SMART ELECTRICITY METERS

EMDX³ SUSTAINABLE SAVINGS FOR YOUR INSTALLATIONS

THE GLOBAL SPECIALIST IN ELECTRICAL AND DIGITAL BUILDING INFRASTRUCTURES

legrand®

Lasting savings for your installations

Living conditions and comfort can be improved by developing solutions that optimise energy efficiency.

Given that buildings account for 40% of electricity consumption and 20% of CO2 emissions, cutting energy consumption in buildings is a major issue in the fight against climate change.

The aim is for every user to reduce their bill, as well as their energy footprint and metering is the first step in making lasting savings and the basis of any diagnostics.

Thanks to the new range of EMDX³ electricity meters, multi-function measuring units, the CX³ EMS system or the DMX³ and DPX³ MCCBs incorporating measurement functions, Legrand has developed a smart infrastructure for displaying information on active and reactive power consumption, voltage disturbance, harmonic distortion, etc. according to the type of building.

Contents

EMDX³ MEASUREMENT CONTROL UNITS

REAL SYNERGY WITH EMDX³ MULTI-FUNCTION MEASURING UNITS

EMDX³ multi-function measuring units record the energy consumed by the various circuits, measure the electrical values (current, voltage, power, etc) or analogue values (temperature) to check the installation is working properly.
They monitor energy quality by analysing harmonics and measuring the reactive energy.

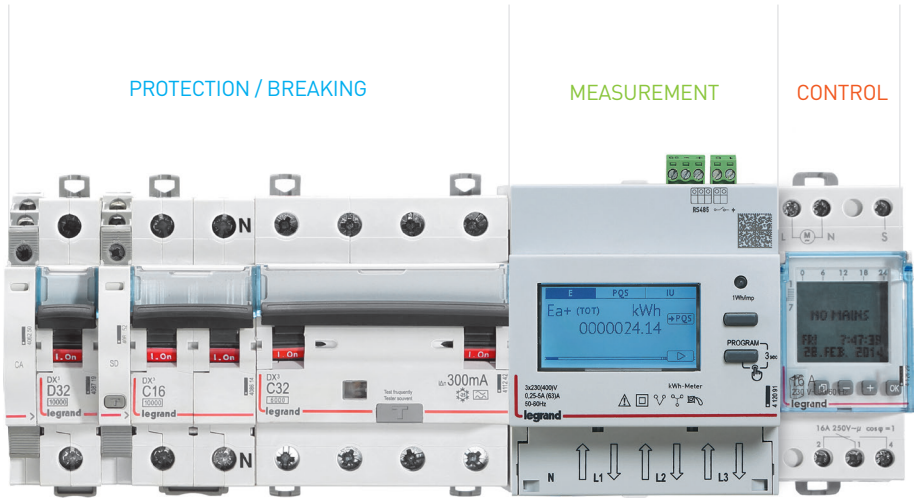
They also communicate the values measured to supervision or energy management systems, in order to optimise the consumption and energy quality of electrical circuits in commercial and industrial environments.

The Core Brick of your installation is now smarter

EMDX^3 Din Rail Meters

MAKES YOUR DISTRIBUTION SMART

Measure and become aware of your consumption from anywhere using energy management systems.



Measurement is the basis of all diagnostics

By measuring your electricity consumption, you can:

- become more aware of your consumption
- adopt a constant operating regime to smooth out consumption over time
- identify potential savings and implement actions and solutions to cut your consumption.

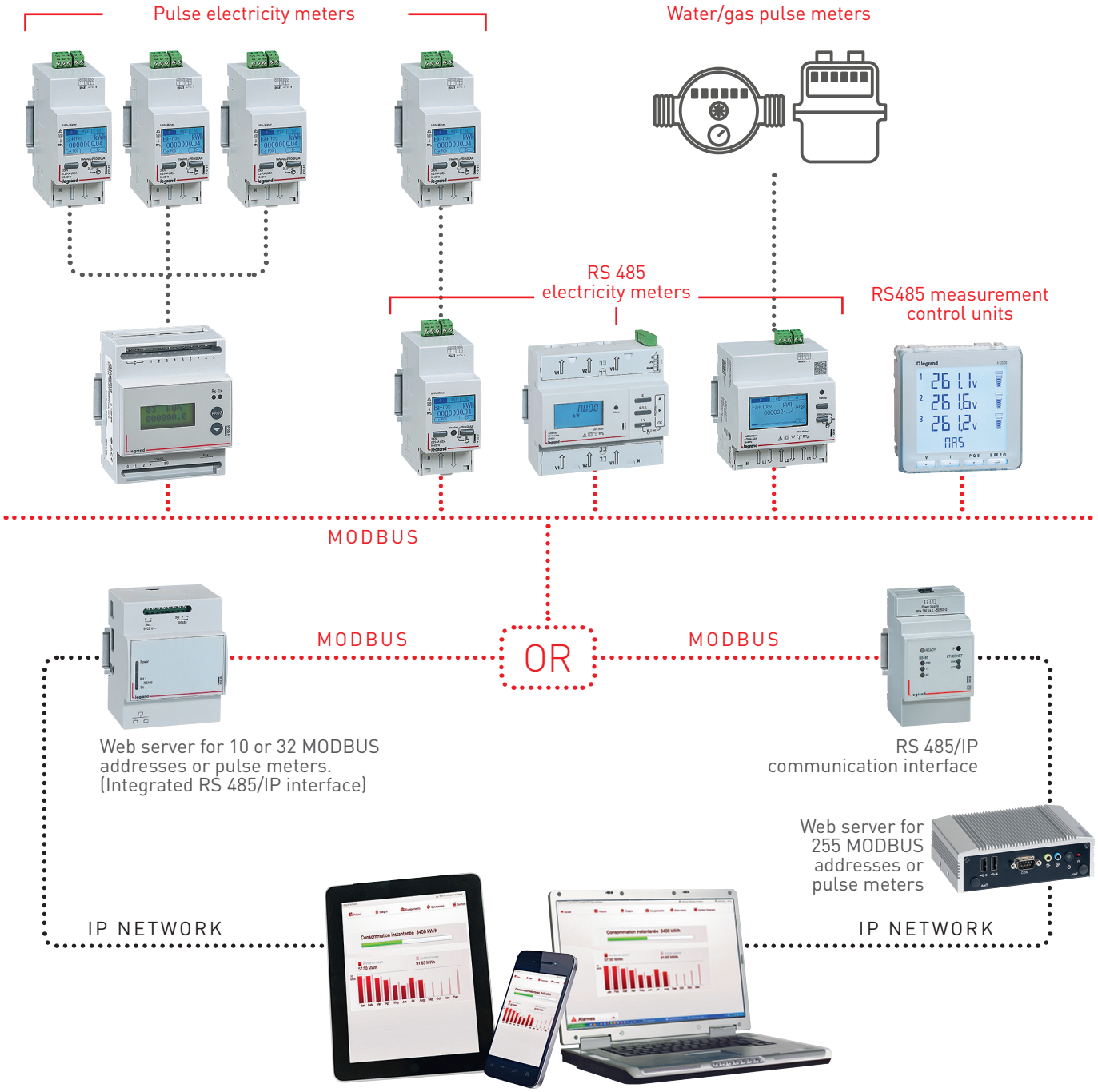
Thanks to the new range of EMDX³ electricity meters and our supervision solutions, it is possible to analyse consumption data and improve processes. It is also possible to manage multi-site electrical installations remotely or locally using a smartphone, tablet, or a PC.

