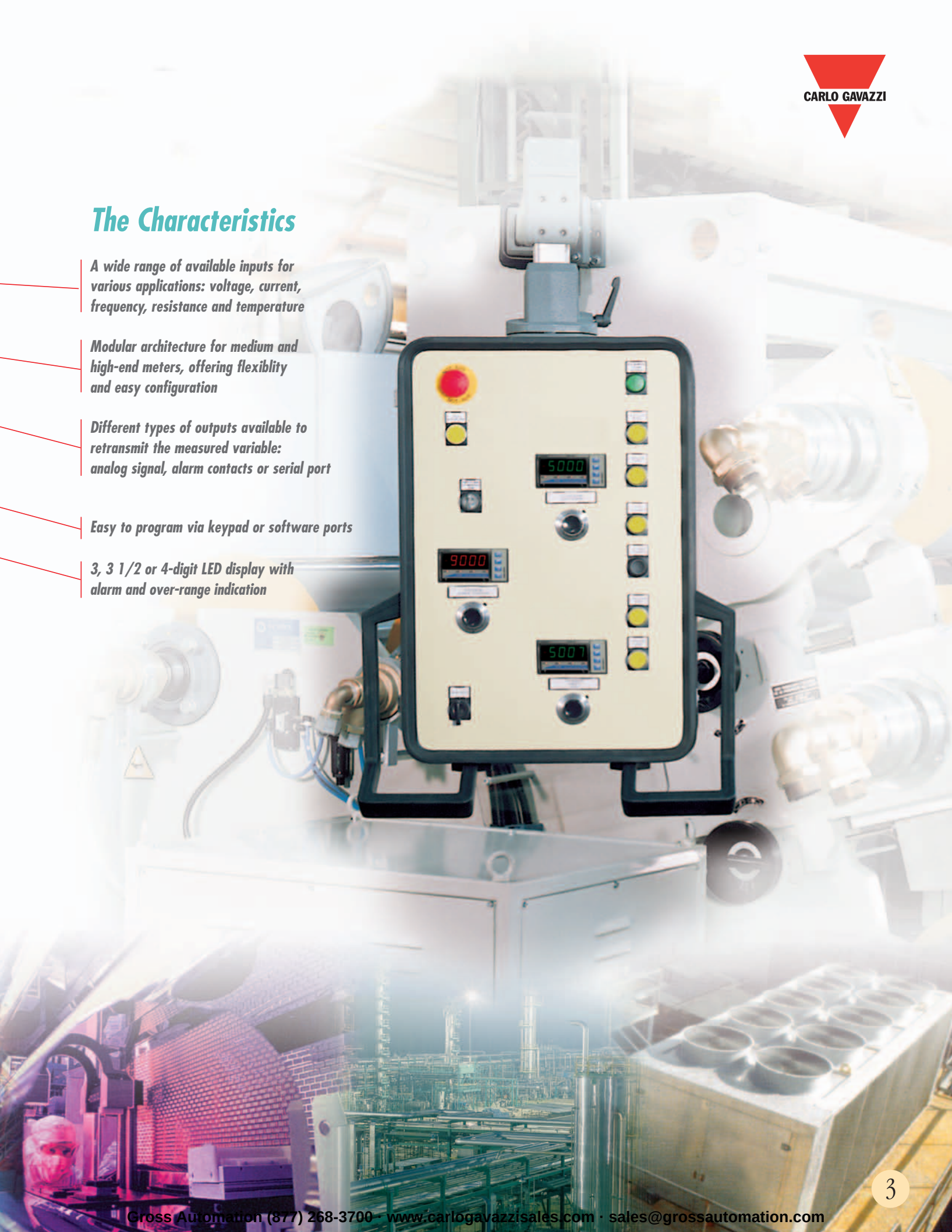
A wide range of available inputs for various applications: voltage, current, frequency, resistance and temperature

Modular architecture for medium and high-end meters, offering flexiblity and easy configuration

Different types of outputs available to retransmit the measured variable: analog signal, alarm contacts or serial port

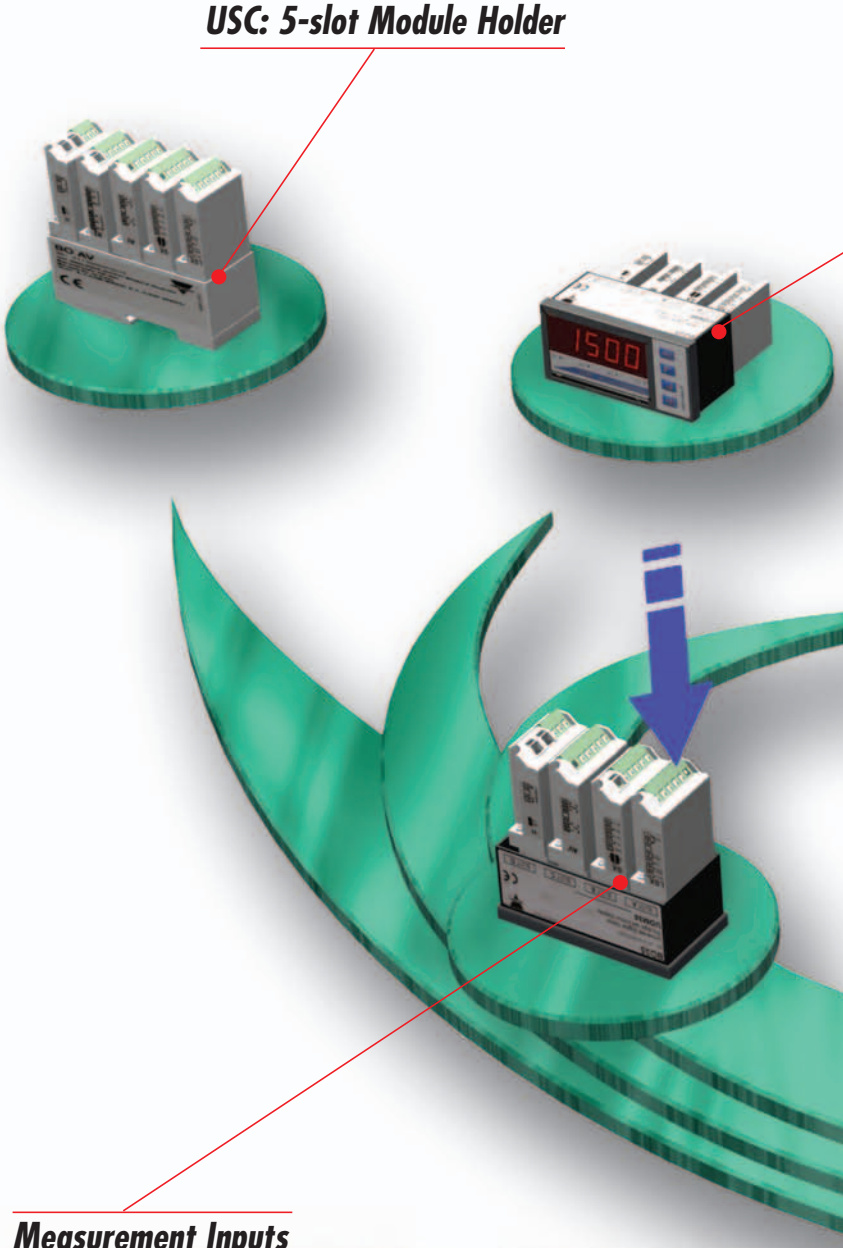
Easy to program via keypad or software ports

