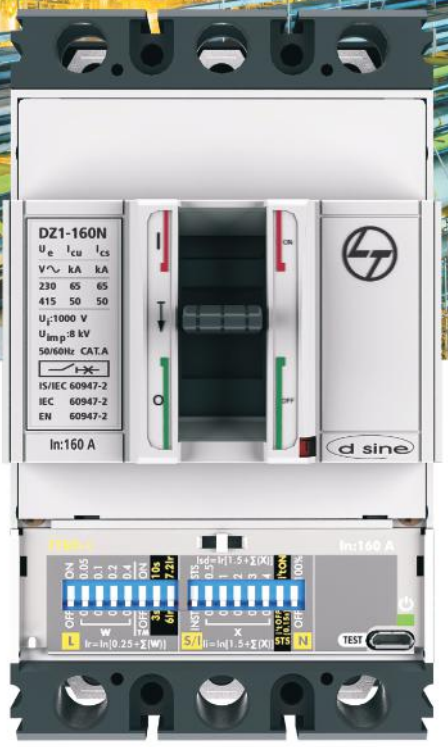
L&T Electrical & Automation

d sine-DZ1 | Moulded Case Circuit Breakers

User Centric Innovation



L&T SWITCHGEAR
SAFE & SURE

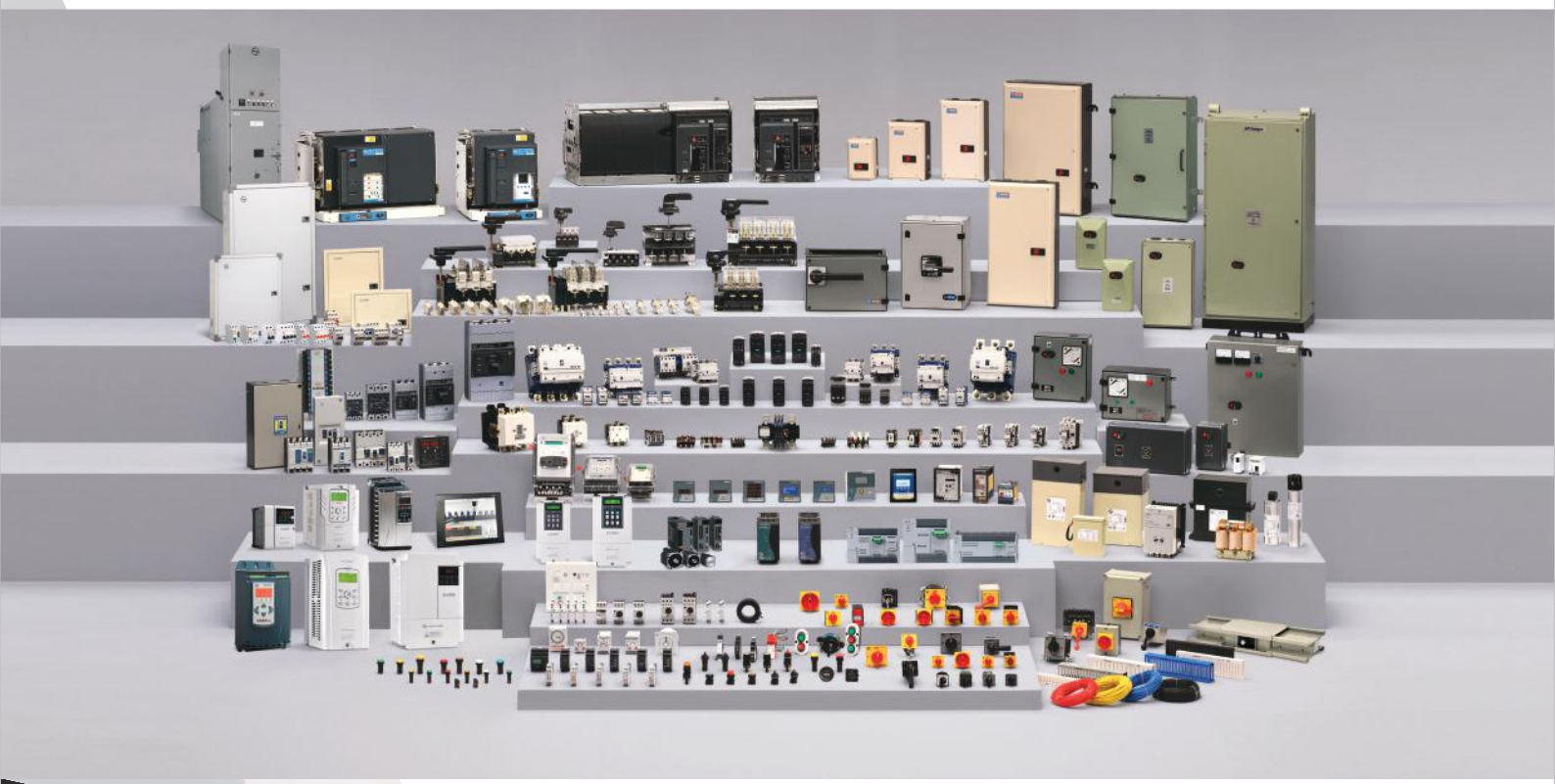
A technology idea often forms the foundation of innovation in a product and the success of its outcome is determined by the users' experience. Talking to customers and taking their feedback gives an assurance that the innovation would meet the expected and even aspired results. The dsine DZ range is an outcome of users' feedback that has been recorded, analysed and incorporated in its design and development journey.