EMDX³ THREE-PHASE METER

Schematic diagram of an installation:

An installation can record several meters and measurement control units, connected on a Modbus network. The RS 485/IP communication interface and web servers can be used for remote control.

The pulse concentrator can collect measurements from 12 of the pulse electricity meters and send the information over the Modbus network using the RS 485 output.



An intuitive system that is easy to use

EMDX³ electricity meters can be used to display consumption locally, in the distribution board or remotely via the internet.
They have two types of output that allow them to be integrated in a smart system: RS 485 Modbus or pulse.

The communication function makes it possible to:
- centralise consumption
- reproduce electrical values remotely via web servers.

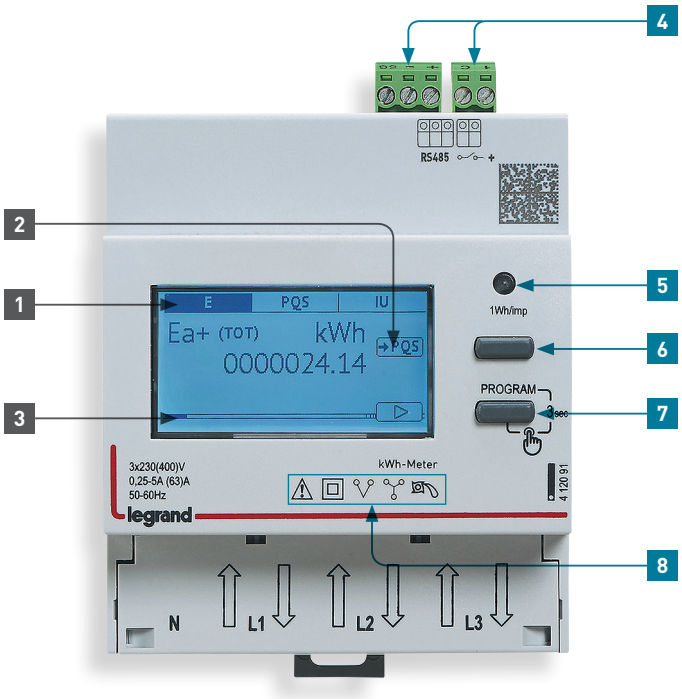
WEB SERVERS

TWO TYPES OF WEB SERVER DEPENDING ON THE SIZE OF THE INSTALLATION

Web servers can be used to display consumption on any type of screen equipped with a web browser: PC, smartphone, tablet, for installations with up to 255 Modbus addresses or pulse meters.

Intuitive browsing

Browsing through menus to display the measured values happens intuitively, using just two buttons. it's quick and easy to preview the configuration settings, without needing to go into the configuration menu.



1 **Current menu** (whose pages are displayed on-screen)

2 **Next menu**, accessible by pressing the corresponding button

3 **Scroll bar** indicating progress through the pages displayed

4 **Removable terminal blocks:**
- input for dual-tariff energy metering
- pulse output or Modbus connection

5 **Metrology LED**

6 **Function button**, which can be used to browse between the various page menus (located at the top of the screen): E (energy), PQS (powers) and IU (current and voltage)

7 **Dual-function button:**
- quick press –> pages scroll through the current menu (indicated at the top of the screen)
- press for 3 sec. –> activates configuration mode

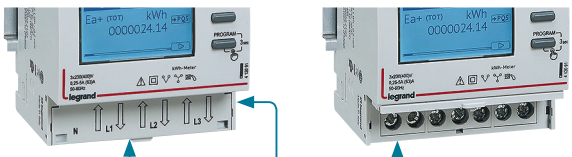
8 **Technical marking:**
- Please consult the user manual before continuing with installation.
- Double insulation
- Activation on 3-wire three-phase line
- Activation on 4-wire three-phase line
- Anti-rotation (antidiminution)

Simplified installation and connection

The phase and neutral terminals have the same dimensions and are offset to make wiring easier.

Three-phase meters can be used to display phase sequences to ensure they are connected correctly.

All the meters have a built-in 120 Ohm termination resistor on the RS 485 line, which can be configured in programming mode.



Clear marking indicating the terminal position and wiring direction.

Sealed terminal shield to prevent unauthorised access.

