2012-Z-104A

Electrical Transducers

Electrical Transducers

Ziegler

Redefine Innovative Metering

ELECTRICAL TRANSDUCER

1. Transducers for AC Current & Voltage
2. Transducers for Frequency.
3. Transducers for Active, Reactive Power & Power factor, Phase angle Difference.
4. Multitransducer with Onsite Programming of Parameters.
5. Passive DC Isolators, Amplier, Convertor.
6. Temperature Transmitter & Programmable Universal Transmitter.

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Transducers for AC current / AC Voltage

IXX/ E15 Current	AC current transducer
VXX/ E15 Voltage	AC voltage transducer
E1D	AC voltage & current transducer with dual output
E13	3 channel AC current & voltage transducer

Ziegler IXX / VXX / E1X measuring transducers are used to convert a sine wave or distorted AC current and AC voltage into an impressed load independent output signal.
The output signal is proportional to the root mean square value of the input current and voltage.

GENERAL FEATURES:

APPLICABLE STANDARDS	
Product Performance	Acc. to IEC 60688
Housing Protection	IP 40 acc. to EN 60 529 Terminal IP 20
Rated Insulation Voltage	Measuring input AC 300 V Power supply AC 300 V, DC 230V Measuring output DC 40V
Contamination level	2
Over voltage category	III
Protection class	II
Safe isolation	Acc. to IEC 61010 and DIN/DE 106, part 101
Impulse withstand voltage acc. to IEC 255-4Cl. III	5kV, 1.2/50ms, 0.5Ws Common-mode and differential mode between any terminals
Test voltage	3.7kV/50Hz/1min. between electrically isolated circuits Measuring output versus housing 0.5kV/50kV/1min measuring 2:0.5kV/50Hz/1min Measuring output 1 versus
ENVIRONMENTAL CONDITIONS	
Climatic rating	Climate class 3Z acc. to VDI/VDE 3540
Operating temperature	-25 to +55°C
Storage temperature	-40 to +70°C
Relative humidity	75% (STD), 90% (Enhanced)
Permissible vibration	2g acc. to EN 60 068-2-6
Shock	3x50g (3 shocks each in 6 directions)

FACT SHEET:

Mechanical Design	Moulded case housing 35mm width
Case Material	Glass filled polycarbonate, Flame retardant & drip proof as per UL 94 V0
Position of use	Any
Higher load capacity	750Ω at 20mA
Mounting	DIN rail mounting (35x15/7.5mm) acc. to EN 50 022 or directly onto wall or panel mounting. Easy “onsite”conversion possible
Protection type	Output short circuit and open circuit proof
Terminal connection	Screw-type terminals with indirect wire pressure 2 for max. 2x2.5mm^2 or 1x6mm^2 Electricians delight. Even suitable for multistrand or solid wire connection. Large space for looping of wires

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VOLTAGE CURRENT & FREQUENCY TRANSDUCERS

Models	I11/V11	I12	E15	E1D	E13	I21/V21	I22/V22
Measuring quantity	AC Current/Voltage	AC Current	AC Current/Voltage				
Nominal Input	Current: 1A or 5A Voltage: 110V/ 3/ 110/150/240/415/ 440V	1A or 5A site configurable.	Current: 1/1.2/5 or 6A Voltage: 100/ 3/110 3/120/ 3/ 100/110/116.66/120/125/133.33/150/250/400 or 500V	Current: 1/1.2/5 or 6A Voltage: 100/ 3/110 3/120/ 3/ 100/110/116.66/120/125/133.33/150/250/400 or 500V		Current: 0-1A to 0-7.5A Voltage: 0-100V to 0-500V	
Nominal Frequency	50, 60Hz			50, 60 or 400Hz			50, 60Hz
Output Quantity	Load Independent DC Current or DC Voltage						
Output Range	0-1/0-5/0-10 or 0-20mA 4-20mA-wire connection 0-10V	0-5/0-10/0-20mA 0-10V	0-10V/1-5V 0-1//5/10/20mA or 4-20mA Option:Dual Output.	0-1,0-5,0-10, 0-20 or 4-20mA 0-10V, 1-5V Dual output	3 channel	0-1mA to 0-20mA,4-20mA 0-1V to 0-10V Option: Dual Output.	
Ripple	<1% P-P					<0.5% P-P	
Output Burden	Current Output:R_{ext}=15V/I {Full Scale} [750Ω @ 20mA or 1500 Ω @ 10mA] Voltage Output:Rext= Output Voltage/20mA.						
Auxiliary Supply	Self Powered OR 12V-30V (Only for 2 wire connection with output 4-20mA)	Self Powered	AC 24/115/120/230/240/250V + 15% 50/60Hz DC 24,48,60 or 110V - 15% +33%.	AC 24/115/120/230/240/250V + 15% 50/60Hz DC 24,48,60 or 110V - 15% +33%.	AC 110 or 230V	AC 24/110/230/400V AC/DC 24-60V AC/DC 85-230V	
Power Consumption	---	1 VA	< 0.2 VA in Current < 1 VA in Voltage	<0.2VA <2VA	<0.2VA <1VA	<4VA	
Response Time	<300ms	<2s	<300ms			<300 ms (< 50ms option)	
High Insulation Level	4kV	3.7kV	4kV	4kV	3.7kV	3.7kV	
Impluse Withstand Voltage	5kV, 1.2/50µsec,0.5 Ws						
Accuracy as per IEC 688	Class 0.5						Class 0.2
Operating Temperature	-25 to 55˚C						
Weight	Approx. 0.4kg	Approx. 0.5kg		Approx. 0.7kg	Approx. 0.9kg	Approx. 0.5kg	

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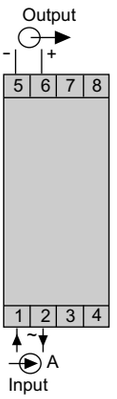
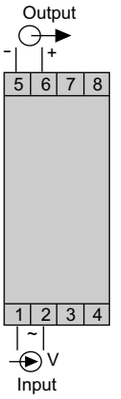
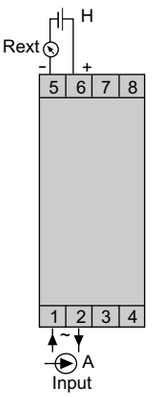
ELECTRICAL CONNECTION



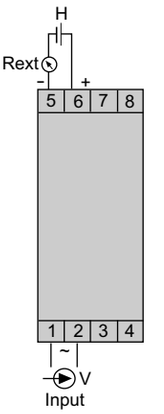
Ziegler Transducer I11
for measuring AC Current



Ziegler Transducer V11
for measuring AC Voltage



Ziegler Transducer I11
as 2-wire converter
with 4.. 20 mA output.



Ziegler Transducer V11,
as 2-wire converter
with 4.. 20 mA output.

I11,V11

Connection	Connecting terminals
Measuring input E 1A~	1 and 3
Measuring input E 5A~	1 and 2
Measuring output A	5 - and 6 +

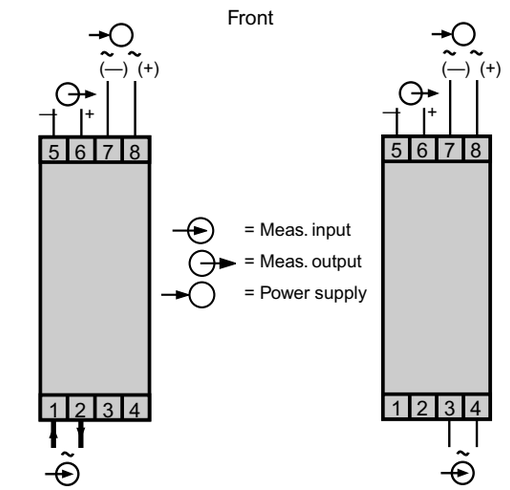
I12

Connection	Terminals	
Measuring input	~	1
	~	3
Measuring Output	+	13
	-	14
Power supply	~,+	21
	~,-	22

I11,V11/ I21 / I22

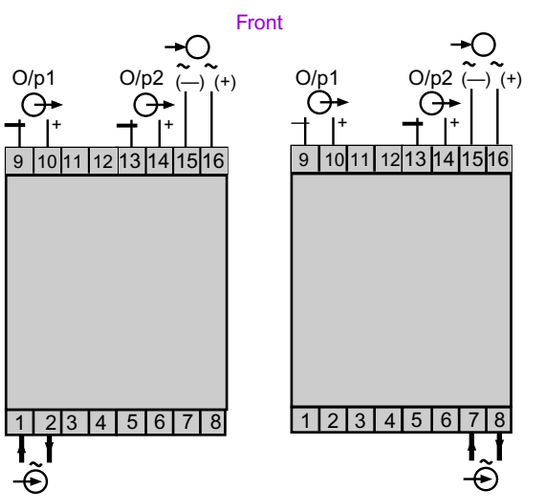
Connection	Terminals	
Measuring input	~	2
	~	5
Measuring Output	+	13
	-	14
Power supply	~,+	21
	~,-	22

V21 / V22



Ziegler Tranducer E 15 one output
for AC current measurement.

Ziegler Tranducer E15 one
output for AC voltage
measurement.



Ziegler Tranducer E15 two
output for AC current
measurement.

Ziegler Tranducer E15 two
output for AC voltage
measurement.

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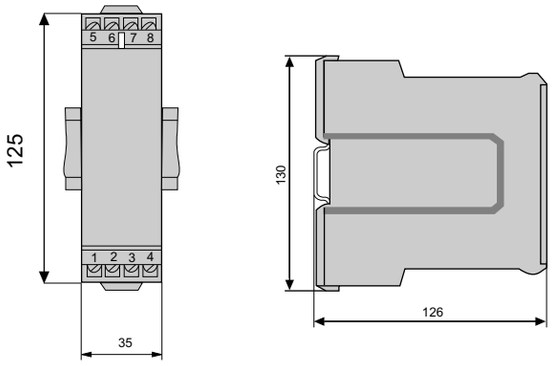
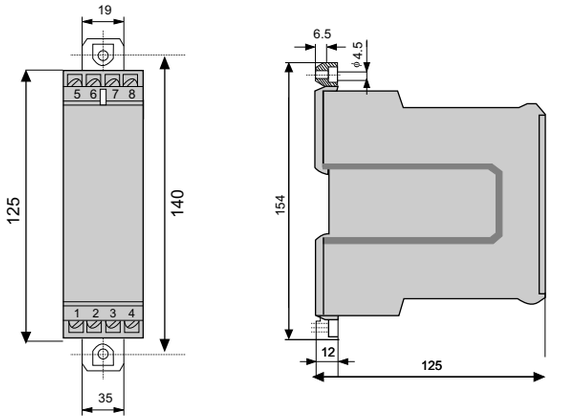
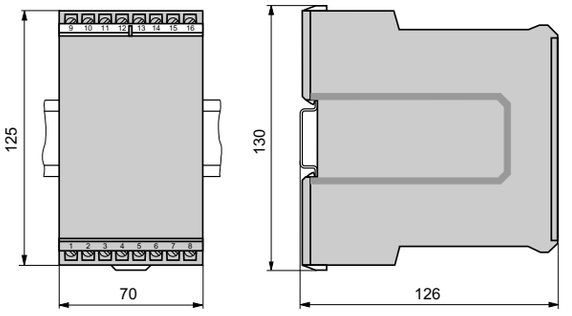
DIMENSIONAL DRAWING



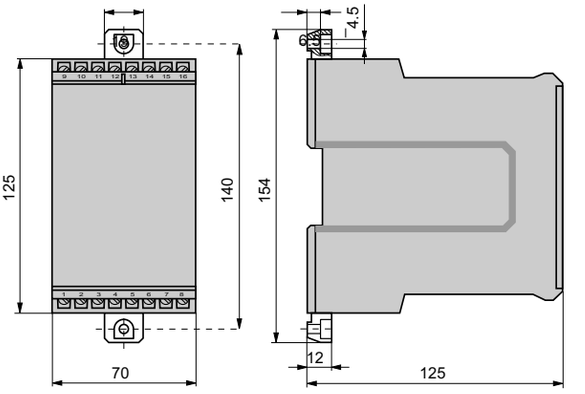
Transducer in housing E8 clipped onto a top-hat rail (35 x 15 mm or 35 x 7.5 mm acc. to EN 50 022).



