



EKMS2-32P



EKMS2-32R



EKMS2-80P

Overview

EKMS2 series motor protection circuit breaker (MPCB) is designed for circuits with AC voltage up to 690V and current up to 80A. It is a comprehensive protection device that integrates the functions of a disconnecter, circuit breaker, and thermal overload relay. Its main purpose is to protect various single-phase and three-phase AC motors from potential damage such as overload and short circuit.

This product has multiple functions such as isolation protection, overload protection, temperature compensation, phase failure protection, and short circuit protection, and is widely used in industrial environments, small mechanical equipment, agricultural machinery, compressors, and other fields.

Features

- Compact size & space saving
- With overload & short circuit protection
- High breaking capacity
- Sensitive to single phasing
- Visual fault indication
- Simple & easy installation
- Wide range of accessories
- Available in open execution / in plastic enclosure

Technical Data

Model	EKMS2-32P	EKMS2-32R	EKMS2-80P
Standard	IEC 60947-2 & IEC 60947-4-1		
Operation type	Pushbutton	Rotary knob	Pushbutton
Utilization category	IEC 60947-2(circuit breaker)	A	
	IEC 60947-4-1 (motor starter)	AC-3	
Frame rated current Inm	32A	32A	80A
Number of poles	3		
Rated thermal current range Ith	0.16-32A	0.16-32A	25-80A
Rated operational voltage Ue	230/240, 400/415, 440, 500, 690		
Rated frequency	50/60Hz		
Rated insulation voltage Ui	690V		
Rated impulse withstand voltage Uimp	6kV		
Tripping test	Yes		
Tripping class (IEC 60947-4-1)	10A		

Release type	thermal-magnetic	
Operations/hour	120 cycles	
Electrical life	10000 cycles	1500 cycles
Mechanical life	100000 cycles	8500 cycles
Degree of protection (IEC 60529)	IP20, IP55 with Enclosure	
Pollution degree	3	
Ambient temperature	-25°C to +40°C	
Altitude	≤2000m	
Installation	Mounting on 35mm Din rail compliance with EN 60715	
Type of terminals	Screw	
Tightening torque	2 N.m	5 N.m
Internal accessories	Aux, alarm, shunt trip, UVR	Aux

Rated Ultimate and Service Short-circuit Breaking Capacity

Code Pushbutton	Code Rotary	Rated current of release In(A)	Setting current regulation range (A)	Rated ultimate short-circuit breaking I _{cu} (kA) Rated service short-circuit breaking capacity I _{cs} (kA)			
				400/415V		690V	
				I _{cu}	I _{cs}	I _{cu}	I _{cs}
EKMS2-3201P	EKMS2-3201R	0.16	0.1~0.16	100	100	100	100
EKMS2-3202P	EKMS2-3202R	0.25	0.16~0.25	100	100	100	100
EKMS2-3203P	EKMS2-3203R	0.4	0.25~0.4	100	100	100	100
EKMS2-3204P	EKMS2-3204R	0.63	0.4~0.63	100	100	100	100
EKMS2-3205P	EKMS2-3205R	1	0.63~1	100	100	100	100
EKMS2-3206P	EKMS2-3206R	1.6	1~1.6	100	100	100	100
EKMS2-3207P	EKMS2-3207R	2.5	1.6~2.5	100	100	3	2.25
EKMS2-3208P	EKMS2-3208R	4	2.5~4	100	100	3	2.25
EKMS2-3210P	EKMS2-3210R	6.3	4~6.3	100	100	3	2.25
EKMS2-3214P	EKMS2-3214R	10	6~10	100	100	3	2.25
EKMS2-3216P	EKMS2-3216R	14	9~14	15	7.5	3	2.25
EKMS2-3220P	EKMS2-3220R	18	13~18	15	7.5	3	2.25
EKMS2-3221P	EKMS2-3221R	23	17~23	15	6	3	2.25
EKMS2-3222P	EKMS2-3222R	25	20~25	15	6	3	2.25
EKMS2-3232P	EKMS2-3232R	32	24~32	10	6	3	2.25
EKMS2-8025P	-	25	16~25	15	7.5	4	2
EKMS2-8040P	-	40	25~40	15	7.5	4	2
EKMS2-8063P	-	63	40~63	15	7.5	4	2
EKMS2-8080P	-	80	56~80	15	7.5	4	2

Selection of backup fuse

When the expected short-circuit current of the installation site is greater than the rated limit short-circuit breaking capacity of the starter, the type and melt current specification of the backup short-circuit protection fuse shall be provided.

