DEIF

-power in control

CE

DATA SHEET



Advanced Power Meter, APM 380 & APM 305

- Easy installation
- Monitors all 3 phases
- 5 optional communication interfaces
- Phase error detection
- Low power consumption
- Two-pulse output

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1. General information

1.1 Application and overview

1.1.1 Application

The digital power meters with green backlight LCD display, made for a fast and correct reading, are ideal instruments for installation in distribution panels, where user can easily read and control more quantities for the three phases. They are also used to measure the energy of three phases systems, for example in residential, generic and industrial applications. They are provided with two S0 outputs: one for active imported energy, the other one for active exported energy. The products can be set up to communicate with LAN, Modbus RTU/ASCII, MBus and KNX interfaces are used to analyse the energy consumption to reduce the running cost to a minimum for Industrial plants and buildings like offices, hospitals, universities etc.

1.1.2 Overview

These multimeters are ideal instruments for installation in distribution panels, where user can easily read and control more quantities for the three phases.

- Liquid crystal display with illuminated green background can monitor all three phases
- For direct connection 80 A, or for transformer .../5 A
- For transformer primary current of 5 A to 10.000/5 A. Input is in 5 A increments
- Detection of connection errors (phase transposition)
- Accuracy class 1 precision for the current, voltage
- Accuracy class 1 precision and power and energy active according to EN 50470-3 (B)
- Accuracy class 2 precision for the reactive power according to EN 62053-23
- 2 pulse output and set up for communication
  - - (1 pulse output for export energy)
  - - (1 pulse output for import energy)
- Two pulse S0/kWh selection
- Front LED pulses per kWh selection
- Energy register zero setting
- Energy register for import and export
- 4 DIN modules wide (72 mm)

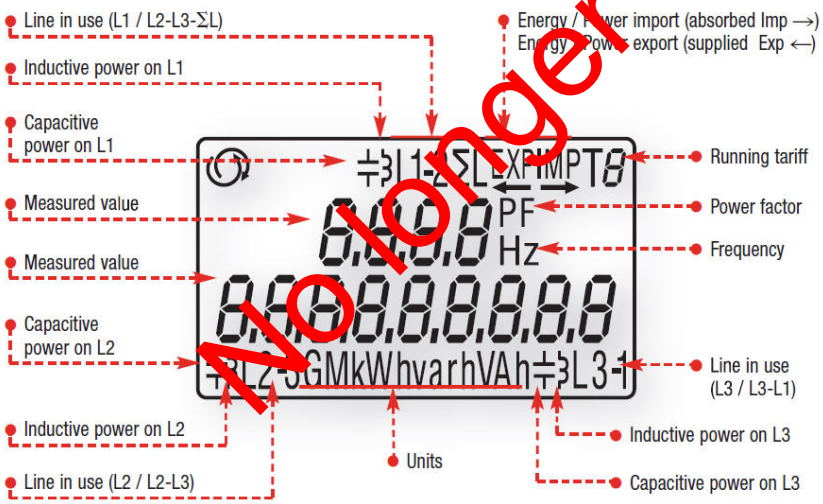
1.1.3 Functionality

Readouts

		Unit	ID
Current		A	L1, L2, L3
Voltage phase/neutral		V	L1-N, L2-N, L3-N
Voltage phase/phase		V	L1-L2, L2-L3, L3-L1
Power factor		PF	L1, L2, L3
Frequency		Hz	L1
Active power		(k-M) W	Utilisation and instantaneous value L1, L2, L3
Reactive power		(k-M) var	Utilisation and instantaneous value L1, L2, L3
Apparent power		(k-M) VA	Utilisation and instantaneous value L1, L2, L3
Active energy	Tariff 1	(M)-(K) Wh	Energy absorbed or supplied ΣL
Connection errors			PHASE Err
Primary transformer	5 ... 10.000/5	A	CT (current transformer)

Display

The AEM 380/305 has been fitted with a liquid crystal display with illuminated green background.



1.1.4 APM 380 standard module housing

The standard module housing is suitable for DIN rail mounting, direct connection 80 A.

1. Terminals S0 pulse outlet
2. Backlighting makes the display easy to read
3. Optic control IR for external communication
4. Supply terminals 80 A direct connection
5. Precision control LED
6. Up
7. Down
8. Menu
9. OK

1.1.5 APM 305 standard module housing

The standard module housing is suitable for DIN rail mounting, connection through CT .../5 A till 10,000/5 A.

