La legrand®

DPX³ 250 HP S1 electronic (no display) with earth leakage circuit breakers

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Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;

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1. USE

DPX³ HP platform has been developed to give a new solution of protection devices for a more precise approach in power installations in order to offer the correct answer for different project needs. DPX³ HP platform provide a complete project approach in premium market segment, offering a range completely suitable for high power application with high performance breakers in compact dimensions and at a competitive costs.

2. RANGE

	DPX ³ 250 HP electronic (no display) + earth			
	leakage	version		
	36 kA 50 kA			
In (A)	4P			
40	423215	423235		
100	423216	423236		
160	423217	423237		
250	423218 423238			

3. DIMENSIONS AND WEIGHTS

7. CONFORMITY

9. CURVES

3.1 Dimensions

Lateral view



Frontal view



Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;



Draw-out version



Interlock











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Direct rotary handle





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Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;













Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;





Motor operator



Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;











3.2 Weights

	Weights (Kg)
Configuration	4P
Circuit breaker	2.5
Plug-in*	4.5
Draw-out**	2.5
Interlock*	0.35
Rear interlock (for plug-in/draw-out version)*	5
Motor operator*	1
* to add to deveice weight	
* to add to deveice and plug-in weights	

4. OVERVIEW

4.1 Supplied with:

- 4 fixing screws
- 8 screws for connections
- 3 phase insulators

5. ELECTRICAL CONNECTIONS

5.1 Mounting possibilities

On plate:

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- Vertical
- Horizontal
- Supply invertor type

Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;

5.2 Mounting

(see instruction sheet for detailed mounting procedures)







Busbars/cable lugs:







Cables:



6. ELECTRICAL AND MECHANICAL CHARACTERISTICS

Circuit Breaker	DPX ³ 250 HP + RCD F/N (36kA, 50kA)
Rated current (A)	40-100-160-250
Poles	4
Pole pitch (mm)	35
Rated Insulation voltage (50/60Hz) U _I (V)	500
Rated operating voltage (50/60Hz) U _e (V)	500
Rated impulse withstand current U _{Imp} (kV)	6
Reference amblent temperature(°C)	40 - 50
Operating temperature (°C)	-25 + 70
Mechanical endurance (cycles)	12000
Mechanical endurance with motor control (cycles)	12000
Electrical endurance at In (cycles)	6000
Electrical endurance at 0.5 In (cycles)	6000
Utilization category	A
Suitable for isolation	Yes
Type of protection	Electronic (with knobs)
Thermal adjustment I,	(0.4+1) x l _n
Magnetic adjustment l _{ad} ^(**)	(1,5+10) x l _i
Neutral protection for 4P (%Ith of phase pole)	0FF-50 ^(*) -100
Dimensions (W x H x D) (mm)	140 x 165 x 86 (4P)
Earth leakage type	A - integrated
Adjustable sensitivity (A)	0.03 - 0.3 - 1 - 3
Adjustable tripping (s)	0 - 0.3 - 1 - 3 (with 0.03 possible only 0s)
Dimensions (W x H x D) (mm)	140 x 165 x 86 (4P)

(*) if $I_n{=}40A,$ then 50% regulation is allowed only if $I_r \geq 0.8$

(**) Regulations not adjustable:

- *t_r=5s*
- t_{sd}=0.1s
- *li=3250A*

When $I_r < 0.8$, knob setting marked with 50% equals to a 100% value.

General remarks on protection unit

The protection units S1 are normally supplied by the internal current transformers (CTs).

When the current flowing through the circuit breaker is lower than 12% of the maximum power (20% of In for single phase load), the internal voltage supply ensures the following basic functions of protection unit: RCD protection, LED status and RCD diagnostic trip test (T button).

Instead, over the 12% of the maximum power (20% of In for single phase load), the additional power provided by current transformers ensures the complete functions of the protection unit, like diagnostic functions (e.g. trip test).

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

 power supply temporarily connected to frontal Service port, connected to specific adapter for PC (Legrand use 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.



6.2 Breaking capacity (kA)

		Breaking capa	acity (kA) & I _{cs}		
		4	Р		
	U _e /I _{cu} (I _{cu} letter)	36kA (F)	50kA (N)		
	220/240 V AC	70	90		
IEC 60947-2	380/415 V AC	36	50		
	440/460 V AC	25	30		
	480/500 V AC	16	18		
	I _{cs} (% I _{cu})	100	100		
	Rated making capacity under short circuit \mathbf{I}_{cm}				
	I _{cm} (kA) at 415V	76.5	105		
	220/240 V AC	70	90		
	480/500 V AC	16	18		

6.3 Rated current (In)

	Phases limit trip current			
	therm	nal (I _r)	magne	etic (I _{sd})
I _n (A)	0.4 x I _n	1 x I _n	min	max
40	16	40	60	400
100	40	100	150	1000
160	64	160	240	1600
250	100	250	375	2500

6.3 Load operations

Force on handle	N
Opening operation	63,5
Closing operation	66
Restore operation	86,5

Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;

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 _{cc} (kA)	Maximum Distance (mm)
36	350
50	300

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.