3, 3 1/2 or 4-digit LED display with alarm and over-range indication



A New Concept of Modularity

- **Maximum In-field Flexibility**
- **Quick Assembly and Configuration**
- **Easy Future Expansion**



Measurement Inputs
0.2-2-20mA AC/DC
0.2-2-20mA AC/DC + excitation output
0.2, 2, 5A AC/DC; 20, 200, 500V AC/DC
TC: J-K-S-T-E, Pt100-250-500-1000, Ni100
Ω: 0.02, 0.2, 2, 20kΩ

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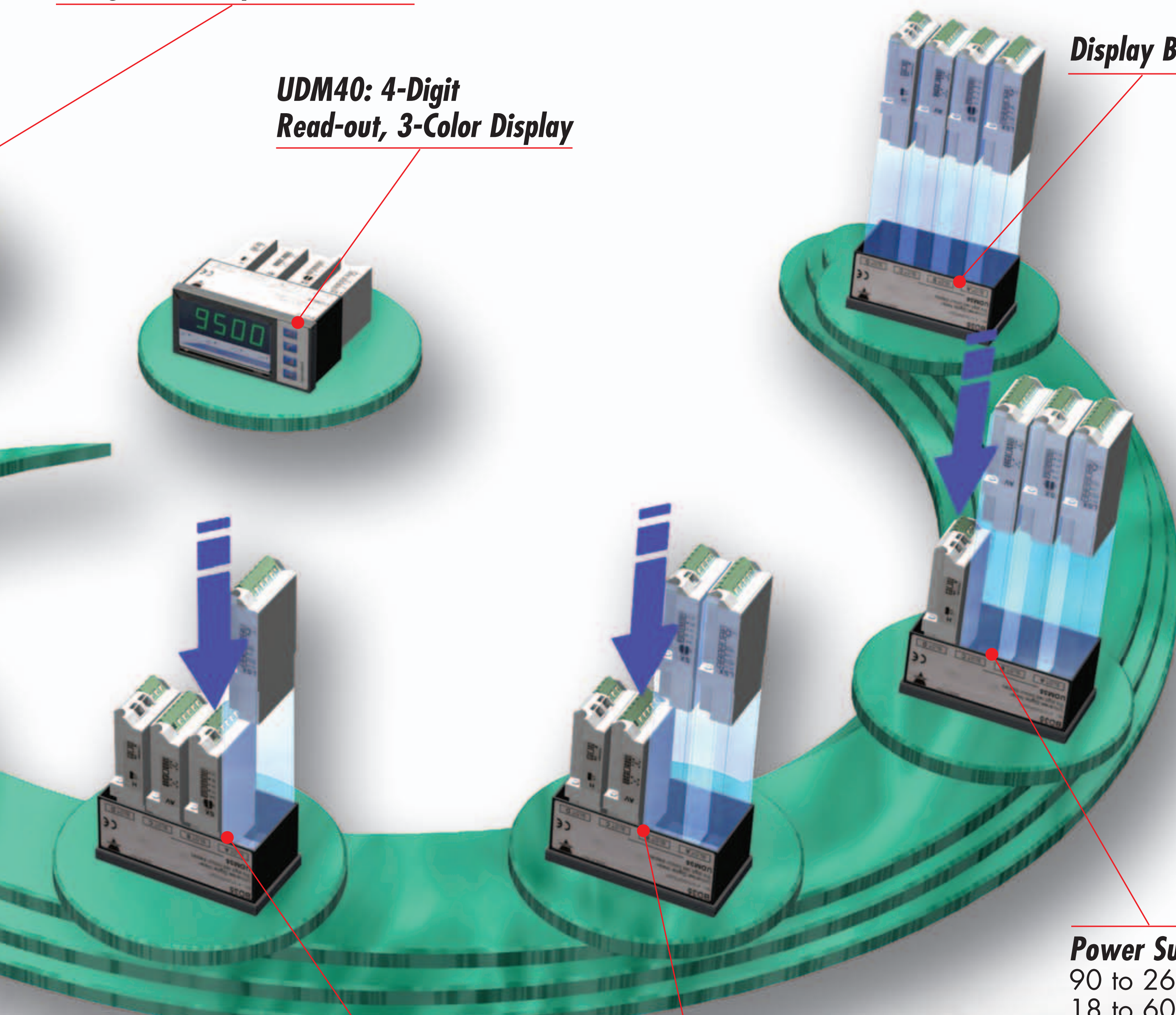
UDM35: 3 1/2-Digit Read-out, 3-Digit + Dummy 0 Read-out

