

UMT 1

The Multi-Channel Measuring Transducer

Programming in Clear-Text Display of Actual Values



MEASUREMENT • CONVERSION

OUTPUT • DISPLAY

USE	Measurement transducer
MEASUREMENT	of voltage and current → 3-phase system → 1-phase system
CONVERSION	of voltage and current, frequency power factor, active, reactive and apparent power, active and reactive energy
OUTPUT	via parameterizable analog outputs (± 10 V, ± 20 mA, 0/4..20 mA) of the voltage, current, frequency, power factor active, reactive and apparent power parameterizable pulse output for active and reactive energy (open collector)
DISPLAY	of measurement values on a 5 mm LC display voltage, current, frequency, power, energy
UMT 11	measurement value 100 V with current transducer 1 A or 5 A
UMT 14	measurement voltage 400 V with current transducer 1 A or 5 A
INTERFACES BUSSES PROTOCOLS	RS232, RS422, RS485, TTY MOD bus Slave, CAN bus e.g. Leonhard-data-protocol, Siemens DK 3964

Features

- » Microprocessor driven measuring method
- » 10 Bit measuring of the measuring values
- » Measurement
 - 3-phase system
 - 1-phase system
- » 5 mm LC display (green illuminated)
- » Measuring voltage (alternatively) versions for:
 - Measuring voltage = 57/100 V
 - Measuring voltage = 230/400 V
- » Measuring current (alternatively) versions for:
 - Measuring current = 1 A
 - Measuring current = 5 A
- » Internal measuring transducer
- » Network configuration adjustable in the display
- » Display
 - Measuring value with unit
- » Analog output manager
 - assignment of the measured values to the freely scaleable analog outputs ± 10 V, ± 20 mA or 0/4..20 mA
 - (e. g. -20..+20 mA = 0..30 kW)
- » An internal test routine monitors cyclically the readiness for operation of the device
- » Mounting
 - DIN housing with screwed plug system
 - Front-panel installation (IP54 front)
 - Snap-on rail installation optionally
- » Advantages
 - Reduction of work and expenses
 - Easy commissioning
 - User-friendly operation
 - Safe operation
 - Increased availability
 - Reduced number of different types

Display

- Alternatively by pressing the push-button
 - Voltage and current (star or delta)
- Cyclical
 - $U_{\emptyset(L1-L2-L3)}, I_{\emptyset(L1-L2-L3)}$
 - P, Q, S, $P_{L1}, P_{L2}, P_{L3}, \cos \varphi$

Input / Output

- » Measuring inputs
 - Voltage = 57/100 V or 230/400 V
 - Current = 1 A or 5 A
- » Output of recorded quantities through
 - Analog outputs
 - ⇒ assign. by means of analog output manager
 - 3 x ± 20 mA metalically separated each or
 - 4 x ± 10 V metalically separated once
 - Interfaces and busses
 - RS232, RS422, RS485, TTY, MOD bus slave, CAN bus
 - Additional interfaces, busses and protocols via Gateway GW 4

Overview - Measuring Inputs

57/100 V - 1 A	Measuring input	UMT 111
230/400 V - 1 A	Measuring input	UMT 141
57/100 V - 5 A	Measuring input	UMT 115
230/400 V - 5 A	Measuring input	UMT 145