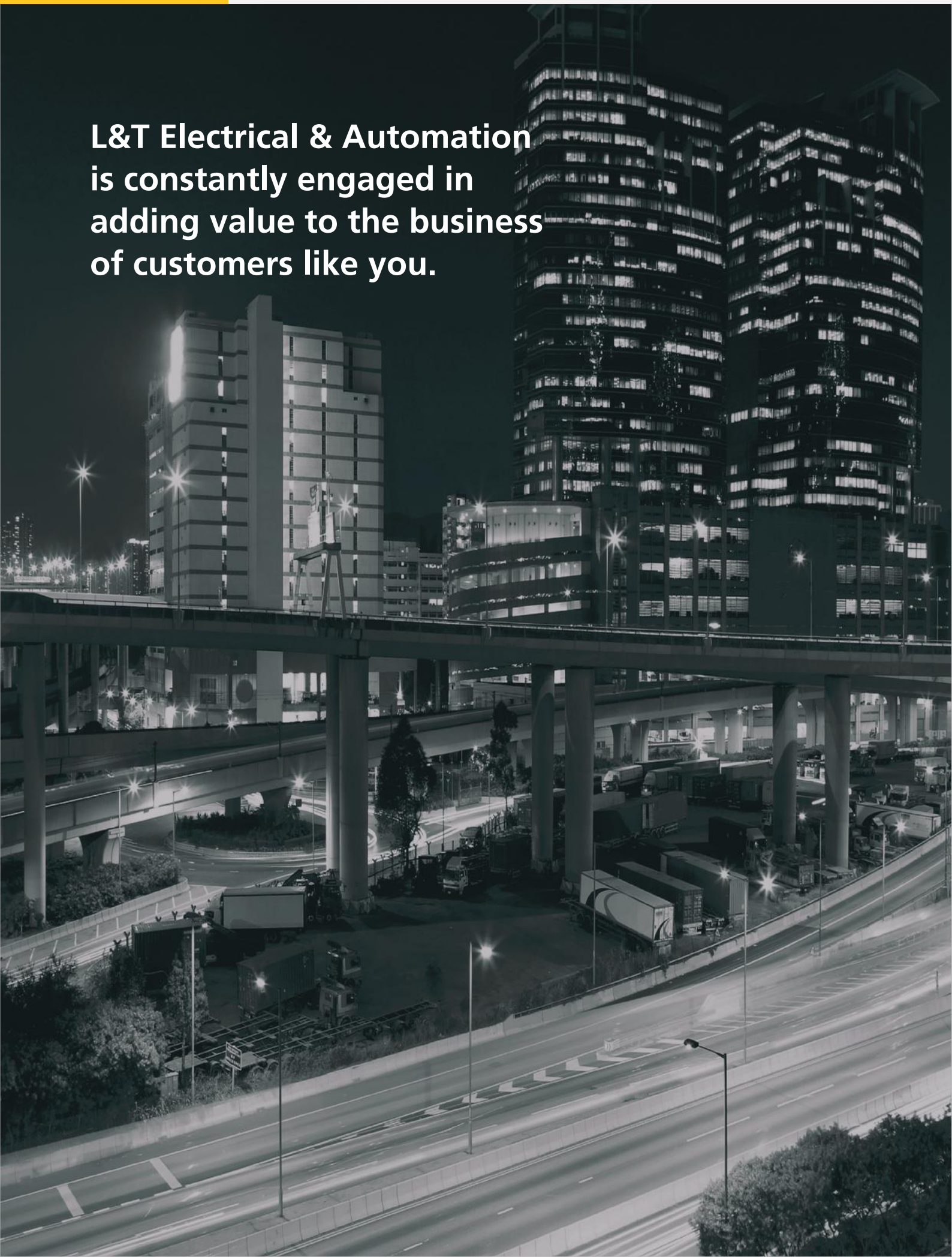
About
L&T Electrical & Automation

L&T Electrical & Automation (E&A) is a part of US $17 billion Larsen & Toubro that is engaged in technology, engineering, construction, manufacturing and financial services with operations in over 30 countries worldwide. Its business comprises low and medium voltage switchgear products, electrical systems, energy meters, wiring accessories and automation solutions.

E&A's in-house design and development centre for switchgear promotes a culture of collaboration and experimentation that facilitates innovation and creation of intellectual property.

The customer-focus philosophy of E&A has led to setting up of a wide network of channel partners along with manufacturing operations in Navi Mumbai, Ahmednagar, Vadodara, Coimbatore and Mysore in India as well as in Saudi Arabia, Jebel Ali (Dubai), Kuwait, Malaysia, Indonesia and the UK.




L&T Electrical & Automation
is constantly engaged in
adding value to the business
of customers like you.

CONTENTS

User Centric Innovation

The dsine DZ range is designed to meet the requirements of today's evolving electrical systems in modern installations. Protection units in thermal magnetic as well as microprocessor versions offer comprehensive protection for all needs.

Range features:

- Rated Current : 16 A to 160 A
- Available in 3 Pole & 4 Pole
- Protection using both Thermal Magnetic & Microprocessor based release
- Various types of terminations
- No Load-Line bias
- Ics=100% of Icu
- Suitable for Isolation
- Wide Range of Internal and External accessories
- Conforms to IS 60947-2, IEC 60947-2 and EN 60947-2

DZ1		
Protection Release	**Ratings (A)**	**Breaking Capacity (kA) Ics= 100% of Icu**