A range suitable for a variety of uses

EXAMPLE OF A PHOTOVOLTAIC INSTALLATION

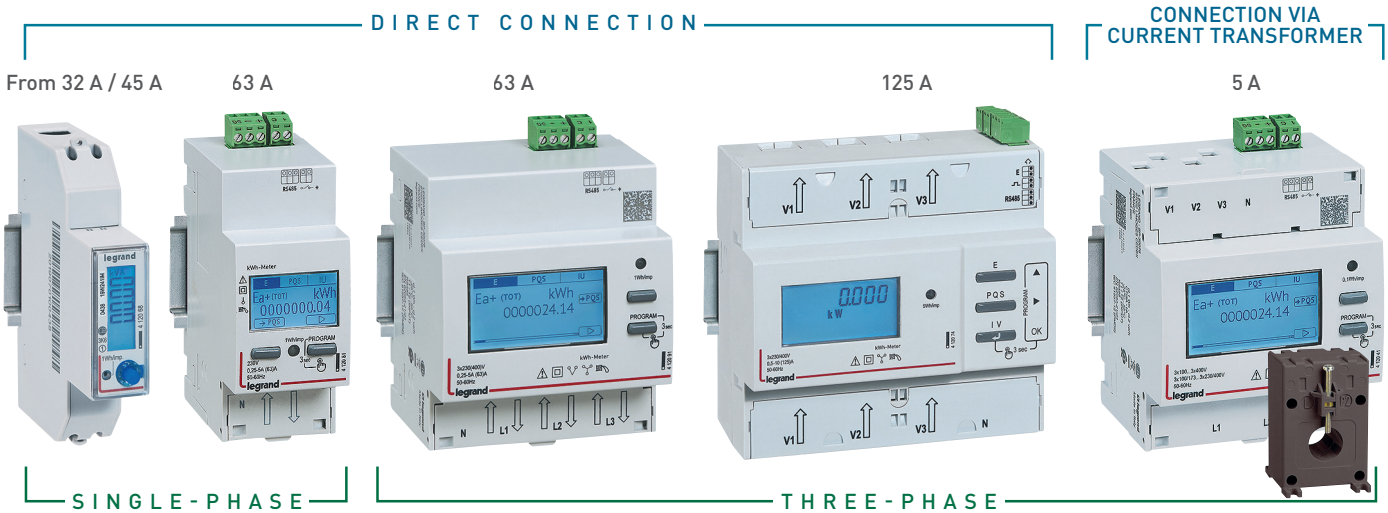
The new EMDX³ electricity meters measure and display values such as: total active energy, total reactive energy, partial active energy, partial active energy, active power, reactive power, apparent power, average active power, the maximum value of the average active power, current, voltage, frequency, the power factor, the running time (per tariff) per single-phase or three-phase circuit downstream of the electricity supply company's metering.

A MULTIMETERING MID-CERTIFIED RANGE

Possibility of bi-directional metering of active and reactive energy consumed/produced (Ea+ and Ea-/Er+ and Er-) which makes them particularly suitable for buildings equipped with a power plant (photovoltaic, wind).

MID certification ensures accuracy of the metering with a view to charging out the electricity consumed or produced.

A meter should be selected according to the network (single-phase or three-phase) and its maximum current, required displayed values and communication type allowing it to be run by a supervision system.



Conforming to standards IEC 61557-12, IEC 62053-21/23, IEC 62052-11, IEC 62052-31, EN 50470-1/3 (for the MID version)

		Cat.No	Imax (A)	Width (number of modules)	Non-MID	MID	Output: Modbus (RS 485)	Output: Pulse	Dual Tariff	WAGES (Pulse Input)
	Single-phase Direct connection	0 046 70	32	1	x			x		
		4 120 68	45	1	x		x			
		4 120 69	45	1		x		x		
		4 120 80	63	2	x			x		x
		4 120 81	63	2	x		x		o	o
		4 120 82	63	2		x		x		x
		4 120 83	63	2		x	x		o	o
	Three-phase Direct connection	4 120 90	63	4	x			x		x
		4 120 91	63	4	x		x		o	o
		4 120 92	63	4		x		x		x
		4 120 93	63	4		x	x		o	o
		4 120 74	125	6	x		x	x	x	
		4 120 75	125	6		x	x	x	x	
	Three-phase Connection via current transformer	4 120 40	5	4	x			x		x
		4 120 41	5	4	x		x		o	o
		4 120 42	5	4		x		x		x
		4 120 43	5	4		x	x		o	o

New range

x Built-in

o Dual tariff or 1 pulse input for other meters to connect (water, gas etc.)

The Dual Tariff function allows energy consumption to be measured during different time slots (peak period, off-peak period) or record energy use from two different sources (EB or DG) with a single meter.

EMDX³ Multi-function Meters for Smart Distribution Board

Din rail mounting


4 120 68


4 120 91


4 120 65


4 120 45


4 120 51

Technical characteristics **p. 17**

- Din Rail Meters for Smart Distribution Board.
- LCD meter with bright graphical back lit display.
- 1P / 3P Direct connection or connection with CT.
- Measures kWh as well as other values like current, voltage, active energy, power etc.
- Confirms to Standards: IEC 61557-12; IEC 62053-21/23; IEC 62052-11 and IEC 62052-31
- MID* compliance ensures accuracy for billing
- Dual Tariff meters
- WAGES Enabled (1 Pulse input to connect water meter, gas meter etc.)

* MID - Measuring Instruments Directive. The meters comply to MID, ensures the highest levels of reliability and transparency, and in order to provide complete metrological assurance, applications that necessitate the installation of meters dedicated to invoicing purposes.

Single-phase meters

Direct connection

Pack	Cat.Nos		Maximum current (A)	Output type	Dual tariff	WAGES (1 Pulse Input)	Number of modules
	Non-MID	MID compliant					
1	0 046 70		32	Pulse	No	No	1
1	4 120 68		45	RS 485	No	No	1
1		4 120 69	45	Pulse	No	No	1
1	4 120 80	4 120 82	63	Pulse	No	Yes	2
1	4 120 81	4 120 83	63	RS 485	Yes	or Yes*	2

Three-phase meters

Direct connection

Pack	Cat.Nos		Maximum current (A)	Output type	Dual tariff	WAGES (1 Pulse Input)	Number of modules
	Non-MID	MID compliant					
1	4 120 90[1]	4 120 92[1]	63	Pulse	No	Yes	4
1	4 120 91	4 120 93	63	RS 485	Yes	or Yes*	4
1	4 120 74	4 120 75	125	Pulse and RS 485	Yes	No	6

Connection with CT

Pack	Cat.Nos		Maximum current (A)	Output type	Dual tariff	WAGES (1 Pulse Input)	Number of modules
1	4 120 40[1]	4 120 42[1]	5	Pulse	No	Yes	4
1	4 120 41	4 120 43	5	RS 485	Yes	or Yes*	4

Pulse concentrator

Pack	Cat.Nos
1	4 120 65

- For collecting and transmitting measurements taken by 12 universal pulse electricity meters.
- Collects pulses from other meters (gas meters, water meters, etc.)
- RS485 output
- 4 modules

Technical characteristics **p. 17**

EMDX³ modular

Pack	Cat.Nos
1	4 120 45

Modular Multi Function Meter with THD - RS-485 & Pulse Output Cl 1
Din Rail Mounting
Width: 4 modules

- LCD display
- 4 Dedicated Keys (V / I / P Q S / E PF F)
- Precision class: 1
- Connection with current transformers (CT)
- Measurement of currents, voltages, frequency, active, reactive and apparent power, power factor, active and reactive energy
- THD voltages and currents
- RS 485 and pulse output
- Phase sequence correction diagnostic

EMDX³ modular

Pack	Cat.Nos
1	4 120 51

4 Tariff Modular Multi Function Meter with Individual THD, Programmable alarms - RS-485 & Pulse Output Cl 0.5
Din rail mounting
Width: 4 modules

- LCD display
- 4 Dedicated Keys (V / I / P Q S / E PF F)
- Precision class: 0.5
- Connection with current transformers (CT)
- Measurement of currents, voltages, frequency, active, reactive and apparent power, power factor, active and reactive energy
- 4 tariff metering:
- THD voltages, currents and harmonic analysis up to order 25th (available on Modbus COM port)
- Programmable alarms on all functions
- RS 485 and pulse output
- Phase sequence correction diagnostic
- Customized page display

1: One pulse type input for other types of meters (gas, water, etc.)
*Either one of each Dual Tariff or WAGES is possible.

