

A nighttime photograph of a city skyline, likely New York City, viewed from across a body of water. The buildings are illuminated with various lights, and their reflections are visible on the water. A dark, semi-transparent rectangular overlay is placed over the middle of the image, containing the main title text in white.

Switchgear and Controlgear Product Training for Channel Partners

Product Range

Low Voltage Switchgear

ACB



MCCB



Pilot Devices



CAM Switches



Controlgear Range

Contactor

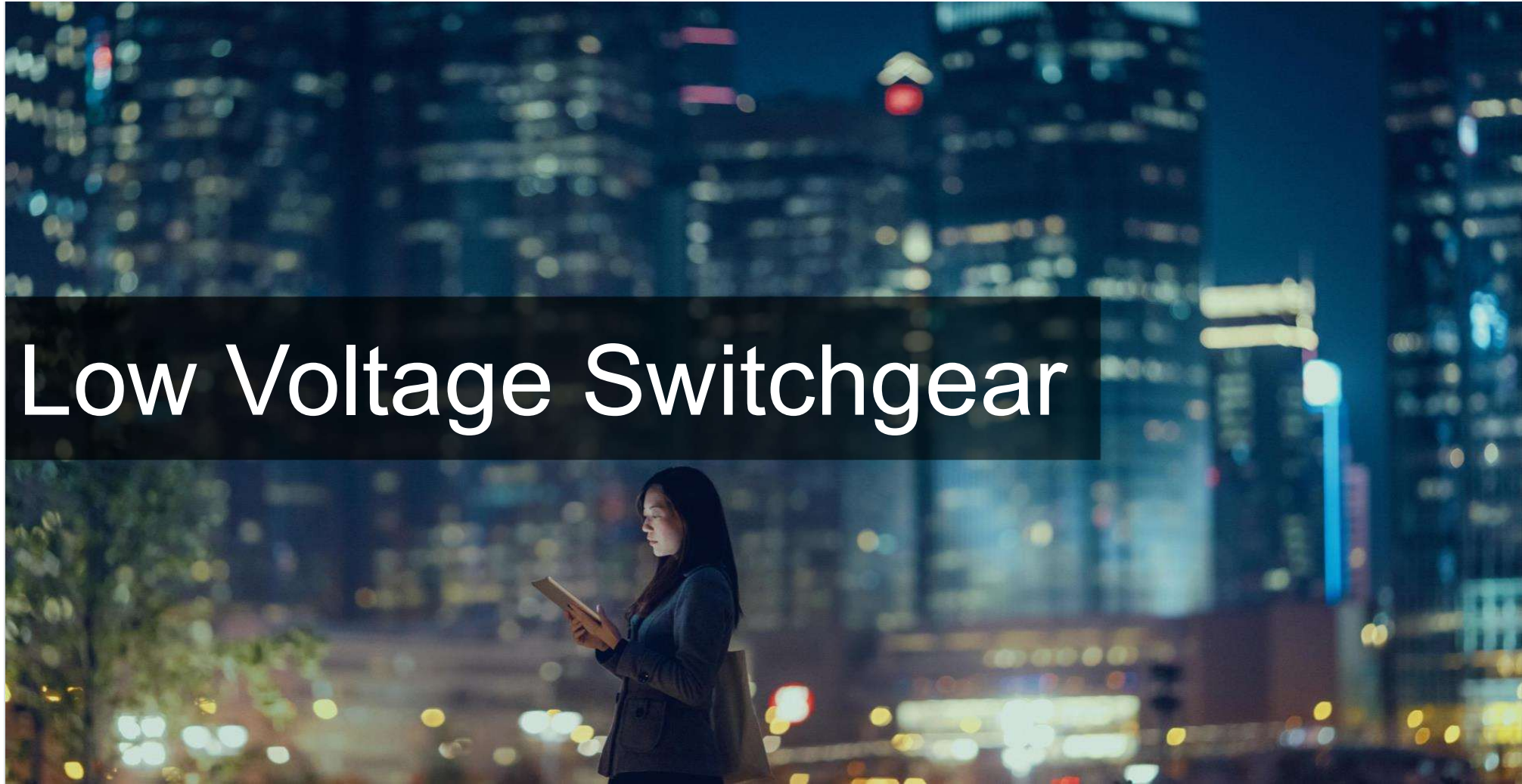


Overload Relay



MPCB





Low Voltage Switchgear

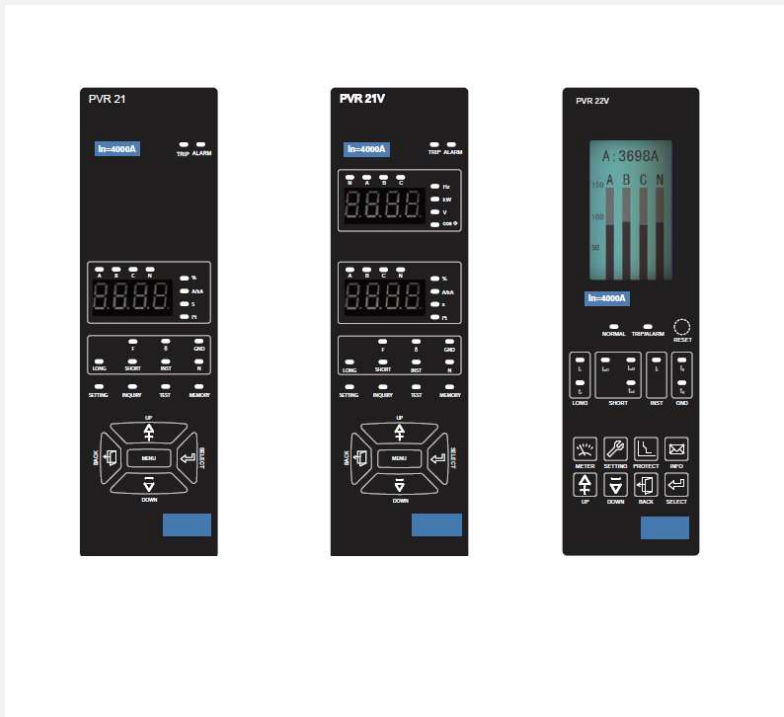
Air Circuit Breaker

PSL Series



- Range from 800A to 4000A with LCD display
- 2 Frame size
- Braking Capacity 55kA and 66kA
- No deratings under 40 degree C
- Fully protected neutral line on 4P
- Fixed and Draw-out version available
- Microprocessor based release: LED and LCD type
- Complete range of accessories suitable for all requirements

Trip unit types and features



- **PVR21:** LED digital with current measurement
- **PVR21V:** LED digital with current + voltage measurement
- **PVR22:** LCD with current measurement
- **PVR22V:** LCD with current + voltage measurement

Functions

Functional items		PVR21	PVR21V	PVR22	PVR22V
Display type	Digital LED and symbols display	√	√	–	–
	LCD panel symbols and graphics display	–	–	√	√
Protection functions	Overload long-time delay protection	√	√	√	√
	Overload thermal memory	√	√	√	√
	Overload pre-alarm	√	√	√	√
	Short circuit short-time delay protection	√	√	√	√
	Short-time delay thermal memory	√	√	√	√
	Short circuit instantaneous protection	√	√	√	√
	Grounding fault protection	√	√	√	√