Microprocessor	25, 40, 63, 100, 160	36, 50
Thermal Magnetic	16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160	
Only Magnetic	16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160	

Protection Release features

- Wide range of protections using Thermal and Microprocessor based trip unit
- Long time (Overload) setting starts from 0.25In for *i*TRP-1 release and 0.67In for Thermal Magnetic release
- Transparent release cover

Thermal Magnetic Release:

- Adjustable overload setting
- Adjustable short circuit setting*
- True RMS sensing

***i*TM - AA**	
LI	
Rated Current (A)	16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160
Frame	DZ1
OverLoad (Phase)	
Current Setting Ir (Ir = x In)	0.67 to 1 x In
Instantaneous	
Current Setting Ii (Ii = x In)	6 to 12 x In*

* 16 A to 50 A : Fixed Magnetic 375 A

Microprocessor Releases:
i TRP-1

- Wide range of overload setting starting from 0.25In
- Adjustable Trip class
- Neutral overload protection
- Short circuit setting with delay or Instantaneous option
- Adjustable Instantaneous Setting
- Thermal Memory with option of Defeat
- Provision for release testing

***i*TRP-1**	
LS/I	
Rated Current (A)	25, 40, 63, 100, 160
Frame	DZ1
OverLoad (Phase)	
Current Setting Ir (Ir = x In)	0.25 to 1 x In (in step of 0.05)
Time delay, tr (Inverse)	10s at 6Ir, 3s at 6Ir , 10s at 7.2 Ir, 3s at 7.2Ir
Protection Mode	ON/OFF
Thermal Memory	ON/OFF
OverLoad (Neutral)	
Current Setting In (In = x Ir)	OFF / 1.0 x Ir
Time delay, tr (Inverse)	As per Overload Curve Setting
Protection Mode	ON/OFF
Short Circuit	
Current Setting Is (Is = x Ir)	1.5 to 12 x Ir (in step of 0.5)
Time delay, ts	As per I^2t curve /150 msec
I^2t	ON/OFF
or Instantaneous	
Current Setting Ii (Ii = x In)	1.5 to 12 x In (in step of 0.5)

