

Measuring transducer

with digital output
via Modbus RTU / RS 485



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MTI

Measuring transducer for sinusoidal and non-sinusoidal alternating current with digital output via Modbus RTU / RS 485

Characteristics / uses

- Measuring output as double output, switchable: 0(4)...20 mA und 0(2)...10 V
- With auxiliary power supply
- Housing for 35 mm DIN rail
- Measuring output: Unipolar and live-zero output variables
- AC oder DC auxiliary energy
- Measuring range and outputs easily switchable via dip switch

Application

Measuring transducer for the conversion of sinusoidal and non-sinusoidal alternating (distorted) current. As output signal is a load-independent DC current signal and a load-independent voltage signal, which is proportional to the measured value of the input variable. Both outputs are switchable between 4...20 mA and 0...10 V or 2...10 V.

Technical parameters

Measuring input		Temperature range	-20°C to +70°C
Nominal frequency f_N	50 Hz or 60Hz	Temperature influence	< 0,05 % at 10 K
Nominal input current I_N	0...1 A or 0...5 A switchable Higher currents on request	Humidity	10-70 % rel. humidity, non condensing
Measuring range	0...1,2 A or 0...6 A	Auxiliary energy	
Burden	0,01 Ω	AC voltage	100...277 V AC, 47-63 Hz condensing
Overload capacity	2 · I_N , permanent 20 · I_N , 1 sec.	DC voltage	24 V DC, \pm 15%
Measuring output 0(4)...20 mA		Auxiliary voltage influence	no
Load-independent DC (0...1,2 A or 0...6 A)	0...24 mA / 750 Ω Burden or live-zero 4...23,2 mA / 750 Ω Burden	Internal consumption	< 1,4 W @ 24 V DC < 2 VA @ 230 V AC
Load-independent DC at I_N max.	20 mA / 750 Ω Bürde	Waveform	Non-sinusoidal, Crestfactor < 4
Open-circuit voltage	max. 22 V	Safety	
Current limitation	max. 25 mA on overload	Test voltage	4 kV between input, output, auxiliary voltage 230 V AC or 1 kV for auxiliary voltage 24 V DC
Measuring output 0(2)...10 V		Weight	ca. 110 g
Imprinted DC voltage (0...1,2 A or 0...6 A)	0...12 V / \geq 10 k Ω Burden or live-zero 2...11,6 V / \geq 10 k Ω Burden	General technical data	
Imprinted DC voltage at I_N max.	10 V / \geq 10 k Ω Burden	Protection class	2
Voltage limitation	12,5 V bei Überlast	Protection type	IP 20
Residual ripple	< 10 mVpp	Measuring category	CAT III
Setting time	< 200 ms	Degree of pollution	2
Frequency influence	< 0,05 % at 10 Hz Frequency change	Switchable via dip switch	
External field influence	no (400 A/m)	1: DIP active / inactive	OFF = Setting acc. to Modbus ON = Setting acc. to DIP 2,3,4
Digital interface		2: Measuring range	OFF = 1 A ON = 5 A
Protocol	Modbus RTU	3: Measuring output voltage	OFF = 0 ... 10 V ON = 2...10 V
Electrical	RS 485	4: Measuring output current	OFF = 0...20 mA ON = 4...20 mA
Line length	max. 30m, shielded from 3m (non-interbuilding)		
Accuracy			
Basic accuracy	\pm 0,5 % at 0 – 120 % of the final value I_N		

Dip switch
backside

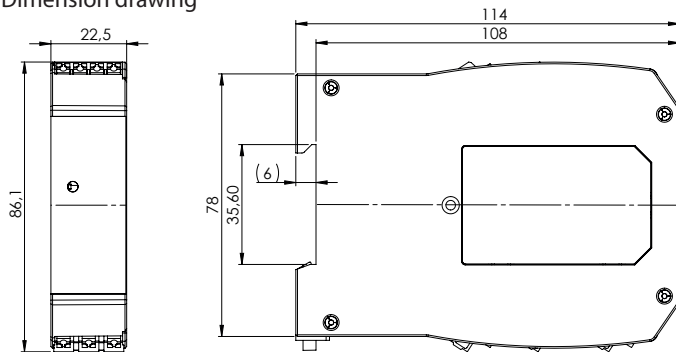


Dip switch



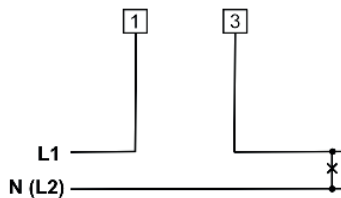
MTI Dimension drawing

Dimension drawing

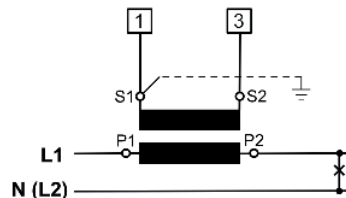


MTI Connecting diagram

Direct switching



Transducer circuit



MTI Terminal assignment

Terminal	
1	I _E
3	I _E
7	U _H L1 (+)
9	U _H N (-)
18	U _A (+)
19	U _A (-)
20	I _A (+)
21	I _A (-)
Modbus RTU	
14	D+
15	D-
16	GND

Order table

Auxiliary voltage U _H	Primary current (A)	Measurement output / adjusted				Setting via 4-pole DIP switch
		0...10 V and 0...20 mA	0...10 V and 4...20 mA	2...10 V and 0...20 mA	2...10 V and 4...20 mA	
230 V	1 A	225101	225102	225103	225104	225100
	5 A	225105	225106	225107	225108	
24 V	1 A	225201	225202	225203	225204	225200
	5 A	225205	225206	225207	225208	



MTU

Measuring transducer for sinusoidal and non-sinusoidal alternating Voltage with digital output via Modbus RTU / RS 485

Characteristics / uses

- Measuring output as double output, switchable: 0(4)...20 mA and 0(2)...10 V
- With auxiliary power supply
- Housing for 35 mm DIN rail
- Measuring output: Unipolar and live-zero output variables
- AC or DC auxiliary energy
- Measuring range and outputs easily switchable via dip switch

Application

Measuring transducer for the conversion of sinusoidal and non-sinusoidal alternating (distorted). As output signal is a load independent DC current signal and a load-independent voltage signal, which is proportional to the measured value of the input variable. Both outputs are switchable between 4...20 mA and 0...10 V or 2...10 V.