6.5 Power losses per pole under In

Circuit breaker

	Power losses per pole (W)					
In (A)	40 100 160 250					
Cage terminals	0.54	3.37	8.63	21.07		
Lugs	0.49	3.08	7.88	19.25		
Spreaders	0.41	2.59	6.64	16.21		
Rear terminals	0.51 3.18 8.13 19.86					

Note: power losses 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

according to IEC/EN 60947-1

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.

	Temperature Ta (°C)							
I _n (A)	40	40 50 60 70						
40	40	40	40	40				
100	100	100	100	95				
160	160	160	160	155				
250	250	250	210	190				

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.

Pollution degree

for DPX³ 250 HP circuit breakers, degree 3, according to IEC/EN 60947-2

6.6.3 Altitude

Altitude derating for DPX³

Altitude (m)	2000	3000	4000	5000
U _e (V)	500	430	380	330
I _n (A)	1 x I _n	0.98 x I _n	0.93 x I _n	0.9 x I _n

Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;

7. CONFORMITY

DPX³ HP range of product concerning circuit-breakers and switchdisconnectors exceed compliance with the IEC/EN standard 60947-2 and 60947-3 respectively. Certification available by IECEE CB-scheme or LOVAG Compliance scheme.

DPX³ HP respect the European Directives REACh, RoHS, RAEE.

For specific information, please contact Legrand support.

7.1 Marking

Product (circuit breakers) are provided with labelling in full conformity to the referred standard and directives requirements by laser or sticker labels (for illustrative purposes only) as:

Product laser label on front

-Manufacturer responsible

-Denomination, type product, code

-Standard conformity

-Standard characteristics declared

-Coloured identification of Icu at 415V



Electronic release label



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



4 232 38

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0

80

Made in Italy egrand) W40

Packaging sticker label

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



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Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;

5 to 4 232 18; 5 to 4 232 38;

8.	EQUIF	MENTS	AND	ACCESS	ORIES
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8.1 Releases (for DPX³ 125/250 HP and DPX³ 160/250)

 shunt releases with voltage: 	
12 Vac and dc	ref. 4 210 12
24 Vac and dc	ref. 4 210 13
48 Vac and dc	ref. 4 210 14
110÷130 Vac	ref. 4 210 15
220÷277 Vac	ref. 4 210 16
380÷480 Vac	ref. 4 210 17

Maximum power = 400 VA / W

 undervoltage releases with voltage: 	
12 Vac and dc	ref. 4 210 18
24 Vac and dc	ref. 4 210 19
48 Vac and dc	ref. 4 210 20
110÷130 Vac and dc	ref. 4 210 21
220÷240 Vac	ref. 4 210 22
277 Vac	ref. 4 210 23
380÷415 Vac	ref. 4 210 24
440÷480 Vac	ref. 4 210 25

Maximum power = 4 VA Circuit breaker opening time < 50 ms

UVR releases can be used on DPX3 125/250 HP starting from batch 19W15

• 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
Release (to be equipped with a time-lag module 0 261 90/91)	ref. 4 210 98

8.2 Auxiliary contacts

For version of DPX³ 250 HP electronic version, with earth leakage module, auxiliary contacts are integrated inside module M.C.I (see instruction sheet for details).

Here a connection scheme to get auxiliary functionality:





TRIP STATUS (CTR)	151 Common contact 152 Normal close contact 154 Normal open contact	<u>154</u>
OPEN/CLOSE STATUS (OC)	111 Common contact 112 Normal close contact 114 Normal open contact	114 112 111
TRIP RCD (EC TR)	191 Common contact 194 Normal open contact	<u>194</u> <u>191</u>











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

8.3 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
 1 lock + 1 flat key with fixed mapping (EL43363) ref. 4 238
- 1 lock + 1 star key with random mapping

8.4 Rotary handles

Direct on DPX ³ (with auxiliary option)	
Standard (black)	ref. 4 238 00
 For emergency use (red / yellow) 	ref. 4 238 01
 Vari-depth handle IP55 (with auxiliary option) Standard (black) For emergency use (red / yellow) 	ref. 4 238 02 ref. 4 238 03
Locking accessories (for rotary handle with auxiliary	option)

Key lock accessory for direct rotary handle ref. 4 238 04 Key lock accessory for vari-depth rotary handle ref. 4 238 05 ٠ (ref. 4 238 05 is compatible with DPX³ 125 HP also)

Ref. 4 238 04 and 4 238 05 must be used with universal keylocks to get the complete locking kit for rotary handle

8.5 Motor operators

For synchronized operations (energy storage type):

•	24 Vac and dc	ref. 4 238 40
•	48 Vac and dc	ref. 4 238 41
•	110 Vac	ref. 4 238 42
•	230 Vac	ref. 4 238 43

