

Reference(s) :

from 4 229 00 to 4 229 15;

from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;

from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers



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## 1. USE

DPX<sup>3</sup> platform, for premium segment, is able to cover extended ranges in terms of breaking capacities and rated currents, make protection suitable for different levels of power involved in installations.

DPX<sup>3</sup> platform provide easy assembly procedures during the phase of installation and mounting of accessories, suitable for professional use.

DPX<sup>3</sup> S10 is a modern approach for electronic protection units that magnifies all flexibility allowed by technology.

## 2. RANGE

DPX3 1600 S10

I <sub>n</sub> (A)	DPX <sup>3</sup> 1600 S10			
	36kA		50kA	
	3P	4P	3P	4P
500	422900	422901	422902	422903
630	422920	422925	422930	422935
800	422921	422926	422931	422936
1000	422922	422927	422932	422937
1250	422923	422928	422933	422938
1600	422924	422929	422934	422939
	70kA		100kA	
I <sub>n</sub> (A)	3P	4P	3P	4P
500	422904	422905	422906	422907
630	422940	422945	422950	422955
800	422941	422946	422951	422956
1000	422942	422947	422952	422957
1250	422943	422948	422953	422958
1600	422944	422949	-	-

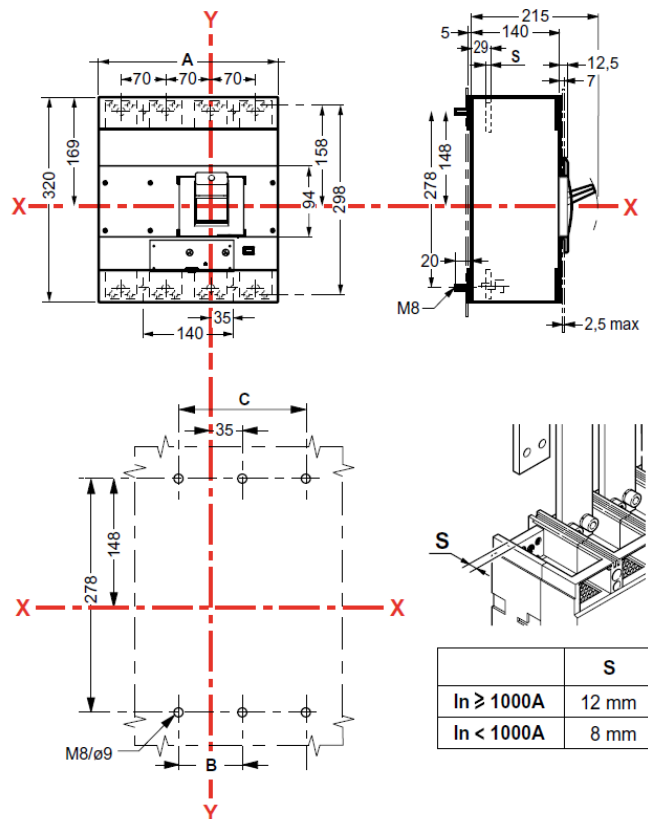
DPX3 1600 S10 with measurement function

I <sub>n</sub> (A)	DPX <sup>3</sup> 1600 S10 +measurement function			
	36kA		50kA	
	3P	4P	3P	4P
500	422908	422909	422910	422911
630	422960	422965	422970	422975
800	422961	422966	422971	422976
1000	422962	422967	422972	422977
1250	422963	422968	422973	422978
1600	422964	422969	422974	422979
	70kA		100kA	
I <sub>n</sub> (A)	3P	4P	3P	4P
500	422912	422913	422914	422915
630	422980	422985	422990	422995
800	422981	422986	422991	422996
1000	422982	422987	422992	422997
1250	422983	422988	422993	422998
1600	422984	422989	-	-

## 3. DIMENSIONS AND WEIGHTS

### 3.1 Dimensions

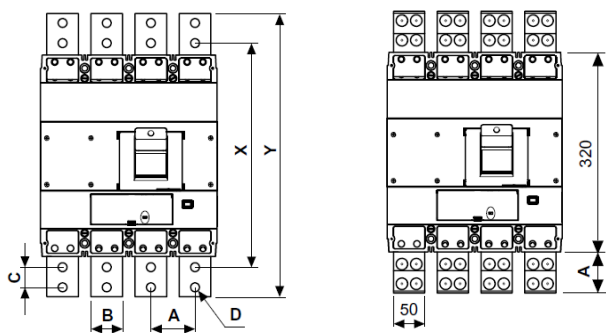
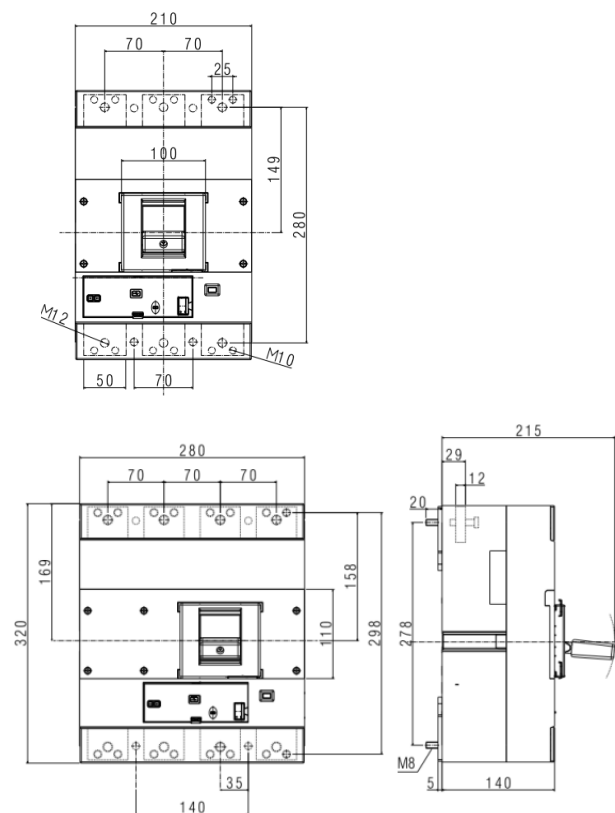
#### Implantation



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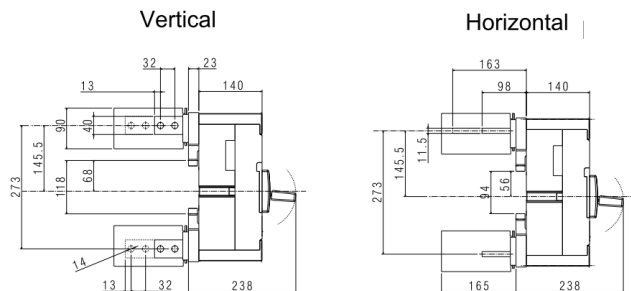
## Front terminals, fixed version



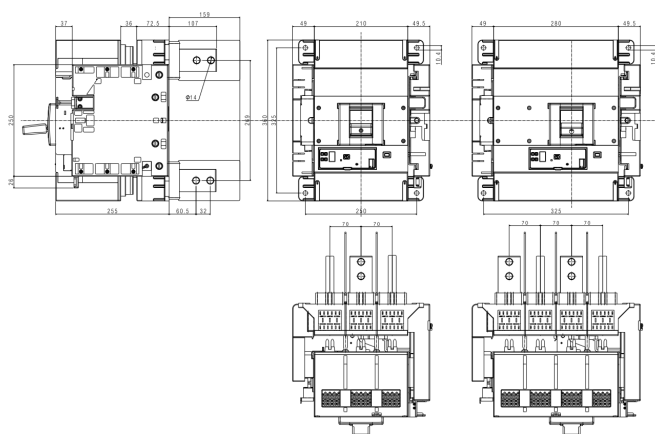
	A	B	C	D	X	Y
	70	50	32	14	358	452
	125	100	25	14,5	544	624

	A	1,5	63
--	---	-----	----

## Side view, flat rear terminals



## Draw-out version, rear terminals



## 3.2 Weights

Configuration	Weights (Kg)			
	3P		4P	
	$I_n \leq 1250A$	$I_n = 1600A$	$I_n \leq 1250A$	$I_n = 1600A$
Circuit breaker (fixed version)	16	17	20	21.5
Draw-out base (with front terminals)*	18	18	22	22
Draw-out base (with rear terminals)*	21.7	21.7	26.2	26.2
Draw-out debro-lift mechanism *	9.9	9.9	11.2	11.2

\* to add to fixed version

## 4. OVERVIEW

### 4.1 Supplied with:

- fixing screws (4 for 3P and 4P)
- screws for connections (6 for 3P and 8 for 4P)
- phase insulators (2 for 3P and 3 for 4P)

## 5. ELECTRICAL CONNECTIONS

### 5.1 Mounting possibilities

On plate:

- Vertical
- Horizontal
- Supply inverter type

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Reference(s) :

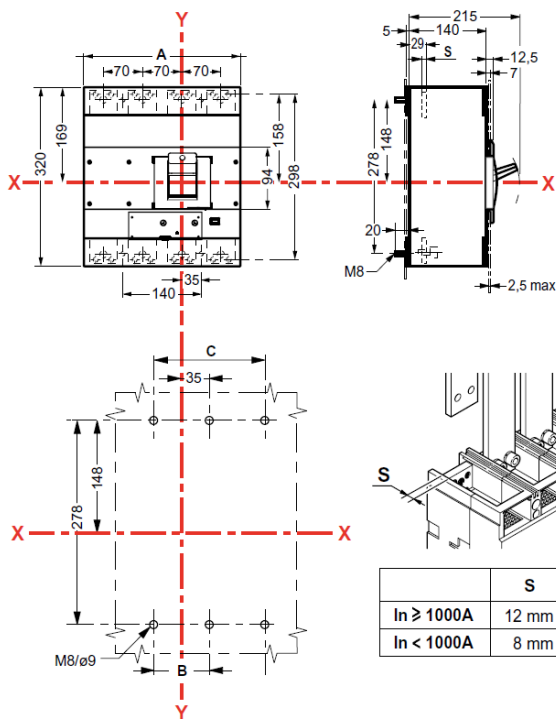
from 4 229 00 to 4 229 15;

from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;

