

ADP3-5C

Energy Meters Three-Phase

Application

The new ADP range of Multifunction digital power-meters with a green backlight LCD display, made for a fast and correct reading, are ideal instruments for installation in distribution panels, where the user can easily read and monitor more electrical parameters.

They are also used to measure the energy of three phase systems, for example in residential, generics and industrial applications. They are provided with two SO outputs: one for active imported energy, the other for active exported energy. The meters can be set up to transmit the electrical parameters by RS 485 Modbus (Autometers V6 protocol) by using the ADM-F external Modbus module. By transmitting the information to Autometers HORIZON metering system it is possible to analyze the energy-consumption and reduce the running costs to a minimum for industrial plants and buildings like Offices, Hospitals Universities etc.

Overview

The ADP3-5C is a 3 phase 4 wire 230/400 volt 5 Amp current transformer operated multifunction meter, four modules wide with a large and easy to read display showing many parameters of electrical energy, with it's wide range of communications options makes it the ideal meter for most applications in distribution panels.

Function

Display	Unit	ID
Current	A	I1, I2, I3
Tensions related	V	L1-N, L2-N, L3-N
Tensions between phases	V	L1-L2, L2-L3, L3-L1
Power factor	PF	L1, L2, L3
Frequency	Hz	L1
Active power	(<M) W	Utilization and instantaneous value I1, I2, I3
Reactive power	(<M) var	Utilization and instantaneous value I1, I2, I3
Apparent power	(<M) VA	Utilization and instantaneous value L1, L2, L3
Active energy	Tariff 1 (M)-(K) Wh	Energy absorbed or supplied L
Connection errors		PHASE Err
Primary transformer	5 ... 10,000/5 A	CT (current transformer)



Picture showing the installation of the external ADM-F Modbus module

4 Standard Module Housing

230/400 Volt 5 Amp (Current transformer operated)



The meter must be fitted in a suitable enclosure. (See Autometers full range of enclosures).

Technical Data

Data in compliance with EN50470-1, EN50470-3, EN62053-23 and EN62053-31

			ADP3-5C
General characteristics			
• Housing	DIN 43880	DIN	4 modules
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70
• Reference standard	active energy reactive energy - pulse output	-	EN 50470-1-3 EN 62053-23-31
Operating features			
• Connectivity	to single/three-phase network	n° wires	4
• Storage of energy values and configuration	internal flash memory	-	yes
• Tariff	for active energy	-	1 Tariff
Supply			
• Rated control supply voltage U_n		VAC	230
• Operating range voltage		V	184 ... 276
• Rated frequency f_n		Hz	50 ±2%
• Rated power dissipation (max. for phase) P_v		VA (W)	±6 (0.6)
Overload capability			
• Voltage U_n	continuous; phase/phase	V	480
	1 second; phase/phase	V	600
	continuous; phase/N	V	276
	1 second; phase/N	V	300
• Current I_{max}	continuous	A	6
	momentary (0,5 s)	A	120
	momentary (10 ms)	A	-
Display (readouts)			
• Connector errors and phase out	discernible from phase-sequence indic.	-	PHASE Err
• Display type	LCD - Energy	n° digits	9 (1 ... 3 decimal)
	LCD - Instantaneous	n° digits	4 (1 ... 3 decimal)
	digit dimensions	mm x mm	6.00 x 3
• Active energy: 1 display, 9 digit + display import or export (arrow)	tariff 1	Wh	0.01
	overload	MWh	9999999.99
• Instantaneous active power: 3 display, 3-digit		W, kW or MW	000 ... 999.9
• Instantaneous reactive power: 3 display, 3-digit		var, kvar or Mvar	000 ... 999.9
• Instantaneous apparent power: 3 display, 3-digit		VA, kVA or MVA	000 ... 999.9
• Instantaneous tariff measurement		1 display, 1-digit	T1
• Transformer primary current		A	5 ... 10.000
• Display period refresh		s	1
Measuring accuracy			
• Active energy and power	acc.to EN 50470-3	class 1	B
• Reactive and apparent power	acc.to EN 62053-23	class 2	2
Measuring input			
• Type of connection			Transformer ... to A
• Voltage U_n	phase/phase	V	400
	phase/N	V	230
• Operating range voltage	phase/phase	V	319 ... 480
	phase/N	V	184 ... 276
• Current I_{ref}		A	-
• Current I_n		A	5
• Current I_{min}		A	0.05
• Operating range current (I_{st} ... I_{max})	direct connection	A	-
	transformer connection	A	0.003 ... 6
	primary current of the transformer	A	5 ... 10.000
• Transformer current	smallest input step adjus. in 5 A steps	A	5
Measuring input			
• Frequency		Hz	50
• Input waveform			sinusoidal
• Starting current for energy measurement (I_{st})		mA	3
Pulse output SO			
• 2 pulse output	1 pulse output for energy export 1 pulse output for energy import	-	yes yes
• Quantity pulse output	depending on the transf. factor, adjus.	imp/kWh	adjustable (depends on CT)
• Pulse duration		ms	30 ±2 ms
• Required voltage	min. (max)	VAC (DC)	5 ... 230 ±5% (5 ... 300)
• Permissible current	pulse ON max. 230 V AC/DC)	mA	30
• Permissible current	Imp. OFF (leak. Cur. Max. 230V AC/DC)	µA	1
Safety acc. to EN 50470-1			
• Indoor meter		-	yes
• Degree of pollution			2
• Operational voltage		V	300
• AC voltage test (EN 50470-3, 7.2)		kV	4
• Impulse voltage test		1.2/50 µs-kV	6
• Protection class (EN 50470)		class	II
• Insulating material flame resistance	UL 94	class	VO

