

# SMART ELECTRICITY METERS



## EMDX<sup>3</sup> SUSTAINABLE SAVINGS FOR YOUR INSTALLATIONS



THE GLOBAL SPECIALIST IN ELECTRICAL AND  
DIGITAL BUILDING INFRASTRUCTURES

 **legrand**<sup>®</sup>



# 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 EMDX<sup>3</sup> electricity meters, multi-function measuring units, the CX<sup>3</sup> EMS system or the DMX<sup>3</sup> and DPX<sup>3</sup> 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

Measurement is the basis of all diagnostics ..... 6

An intuitive system that is easy to use ..... 8

A range suitable for a variety of uses ..... 10

Catalogue pages ..... 12



EMDX<sup>3</sup> MEASUREMENT CONTROL UNITS

## REAL SYNERGY WITH EMDX<sup>3</sup> MULTI-FUNCTION MEASURING UNITS

EMDX<sup>3</sup> 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.

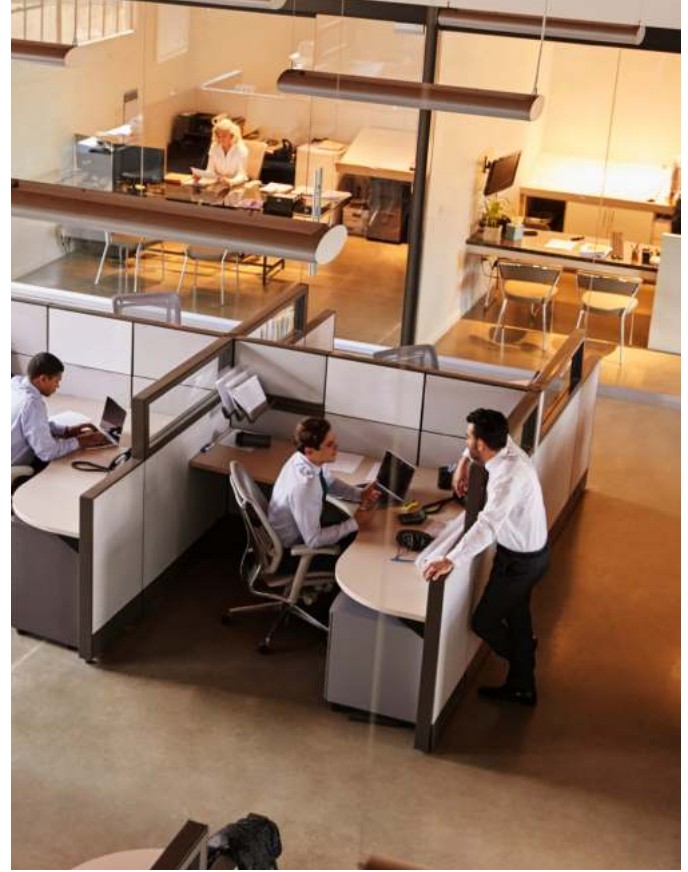
They also communicate the values measured to supervision or energy management systems, in order to optimise the consumption and energy quality of electrical circuits in commercial and industrial environments.

In accordance with its policy of continual improvement, the company reserves the right to modify the characteristics and design of its products without warning. All illustrations, descriptions, dimensions, and weights indicated in this catalogue are given as a guide only and the company cannot be held liable for their accuracy.



The Core Brick of  
your installation is  
now smarter





# EMDX<sup>3</sup> 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 EMDX<sup>3</sup> 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.