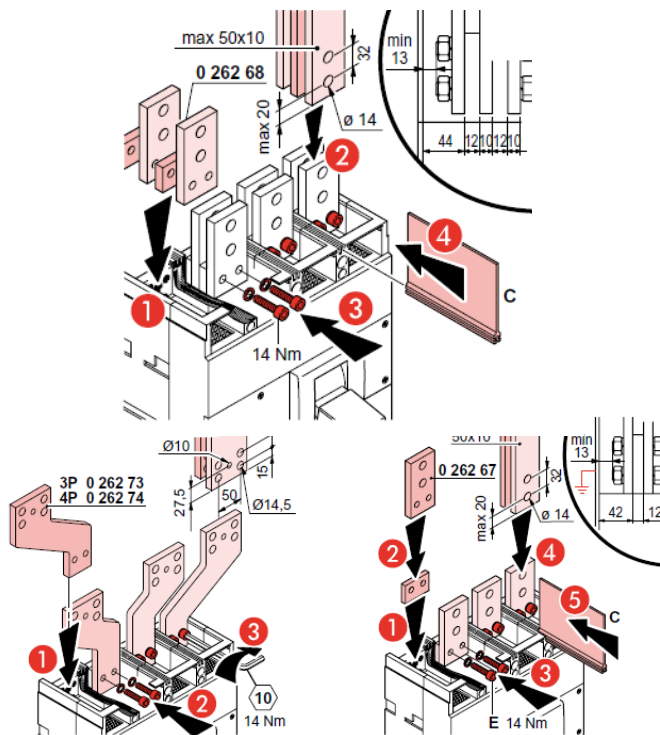
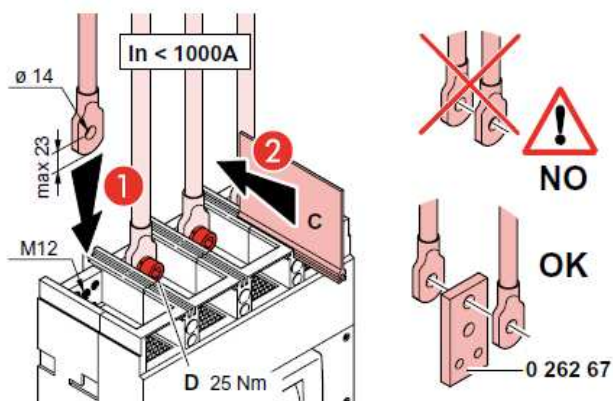
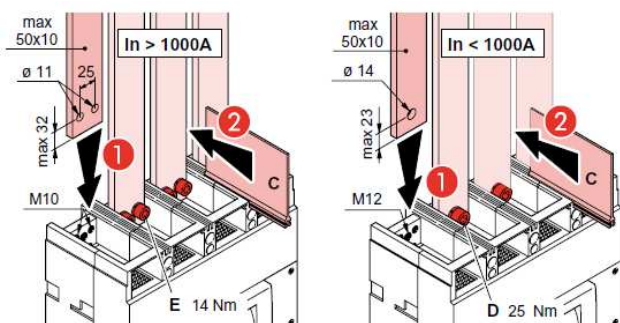
from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

## 5.2 Mounting

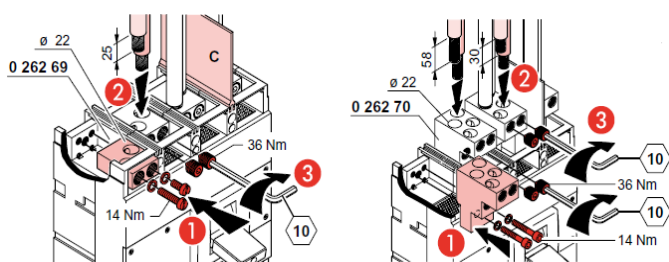
(see instruction sheet for detailed mounting procedures)



### Busbars/cable lugs:



### Cables:



Flexible Conductors		2x95mm <sup>2</sup> 4x95mm <sup>2</sup>	MIN	2x185mm <sup>2</sup> 4x185mm <sup>2</sup>	MAX
Rigid Conductors		2x120mm <sup>2</sup> 4x120mm <sup>2</sup>	MIN	2x240mm <sup>2</sup> 4x240mm <sup>2</sup>	MAX

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## 6. ELECTRICAL AND MECHANICAL CHARACTERISTICS

Circuit Breaker	DPX <sup>3</sup> 1600 S10 F/N/H/L (36kA, 50kA, 70kA, 100kA)
Rated current (A)	500, 630, 800, 1000, 1250, 1600
Poles	3 - 4
Pole pitch (mm)	10-mar
Rated insulation voltage (50/60Hz) U <sub>i</sub> (V)	1000
Rated operating voltage (50/60Hz) U <sub>o</sub> (V)	690
Rated impulse withstand current U <sub>imp</sub>	8
Rated frequency (Hz)	50 - 60
Operating temperature (°C)	-25 ÷ 70
Mechanical endurance (cycles)	10000
Mechanical endurance with motor control	5000
Electrical endurance at I <sub>n</sub> (cycles)	4000
Electrical endurance at 0.5 I <sub>n</sub> (cycles)	8000
Utilization category	B
Suitable for isolation	Yes
Type of protection	Electronic (with display)
Thermal type protection	Adjustable (Mem On/Off)
Ability to enable thermal protection	On/Off
Thermal adjustment I <sub>t</sub> [x I <sub>n</sub> ]	0.2+1 (steps 1A)
Thermal adjustment t <sub>t</sub> [s]	0.04+30 (steps 40ms, @6lr)
Thermal time tripping at 2xI <sub>n</sub> (single pole) [s]	0.44s±20% if tr = 0.04s@6lr
Magnetic type protection	Adjustable
Ability to enable magnetic protection	On/Off
Magnetic adjustment I <sub>sd</sub> [x I <sub>t</sub> ]	1.5+10 (steps 1A)
Time adjustment t <sub>sd</sub> (t=k o P't=k) [s]	40+480 (steps 40ms)
Minimum release single pole	1 I <sub>sd</sub>
Instantaneous electronic adjustment I <sub>t</sub>	2+15 (steps 1A) & Isf=15kA (@In<=1250A) and sf=20kA (@In<=1600A)
Neutral protection for 4P (%I <sub>th</sub> of phase pole)	0FF-50-100-150-200
Earth leakage trip type	Internal
Ability to enable earth leakage trip	On/Off
Earth leakage trip IΔn /I <sub>n</sub> [A /x In]	- / 0.2 ÷ 1 (steps 0,1In)
Earth leakage trip Δt / t <sub>t</sub> (t=k o P't=k) [s]	- / 0.08 ÷ 1 (steps 40ms)
Dimensions (W x H x D) (mm)	140 x 260 x 105 (3P) 183 x 260 x 105 (4P)

The maximum admissible (absolute) temperature is 125°C  
(for detail, see IEC 60947-1 and 60947-2)

DPX<sup>3</sup> product line has the possibility to supply both in "direct" and "reverse" feed.

If "direct", the word "LINE" needs to be marked on supply terminals (normally the top ones), as well as "LOAD" has to be written on the output terminals to be connected to the load (normally the bottom ones).

If "reverse", any indications about LINE / LOAD are NOT expected on the product.

## 6.1 Breaking capacity (kA)

U <sub>e</sub> /I <sub>cu</sub> (letter)	Breaking capacity (kA) & I <sub>cs</sub>			
	3P-4P			
	36kA (F)	50kA (N)	70kA (H)	100kA (L)
220/240 V AC	70	100	105	150
380/415 V AC	36	50	70	100
440/460 V AC	30	45	65	80
480/500 V AC	25	35	45	55
480/550 V AC	20	24	28	30
600 V AC	20	24	28	30
690V AC	14	20	22	25
I <sub>cs</sub> (% I <sub>cu</sub> )	100	100	100	70
Rated making capacity under short circuit I <sub>cm</sub>				
I <sub>cm</sub> (kA) at 415V	76.5	105	154	220
220/240 V AC	70	100	105	150
480/500 V AC	25	35	45	55
690 V AC	14	20	22	25

## 6.3 Rated current (I<sub>n</sub>) at 40°C / 50°C

I <sub>n</sub> (A)	Phases limit trip current			
	thermal (I <sub>t</sub> )		magnetic (I <sub>t</sub> )	
	0.2 x I <sub>n</sub>	1 x I <sub>n</sub>	1.5 x I <sub>t</sub>	10 x I <sub>t</sub>
500	100	500	750	5000
630	126	630	945	6300
800	160	800	1200	8000
1000	200	1000	1500	10000
1250	250	1250	1875	12500

\* For neutral adjustment, as explained in technical sheet, please consider the values ratios 100% on set currents.

## 6.3 Load operations

Force on handle	In ≤ 400A	In ≥ 500A
Opening operation (N)	80	130
Closing operation (N)	180	210
Restore operation (N)	145	200

## 6.4 Electrodynamic forces

The table below shows an indication of suggested distances to keep between the breaker and the first fixing point of the conductor and bars in order to reduce the effects of the electrodynamic stresses that may be created during a short circuit. In the realization of anchorage system it is recommend the use of isolators suitable for the type of conductor used and the operating voltage.

I <sub>cc</sub> (kA)	Maximum Distance (mm)
36	350
50	300
70	250
100	200

According to conductor type and bar system (except Legrand bar kits), the choice of the distance to keep is to be calibrated by the installer. Also installer must take into account the weight of the conductors so that this does not affect the electrical junction between the conductor itself and the connection point.

