

OR-WE-513	Three-phase meter 80A
OR-WE-516	Three-phase meter 80A with port RS-485
OR-WE-517	Three-phase multitarriff meter 80A with port RS-485
ORNO-LOGISTIC Sp. z o.o. ul. Katowicka 134 43-190 Mikołów tel. 32 43 43 110	Service and assembly manual

## IMPORTANT!

Before use of the device, read this service manual and keep it for future. Repairs and modifications carried out by yourselves result in the guarantee invalidation. The manufacturer is not liable for damages that can get out of improper device installation or operation.

In view of the fact the technical data are subject to continuous modifications, the Manufacturer reserves the right to make changes in the product characteristics and to introduce another constructional solutions that do not deteriorate the product parameters and use values. The latest version of the manual can be downloaded from [www.orno.pl](http://www.orno.pl). Any rights to translate / construe and the copyright of this manual are reserved.

The meter should be installed by a qualified personnel - persons having knowledge on marking and grounding the electrical appliances and knowing regulations concerning safety. Improper installation can make a risk of electric shock or fire.

Do not use the device contrary to its intended use.

The meter shall be stored in a dry room.

Do not immerse the device in water or another fluids.

Do not install nor operate the device with damaged housing.

Do not modify the device nor repair it by yourselves.

Use only insulated tools.

To avoid electric shock or meter damage, switch off the supply voltage before any change of the connection system.

Before connection of the supply voltage, make sure that all conductors are connected properly.

The meter is designed for installation in mechanical environment "M1" where shocks and vibrations are insignificant according to the directive 2014/32/EU. The meter is designed for installation in electromagnetic environment "E2" according to the directive 2014/32/EU.

**NOTE: The 24-months' guarantee includes the product equipped with the factory seal that must not be broken!**



Any household is a user of electric and electronic equipment and therefore a potential producer of waste, hazardous for people and environment due to presence of hazardous substances, mixtures and components in the equipment. On the other hand, the used equipment is a valuable material due to such a raw material as copper, tin, glass, iron, etc. to be recovered. The symbol of the crossed litter bin placed on the equipment, a package or accompanying documents means that the product must not be discarded together with other wastes. The marking means also that the equipment was introduced for trade after 13th August 2005. The user is obliged to transfer the used equipment to an appointed collection point for its proper processing. Information on an available system of used electronic equipment collection can be found at the shop information desk and at the municipality / commune office. Proper disposal of used equipment prevents negative consequences for the natural environment and human health!

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## 1. INTRODUCTION

OR-WE-513, OR-WE-516, OR-WE-517 are the three-phase, four-wire, three-module meters with the LCD, to be mounted on the DIN rail. They are used to monitor consumption of electric energy from the three-phase network. They are ideal devices to be used as submeters of alternating current. They correspond to the communication standard RS485 and meet the standard DIN EN 50022 that is proper for the current distribution system at household and commercial uses.

## 2. PROPERTIES AND TECHNICAL PARAMETERS

### 2.1 Properties

The meter can read network parameters, analyse energy quality and load condition at certain period.

OR-WE-516 The meter can register the electric energy consumed, with possibility of remote readout of the index group register through the wire network of the standard RS485, protocol: Mode Modbus-RTU.

OR-WE-517 The meter can register the electric energy consumed, with possibility of remote readout of the index group register through the wire network of the standard RS485, protocol: Mode Modbus-RTU and 4 independent tariffs (the user can set different times through RS485).

It measures the three-phase active / reactive energy, positive and negative measurement, 4 tariffs.

It can be set for three modes of measurement according to the synthesis code.

Calculation of the maximum demand.

You can reset energy using the button.

#### LCD

It can display the total energy, the tariff energy, the three-phase voltage, the three-phase current, the total / three-phase power, the total / three-phase apparent power, the total / three-phase power factor, the frequency, the pulse output, the communication address, etc. (the detailed information, see the display manual).

#### Communication

It corresponds to the communication standard IR (near infrared) and RS485. IR meets the requirements of the protocol EN62056(IEC1107), and the communication RS485 uses the protocol MODBUS.

#### Button

The meter has two buttons; by pressing the buttons, you can display all contents. Meanwhile, by pressing the buttons, you can set the LCD scroll time, reset the energy and the back light mode. You can set automatic displaying the contents through IR.

By setting the button, you can set three modes: ON after pressing the button, always ON and always OFF.

#### Pulse output

You can set: 1000/100/10/1 - in total, four modes of the pulse output for communication.

\***Base current** - specifies the current value when percentage measurement error is near zero. If the current flowing through the meter is greater than the base current, then the measurement error has the minus sign. If the current flowing through the meter is lower than the base current, then the percentage measurement error has the plus sign (percentage measurement error versus current).

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The meter measures the electric energy properly within the whole measuring range, with an accuracy of the meter class.

**Maximum current** - the permissible maximum current to load the electric energy meter constantly.

**Minimum current** - the lowest value of the load current that is detected and registered by the meter.

Marking on the device: 5(80)A - position 1 (prior to the parenthesis) and the base current 5 A; position 2 (parenthetic) and the maximum current 80 A.