EMDX³ Digital Panel Meter

for mounting on door or solid faceplate


4 120 47


4 120 52


4 120 53


4 120 55


4 120 57

Technical characteristics **p. 18**

Pack	Cat.Nos	
		Multi Function Meter with THD - RS-485 & Pulse Output CI 1
1	4 120 47	• Dimensions: 96 x 96 x 62 mm • LCD display • 4 Dedicated Keys (V / I / P Q S / E PF F) • Connection with current transformers (CT) • Measurement of currents, voltages, frequency, active, reactive and apparent power and power factor • Metering: • Active energy consumed or produced • Reactive energy consumed or produced • THD voltages and currents • RS 485 communication and Pulse output • Phase sequence correction diagnostic
		Advance Multi Function Meter with Individual THD - RS-485 & Pulse Output CI 0.5
1	4 120 52	• Dimensions: 96 x 96 x 62 mm • LCD display • 4 Dedicated Keys (V / I / P Q S / E PF F) • Measurement of currents, voltages, active, reactive and apparent power and power factor • Metering: • Active energy consumed or produced • Reactive energy consumed or produced • Operating time • Pulses • THD voltages, currents, and individual harmonic up to order 25(1) • RS 485 communication and Pulse output • Phase sequence correction diagnostic • Optorelays with potential-free SPST-NO contact • Customized page display
		Power Quality & Network Analyzer with Data Logger
1	4 120 53	• Dimensions: 96 x 96 x 62 mm • LCD display • Customized display page • 4 Dedicated Keys (V / I / P Q S / E PF F) • Precision class: 0.5 • Measurement of currents, voltages, active, reactive and apparent power, internal temperature and power factor • Metering: • Active energy consumed or produced • Reactive energy consumed or produced • Operating time • THD • Programmable alarms on all functions • Power quality functions: harmonics (U & I) to 50th, dips, swells, interruption, rapid voltage change and flickers • Memory embedded (8 Mb) • RTC (real time clock) Can take 4 EMDX3 optional modules
		Optional Modules for Power Quality & Network Analyzer with Data Logger
1	4 120 55	R485 communication module with Modbus link
1	4 120 59	Pulse ouput module for energy count 2 independent and insulated outputs
1	4 120 57	2 inputs / 2 outputs module Output can be assigned to alarms on different values
1	4 120 60	2 analog outputs module 0...20 mA and/or 4...20 mA
1	4 120 58	Temperature module 2 Pt100 inputs resistances

1: Available on Modbus COM port

EMDX³ Supervision system


4 149 38


4 149 48

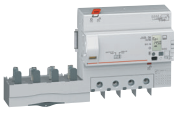
Technical characteristics **p. 18**

Pack	Cat.Nos		
		Energy management software for 1 computer (user licence key)	
		Allows remote configuration, test, control and visualization of data collected from EMDX³ electrical energy meters and multi-function measuring units and CX³ energy management system on one computer connected to the network 30-day free trial version available for download via E-Catalogue	
1	4 149 38	Software licence agreement (user key) for 32 Modbus adresses or 32 pulse modules	
1	4 149 39	Software licence agreement (user key) 255 Modbus adresses or 255 pulse modules	
		Energy management multi-support web servers	
		Allow remote configuration, test, control and visualization, via a web browser on PCs, smartphones, web viewers, tablet computers, of data collected from: protection devices (DX³ add-on modules with integrated measurement control unit, DPX³ and DMX³), EMDX³ electricity meters and multi-function measuring units, CX³ energy management system and Green'up charging stations for electric vehicles.	
		Din rail mounting	
		Direct IP connection Power supply: 9 to 28 V ⎓ with the help of a single-phase switching mode power supply Cat.No 1 467 21 (p. 97) to be ordered separately	Number of modules
1	4 149 47	For 10 Modbus adresses or 10 pulse modules	4
1	4 149 48	For 32 Modbus adresses or 32 pulse modules	4
		Fixing on plate	
1	4 149 49	For 255 Modbus adresses or 255 pulse modules Supplied with external power supply and fixing brackets	
		Communication interface	
		RS485 / Ethernet	
1	0 046 89	For RS 485 / Ethernet conversion (for connection to an IP network)	Number of modules 3

Measurement and display via e-communication

selection table

PROTECTION DEVICES WITH INTEGRATED MEASUREMENT FUNCTION

PROTECTION & MEASUREMENT		COMMUNICATION
DMX³ with electronic protection unit		DMX³ communication option Cat.No 0 288 05
DPX³ with electronic release and energy metering central unit		Communication interface Cat.No 4 210 75 
DX³ add-on module with integrated measurement unit		Communication interface Cat.No 4 210 75 

PROTECTION DEVICES IN ASSOCIATION WITH EMDX³ MULTIFUNCTION MEASURING UNITS OR CX³ EMS

PROTECTION		MEASUREMENT & COMMUNICATION
DMX³ with electronic protection unit		EDMX³ multifunction measuring units on Din rail  RS 485 output
		or
DPX³ with thermal magnetic or electronic release		EDMX³ multifunction measuring units on door  RS 485 output
		or
DX³ MCBs		CX³ EMS measurement modules + Communication interface Cat.No 4 149 40 