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## 6.5 Power losses per pole under I<sub>n</sub>

	Power losses (W)					
	I <sub>n</sub> (A)					
	500	630	800	1000	1250	1600
Front terminals, fixed version	11.6	18.5	29.8	47.6	74.4	65.3
Rear terminals, fixed version	11.5	18.3	29.4	47.0	73.4	58.9
Front terminals, draw-out version	20.0	31.8	51.2	82.0	128.1	112.6
Rear terminals, draw-out version	15.0	23.8	38.4	60.0	93.8	97.3

Note: power loss in the table above are referred and measured as described in the standard IEC 60947-2 (Annex G) for circuit-breakers. Values in the table are referred to a single phase.

## 6.6 DERATINGS

### 6.6.1 Temperature

Rated current and his adjustment has to be considered relating to a rise or fall of ambient temperature and to a different version or installation conditions. The table below indicates the maximum long-time (LT) protection setting depending on the ambient temperature.

I <sub>n</sub> (A)	Temperature Ta (°C)		
	up to 50	60	70
500	500	500	500
630	630	630	630
800	800	800	720
1000	1000	1000	900
1250	1250	1250	938
1600	1600	1600	1360

For derating temperature with other configurations, see table A.

### 6.6.2 Specific condition use

#### Climatic conditions

according to IEC/EN 60947-1 Annex Q, Cat. F subject to temperature, humidity, vibration, shock and salt mist.

#### Electromagnetic disturbances (EMC)

for DPX<sup>3</sup> 1600 circuit breakers, according to IEC/EN 60947-2 Annex F

#### Pollution degree

for DPX<sup>3</sup> 1600 circuit breakers, degree 3, according to IEC/EN 60947-2

### 6.6.3 Altitude

Altitude derating for DPX<sup>3</sup> and DPX<sup>3</sup>-I

Altitude (m)	2000	3000	4000	5000
U <sub>e</sub> (V)	690	590	520	460
I <sub>n</sub> (A) (T <sub>a</sub> = 40°C/50°C)	1 x I <sub>n</sub>	0.98 x I <sub>n</sub>	0.93 x I <sub>n</sub>	0.9 x I <sub>n</sub>

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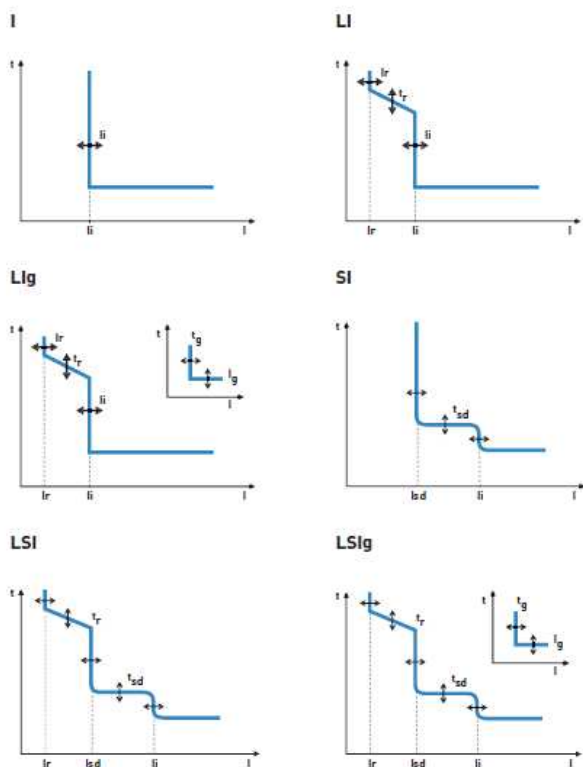
## 7.ELECTRONIC PROTECTION S10

Electronic DPX<sup>3</sup> circuit breakers equipped with S10 protection units are fully configurable. They can be used to adapt settings as closely as possible to the requirements of your installation, either by enabling/disabling the different protection devices (tripping time delays and currents), or by altering the different trip thresholds.

The tripping curve is therefore fully customised to suit the real-life conditions of each project.

Thanks to the internal battery, the protection unit can be set even if the circuit breaker is de-energised. Tests and troubleshooting can be done directly via the circuit breaker LCD screens.

A single circuit breaker can operate according to different tripping curves depending on the settings, as explained in the following images:



- $I_r$  Long time protection against overloads
- $t_r$  Long time protection delay
- $I_{sd}$  Short time protection against short circuits
- $t_{sd}$  Short time protection delay
- $I_i$  Instantaneous protection against high-intensity short-circuits
- $I_g$  Earth fault current
- $t_g$  Earth fault current protection delay
- IN Neutral protection

See relative instruction sheet for details

## Settings on DPX<sup>3</sup> 250 HP, DPX<sup>3</sup> 630 and DPX<sup>3</sup> 1600 S10 electronic protection

There are 2 options for configuring setting: locally on the circuit breaker or on a PC, smartphone or tablet:

Settings	DPX <sup>3</sup> 250 HP, DPX <sup>3</sup> 630 and DPX <sup>3</sup> 1600 with S10 electronic protection	
	Locally on the device	By software or app
$I_r$	0.2 to 1 x $I_n$ , in steps of 1 A	0.2 to 1 x $I_n$ - OFF, in steps of 1 A
$t_d$	DPX <sup>3</sup> 250 HP: 3 - 5 - 10 - 15 s DPX <sup>3</sup> 630 and 1600: 3 to 30 s (7 steps)	DPX <sup>3</sup> 250 HP: 3 to 15 s, in steps of 40 ms DPX <sup>3</sup> 630 and 1600: 3 to 30 s in steps of 40 ms
$I_{sd}$	1.5 to 3 x $I_r$ , in steps of 0.5 x $I_r$ 3 to 10 x $I_r$ , in steps of $I_r$	1.5 x $I_r$ to 10 x $I_n$ - OFF, in steps of 1 A
$t_{sd}$ (t=k, I2t=k)	40 to 480 ms (7 steps)	40 to 480 ms, in steps of 40 ms
$I_i$ (t=k)	-	2 to 15 x $I_n$ - OFF, in steps of 1 A
$I_g$	0.2 to 1 x $I_n$ , in steps of 0.1 x $I_n$	0.2 to 1 x $I_n$ - OFF, in steps of 0.1 x $I_n$
$t_g$ (t=k, I2t=k)	80 to 480 ms and 1 s (6 steps)	80 ms to 1 s, in steps of 40 ms

There are several ways to configure the various settings: directly on the protection units (using the +/- and >/< buttons on the front face), on a PC with Power Control Station software installed, or on a tablet or smartphone via the EnerUp+ Project app.

Power Control Station software for PC and the EnerUp+ Project app for smartphone/tablet can be used to exchange data with the DPX<sup>3</sup> S10 protection unit.

The software and app can be used to:

- monitor the status of the circuit breaker
- display information (firmware and device versions, alarms, measurements, parameters, fault log, settings)
- configure the different protection devices [1]
- update the protection unit firmware [2]
- generate reports based on the data stored and read by the protection unit [1]
- run diagnostic tests
- upload data linked to your profile and installation to the Cloud (with the EnerUp + Project app only)

[1] With the Power Control Station software only

[2] For Legrand technical support via the Power Control Station software only

Together with above protections, activated in case of electric faults, the trip unit also integrates self-protection for:

- Over temperature : in case the internal temperature of protection unit exceed 95°C;
- Auto diagnostics: in case embedded watchdog circuit detects internal malfunctions, which could compromise the correct working of microcontroller.

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With electronic DPX<sup>3</sup> 250 HP, 630 and 1600 S10 with integrated measurement, it is very easy to monitor the parameters and consumption of the different circuits in the installation.

Electronic DPX<sup>3</sup> circuit breakers equipped with S10 protection units with integrated measurement can be used to display the current, voltage, active and reactive power, frequency and power factor values, as well as the energy consumption.

Alarms can be programmed on some parameters, including minimum and maximum voltage, phase unbalance, and minimum and maximum frequency.

The measured values are displayed directly on the LCD screen on the front of the equipment.

The measurement data can also be displayed on a PC equipped with Power Control Station software or remotely on a smartphone or tablet via the EnerUp+ Project app.

In the electronic unit protection, an energy metering central unit is integrated.

The possible parameters that can be measured are listed in the following table:

Measured	UNIT	DESCRIPTION
$I_1$	A	L1 realtime measured value
$I_2$	A	L2 realtime measured value
$I_3$	A	L3 realtime measured value
$I_N$ (4P)	A	N realtime measured value
$I_G$	A	G realtime measured value
$U_{12}$ $U_{23}$ $U_{31}$ (3P)	V	Phase to Phase Voltage
$V_{12}$ $V_{23}$ $V_{31}$ (4P)	V	Voltage
Freq.	Hz	Frequency
$P_{Tot}$	kW	Active Power
$Q_{Tot}$	kvar	Reactive Power
PF		Power Factor
$E_p \downarrow$	kWh	Consumed active energy
$E_p \uparrow$	kWh	Returned active energy
$E_q \downarrow$	kvar h	Consumed reactive energy
$E_q \uparrow$	Kvar h	Returned reactive energy
$THDU_{12}/THDU_{23}/THDU_{31}$ (3P)	%	Chained Voltage THD
$THDV_{1N}/THDV_{2N}/THDV_{3N}$ (4P)	%	Voltage THD
$THDI_1/THDI_2/THDI_3/THDI_N$	%	Current THD
MEM	A - °C	Cause of the last intervention and its value

Function performance class according to IEC 61557-12

Function symbol	Performance class	Measurement range					Other complementary characteristics				
		DPX <sup>3</sup> 1600A					$I_{max}$ PMD				
$I_n$		630A	800A	1000A	1250A	1600A	630A	800A	1000A	1250A	1600A
P	1	0.5kW	0.5kW	0.5kW	0.5kW	0.5kW	750A	960A	1200A	1500A	1920A
		900kW	1.15MW	1.4MW	1.8MW	2.3MW	$I_b=400A, U_n=400V, f_r=50Hz$				
$Q_v$	2	0.5kvar	0.5kvar	0.5kvar	0.5kvar	0.5kvar	750A	960A	1200A	1500A	1920A
		900kW	1.15MW	1.4MW	1.8MW	2.3MW	$I_b=250A, U_n=400V, f_r=50Hz$				
$E_g$	1	0...999 GW/h					750A	960A	1200A	1500A	1920A
							$I_b=400A, U_n=400V, f_r=50Hz$				
$E_{IV}$	2	0...999 GW/h					750A	960A	1200A	1500A	1920A
							$I_b=400A, U_n=400V, f_r=50Hz$				
f	0.02	50..60 Hz					-				
I	1	20A	20A	20A	20A	20A	750A	960A	1200A	1500A	1920A
		750A	950A	1200A	1500A	1950A	$I_b=400A, U_n=400V, f_r=50Hz$				
$I_N$	1	20A	20A	20A	20A	20A	750A	960A	1200A	1500A	1920A
		750A	950A	1200A	1500A	1950A	$I_b=400A, U_n=400V, f_r=50Hz$				
$U(3P), V(4P)$	0.5	88...690V					-				
$P_{FA}$	0.5	-					750A	960A	1200A	1500A	1920A
							$I_b=400A, U_n=400V, f_r=50Hz$				
$THDU(3P), THDV(4P)$	5	110...690V					-				
THD <sub>I</sub>	5	400A	400A	400A	400A	400A	-				
		630A	800A	1000A	1250A	1600A					

## General remarks on protection unit

The protection units S10 are normally supplied by the internal current transformers (CTs).