1. Terminals S0 pulse outlet
2. Backlighting makes the display easy to read
3. Optic control IR for external communication
4. Supply terminals CT connection 5 to 10,000 A
5. Precision control LED
6. Up
7. Down
8. Menu
9. OK

2. Technical information

2.1 Technical data

2.1.1 General characteristics

Technical data Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31			APM 380 direct connection 80 A	APM 305 CT connect. till 10.000/5 A
General characteristics				
Housing	DIN 43880	DIN	4 modules	4 modules
Mounting	EN 60715	35 mm	DIN rail	DIN rail
Depth		mm	70	70
Reference standard	active energy	-	EN 50470-1-3	EN 50470-1-3
	reactive energy - pulse output		EN 62053-23-31	EN 62053-23-31
Operating features				
Connectivity	to single/three-phase network	n° wires	2-4	4
Storage of energy values and configuration	internal flash memo-ry	-	yes	yes
Tarif	for active energy		1 Tarif	1 Tarif
Supply				
Rated control supply volt-age Un		VAC	230	230
Operating range voltage		V	184 ... 276	184 ... 276
Rated frequency fn		Hz	50 ±2%	50 ±2%
Rated power dissipation (max. for phase) Pv		VA (W)	≤ 8 (0,6)	≤ 8 (0,6)
Overload capability				
Voltage Un	continuous: phase/ phase	V	480	480
	1 second: phase/ phase	V	800	800
	continuous: phase/N	V	276	276
	1 second: phase/N	V	300	300
Current Imax	continuous	A	80	6
	momentary (0,5 s)	A	-	120
	momentary (10 ms)	A	2400	-

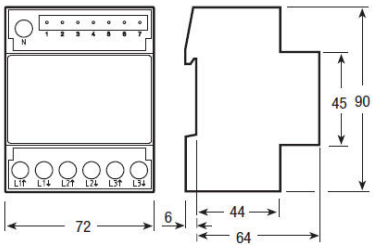
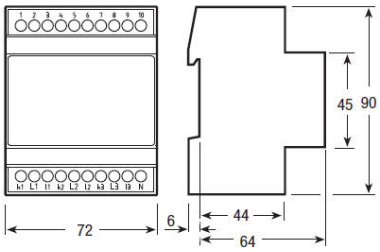
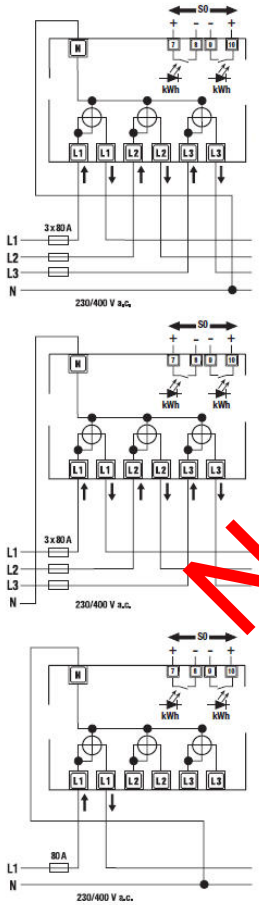
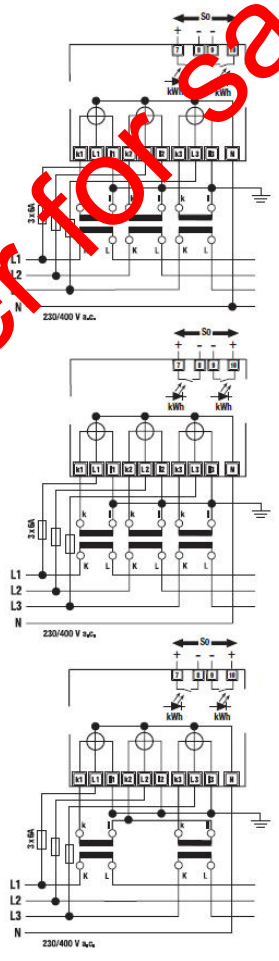
Technical data Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31			APM 380 direct connection 80 A	APM 305 CT connect. till 10.000/5 A
Display (readouts)				
Connection errors and phase out	discernible from phase-sequence indic.	-	PHASE Err	PHASE Err
Display type	LCD -Energy	n° digits	9 (1 ... 3 decimal)	9 (1 ... 3 decimal)
	LCD -Largeness instantaneous	n° digits	4 (1 ... 3 decimal)	4 (1 ... 3 decimal)
	digit dimensions	mm x mm	6,00 x 3	6,00 x 3
Active energy: 1 display, 9 digit	tariff 1	Wh	0,01	0,01
+ display import or export (arrow)	overflow	MWh	9999999,99	9999999,99
Instantaneous active power: 3 display, 3-digit		W, kW or MW	000 ... 999,9	000 ... 999,9
Instantaneous reactive power: 3 display, 3-digit		var, kvar or Mvar	000 ... 999,9	000 ... 999,9
Instantaneous apparent power: 3 display, 3-digit		VA, kVA or MVA	000 ... 999,9	000 ... 999,9
Instantaneous tariff measurement	1 display, 1-digit		T1	T1
Transformer primary current		A	-	5 ... 10,000
Display period refresh		s	1	1
Measuring accuracy				
Active energy and power	acc.to EN 50470-3	class 1	B	B
Reactive and apparent power	acc.to EN 62053-23	class 2	2	2
Measuring input				
Type of connection			direct	transformer .../5 A
Voltage Un	phase/phase	V	400	400
	phase/N	V	230	230
Operating range voltage	phase/phase	V	319 ... 480	319 ... 480
	phase/N	V	184 ... 276	184 ... 276
Current Iref		A	5	-
Current In		A	-	5