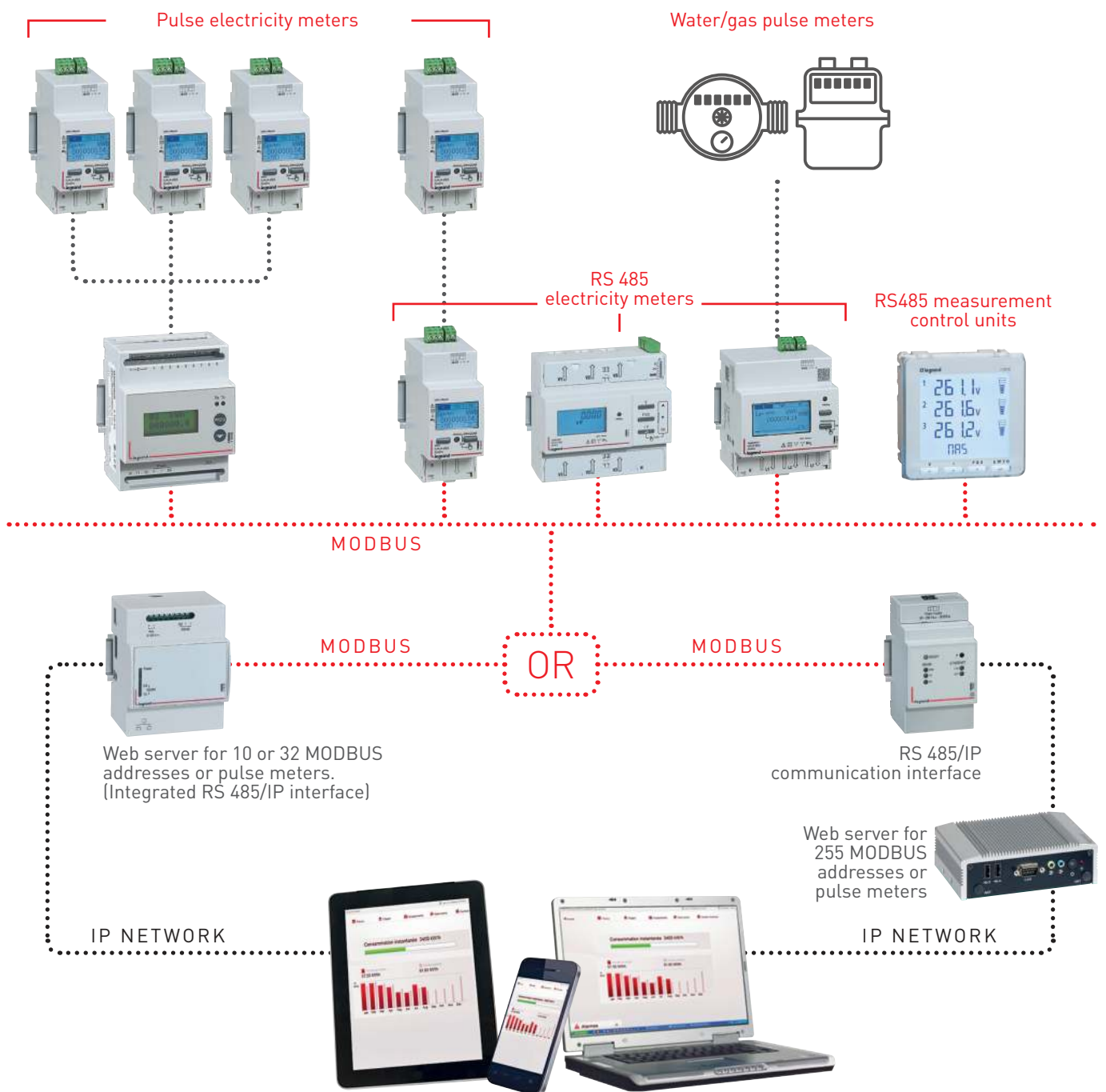


EMDX<sup>3</sup> THREE-PHASE METER

# 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



EMDX<sup>3</sup> 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.



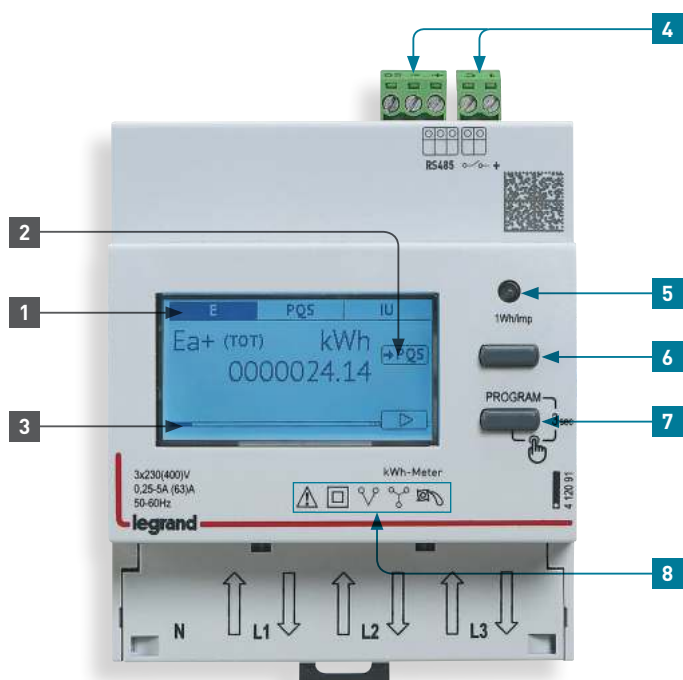
WEB SERVERS

## 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



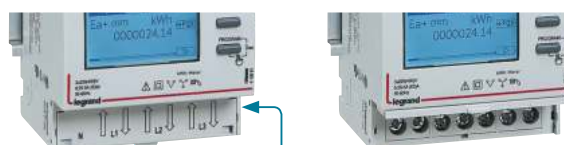
- 5 Metrology LED**
- 6 Function button**, which can be used to browse between the various page menus (located at the top of the screen): E (energy), PQS (powers) and IU (current and voltage)
- 7 Dual-function button:**
  - quick press → pages scroll through the current menu (indicated at the top of 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 (antidimintion)

## 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

The new EMDX<sup>3</sup> electricity meters measure and display values such as: total active energy, total reactive 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.



