

Switch-disconnector 3p, 160A



Part no. PN1-160
281235
EL Number 4359000
(Norway)

General specifications	
Product name	Eaton Moeller series NZM switch-disconnector
Part no.	PN1-160
EAN	4015082812355
Product Length/Depth	88 millimetre
Product height	145 millimetre
Product width	90 millimetre
Product weight	0.886 kilogram
Compliances	RoHS conform
Certifications	IEC/EN 60947 IEC
Product Tradename	NZM
Product Type	Switch-disconnector
Product Sub Type	None
Catalog Notes	Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113. Isolating characteristics to IEC/EN 60947-3 and VDE 0660. Busbar tag shroud to VDE 0160 Part 100.
Delivery program	
Application	Use in unearthed supply systems at 690 V
Type	Switch-disconnector
Circuit breaker frame type	PN1
Number of poles	Three-pole
Amperage Rating	160 A
Features	Version as emergency stop installation Version as maintenance-/service switch Version as main switch
Special features	Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113. Isolating characteristics to IEC/EN 60947-3 and VDE 0660. Busbar tag shroud to VDE 0160 Part 100. Rated current = rated uninterrupted current: 160 A
Used with	Enclosure 100 x 800 x 800 mm
Technical Data - Electrical	
Voltage rating	690 V - 690 V
Rated operating voltage (Ue) at AC - max	690 V
Rated insulation voltage (Ui)	690 V
Rated impulse withstand voltage (Uimp) at auxiliary contacts	6000 V
Rated impulse withstand voltage (Uimp) at main contacts	6000 V
Rated conditional short-circuit current (Iq)	0 kA
Rated operational current	160 A (415 V AC-22/23A, making and breaking capacity) 160 A (690 V AC-22/23A, making and breaking capacity)
Rated permanent current at AC-21, 400 V	0 A
Rated permanent current at AC-23, 400 V	0 A
Rated conditional short-circuit current with back-up fuse	100 kA at 400/415 V 160 gR 80 kA at 690 V
Rated conditional short-circuit current with downstream fuse	10 kA at 690 V 160 gR 100 kA at 400/415 V
Rated short-time withstand current (Icw)	2 kA
Rated short-time withstand current (t = 0.3 s)	2 kA
Rated short-time withstand current (t = 1 s)	2 kA
Rated operating frequency	50 Hz
Rated short-circuit making capacity Icm at 690 V, 50/60 Hz	2.8 kA

Rated operating power at AC-3, 400 V		0 kW
Rated operating power at AC-23, 400 V		90 kW
Switching power at 400 V		0 kW
Short-circuit protective device fuses - max		160 A gL
Electrical connection type of main circuit		Frame clamp
Isolation		300 V AC (between the auxiliary contacts) 500 V AC (between auxiliary contacts and main contacts)
Number of operations per hour - max		120
Handle type		Rocker lever
Overvoltage category		III
Pollution degree		3
Lifespan, electrical		5000 operations at 690 V AC-1 7500 operations at 415 V AC-1 1000 operations at 400 V AC-23A 1000 operations at 415 V AC-23A 1000 operations at 690 V AC-23A 7500 operations at 400 V AC-1
Direction of incoming supply		As required

Technical Data - Mechanical

Mounting Method		Fixed Built-in device fixed built-in technique Distribution board installation Ground mounting Intermediate mounting
Degree of protection		IP20 (basic protection type, in the area of the HMI devices) Other
Degree of protection (IP), front side		IP20 IP66 (with door coupling rotary handle) IP40 (with insulating surround)
Degree of protection (terminations)		IP10 (tunnel terminal) IP00 (terminations, phase isolator and band terminal)
Protection against direct contact		Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part 110
Shock resistance		20 g (half-sinusoidal shock 20 ms)
Number of auxiliary contacts (change-over contacts)		0
Number of auxiliary contacts (normally closed contacts)		0
Number of auxiliary contacts (normally open contacts)		0
Number of switches		1
Handle color		Black
Switch positions		I, 0
Climatic proofing		Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
Special features		Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113. Isolating characteristics to IEC/EN 60947-3 and VDE 0660. Busbar tag shroud to VDE 0160 Part 100. Rated current = rated uninterrupted current: 160 A
Lifespan, mechanical		20000 operations