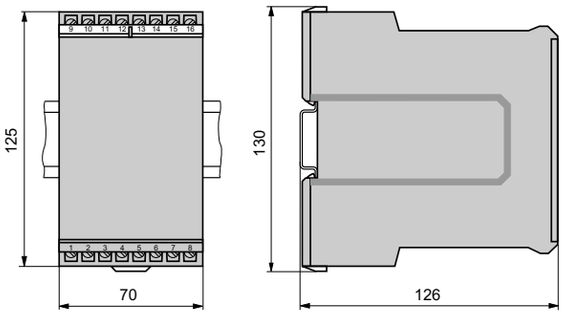
Transducer in housing E8 with the screw hole brackets pulled out for wall mounting.



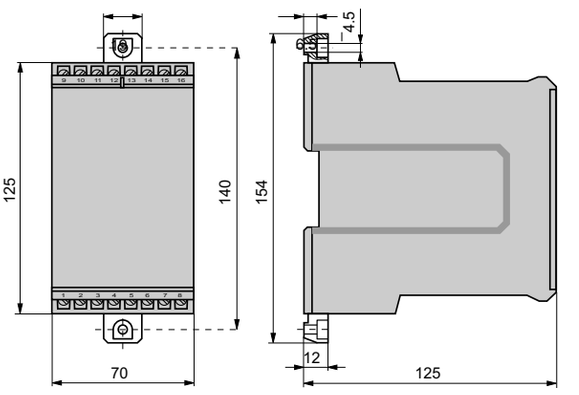
Transducer E15 two output in housing E16 clipped onto a top hat rail (35 X 15 mm or 35 7.5 mm) acc. to EN 50022.



Transducer E15 two output in housing E16 with the screw hole brackets pulled out for wall mounting.



Transducer E1D two output in housing E16 clipped onto a top hat rail (35 X 15 mm or 35 7.5 mm) acc. to EN 50022.



Transducer E1D two output in housing E16 with the screw hole brackets pulled out for wall mounting.

ORDERING INFORMATION:

Please specify ordering information as given below,

Type	Measuring qty.	Measuring Range/Input	Output	Aux supply

ORDER EXAMPLE:

E15	Voltage	400V	4... 20mA	230VAC

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Transducers for Frequency Measurement

F11 F12	Frequency measurement transducer

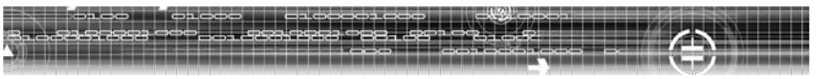
Ziegler F11/F12 measuring transducers are used for frequency measurement.
The output signal is proportional to measured frequency & is either a load independent DC current or a load independent DC voltage.

GENERAL FEATURES:

APPLICABLE STANDARDS	
Product Performance	Acc. to IEC 60688
Housing Protection	IP 40 acc. to EN 60 529 Terminal IP 20
Rated Insulation Voltage	Measuring input AC 300 V Power supply AC 300 V, DC 230V Measuring output DC 40V
Contamination level	2
Over voltage category	III
Protection class	II
Safe isolation	Acc. to IEC 61010 and DIN/DE 106, part 101
Impulse withstand voltage acc. to IEC 255-4Cl. III	5kV, 1.2/50ms, 0.5Ws Common-mode and differential mode between any terminals
Test voltage	Measuring input versus Measuring output 3.7kV/50Hz/1min. Measuring input versus housing 3.7kV/50Hz/1min. Measuring output versus housing 3.7kV/50Hz/1min. 0.5kV/50Hz/1min. Measuring output 1 versus output 2 500V/50Hz/1min
ENVIRONMENTAL CONDITIONS	
Climatic rating	Climate class 3Z acc. to VDI/VDE 3540
Operating temperature	0-60°C
Storage temperature	-20°C to +70°C
Relative humidity	75% (STD)
Permissible vibration	2g acc. to EN 60 068-2-6
Shock	3x50g (3 shocks each in 6 directions)

FACT SHEET:

Mechanical Design	Moulded case housing 35mm width
Case Material	Glass filled polycarbonate, Flame retardant & drip proof as per UL 94 V0
Position of use	Any
Higher load capacity	750Ω at 20mA
Mounting	DIN rail mounting (35x15/7.5mm) acc. to EN 50 022 or directly onto wall or panel mounting. Easy “onsite”conversion possible
Protection type	Output short circuit and open circuit proof
Terminal connection	Screw-type terminals with indirect wire pressure 2 for max. 2x2.5mm^2 or 1x6mm^2 Electricians delight. Even suitable for multistrand or solid wire connection. Large space for looping of wires



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VOLTAGE CURRENT & FREQUENCY TRANSDUCERS

Models	F11	F12
Measuring quantity	Frequency	
Nominal Input	63.5V…480V 45-55Hz/55-65Hz/45-65Hz/360Hz-440Hz	
Nominal Frequency	45-65Hz	
Output Quantity	Load independent DC current or DC voltage	
Output Range	0-1/0-5/0-10/0-20mA/4-20mA 0-5/10V Option: Dual Output	
Ripple	<0.5% of full rated O/P	
Output Burden	Current output: R_{ext} = 15V/I(full scale) Voltage Output: R_{ext} = output voltage/20mA	
Auxiliary Supply	AC 24/110/120/230/380V DC 24-60V AC/DC or 85-230V AC/DC	
Power Consumption	<2 VA, <5 VA for dual output	
Response Time	<400ms	
High Insulation Level	3.7kV	
Impluse Withstand Voltage	5kV, 1.2/50 µsec., 0.5Ws	
Accuracy as per IEC 688	Class 0.5	Class 0.2
Operating Temperature	0-60˚C	
Weight	approx. <0.45kg	

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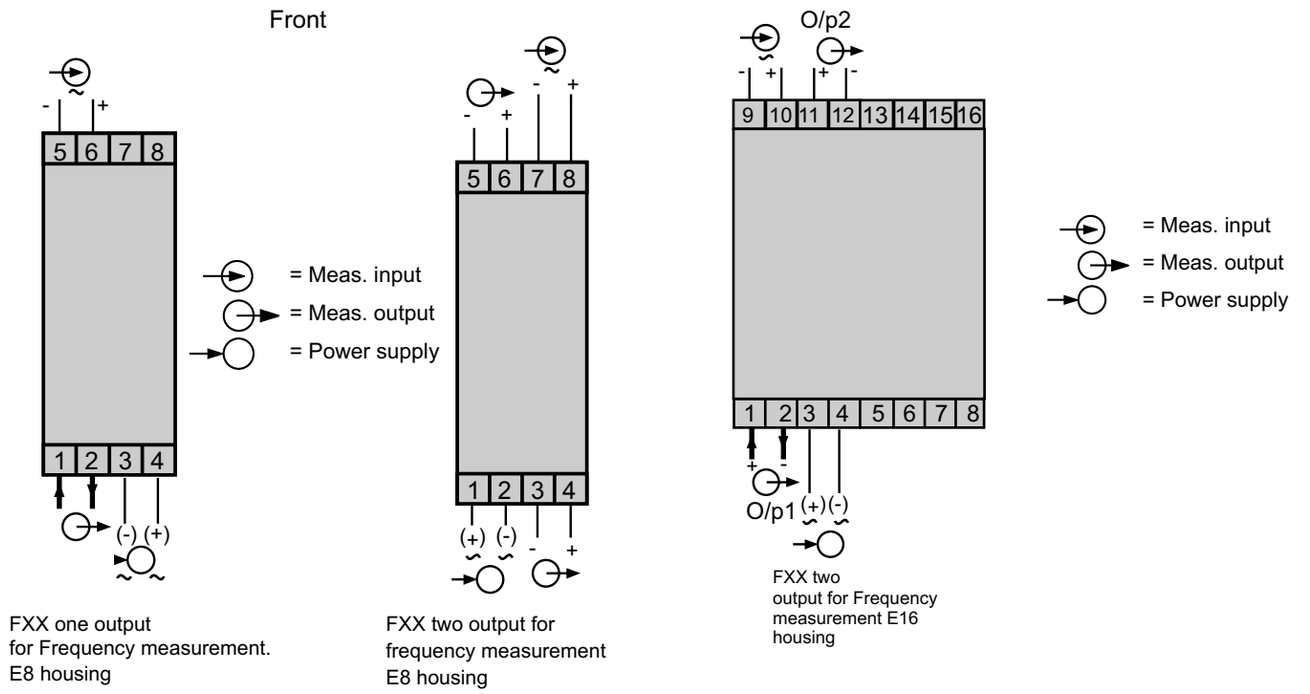
CONNECTION DIAGRAM

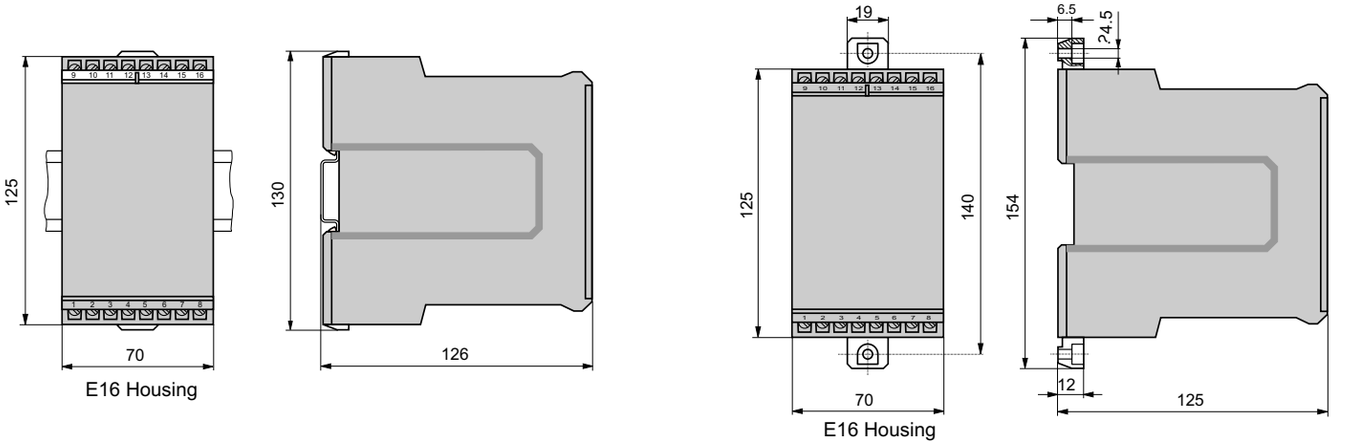


FXX one output
for Frequency measurement.
E8 housing

FXX two output for
frequency measurement
E8 housing

FXX two
output for Frequency
measurement E16
housing

DIMENSIONS



FXX in housing E8 / E16 clipped onto a top-hat rail
(35 x 15 mm or 35 x 7.5 mm, acc. to EN 50 022).

FXX in housing E8 / E16 with the screw hole brackets
pulled out for wall mounting.

ORDERING INFORMATION:

Please specify ordering information as given below,

Type	Nominal Input	Measuring Range/Input	Output	Aux supply

ORDER EXAMPLE:

F12	415V	55-65Hz	1mA-20mA	85-230V AC/DC

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Transducers for Power, Power Factor & Phase Angle Measurement.