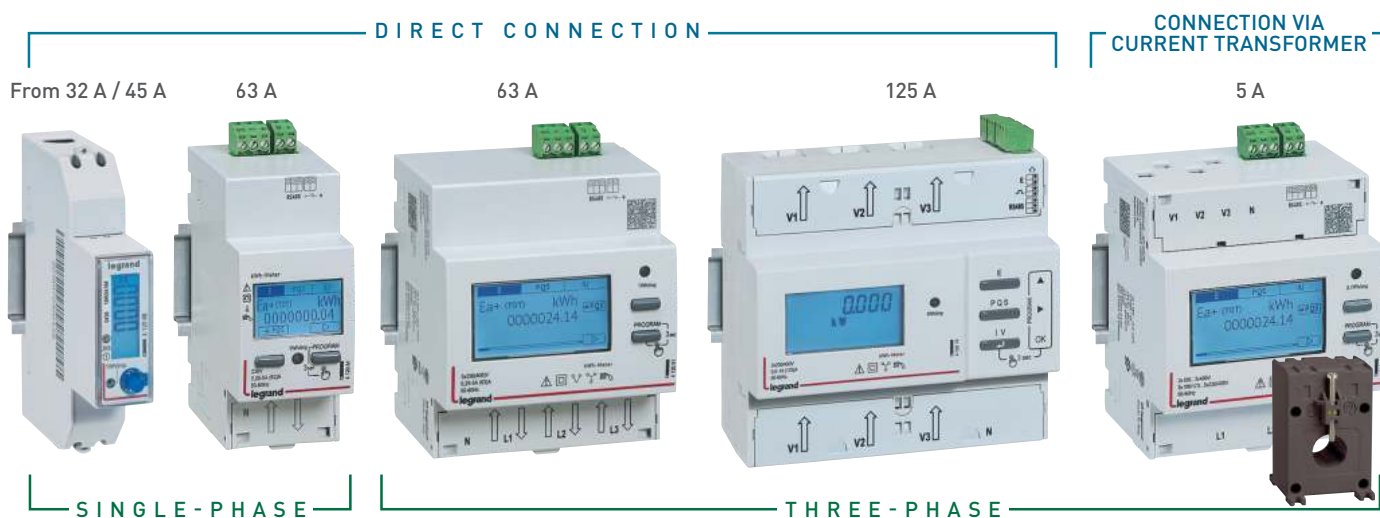
EXAMPLE OF A PHOTOVOLTAIC INSTALLATION

## 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	I <sub>max</sub> (A)	Width (number of modules)	Non-MID	MID	Output		Dual Tariff	WAGES (Pulse Input)
						Modbus (RS 485)	Pulse		
	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
	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	
	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.

# EMDX<sup>3</sup> Multi-function Meters for Smart Distribution Board

Din rail mounting



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.

Pack	Cat.Nos		Single-phase meters				
	Non-MID	MID compliant	Maximum current (A)	Output type	Dual tariff	WAGES (1 Pulse Input)	Number of modules
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

Pack	Cat.Nos		Three-phase meters				
	Non-MID	MID compliant	Maximum current (A)	Output type	Dual tariff	WAGES (1 Pulse Input)	Number of modules
1	4 120 90 <sup>1</sup>	4 120 92 <sup>1</sup>	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
1	4 120 40 <sup>1</sup>	4 120 42 <sup>1</sup>	5	Pulse	No	Yes	4
1	4 120 41	4 120 43	5	RS 485	Yes	or Yes*	4

Pack	Cat.Nos	Pulse concentrator
1	4 120 65	<ul style="list-style-type: none"> <li>• For collecting and transmitting measurements taken by 12 universal pulse electricity meters.</li> <li>• Collects pulses from other meters (gas meters, water meters, etc.)</li> <li>• RS485 output</li> <li>• 4 modules</li> </ul>

Technical characteristics p. 17

Pack	Cat.Nos	EMDX <sup>3</sup> modular
1	4 120 45	<p><b>Modular Multi Function Meter with THD - RS-485 &amp; Pulse Output CI 1</b></p> <p>Din Rail Mounting Width: 4 modules</p> <ul style="list-style-type: none"> <li>• LCD display</li> <li>• 4 Dedicated Keys (V / I / P Q S / E P F F)</li> <li>• Precision class: 1</li> <li>• Connection with current transformers (CT)</li> <li>• Measurement of currents, voltages, frequency, active, reactive and apparent power, power factor, active and reactive energy</li> <li>• THD voltages and currents</li> <li>• RS 485 and pulse output</li> <li>• Phase sequence correction diagnostic</li> </ul>


Pack	Cat.Nos	EMDX <sup>3</sup> modular
1	4 120 51	<p><b>4 Tariff Modular Multi Function Meter with Individual THD, Programmable alarms - RS-485 &amp; Pulse Output CI 0.5</b></p> <p>Din rail mounting Width: 4 modules</p> <ul style="list-style-type: none"> <li>• LCD display</li> <li>• 4 Dedicated Keys (V / I / P Q S / E P F F)</li> <li>• Precision class: 0.5</li> <li>• Connection with current transformers (CT)</li> <li>• Measurement of currents, voltages, frequency, active, reactive and apparent power, power factor, active and reactive energy</li> <li>• 4 tariff metering:</li> <li>• THD voltages, currents and harmonic analysis up to order 25th (available on Modbus COM port)</li> <li>• Programmable alarms on all functions</li> <li>• RS 485 and pulse output</li> <li>• Phase sequence correction diagnostic</li> <li>• Customized page display</li> </ul>

