

Specifications



Eaton 098166

Eaton Moeller® series T0 Reversing switch, 20 A, service distr. board mounting, 3 contact units, Contacts: 5, 60 °, maintained, 0 (Off) position, 1-0-2, Design no. 8401

General specifications

PRODUCT NAME	Eaton Moeller® series T0 Reversing switch
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CATALOG NUMBER	098166
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MODEL CODE	T0-3-8401/IVS
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EAN	4015080981664
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PRODUCT LENGTH/DEPTH	101 mm
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PRODUCT HEIGHT	55 mm
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PRODUCT WIDTH	54 mm
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PRODUCT WEIGHT	0.155 kg
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CERTIFICATIONS	UL Category Control No.: NLRV CE UL CSA Class No.: 3211-05 CSA-C22.2 No. 94 VDE 0660 CSA IEC/EN 60947 CSA-C22.2 No. 60947-4-1-14 IEC/EN 60204 IEC/EN 60947-3 UL File No.: E36332 CSA File No.: 012528 UL 60947-4-1
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CATALOG NOTES	Rated Short-time Withstand Current (Icw) for a time of 1 second
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Actuator

ACTUATOR FUNCTION With 0 (Off) position Maintained

ACTUATOR TYPE Short thumb-grip

Contacts

CONTROL CIRCUIT RELIABILITY 1 failure per 100,000 switching operations statistically determined, at 24 V DC, 10 mA)

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 CONTACTS 5

Climatic environmental conditions

AMBIENT OPERATING TEMPERATURE - MAX 50 °C

AMBIENT OPERATING TEMPERATURE - MIN -25 °C

AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MAX 40 °C

AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MIN -25 °C

CLIMATIC PROOFING Damp heat, constant, to IEC 60068-2-78
Damp heat, cyclic, to IEC 60068-2-30

Design verification

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.

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.
EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	0 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0.6 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	20 A
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	0 W

Electrical rating

RATED BREAKING CAPACITY AT 220/230 V (COS PHI TO IEC 60947-3)	100 A
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RATED BREAKING CAPACITY AT 400/415 V (COS PHI TO IEC 60947-3)	110 A
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RATED BREAKING CAPACITY AT 500 V (COS PHI TO IEC 60947-3)	80 A
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RATED BREAKING CAPACITY AT 660/690 V (COS PHI TO IEC 60947-3)	60 A
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RATED OPERATIONAL CURRENT (IE)	15.6 A at AC-3, 500 V star- delta 20 A at AC-3, 230 V star- delta 20 A at AC-3, 400 V star- delta 8.5 A at AC-3, 690 V star- delta
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RATED OPERATIONAL CURRENT (IE) AT AC-21, 440 V	20 A
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RATED OPERATIONAL CURRENT (IE) AT AC-23A, 230 V	13.3 A
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RATED OPERATIONAL CURRENT (IE) AT AC-23A, 400 V, 415 V	13.3 A
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RATED OPERATIONAL CURRENT (IE) AT AC-23A, 500 V	13.3 A
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RATED OPERATIONAL CURRENT (IE) AT AC-23A, 690 V	7.6 A
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RATED OPERATIONAL CURRENT (IE) AT AC-3, 220 V, 230 V, 240 V	11.5 A
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RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V	11.5 A
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RATED OPERATIONAL CURRENT (IE) AT AC-3, 500 V	9 A
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RATED OPERATIONAL CURRENT (IE) AT AC-3, 660 V, 690 V	4.9 A
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RATED OPERATIONAL CURRENT (IE) AT DC-1, LOAD-BREAK SWITCHES L/R = 1 MS	10 A
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RATED OPERATIONAL	10 A
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Features & functions