DISPLAY

RS 485/IP converter
Cat.No 0 046 89

+

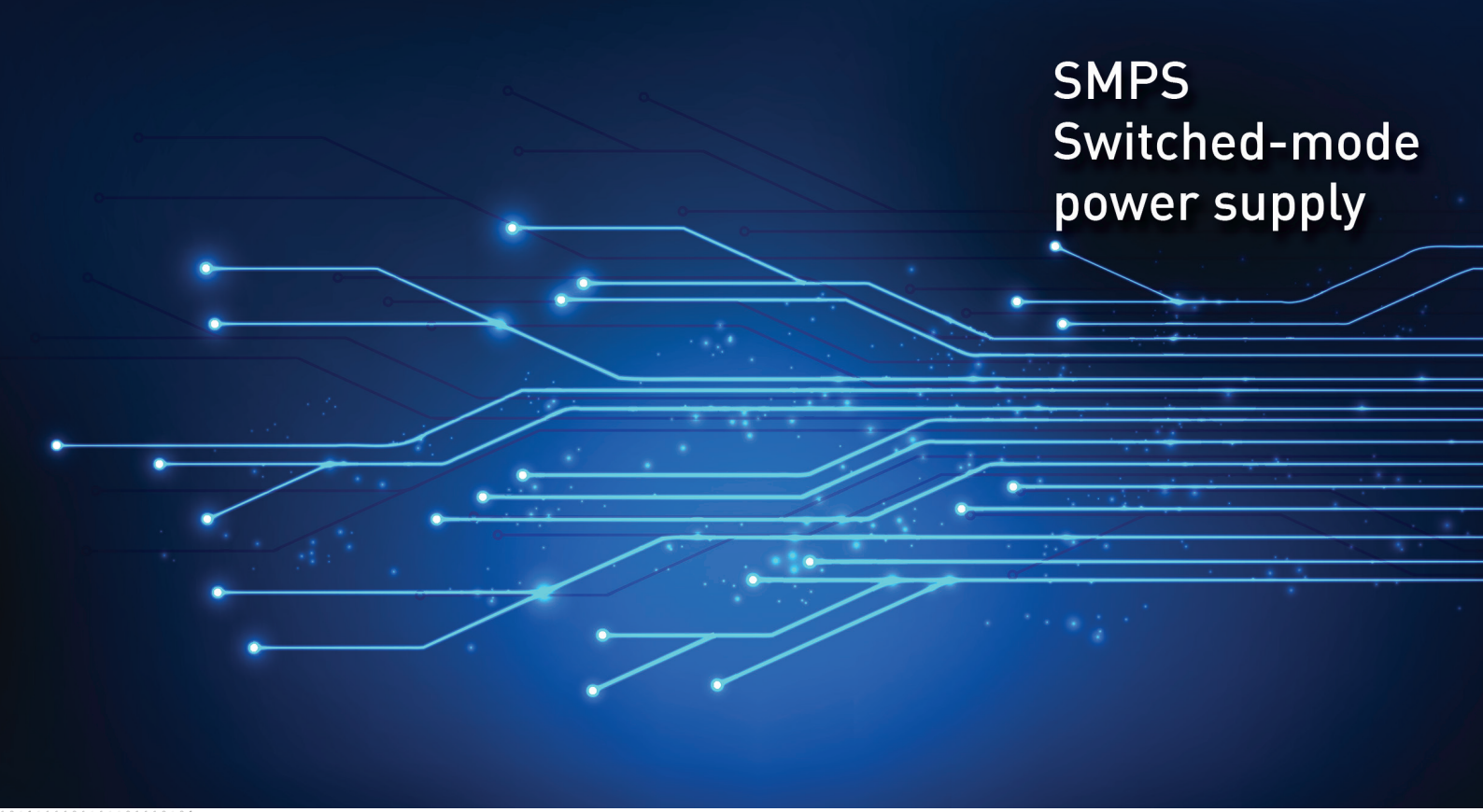
Door mounting touch screen
Cat.No 0 261 56

or

User licence key
Cat.Nos. 4 149 38/39
for displaying on 1 PC only

or

Energy management multi-support web servers:
- Cat.Nos 4 149 47/48 (direct IP connection)
- Cat.No 4 149 49 + RS 485/IP converter Cat.No 0 046 89 for displaying on one or multiple PCs, tablets, smartphones



SMPS Switched-mode power supply

Generic power supply for all your conversion needs from AC to DC

Features

- Single-phase switching module power supply
- Input 100-240 V~
- Output 5 V= / 12 V= / 24 V=
- Output Power -15 W / 24 W / 36 W/ 54 W / 60 W / 92 W
- Operating frequency: 50/60 Hz
- Integrated short-circuit and overload protection on the power supply secondary
- Class II insulation
- Output voltage present indicator
- Output voltage adjustment potentiometer on front panel
- Outout voltage variation:±1%
- No-load power consumption less than 0.3w
- Cooling by natural convection
- Modular product

1467 01

1467 12

1467 22

UL 508 approvals
conforming to IES EN 60950-1, EN 61558-2-16
Conforming to EN 55022 class B*,EN 61000-3-2 class A, EN 61000-3-3
Conforming to EN 61000-4-2, 3, 4, 6 Level 3, criterion A
EN 61000-4-5 and 8 level 4, criterion A
EN 61204-3
*Class B means the power supply can be used in any environment, including residential

Power supervision system

remote control, monitoring and measurement


0 261 37


0 261 36


0 261 45


4 149 38


4 149 48


4 149 49

With the Legrand Power supervision system, circuit breakers are integrated in a supervision system
You can therefore check the status of the circuit breakers, measure the electrical values and control the circuit breakers remotely
MODBUS protocol

Pack	Cat.Nos	RS485 Modbus communication interfaces
		DPX³ electronic interface
1	4 210 75	For connecting electronic DPX³ (except DPX³ 630 and 1600 S1 electronic releases) to an RS485 Modbus communication network All the information managed by the circuit breaker's electronic card will be shared on the Modbus network Dimension: 1 module Power supply: 24 V~ / ⎓ . RS 485 link (2-wire) Address, speed and coding can be modified with configurator kit
		RS 485 Modbus communication option for DMX³
1	0 288 05[1]	Option making the DMX³ capable of communicating for supervision
		Modular power supply
1	0 035 67	230 V~ - 27 V⎓ - 0.6 A 2 modules
		DPX and DX³ signalling and control interface
1	0 261 36	Signalling and control interface between the power supervision system and the thermal magnetic and electronic circuit breakers. Equipped with analogue / digital inputs and relay outputs. Can handle multiple circuit breakers. - 24 inputs for collecting information from the signalling auxiliaries on the DPX and DX³ circuit breakers: auxiliary contact NO position (1 input) or NO+NC position (2 inputs), fault signal (1 input) - 6 outputs for: the remote control of the motor driven circuit breakers (2 outputs) and for tripping the circuit breakers for testing purposes (1 output) Dimension: 6 modules Power supply: 24 V~ / ⎓ RS 485 link (2-wire) Address, speed and coding can be modified with configuration kit.