Code Pushbutton	Code Rotary	Rated current of release In(A)	Setting current regulation range (A)	Current rating of fuse-link of back-up fuse, which Icc > Icu(A)									
				230/240V		400/415V		440V		500V		690V	
				aM	gL	aM	gL	aM	gL	aM	gL	aM	gL
EKMS2-3201P	EKMS2-3201R	0.16	0.1~0.16	★	★	★	★	★	★	★	★	★	★
EKMS2-3202P	EKMS2-3202R	0.25	0.16~0.25	★	★	★	★	★	★	★	★	★	★
EKMS2-3203P	EKMS2-3203R	0.4	0.25~0.4	★	★	★	★	★	★	★	★	★	★
EKMS2-3204P	EKMS2-3204R	0.63	0.4~0.63	★	★	★	★	★	★	★	★	★	★
EKMS2-3205P	EKMS2-3205R	1	0.63~1	★	★	★	★	★	★	★	★	★	★
EKMS2-3206P	EKMS2-3206R	1.6	1~1.6	★	★	★	★	★	★	★	★	★	★
EKMS2-3207P	EKMS2-3207R	2.5	1.6~2.5	★	★	★	★	★	★	★	★	16	20
EKMS2-3208P	EKMS2-3208R	4	2.5~4	★	★	★	★	★	★	★	★	25	32
EKMS2-3210P	EKMS2-3210R	6.3	4~6.3	★	★	★	★	50	63	50	63	32	40
EKMS2-3214P	EKMS2-3214R	10	6~10	★	★	★	★	50	63	50	63	32	40
EKMS2-3216P	EKMS2-3216R	14	9~14	★	★	63	80	50	63	50	63	40	50
EKMS2-3220P	EKMS2-3220R	18	13~18	★	★	63	80	50	63	50	63	40	50
EKMS2-3221P	EKMS2-3221R	23	17~23	80	100	80	100	63	80	50	63	40	50
EKMS2-3222P	EKMS2-3222R	25	20~25	80	100	80	100	63	80	50	63	40	50
EKMS2-3232P	EKMS2-3232R	32	24~32	80	100	80	100	63	80	50	63	40	50
EKMS2-8025P	-	25	16~25	-	-	250	315	-	-	-	-	160	200
EKMS2-8040P	-	40	25~40	-	-	250	315	-	-	-	-	160	200
EKMS2-8063P	-	63	40~63	-	-	315	400	-	-	-	-	200	250
EKMS2-8080P	-	80	56~80	-	-	315	400	-	-	-	-	200	250

Note: ★ indicates No back-up fuse required.

Rated power of three phase motor controlled by starter

Code Pushbutton	Code Rotary	Rated current of release In(A)	Setting current regulation range (A)	Standard rated power of three phase motor (kW)					
				AC-3, 50Hz/60Hz					
				230/240V	400V	415V	440V	500V	690V
EKMS2-3201P	EKMS2-3201R	0.16	0.1~0.16	-	-	-	-	-	-
EKMS2-3202P	EKMS2-3202R	0.25	0.16~0.25	-	-	-	-	-	-
EKMS2-3203P	EKMS2-3203R	0.4	0.25~0.4	-	-	-	-	-	-
EKMS2-3204P	EKMS2-3204R	0.63	0.4~0.63	-	-	-	-	-	0.37
EKMS2-3205P	EKMS2-3205R	1	0.63~1	-	-	-	0.37	0.37	0.55
EKMS2-3206P	EKMS2-3206R	1.6	1~1.6	-	0.37	-	0.55	0.75	1.1
EKMS2-3207P	EKMS2-3207R	2.5	1.6~2.5	0.37	0.75	0.75	1.1	11	1.5
EKMS2-3208P	EKMS2-3208R	4	2.5~4	0.75	1.5	1.5	1.5	2.2	3
EKMS2-3210P	EKMS2-3210R	6.3	4~6.3	1.1	2.2	2.2	3	3.7	4
EKMS2-3214P	EKMS2-3214R	10	6~10	2.2	4	4	4	5.5	7.5
EKMS2-3216P	EKMS2-3216R	14	9~14	3	5.5	5.5	7.5	7.5	9
EKMS2-3220P	EKMS2-3220R	18	13~18	4	7.5	9	9	9	11
EKMS2-3221P	EKMS2-3221R	23	17~23	5.5	11	11	11	11	15
EKMS2-3222P	EKMS2-3222R	25	20~25	5.5	11	11	11	15	18.5
EKMS2-3232P	EKMS2-3232R	32	24~32	7.5	15	15	15	18.5	22
EKMS2-8025P	-	25	16~25	-	11	11	-	-	18.5
EKMS2-8040P	-	40	25~40	-	18.5	18.5	-	-	30
EKMS2-8063P	-	63	40~63	-	30	30	-	-	45
EKMS2-8080P	-	80	56~80	-	37	37	-	-	55