ENCLOSURE MATERIAL	Plastic
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FITTED WITH:	Black thumb grip and front plate 0 (off) position
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INSCRIPTION	1-0-2
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NUMBER OF POLES	3
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CURRENT (IE) AT DC-13, CONTROL SWITCHES L/R = 50 MS	
RATED OPERATIONAL CURRENT (IE) AT DC-21, 240 V	1 A
RATED OPERATIONAL CURRENT (IE) AT DC-23A, 120 V	5 A
RATED OPERATIONAL CURRENT (IE) AT DC-23A, 24 V	10 A
RATED OPERATIONAL CURRENT (IE) AT DC-23A, 240 V	5 A
RATED OPERATIONAL CURRENT (IE) AT DC-23A, 48 V	10 A
RATED OPERATIONAL CURRENT (IE) AT DC-23A, 60 V	10 A
RATED OPERATIONAL POWER AT AC-23A, 220/230 V, 50 HZ	3 kW
RATED OPERATIONAL POWER AT AC-23A, 400 V, 50 HZ	5.5 kW
RATED OPERATIONAL POWER AT AC-23A, 500 V, 50 HZ	7.5 kW
RATED OPERATIONAL POWER AT AC-23A, 690 V, 50 HZ	5.5 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	4 kW
RATED OPERATIONAL POWER AT AC-3, 415 V, 50 HZ	5.5 kW
RATED OPERATIONAL POWER AT AC-3, 690 V, 50 HZ	4 kW
RATED OPERATIONAL POWER STAR-DELTA AT 220/230 V, 50 HZ	5.5 kW
RATED OPERATIONAL POWER STAR-DELTA AT 380/400 V, 50 HZ	7.5 kW
RATED OPERATIONAL POWER STAR-DELTA AT 500 V, 50 HZ	7.5 kW
RATED OPERATIONAL POWER STAR-DELTA AT	5.5 kW

690 V, 50 HZ	
RATED OPERATIONAL VOLTAGE (UE) AT AC - MAX	690 V
RATED UNINTERRUPTED CURRENT (IU)	20 A
UNINTERRUPTED CURRENT	Rated uninterrupted current Iu is specified for max. cross-section.

General information	
DEGREE OF PROTECTION	IP30
DEGREE OF PROTECTION (FRONT SIDE)	IP30 NEMA 2
LIFESPAN, MECHANICAL	400,000 Operations
MODEL	Reversing switch
MOUNTING METHOD	Service distribution board mounting
MOUNTING POSITION	As required
NUMBER OF CONTACT UNITS	3
OPERATING FREQUENCY	1200 Operations/h
OVERVOLTAGE CATEGORY	III
POLLUTION DEGREE	3
PRODUCT CATEGORY	Control switches
RATED IMPULSE WITHSTAND VOLTAGE (UIMP)	6000 V AC
SAFE ISOLATION	440 V AC, Between the contacts, According to EN 61140
SAFETY PARAMETER (EN ISO 13849-1)	B10d values as per EN ISO 13849-1, table C.1
SHOCK RESISTANCE	15 g, Mechanical, According to IEC/EN 60068-2-27, Half-sinusoidal shock 20 ms
SUITABLE FOR	Branch circuits, suitable as motor disconnect, (UL/CSA) Distribution board installation Front mounting
SWITCHING ANGLE	60 °
TYPE	Reversing switch

Motor rating	
ASSIGNED MOTOR POWER AT 115/120 V, 60 HZ, 1-PHASE	0.5 HP
ASSIGNED MOTOR POWER AT 200/208 V, 60 HZ, 1-PHASE	1 HP
ASSIGNED MOTOR POWER AT 200/208 V, 60 HZ, 3-PHASE	3 HP
ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 1-PHASE	1.5 HP
ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 3-PHASE	3 HP
ASSIGNED MOTOR POWER AT 460/480 V, 60 HZ, 3-PHASE	7.5 HP
ASSIGNED MOTOR POWER AT 575/600 V, 60 HZ, 3-PHASE	7.5 HP