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

# EMDX<sup>3</sup> Digital Panel Meter

for mounting on door or solid faceplate




 Technical characteristics p. 18

Pack	Cat.Nos	
1	4 120 47	<b>Multi Function Meter with THD - RS-485 &amp; Pulse Output CI 1</b> <ul style="list-style-type: none"> <li>• Dimensions: 96 x 96 x 62 mm</li> <li>• LCD display</li> <li>• 4 Dedicated Keys (V / I / P Q S / E P F F)</li> <li>• Connection with current transformers (CT)</li> <li>• Measurement of currents, voltages, frequency, active, reactive and apparent power and power factor</li> <li>• Metering:               <ul style="list-style-type: none"> <li>• Active energy consumed or produced</li> <li>• Reactive energy consumed or produced</li> <li>• THD voltages and currents</li> <li>• RS 485 communication and Pulse output</li> <li>• Phase sequence correction diagnostic</li> </ul> </li> </ul>
1	4 120 52	<b>Advance Multi Function Meter with Individual THD - RS-485 &amp; Pulse Output CI 0.5</b> <ul style="list-style-type: none"> <li>• Dimensions: 96 x 96 x 62 mm</li> <li>• LCD display</li> <li>• 4 Dedicated Keys (V / I / P Q S / E P F F)</li> <li>• Measurement of currents, voltages, active, reactive and apparent power and power factor</li> <li>• Metering:               <ul style="list-style-type: none"> <li>• Active energy consumed or produced</li> <li>• Reactive energy consumed or produced</li> <li>• Operating time</li> <li>• Pulses</li> <li>• THD voltages, currents, and individual harmonic up to order 25(1)</li> <li>• RS 485 communication and Pulse output</li> <li>• Phase sequence correction diagnostic</li> <li>• Optorelays with potential-free SPST-NO contact</li> <li>• Customized page display</li> </ul> </li> </ul>
1	4 120 53	<b>Power Quality &amp; Network Analyzer with Data Logger</b> <ul style="list-style-type: none"> <li>• Dimensions: 96 x 96 x 62 mm</li> <li>• LCD display</li> <li>• Customized display page</li> <li>• 4 Dedicated Keys (V / I / P Q S / E P F F)</li> <li>• Precision class: 0.5</li> <li>• Measurement of currents, voltages, active, reactive and apparent power, internal temperature and power factor</li> <li>• Metering:               <ul style="list-style-type: none"> <li>• Active energy consumed or produced</li> <li>• Reactive energy consumed or produced</li> <li>• Operating time</li> <li>• THD</li> <li>• Programmable alarms on all functions</li> <li>• Power quality functions: harmonics (U &amp; I) to 50th, dips, swells, interruption, rapid voltage change and flickers</li> <li>• Memory embedded (8 Mb)</li> <li>• RTC (real time clock)</li> </ul> </li> <li>• Can take 4 EMDX3 optional modules</li> </ul>
1	4 120 55	R485 communication module with Modbus link
1	4 120 59	Pulse output module for energy count
1	4 120 57	2 independent and insulated outputs 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

# EMDX<sup>3</sup> Supervision system














 Technical characteristics p. 18





Pack	Cat.Nos		
1	4 149 38	<b>Energy management software for 1 computer (user licence key)</b> <p>Allows remote configuration, test, control and visualization of data collected from EMDX<sup>3</sup> electrical energy meters and multi-function measuring units and CX<sup>3</sup> energy management system on one computer connected to the network 30-day free trial version available for download via E-Catalogue</p>	
1	4 149 39	Software licence agreement (user key) for 32 Modbus addresses or 32 pulse modules	
1	4 149 39	Software licence agreement (user key) 255 Modbus addresses or 255 pulse modules	
		<b>Energy management multi-support web servers</b> <p>Allow remote configuration, test, control and visualization, via a web browser on PCs, smartphones, web viewers, tablet computers, of data collected from: protection devices (DX<sup>3</sup> add-on modules with integrated measurement control unit, DPX<sup>3</sup> and DMX<sup>3</sup>), EMDX<sup>3</sup> electricity meters and multi-function measuring units, CX<sup>3</sup> energy management system and Green'up charging stations for electric vehicles.</p>	
		<b>Din rail mounting</b> 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	
1	4 149 47	For 10 Modbus addresses or 10 pulse modules	Number of modules 4
1	4 149 48	For 32 Modbus addresses or 32 pulse modules	4
1	4 149 49	For 255 Modbus addresses or 255 pulse modules Supplied with external power supply and fixing brackets	
1	0 046 89	<b>Communication interface RS485 / Ethernet</b> 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
<p>DMX<sup>3</sup> with electronic protection unit</p> 	+	<p>DMX<sup>3</sup> communication option Cat.No 0 288 05</p> 
<p>DPX<sup>3</sup> with electronic release and energy metering central unit</p> 	+	<p>Communication interface Cat.No 4 210 75</p> 
<p>DX<sup>3</sup> add-on module with integrated measurement unit</p> 	+	<p>Communication interface Cat.No 4 210 75</p> 

PROTECTION DEVICES IN ASSOCIATION WITH EDMX <sup>3</sup> MULTIFUNCTION MEASURING UNITS OR CX <sup>3</sup> EMS		
PROTECTION		MEASUREMENT & COMMUNICATION
<p>DMX<sup>3</sup> with electronic protection unit</p> 	+	<p>EDMX<sup>3</sup> multifunction measuring units on Din rail</p>  <p>→ RS 485 output</p>
<p>DPX<sup>3</sup> with thermal magnetic or electronic release</p> 		<p>EDMX<sup>3</sup> multifunction measuring units on door</p>  <p>→ RS 485 output</p>
<p>DX<sup>3</sup> MCBs</p> 		<p>CX<sup>3</sup> EMS measurement modules + Communication interface Cat.No 4 149 40</p> 

DISPLAY
<p>RS 485/IP converter Cat.No 0 046 89</p> 
+
<p>Door mounting touch screen Cat.No 0 261 56</p> 
or
<p>User licence key Cat.Nos. 4 149 38/39 for displaying on 1 PC only</p> 
or
<p>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</p> 

# 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
  - Output voltage variation:  $\pm 1\%$
- 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