Technical Datasheet

Frame			DZ1-160	
Type			D	N
Current Range In (A)			16-160	
Release			TM(VTVM)/Microprocessor *	
Poles			3P/4P	
Impulse Withstand Voltage Uimp (kV)			8	
Rated Operational Voltage Ue (V AC) (MAX) @ 50 / 60 Hz			415	
Rated Operational Voltage Ue (V DC) (MAX)			500	
Rated Insulation Voltage Ui (V AC)			800	
Utilization Category			A	
Standard			IS 60947-2, IEC 60947-2, EN 60947-2	
Rated Short Circuit Breaking Capacity	Icu(kA)	220 / 230 V AC 50 / 60 Hz	45	65
		400 / 415 V AC 50 / 60 Hz	36	50
	Ics as % of Icu	220 / 230 V AC 50 / 60 Hz	100%	
		400 / 415 V AC 50 / 60 Hz		
Making Capacity (kA) @ 415 V AC			75.6	105
Life	Mechanical		30000	
	Electrical @ 415 V AC		10000	
Operating Frequency (Hz)			50/60	
Opening Time			< 10 msec	
Fingerproof Terminals			YES	
Suitable for Isolation			YES	
IP Class			IP20/IP40[$] and IP54 with Extended ROM	
Pollution Degree			III	
Load-Line Bias			NO	
Ambient Temperature			- 5 °C to 55 °C	
Storage Temperature			- 15 °C to 70 °C	
Mounting Positions in Vertical Plane			Vertical and 90° in both directions	
Dimensions (H x W x D) (mm)	3 Pole		130 x 75 x 60	
	4 Pole		130 x 100 x 60	
Weight (kg) 3P/4P			0.9/1.1	
Accessories	Internal	Auxiliary Contact 1 C/O	01 no. Aux	
		Trip Alarm Contact 1 C/O	01 no. TAC	
		Shunt Release	01 no. Shunt or 01 no. UV	
		Under Voltage Release		
	External	Rotary Operating Mechanism(Direct/Extended)	✓	
		Mechanical Interlock Kit	✓	
		Spreader Terminals	✓	
		Rear Terminals[#]	✓	
		Box-Clamp[#]	✓	
		Plug-in[#]	✓	

*VTVM - Variable Thermal Variable Magnetic
*16 A to 50 A : Fixed Magnetic 375A
$ IP20 : At the Terminals, IP40: At Front Face
# For details contact nearest branch office