P11	Active, Reactive Power Measurement
C11	Power Factor/Phase Angle Measurement
C12	Phase Angle Difference of 2 Single Phase Balanced Network

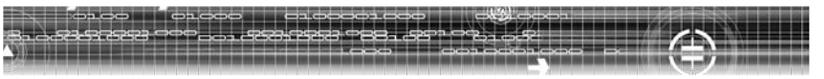
Ziegler P11 measures active/reactive power of a single/three phase system with balanced or unbalanced load by TDM (Time Division Multiplexing) principle and converts it into proportionate load independent DC current or voltage.
Ziegler C11 measures the phase angle between current & voltage of a single or three phase balanced network having sine wave form. The output signal is in the form of load independent DC current or voltage which is proportional to phase angle between current and voltage.
Ziegler C12 converts the phase angle difference of 2 synchronized supply into an output signal, that can serve several receiving instruments.

GENERAL FEATURES :

APPLICABLE STANDARDS	
Product Performance	Acc. to IEC 60688
Housing Protection	IP 40 acc. to EN 60 529 Terminal IP 20
Rated Insulation Voltage	Measuring input AC 300 V Power supply AC 300 V, DC 230V Measuring output DC 40V
Contamination level	2
Over voltage category	III
Protection class	II
Safe isolation	Acc. to IEC 61010 and DIN/DE 106, part 101
Impulse withstand voltage acc. to IEC 255-4Cl. III	5kV, 1.2/50ms, 0.5Ws Common-mode and differential mode between any terminals
Test voltage	Measuring input versus Measuring output 3.7kV/50Hz/1min. Measuring input versus housing 3.7kV/50Hz/1min. Measuring output versus housing 3.7kV/50Hz/1min. 0.5kV/50Hz/1min. Measuring output 1 versus output 2 500V/50Hz/1min
ENVIRONMENTAL CONDITIONS	
Climatic rating	Climate class 3Z acc. to VDI/VDE 3540
Operating temperature	0-60°C
Storage temperature	-20°C to +70°C
Relative humidity	75% (STD)
Permissible vibration	2g acc. to EN 60 068-2-6
Shock	3x50g (3 shocks each in 6 directions)

FACT SHEET :

Mechanical Design	Moulded case housing 35mm width
Case Material	Glass filled polycarbonate, Flame retardant & drip proof as per UL 94 V0
Position of use	Any
Higher load capacity	750Ω at 20mA
Mounting	DIN rail mounting (35x15/7.5mm) acc. to EN 50 022 or directly onto wall or panel mounting. Easy “onsite”conversion possible
Protection type	Output short circuit and open circuit proof
Terminal connection	Screw-type terminals with indirect wire pressure 2 for max. 2x2.5mm^2 or 1x6mm^2 Electricians delight. Even suitable for multistrand or solid wire connection. Large space for looping of wires



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ZIEGLER RANGE OF POWER, POWER FACTOR & PHASE ANGLE DIFFERENCE TRANSDUCER :

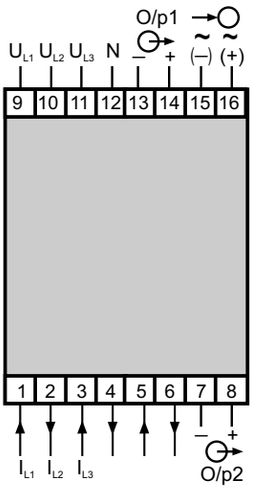
Models	P11	C11	C12
Measuring quantity	Active,Reactive Power	Power Factor/Phase Angle	Phase Angle difference of two single phase balanced ntwork
Measuring Principle	Time Division Multiplication	Measurement of zero crossing interval	Measurement of zero crossing interval
Nominal Input	Current:1A or 5A CT secondary(0.01 to 10A) Voltage:110 3,110,230,240,400,500 V (10V-660V)		Voltage:10 to 660V
Std Measuring Ranges	-----	0.9 Cap-1-ind 0.5 0.8Cap-1-ind 0 0.5 Cap-1-ind 0.5 0.5 -ind-0-Cap-1-0-Cap 0.5	± 60 to ±175° elec
Output Quantity	Load independent DC Voltage or DC Current (Unipolar/Bipolar)		
Output Range	Current:0-1/0-5/0-10/0-20/4-20mA, -1…0…1 to -20…0…20mA (Bipolar) Voltage: 0-10V/1-5V-10…0…10V(Bipolar) Option:Dual Output.		
Ripple	1% P-P	2% P-P	
Output Burden	Current Output:Rext=15V/I(Full Scale) 750Ω @ 20mA or 1500Ω @ 10mA Voltage Output:Rext=Output Voltage/20mA		
Auxiliary Supply	AC 24V/115V or 230V/240V ± 15% DC 24V…90V or 90…240V -15%/33%		
Own Consumption	< 0.1 VA per current path,Un*1mA per Voltage path		
Response Time	<300ms		
High Insulation Level	4kV		
Impluse Withstand Voltage	1kV,1.2/50µsec,0.5Ws		
Accuracy as per IEC 688	Class 0.5		
Operating Temperature	-25 to 55°C		
Weight	Approx 0.5Kg	Approx 0.6Kg	

ELECTRICAL CONNECTIONS FOR P11

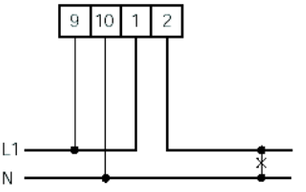
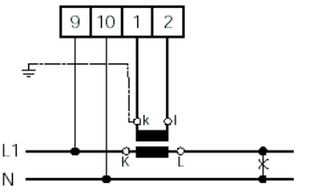
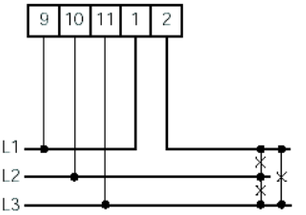
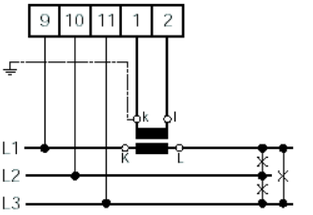
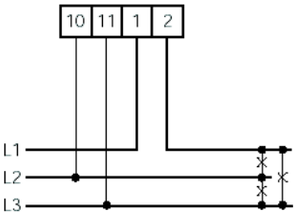
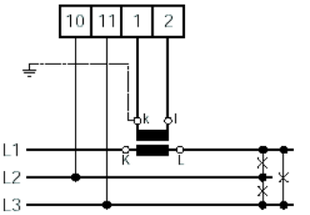
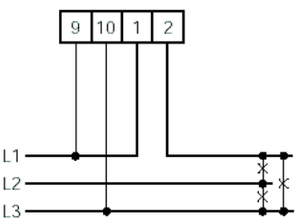
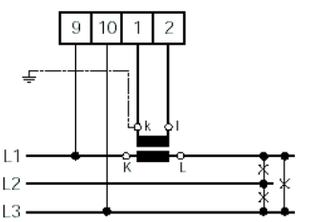
U_{L1} , U_{L2} ,U_{L3}
I_{L1} , I_{L2} ,I_{L3}
N
} = Measuring Inputs

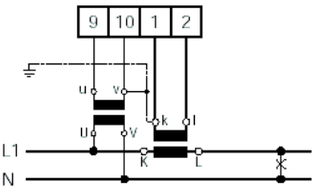
= Measuring output O/p1 & O/p2

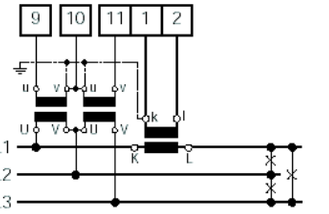
= Power supply

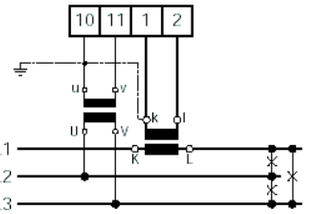


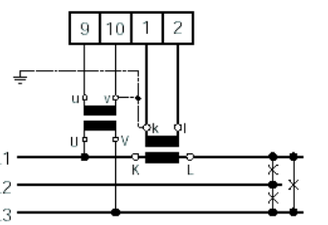
Front

Measuring Inputs		
Application	Terminal allocation	
Active or reactive power measurement in single-phase AC network		
Active power measurement in 3-wire 3-phase network balanced load		
Reactive power measurement in 3-wire 3-phase network balanced load		
Active or reactive power measurement in 3-wire 3-phase network balanced load Phase shift U: L1-L3 I: L1		









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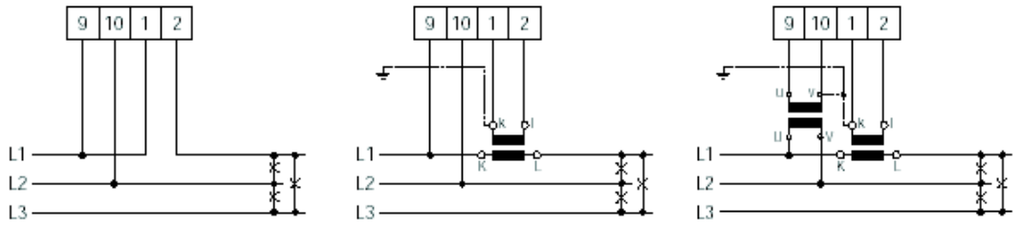
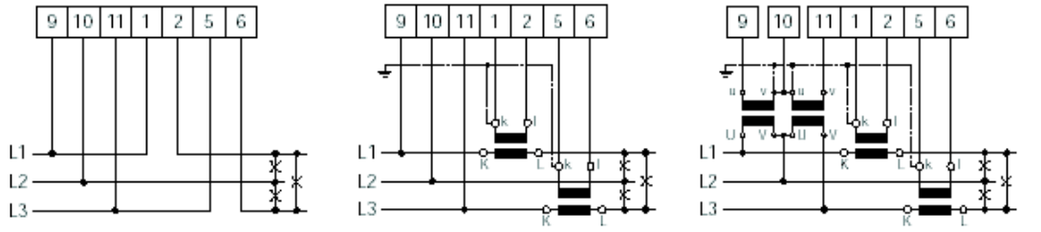
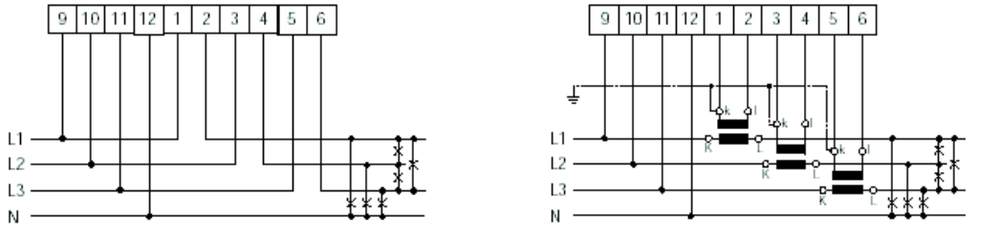
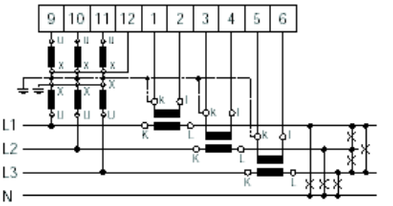
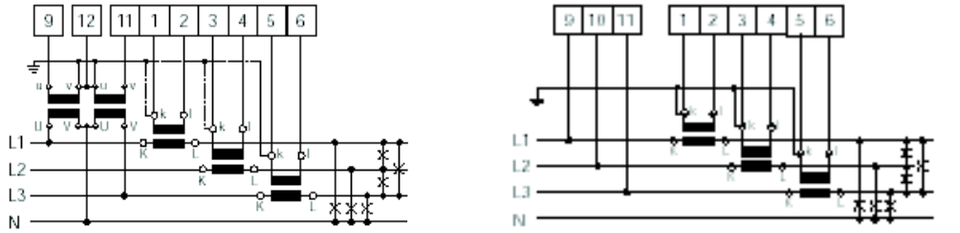
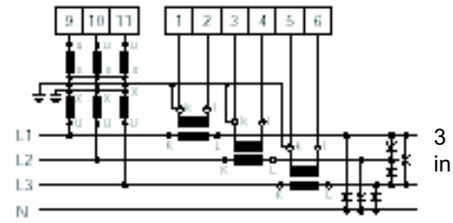
ELECTRICAL CONNECTIONS