When the current flowing through the circuit breaker is greater than 12% of the maximum power (20% of  $I_n$  for single phase load), the internal current supply ensures all operation of the protection unit, included LED status, display indications and diagnostic functions (e.g. trip test).

Display backlight and integrated measure (if available) are instead guaranteed starting from 20% of the maximum power (35% of  $I_n$  for single phase load), in absence of any other supply. In any case the external power supply is strongly recommended for the correct working of measurement, as well as RS485 communication.

To ensure the same performance when the load is less than 12% of the maximum power (20% of  $I_n$  for single phase load) to grant complete functions, one of the following optional power supplies can be used:

- external Auxiliary power supplier or, alternatively, Modbus/EMS communication interface.
- power supply temporarily connected to frontal USB socket, connected to a 5V DC power bank, Dongle BLE or PC.



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## 8. CONFORMITY

DPX<sup>3</sup> range of product concerning circuit-breakers exceed compliance with the IEC/EN standard 60947-2.

Certification available by IECEE CB-scheme or LOVAG Compliance scheme.

Marks as CCC (China), EAC (Eurasian Federation) or different local certification are available.

DMX<sup>3</sup> are in conformity with the Lloyds Shipping Register, RINA and Bureau Veritas Marine.

DMX<sup>3</sup> respect the European Directives REACH, RoHS, RAEE and Product Environment Product (PEP Ecopassport) are available.

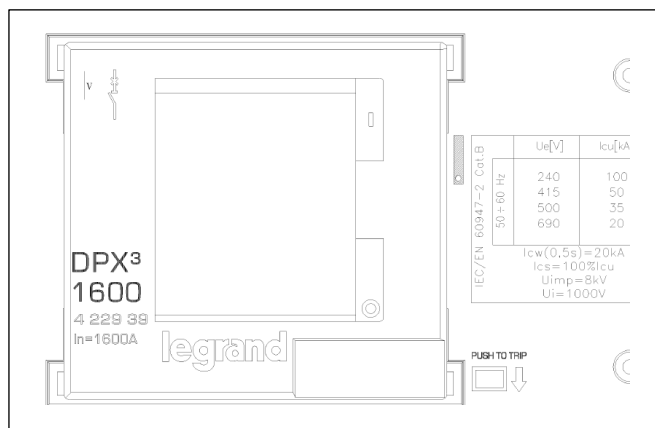
For specific information, please contact Legrand support.

### 8.1 Marking

Product (both circuit breakers and switch disconnectors) are provided with labelling in full conformity to the referred standard and directives requirements by laser or sticker labels as:

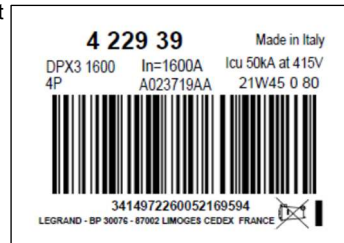
#### Product laser label on front

- Manufacturer responsible
- Denomination, type product, code
- Standard conformity
- Standard characteristics declared
- coloured identification of I<sub>cu</sub> at 415V



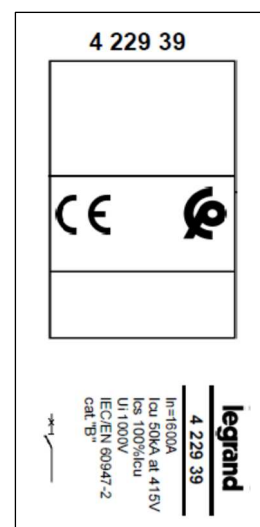
#### Product sticker label on side

- Manufacturer responsible
- Denomination and type product
- Standard conformity
- Mark/Licence (if any)
- Directive requirements
- bar code identification product
- Manufacturing Country



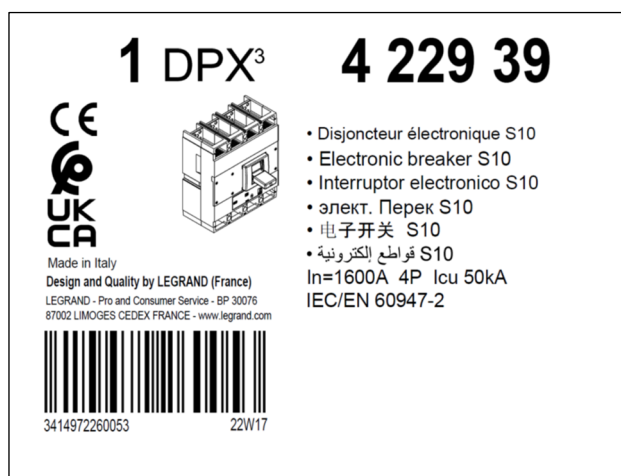
#### Mark sticker label on side

- Product code
- Mark/Licence (if any)
- Country deviation, if any



#### Packaging sticker label

- Manufacturer responsible
- Denomination and type product
- Standard conformity
- Mark/Licence (if any)
- Directive requirements
- bar code identification product





# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

## 9. EQUIPMENTS AND ACCESSORIES

### 9.1 Releases (for DPX<sup>3</sup> 630 / DPX<sup>3</sup> 1600)

- shunt releases with voltage:
 

24 Vac and dc	ref. 4 222 39
48 Vac and dc	ref. 4 222 40
110÷130 Vac and dc	ref. 4 222 41
220÷250 Vac and dc	ref. 4 222 42
380÷440 Vac and dc	ref. 4 222 43

Shunt releases electrical characteristics	
Rated voltage (U <sub>c</sub> )	Both ac and dc: 24V/48V/110÷130V/220÷250V/380÷440V
Voltage range (%U <sub>c</sub> )	70 ÷ 110
Intervention time (ms)	≤ 50
Power consumption (W/VA)	300
Minimum opening time (ms)	50 ms
Insulation voltage (kV)	2,5

- undervoltage releases with voltage:
 

24 V dc	ref. 4 222 44
24 V ac	ref. 4 222 45
48 V dc	ref. 4 222 46
110 - 125 V ac	ref. 4 222 47
220 - 240 V ac	ref. 4 222 48
380 - 415 V ac	ref. 4 222 49

Undervoltage releases electrical characteristics	
Rated voltage (U <sub>c</sub> )	ac: 24V/110÷125V/220÷240V/380÷415V dc: 24V/48V
Voltage range (%U <sub>c</sub> )	85 ÷ 110
Minimum opening time (ms)	50
Power consumption (W/VA)	1,6 / 5

- time-lag undervoltage releases (800 ms)  
*Time-lag modules with voltage:*

230 V ac	ref. 0 261 90
400 V ac	ref. 0 261 91

Universal Release ref. 4 226 23  
 (to be equipped with a time-lag module 0 261 90/91)

### 9.2 Auxiliary contacts (for DPX<sup>3</sup> 630 / DPX<sup>3</sup> 1600)

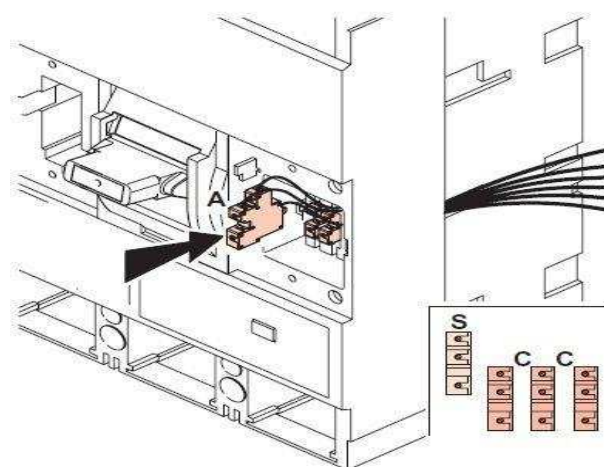
Changeover switch 3A – 250 VAC ref. 4 210 11

To show the state of the contacts or opening of the DPX<sup>3</sup>/DPX<sup>3</sup> -I on a fault:

- Auxiliary contact (standard) **OC**
- Fault signal **CTR**

Auxiliary contact electrical characteristics		
Rated voltage (V <sub>n</sub> )	V (ac or dc)	24 to 250
Intensity (A)	24 V dc	5
	48 V dc	1.7
	110 V dc	0.5
	230 V dc	0.25
	110 V ac	4
	230/250 V ac	3

Configurations:  
 DPX<sup>3</sup> 1600 → 3 auxiliary contacts + 1 fault signal + 1 release



To get more information on auxiliary mounting procedures, please refer to product instruction sheet.