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	Pack	Cat.Nos	Accessories								
1	4 210 75	<b>DPX<sup>3</sup> electronic interface</b> For connecting electronic DPX <sup>3</sup> (except DPX <sup>3</sup> 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 $\sim$ / $\pm$ . RS 485 link (2-wire) Address, speed and coding can be modified with configurator kit	1	0 261 45	<b>Configurator kit</b> For configuring the DPX and DPX <sup>3</sup> I/O card and interface Kit with configurators 0 to 9 (10 configurators for each digit)								
1	0 288 051	<b>RS 485 Modbus communication option for DMX<sup>3</sup></b> Option making the DMX <sup>3</sup> capable of communicating for supervision	1	1 466 23	<b>Single phase stabilised power supply</b> For supplying communication devices Primary 115-230 V 24 V $\pm$ <table border="1" style="margin-left: 20px;"> <tr> <td>Power (W)</td> <td>Current (A)</td> <td>Flexible cable terminal capacity Input (mm<sup>2</sup>)</td> <td>Output (mm<sup>2</sup>)</td> </tr> <tr> <td>120</td> <td>5</td> <td>6</td> <td>2 x 6</td> </tr> </table>	Power (W)	Current (A)	Flexible cable terminal capacity Input (mm <sup>2</sup> )	Output (mm <sup>2</sup> )	120	5	6	2 x 6
Power (W)	Current (A)	Flexible cable terminal capacity Input (mm <sup>2</sup> )	Output (mm <sup>2</sup> )										
120	5	6	2 x 6										
1	0 035 67	<b>Modular power supply</b> 230 V $\sim$ - 27 V $\pm$ - 0.6 A 2 modules	1	0 046 89	<b>IP converter</b> For RS 485/Ethernet conversion for connecting electricity meters and measurement control units to an IP network Supply voltage 90-260 V $\sim$ 80/60 HZ Dimension: 2 modules								
1	0 261 36	<b>DPX and DX<sup>3</sup> signalling and control interface</b> 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 DX <sup>3</sup> 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 $\sim$ / $\pm$ RS 485 link (2-wire) Address, speed and coding can be modified with configuration kit.	1	4 149 38	<b>Energy management software for 1 computer (user licence key)</b> Allows remote configuration, test, control and visualization of data collected from EMDX <sup>3</sup> electrical energy meters and multi-function measuring units and CX <sup>3</sup> energy management system on one computer connected to the network 30-day free trial version available for download via E-Catalogue								
1		1: Factory fitted	1	4 149 39	Software licence agreement (user key) for 32 Modbus addresses or 32 pulse modules Software licence agreement (user key) 255 Modbus addresses or 255 pulse modules								
					<b>Energy management multi-support web servers</b> Allow remote configuration, test, control and visualization, via a web browser on PCs, smartphones, web viewers, tablet computers, of data collected from: protection devices (DX <sup>3</sup> add-on modules with integrated measurement control unit, DPX <sup>3</sup> and DMX <sup>3</sup> ), EMDX <sup>3</sup> electricity meters and multi-function measuring units, CX <sup>3</sup> energy management system and Green'up charging stations for electric vehicles.								
					<b>DIN rail mounting</b> Direct IP connection Power supply: 9 to 28 V $\pm$ with the help of a single-phase switching mode power supply Cat.No 1 467 21 (p. 97) to be ordered separately								
			1	4 149 47	For 10 Modbus addresses or 10 pulse modules								
			1	4 149 48	For 32 Modbus addresses or 32 pulse modules								
			1	4 149 49	<b>Fixing on plate</b> For 255 Modbus addresses or 255 pulse modules Supplied with external power supply and fixing brackets								

# EMDX<sup>3</sup> 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: 999999.99 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: 999999.99 kWh