UDM40: 4-Digit Read-out, 3-Color Display

Display Base



Power Supply
90 to 260V AC/DC
18 to 60V AC/DC

Communication Port
RS485 and RS232 ports

Outputs
Analog outputs:
Max 1 analog output:
0 to 20mA or 0 to 10VDC

Alarm outputs:
1 relay output
2 relay outputs
2 relay + 2 open collector outputs
4 relay outputs

Features and Benefits of the Digital Panel Meters

DI3 DIN, DI3 72, LDI3
- Indicators for DIN-rail and panel mounting
- Various input capabilities
- Easy product configuration via dip switches

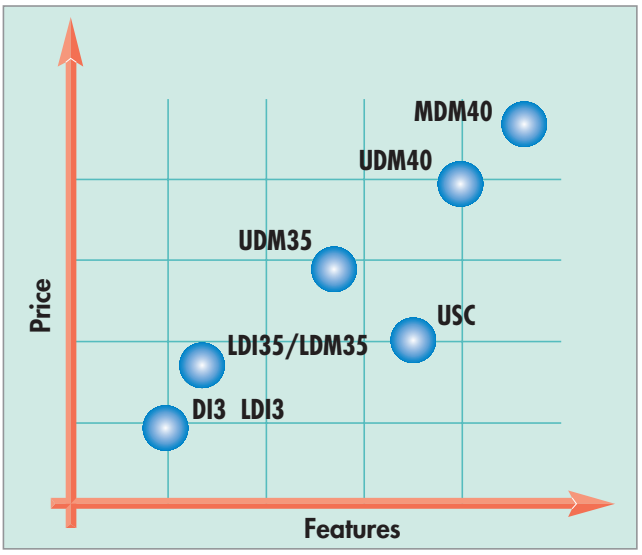
LDI35, LDM35H
- Multi range and multi signal indicator and controller
- Powerful scaling capability
- Universal power supply (LDM35H only)

UDM35
- Powerful performance
- Plug and play modules
- Maximum in-field flexibility
- Possibility to expand the inputs/outputs as required

UDM40
- State of the art performance
- Maximum in-field flexibility
- Input signal linearization capability
- 3-color display

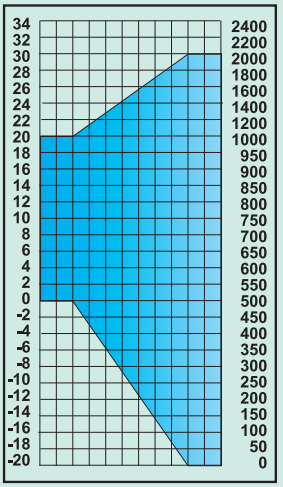
USC
- Universal signal conditioner
- Maximum in-field flexibility
- Input signal linearization capability
- Programming and network software

MDM40
- Two-alarm tachometer
- Dual input and multifunction capability
- Management of all available sensors
- Reverse speed control



LDI35, LDM and UDM

In process control applications, it is important to be able to manage signals such as "mA and volts" which are proportional to pressure or other variables being measured.
The LDI, LDM or UDM Series fulfill this requirement with ***powerful scaling and filter capabilities.***



UDM40 Color Display

RED
High priority, abnormal condition

AMBER
Low priority, abnormal condition

GREEN
Normal condition

Available Modules

Type	Output(s)	UDM35	UDM40	USC	Ordering Code
UDM35 base		●			BD35
UDM40 base			●		BD40
USC base				●	BDXX
AC/DC inputs: 200µA, 2mA, 20mA, 200mV, 2V, 20V	1	●	●	●	BQLSX
AC/DC inputs: 200µA, 2mA, 20mA, 200mV, 2V, 20V + excitation output	1	●	●	●	BQLSE
AC/DC inputs: 200mA, 2A, 5A, 20V, 200V, 500V	1	●	●	●	BQHSX
Inputs: 20Ω, 200Ω, 2kΩ,20kΩ; TC: J-K-S-T-E, Pt100-250-500-1000, Ni100	1	●	●	●	BQTRX
Analog output: 0 to 20mA, 0 to 10V DC	1	●	●	●	BOAV
Relay output	1	●	●	●	BOR1
Relay output	2	●	●	●	BOR2
Outputs: 2 relays + 2 open collectors	4	●	●	●	BOR4
4 Relay output	4	●	●	●	BOR5
RS485 communication port	1	●	●	●	BRSX
RS232 communication port	1	●	●	●	BRSY
18 to 60V AC/DC power supply		●	●	●	BPL
90 to 260V AC/DC power supply		●	●	●	BPH

	UDM35 / UDM40				USC				
Slot	A	B	C	D	A	B	C	D	E
Inputs/Outputs	1	2	3	4	1	2	3	4	5
Measurement inputs: LSX, LSE, HSX, TRX	●				●				
RS485 communication port: SX		●				●			
RS232 communication port: SY		●				●			
Analog output (*): AV		●	●			●	●	●	
Relay and open collector outputs: R1, R2, R4, R5			●				●		
Power supply: H, L				●					●