### 9.3 Universal keylocks

These keylocks must be used for all the accessories that can be locked:

- rotary handle
- motor operator
- plug-in mechanism
- draw-out mechanism

For each of these, a specific accessory (indicated in the specific section of this datasheet) must be added in order to get the complete locking kits for the specific application.

- 1 lock + 1 flat key with random mapping ref. 4 238 80
- 1 lock + 1 flat key with fixed mapping (EL43525) ref. 4 238 81
- 1 lock + 1 flat key with fixed mapping (EL43363) ref. 4 238 82
- 1 lock + 1 star key with random mapping ref. 4 238 83

# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

## 9.4 Rotary handles

*Direct on DPX<sup>3</sup> (with auxiliary option)*

- Standard (black) ref. 0 262 61

*Vari-depth handle IP55 (with auxiliary option)*

- Standard (black) ref. 0 262 83
- For emergency use (red / yellow) adapting on standard handle ref. 0 262 84

*Locking accessories (for vary-depth handle with auxiliary option)*

- Key lock accessory for vari-depth rotary handle ref. 4 228 07

Ref. 4 238 07 must be used with universal keylocks to get the complete locking kit for rotary handle

## 9.5 Motor-driven handles

**Factory assembled**

Front operated

- Voltage 230 V AC ref. 0 261 54

**Customer assembled**

Front operated

- Voltage 24 V AC and DC ( $I_n \leq 1250A$ ) ref. 0 261 24
- Voltage 48 V AC and DC ( $I_n \leq 1250A$ ) ref. 0 261 25
- Voltage 110 V AC and DC ( $I_n \leq 1250A$ ) ref. 0 261 26
- Voltage 220 V AC and DC ( $I_n \leq 1250A$ ) ref. 0 261 23
- Voltage 24 V AC and DC ( $I_n = 1600A$ ) ref. 0 261 19
- Voltage 48 V AC and DC ( $I_n = 1600A$ ) ref. 0 261 28
- Voltage 110 V AC and DC ( $I_n = 1600A$ ) ref. 0 261 29
- Voltage 220 V AC and DC ( $I_n = 1600A$ ) ref. 0 261 27

Locking accessories

- Key lock accessory for motor operator ref. 4 228 06

Ref. 4 228 06 must be used with universal keylocks to get the complete locking kit for motor operator

## 9.6 Mechanical accessories

Phase insulators

- Set of 3 ref. 0 262 66

Sealable terminal shields

- Set of 2 3P ref. 0 262 64
- Set of 2 4P ref. 0 262 65

Padlock

- Accessories to lock in open position ref. 0 262 60

Terminal covers to guarantee IP20

- Set of 2 3P ref. 4 225 90
- Set of 2 4P ref. 4 225 91
- External neutral ref. 4 225 92

## 9.7 Connection accessories

Cage terminals

- Set of 4 terminals for cables 2x240mm<sup>2</sup> max (rigid) or 2x185mm<sup>2</sup> max (flexible) (Cu/Al) ref. 0 262 69
- Set of 4 terminals for cables 4x240mm<sup>2</sup> max (rigid) or 4x185mm<sup>2</sup> max (flexible) (Cu/Al) ref. 0 262 70

Extended front terminals

- Short terminals for 500 - 1250A (2 bars max. per pole) ref. 0 262 67
- Long terminals for 1600A (3 bars max. per pole) ref. 0 262 68

Spreaders

- Set of 3 (incoming or outgoing 3P) ref. 0 262 73
- Set of 4 (incoming or outgoing 4P) ref. 0 262 74

Rear terminals

(use to connect fixed version with front terminals into fixed version with rear terminal)

- Set of swivel terminals, incoming or outgoing
  - 3P ref. 0 263 80
  - 4P ref. 0 263 82
- Set of flat rear terminals, incoming or outgoing
  - 3P ref. 0 263 81
  - 4P ref. 0 263 83

## Cage terminal use specifications

DPX <sup>3</sup> 1600							
Type of cage terminal	Cable standard suggested cross section (mm <sup>2</sup> )*			Dimensions limits of cable for cage terminals			
	In (A)	Cu	Al	MIN cross section (mm <sup>2</sup> )		MAX cross section (mm <sup>2</sup> )	
				Flexible	Rigid	Flexible	Rigid
Standard	500	2x150	2x240	95	70	185	240
	630	2x185	\				
	800	2x240	\				
	1000	\	\				
	1250	\	\				
High capacity	500	2x150	2x240	95	70	185	240
	630	2x185	3x240				
	800	2x240	3x240				
	1000	4x150	4x240				
	1250	4x185	\				
	1600	4x240	\				

\* The suggested cross section are in compliance with standard IEC60947-1 (ed.6 2020/04) and IEC60947-2 (ed.5.1 2019/07)

## 9.8 Draw-out version

(A DPX<sup>3</sup> draw-out version is a plug-in DPX<sup>3</sup> fitted with a "Débro-lift" mechanism which can be used to withdraw the DPX<sup>3</sup> while keeping it on its base)

Draw-out base

Base for DPX<sup>3</sup> 1600 equipped with "Débro-lift" mechanism

- Front terminals
  - 3P ref. 4 225 86
  - 4P ref. 4 225 87
- Rear terminals
  - 3P ref. 4 225 88
  - 4P ref. 4 225 89

# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

## "Débro-lift" mechanism

To be fitted on a DPX<sup>3</sup> 1600 fixed version in order to obtain the movable part of a drawout circuit breaker

- Mobile part for draw-out version
  - 3P ref. 4 225 93
  - 4P ref. 4 225 94

## Key lock for "Débro-lift" mechanism

- One key for DPX<sup>3</sup> only  
(enable locking in draw - out position)
- Key lock accessory for draw-out (frontal masks for motor operator or rotary handle) ref. 4 228 09
- Key lock accessory for draw-out ref. 4 228 10

Ref. 4 228 09 and 4 228 10 must be used with universal keylocks to get the complete locking kit for draw-out version

## Accessories for "Débro-lift" mechanism

- Isolated handle for drawing-out ref 0 265 75
- Signal contact (plugged-in / drawn-out) ref 0 265 74
- Set of connectors (8 contacts) ref 0 263 99
- Set of connectors (6 contacts) ref 0 263 19
- Support plate for draw-out version ref 4 225 95
- Automatic auxiliary contacts (12 pin) D/O version ref.4 222 30

## Plate for transfer switches (factory assembled)

(A transfer switch plate is composed of one plate with interlock for 2 devices)

- Plate for breaker or trip-free switch fixed version ref. 0 264 10
- Plate for breaker or trip-free switch plug-in and draw-out version ref. 0 264 05

## 9.9 Specific accessories for electronic version

### Auxiliary power supply

- For supplying electronic units ref. 4 210 83

Is used to supply DPX<sup>3</sup> electronic circuit breakers S2/Sg with / without earth leakage module and with / without energy metering central unit. It is mandatory in case of electronic breakers with integrated measure and not interconnected in a supervision system (MODBUS network not requested) to correctly manage the measure functions

### Technical characteristics:

- Input voltage: 24V ad/dc (+/- 10%)
- Enclosure: 2 DIN modules
- Output: up to 250mA (to supply many circuit breakers according to the following table):

4 210 83	DPX <sup>3</sup> 250 / 250HP / 630 / 1600	[mA]
I <sub>out</sub> MAX = 250 mA	Electronic/Electronic + RCD (S2/Sg)	50
	Electronic/Electronic + RCD with power metering (S2/Sg)	62.5
	Electronic/Electronic + RCD (S10)	70
	Electronic/Electronic + RCD with power metering (S10)	83

According to single absorptions, it can be possible to connect more than one breaker

## MODBUS communication

- RS485 MODBUS communication interface ref. 4 210 75

Is used for sharing on MODBUS network all information managed by DPX<sup>3</sup> electronic circuit breakers S2/Sg with / without earth leakage module and with / without energy metering central unit.

### Technical characteristics:

- USB local PC connection
- Input voltage: 24V ad/dc (+/- 10%)
- Enclosure: 1 DIN modules
- MODBUS address configuration / transmission mode / transmission speed by physic configurators
- Output relay (220V - 0,2A): to signal tripped position

Consumption: 90mA

*It is possible to connect only one breaker to the interface.*

*In case of use of MODBUS interface 4 210 75, the external power supply module 4 210 83 is not necessary because the external power is already provided by the MODBUS module*

## DPX<sup>3</sup> electronic interface - EMS CX<sup>3</sup>

- For connecting electronic DPX<sup>3</sup> S10 (250HP, 630,1600) to an EMS communication network. All the informations managed by circuit breaker's electronic card will be shared on the EMS network  
 Dimension: 1 module  
 Power supply: with EMS CX<sup>3</sup> power supply module 4 149 45  
 Address can be modified and set locally by DIP switches or remotely with the help of the EMS configurator software

ref. 4 238 90

## Bluetooth communication key

USB key for BLE communication with electronic DPX<sup>3</sup> S10 (250 HP, 630, 1600) to configure, monitor and manage it remotely through App Connection port USB on front of the circuit breaker

ref. 0 283 10

*EnerUp + Project App for smartphone and tablet available on Apple Store and Google Play Configuration, monitoring and management software (PCS) available for download via e-catalogue (does not require the use of Bluetooth communication key Ref.0 283 10)*

## Modular power supply

- 230 V ± - 27 V= - 0.6 A (2 modules) ref. BT-E49

## Touch screen

- To show data collected by DX<sup>3</sup>, DPX<sup>3</sup>, DMX<sup>3</sup>, EMDX<sup>3</sup>. It can manage up to 8 devices ref. 0 261 56