Valtaga	Bronorty	A	C	DC		
voltage	Property	Opening	Closing	Opening	Closing	
	Maximum inrush power (VA)	75	430	55	320	
24V ac/dc	Rated power (VA)	45	-	20	-	
	Absorption time (s)	2.8	0.01	3.3	0.01	
	Operating current time (s)	1.1	0.03	1.2	0.03	
	Maximum inrush power (VA)	85	1000	70	690	
19\/ ac/dc	Rated power (VA)	65	-	15	-	
46V ac/uc	Absorption time (s)	3.3	0.006	3.8	0.006	
	Operating current time (s)	1.1	0.02	1.3	0.02	
	Maximum inrush power (VA)	95	600	-	-	
1101/20	Rated power (VA)	60	-	-	-	
110V ac	Absorption time (s)	3	0.02	-	-	
	Operating current time (s)	1.0	0.03	-	-	
	Maximum inrush power (VA)	125	460	-	-	
230V ac	Rated power (VA)	70	-	-	-	
	Absorption time (s)	2.5	0.08	-	-	
	Operating current time (s)	0.9	0.03	-	-	

It is necessary to foresee a protection device (e.g. fuse) along the motor operator power line. The correct size of the fuse depends on the motor version and on the number of users.

Here a schematic example:



Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;

8.6 Mechanical accessories

- Padlock (for locking in "OPEN" position) ref. 4 210 49 (ref. 4 210 49 is compatible with DPX³ 125 HP and DPX³ 160/250)
- Sealable terminal shields: Set of 3 (for 4P) ref. 4 238 24 0
- Insulated shields: Set of 3 (for 4P) ref. 4 238 35 0

(ref. 4 238 35 is compatible with DPX³ 125 HP also)

8.7 Connection accessories

Cage terminals

Set of 4 terminals for cables 150 mm² max (rigid) ref. 4 238 31 or 120 mm² max (flexible) Cu/Al

Spreaders (incoming or outcoming):Set of 4 (for 4P)	ref. 6 250 18
<i>Rear terminals</i> (incoming or outcoming):Set of 4 (for 4P)	ref. 4 238 22

Technical parameters:

Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;

8.8 Plug-in version 8.9 Draw-out version (A plug-in is a DPX³ 250 HP fitted with special terminals and mounted (A DPX³ 250 HP draw-out version is a plug-in DPX³ 250 HP fitted with a on a plug-in base) "Debro-lift" mechanism which can be used to withdraw the breaker while keeping it on its base) Bases (for plug-in and draw-out versions for DPX³ 250 HP and DPX³-I 250 HP) "Debro-lift" mechanism (supplied with a rigid slide and handle for drawing-out) Plug-in/draw-out base for 4P ref 4 238 51 transformation kit for 4P ref. 4 238 61 Plug-in/draw-out mobile part kit for 4P ref. 4 238 53 Fontal masks for draw-out version Plug-in accessories (to provide in addition to debro-lift mechanism according to accessory mounted) Locking accessory (for plug-in) ref. 4 238 63 Frontal module, with frontal mask (3P and 4P) ref. 4 238 55 Key lock accessory for plug-in (if neither motor operator nor rotary handle are mounted) Frontal mask for motor operator (3P and 4P) ref. 4 238 56 Ref. 4 238 63 must be used with universal keylocks to get the complete locking kit for plug-in version Locking accessory (for draw-out) Padlock for draw-out position ref. 4 238 64 Key lock accessory for draw-out ref. 4 238 62 Ref. 4 238 62 must be used with universal keylocks to get the complete locking kit for draw-out version Auxiliary contacts Automatic auxiliary contacts for draw-out version ref. 4 222 30 6 contact connector (under sliding contacts) ref. 0 098 19 (Ref. 0 098 19 can be used with both plug-in and draw-out version) 8.10 Interlock mechanism (for interlocking 2 DPX³ 125 HP or 2 DPX³ 250 HP breakers) No frame mixing in interlock mechanism Interlock mechanism – standard version ref. 4 238 27 . (for fixed version DPX³ 125 HP and DPX³ 250 HP) Interlock mechanism – for electronic module ref. 4 238 28 (for fixed version DPX³ 125 HP and DPX³ 250 HP) Interlock plate for DPX³ 250 HP ref. 4 238 26 ref. 4 238 29 Rear interlock mechanism (for DPX³ 250 HP plug-in and/or draw-out version) If used ref. 0 098 19, maximum 1 set

Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;







Value	Description
t	time
	current
l _r	long time setting current
t _r	long time delay
Isd	short time setting current
tsd	short time delay
li	instantaneous release
lcu	rated ultimate short-circuit breaking capacity
l²t = 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

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Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;

9.4.1 Earth leakage curves, instantaneous





Reference(s) : from 4 232 15 to 4 232 18; from 4 232 35 to 4 232 38;

A) Derating Temperature and configurations

	Ambient temperature									
	30 °C		40	0 °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
Cage terminals, flexible cable	238	0.95	225	0.90	200	0.80	175	0.70	163	0.65
Cage terminals, flexible cable + sealable terminal shields	238	0.95	225	0.90	200	0.80	175	0.70	163	0.65
Spreaders, flexible cable	250	1	213	0.85	200	0.80	175	0.70	163	0.65
Rear terminals, flexible cable	238	0.95	200	0.80	188	0.75	163	0.65	150	0.60
Plug-in/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
Cage terminals, flexible cable	250	1	238	0.95	238	0.95	233	0.93	225	0.90

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