(*) Note: A maximum of one analog output module




	DI3 DIN Page 10	DI3 72 Page 10	LDI3 Page 10	LDI35 Page 11
DIN rail mounting	●			
Panel mounting		●	●	●
Modular				
Indicator	●	●	●	●
Controller				●
3-color display				
Signal conditioner				
Linearization capability				
Multi input (A-V)	●	●	●	●
Temperature measurement				●
Tachometer				
Command inputs				
Up to 1 alarm				●
Up to 2 alarms				
Up to 4 alarms				
Analog output				
Serial communication				
Universal power supply				

Modular

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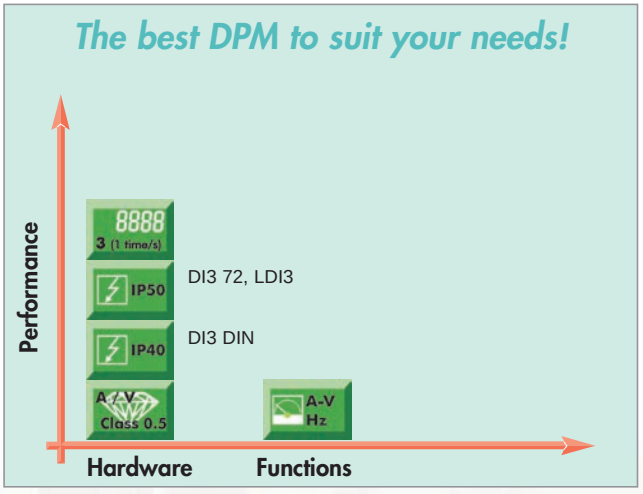
DI3 DIN DI3 72 LDI3

This series includes three basic indicators and is a cost effective solution for panel builders.



DI3 DIN DI3 72 LDI3

Description	3-DGT µP-based indicator
Housing (H x W x D)	89 x 53.5 x 58.8 mm (DIN) 72 x 72 x 75 mm (72) 48 x 96 x 83 mm (LDI3)
Mounting	DIN rail, panel mounting (72, LDI3)
Display type	3 DGT, red LED
Variables on display	YES
Measured signals	1A/60mV/100-500VDC 1A/100VAC, 5A/500VAC 1 to 1000Hz
Type of signals	DC or AC
Engineering units	mA, A, V, Hz
Accuracy	±(0.5%FS, + 1DGT)
Temperature drift	±350ppm/°C
Sampling rate	1 time per second
Command inputs	Not Available
Outputs: Alarm	Not Available
Analog	Not Available
Serial	Not Available
Signal/display scaling	YES (CT and PT sel. by dip-switch)
Power supply	24V, 48V, 115V, 230V AC
Approvals	UR (except DI3), CSA, CE
Protection degree	IP40 (DIN); IP50 (72), IP50 (LDI3), IP65 (LDI3 on request)

LDI35

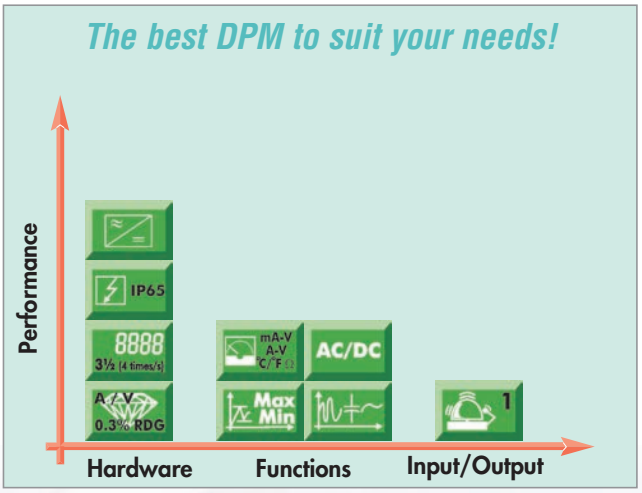
This series is available in two basic models:

- LDI35, offered as an indicator only
- LDI35, with one alarm relay output

Each model has a specific version for:

- Process applications with 2-20mA and 0.2-20V-200V input
- Higher current/voltage applications with 2-5A and 200-500VAC/DC input

The range includes an ohmmeter and a temperature controller which can accept various types of RTDs and thermocouples.



LDI35

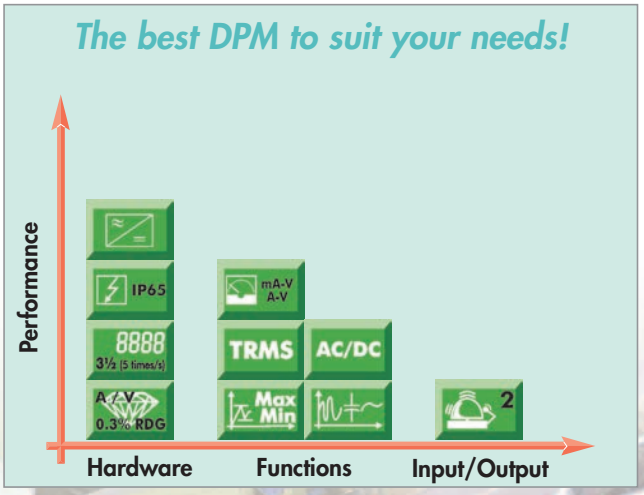
Description	3 1/2-DGT µP-based indicator and controller
Housing (H x W x D)	48 x 96 x 83 mm
Mounting	Panel mounting
Display type	3 1/2-DGT or 3DGT+ dummy 0, red LED
Variables on display	YES
Measured signals	(2-20mA, 20-200V); (2-5A, 200-500V); (TC: J-K-S-T-L, Pt100-1000, Ni100, 200-2000 Ω)
Type of signals	DC and AC
Engineering units	Label set
Accuracy	DC: ±(0.3%FS + 1DGT) AC: ±(0.5%FS + 1DGT)
Temperature drift	±200ppm/°C
Sampling rate	4 times per second
Command inputs	Not Available
Outputs: **Alarm**	Up to 1
Analog	Not Available
Serial	Not Available
Other available characteristics	Signal/display scaling. Digital filter, Peak and valley. Burn-out control on temperature input
Power supply	24, 48, 115, 230VAC, 9 to 32VDC, 40 to 150VDC
Approvals	UR, CSA, CE
Protection degree	IP65 (on request)

LDM35H

This series is available in two basic models:
- LDM35H, offered as an indicator only
- LDM35H, with one or two relay outputs
  Both versions are provided with a universal power supply

Each model has a specific version for:
- Process applications with 0.2-2-20mA and 0.2-2-20V DC/AC input
- Higher current/voltage applications with 0.2-2-5A and 20-200-500V AC/DC input

TRMS measurement significantly improves the accuracy of the measurement on both distorted current and voltage signals.