Technical data Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31			APM 380 direct connection 80 A	APM 305 CT connect. till 10.000/5 A
Current Imin		A	0,25	0,05
Operating range current (Ist ... Imax)	direct connection	A	0,015 ... 80	-
	transformer connec-tion	A	-	0,003 ... 6
Transformer current	primary current of the transformer	A	-	5 ...10,000
	smallest input step adjus. in 5 A steps	A	-	5
Frequency		Hz	50	50
Input waveform		-	sinusoidal	sinusoidal
Starting current for energy measurement (Ist)		mA	15	3
Pulse output SO	acc.to EN 62053-31			
2 pulse output	1 pulse output for energy export	-	yes	yes
	1 pulse output for energy import	-	yes	yes
Terminal output	for direct connection 80 A	Imp/kWh	adjustable (max. 2000)	-
	depending on the transf. factor, adjus.	Imp/kWh	-	adjustable (de-pends on CT)
Pulse duration		ms	30 ±2 ms	30 ±2 ms
Required voltage	min. (max.)	VAC (DC)	5 ... 230 ±5% (5 ... 300)	5 ... 230 ±5% (5 ... 300)
Permissible current	pulse ON (max. 230 V AC/DC)	mA	90	90
Permissible current	Imp. OFF (leak. cur. max. 230 V AC/DC)	ìA	1	1
Safety acc. to EN 50470-1				
Indoor meter		-	yes	yes
Degree of pollution		-	2	2
Operational voltage		V	300	300
AC voltage test (EN 50470-3, 7,2)		kV	4	4

Technical data Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31			APM 380 direct connection 80 A	APM 305 CT connect. till 10.000/5 A
Impulse voltage test		1,2/50 ìs-kV	6	6
Protection class (EN 50470)		class	II	II
Housing material flame resistance	UL 94	class	V0	V0
Adaptor for communication (option)				
Plug-and-play technology		-		
LAN (TCP/IP) interface	Ethernet 802,3	-	10/100 Mbps	10/100 Mbps
Modbus RTU, Ascii interface	RS-485 - 3 wires	-	up to 19,200 bps	up to 19,200 bps
MBus interface	2 wires	-	up to 9,600 bps	up to 9,600 bps
KNX interface	KNX standard	-	up to 9,600 bps	up to 9,600 bps
SD datalog interface		-	1 to 8 Gigabytes	1 to 8 Gigabytes
Connection terminals				
Type cage main current paths	screw head Z +/-	POZIDRIV	PZ2	PZ1
Type cage pulse output	blade for slotted screw	mm	0,8 x 3,5	0,8 x 3,5
Terminal capacity main current paths	solid wire min. (max.)	mm2	1,5 (35)	1,5 (6)
	stranded wire with sleeve min. (max.)	mm2	1,5 (35)	1,5 (6)
Terminal capacity pulse outlet	solid wire min. (max.)	mm2	0,14 (2,5)	0,14 (2,5)
	stranded wire with sleeve min. (max.)	mm2	0,14 (1,5)	0,14 (1,5)
Environmental conditions				
Mechanical environment		-	M1	M1
Electromagnetic environment		-	E2	E2
Operating temperature		°C	-10 ... +55	-10 ... +55
Limit temperature of transportation and storage		°C	-25 ... +70	-25 ... +70

Technical data Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31			APM 380 direct connection 80 A	APM 305 CT connect. till 10.000/5 A
Relative humidity (not condensation)		%	80	80
Vibrations	50 Hz sinusoidal vibration amplitude	mm	±0,075	±0,075
Degree protection	housing when mounted in front (term.)	-	IP51(*)/IP20	IP51(*)/IP20
(*) For the installation in a cabinet at least with IP51 protection.				

2.1.2 Dimensions and circuit diagrams

APM 380	APM 305
Overall dimensions 	Overall dimensions 
Circuit diagrams 	Circuit diagrams 

3. Ordering information

3.1 Order specification and disclaimer

3.1.1 Order specifications

Type	Order details
APM 380	Three phase power meter, 80A, 2S0, Aux. supply: 230V AC / 50Hz DEIF no. 1217020002 EAN no. 5703727110094
APM 305	Three phase power meter, CT../5A, 2S0, Aux. supply: 230V AC / 50Hz DEIF no. 1217020001 EAN no. 5703727110087
Optional interfaces	
Modbus Interface	MODBUS -Rtu/ASCII for energy and power communication. Aux. supply: 230V AC / 50Hz DEIF no. 1217030001 EAN no. 5703727110100
MBus Interface	M-BUS for energy and power communication DEIF no. 1217030002 EAN no. 5703727110117
KNX Interface	KNX for energy and power communication DEIF no. 1217030003 EAN no. 5703727110124
LAN Interface	LAN TCP/IP server for energy and power measurements. Aux. supply: 230V AC / 50Hz DEIF no. 1217030004 EAN no. 5703727110131
SD Datalog Interface	SD-card Data logger, 2GB SD card. Aux. Supply: 12-24V AC/DC DEIF no. 1217030006 EAN no. 5703727110148
SD Power supply	Power supply, 12 VAC 3VA (up to 6 SD Datalog interfaces) DEIF no. 1217030007 EAN no. 5703727110155

3.1.2 Disclaimer

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