Action characteristics of motor circuit breaker when the phases are balanced (Distribution protection)

No.	Setting current multiple	Tripping time	Expected results	Initial state	Ambient air temperature
1	1.05	$t \leq 1h$	No tripping	Cold state	+20°C ±2°C
2	1.3	$t \leq 1h$	Tripping	Right after test.1	
3	1.5	$t < 2min$	Tripping		

Action characteristics of balanced load of each phase of the circuit breaker (Motor protection)

No.	Setting current multiple	Tripping time	Expected results	Initial state	Ambient air temperature
1	1.05	$t \leq 2h$	No tripping	Cold state	+20°C ±2°C
2	1.3	$t \leq 2h$	Tripping	Right after test.1	
3	1.5	$t < 2min$	Tripping		
4	7.2	2~10s	Tripping	Cold state	

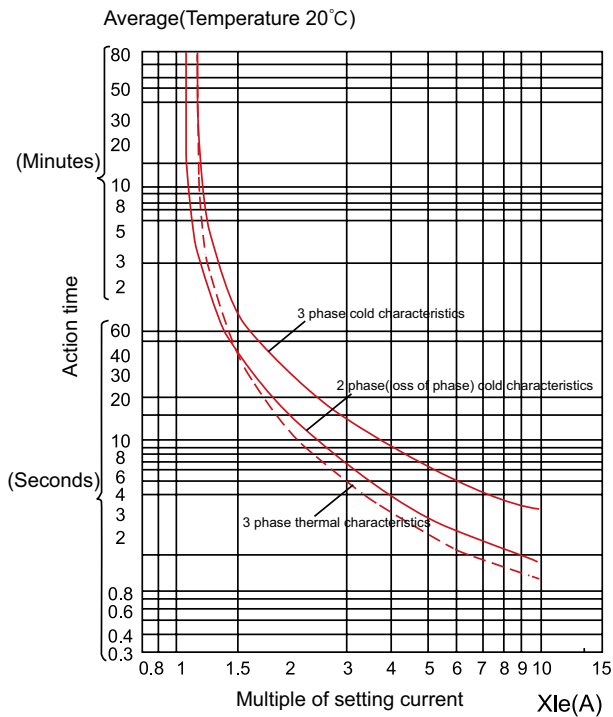
Action characteristics of the circuit breaker when the load is unbalanced (phase break)

No.	Setting current multiple		Tripping time	Expected results	Initial state	Ambient air temperature
	Any 2 phases	The other phase				
1	1	0.9	$t \geq 2h$	No tripping	Cold state	+20°C ±2°C
2	1.15	0	$t < 2h$	Tripping	Heat status (right after test.1)	

Action characteristics of instantaneous electromagnetic trip of starter



Test current	Initial state	Specified time	Expected results	Ambient air temperature
0.8x12xIn	Cold state	$t \geq 0.2s$	No tripping	+20°C ±5°C
1.2x12xIn	Cold state	$t < 0.2s$	Tripping	

Trip characteristics



The trip characteristics show the trip time of the switches as a function of the operating current. These are mean values of the scattering bands at 20 °C ambient temperature from cold condition. Specific characteristics can be requested for any setting range if required.