LDM35H

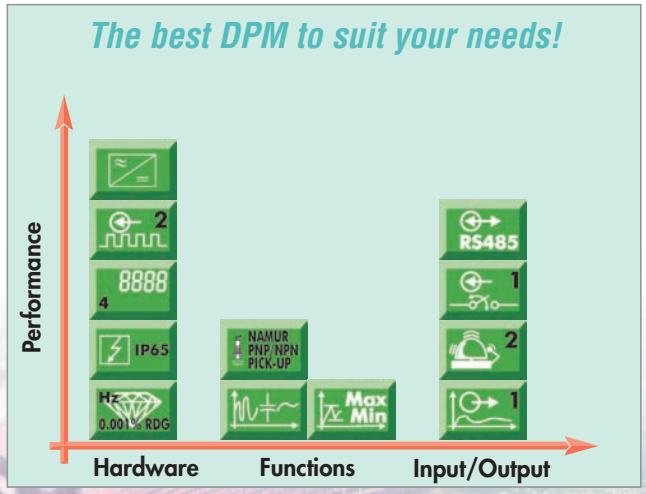
Description	3 1/2-DGT µP-based indicator and controller
Housing (H x W x D)	48 x 96 x 83 mm
Mounting	Panel mounting
Display type	3 1/2-DGT or 3-DGT + dummy 0, red LED
Variables on display	YES
Measured signals	(0.2-2-20mA, 0.2-2-20V); (0.2-2-5A, 20-200-500V)
Type of signals	DC and AC TRMS
Engineering units	Self sticking label set
Accuracy	DC: ±(0.3%RDG + 3DGT) AC: ±(0.5%RDG + 3DGT)
Temperature drift	±150ppm/°C
Sampling rate	5 times per second
Command inputs	Not Available
Outputs: **Alarm** **Analog** **Serial**	Up to 2 Not Available Not Available
Other available characteristics	Signal/display scaling. Digital filter, Peak and valley.
Power supply	90 to 260V AC/DC, 18 to 60V AC/DC
Approvals	UR, CSA, CE
Protection degree	IP65, IP67 (on request)

MDM40

The MDM40 tachometer is a high performance instrument which is suitable to be used in all applications requiring:

- The capability to measure a very slow speed or frequency (0.001 Hz)
- The management of pulse signals from proximity switches, photoelectric sensors, NAMUR proximity sensors, encoders and magnetic switches
- The rate-tacho-frequency-period meter functions

The two independent inputs, with proper parameter programming are capable of measuring rate, speed, frequency and period variables using mathematical formulas such as: A, B, 1/A, A/B, A-B, (A-B)/B, B/(A+B) and reverse speed control.



MDM40

Description	4-DGT multi-range controller for pulse signal
Housing (H x W x D)	48 x 96 x 124 mm
Mounting	Panel mounting
Display type	4 DGT, red LED
Variables on display	YES
Measured signals	Speed, frequency, rate, period
Type of signals	DC or AC
Engineering units	Label set
Accuracy	±(0.001% RDG + 3DGT)
Temperature drift	±100ppm/°C
Sampling rate	Programmable
Command inputs	1 (display hold, key pad lock)
Outputs: Alarm	2
Analog	1 (20 mA, 10 VDC)
Serial	RS485
Other available characteristics	Signal/display and analog out scaling. Digital filter. Peak and valley.
Power supply	24,48,115,120,230,240 VAC 9 to 32, 40 to 150 VDC
Approvals	UR, CSA, CE
Protection degree	IP65, IP67 (on request)

Modular Panel Meter

UDM35

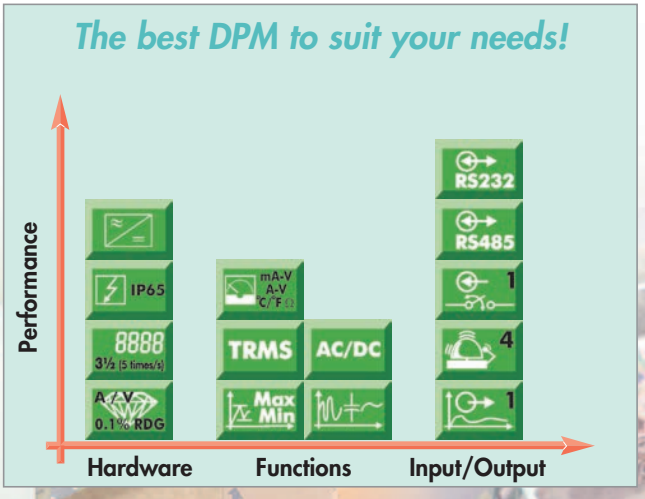
The UDM 35 is a universal Digital Panel Meter that has been developed to meet the most advanced application requirements. The UDM35 offers:

- Quick assembly and maintenance using plug and play modules
- Easy and quick parameter programming and parameter cloning on other UDMs by means of UdmSoft or PC HyperTerminal
- Powerful variable control by means of up to four alarms
- Analog output and RS485/RS232 communication ports

The different type of alarm controls:

- Up-down functions with automatic reset
- Up-down functions with manual reset
- Down with disable function at power-on

These alarms can be combined to offer up to four abnormal steps known as pre-alarms and alarms.