Measuring Inputs

Application	Terminal allocation
Active or reactive power measurement in 3-wire 3-phase network balanced load Phase shift U: L1-L2 I: L1	
Active or reactive power measurement in 3-wire 3-phase network unbalanced load	
Active power measurement in 4-wire 3-phase network unbalanced load	  3 single-pole insulated voltage transformer in the high-voltage system
Active or reactive power measurement in 4-wire 3-phase network unbalanced load (special circuit)	  3 single-pole insulated voltage transformer in the high-voltage system

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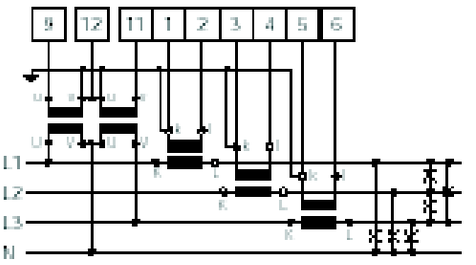
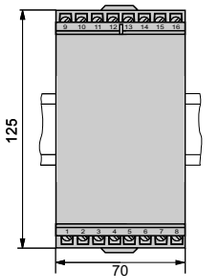
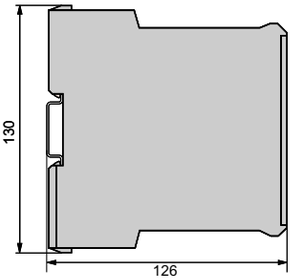
Redefine Innovative Metering

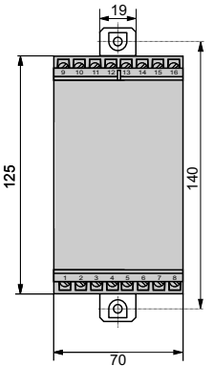
Measuring Inputs	
Application	Terminal allocation
Active or reactive power measurement in 4-wire 3-phase network unbalanced load (special circuit)	 (Delta connection using 2 VT's L1 – N and L3 – N, Open-Y connection)

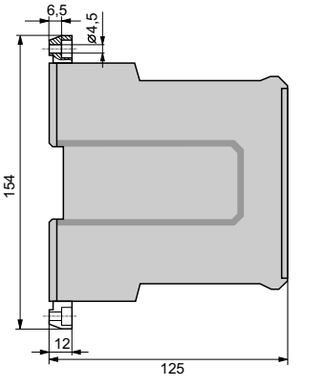
DIMENSIONAL DRAWINGS





P11 in housing E16 clipped onto a top hat rail
(35 x 15 mm or 35 x 7.5 mm, acc. to EN 50 022).





P11 in housing E16 with the screw hole brackets pulled out
for wall mounting.

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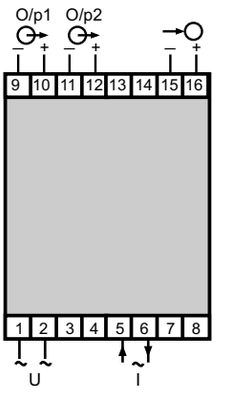
ELECTRICAL CONNECTIONS FOR C11 & C12

C11

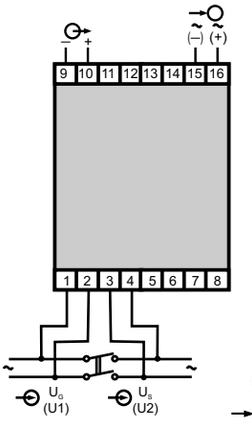


U, I = Measuring Inputs

= Measuring output O/p1 & O/p2

= Power supply

C12

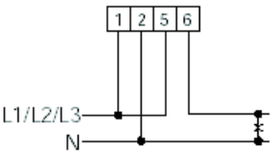
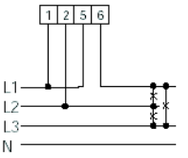
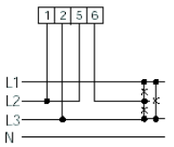
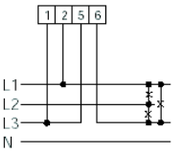
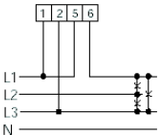
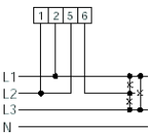
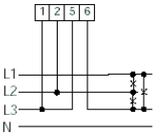


U_G = Measuring Inputs, generator Voltage

U_S = Measuring Inputs, bus Voltage

= Measuring output

= Power supply

Measuring Inputs			
Application	Terminal allocation	Application	Terminal allocation
Phase angle measurement in single-phase AC network		Phase angle measurement in 3- or 4-wire 3-phase network balanced U: L1 – L2 I: L1	
Phase angle measurement in 3- or 4-wire 3-phase network U: L2 – L3 I: L2		Phase angle measurement in 3- or 4-wire 3-phase network U: L2 – L3 I: L2	
Phase angle measurement in 3- or 4-wire 3-phase network U: L1 – L3 I: L1		Phase angle measurement in 3- or 4-wire 3-phase network U: L1 – L3 I: L1	
Phase angle measurement in 3- or 4-wire 3-phase network U: L3 – L2 I: L3			

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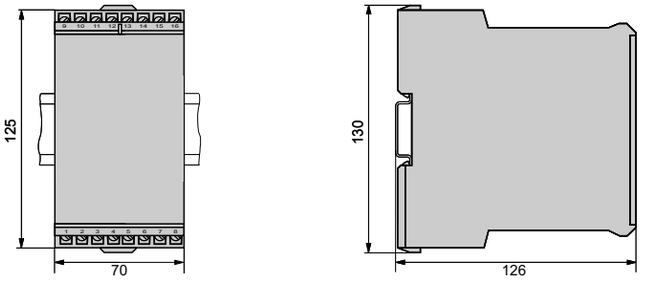
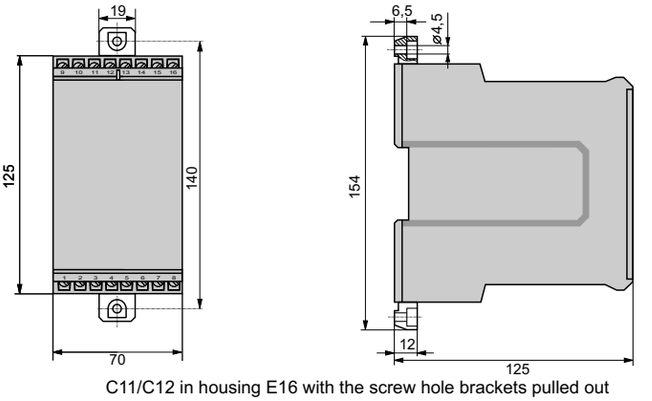
DIMENSIONAL DRAWINGS



C11/C12 in housing E16 clipped onto a top hat rail
(35 x15 mm or 35 x 7.5 mm, acc. to EN 50 022).



C11/C12 in housing E16 with the screw hole brackets pulled out
for wall mounting.

ORDERING INFORMATION:

Please specify ordering information as given below,

Type	Nominal input	Measuring Range/Input	Output	Aux supply

ORDER EXAMPLE:

C11	415V, 5A	0.9 Cap-1-ind 0.5	4... 20mA	230VAC

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Programmable Multi-Transducers

M42	4 Analogue, 2 Digital outputs
M24	2 Digital outputs, 4 Analogue
M40	4 Analogue outputs
M01	LON BUS Interface
M20	2 Analogue outputs
M30	3 Analogue outputs

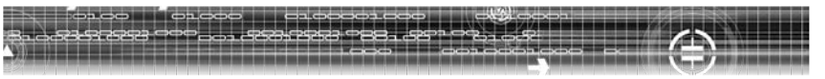
The RS232/485 interface at the multi-transducers enables programming with the help of PC and Software and can also be used to initialize helpful ancillary functions.

GENERAL FEATURES:

APPLICABLE STANDARDS	
Product Performance	Acc. to IEC 60688
Housing Protection	IP 40 acc. to EN 60 529 Terminal IP 20
Rated Insulation Voltage	Measuring input AC 300 V Power supply AC 300 V, DC 230V Measuring output DC 40V
Contamination level	2
Over voltage category	III
Protection class	II
Safe isolation	Acc. to IEC 61010 and DIN/DE 106, part 101
Impulse withstand voltage acc. to IEC 255-4Cl. III	5kV, 1.2/50ms, 0.5Ws Common-mode and differential mode between any terminals
Test voltage	Measuring input versus Measuring output 3.7kV/50Hz/1min. Measuring input versus housing 3.7kV/50Hz/1min. Measuring output versus housing 3.7kV/50Hz/1min. 0.5kV/50Hz/1min. Measuring output 1 versus output 2 500V/50Hz/1min
ENVIRONMENTAL CONDITIONS:	
Climatic rating	Climate class 3Z acc. to VDI/VDE 3540
Operating temperature	0-60°C
Storage temperature	-20°C to +70°C
Relative humidity	75% (STD)
Permissible vibration	2g acc. to EN 60 068-2-6
Shock	3x50g (3 shocks each in 6 directions)

FACT SHEET:

Mechanical Design	Moulded case housing 35mm width
Case Material	Glass filled polycarbonate, Flame retardant & drip proof as per UL 94 V0
Position of use	Any
Higher load capacity	750Ω at 20mA
Mounting	DIN rail mounting (35x15/7.5mm) acc. to EN 50 022 or directly onto wall or panel mounting. Easy “onsite”conversion possible
Protection type	Output short circuit and open circuit proof
Terminal connection	Screw-type terminals with indirect wire pressure 2 for max. 2x2.5mm^2 or 1x6mm^2 Electricians delight. Even suitable for multistrand or solid wire connection. Large space for looping of wires



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ZIEGLER SERIES OF PROGRAMMABLE MULTITRANSDUCERS :

Models		M42	M24	M40	M01	M20
Analog Output		4	2	4	0	2
Digital Output		2	4	0	0	0
Interface		RS232		RS232/RS485		RS232
Measured Variables		Current,Voltage,Active/Reactive Power,Cosφ,Sinφ & Power Factor,Amper Demand,Frequency,Energy.				
Systems		Single Phase AC,3 Phase 3 wire Balanced/Unbalanced load,3 Phase 4 wire Balanced/Unbalanced load.				
INPUTS	Frequency	50 to 60 Hz,16 Hz.				
	Nominal Voltage	57 to 400V				
	Nominal Current	1A to 6A				
Continuous overload capacity	Current	10A				
	Voltage	480 V Single Phase System 813V Three Phase System.				
OUTPUTS	Load independent DC current	1mA to 20mA				
	Load independent DC Voltage	1V to 10V				
Accuracy: DIN IEC 688	Frequency	0.15%				
	Current/Voltage	0.20%				
	Power & Power factor	0.25%				
Power Supply	AC Voltage	100V,110V,230V,400V,500V or 693V.				
	DC/AC Voltage	24V to 60V or 85V to 230V.				
Response Time		1..2 times the measurement cycle.				
Measurement Cycle		Approx 0.25 sec to 0.5sec for 50Hz.				
Weight		Approx 0.7Kg				