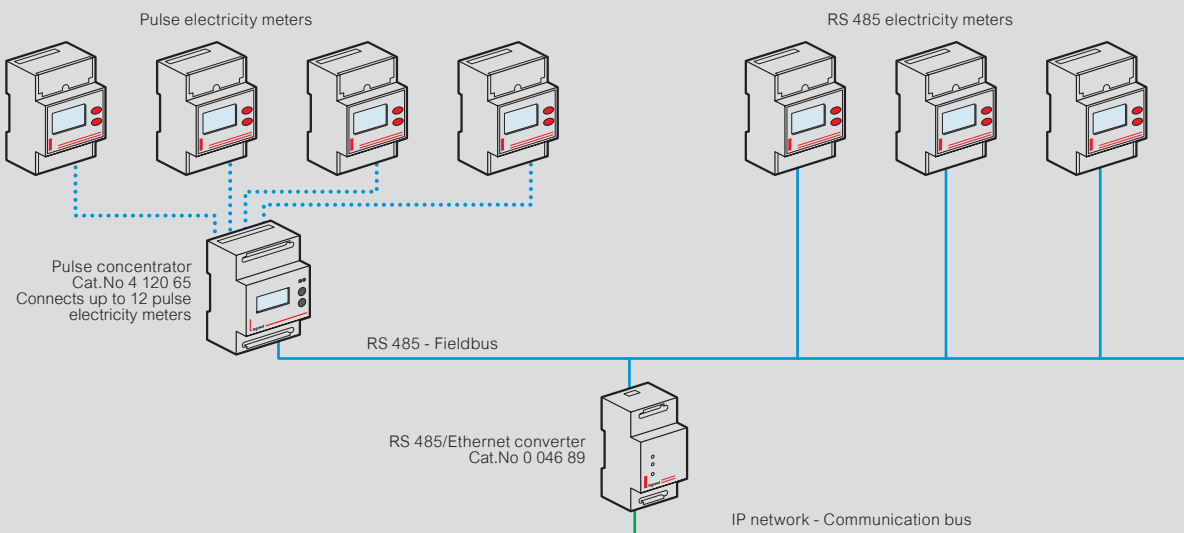
#### Cat.Nos 4 120 74/75

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				●	●	●	●	●	●	●	●			●	●	●	●		
		Active power		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Power	Reactive power		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Apparent power		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Average active power		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Max. average active power value				●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Electrical values	Current		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Voltage		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Frequency		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Power factor		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Dual tariff					●	●	●	●	●	●	●	●	●	●		●	●	●			
Pulse input					●	○	●	○	●	○	●	○			●	○	●	○			
Connection diagnostic															●	●	●	●			
Time of uses	Total				●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	By tariff				●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Communication	Pulse output	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Modbus RS 485		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Certification				●	●	●	●	●	●	●	●	●	●	●		●	●	●			

● Built-in function  
○ 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

# EMDX<sup>3</sup> multi-function measuring units

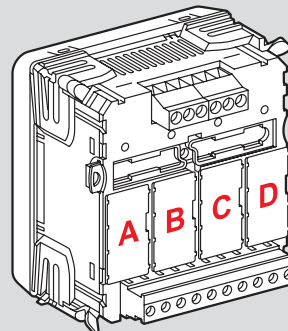
## Technical characteristics

Cat.Nos			4 120 45	4 120 47	4 120 51	4 120 52	4 120 53
Connection	Current measurement terminais	Flexible cable	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
		Rigid cable	6 mm <sup>2</sup>	6 mm <sup>2</sup>	6 mm <sup>2</sup>	6 mm <sup>2</sup>	6 mm <sup>2</sup>
	Other terminais	Flexible cable	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>
		Rigid cable	4 mm <sup>2</sup>	4.5 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
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/Neutral	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	Direct		0.8 s	0.3 s	0.2 s	0.2 s	0.2 s
	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)
Current measurement	Minimum measurement	Primary	5 A	5 A	1 A or 5 A	1 A or 5 A	1 A or 5 A
		Secondary	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	0.2s	0.2s
	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

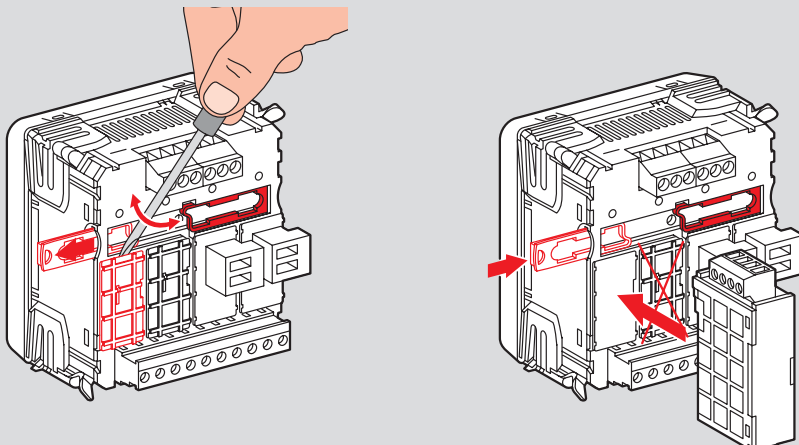
1: except for Cat.No 4 120 53 - 50 Hz only

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

Cat.Nos	Designation	Max. number	EMDX <sup>3</sup> -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

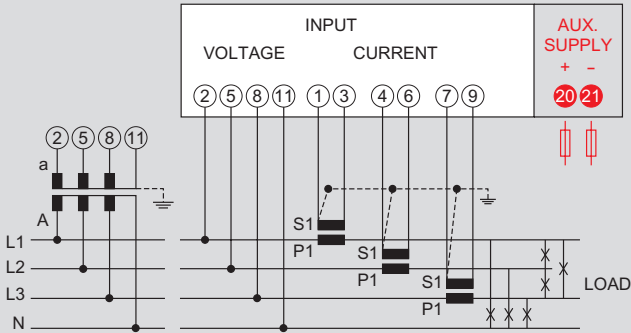


## Fitting modules Cat.Nos 4 120 53

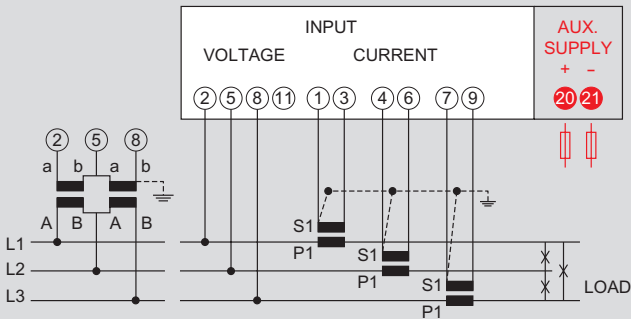


**Connection solutions**

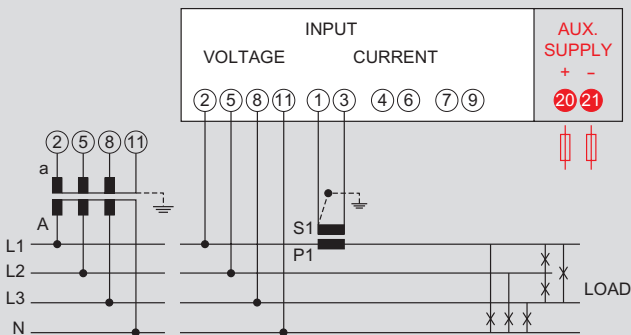
**Unbalanced three-phase network (4-wire)**