Name of accessories		Accessories Model (adapt the EKMS2-32P(R))	Specification
Undervoltage release		EKMS2-AU110	110~115V,50Hz; 127V,60Hz
		EKMS2-AU220	220~240V,50Hz
		EKMS2-AU380	380~400V,50Hz; 440V,60Hz
Shunt release		EKMS2-AS110	110~150V,50Hz; 127V,60Hz
		EKMS2-AS220	220~240V, 50Hz
		EKMS2-AS380	380~400V,50Hz ; 440V,60Hz
Instantaneous auxiliary contact (Forward-mounted)		EKMS2-AE20	2NO
		EKMS2-AE11	1NO+1NC
Instantaneous auxiliary contact (Side-mounted)		EKMS2-AN20	2NO
		EKMS2-AN11	1NO+1NC
Fault signal contact and instantaneous auxiliary contact		EKMS2-AD0110	1NC+1NO
		EKMS2-AD0101	1NC+1NC
		EKMS2-AD1010	1NO+1NO
		EKMS2-AD1001	1NO+1NC
Waterproof mounting box		EKMS2-MC	IP55

Name of accessories		Accessories Model (adapt the EKMS2-32P(R))	Specification
Mounting box with emergency stop button		EKMS2-MC01	IP55
Connector			For use with LC1D contactor
Extended handle		AP02 Consists of handle + fixed seat + extension rod	<p>Handle: Padlock can be used to lock the device in the off position, IP42</p> <p>Consists of handle + fixed seat + extension rod</p> <p>Extension rod: Made to a max. length of 350mm according to standard, customers can cut and use the thicker end on one side according to their actual needs.</p>

Note: The accessories of EKMS2-80 specification only include 1NO + 1NC and 2 NO auxiliary contacts, and the ordering codes are EKMS2-AN20(EKMS2-80) and EKMS2-AN11(EKMS2-80).

Basic Parameters of Undervoltage Release

Rated insulation voltage U_i	690 V
Operating voltage (enables cir. breaker switch on)	$(0.85 \sim 1.1) \times U_s$
Non-operating voltage (guarantees circuit breaker switch OFF)	$(0.7 \sim 0.35) \times U_s$
Energization consumption	20.2 VA / 13 W
Consumption	7.2 VA / 2.4 W
Max. opening time	20 ms

Basic Parameters of Shunt Release

Rated insulation voltage U_i	690 V
Operating voltage (guarantee circuit breaker switch OFF)	$(0.7 \sim 1.1) \times U_s$
Consumption - Energization	20.2 VA / 13 W
Max. opening time	20 ms

Basic Parameters of Instantaneous Auxiliary Contact

Name	Rated insulation voltage U_i (V)	Utilization category	Rated operating Voltage U_e (V)	Rated operating Current I_e (A)	Agreed heating Current I_{th} (A)	Normal operating power P (W)
Auxiliary contact (Forward-mounted)	250	AC-15	24	2	2.5	48
			48	1.25	2.5	60
			110/127	1	2.5	127
			230/240	0.5	2.5	120
		DC-13	24	1	2.5	24
			48	0.3	2.5	15
60	0.15		2.5	9		
Auxiliary contact (Side-mounted)	690	AC-15	48	6	6	300
			110/127	4.5	6	500
			230/240	3.3	6	720
			380/415	2.2	6	850
			440	1.5	6	650
			500	1	6	500
			690	0.6	6	400
		DC-13	24	6	6	140
			48	5	6	240
			60	3	6	180
			110	1.3	6	140
			220	0.5	6	120