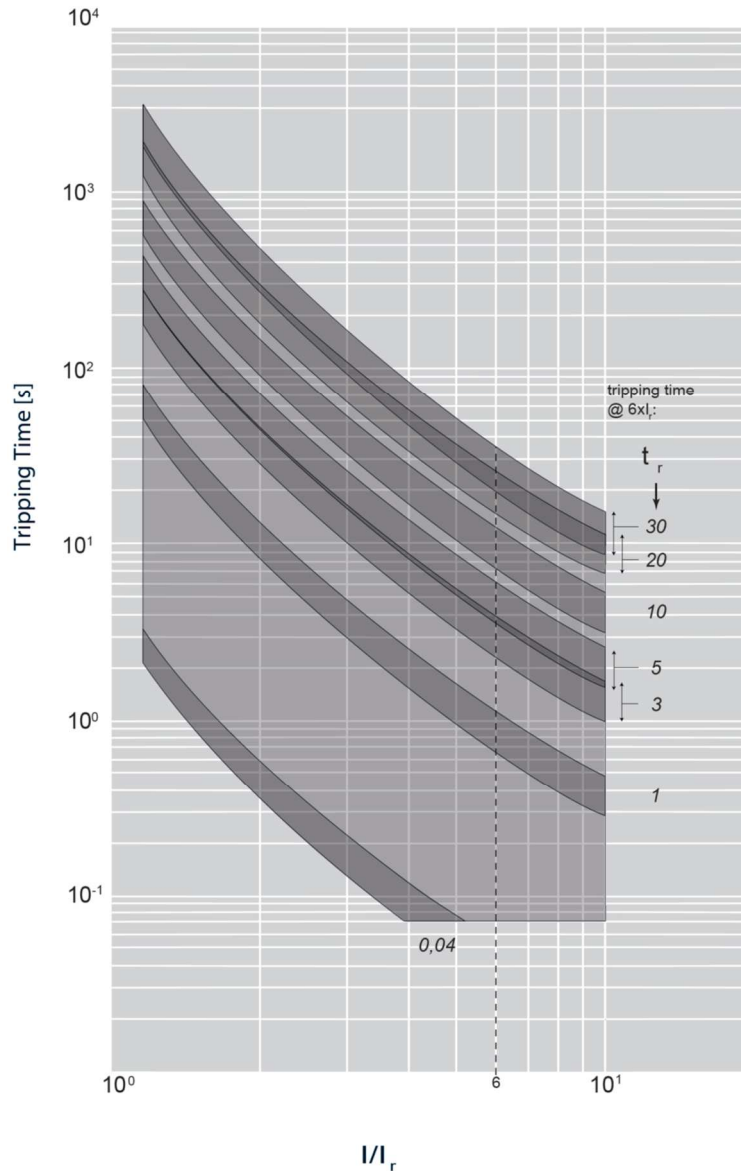
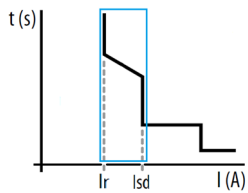
# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

## 10. CURVES

### 10.1.1 Tripping curve [ 1/3 ]

Update: 16/11/2022



$I_{cu} = 36-50-70-100 \text{ kA}$   $I_{max} = 1600\text{A}$  3-4 P  $U_o = 415\text{Vac}$  (IEC/EN 60947-2)

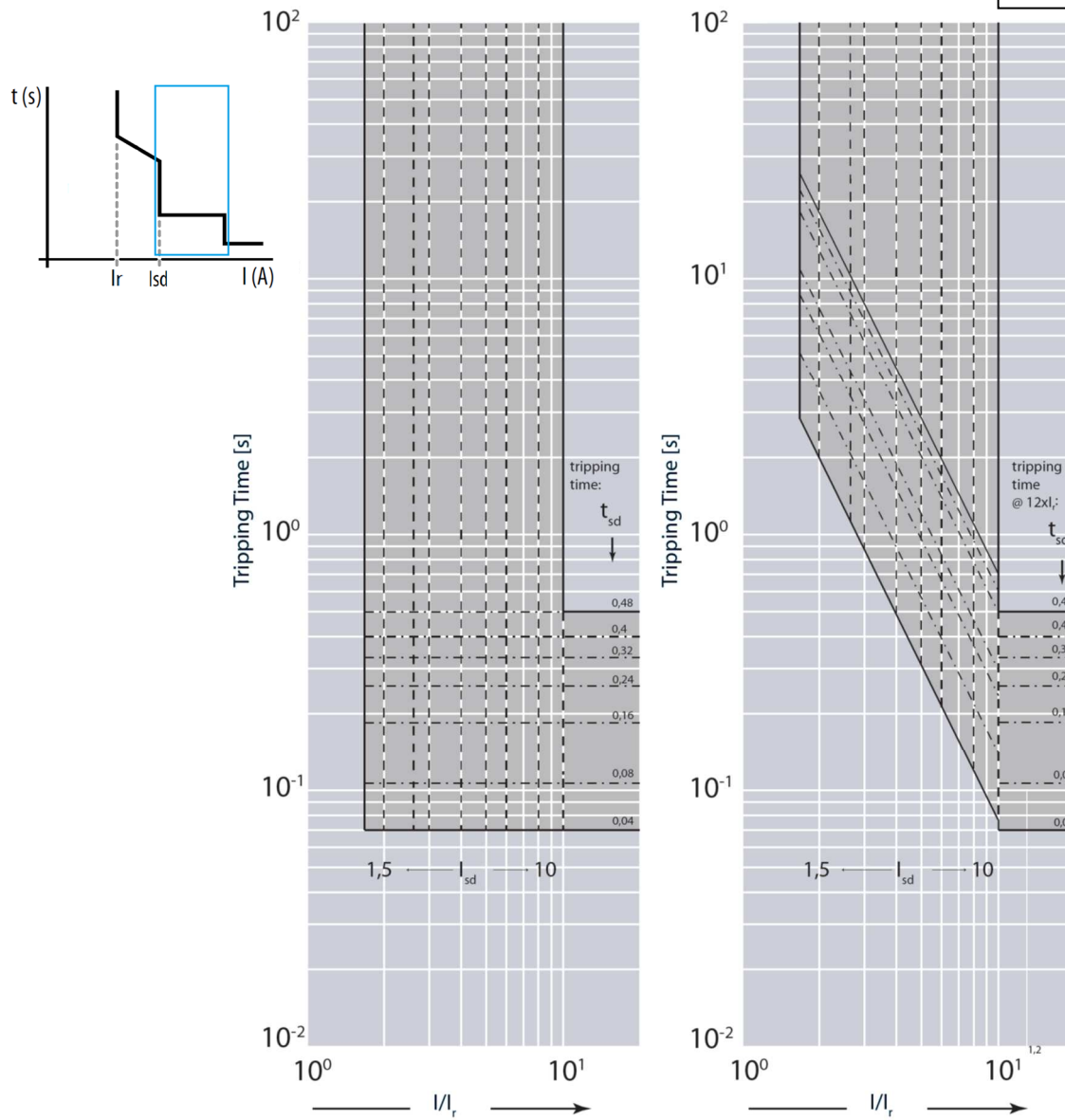
Value	Description
t	time
I	current
$I_r$	long time setting current
$t_r$	long time delay
$I_{sd}$	short time setting current
$t_{sd}$	short time delay
$I_i$	instantaneous release
$I_{cu}$	rated ultimate short-circuit breaking capacity
$I^2t = K$	constant pass-through energy setting
$t = K$	constant tripping time setting
—————	long time trip curve
-----	short time trip curve
Current tolerance	10% up to $I_{sd}$ ; 20% up to $I_i$

# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

Update: 17/11/2022

## 10.1.2 Tripping curve [ 2/3 ]



$I_{cu} = 36-50-70-100 \text{ kA}$   $I_{max} = 1600 \text{ A}$  3-4 P  $U_o = 415 \text{ Vac}$  (IEC/EN 60947-2)