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CONFIGURATION SOFTWARE MXX

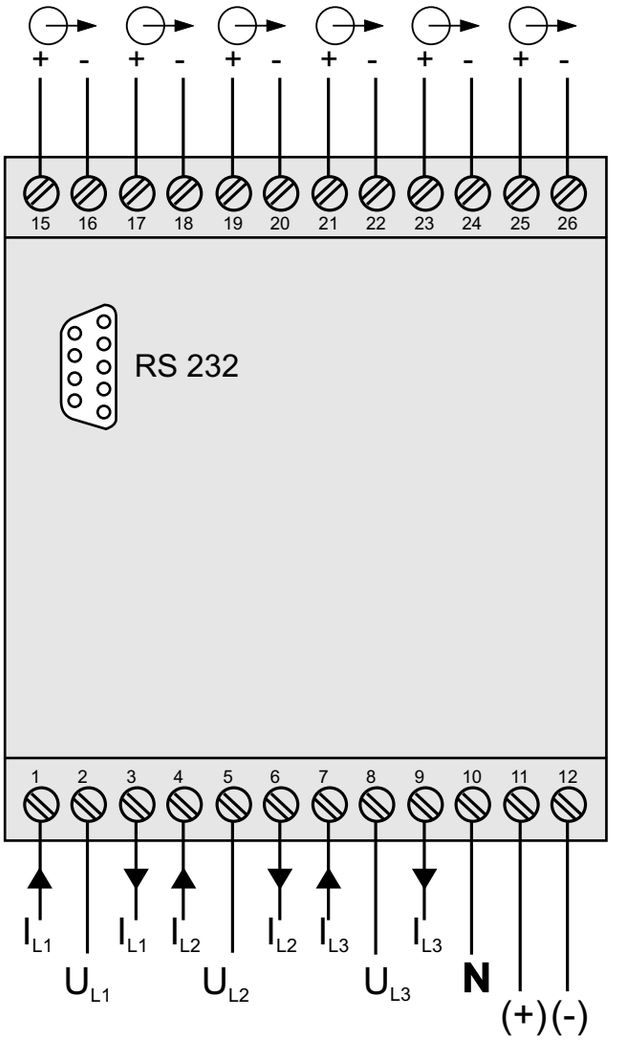
- Software provides the flexibility in the selection of : Single Phase loads/3 Phase 3 Wire Balanced/Unbalanced loads, 3 Phase 4 Wire Balanced/Unbalanced loads.
- Primary and Secondary of C.T. and P.T. can be configured. The configuration can be changed any time.
- Response characteristics for each individual output variable can be programmed. The programmed configuration is password protected.
- The configuration can be stored for future use in event of reprogramming of the unit.
- Output characteristics can be Bent. Linear or Live Zero and output can be programmed accordingly without necessitating any kind of hardware change.
- The digital output can be logically summed for 4 internal counter and have digital output (True/False) if the set condition is achieved.
- The measured variables are displayed on PC monitor. The measured variables can be logged in an Excel sheet for maintaining records.

SYSTEM CONFIGURATION :

- 4 wire system, Asymmetrical.
- 3 wire system, Asymmetrical (Aron)
- 4 wire system Asymmetrical (Open Y)
- 4 wire system, Balanced load.
- 3 wire system, Balanced load
- Single line system.
- Programmable for specific systems (1/3 phase, $2^{3}/_{4}$ wire)
- Nominal current programmable from 1 to 6 A
- Nominal voltage programmable from 57V to 400V (Phase-to-neutral) or 100Vto 693V (phase-to-phase)
- Programmable analog outputs (Current or Voltage)
- Digital outputs can be used for limit value monitoring energy metering
- Programmable Bend Characteristics
- Programmable response time
- Universal (AC,DC) power pack with very wide tolerance range or AC auxiliary supply
- Configurable from a PC or RS232 interface
- Power system check
- Display of measurement values at a PC monitor
- Simulation of outputs
- Recording of data in excel file & more

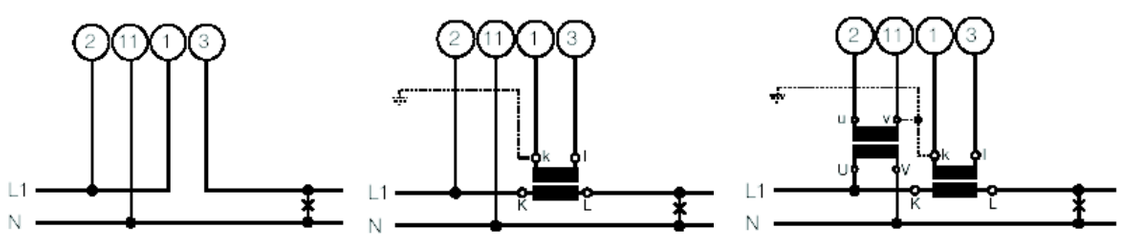
ELECTRICAL CONNECTIONS

Function				Connection
Meas. input	AC current	IL1		1 / 3
		IL2		4 / 6
		IL3		7 / 9
Meas. input	AC Voltage	UL1		2
		UL2		5
		UL3		8
		N		11
Outputs	Analogue	Digital		
	A		+	15
			–	16
	B		+	17
			–	18
	C	E	+	19
			–	20
	D	F	+	21
			–	22
		G	+	23
			–	24
		H	+	25
			–	26
Power Supply	AC		~	13
			~	14
	DC		+	13
			-	14



If power supply is taken from the measured voltage internal connections are as follow:

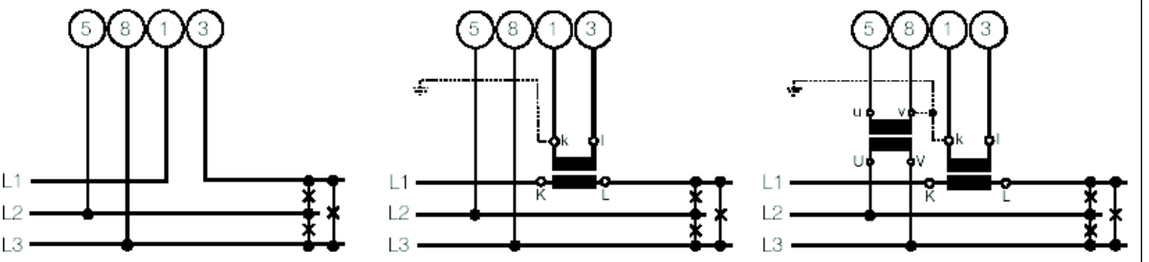
Application (system)	Internal connection Terminal / System
Single phase AC current	2 / 11 (L1 - N)
4-wire 3-phase symmetric load	2 / 11 (L1 - N)
All other *	2 /5 (L1 - L2)

Measuring input	
System / application	Terminals
Single-phase AC system	

Measuring input

System / application	Terminals

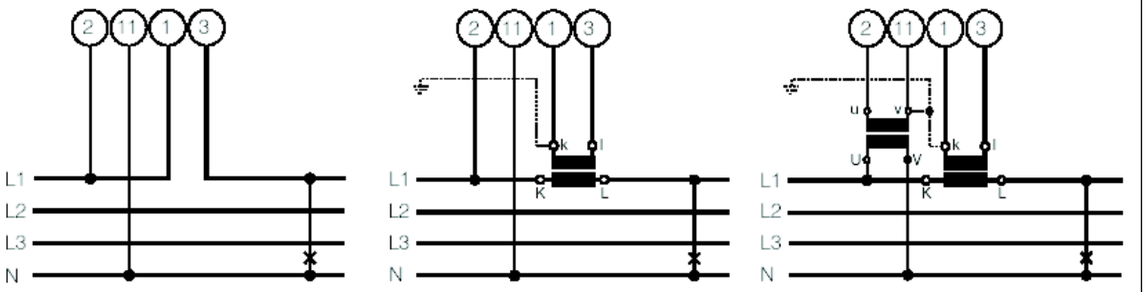
3-wire 3-phase symmetric load Phase-shift U: L2 - L3 I: L1



Connect the voltage according to the following table for current measurement in L2 or L3:

Current transformer	Terminals		5	8
L2	1	3	L3	L1
L3	1	3	L1	L2

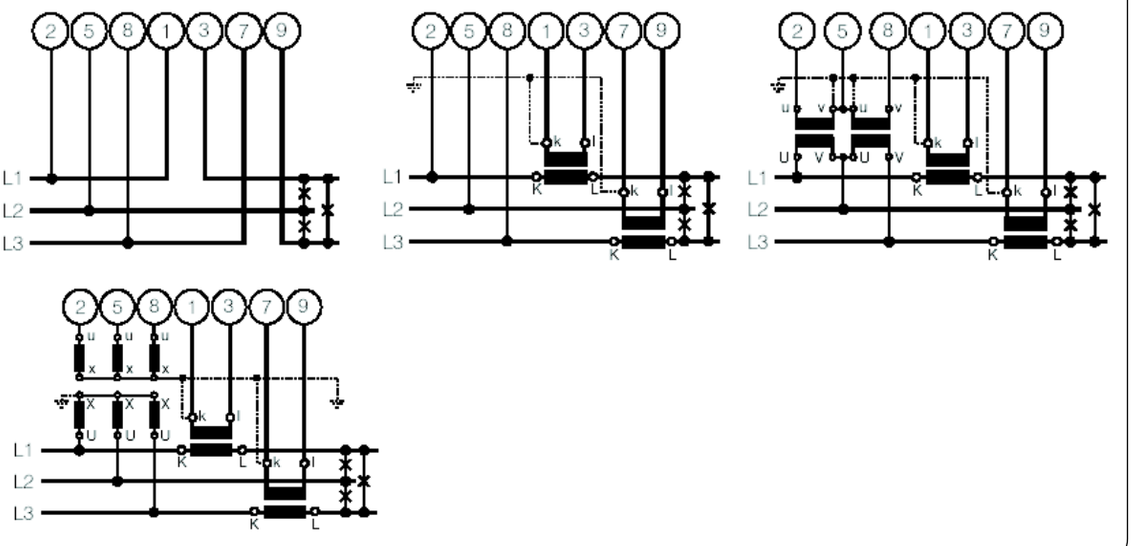
4-wire 3-phase symmetric load I: L1



Connect the voltage according to the following table for current measurement in L2 or L3:

Current transformer	Terminals		2	11
L2	1	3	L2	N
L3	1	3	L3	N

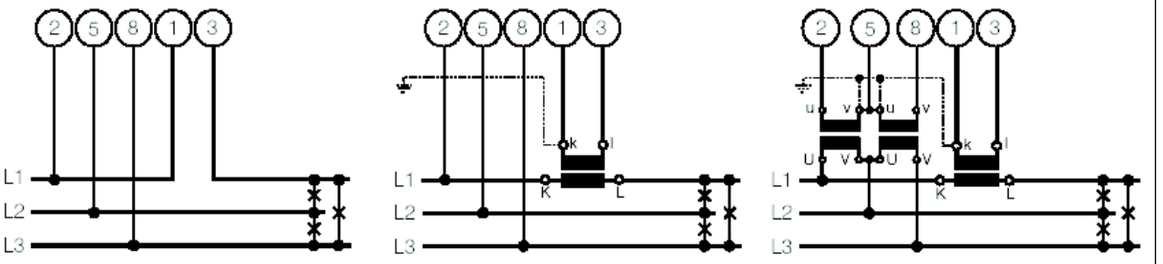
3-phase 3-wire asymmetric load *



Measuring input

System / application	Terminals

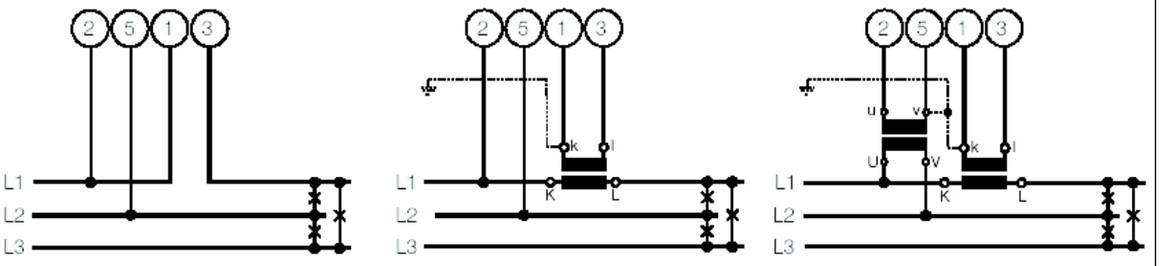
3-wire
3-phase
symmetric
load
I: L1



Connect the voltage according to the following table for current measurement in L2 or L3:

Current transformer	Terminals		2	5	8
L1	1	3	L2	L3	L1
L3	1	3	L3	L1	L2

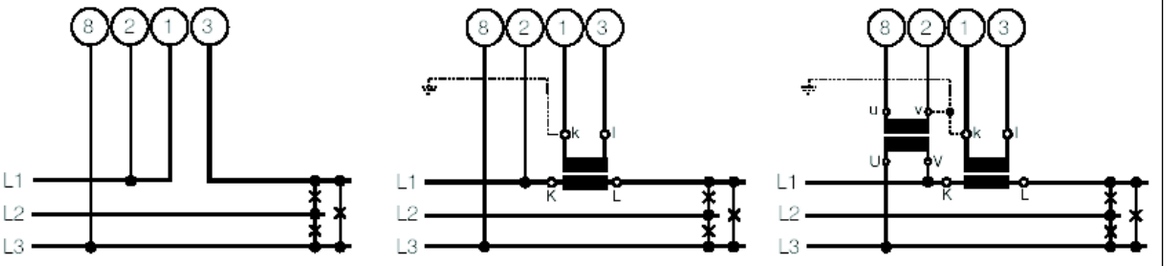
3-wire
3-phase
symmetric
load
Phase-shift
U: L1 - L2
I: L1



Connect the voltage according to the following table for current measurement in L2 or L3:

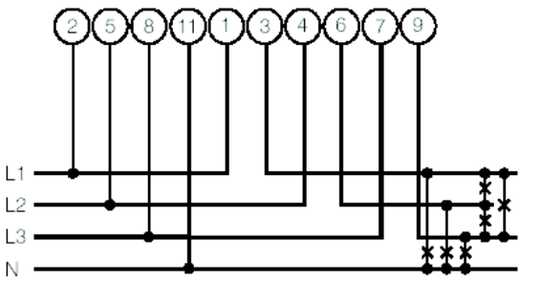
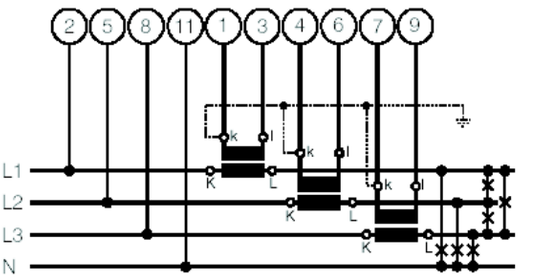
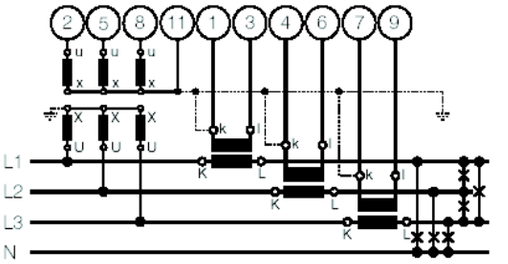
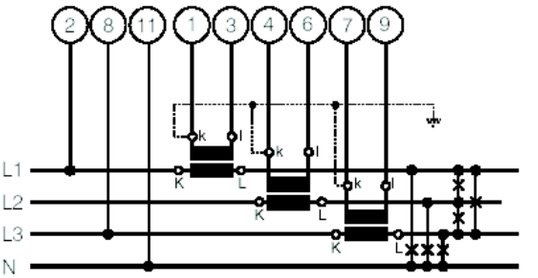
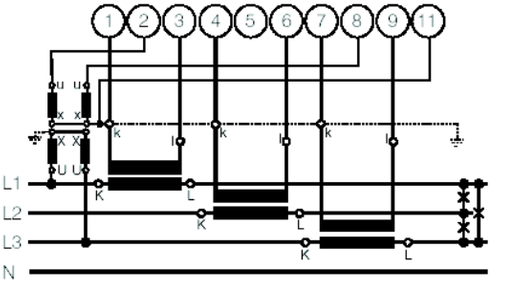
Current transformer	Terminals		2	5
L2	1	3	L2	L3
L3	1	3	L3	L1

3-wire
3-phase
symmetric
load
Phase-shift
U: L3 - L1
I: L1

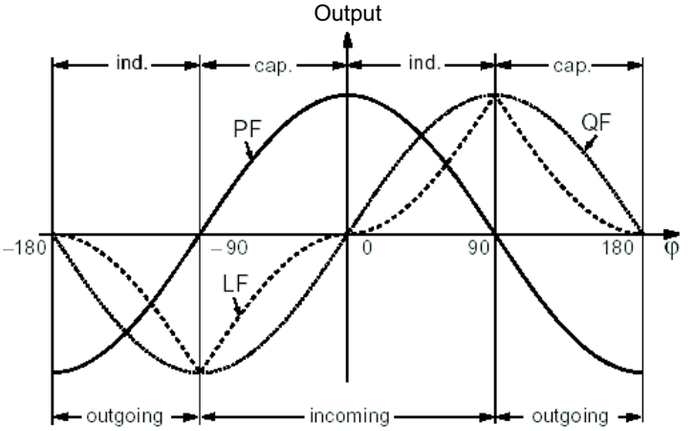


Connect the voltage according to the following table for current measurement in L2 or L3:

Current transformer	Terminals		8	2
L2	1	3	L1	L2
L3	1	3	L2	L3

Measuring input	
System / application	Terminals
3-phase 3-wire asymmetric load *	   3 single-pole insulated voltage transformers in high-voltage system
4-wire asymmetric load, 3-phase Open Y connection*	 Low-voltage system  2 single-pole insulated voltage transformers in high-voltage system

Relationship between PF, QF and LF



Active power PF----- , reactive power QF ------, power factor LF------ .

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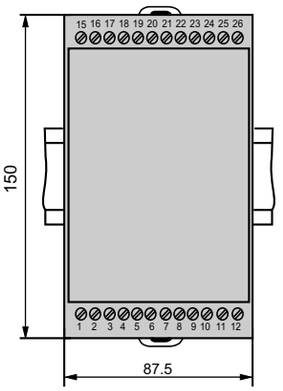
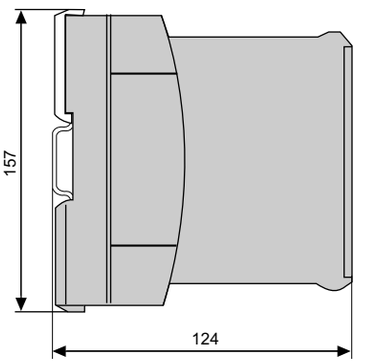
Redefine Innovative Metering

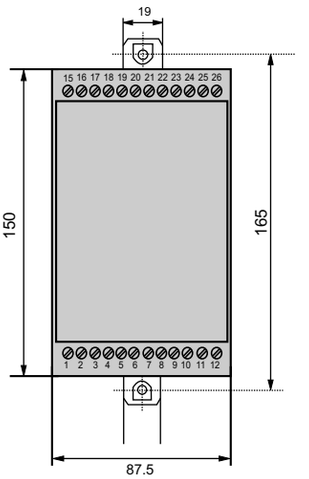
DIMENSIONAL DRAWING



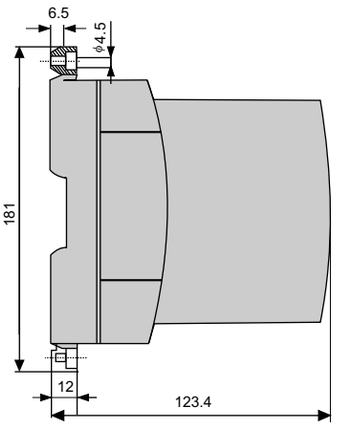
MXX in housing
(35 X 15 mm or 35 X 7.5 mm, acc. to EN 50 022).



T24 clipped onto a top-hat rail



MXX in housing
brackets pulled out.



T24, screw hole mounting

ORDERING INFORMATION:

Please specify ordering information as given below,

Type	System type	Input	Programming	Aux supply

ORDER EXAMPLE:

M42	3 phase 4 wire unbalanced	400V, 5A	Basic	85...230V AC/DC

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Redefine Innovative Metering

Passive DC Signal Isolator/ Converter/Isolating Amplifier.

TI816	DC Signal Isolators
TI807	DC Signal Isolators
TV808	Isolating Amplifier

The DC signal isolator serves to electrically isolate the analog DC signal in the range from 0(4)-20mA which, depending on version, is then converted to a current signal 0(4)-20mA or voltage signal 0(2)-10V. It does not require a separate power supply, but derives the little auxiliary energy it needs from the DC signal.
Isolating amplifier Ziegler TV808, finds its applications for isolation, amplification and conversion of DC signals.

GENERAL FEATURES:

APPLICABLE STANDARDS	
Product Performance	Acc. to IEC 60688
Housing Protection	IP 40 acc. to EN 60 529 Terminal IP 20
Rated Insulation Voltage	Measuring input AC 300 V Power supply AC 300 V, DC 230V Measuring output DC 40V
Contamination level	2
Over voltage category	III
Protection class	II
Safe isolation	Acc. to IEC 61010 and DIN/DE 106, part 101
Impulse withstand voltage acc. to IEC 255-4Cl. III	5kV, 1.2/50ms, 0.5Ws Common-mode and differential mode between any terminals
Test voltage	Measuring input versus Measuring output 3.7kV/50Hz/1min. Measuring input versus housing 3.7kV/50Hz/1min. Measuring output versus housing 3.7kV/50Hz/1min. 0.5kV/50Hz/1min. Measuring output 1 versus output 2 500V/50Hz/1min
ENVIRONMENTAL CONDITIONS:	
Climatic rating	Climate class 3Z acc. to VDI/VDE 3540
Operating temperature	0-60°C
Storage temperature	-20°C to +70°C
Relative humidity	75% (STD)
Permissible vibration	2g acc. to EN 60 068-2-6
Shock	3x50g (3 shocks each in 6 directions)

FACT SHEET:

Mechanical Design	Moulded case housing 12.5mm(TI816), 17.5mm (TI807) width
Case Material	Glass filled polycarbonate, Flame retardant & drip proof as per UL 94 V0
Position of use	Any
Higher load capacity	750Ω at 20mA
Mounting	DIN rail mounting (35x15/7.5mm) acc. to EN 50 022 or directly onto wall or panel mounting. Easy “onsite”conversion possible
Protection type	Output short circuit and open circuit proof
Terminal connection	Screw-type terminals with indirect wire pressure 2 for max. 2x2.5mm^2 or 1x6mm^2 Electricians delight. Even suitable for multistrand or solid wire connection. Large space for looping of wires

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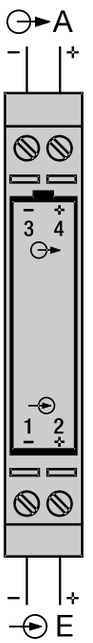
Redefine Innovative Metering

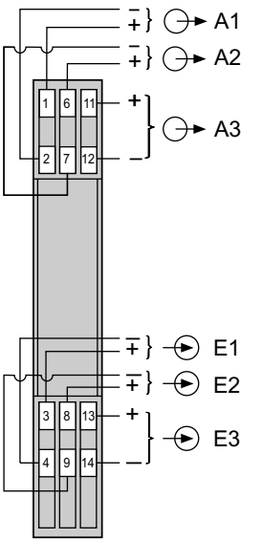
ZIEGLER PASSIVE DC SIGNAL ISOLATOR/CONVERTER/ISOLATING AMPLIFIER :