Altitude Correction Factors

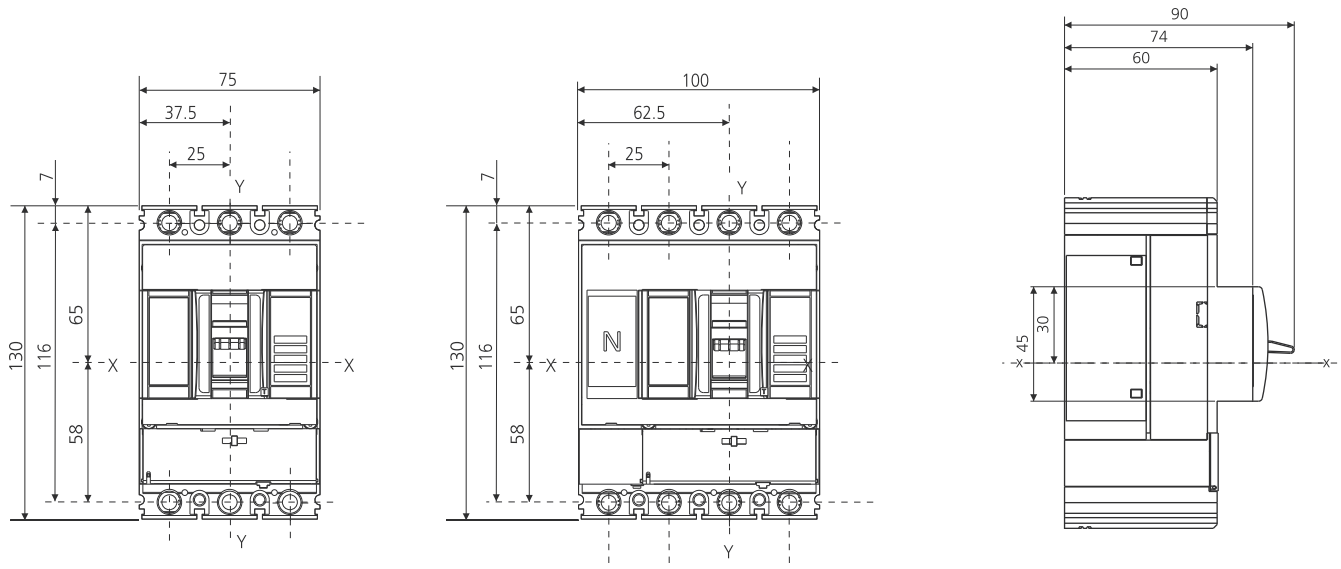
Altitude does not significantly affect circuit breaker characteristics upto 2000 m.
Above this altitude, it is necessary to take into account the decrease in the dielectric strength and cooling capacity of air.

The following tables give the altitude correction factors for various circuit breaker characteristics :

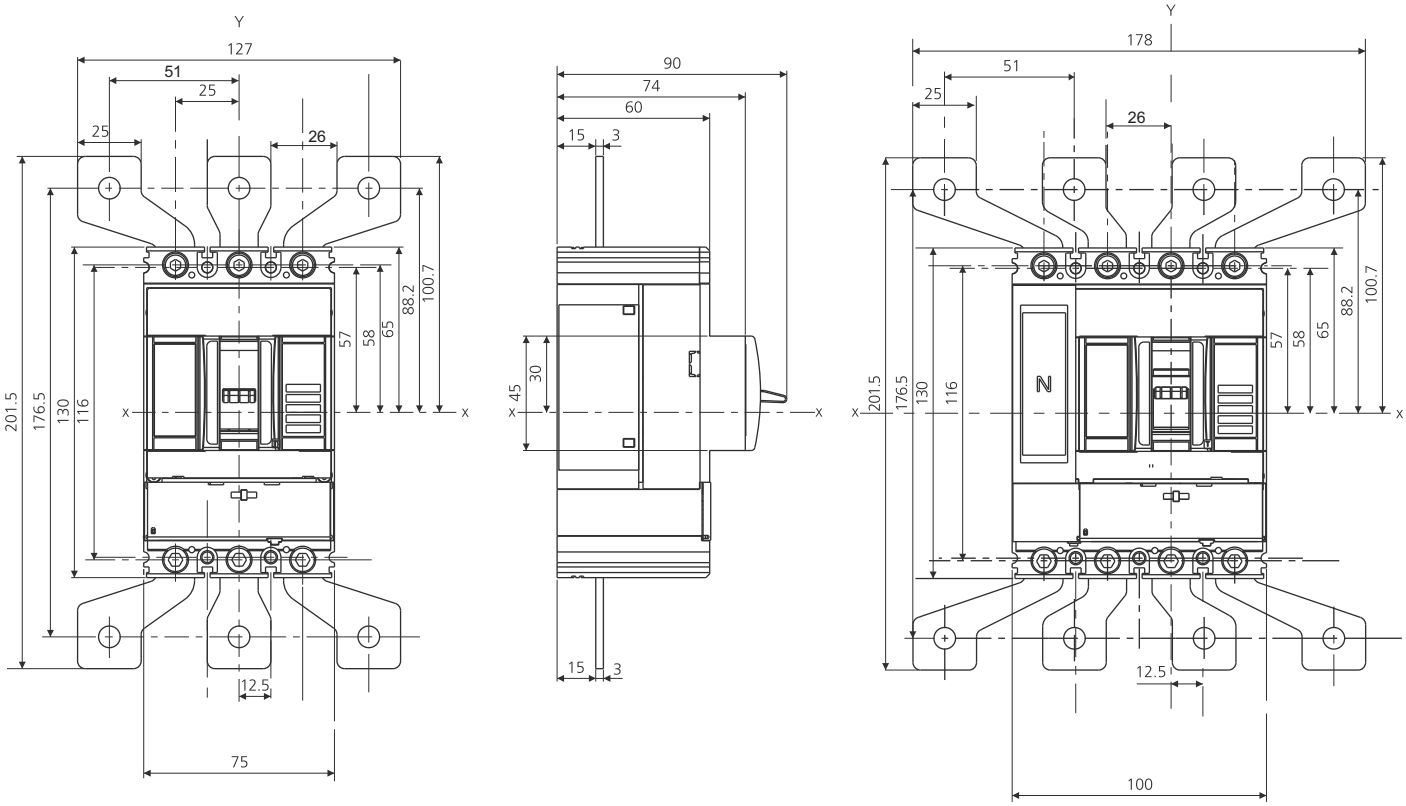
Altitude Correction Factors		
Altitude	Rated Continuous Current (In)	Rated Voltage (Ue)
(m)	x (In)	x (Ue)
2000 & below	1.00	1.00
2500	0.99	0.95
3900	0.95	0.80