UDM35

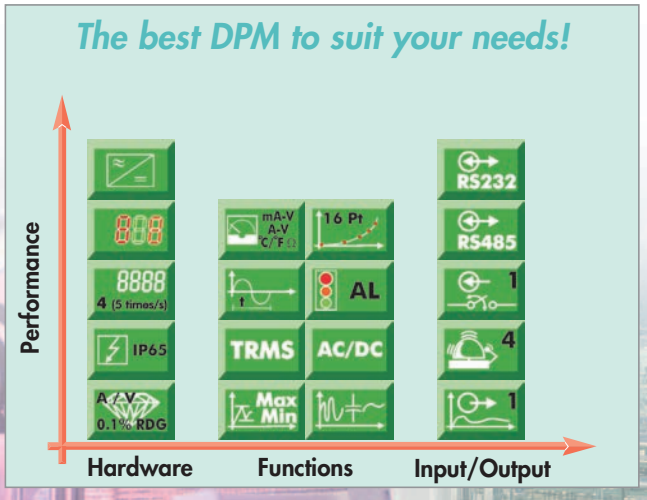
Description	3 1/2-DGT µP-based controller with modular housing
Housing (H x W x D)	48 x 96 x 105 mm
Mounting	Panel mounting
Display type	3 1/2-DGT or 3-DGT + dummy 0, red LED
Variables on display	YES
Measured signals	(0.2-2-20mA, 0.2-2-20V); (0.2-2-5A, 20-200-500V); (TC: J-K-S-T-E, RTD, Ω)
Type of signals	DC and AC TRMS
Engineering units	Self sticking label set
Accuracy	DC: ±(0.1%RDG + 3DGT) AC: ±(0.3%RDG + 3DGT)
Temperature drift	±150ppm/°C
Sampling rate	5 times per second
Command inputs	1 (display hold, key pad lock or latch alarm reset)
Outputs: Alarm	Up to 4
Analog	1 (20mA,10VDC)
Serial	RS485, RS232
Other available characteristics	Signal/display scaling. Analog output scaling. Digital filter, Peak and Valley. Burn-out control on temperature inputs only.
Power supply	90 to 260 AC/DC, 18 to 60V AC/DC
Approvals	UR, CSA, CE
Protection degree	IP65, IP67 (on request)

UDM40

The UDM40 offers the same basic characteristics as the UDM35, but with these additional benefits:

- Display color adaptable to other existing instruments by means of a 3-color choice
- Management of non linear signals coming from special process transmitters using a 16-point linearization capability
- Provides reliable process information, working out a complex or disturbed signal by a programmable input integration time and/or a smart digital filter

Alarm status at a glance using the easy "traffic light" principle. The instrument may show the alarm status based on a sequence of colors that can be programmed by the user.



UDM40

Description	4-DGT µP-based controller with modular housing
Housing (H x W x D)	48 x 96 x 105 mm
Mounting	Panel mounting
Display type	4-DGT, color LED
Variables on display	YES
Measured signals	(0.2-2-20mA, 0.2-2-20V); (0.2-2-5A, 20-200-500V); (TC: J-K-S-T-E, RTD, Ω)
Type of signals	DC and AC TRMS
Engineering units	Self sticking label set
Accuracy	DC: ±(0.1%RDG + 3DGT) AC: ±(0.3%RDG + 3DGT)
Temperature drift	±150ppm/°C
Sampling rate	5 times per second
Command inputs	1 (display hold, key pad lock or latch alarm reset)
Outputs: Alarm Analog Serial	Up to 4 1 (20mA, 10VDC) RS485, RS232
Other available characteristics	Signal/display scaling. Analog output scaling. Digital filter. Integration time. Peak and valley. Burn out control on temperature inputs only. Linearization. "Traffic light" function.
Power supply	90 to 260 AC/DC, 18 to 60V AC/DC
Approvals	UR, CSA, CE
Protection degree	IP65, IP67 (on request)