1: Factory fitted

Pack	Cat.Nos	Accessories
		Configurator kit For configuring the DPX and DPX³ I/O card and interface
1	0 261 45	Kit with configurators 0 to 9 (10 configurators for each digit)
		Single phase stabilised power supply For supplying communication devices Primary 115-230 V 24 V⎓

Pack	Cat.Nos	Power (W)	Current (A)	Flexible cable terminal capacity Input (mm²)	Flexible cable terminal capacity Output (mm²)
1	1 466 23	120	5	6	2 x 6

Pack	Cat.Nos	
		IP converter
1	0 046 89	For RS 485/Ethernet conversion for connecting electricity meters and measurement control units to an IP network Supply voltage 90-260 V~ 80/60 HZ Dimension: 2 modules
		Energy management software for 1 computer (user licence key)
		Allows remote configuration, test, control and visualization of data collected from EMDX³ electrical energy meters and multi-function measuring units and CX³ energy management system on one computer connected to the network 30-day free trial version available for download via E-Catalogue
1	4 149 38	Software licence agreement (user key) for 32 Modbus adresses or 32 pulse modules
1	4 149 39	Software licence agreement (user key) 255 Modbus adresses or 255 pulse modules
		Energy management multi-support web servers
		Allow remote configuration, test, control and visualization, via a web browser on PCs, smartphones, web viewers, tablet computers, of data collected from: protection devices (DX³ add-on modules with integrated measurement control unit, DPX³ and DMX³), EMDX³ electricity meters and multi-function measuring units, CX³ energy management system and Green'up charging stations for electric vehicles.
		DIN rail mounting Direct IP connection Power supply: 9 to 28 V ⎓ with the help of a single-phase switching mode power supply Cat.No 1 467 21 (p. 97) to be ordered separately

Pack	Cat.Nos		Number of modules
1	4 149 47	For 10 Modbus adresses or 10 pulse modules	4
1	4 149 48	For 32 Modbus adresses or 32 pulse modules	4
		Fixing on plate	
1	4 149 49	For 255 Modbus adresses or 255 pulse modules Supplied with external power supply and fixing brackets	

EMDX³ electrical energy meters

Din rail mounting

Technical characteristics

Conform to IEC 61557-12
Active energy accuracy: Class 1 (EN 62053-21)
Class B (EN 50470-1,3) - for MID version
Reactive energy accuracy: Class 2 (EN 62053-23)

Single-phase meters:
Reference voltage Un: 230 V-240 V
Reference frequency: 50-60 Hz

Cat.Nos 0 046 70, 4 120 68/69
LCD display: 7 digits
Resolution: 0.1 kWh
Maximum indication: 99999.9 kWh

Cat.Nos 4 120 80/81/82/83
LCD graphic display: 9 digits
Resolution: 0.01 kWh
Maximum indication: 9999999.99 kWh

Three-phase meters:
Reference voltage Un: single phase 230 V-240 V
three-phase 230 (400) - 240 (415) V
Reference frequency: 50-60 Hz

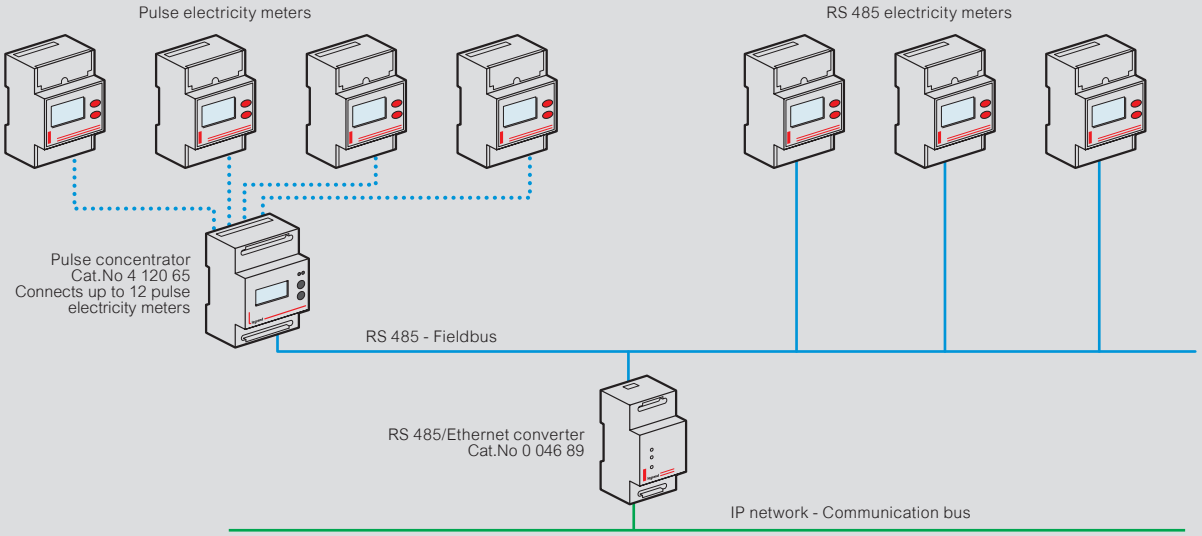
Cat.Nos 4 120 40/41/42/43/91/92/93
LCD graphic display: 9 digits
Resolution: 0.01 kWh
Maximum indication: 9999999.99 kWh

Cat.Nos 4 120 74/75
LCD display: 8 digits
Resolution: 0.01 kWh
Maximum indication: 999999.99 kWh

Cat.Nos			0 046 70	4 120 68	4 120 69	4 120 80	4 120 81	4 120 82	4 120 83	4 120 90	4 120 91	4 120 92	4 120 93	4 120 74	4 120 75	4 120 40	4 120 41	4 120 42	4 120 43
Type			Single phase							Three-phase									
Connection			Direct connection													Connection via CT			
Number of modules			1	1	1	2	2	2	2	4	4	4	4	6	6	4	4	4	4
Max. current (A)			32	45	45	63	63	63	63	63	63	63	63	125	125	5 (CT)	5 (CT)	5 (CT)	5 (CT)
Metering and measurement	Energy	Total active energy	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Total reactive energy		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Partial active energy (reset)				●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Partial reactive energy (reset)				●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Energy bidirectional measure	Ea + and Ea- by tariff				●	●	●	●	●	●	●	●			●	●	●	●
	Power	Active power		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Reactive power		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Apparent power		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Average active power		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Max. average active power value				●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Electrical values	Current		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Voltage		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Frequency				●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Power factor		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
Dual tariff							●		●		●		●	●	●		●		●
Pulse input						●	O	●	O	●	O	●	O			●	O	●	O
Connection diagnostic																●	●	●	●
Time of uses	Total					●	●	●	●	●	●	●	●	●	●	●	●	●	●
	By tariff						●		●		●		●				●		●
Communication	Pulse output		●		●	●		●		●		●		●	●	●		●	
	Modbus RS 485			●			●		●		●		●	●	●		●		●
Certification					●		●		●		●		●		●		●		●