Short-circuit rating

**RATED CONDITIONAL
SHORT-CIRCUIT CURRENT
(IQ)** 6 kA

**RATED SHORT-TIME
WITHSTAND CURRENT
(ICW)** 320 A, Contacts, 1 second

**SHORT-CIRCUIT CURRENT
RATING (BASIC RATING)** 5 kA, SCCR (UL/CSA)
50A, max. Fuse, SCCR
(UL/CSA)

**SHORT-CIRCUIT CURRENT
RATING (HIGH FAULT)** 10 kA, SCCR (UL/CSA)
20 A, Class J, max. Fuse,
SCCR (UL/CSA)

**SHORT-CIRCUIT
PROTECTION RATING** 20 A gG/gL, Fuse, Contacts

Switching capacity

LOAD RATING 2 x I_e (with intermittent
operation class 12, 25 %
duty factor)
1.6 x I_e (with intermittent
operation class 12, 40 %
duty factor)
1.3 x I_e (with intermittent
operation class 12, 60 %
duty factor)

**NUMBER OF CONTACTS
IN SERIES AT DC-21A, 240
V** 1

**NUMBER OF CONTACTS
IN SERIES AT DC-23A, 120
V** 3

**NUMBER OF CONTACTS
IN SERIES AT DC-23A, 24 V** 1

**NUMBER OF CONTACTS
IN SERIES AT DC-23A, 240
V** 5

**NUMBER OF CONTACTS
IN SERIES AT DC-23A, 48 V** 2

**NUMBER OF CONTACTS
IN SERIES AT DC-23A, 60 V** 3

**RATED MAKING
CAPACITY UP TO 690 V
(COS PHI TO IEC/EN
60947-3)** 130 A

**SWITCHING CAPACITY
(AUXILIARY CONTACTS,
GENERAL USE)** 10A, IU, (UL/CSA)

**SWITCHING CAPACITY
(AUXILIARY CONTACTS,
PILOT DUTY)** P300 (UL/CSA)
A600 (UL/CSA)

**SWITCHING CAPACITY
(MAIN CONTACTS,
GENERAL USE)** 16 A, Rated uninterrupted
current max. (UL/CSA)

**VOLTAGE PER CONTACT
PAIR IN SERIES** 60 V

Terminal capacities

SCREW SIZE	M3.5, Terminal screw
TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)	2 x (0.75 - 2.5) mm ² , ferrules to DIN 46228 1 x (0.75 - 2.5) mm ² , ferrules to DIN 46228
TERMINAL CAPACITY (SOLID/FLEXIBLE WITH FERRULE AWG)	18 - 14
TERMINAL CAPACITY (SOLID/STRANDED)	2 x (1 - 2.5) mm ² 1 x (1 - 2.5) mm ²
TIGHTENING TORQUE	1 Nm, Screw terminals 8.8 lb-in, Screw terminals

Resources

BROCHURES	Brochure - T Rotary Cam switch and P Switch-disconnector
CATALOGUES	P Switch-disconnectors and T Rotary cam switches catalogue CA042001EN
DECLARATIONS OF CONFORMITY	eaton-step-switch-declaration-of-conformity-eu250844en.pdf eaton-step-switch-declaration-of-conformity-uk251327en.pdf
DRAWINGS	eaton-rotary-switches-mounting-t0-step-switch-dimensions.eps eaton-rotary-switches-mounting-t0-step-switch-dimensions-004.eps eaton-rotary-switches-front-plate-t0-changeover-switch-symbol-009.eps eaton-rotary-switches-mounting-t0-changeover-switch-3d-drawing.eps eaton-general-rotary-switch-t0-step-switch-symbol-005.eps
ECAD MODEL	ETN.098166.edz
INSTALLATION INSTRUCTIONS	IL03801006Z
INSTALLATION VIDEOS	Eaton's P Switch-disconnectors used in a factory
MCAD MODEL	DA-CS-t0_3_ivs eaton-universal-control-switches-mcad-drawings-t0-3-ivs.dwg
PRODUCT NOTIFICATIONS	MZ008006ZU_Orderform_Customized_Switch.pdf MZ008005ZU_Orderform_Customized_Switch.pdf
WIRING DIAGRAMS	eaton-rotary-switches-reversing-switch-t0-reversing-switch-wiring-diagram-002.eps

PROJECT NAME:
PROJECT NUMBER:
PREPARED BY:
DATE:



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