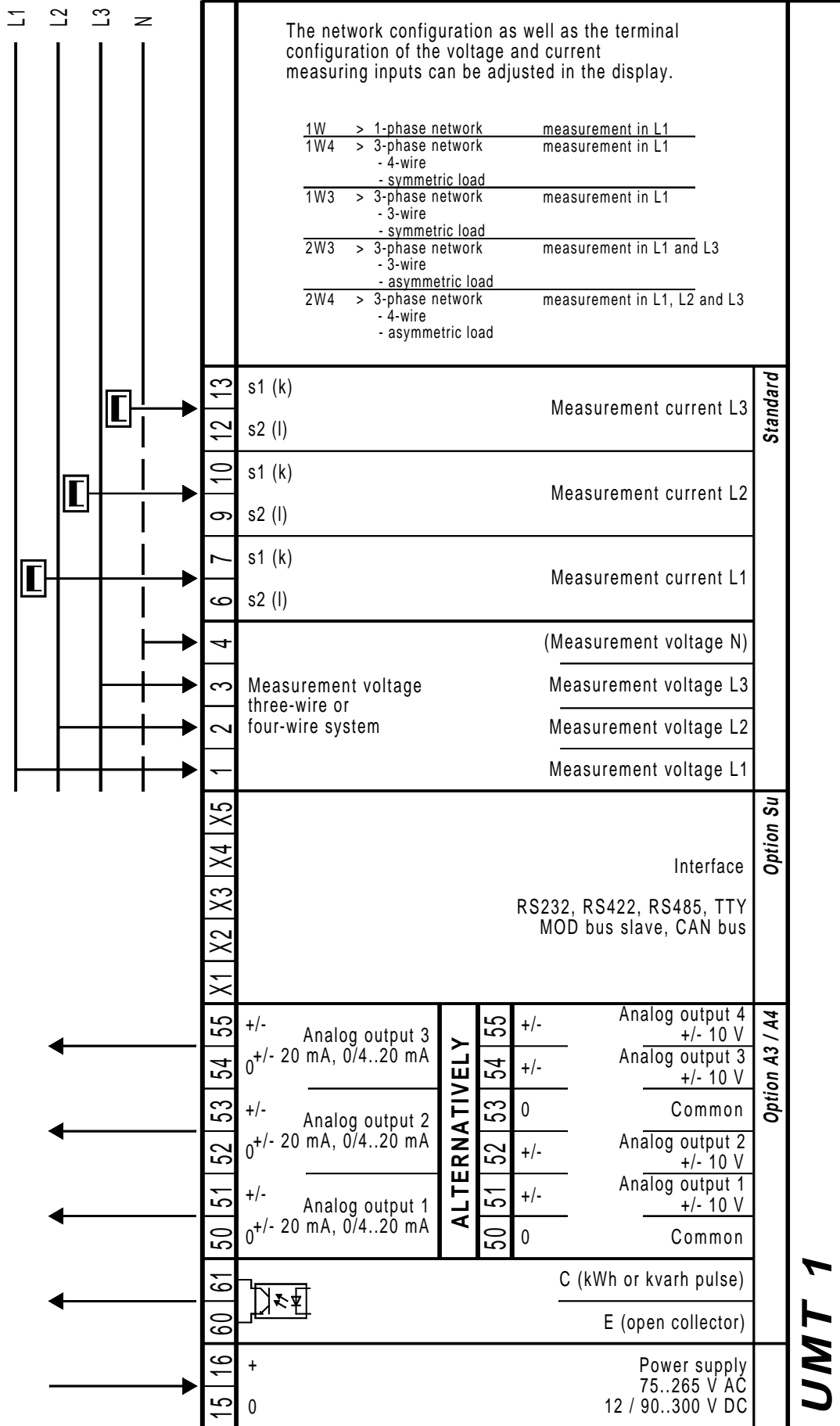
Overview - Power Supply

Direct current

- 24 V_{DC} (Standard)
- 90..300 V_{DC} (Option N)

Alternating current

- 75..265 V_{AC} (Option N)



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UMT 1

MEASURED QUANTITIES

Measured quantity	Display	Accuracy*	Range	Note
Frequency	30.0..70.0 Hz	±0.05 Hz	30.0..70.0 Hz	
f _{L1}				
Voltage	0..520 V / 0..60.0 kV	0.5 %	0..520 V / 0..60.0 kV	
U _{L1} , U _{L2} , U _{L3} , U _{L12} , U _{L23} , U _{L31} , U _{∅(L1-L2-L3)}				adjustable transformer ratio
Current	0..9,999 A	0.5 %	0..9,999 A	
I _{L1} , I _{L2} , I _{L3} , I _{∅(L1-L2-L3)}				adjustable transformer ratio
Active power	-32.0..32.0 MW	1 %	-32,000.0..32,000.0 kW	
Overall actual active power.....				
Reactive power	-32.0..32.0 Mvar	1 %	-32,000..32,000 kvar	
Actual value in L1, L2, L3				
Apparent power	0..45.0 MVA	1 %	0..45,000 kVA	
Overall actual apparent power.....				
Actual pow. factor	i0.00..1.00..k0.00	1.5°	i0.00..1.00..k0.00	
cos φ _{L1}				
Miscellaneous				
Active energy	0..4,200 GWh.....		0..4,200 GWh.....	not calibrated to PTB
Reactive energy, ind.	0..4,200 Gvarh		0..4,200 Gvarh	not calibrated to PTB
Reactive energy, cap.	0..4,200 Gvarh		0..4,200 Gvarh	not calibrated to PTB
Active energy (pulse).....				pulse output
Reactive energy, inductive (pulse).....				pulse output
Reactive energy, capacitive (pulse).....				pulse output