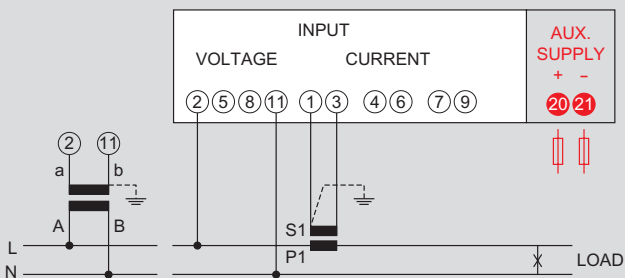
**(3-wire)**



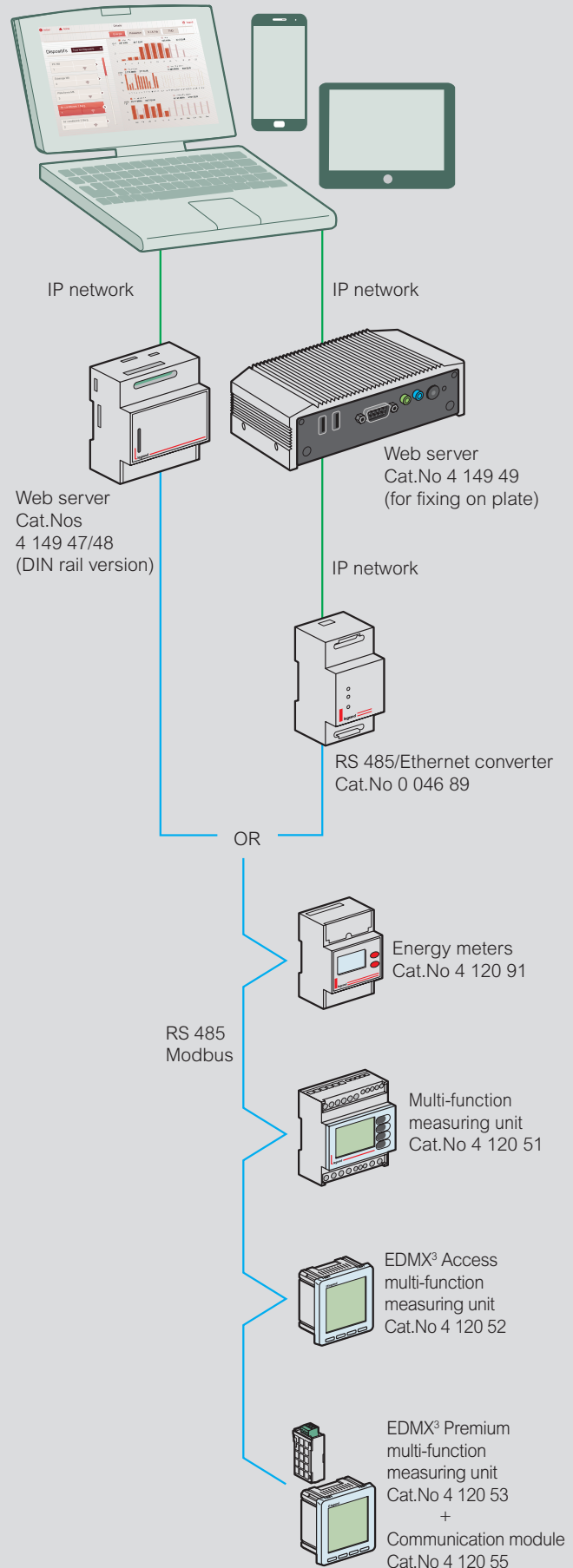
**Balanced three-phase network (3-wire)**