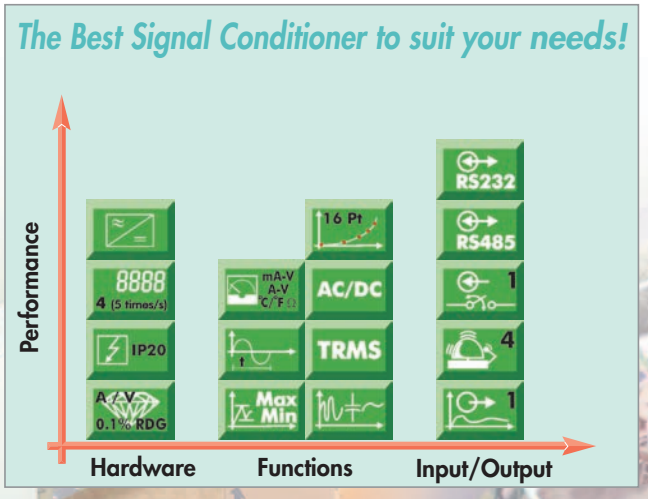
Modular Signal Conditioner

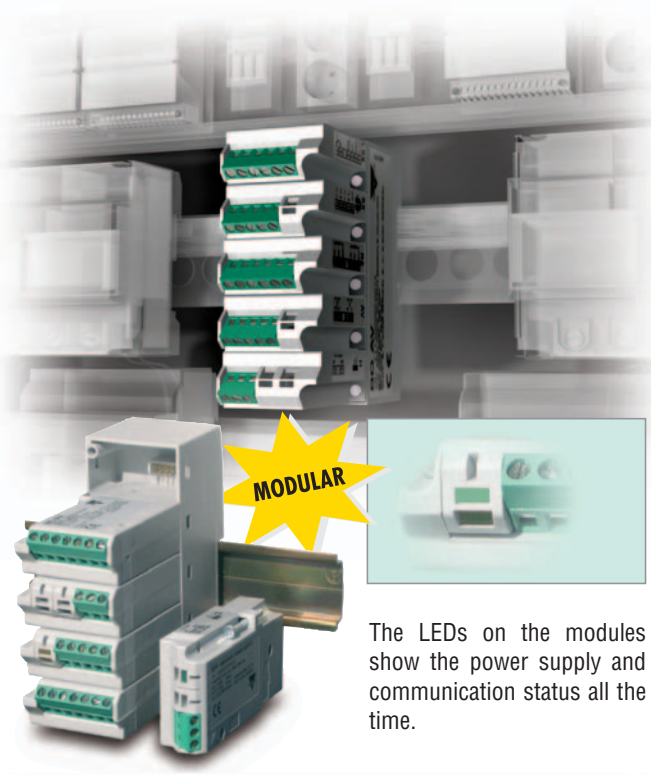
USC

The key benefit of the USC Universal Signal Conditioner is its architecture. It is created with a module holder on which it is possible to plug in modules with different functions: power supply, measurement, alarm, control and signal retransmission. The different combination of the modules allows for a simple signal conditioner or a very sophisticated controller with communication port.

The USC offers:

- Easy and quick parameter programming and parameter cloning on other USCs by means of UscSoft or PC HyperTerminal
- Powerful variable control by means of up to four alarms
- Remote control via an analog output
- RS485 and RS232 communication ports
- Management of non linear signals coming from special process transmitters using a 16-point linearization capability
- Reliable process information, working out a complex or disturbed signal by a programmable input integration time and/or smart digital filter
- Interchangeable I/O modules with the UDM Series





The LEDs on the modules show the power supply and communication status all the time.

USC

Description	µP-based signal conditioner with modular housing
Housing (H x W x D)	44 x 113 x 107 mm
Mounting	DIN-rail mounting
Display type	Not Available
Variables on display	Not Available
Measured signals	(0.2-2-20mA, 0.2-2-20V); (0.2-2-5A, 20-200-500V); (TC: J-K-S-T-E, RTD, Ω)
Type of signals	DC and AC TRMS
Engineering units	Not Available
Accuracy	DC: ±(0.1%RDG + 3DGT) AC: ±(0.3%RDG + 3DGT)
Temperature drift	±150ppm/°C
Sampling rate	5 times per second
Command inputs	1 (latch alarm reset)
Outputs: Alarm	Up to 4
Analog	1 (20mA, 10VDC)
Serial	RS485, RS232
Other available characteristics	Signal/display scaling. Analog output scaling. Digital filter. Integration time. Peak and valley. Burn-out control on temp.Inputs only. Linearization up to 16 points.
Power supply	90 to 260 AC/DC, 18 to 60V AC/DC
Approvals	UR, CSA, CE
Protection degree	IP20

Accessories

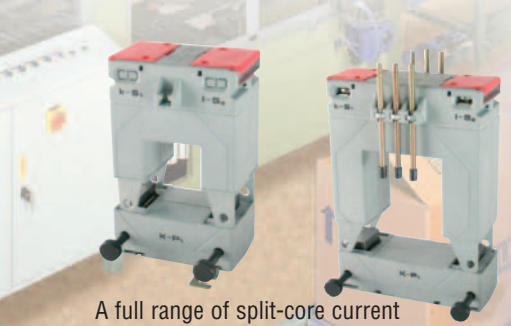
Types	SIU-PC85	SIU-DIN 8585	SIU-DIN.RLY	PSU-DIN (DC/AC)	PSU-DIN (AC/DC)
Description	Serial communication line adapter	Serial communication line amplifier, driver	Serial communication relay outputs	Power supply unit DC to AC	Power supply unit AC to DC
Housing	Front: 65x80mm	Front: 89x71.5mm	Front: 89x71.5mm	Front: 89x71.5mm	Front: 89x71.5mm
Signal input	RS232	RS485, RS422	RS485, RS422	N.A.	N.A.
Working mode	2-wire comm.	2 or 4-wire comm.	2 or 4-wire comm.	N.A.	N.A.
Line Bias	N.A.	YES	N.A.	N.A.	N.A.
Line termination	N.A.	YES	YES	N.A.	N.A.
Connections	9-pole, female	Screw terminal block	Screw terminal block	Screw terminal block	Screw terminal block
Output	RS422 RS485	RS422	4 relays 5A, 250V	24VDC (max. 250mA) 48VDC (max. 125mA) 115VDC (max. 50mA)	5VDC (max. 200mA) 12VDC (max. 100mA) 24VDC (max. 50mA)
Working mode	4-wire comm.	4-wire comm.	SPDT contacts	Switching mode	By transformer
Line Bias	YES	YES	N.A.	N.A.	N.A.
Line termination	YES	YES	N.A.	N.A.	N.A.
Connections	Screw terminal block	Screw terminal block	Screw terminal block	Screw terminal block	Screw terminal block
Baud rate	Max 19200 Baud	Max 19200 Baud	Max 9600 Baud	N.A.	N.A.
Protection	All inputs/outputs	All inputs/outputs	N.A.	Output: by fuse	Output: electronic
Indication (by means of LEDs)	Power-on Data-stream	Power-on	Power-on Comm. status Output status	Power-on	Power-on
Insulation	Input/output: 2kV input/output and power supply: 4kV	Input/output: N.A. input/output and power supply: 4kV	Input/output: 2kV input/output and power supply: 4kV	N.A.	Input/output: 4kV
Operating temperature	0 to +50°C (R.H. ≤90% non condensing)	0 to +50°C (R.H. ≤90% non condensing)	0 to +50°C (R.H. ≤90% non condensing)	0 to +50°C (R.H. ≤90% non condensing)	0 to +50°C (R.H. ≤90% non condensing)
Storage temperature	-10 to +60°C (R.H. ≤90% non condensing)	-10 to +60°C (R.H. ≤90% non condensing)	-10 to +60°C (R.H. ≤90% non condensing)	-10 to +60°C (R.H. ≤90% non condensing)	-10 to +60°C (R.H. ≤90% non condensing)
Included set	1.8m cable with 9 to 9-pole connectors, power supply cable	N.A.	N.A.	N.A.	N.A.
Other characteristics	Wrong-line connection and full overvoltage protection. Reverse conversion capability.	Dual purpose: distance increase by 1200m per unit; network increase	4 relay outputs to be driven by an RS485 communication port	Stabilized AC voltage output. Stability: ≤4% Un @ max. current	Stabilized DC voltage output. Stability: ≤0.5% Un @ max. current Non-stabilized DC voltage outputs: 2V-20V-30VDC
Power supply input	24VAC, 48VAC 115VAC, 230VAC	24VAC, 48VAC 115VAC, 230VAC	24VAC, 48VAC 115VAC, 230VAC	80 to 240VDC 18 to 60VDC 9 to 16VDC	24VAC, 48VAC 115VAC, 230VAC
Protection degree	IP20	IP40	IP40	IP40	IP40

