



**COMPANY
KRUS-ZAPAD**

Technical catalog **2026**

Industrial Heat Tracing Systems

KRUS-ZAPAD COMPANY

About company

KRUS-Zapad Company is a Russian full-service engineering and manufacturing company in the field of automated industrial heat tracing systems, low and medium voltage electrical equipment, Ex equipment for corrosive and hazardous environments, packaged and modular buildings and prefab structures to supply power to industrial and process facilities, industrial automation, and hardware and software packages.

100 %
RUSSIAN MADE

over 15
YEARS IN ELECTRICAL HEAT TRACING INDUSTRY

more than 2700
PROJECTS DELIVERED
THROUGHOUT RUSSIA AND
NEIGHBORING COUNTRIES

over 30 000 sq.m
OF MANUFACTURING AREA

FULL RANGE OF SERVICES



ENGINEERING



DELIVERY



INSTALLATION
AND SUPERVISED
INSTALLATION



COMMISSIONING



AFTERSALES SERVICE
AND WARRANTY
MAINTENANCE



TECHNICAL AUDITING

CERTIFICATION

The products are CU TR 004/2011, CU TR 012/2011, CU TR 020/2011 and fire safety certified, certified to meet ISO 9001, ISO 14001, OHSAS 18001, Russian State Standard System, and have a confirmation of being manufactured in Russia and other special certificates and approvals to meet the Customer's requirements or specific operation conditions (e.g. maritime register, INTERGAZCERT Certificate, etc.).

СДСПБ



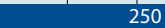
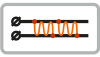
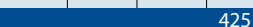
COMPANY KRUS-ZAPAD

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Heating Element Selection Table

Exposure temperature  Maintenance temperature  								Heating element	Type of Heating Element
0	100	200	300	400	500	600			
 85  65								CK-FS.85 Self-regulating heating element	
	 200  120							CK-FS.200 Self-regulating heating element	
		 250  150						CK-FS.250 Self-regulating heating element	
	 121  121							CK-FS.S Self-regulating heating element	
		 260  215						CK-SL Power-limiting heating element	
		 260  200						CK-SL.C Power-limiting heating element	
		 260  200						CK-ML Serial type heating element	
						 850  600		CK-MI-1M Constant wattage heating element	
				 425  340				CK-MI-2M Constant wattage heating element	

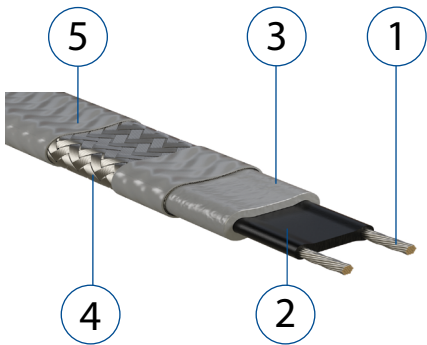
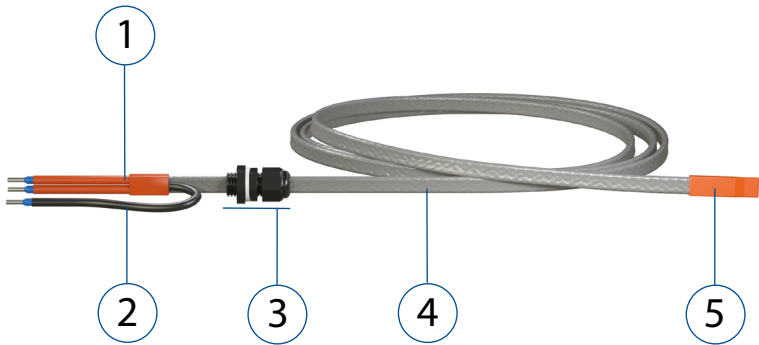
Selection table

DESCRIPTION

Parallel type self-regulating heating element CK-FS.85 is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment which are not subject to steam-out, for exposure to temperatures below 85°C.

Self-regulating heating element is supplied as a kit comprising a heat trace cable, connecting elements, an entry gland and termination.

DESIGN



- 1. Cable connector to feeding terminals in the junction box
- 2. PE lead to connect cable screening braid to PE terminal in the junction box
- 3. Cable gland to connect the cable into the junction box (assembly)
- 4. Heat trace cable
- 5. Termination

- 1. Nickel-plated copper wires
- 2. Semiconductor heating element
- 3. Electrical insulation
- 4. Tinned copper braid
- 5. Jacket for extra cable and braid protection

MODIFICATIONS

Parallel type self-regulating heating elements CK-FS.85 are produced in several designs with various jackets of heat trace cables. The jacketing material is identified with a Roman letter at the end of the item number.