● Built-in function
O Dual tariff or pulse input

Interfacing with IP communication network



For direct connection meters, if connected via transformers, the resolution and maximum indication depend on the transformation ratios of these transformers

EMDX³ multi-function measuring units

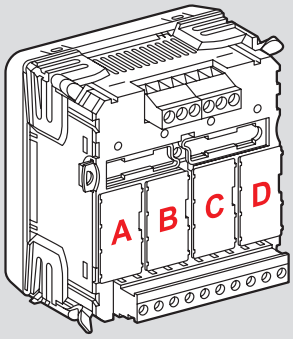
Technical characteristics

Cat.Nos			4 120 45	4 120 47	4 120 51	4 120 52	4 120 53
Connection	Current measurement terminals	Flexible cable	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²
		Rigid cable	6 mm²	6 mm²	6 mm²	6 mm²	6 mm²
	Other terminals	Flexible cable	2.5 mm²	2.5 mm²	2.5 mm²	2.5 mm²	2.5 mm²
		Rigid cable	4 mm²	4.5 mm²	4 mm²	4 mm²	4 mm²
Protection index	Front cover		IP 54	IP 54	IP 54	IP 54	IP 54
	Casing		IP 20	IP 20	IP 20	IP 20	IP 20
Weight			250 g	285 g	250 g	285 g	285 g
Display	Type		Backlit LCD	Backlit LCD	Backlit LCD	Backlit LCD	Backlit LCD
	Refresh time		1.1 s	1.1 s	1 s	1 s	1 s
Measurements			1P+N, 3P, 3P+N	1P+N, 3P, 3P+N	1P+N, 3P, 3P+N	1P+N, 3P, 3P+N	1P+N, 3P, 3P+N
Voltage measurement	Direct	Phase/Phase	80 - 500 V	50 - 460 V	80 - 500 V	80 - 500 V	80 - 690 V
		Phase/Neutra!	50 -290 V	86 -260 V	50 -290 V	50 - 290 V	50 - 400 V
	From PT	Primary	-	-	max. 1200 V	max. 1200 V	max. 150 kV
		Secondary	-	-	-	-	-
	Update period		0.8 s	0.3 s	0.2 s	0.2 s	0.2 s
Current measurement	Direct		-	-	-	-	-
	From a CT	Primary	50 kA	50 kA	max. 10 kA (X/1 A) or 50 kA (X/5A)	max. 10 kA (X/1 A) or 50 kA (X/5A)	max. 10 kA (X/1 A) or 50 kA (X/5A)
		Secondary	5 A	5 A	1 A or 5 A	1 A or 5 A	1 A or 5 A
	Minimum measurement		10 mA	10 mA	5 mA	5 mA	5 mA
	Input consumption		≤ 1 VA	≤ 1 VA	≤ 1 VA	≤ 1 VA	≤ 0,2 VA
	Permanent overload		1.2 In	1.2 In	1.2 In	1.2 In	1.2 In
	Intermittent overload		20 In / 0.5 s	20 In / 0.5 s	20 In / 0.5 s	20 In / 0.5 s	20 In / 0.5 s
	Update period		0.2s	0.2s	0.2s	0.2 s	0.2 s
	Max. CT x PT ratio		9999	9999	99990	99990	10000000 (x/1 A) 2000000 (x/5 A)
Power measurement	Total		0 - 9999 kW/ kVAr / kVA	0 - 9999 kW/ kVAr / kVA	0 - 9999 kW/ kVAr / kVA 0 - 9999 MW I MVAr / MVA	0 - 9999 kW/ kVAr / kVA 0 - 9999 MW I MVAr / MVA	0 - 9999 kW/ kVAr / kVA 0 - 9999 MW I MVAr / MVA
	Update period		0.2 s	0.2 s	0.2 s	0.2 s	0.2 s
Frequency measurement	Measurement range		45/65 Hz	45/65 Hz	45/65 Hz - 360/440 Hz	45/65 Hz - 360/440 Hz	45/65 Hz
	Update period		0.2 s	0.2 s	0.2 s	0.2 s	0.2 s
Auxiliary power supply	50 / 60 Hz		230 V ± 10%	Self-supplied	80 - 265 V ± 10%	80 - 265 V ± 10%	80 - 265 V ± 10%
	d.c.		-	-	100 - 300 V ± 10%	100 - 300 V ± 10%	100 - 300 V ± 10%
	Consumption	a.c.	≤ 2.5 VA	≤ 2.5 VA	≤ 2.5 VA	≤ 2.5 VA	≤ 2.5 VA
		d.c.	–	–	≤ 2.5 W	≤ 3.5 W	≤ 3.5 W
Operating temperature			from - 5° C to + 55° C	from - 5° C to + 55° C	from - 5° C to + 55° C	from - 5° C to + 55° C	from - 5° C to + 55° C
Storage temperature			from - 25° C to + 70° C	from - 25° C to + 70° C	from - 25° C to + 70° C	from - 25° C to + 70° C	from - 25° C to + 70° C

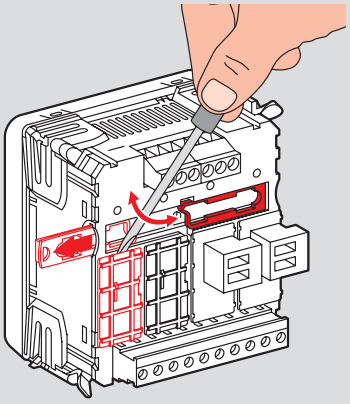
1: except for Cat.No 4 120 53 - 50 Hz only

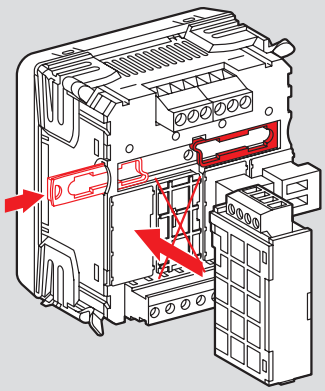
Maximum number of modules and installing position for multi-function measuring unit Cat.No 4 120 53

Cat.Nos	Designation	Max. number	EMDX³-Premium 4 120 53
4 120 55	RS 485 communication module	1	A
4 120 57	2 inputs / 2 outputs module	2	C, D
4 120 58	Temperature module	1	D
4 120 59	Pulse output module for energy count	2	A, B, C, D
4 120 60	2 analog outputs module	2	C, D