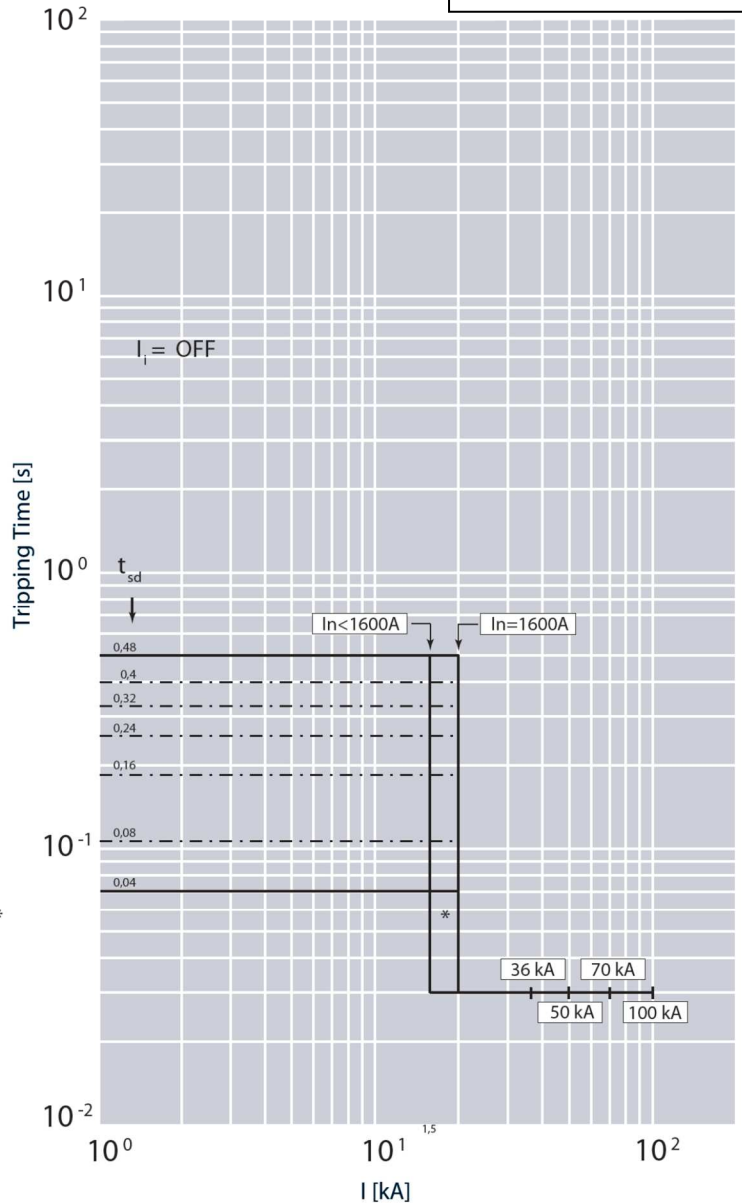
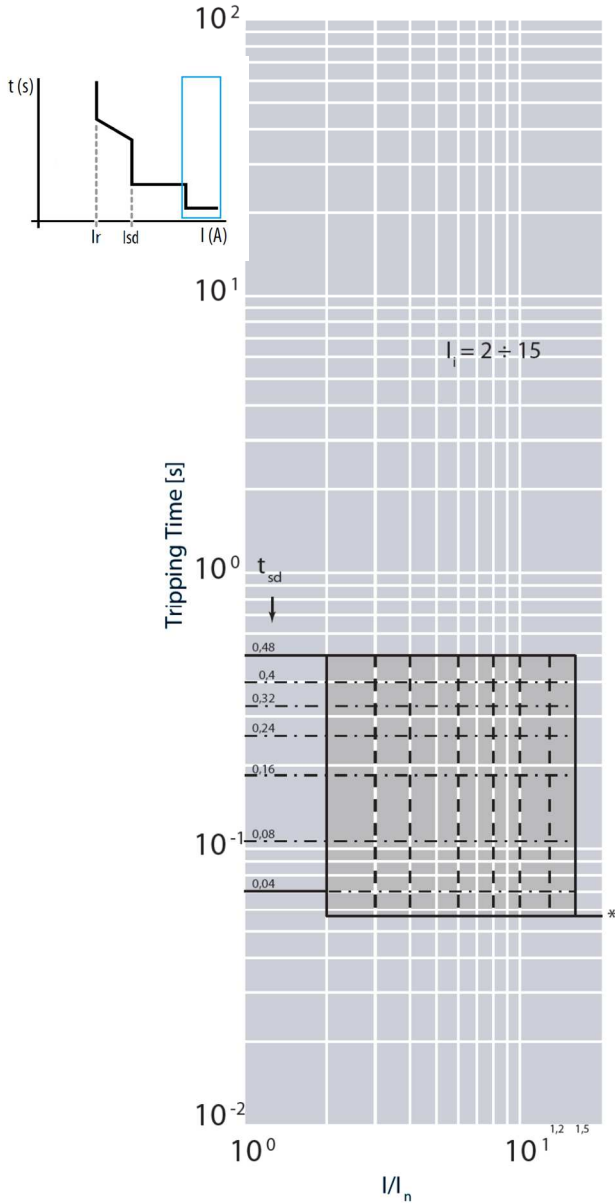
Value	Description
t	time
I	current
$I_r$	long time setting current
$t_r$	long time delay
$I_{sd}$	short time setting current
$t_{sd}$	short time delay
$I_i$	instantaneous release
$I_{cu}$	rated ultimate short-circuit breaking capacity
$I^2t = K$	constant pass-through energy setting
$t = K$	constant tripping time setting
—————	long time trip curve
-----	short time trip curve
Current tolerance	10% up to $I_{sd}$ ; 20% up to $I_i$

# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

Update: 17/11/2022

## 10.1.3 Tripping curve [ 3/3 ]



$I_{cu} = 36-50-70-100 \text{ kA}$   $I_{max} = 1600 \text{ A}$  3-4 P  $U_e = 415 \text{ Vac}$  (IEC/EN 60947-2)  
 Fixed Instantaneous override  $I_{sf} = 15 \text{ kA}$  (for  $I_n < 1600 \text{ A}$ ) and  $I_{sf} = 20 \text{ kA}$  (for  $I_n = 1600 \text{ A}$ )

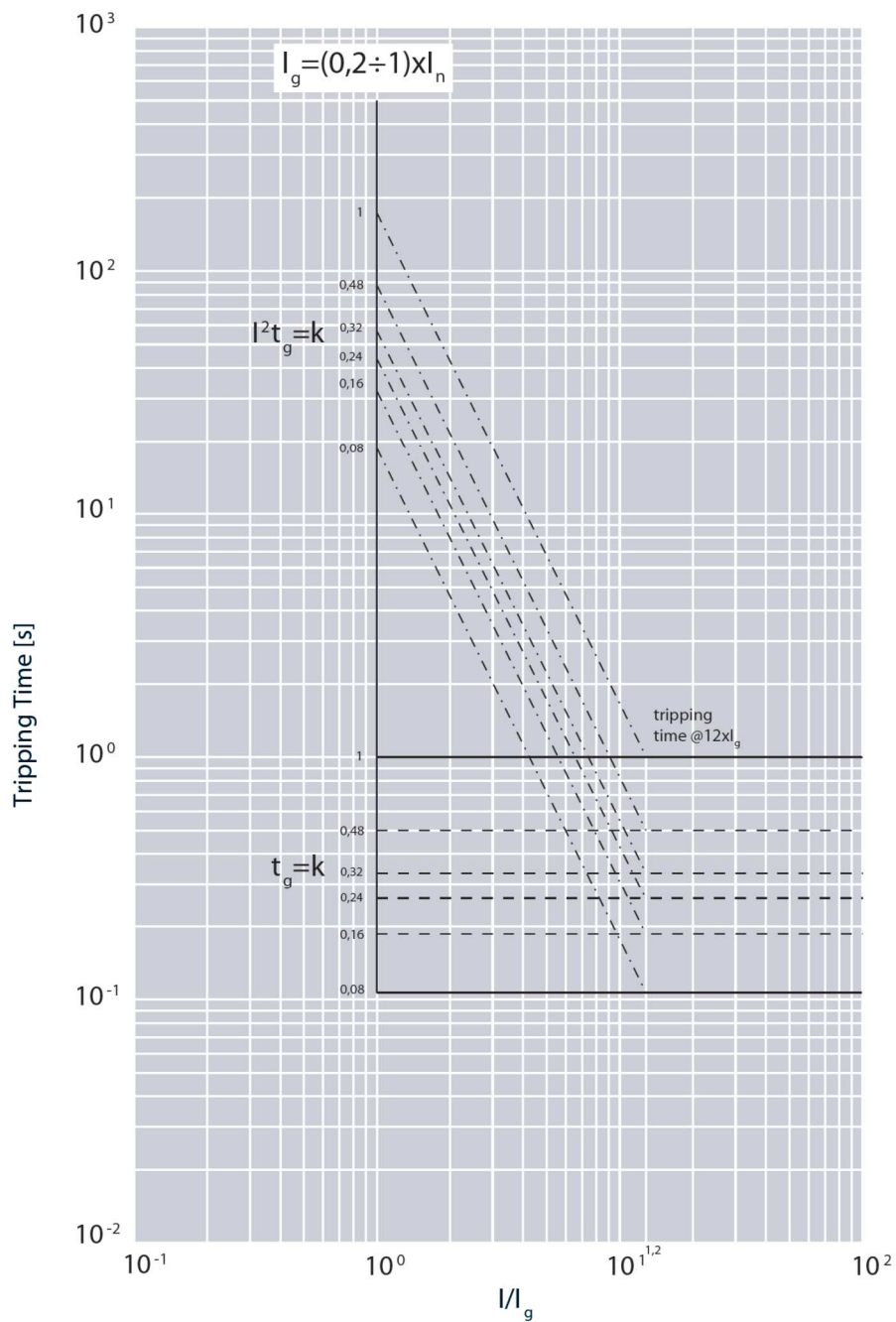
Value	Description
t	time
I	current
$I_r$	long time setting current
$t_r$	long time delay
$I_{sd}$	short time setting current
$t_{sd}$	short time delay
$I_i$	instantaneous release
$I_{cu}$	rated ultimate short-circuit breaking capacity
$I^2t = K$	constant pass-through energy setting
$t = K$	constant tripping time setting
—	long time trip curve
-----	short time trip curve
Current tolerance	10% up to $I_{sd}$ ; 20% up to $I_i$

# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

## 10.2 Ground Fault curve

Update: 16/11/2022



$I_{cu} = 36-50-70-100$  kA  $I_{max} = 1600$ A 3-4 P  $U_e = 415$ Vac (IEC/EN 60947-2)