Jacketing material is as marked:

Fluoropolymer.....CK-FS.85/_f
Thermoplastic.....CK-FS.85/_t

P.O. DETAILS

To place a P.O., please select the item number of the heating element from the Marking table that suits your project specification, and specify the jacket material and design length (m).

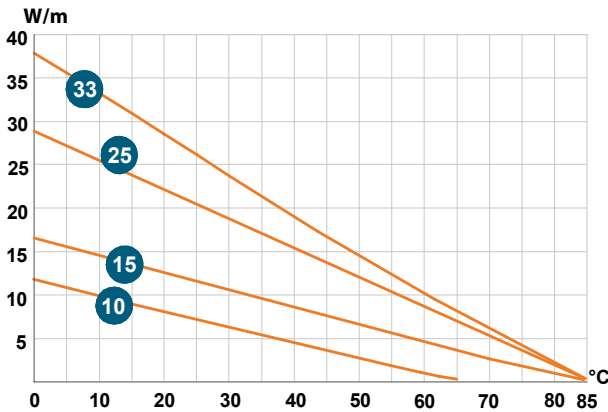
E.g., a P.O. for a CK-FS.85 type heating element (fluoropolymer jacketed heat cable, specific output = 23 W/m and design length = 30 m), should contain the following number:
CK-FS.85/25/30-f

GENERAL SPECIFICATION

Exposure temperature, max	85°C
Maintenance temperature, max	65°C
Supply voltage	~ 230 V
Jacket material	Fluoropolymer, thermoplastic
Wire material	Cu, Cu-Ni alloy
Type of heat cable	Parallel, self-regulating
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EAЭC RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T5 Gb X, Ex 60079-30-1 IIIC T85°C...T100°C Db X
UV resistance	Yes

OUTPUT RATING

Cable output vs. Temperature, @ 230 V



MARKING

Item #	Specific output, @ 10°C
CK-FS.85/10	10 W/m
CK-FS.85/15	15 W/m
CK-FS.85/25	25 W/m
CK-FS.85/33	33 W/m

MAX HEATING CIRCUIT LENGTH

		Max heat cable circuit length, with Type C circuit breaker, m			
Cable grade	CB Rating, A	Initial temperature, ° C			
		10	0	-20	-40
CK-FS.85/10	16	191	191	156	127
	25	226	226	226	199
	32	226	226	226	226
CK-FS.85/15	16	164	155	98	90
	25	205	184	153	123
	32	205	184	184	180
CK-FS.85/25	16	93	93	64	64
	25	146	146	128	100
	32	146	140	130	128
CK-FS.85/33	16	70	65	49	43
	25	110	109	90	65
	32	115	109	100	82

DESCRIPTION

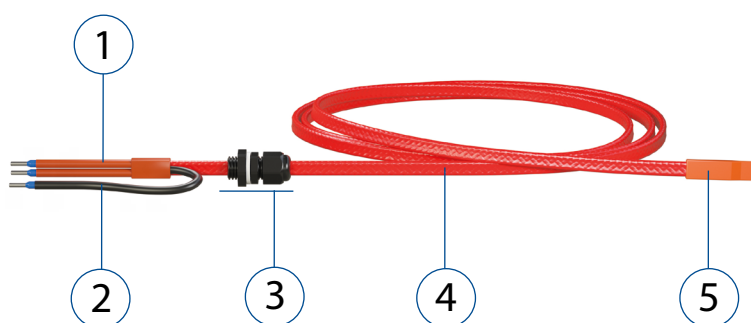
Parallel type self-regulating heating element CK-FS.200 is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment for exposure to temperatures below 200 °C.

Self-regulating heating element is supplied as a kit comprising a heat trace cable, connecting elements, and termination.

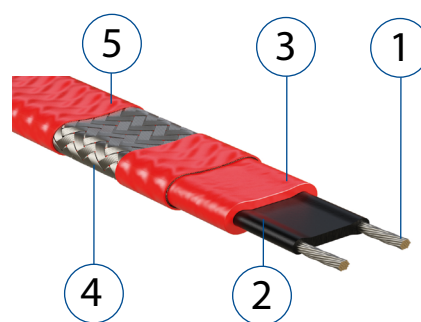
DESIGN

Heating element is sized to the Customer's specifications. The scope of supply includes a made-to-order heat trace cable, with wires for terminal connection and end termination, and a properly sized gland.