**Single-phase network (2-wire)**

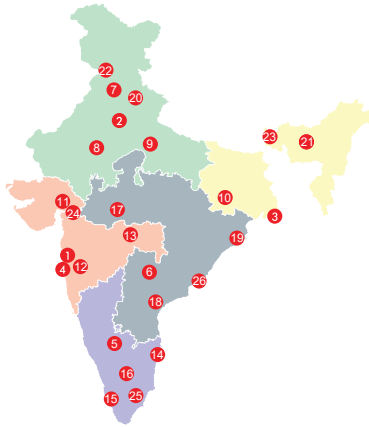


**Wiring example of communication network**









## Branch offices

7. Unit 203, 2nd Floor, Tower- B, Bestech Business Tower, Sector 66, Mohali, **CHANDIGARH**-160066. Tel : 0172 - 5019008
8. 507 - 510, 5th Floor, Soni Paris Point, Jai Singh Highway, Banipark, **JAIPUR**- 302 016. Tel / Fax : (0141) 220 8665 / 666
9. 209-A, 2nd Floor, Cyber Heights, Opp. Indira Gandhi Pratishthan, Vibhuti Khand, Gomti Nagar **LUCKNOW**- 226 010. Tel : (522) 319 2031 / 32 / 33
10. 202 & 203, 2nd Floor, Sunrise, Forum 100, Burdwan Compound, Lalpur, **RANCHI** - 834 001. Tel : (651) 660 5400
11. A 101-102, Mondeal Heights, Besides Novotel Hotel, Sarkhej Gandhinagar Highway [S G Highway], **AHMEDABAD** - 380 015. Tel : (079) 6134 0555
12. 402, Swastik Chambers, Near Ashwamegh Marriage Hall, Behind HP Petrol Pump, Off Karve Road, Erandwane, **PUNE** - 411 004. Tel : (020) 6729 5601 / 602 Fax : (020) 6729 5604
13. Plot No.95, II Floor, Shreyash Heights, VIP Road, Ramdaspath, **NAGPUR** - 440 010. Tel : (0712) 662 7857 / 858 Fax : (0712) 662 7859
14. 10 B, [10th Floor], Prestige Center Court Office Block Vijaya Forum Mall, #183, N.S.K. Salai, Vadapalani **CHENNAI** - 600 026. Tel : (044) 6612 2800 / 2362 3125 / 35 / 45 Fax : (044) 2362 3165
15. J. B. Manjoran Estate, Door No 50/1107A9, 3rd Floor, Bye Pass Junction, Edappally, **COCHIN** - 682 024. Tel : (0484) 280 1921 / 2921, 658 0921 Fax : (0484) 280 1921 / 2921
16. B-5, 1st Floor, Thirumalai Towers, 723, Avanashi Road, **COIMBATORE** - 641 018. Tel : (0422) 222 3634 / 0283 Fax : (0422) 222 3164
17. 204-205, Megapolis Square, 579, M G Road, **INDORE** - 452 001. Tel : (0731) 4999 891 / 892
18. MF-2, Datta's Lords House, Jammi Chettu Street, Mogalrajapuram, **VIJAYAWADA** - 520 010. Tel : (0866) 248 2393/6393/5393
19. Plot No. 359, Saheed Nagar, 2nd Floor, **BHUBANESWAR** - 751 007. Tel : (0674) 254 0623
20. Unit - 1 & 2, Vijay Park, Main Chakrata Road, **DEHRADUN**- 248 001. Uttarakhand. Tel : (0135) 661 6100
21. House No. 97, Ground Floor, Rajgarh Main Road, Opp. City Heart Nursing Home, **GUWAHATI** - 781 007. Tel : (0361) 245 8498

## Area offices

22. Cabin No. 9, Second Floor, Madhok Trade Centre, Madhok Complex, Ferozpur Road, **LUDHIANA** - 141 001. Tel : (0161) 277 0301 / 2 / 3 / 4
23. 94, Udhm Singh Sarani, Ground Floor, Ashrampara, **SILIGURI** - 734 001. Tel : (0353) 264 1067
24. 405, City Centre, Sosyo Circle, Udhana Magdalla Road, **SURAT** - 395 002. Tel : (0261) 263 3861
25. Aparna Towers, 1st Floor, 2/3, Bypass Road, **MADURAI** - 625 010. Telefax : (0452) 230 8414
26. 43-9-205, Near Srikanya Theatre 3rd Floor, Plot No. 10, Subbalaskhmi Nagar, Allipuram Ward, Dondaparthi Area, **VISHAKHAPATNAM** - 530 016. Tel : (0891) 663 5652 / 663 9363

## Head offices

1. 61 & 62, 6th Floor, Kalpataru Square, Kondivita Road, Off Andheri-Kurla Road, Andheri (E), **MUMBAI** - 400 059. Tel : (022) 3041 6200 Fax : (022) 3041 6201 Website : www.legrand.co.in

## Regional sales offices

2. A-25, Mohan Co-operative Industrial Estate, Mathura Road, **NEW DELHI** - 110 044. Tel : (011) 3990 2200, 2699 0046, (011) 2699 0028 / 29 / 30 / 31 Fax : (011) 2699 0047
3. Bhakta Towers, 2nd & 3rd Floor, Plot No. KB 22, Sector-III, Saltlake, **KOLKATA** - 700 098. Tel : (033) 4021 3535 / 36 Fax : (033) 4021 3537
4. C/203, Corporate Avenue, Atul Projects, Near Mirador Hotel, Chakala, Andheri Ghatkopar Link Road, Andheri - East, **MUMBAI** - 400 099. Tel : (022) 3385 6200 / 62301000
5. Ferozes Manor, Situated at 58 Hospital Road, Shivaji Nagar, **BANGALORE**- 560 001. Tel : (080) 6822 0000
6. 205-208, 2nd Floor, Block - II, White House, Kundan Bagh, Begumpet, **HYDER ABAD** - 500 016. Tel : (040) 2341 4398 / 67, 4567 1717 Fax : (040) 4567 1730

## Technical assistance from Legrand

Telephonic technical assistance for selection of products, technical information, guidance, wiring diagrams and estimation is now made available to you at each Regional Office. Contact the Technical Officer of Legrand at the following telephone numbers

- New Delhi** : Tel.: (011) 2699 0028, 3990 2200  
**Kolkata** : Tel.: (033) 4021 3535 / 36  
**Mumbai** : Tel.: (022) 3385 6200  
**Chennai** : Tel.: (044) 3024 7200  
**Hyderabad** : Tel.: (040) 2341 4398 / 67, 4567 1717

For other places, contact the nearest Regional / Branch / Area offices

[customer.care@legrand.co.in](mailto:customer.care@legrand.co.in)



**LIVE THE ADVANTAGE**