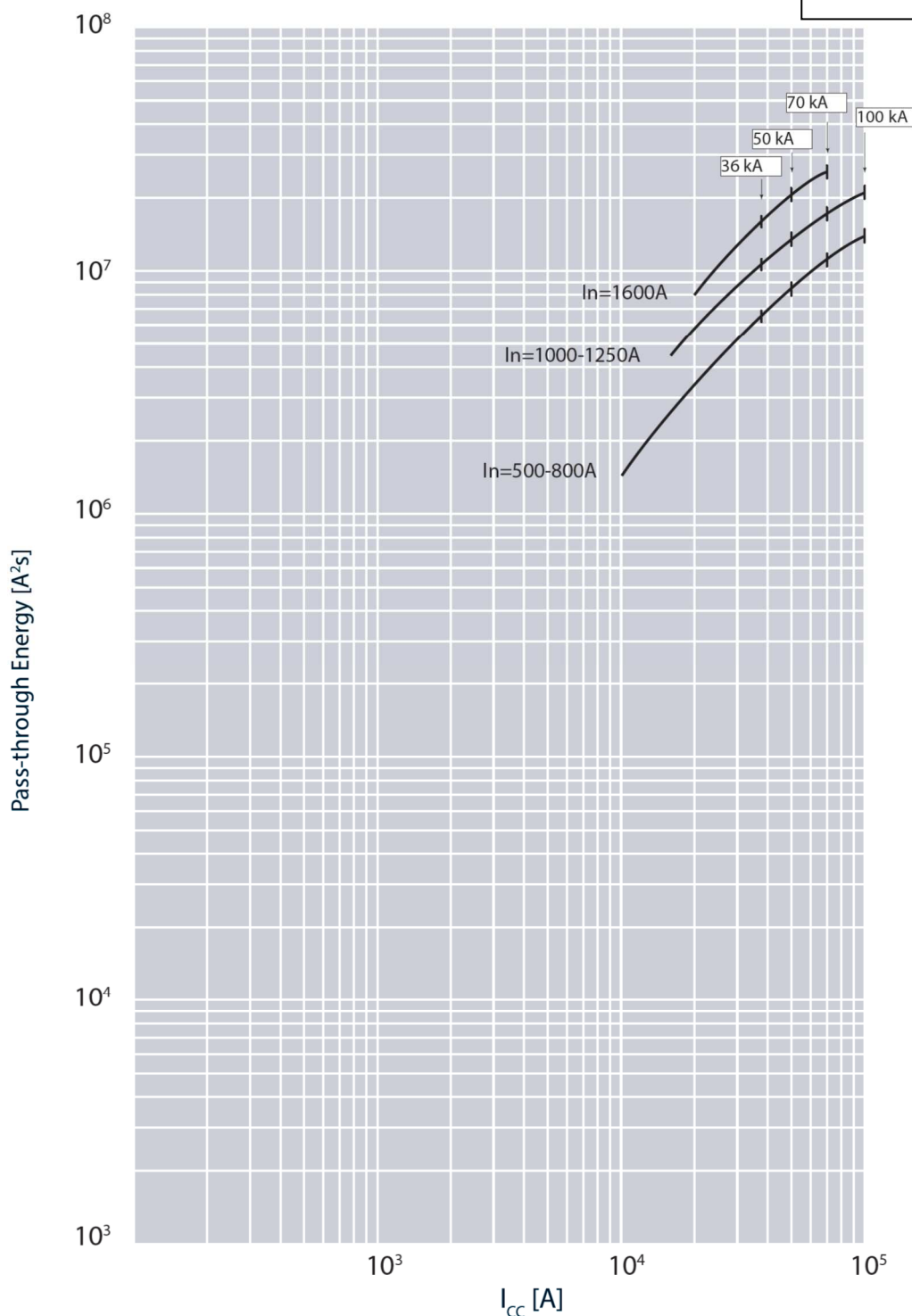


# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

## 10.3 Pass-through specific energy characteristic curve

Update: 03/07/2018



$I_{cu} = 36-50-70-100 \text{ kA}$   $I_{max} = 1600 \text{ A}$  3-4 P  $U_e = 415 \text{ Vac}$  (IEC/EN 60947-2)

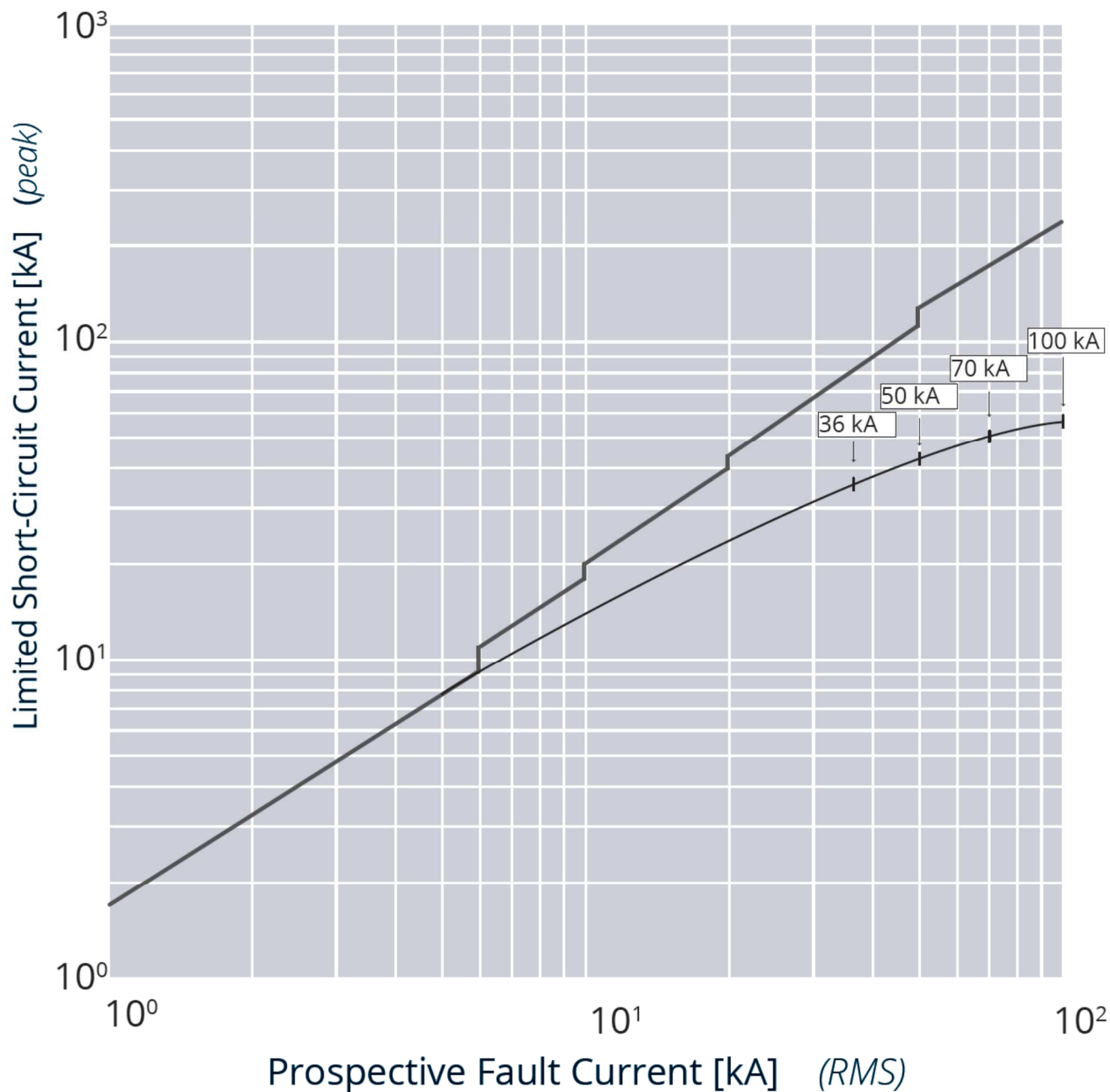
Value	Description
$I_{cc}$	short circuit current
$I^2t \text{ (A}^2\text{s)}$	pass-through specific energy

# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

## 10.4 Cut-off peak current characteristic curve (kA)

Update: 02/07/2018



$I_{cu} = 36-50-70-100 \text{ kA}$   $I_{max} = 1600A$  3-4 P  $U_o = 415Vac$  (IEC/EN 60947-2)

Value	Description
$I_{cc}$	estimated short circuit symmetrical current (RMS value)
$I_p$	maximum short circuit peak current
	maximum prospective short circuit peak current corresponding at the power factor
	maximum real peak short circuit current

# DPX<sup>3</sup> 1600 S10 electronic (display version) circuit breakers

Reference(s) :  
 from 4 229 00 to 4 229 15;  
 from 4 229 20 to 4 229 53; from 4 229 55 to 4 229 58;  
 from 4 229 60 to 4 229 93; from 4 229 95 to 4 229 98

## A) Derating Temperature and configurations

	Ambient temperature									
	30 °C		40 °C		50 °C		60 °C		70 °C	
Fixed version	$I_{max}$ (A)	$I_r / I_n$	$I_{max}$ (A)	$I_r / I_n$	$I_{max}$ (A)	$I_r / I_n$	$I_{max}$ (A)	$I_r / I_n$	$I_{max}$ (A)	$I_r / I_n$
Spreaders, flexible cable	1600	1	1600	1	1600	1	1360	0.85	1200	0.75
Spreaders, rigid cable	1600	1	1600	1	1600	1	1360	0.85	1200	0.75
Spreaders, bars 2x50x10 Cu	1600	1	1600	1	1600	1	1520	0.95	1360	0.85
Rear flat terminals, bars 4x50x5 Cu, horizontal	1600	1	1600	1	1600	1	1600	1	1440	0.9
Rear flat staggered terminals, bars 4x50x5 Cu, horizontal	1600	1	1600	1	1600	1	1600	1	1440	0.9
Draw-out version	$I_{max}$ (A)	$I_r / I_n$	$I_{max}$ (A)	$I_r / I_n$	$I_{max}$ (A)	$I_r / I_n$	$I_{max}$ (A)	$I_r / I_n$	$I_{max}$ (A)	$I_r / I_n$
Spreaders, flexible cable	1600	1	1600	1	1600	1	1280	0.8	1120	0.7
Spreaders, rigid cable	1600	1	1600	1	1600	1	1280	0.8	1120	0.7
Spreaders, bars 2x50x10 Cu	1440	0.9	1440	0.9	1440	0.9	1120	0.7	960	0.6
Rear flat terminals, bars 2x100x5 Cu, vertical	1440	0.9	1440	0.9	1440	0.9	1120	0.7	960	0.6
Rear flat staggered terminals, bars 2x100x5 Cu, vertical	1440	0.9	1440	0.9	1440	0.9	1120	0.7	960	0.6
Rear flat terminals, bars 4x50x5 Cu, horizontal	1600	1	1600	1	1600	1	1440	0.9	1120	0.7
Rear flat staggered terminals, bars 4x50x5 Cu, horizontal	1600	1	1600	1	1600	1	1440	0.9	1120	0.7

For further technical information, please contact Legrand technical support.

Data indicated in this document refers exclusively to test conditions according to product standards, unless otherwise indicated in the documentation.

For the different conditions of use of the product, inside electrical equipment or in any case inserted in the installation context, refer to the regulatory requirements of the equipment, local regulations and design specifications of the system.