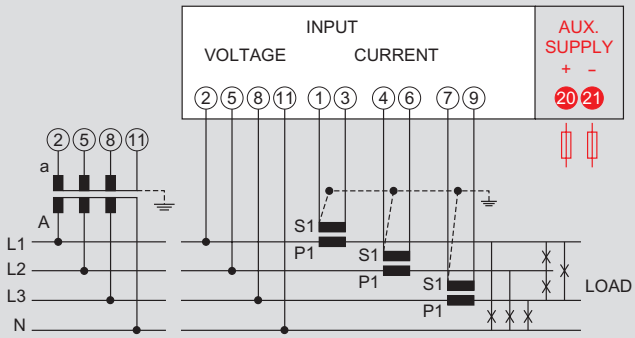
Fitting modules Cat.Nos 4 120 53



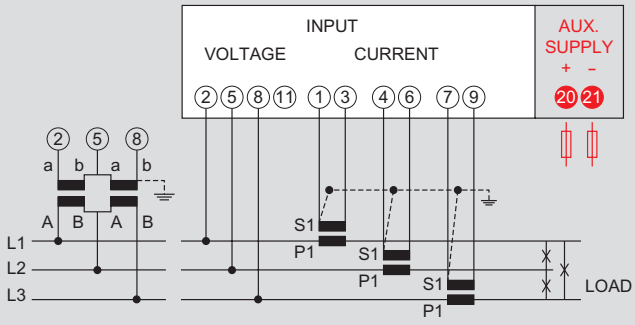


Connection solutions

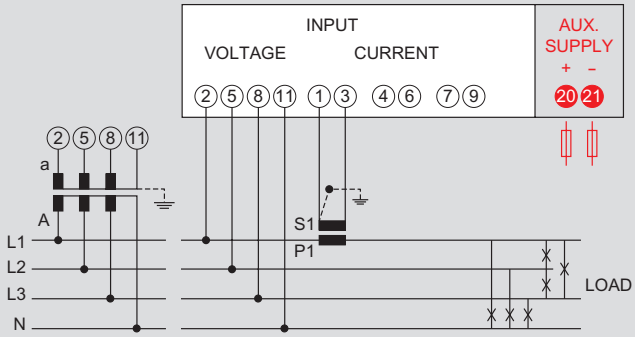
Unbalanced three-phase network (4-wire)



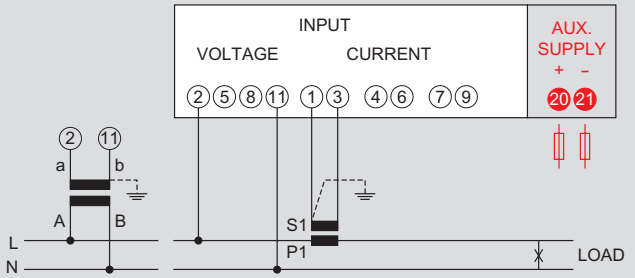
(3-wire)



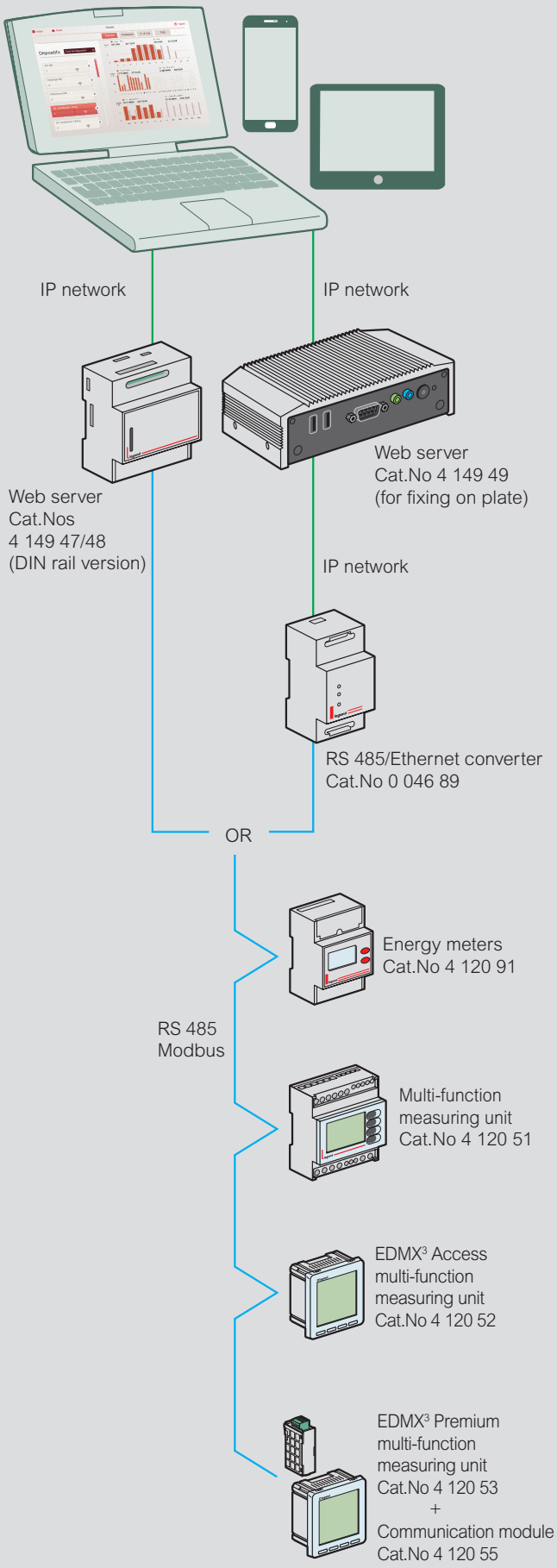
Balanced three-phase network (3-wire)



Single-phase network (2-wire)

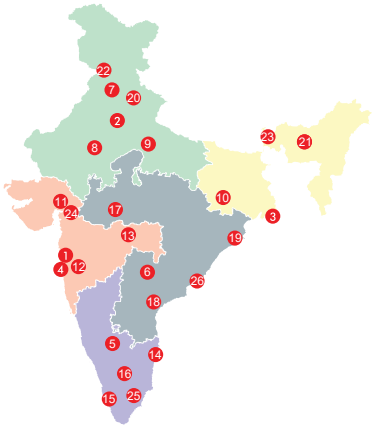


Wiring example of communication network



Notes

Notes



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