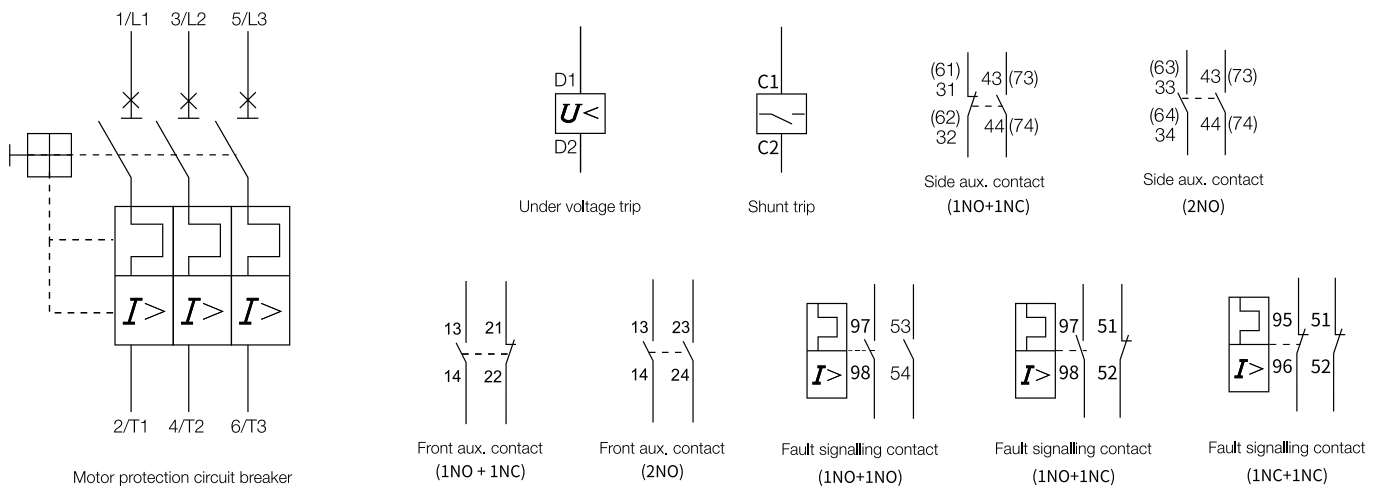
Basic Parameters of The Fault Signal Contact and Instantaneous Auxiliary Contact

Rated insulation voltage U_i (V)	Utilization category	Rated operating Voltage U_e (V)	Rated operating Current I_e (A)	Agreed heating Current I_{th} (A)	Normal operating power P (W)	Operating performance (time)
250	AC-14	24	1.5	2.5	36	1000
		48	1	2.5	48	1000
		110/127	0.5	2.5	72	1000
		230/240	0.3	2.5	72	1000
	DC-13	24	1	2.5	24	1000
		48	0.3	2.5	15	1000
		60	0.15	2.5	9	1000

Non-normal Making and Breaking Capacity of Fault Signal Contact and Instantaneous Auxiliary Contact

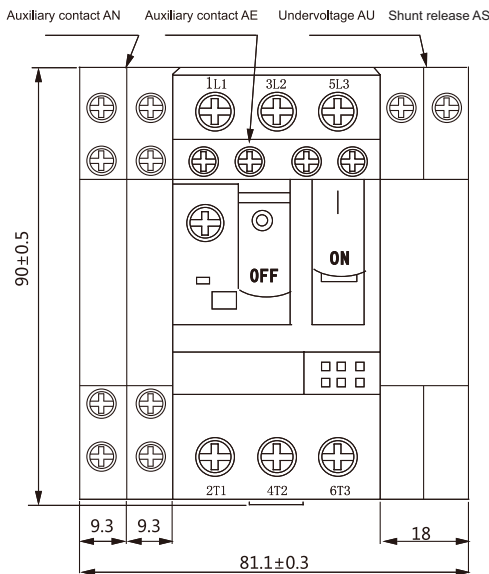
Use type	Connection			Disconnection			On-off operation cycles and operating frequency		
	I/le	U/Ue	CosΦ or T0.95	I/le	U/Ue	CosΦ or T0.95	Operating cycles	Operating cycles per minutes	Energize Time
AC-14	6	1.1	0.7	6	1.1	0.7	10	2	0.05
AC-15	10	1.1	0.3	10	1.1	0.3	10	2	0.05
DC-13	1.1	1.1	6Pe	1.1	1.1	6Pe	10	2	0.05