## 2.2 Technical parameters

Conformity:	Directive 2014/32/EU
Standard:	IEC62052-11, IEC62053-21, EN50470-1/3
Rated voltage:	3x230/400 V
Rated current:	base current (Ib): 5 A maximum current (Imax): 80 A minimum current (Imin): 0.25 A*
Pulse constant:	1000 imp/kWh
Frequency:	50 Hz
Accuracy class:	B
LCD:	LCD 6+2 = 999999.99 kW
Working temperature:	-25~55°C
Meter's own consumption:	≤ 8 VA, ≤ 0.4 W
Annual average humidity:	85%
Starting current:	0.004 Ib
LED flash:	Pulse type, pulse length = 90 ms
Materials:	Housing: Poly(butyl terephthalate), polycarbonate
Protection level:	IP51 (to be used indoors)
Connector	screw terminals 35 mm2
Assembly	rail TH35
Dimensions	4.3 modules (76.11 mm)

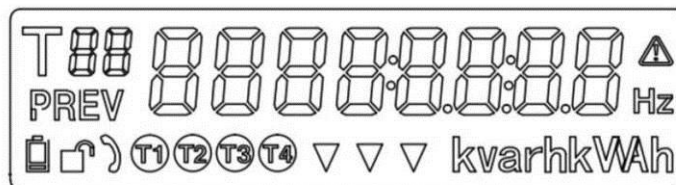
## 3. DESCRIPTION




- A: LCD
- B: button: page forward
- C: button: page backward
- D: communication in near infrared
- E: LED for reactive pulse
- F: LED for active pulse

## 4. LCD

### 4.1 Display parameters / parameter switch



	T88	Hz	kvarh kWh
present tariff (ref. OR-WE-517)	content indication, it can show T1/ T2/ T3/ T4, L1/ L2/L3 (ref. OR-WE-517)	frequency display	kWh unit display; it can show kW, kWh, kvarh, V, A and kVA

After pressing the button, another main page will appear.

Page	Contents	Unit	Displayed mark	Format
1	Date			XX-XX-XX
2	Time			XX-XX-XX
3	Total active energy	kWh		6+2 000000.00
4	T1 Active energy of tariff 1	kWh	T01	6+2 000000.00
5	T2 Active energy of tariff 2	kWh	T02	6+2 000000.00
6	T3 Active energy of tariff 3	kWh	T03	6+2 000000.00
7	T4 Active energy of tariff 4	kWh	T04	6+2 000000.00
8	Total reactive energy	kvarh		6+2 000000.00
9	T1 Reactive energy of tariff 1	kvarh	T11	6+2 000000.00
10	T2 Reactive energy of tariff 2	kvarh	T12	6+2 000000.00
11	T3 Reactive energy of tariff 3	kvarh	T13	6+2 000000.00
12	T4 Reactive energy of tariff 4	kvarh	T14	6+2 000000.00
13	Voltage L1	V	L1	3+1,000.0
14	Voltage L2	V	L2	3+1,000.0
15	Voltage L3	V	L3	3+1,000.0
16	Current L1	A	L1	4+2 0000.00
17	Current L2	A	L2	4+2 0000.00
18	Current L3	A	L3	4+2 0000.00
19	Total active power	kW		5+3 00000.000
20	Active power L1	kW	L1	5+3 00000.000
21	Active power L2	kW	L2	5+3 00000.000
22	Active power L3	kW	L3	5+3 00000.000
23	Total apparent power	kVA		5+3 00000.000
24	Apparent power L1	kVA	L1	5+3 00000.000
25	Apparent power L2	kVA	L2	5+3 00000.000
26	Apparent power L3	kVA	L3	5+3 00000.000
27	Total COS			5+3 00000.000
28	L1COS		L1	1+2 0.00

29	L2 COS		L2	1+2 0.00
30	L3 COS		L3	1+2 0.00
31	Frequency	Hz		1+2 0.00
32	T1 demand	kW	T-1	6+2 000000.00
33	T2 demand	kW	T-2	6+2 000000.00
34	T3 demand	kW	T-3	6+2 000000.00
35	T4 demand	kW	T-4	6+2 000000.00
36	active power cancellation (press and hold A and B buttons)	kWh		00000000
37	combinatorial active status word			00 000
38	Display cycle time (press and hold A and B to enter the change function, choose the require cycle time with A or B)		1-30 s	LCd-t 05
39	Pulse output			S01000
40	Measurement mode			COde 01
41	IR address / meter's serial number		IR adress	123456789
42	MODBUS ID address		Address is 0x10 displays 016	Id 255
43	Data transfer rate MODBUS		Data rate 485	bd 9600
44	Software version		01.00	

## 8. Communication

### 8.1 The meters OR-WE-516 and OR-WE-517 work with RS485; protocol - mode Modbus-RTU;

Standard parameters: the meter ID:1, baud rate: 9600 bits per second, data bit: 8, Parity: even, rzysta, stop bit: 1.

Connection between the protocol MODBUS-RTU and the application is implemented through the standard converter USB RS485 (not included)

Connection between the converter and the meter should be carried out by means of twin-core communication cable adapted to the standard RS485.

### Installation

To allow suitable configuration and reading the values from the meter, you need to install the software before; download the software free of charge from the manufacturer's website.