A gland is used to connect the cable into the power box while ensuring adequate tightness for hazardous area applications.



1. Cable connector to feeding terminals in the junction box
2. PE lead to connect cable screening braid to PE terminal in the power box
3. Cable gland to connect the cable into the power box for hazardous areas (assembly)
4. Heat trace cable
5. Termination



1. Nickel-plated copper wires
2. Semiconductor heating element
3. Electrical insulation
4. Tinned copper braid
5. Jacket for extra cable and braid protection

MODIFICATIONS

Parallel type self-regulating heating elements CK-FS.200 are produced with fluoropolymer jacketed heat trace cables. The jacketing material is identified with a Roman letter at the end of the item number.

Jacketing material is as marked:

Fluoropolymer.....CK-FS.200/_f

P.O. DETAILS

To place a P.O., please select the item number of the heating element from the Marking table that suits your project specification, and specify the jacket material and design length (m).

E.g., a P.O. for a CK-FS.200 type heating element with a fluoropolymer jacketed heat trace cable, specific output = 30 W/m and design length = 31 m, should contain the following number:

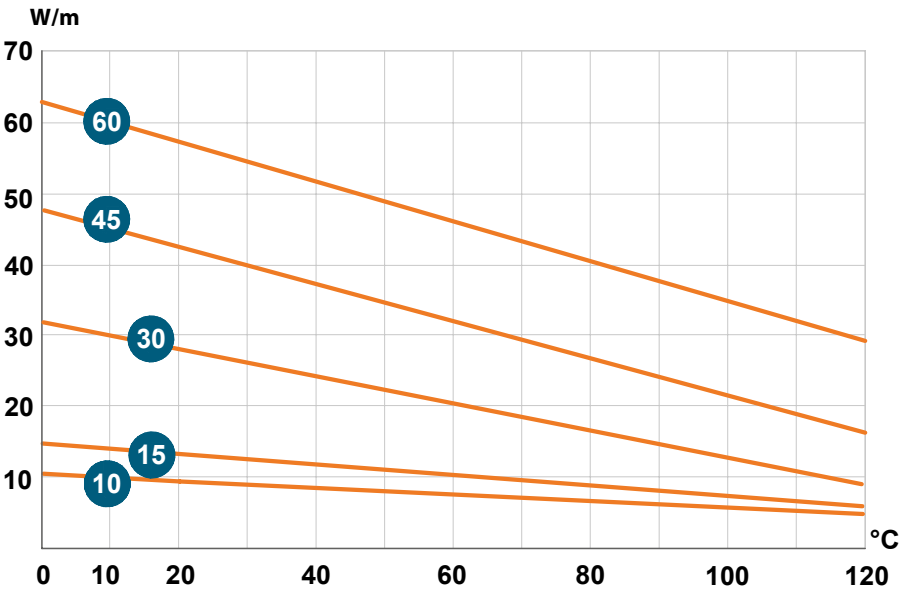
CK-FS.200/30/31-f

GENERAL SPECIFICATION

Exposure temperature, max	200°C
Maintenance temperature, max	120°C
Supply voltage	~230 V
Jacket material	Fluoropolymer
Wire material	Cu, Cu-Ni alloy
Type of heat cable	Parallel, self-regulating
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EA9C RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T3 Gb X, Ex 60079-30-1 IIIC T85°C...T200°C Db X

OUTPUT RATING

Cable output vs. Temperature, @ 230 V .



MARKING

Item #	Specific output, @ 10°C
CK-FS.200/10	10 W/m
CK-FS.200/15	15 W/m
CK-FS.200/30	30 W/m
CK-FS.200/45	45 W/m
CK-FS.200/60	60 W/m

MAX HEATING CIRCUIT LENGTH

Max heat cable circuit length, with type C circuit breaker, m

Cable grade	CB Rating, A	Initial temperature, °C			
		10	0	-20	-40
CK-FS.200/10	16	200	160	125	90
	25	235	160	139	118
	32	235	219	190	173
CK-FS.200/15	16	165	143	143	86
	25	189	160	139	115
	32	219	219	190	173
CK-FS.200/30	16	92	89	89	73
	25	114	112	112	108
	32	134	134	117	108
CK-FS.200/45	16	70	61	61	47
	25	82	77	77	74
	32	99	97	94	91
CK-FS.200/60	16	50	48	45	43
	25	60	58	55	52
	32	81	78	74	70