Reference Conditions

* This data applies to the following reference conditions:

- Input voltage = sinusoidal nominal voltage
- Input current = sinusoidal nominal current
- Frequency = nominal frequency ± 2 %

- Power supply = nominal voltage ± 2 %
- Power factor cos φ = 1
- Ambient temperature 23 °C ± 2 K
- Warm-up period = 20 minutes.

TECHNICAL DATA AND DIMENSIONS

Technical Data

Measuring voltages 57/100 V, 230/400 V
 Measuring currents /1 A, /5 A
 Measuring frequency 30..70 Hz
 Accuracy Class 0.5

Power supply 24 V_{DC} (±25 %)
 or via optionally aux. voltage supply (AC or DC)
 Power consumption max. 10 W (or 10 VA)
 Ambient temperature -20..70 °C
 Ambient humidity 95 %, not condense

Measuring inputs voltage resistance 0.1 %
 Voltage-carrying capacity $2.0 \times U_N$
 Linear measuring range up till $1.3 \times U_N$
 Input resistance 400 V: 0.7 MΩ
 100 V: 0.174 MΩ
 Max. power consumption per path 0.15 W
 Temperature coefficient 15 ppm/K
 Max. change after endurance test ≤ 0.3 %

Measuring inputs current consumption < 0.15 VA
 Current-carrying capacity $1.5 \times I_N$
 Rated short time current (1 s) $50.0 \times I_N$ (./1 A)
 10.0 × I_N (./5 A)
 Reference voltage ±0.15 %
 Max. temperature deviation 12 ppm/K

Analog outputs . freely scaleable for actual value output
 metallically separated, insulation voltage 2,200 V_{eff}
 ±10 V, 0..10 V, ±20 mA, 0/4..20 mA

Resolution 12 Bit
 Output ±20 mA, max. load (U_H 24 V) 400 Ω
 Output ±10 V, internal resistance 500 Ω

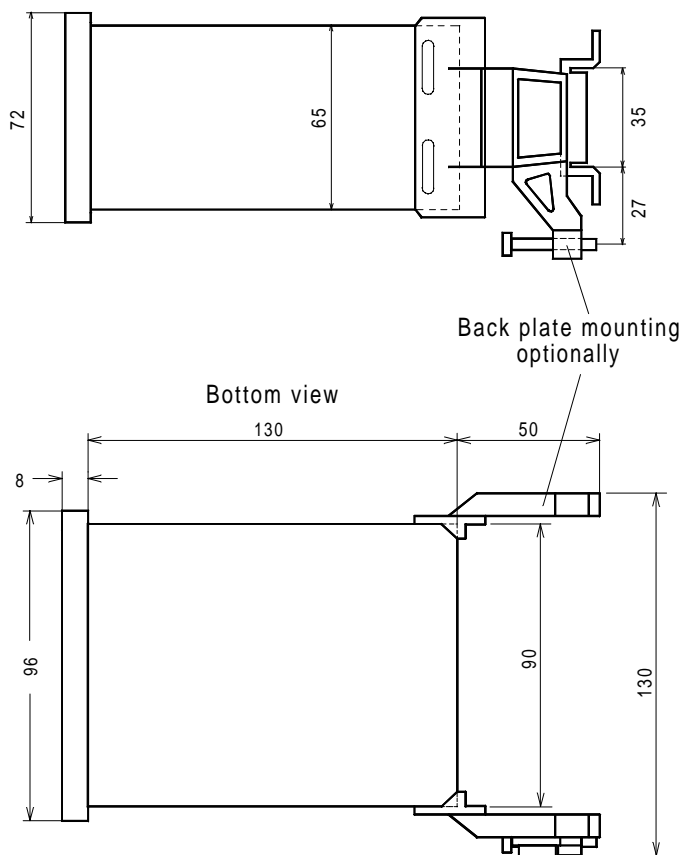
Pulse output ON: max. 30 mA, OFF: 27 V

Housing Typ APRANORM DIN 43 700
 Dimensions 72 × 96 × 130 mm
 Front cutout 67 × 91 mm
 Connection Screw terminals depending on
 plug connector 1.5 mm² or 2.5 mm²