Altitude Correction Factors		
Altitude	Rated Insulation Voltage (Ui)	Rated Impulse Voltage (Uimp)
(m)	(V)	(kV)
2000 & below	1000	8.0
2500	830	6.7
3900	700	5.6

Overall Dimensions

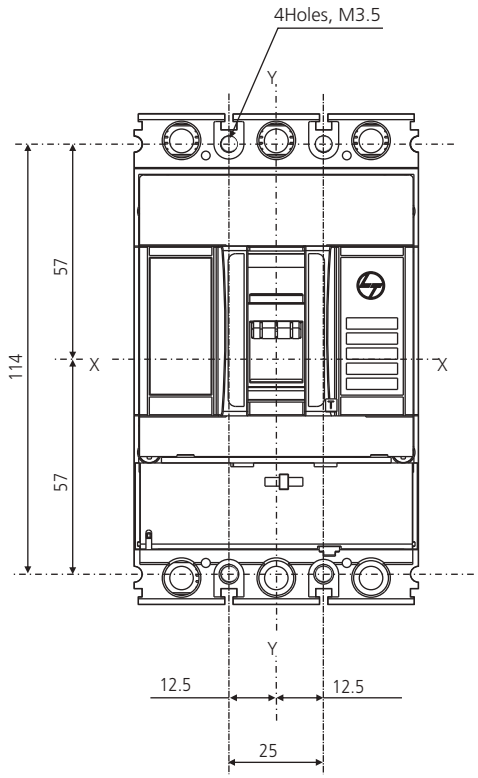


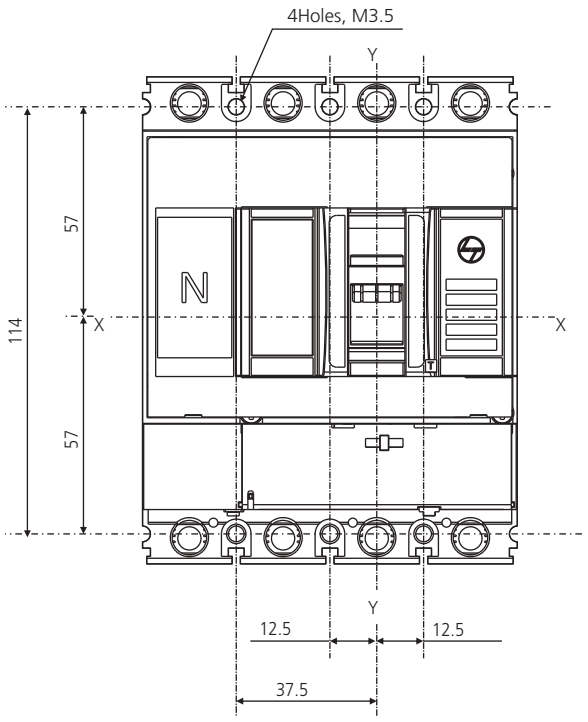
Overall Dimensions with Spreader Links