Technical Data - Mechanical - Terminals

Standard terminals		Box terminal
Optional terminals		Connection on rear. Screw terminal. Tunnel terminal
Terminal capacity (aluminum solid conductor/cable)		10 mm ² - 16 mm ² (1x) direct at switch rear-side connection 10 mm ² - 16 mm ² (2x) direct at switch rear-side connection 16 mm ² (1x) at tunnel terminal
Terminal capacity (aluminum stranded conductor/cable)		25 mm ² - 95 mm ² (1x) at 1-hole tunnel terminal
Terminal capacity (copper busbar)		M6 at rear-side screw connection Max. 16 mm x 5 mm direct at switch rear-side connection Min. 12 mm x 5 mm direct at switch rear-side connection
Terminal capacity (copper solid conductor/cable)		10 mm ² - 16 mm ² (1x) direct at switch rear-side connection 10 mm ² - 16 mm ² (1x) at box terminal 6 mm ² - 16 mm ² (2x) at box terminal 6 mm ² - 16 mm ² (2x) direct at switch rear-side connection 16 mm ² (1x) at tunnel terminal
Terminal capacity (copper stranded conductor/cable)		25 mm ² - 70 mm ² (1x) direct at switch rear-side connection 6 mm ² - 25 mm ² (2x) at box terminal 25 mm ² - 95 mm ² (1x) at 1-hole tunnel terminal 10 mm ² - 70 mm ² (1x) at box terminal 25 mm ² (2x) direct at switch rear-side connection Terminal capacity hint: Up to 95 mm ² can be connected depending on the cable manufacturer

Terminal capacity (copper strip)		Max. 9 segments of 9 mm x 0.8 mm at box terminal Min. 2 segments of 9 mm x 0.8 mm at box terminal
Design verification as per IEC/EN 61439 - technical data		
Rated operational current for specified heat dissipation (In)		160 A
Equipment heat dissipation, current-dependent		29.18 W
Ambient operating temperature - min		-25 °C
Ambient operating temperature - max		70 °C
Ambient storage temperature - min		40 °C
Ambient storage temperature - max		70 °C
Design verification as per IEC/EN 61439		
10.2.2 Corrosion resistance		Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures		Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat		Meets the product standard's requirements.
10.2.3.3 Resist. of insul. mat. to abnormal heat/fire by internal elect. effects		Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation		Meets the product standard's requirements.
10.2.5 Lifting		Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact		Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions		Meets the product standard's requirements.
10.3 Degree of protection of assemblies		Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances		Meets the product standard's requirements.
10.5 Protection against electric shock		Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components		Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections		Is the panel builder's responsibility.
10.8 Connections for external conductors		Is the panel builder's responsibility.
10.9.2 Power-frequency electric strength		Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage		Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material		Is the panel builder's responsibility.
10.10 Temperature rise		The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating		Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility		Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function		The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.
Additional information		
Functions		Interlockable Disconnectors/main switches

Technical data ETIM 9.0

Low-voltage industrial components (EG000017) / Switch disconnecter (low voltage) (EC000216)			
Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Switch disconnecter (ecl@ss13-27-37-14-03 [AKF060018])			
Version as main switch			Yes
Version as maintenance-/service switch			Yes
Version as safety switch			No
Version as emergency stop installation			Yes
Version as reversing switch			No
Number of switches			1
Max. rated operation voltage Ue AC	V		690
Rated operating voltage	V		690 - 690
Rated permanent current Iu	A		160
Rated permanent current at AC-23, 400 V	A		0
Rated permanent current at AC-21, 400 V	A		0
Rated operation power at AC-3, 400 V	kW		0
Rated short-time withstand current Icw	kA		2
Rated operation power at AC-23, 400 V	kW		90
Switching power at 400 V	kW		0

Conditioned rated short-circuit current Iq		kA	0
Number of poles			3
Number of auxiliary contacts as normally closed contact			0
Number of auxiliary contacts as normally open contact			0
Number of auxiliary contacts as change-over contact			0
Motor drive optional			No
Motor drive integrated			No
Voltage release optional			No
Device construction			Built-in device fixed built-in technique
Suitable for floor mounting			Yes
Suitable for front mounting 4-hole			No
Suitable for front mounting centre			No
Suitable for distribution board installation			Yes
Suitable for intermediate mounting			Yes
Colour control element			Black
Type of control element			Rocker lever
Interlockable			Yes
Type of electrical connection of main circuit			Frame clamp
With pre-assembled cabling			No
Degree of protection (IP), front side			IP20
Degree of protection (NEMA)			Other
Width		mm	90
Height		mm	145
Depth		mm	88
Width in number of modular spacings			