	Ground alarm (LED indication)	–	–	√	√
	Neutral line protection	√	√	√	√
	Current unbalance protection	√	√	√	√
	MCR	√	√	√	√
	Undervoltage, overvoltage protection	–	–	–	√
	Voltage unbalance protection	–	–	–	√
	Phase sequence protection	–	–	–	√
	Under/Over frequency protection	–	–	–	√

Functions

Measuring function	Current	√	√	√	√
	Voltage	–	√	–	√
	Phase sequence	–	–	–	√
	Frequency	–	–	–	√
	Energy and power	–	–	–	√
Maintenance function	Fault status indication (LED)	√	√	√	√
	Fault event record(8 events) and query	√	√	√	√
	Historical peak current record	–	–	√	√
	Historical alarm event	–	–	√	√
	Self-diagnostic function	√	√	√	√
	Tripping simulation test	√	√	√	√
	Contact wear query	–	–	√	√
	Operating counter	–	–	√	√
	Clock function	–	–	√	√
Others	DC trip units (DC220V, DC110V)	▲	▲	▲	▲
	Remote reset of trip unit	▲	▲	▲	▲

“√” represents this function is available; “▲” represents optional functions for users, and “–” represents this function is not available

Air Circuit Breaker

IZMX Series



- Range from 800A to 6300A with LCD display
- Single frame size up to 4000A
- Braking Capacity up to 100kA
- Patented ARMS function: Arc flash Reduction Maintenance System
- Zone Selective Interlocking by default
- Communication options – MODBUS / PROFIBUS / ETHERNET
- True RMS current sensing trip units
- All trip units meet EMC directives

Modularity

Connection technology within Draw-out
Modular construction improves heat dissipation

Draw out breaker ("W")



Breaker rear side

The Primary Finger Clusters (blue) and levering mechanism are part of the breaker → Advantage if maintenance is required



Per phase parallel current paths, arranged vertically in order to ensure maximum heat dissipation.