Models	TI 816	TI807	TV808
Measuring quantity	DC Current		DC Current & Voltage
Measuring Principle	DC Signal Isolation		
Nominal Input	DC Current:0-20mA		DC Current:0..0.1 to 0-40mA
Std Measuring Ranges	-----	-----	Current: 0 … 0.1 mA, 0…0.2 mA, 0 … 0.5 mA,0 … 1 mA,0 … 2 mA,0 … 5 mA, 0 … 10 mA,0 … 20 mA, 0.2 …1 mA,1 … 5 mA,2 … 10 mA,4 … 20 mA Voltage:0…0.06V, 0 … 0.1V,0 …0.2V,0 …0.5V,0 …1V, 0 …2 V,0 …5 V,0 …10 V,0…20 V,0 …40 V.
Output Quantity	DC current or DC Voltage.	DC Current	DC current or DC Voltage.
Output Range	0-20mA or 0-10V	0-20mA.	Current:0 ... 20 mA, 4 ... 20 mA,+ 20mA Voltage: 0 ... 10 V, 2 ... 10 V, + 10 V
Inputs & Outputs Available	1 input-1 output 2 inputs-2 outputs 3 inputs-3 outputs		1 input-1 output 1 input-2 outputs 2 inputs-2 outputs
Output Burden	Current: 600 Ω Voltage Signal	1000Ω	Current Output:Rext=Uan[V]/5mA..
Auxiliary Supply	Self		24 ...60 V DC/AC ,85 ... 230 V DC / AC
Response Time	Approx 5ms	Approx 3ms	Approx < 50ms.
High Insulation Level	3.7kV		
Accuracy as per IEC 688	Current:< ±0.1 % Voltage:< ±0.2 %		Current & Voltage:±0.2%
Operating Temperature	-20 to + 65°C		-25 to 55°C
Weight	Approx 0.35 Kg		Approx 0.20Kg

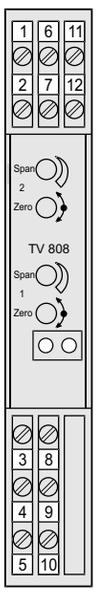
ELECTRICAL CONNECTIONS



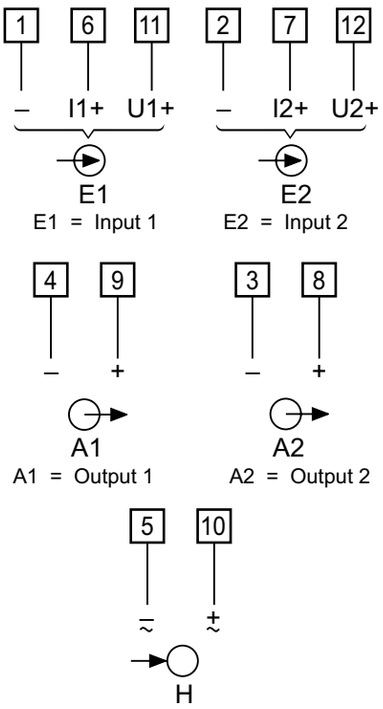
TI816
E = Input signal (IN)
A = Output signal (OUT)



Signal isolator in housing S17
with three isolation and
transmission channels
TI807-113.
standard version



TV808
Without
transparent cover



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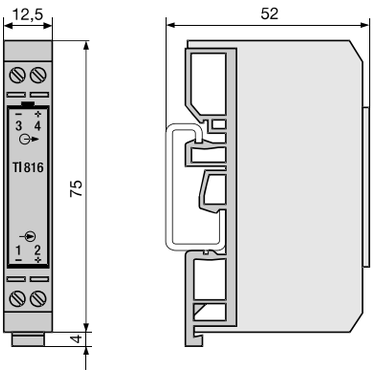
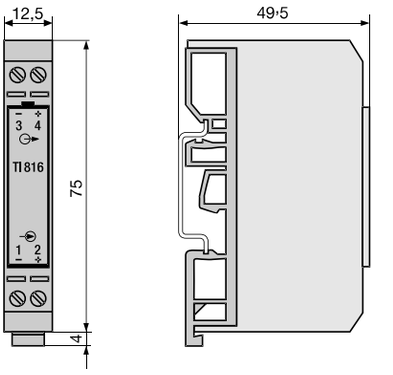
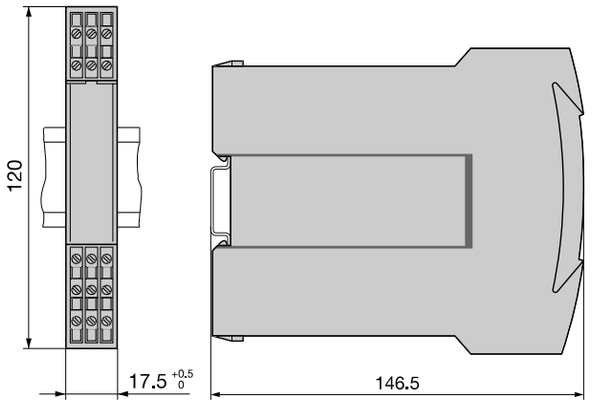
DIMENSIONAL DRAWINGS



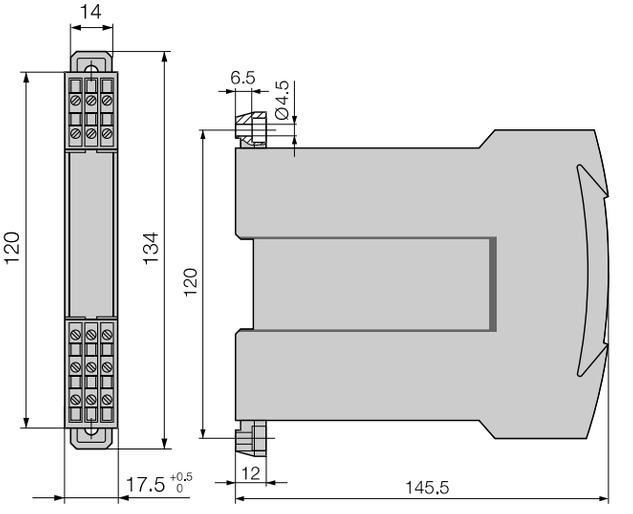
TI816 in carrying rail housing N12 on G-Type rail EN 50 035 - G 32



TI816 in carrying rail housing N12 on top - hat rail EN 50 022 - 35 X 7.5



TI807-1/TV 808 in housing S 17 clipped onto a top - hat rail (35 x 15 mm or 35 x 7.5 mm, acc to EN 50 022).



TI807-1/TV 808 in housing S 17, screw hole mounting brackets pulled out.

ORDERING INFORMATION:

Please specify ordering information as given below,

Type	Nominal input	No. of inputs	Output	No. of outputs

ORDER EXAMPLE:

TI807	0..20mA	2	0..20mA	2

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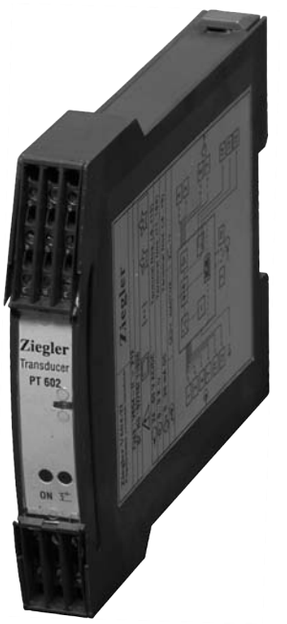
Redefine Innovative Metering

Temperature Transmitter & Programmable Universal Transmitter



PT602	Configurable transmitter for Pt100 temp. sensor
V604-II	Programmable universal transmitter

PT602 converts the input variable - a signal from a resistance thermometer PT100 to a proportionate temp. linear output signal. The analogue output signal is either an impressed current or a superimposed voltage which is processed by other devices.
V604 converts the variable - a DC current or voltage or a signal from a thermocouple, resistance thermometer, remote sensor or potentiometer to proportionate analogue output singnal

GENERAL FEATURES:

APPLICABLE STANDARDS	
Product Performance	Acc. to IEC 60688
Housing Protection	IP 40 acc. to EN 60 529 Terminal IP 20
Rated Insulation Voltage	Measuring input AC 300 V Power supply AC 300 V, DC 230V Measuring output DC 40V
Contamination level	2
Over voltage category	III
Protection class	II
Safe isolation	Acc. to IEC 61010 and DIN/DE 106, part 101
Impulse withstand voltage acc. to IEC 255-4Cl. III	5kV, 1.2/50ms, 0.5Ws Common-mode and differential mode between any terminals
Test voltage	Measuring input versus Measuring output 3.7kV/50Hz/1min. Measuring input versus housing 3.7kV/50Hz/1min. Measuring output versus housing 3.7kV/50Hz/1min. 0.5kV/50Hz/1min. Measuring output 1 versus output 2 500V/50Hz/1min
ENVIRONMENTAL CONDITIONS:	
Climatic rating	Climate class 3Z acc. to VDI/VDE 3540
Operating temperature	0-60°C
Storage temperature	-20°C to +70°C
Relative humidity	75% (STD)
Permissible vibration	2g acc. to EN 60 068-2-6
Shock	3x50g (3 shocks each in 6 directions)

FACT SHEET:

Mechanical Design	Moulded case housing 17.5mm width
Case Material	Glass filled polycarbonate, Flame retardant & drip proof as per UL 94 V0
Position of use	Any
Higher load capacity	750Ω at 20mA
Mounting	DIN rail mounting (35x15/7.5mm) acc. to EN 50 022 or directly onto wall or panel mounting. Easy “onsite”conversion possible
Protection type	Output short circuit and open circuit proof
Terminal connection	Screw-type terminals with indirect wire pressure 2 for max. 2x2.5mm^2 or 1x6mm^2 Electricians delight. Even suitable for multistrand or solid wire connection. Large space for looping of wires

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Redefine Innovative Metering

TECHNICAL SPECIFICATIONS :

Models	Pt602	V604-II
Measuring quantity	Temperature	Temperature,Resistance,DC Current,Voltage.
Nominal Input	For 2 wire connection: -150 to +800°C For 3 or 4wire connection:-170 to + 800 °C.	Plz refer the table 1
Output Quantity	DC Current,Voltage.	DC Current,Voltage.
Output Range	Current:0-20mA or 4-20mA. Voltage:0-10V DC	Current:0-20mA or 4-20mA. Voltage:0-5,0-10 or 2-10V DC
Inputs & Outputs Available	1 input 1 output 2 input 2 output.	2 inputs 2 outputs
Output Burden		
Auxiliary Supply	24…60V DC/AC 85…230V DC/AC	24…60V DC/AC 85…230V DC/AC
Own Consumption	1 Channel : 2.3VA 2 Channel : 3.4VA	2.7VA
Response Time	500ms	1 sec.
High Insulation Level	3.7kV	3.7kV
Accuracy as per IEC 688	±0.5%	±0.2%
Operating Temperature	-25 to 55°C	'-25 to 55°C
Weight	1 Channel:Approx 0.18Kg 2 Channel:0.2Kg	Approx 0.25Kg.

TABLE 1 : MEASURED VARIABLES AND MEASURING RANGES

Measured variables	Measuring ranges		
	Limits	Min. Span	Mix. Span
DC voltages direct input	±300 mV[1]	2 mV	300 mV
via potential divider [2]	± 40 V[1]	300 mV	40 V
DC currents low current range	± 12 mA[1]	0.08 mA	12 mA
high current range	–50 to + 100 mA[1]	0.75 mA	100 mA
Temperature monitored by two, three or four-wire resistance thermometers	–200 to 850 °C		
low resistance range	0...740[1]	8	740
high resistance range	0...5000[1]	40	5000
Temperature monitored by thermocouples	–270 to 1820 °C	2 mV	300 mV
Variation of resistance of remote sensors / potentiometers low resistance range	0...740[1]	8	740
high resistance range	0...5000[1]	40	5000

[1] Note permissible value of the ratio “full-scale value/span ≤ 20”.

PROGRAMMING

A PC with RS 232 C interface (Windows 3.1x,95,98, NT or 2000) the programming cable PRKAB 600 and the configuration software VC 600 are required to program the transmitter.