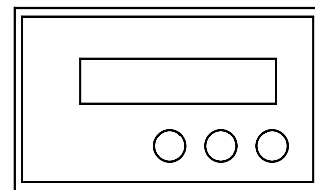
Protection system IP 21, front IP 54
 Weight depending on model, ca. 500 g

Disturbance test (CE) tested according to
 applicable EN guidelines

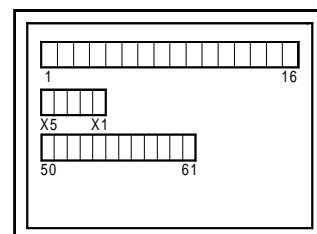
Dimensions



Front view



Back view with connecting terminals



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UMT ...	111	115	141	145
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Measuring Inputs via measuring transducers				
$U_{L1}, U_{L2}, U_{L3} = 100\text{ V}$	$I_1, I_2, I_3 = 1\text{ A}$	♦		
$U_{L1}, U_{L2}, U_{L3} = 100\text{ V}$	$I_1, I_2, I_3 = 5\text{ A}$		♦	
$U_{L1}, U_{L2}, U_{L3} = 400\text{ V}$	$I_1, I_2, I_3 = 1\text{ A}$			♦
$U_{L1}, U_{L2}, U_{L3} = 400\text{ V}$	$I_1, I_2, I_3 = 5\text{ A}$			♦

Basic Units (according to IEC 688)		Standard
• Power supply 24 V _{DC}		
• Converted/calculated measuring values		
- 3 · U _{L1-L2-L3}	voltage [V]	
- U _{Ø(L1-L2-L3)}	mean of the voltage [V]	
- 3 · I _{L1-L2-L3}	current [A]	
- I _{Ø(L1-L2-L3)}	mean of the current [A]	
- f	frequency [Hz]	
- P	active power [W]	
- Q	reactive power [var]	
- S	apparent power [VA]	
- cos φ	power factor [cos φ]	
- kWh	active energy [kWh]	
- kvarh	reactive energy [kvarh]	
• Class 0.5 to I _{max} = 1.5 × I _N		
• Parameterization via three push-buttons and 5 mm LC display (green)		

Analog output (analog output manager and open collector output for kWh or kvarh (27 V, 30 mA))				
• 3 analog outputs 0/4..20 mA, metallicly separated each	A3	• ¹	• ¹	• ¹
• 4 Analogausgänge 0..10 V, metallicly separated once	A4			

Interfaces/busses ² (RS232, RS422, RS485, TTY, MOD bus Slave, CAN bus)				
• Unidirectional standard telegram (output of the measured values)	Su	•	•	•

Auxiliary power supply				
• Wide range power supply: 75..265 V _{AC} or 90..300 V _{DC}	N	•	•	•

Mounting (standard = front cabinet installation B)				
• Snap-on rail installation (via DIN snap-on rail)	M	•	•	•

¹ alternatively ² further interfaces at the Gateway GW 4

Order Example

								Unit-ID	
								Measuring voltage	(100 V, 400 V)
								Measuring current	(../1 A, ../5 A)
								Mounting	(standard B, option M)
								Power supply	(standard 24 V _{DC} , option)
								Analog output	
								Interfaces	
								Complete order context	
UMT 1	4	5	B	/	A3	Su	→	UMT145B+A3Su, interface/bus/protocol, mounting	
UMT 1	1	5	B	/	A3	Su	→	UMT115B+A3Su, interface/bus/protocol, mounting	
UMT 1	1	5	M	/N	A4	Su	→	UMT115M+A4SuN, interface/bus, mounting, aux. power supply	