PXR Trip Unit



	A	V	U	P
Magnum Digitrip Platform 5000A and 6300A	520 LI	520LSI(G)	520MC	1150i
			Std.: LCD, current Opt.: Communication, Arcflash Reduction Maintenance System	Std.: LCD, current, voltage, power, harmonics, waveform capture, communication, Opt.: Arcflash Reduction Maintenance System
IZMX PXR Platform	PXR10	PXR20	PXR25	PXR35
	Std.:Basic LSI/LSIG protection	Std.: LCD, current Opt.: Communication, Arcflash Reduction Maintenance System	Std.: PXR20+voltage, power, communication, waveform Opt.: Arcflash Reduction Maintenance System	Std.: PXR25+Color LCD, touch screen, harmonics, programmable digital relay output, etc. Opt.: Arcflash Reduction Maintenance System

Arcflash Reduction Maintenance System(ARMS)



- The Arcflash Reduction Maintenance System guarantees even more safety for maintenance staff. Overcurrent or dangerous arc flashes will lead to accelerated breaking of the contact and therefore reduce the energy that is set free (radiation, pressure, temperature).
- An accelerated switch-off happens even faster than the switch-off of a non-delayed short-circuit trip.
- This function can be activated either directly on the circuit breaker through an external switch, automatically, or via the communication bus.
- ARMS is optional on both PXR20 and PXR25 trip unit

Criteria for Selection

Rated Current

Nominal Voltage / Frequency

Breaking capacity

Functions required:

- No display
- Current Metering
- Power Metering etc

Operation:

- Fixed / Drawout
- Mechanical / Electrical

Poles

Protection required:

LSI, LSIG

Accessories with the required
voltage required if any

ACB Selection

PSL:

- Codes and prices available in Price List
 - Rating: 800A to 4000A
 - Breaking Capacity: 55kA
 - Trip Unit with LCD display and current Monitoring
 - EDO, MDO, EF, MF
- Any other configuration contact sales team

IZMX:

- Selection can be done with part codes as in the catalog
 - Basic breaker
 - Cassette (incase of DO)
 - + Accessories
- Selection will be done by Sales team

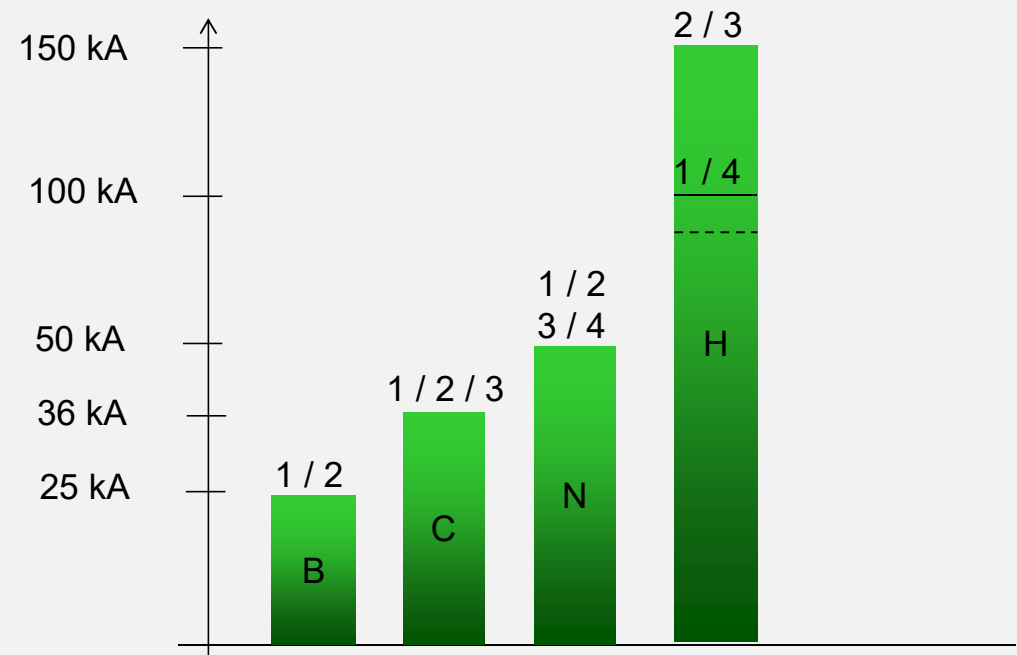
Moulded Case Circuit Breaker

NZM Series



- Four frame sizes with four levels of switching capacity
- Rated voltage up to 1000VAC
- Rated current from 20 to 1600A
- Breaking capacity 25kA to 150kA
- Release: Thermal Magnetic and Electronic trip unit
- Universal accessories