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Technical Data

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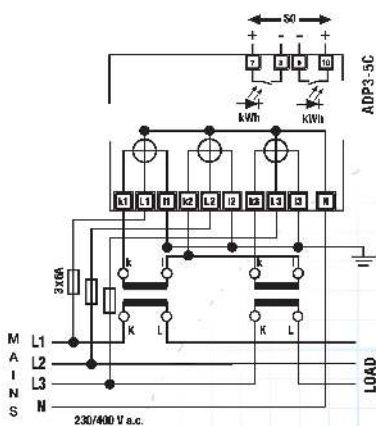
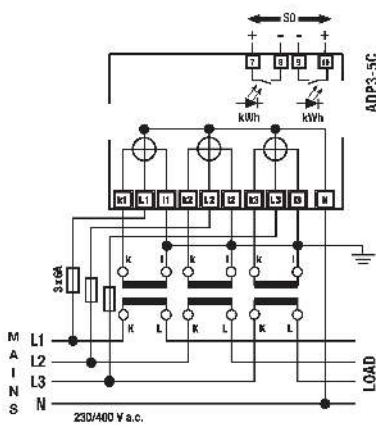
Adaptor for Communication (only for ADP3-5G)

• Modbus RTU, Ascii interface	RS-485 – 8 wires	-	up to 19,200 bps
Connection terminals			
• Type cage main current paths	screw head 7.4/ blade for slotted screw	POZIDRIV	P71
• Type cage pulse outlet	solid wire min. (max.)	mm	0.8 x 3.5
• Terminal capacity main current paths	solid wire min. (max.)	mm ²	1.5 (3)
	stranded wire with sleeve min. (max.)	mm ²	1.5 (3)
	solid wire min. (max.)	mm ²	0.14 (2.5)
• Terminal capacity pulse outlet	stranded wire with sleeve min. (max.)	mm ²	0.14 (1.5)
• Environmental conditions		-	M1
• Mechanical environment		-	E2
• Electromagnetic environment		-	10 ... +55
• Operating temperature		°C	-25 ... +70
• Limit temperature of transportation and storage		°C	80
• Relative humidity (not condensation)		%	+0.075
• Vibrations	50 Hz sinusoidal vibration amplitude	mm	IP51(*)/P20
• Degree protection	housing when mounted in front (term.)	-	

(*) For the installation in a cabinet at least with IP51 protection.

Circuit Diagrams

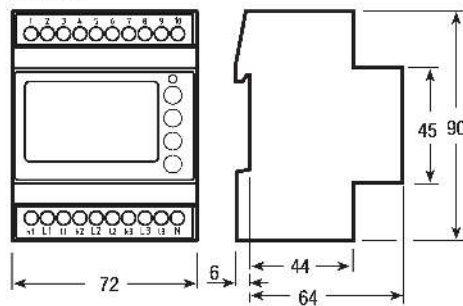
3 Phase 4 wire Connection Diagram



Wire N needs to be connected to the Power-meter

Dimensions

ADP3-5G



Instructions for the connection of transformer counters

A fuse of 6 A is recommended for the line protection. Current transformers must not be operated with open terminals since dangerous high voltages might occur which may result in personal injuries and property damage. In addition to this, the transformers are exposed to thermal overload.

Table indicating Current Transformer Ratio for Impulses per kWh

50 Pulses for kWh (always limited to 16.6 Hz)

For xx/5A, the available range depends on external CT, as follows:

CT Ratio	Imp/kWh
5	10000
10	5000
15 ... 30	2000
35 ... 60	1000
65 ... 120	500
125 ... 300	200
305 ... 600	100
605 ... 1200	50
1205 ... 3000	20
3005 ... 6000	10
6005 ... 10000	5