Circuit Diagram

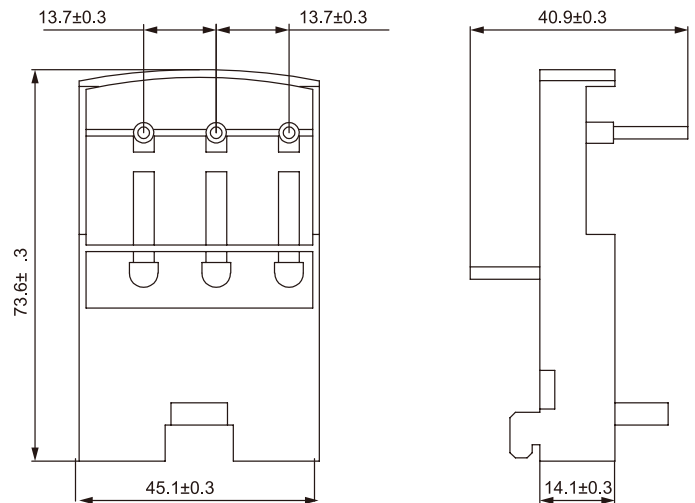


Accessory Mounting Position and Dimensions

• Accessory mounting position and dimensions



• Waterproof mounting box dimensions



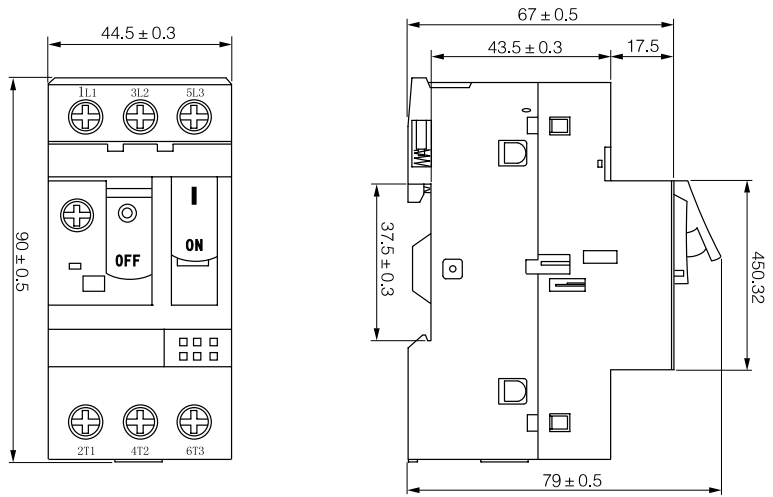
EKMS2 MPCB

Motor Protection Circuit Breaker

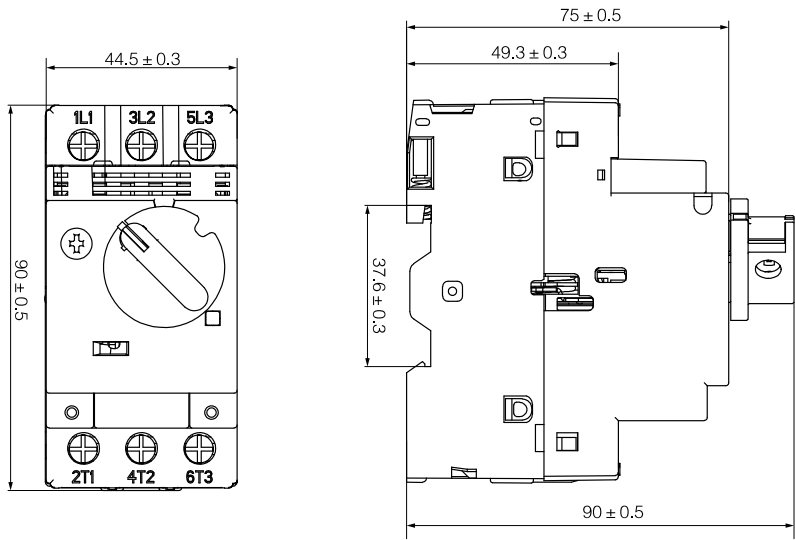
Standard_ IEC60947-2
IEC60947-4-1

• EKMS2 Series Dimensions