Switching Capacity at 415 VAC



Approvals



Features



- Rated voltage applicable up to 1000V AC
- Settings:
 - Yellow rotary knob for Thermal settings
 - Red rotary knob for Magnetic settings
- Indication:
 - Overload warning indication (70% to 100% of I_r) by default
- Wide range of selection of MCCB for different application
- No de-rating up to 50 deg
- Diagnostics USB port for parameterization to PLC

Criteria for Selection

Ratings

Rated Voltage

Approvals:
IEC/UL

Type of MCCB:

- Thermal Magnetic
- Electronic

Breaking capacity

Protection for electronic:

LI, LSI, LSIG

Accessories required if any



Contactors, OLR & MPCB

Contactor



- Widest range of contactors globally from 7A to 2600A in Air and Vacuum type
- Range: 7A to 500A Air type and 580A to 2600A Vacuum type contactor
- Available in AC3 and AC1 duty for 3P and 4P version and AC6 special capacitor duty contactor
- Electronic actuated coil in AC and DC: Contactors picks up at low voltage
- Low Power consumption coils: Energy saving
- Integrated suppressor with coil and twin terminals for easy connection
- Same dimensions of AC and DC contactors: Easy engineering

Contactors up to 170A



4 frame sizes up to 170A

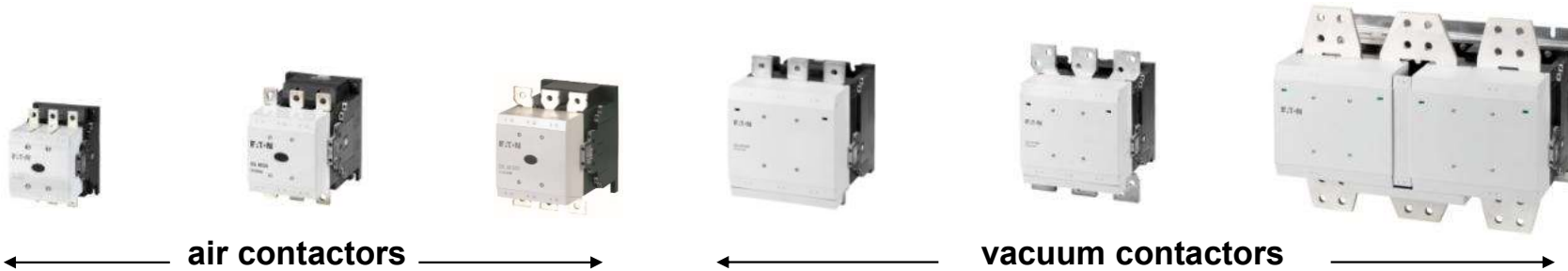
7 - 15A
45mm width

17 - 38A
45mm width

40 - 72A
55mm width

80 - 170A
90mm width

Product Range 185A up to 2600A



AC-3

DILM185A-
DILM225A
185-225A

DILM250-
DILM300A
250-300A

DILM400-
DILM500
400-500A

DILM580-
DILM1000
580-1000A

DILM1600
1600A

AC-1

DILM185A-
DILM225A

DILM250-
DILM300A

DILM400-
DILM500

DILM580-
DILM1000

DILH1400

DILH2000 –
DILH2600

60° C

275-315A

330-400A

500-650A

800-1000A

1400A

2000–2600A

40° C

337-386A

400-490A

612-800A

980-1225A

1714A

2450–3185A

Features



Twin Terminals for ease of wiring



Control wiring terminals in the front

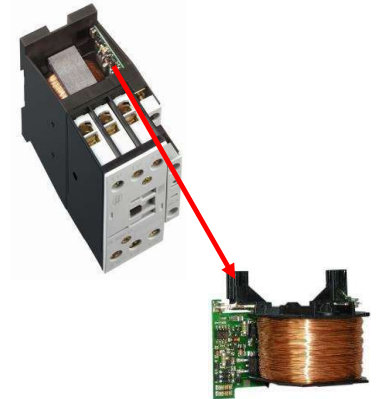


Surge Suppressor

AC operated:

- Pluggable up to DILM95
- By Default from DILM115 to DILH2600

DC Operated: By default for all range



Integrated Electronic coil for low power consumption

AC operated:

DILM115 – DILH2600

DC operated:

DILM17 – DILH2600



IP2X protection finger touch safety



Ready Wiring kits

- Shorting or paralleling links
- RDOL wiring kit
- SD wiring kit

Overload Relay



- Range: 0.1A to 1500A
- Adjustable Trip class setting for protection at heavy duty start
- Complement the contactor series with similar width
- Direct mounting with contactor up to 175A: No separate accessories required
- Manual or automatic reset
- GF device provides enhanced protection against ground faults

ZB-Relays – Product Range

ZB 12



up to 16A

ZB 32



up to 38A

ZB 65



up to 75A

ZB 150



up to 175A

Features



- Direct mounting from DILM7 to DILM170
- Dimensions and frame size complementing the contactor
- Electronic series available for enhanced motor protection
- Adjustable trip class settings
- Easy mounting

Motor Protection Circuit Breaker



- Range: 7A to 63A
- Complement the contactor series with similar width
- Breaking capacity available up to 150kA
- Common accessories with tool less installation
- Twin terminal for ease of wiring
- MPCB enclosure available with IP 40 and IP 65 (also with emergency stop button)

PKE: MPCB

3 basic units + 8 trip blocks = current range up to 65 A

12 A (45 mm)
PKE 12



32 A (45 mm)
PKE 32



65 A (55 mm)
PKE 65



Motor protection

0.3 A → 12 A
0.09 - 5.5 kW (400 V)

1 A → 32 A
0.37 - 15 kW (400 V)

8 A → 65 A
4 - 30 kW (400 V)

System protection

15 A → 36 A

15 A → 65 A

0.3 A → 1.2 A

1 A → 4 A

3 A → 12 A

8 A → 32 A

16 A → 65 A

15 A → 36 A

16 A → 65 A



PKE: Plugable trip units up to 65 A

Standard Version

- overload release $I_r = 0,25 - 1,0 \times I_u$
- time lag class 5...20
- self supplied
- short circuit release $14 \times I_u$ (non delayed)
- short circuit release $12 \times I_r$ (delayed)



Advanced version



- overload release $I_r = 0,25 - 1,0 \times I_u$
- time lag class 5...20
- self supplied
- short circuit release $14 \times I_u$ (non delayed)
- short circuit release $12 \times I_r$ (delayed)
- [COM interface for SmartWireDarwin](#)



PKE – plugable trip units up to 65 A

= increased the service-friendliness (short set-up times, fast commissioning)

= create transparent safeness by visible isolating distance

Motor Solutions using MPCB and Contactors

Motor Starter up to 30kW with Standard components

DOL Starter



Reversing Starter



Pn (AC3) kW	3...5,5(7,5)	7,5...15	18,5...30(35)
Ie (AC3) A	7...12(15)	17...32	40...65(72)

Pn (AC3) kW	3...5,5(7,5)	7,5...15
Ie (AC3) A	7...12(15)	17...32

Criteria for Selection

Contactor:

- Rating
- Coil voltage: AC or DC
- Contactor Duty (AC1, AC3, AC6b....)
- Auxiliary requirement: No. of NO and NC contacts

OLR:

- Rating
- Range for setting
- Auxiliary requirement: No. of NO and NC contacts

MPCB:

- Range
- Range of settings
- Breaking capacity

Pilot Devices – M22 and A22



- Non-Illuminated and Illuminated Pushbuttons
- Indicating Lights
- Emergency Stops (Illuminated and Keyed)
- Non-Illuminated, Illuminated, and Keyed Selector Switches
- Mushroom head buttons

Pilot Switches – M22

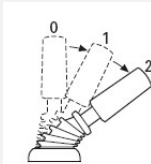
Standard Offering

- Pushbuttons
- Selector switches
- Mushroom head pushbuttons
- Emergency stops
- Pilot lights
- Control stations



Extended Offering

- Double pushbuttons (NEMA 4X / 13)
- Joysticks (2-step operation)
- Communicating devices – ASi
- Buzzers



Unique (New) Offering

- Four- way pushbuttons
- Palm switches
- Bulkhead interfaces – USB, RJ45



Key Features

- Field convertible selector switches and pushbuttons
- Custom laser engraving available for many products
- Stackable contact blocks
- Spring cage terminal blocks
- Exclusive LED offering

CAM Switches and Selector Switches



- Rotary switch T:
 - Current range: 10A to 315A
 - Rating: 6.5kW to 132kW with AC23 @ 400V/415V
 - Features: Flexible, Compact and Modular design
- Switch-Disconnecter P:
 - Range: P1 up to 32A, P3 up to 100A, P5 up to 315A
 - Features: Contacts are positively opened on de-energization
 - Used as switch disconnecter with or without emergency stop, ON/OFF switches as maintenance, manual override or safety switches

EATON

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