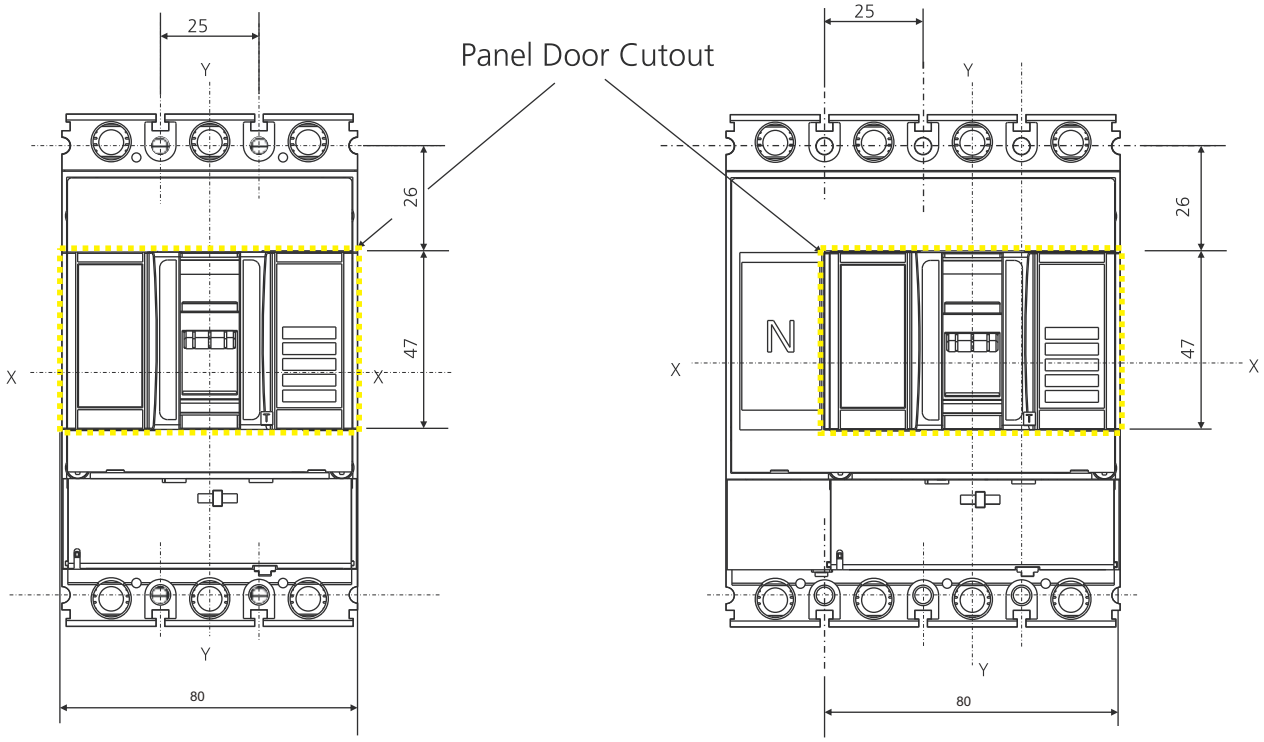
All dimensions are in mm

Mounting Dimensions



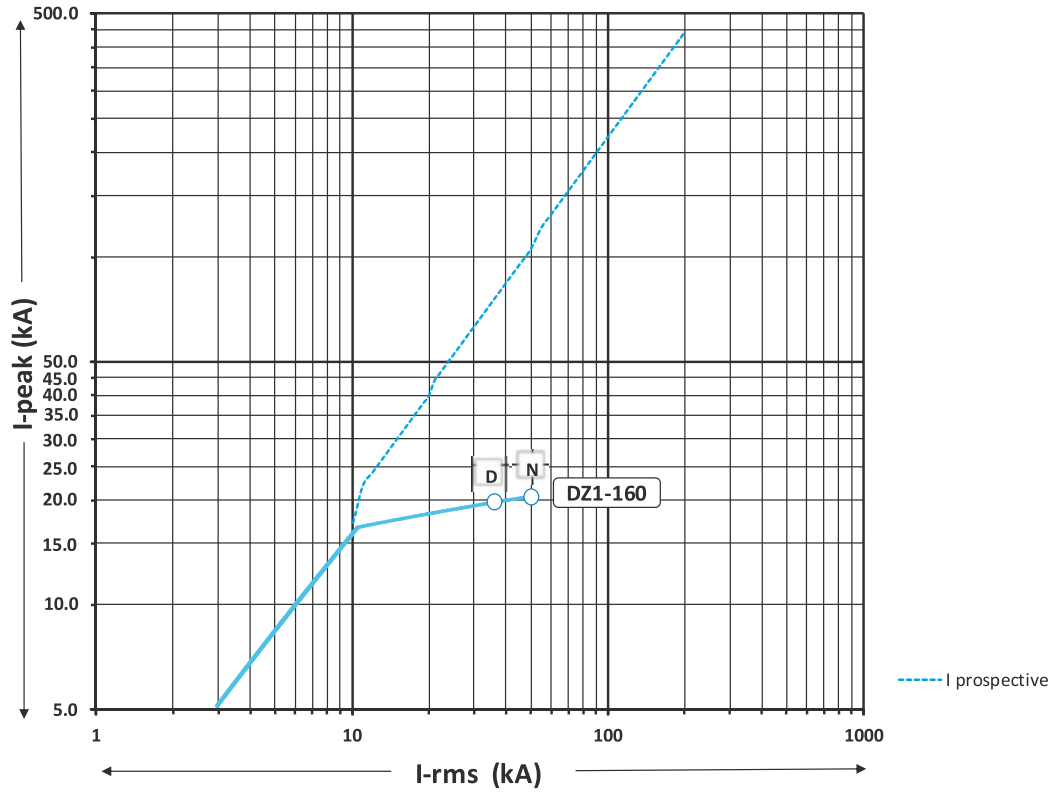


Panel Cutout

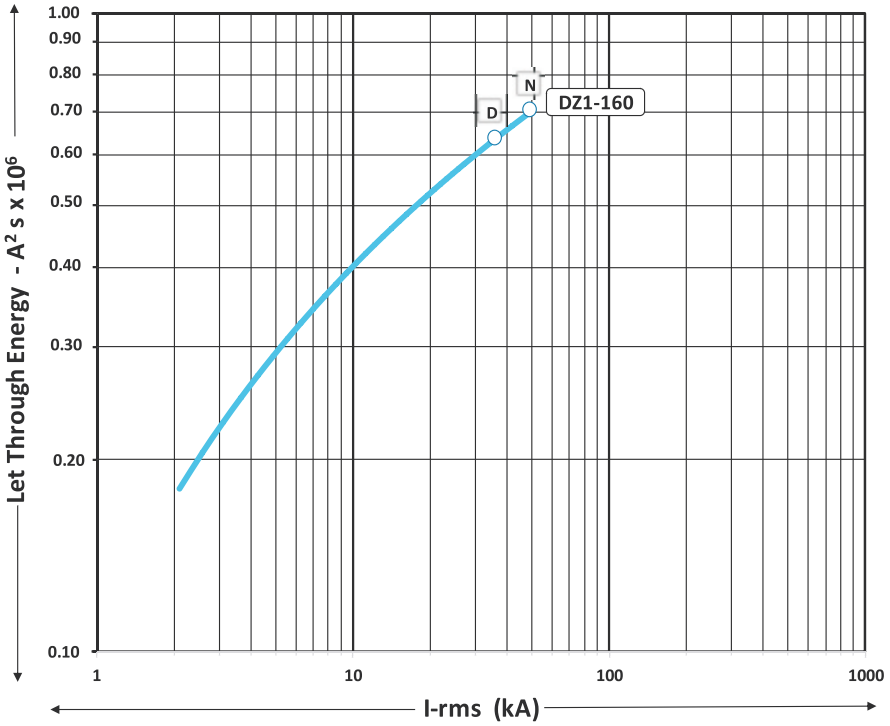


All dimensions are in mm

Current-Limiting Curve for d sine - DZ1 @ 415V



Energy-Limiting Curve for d sine - DZ1 @ 415V



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Product improvement is a continuous process. For the latest information and special applications, please contact any of our offices listed here.

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SAFE & SURE

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