Technical parameters

Measuring input		Temperature range	-20°C to +70°C
Nominal frequency f_N	50 Hz or 60Hz	Temperature influence	< 0,05 % at 10 K
Nominal input current U_N	0...250 V or 0...500 V switchable	Humidity	10-70 % rel. humidity, non condensing
Measuring range	0...300 V or 0...600 V	Auxiliary energy	
Overload capacity	4 · U_N , permanent	AC voltage	100...277 V AC, 47-63 Hz
Internal resistance	4 M Ω	DC voltage	24 V DC, \pm 15%
Measuring output 0(4)...20 mA		Auxiliary voltage influence	no
Load-independent DC (0...300 V or 0...600 V)	0...24 mA / 750 Ω Burden or live-zero	Internal consumption	< 1,4 W @ 24 V DC < 2 VA @ 230 V AC
Load-independent DC at U_N max.	4...23,2 mA / 750 Ω Burden	Waveform	Non-sinusoidal, Crestfactor < 4
Open-circuit voltage	max. 22 V	Safety	
Current limitation	max. 25 mA on overload	Test voltage	4 kV between input, output, auxiliary voltage 230 V AC or 1 kV for auxiliary voltage 24 V DC
Measuring output 0(2)...10 V		Weight	ca. 115 g
Imprinted DC voltage (0...300 V or 0...600 V)	0...12 V / \geq 10 k Ω Burden or live-zero	General technical data	
Imprinted DC voltage at U_N max	2...11,6 V / \geq 10 k Ω Burden	Protection class	2
Voltage limitation	10 V / \geq 10 k Ω Burden	Protection type	IP 20
Residual ripple	< 10 mVpp	Measuring category	CAT III
Setting time	< 200 ms	Degree of pollution	2
Frequency influence	< 0,05 % at 10 Hz	Switchable via dip switch	
Frequency change	Frequency change	1: DIP active / inactive	OFF = Setting acc. to Modbus ON = Setting acc. to. DIP 2, 3, 4
External field influence	no (400 A/m)	2: Measuring range	OFF = 250 V ON = 500 V
Digital interface		3: Measuring output voltage	OFF = 0...10 V ON = 2...10 V
Protocol	Modbus RTU	4: Measuring output current	OFF = 0...20 mA ON = 4...20 mA
Electrical	RS 485		
Line length	Max. 30m, shielded from 3m (non-interbuilding)		
Accuracy			
Basic accuracy	\pm 0,5 % at 0 – 120 % of the final value U_N		

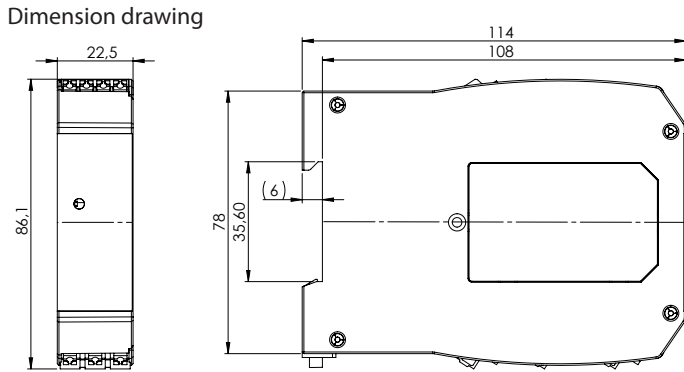
Dip switch
backside



Dip switch

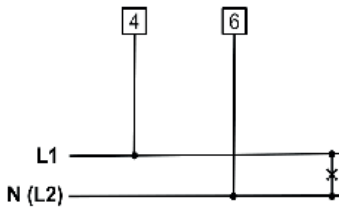


MTU Dimension drawing

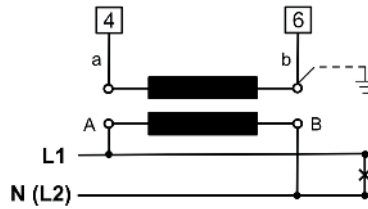


MTU Connecting diagram

Direct switching



Transducer circuit



MTU Terminal assignment

Terminal	
4	U_E
6	U_E
7	UH L1 (+)
9	UH N (-)
18	U_A (+)
19	U_A (-)
20	I_A (+)
21	I_A (-)
Modbus RTU	
14	D+
15	D-
16	GND

Order table

Auxiliary voltage U_H	Nominal input voltage (V)	Measurement output / adjusted				Setting via 4-pole DIP switch
		0...10 V and 0...20 mA	0...10 V and 4...20 mA	2...10 V and 0...20 mA	2...10 V and 4...20 mA	
230 V	250 V	225301	225302	225303	225304	225300
	500 V	225305	225306	225307	225308	
24 V	250 V	225401	225402	225403	225404	225400
	500 V	225405	225406	225407	225408	



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