Current Transformer

Types	TADK	TADK2	TAD 2	TAD 3	TAD 4
Class	0.5	0.5	0.5/ 1/ 3	0.5/ 1	0.5/1
Bus–bar size	Wounded primary	25x5 mm fixed bar	Ø 22 mm	21x14 or 31x11 mm	32x16, 41x11, Ø 32 mm
Dimensions (H x W x D)	115.5x75x44 mm	115.5x75x44 mm	98.5x58x44 mm	98.5x58x44 mm	75x115.5x44 mm
Standards	IEC 60185/EN 60185	IEC 60185/EN 60185	IEC 60185/EN 60185	IEC 60185/EN 60185	IEC 60185/EN 60185
Accuracy class depending on the burden output	Class 0.5 Burden VA	Class 0.5 Burden VA	Class 0.5 1 3 Burden VA VA VA	Class 0.5 1 Burden VA VA	Class 0.5 1 Burden VA VA
Primary current at rated output current of 1A/5A	1 A 10 5 A 10 10 A 10 15 A 10 25 A 10 40 A 10	1 A 10 5 A 10 10 A 10 15 A 10 25 A 10 40 A 10 50 A 10 60 A 10 80 A 10 100 A 10 150 A 10 200 A 10 250 A 10	40 A 3 50 A 3 60 A 3 80 A 3 100 A 3 4 150 A 3 4 6 200 A 3 4 6 250 A 5 8 10 300 A 5 8 10	100 A 3 150 A 3 4 200 A 3 4 250 A 5 8 300 A 5 8 400 A 6 10 500 A 6 10 600 A 6 10	100 A 3 150 A 3 200 A 4 250 A 6 300 A 6 400 A 10 500 A 10 600 A 10 800 A 10

Types	TAD 6	TAD 8	TAD 12	TACO 110	TACO 200
Class	0.5/1	0.5/1/5P10	0.5/1/5P10	0.5/1/5P10	0.5/1/5P10
Bus–bar size	55x22, 65x20, Ø 52 mm	82x32 or 65x34 mm	127x51 or 102x53 mm	Max. Ø 110 mm	Max. Ø 200 mm
Dimensions (H x W x D)	105x145x44 mm	140x120x55 mm	183x170x65 mm	183x170x 65 mm	295x280x45 mm
Standards	IEC 60185/EN 60185	IEC 60185/EN 60185	IEC 60185/EN 60185	IEC 60185/EN 60185	IEC 60185/EN 60185
Accuracy class depending on the burden output	Class 0.5 1 Burden VA VA	Class 0.5 1 5P10 Burden VA VA VA	Class 0.5 1 5P10 Burden VA VA VA	Class 0.5 1 5P10 Burden VA VA VA	Class 0.5 1 5P10 Burden VA VA VA
Primary current at rated output current of 1A/5A	400 A 6 12 500 A 6 12 600 A 10 20 800 A 10 20 1000A 20 40 1200A 20 40 1500A 30 60 2000A 30 60	400 A 4 8 5 500 A 6 12 5 600 A 10 20 5 800 A 15 30 5 1000A 20 40 5 1200A 30 50 5 1500A 40 60 5 2000A 50 80 5 2500A 60 100 5	800 A 15 30 10 1000A 20 40 10 1200A 30 60 10 1500A 40 80 10 2000A 50 100 10 2500A 60 120 10 3000A 80 160 10 4000A 100 200 10	800 A 15 30 10 1000A 20 40 10 1500A 40 80 10 2000A 50 100 10 2500A 60 120 10 3000A 80 160 10 4000A 100 200 10	1000A 15 30 10 1500A 15 30 10 2000A 15 30 10 2500A 40 80 10 3000A 40 80 10 4000A 50 100 10 5000A 50 100 10 6000A 50 100 10

Cable/Bus–bar type current transformers. Standard output 5A (1A on request). Rated primary currents from 40A to 6000A. DIN–rail or panel mounting.
Current transformer 1-phase AC; operating frequency: 40 to 60 Hz; max system voltage: 0.72 kV; rated insulation level: 3kV/1min @ 50Hz; security factor: ≤5; rated secondary current: 5A standard (1A on request).



A full range of split-core current transformers is available from 100A to 6000A