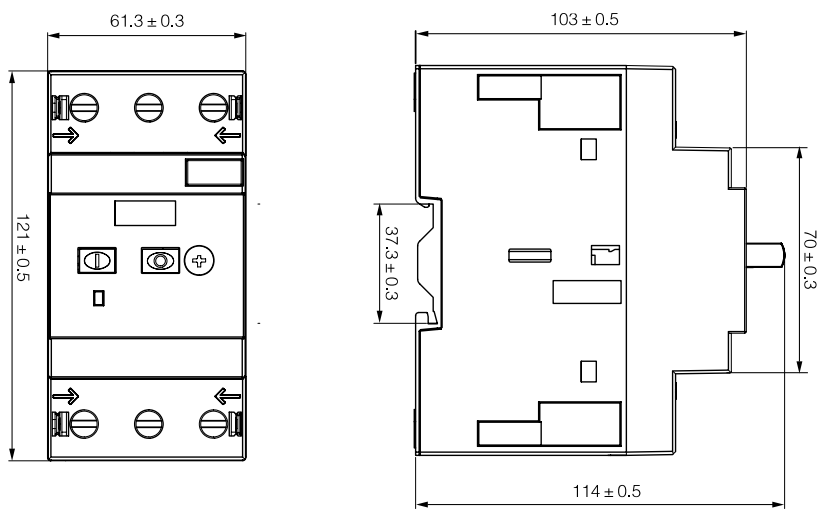
EKMS2-32P



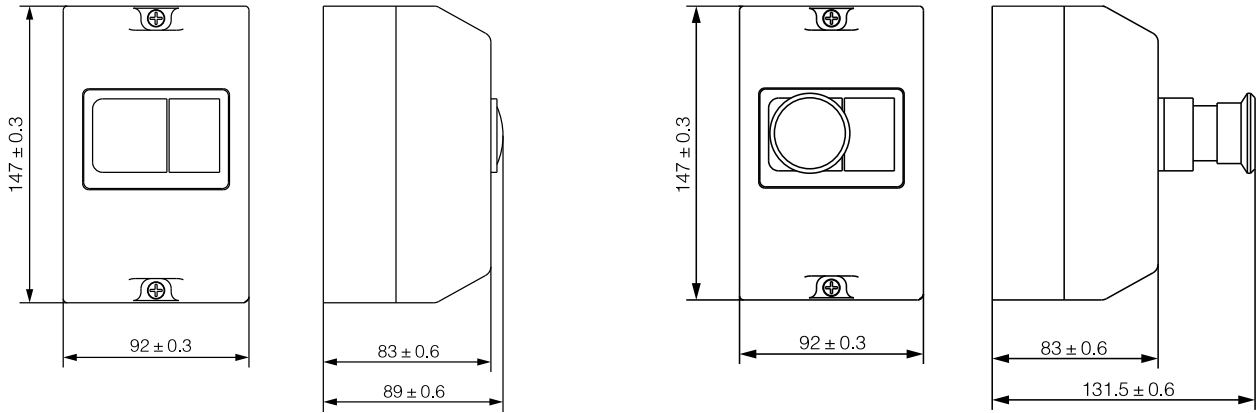
EKMS2-32R



EKMS2-80P



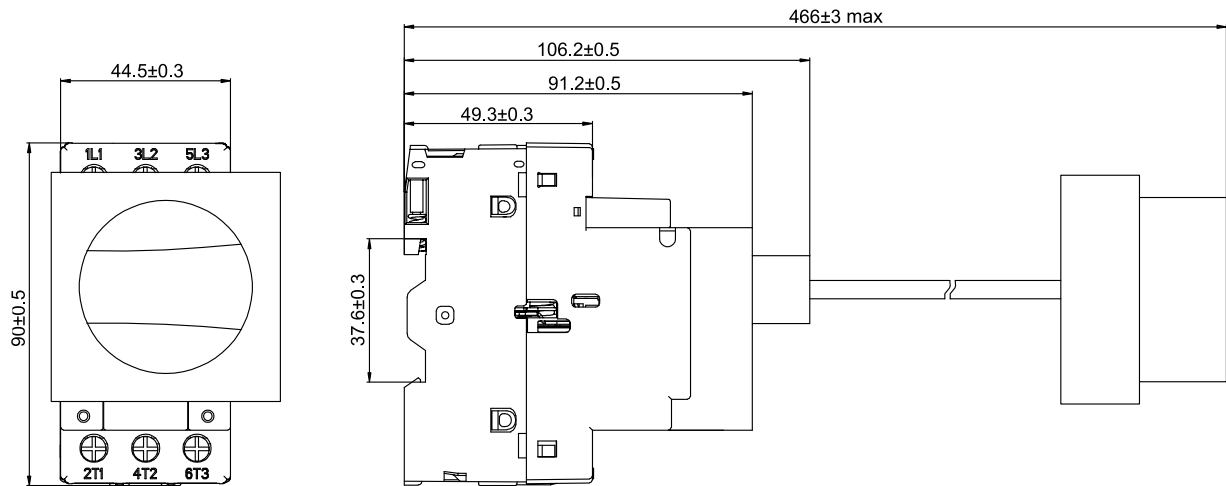
• Waterproof box Dimensions



EKMS2-MC
Waterproof mounting box

EKMS2-MC01
Waterproof mounting box with
emergency stop button

• Dimension of knob type product extension handle



EKMS2-32P AP02 Button Product Extended Handle