The connections between
"PC ⟷ PRKAB 600 ⟷ V 604" can be seen from fig. The power supply must be applied to V604 before it can be programmed.

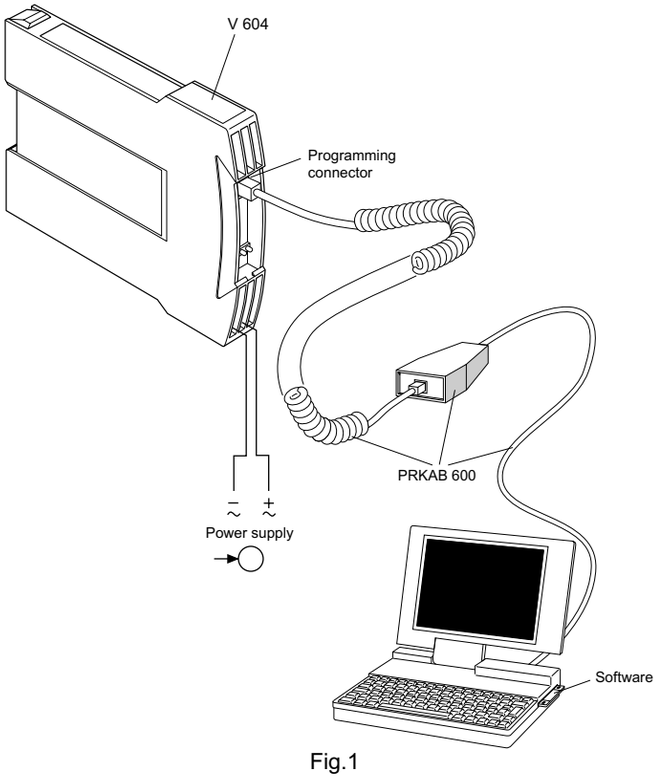


Fig.1

The Software VC 600 is supplied on a CD.

The programming cable PRKAB 600 adjusts the signal level and provides the electrical insulation between the PC and V604

The programming cable PRKAB 600 is used for programming both standard and Ex versions.

Of the programmable details listed one parameter - the output signal - has to be determined by PC programming as well as mechanical setting on the transmitter unit.....

..... the output signal range by PC

..... the type of output (current or voltage signal) has to be set by DIP switch (see Fig.2)

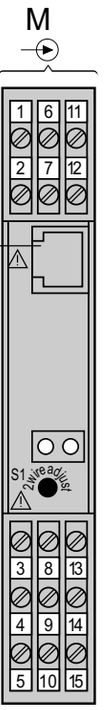
DIP switches	Type of output signal
	load-independent current
	load-independent voltage

Fig.2

Screenshot of V604 configuration software.

ELECTRICAL CONNECTIONS

V604-II

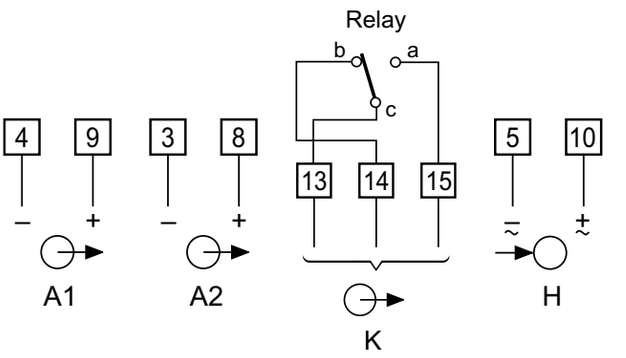


Without transparent cover

Programming connector

S1 Calibration button for automatically compensating the leads for used in conjunction with a two - wire resistance

- ● **ON** Green LED for indicating device standing by
- ● Red LED for indicating operation of open - circuit
  OR
  (⎍) Trip point GW
  (Where a limit monitor is ordered instead of the open - circuit sensor supervision)



Energised: a – c
De-energised: b – c

M = Measured variable / measuring input, Terminal allocation acc. to the measuring mode and application see "Table: Measuring input"

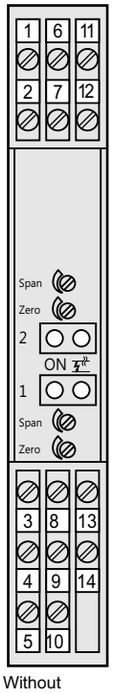
A1 = Output signal / measuring output

A2 = 2nd output (field indicator) (Only brief use permitted in the case of the Ex version)

K = Output contact for open - circuit sensor supervision or for monitoring a limit GW

H = Power supply

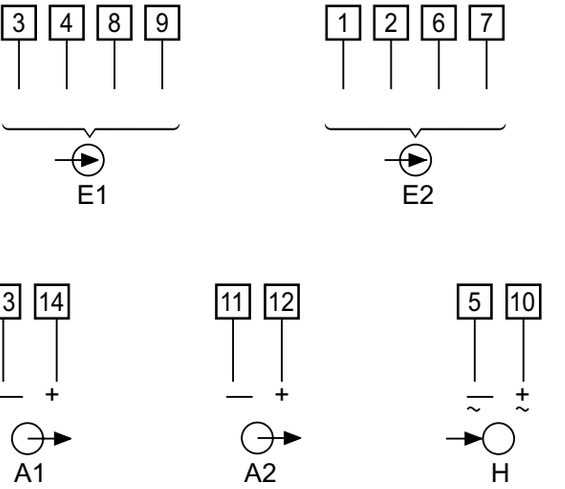
PT602



Without transparent cover

● ON
Green LED's for indicating device standing by

Red LED's for indicating operation of open - circuit or short - circuit



E1 = Measuring input 1 } Terminal allocation acc. to
E2 = Measuring input 2 } Connection mode, see Table 4
A1 = Measuring Output 1
A2 = Measuring Output 2
H = Power supply

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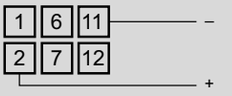
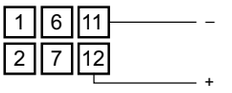
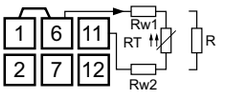
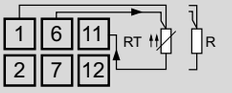
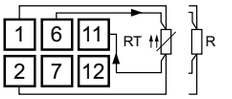
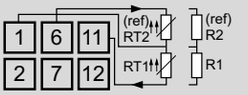
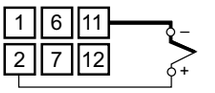
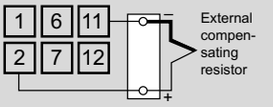
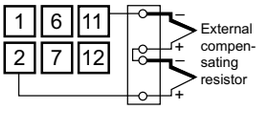
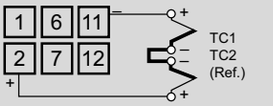
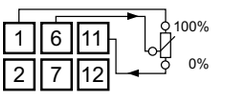
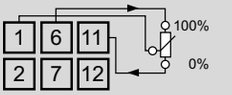
MEASURING INPUT OF V604-II

Measurement	Measuring range limits	Measuring span	Wiring diagram	
			No.	Terminal arrangement
DC voltage (direct input)	– 300...0...300 mV	2...300 mV	1	
DC voltage (input via potential divider)	– 40...0...40 V	0.3 .... 40 V	2	
DC current	– 12...0... 12 mA/ – 50...0...100 mA	0.08... 12 mA / 0.75...100 mA	3	
Resistance thermometer RT or resistance measurement R, two-wire connection	0... 740 Ω / 0...5000 Ω	8... 740 Ω 40...5000 Ω	4	
Resistance thermometer RT or resistance measurement R, three-wire connection	0... 740 Ω / 0...5000 Ω	8... 740 Ω / 40...5000 Ω	5	
Resistance thermometer RT or resistance measurement R, four-wire connection	0... 740 Ω 0...5000 Ω	8... 740 Ω / 40...5000 Ω	6	
2 identical three-wire resistance transmitters RT for deriving the difference	RT1 - RT2 0... 740 Ω 0...5000 Ω	8... 740 Ω / 40...5000 Ω	7	
Thermocouple TC Cold junction compensation internal	– 300...0...300 mV	2...300 mV	8	
Thermocouple TC Cold junction compensation external	– 300...0...300 mV	2...300 mV	9	
Thermocouple TC in a summation circuit for deriving the mean temperature	– 300...0...300 mV	2...300 mV	10	
Thermocouple TC in a differential circuit for deriving the mean temperature	TC1 - TC2 – 300...0...300 mV	2...300 mV	11	
Resistance sensor WF	0... 740 Ω 0...5000 Ω	8... 740 Ω 40...5000 Ω	12	
Resistance sensor WF DIN	0... 740 Ω 0...5000 Ω	8... 740 Ω 40...5000 Ω	13	

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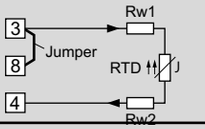
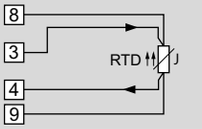
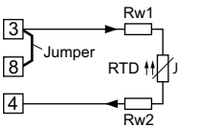
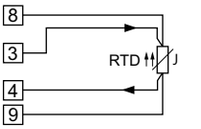
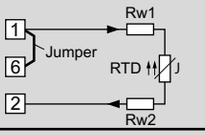
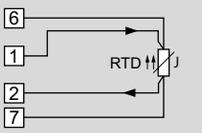
Redefine Innovative Metering

CONNECTION OF THE MEASURING INPUT LEADS E1 & E2 FOR PT602

	Measuring inputs	Connection mode*	Wiring diagram Terminal arrangement
Version with 1 input	Measuring input → E1	Two-wire connection	
		Three-wire connection	
		Four-wire connection	
Version with 2 inputs	Measuring input → E1	Two-wire connection	
		Three-wire connection	
		Four-wire connection	
	Measuring input → E2	Two-wire connection	
		Three-wire connection	
		Four-wire connection	

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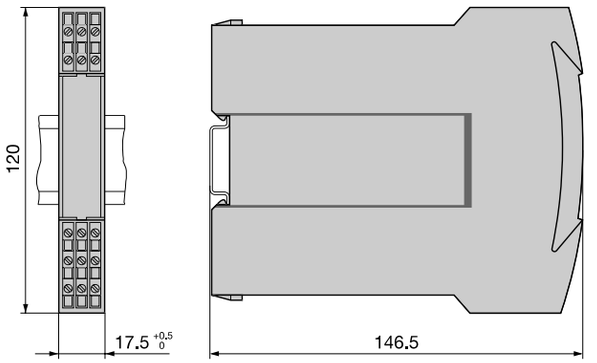
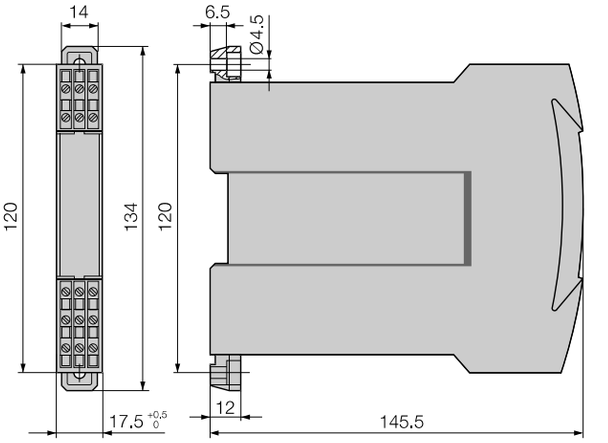
DIMENSIONAL DRAWINGS



PT 602 in housing S 17 clipped onto a top -hat rail
(35 X 15 mm or 35 X 7.5 mm, acc. to EN 50 022).



PT 602 in housing S 17 with screw hole brackets
pulled out for wall mounting.

ORDERING INFORMATION:

Please specify ordering information as given below,

Type	Measuring qty.	Measuring Range/Input	Output	Aux supply

ORDER EXAMPLE:

PT602	Temperature	0...100°C	4... 20mA	85-230V AC/DC