DESCRIPTION

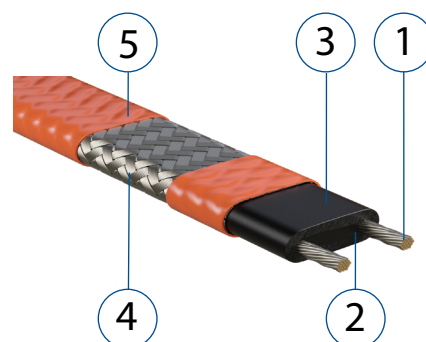
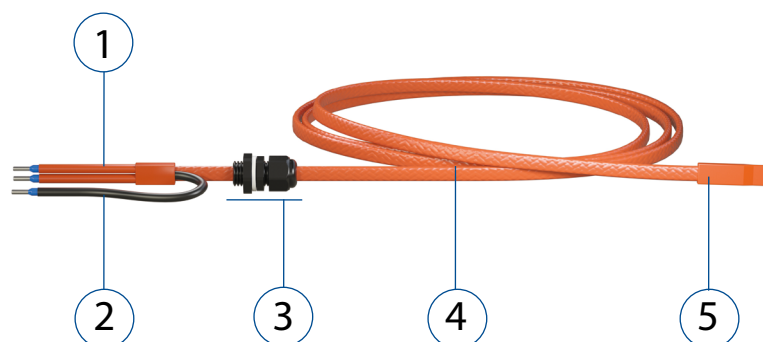
Parallel type self-regulating heating element CK-FS.250 is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment for exposure to temperatures below 250 °C.

Self-regulating heating element is supplied as a kit comprising a heat trace cable, connecting elements, and termination.

DESIGN

Parallel type self-regulating heating element CK-FS.250 is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment for exposure to temperatures below 250 °C.

Self-regulating heating element is supplied as a kit comprising a heat trace cable, connecting elements, and termination.



1. Cable connector to feeding terminals in the junction box
2. PE lead to connect cable screening braid to PE terminal in the power box
3. Cable gland to connect the cable into the power box for hazardous areas (assembly)
4. Heat trace cable
5. Termination

1. Nickel-plated copper wires
2. Semiconductor heating element
3. Electrical insulation
4. Tinned copper braid
5. Jacket for extra cable and braid protection

MODIFICATIONS

Parallel type self-regulating heating elements CK-FS.250 are produced in several designs with various jackets of heat trace cables. The jacketing material is identified with a Roman letter at the end of the item number.

Jacketing material is as marked:

Fluoropolymer.....	CK-FS.250/_f
Silicone.....	CK-FS.250/_s
Metal.....	CK-FS.250/_a

P.O. DETAILS

To place a P.O., please select the item number of the heating element from the Marking table that suits your project specification, and specify the jacket material and design length (m).

E.g., a P.O. for a CK-FS.250 type heating element with a fluoropolymer jacketed heat trace cable, specific output = 18 W/m and design length = 30 m, should contain the following number:

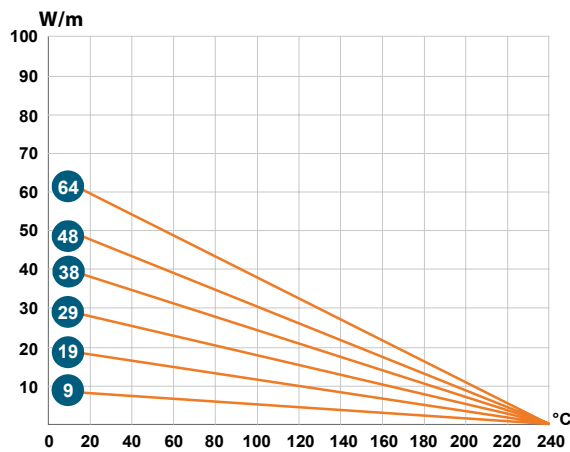
CK-FS.250/20/30-f

GENERAL SPECIFICATION

Exposure temperature, max	250°C
Maintenance temperature, max	150°C
Supply voltage	~230 V
Jacket material	Fluoropolymer, Silicone, Metal, Combo
Wire material	Cu, Cu-Ni alloy
Type of heat cable	Parallel, self-regulating
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EAЭC RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T2 Gb X, Ex 60079-30-1 IIIC T85°C...T300°C Db X

OUTPUT RATING

Cable output vs. Temperature, @ 230 V



MARKING

Item #	Specific output, @ 10°C
CK-FS.250/9	9 Вт/м
CK-FS.250/19	19 Вт/м
CK-FS.250/29	29 Вт/м
CK-FS.250/38	38 Вт/м
CK-FS.250/48	48 Вт/м
CK-FS.250/64	64 Вт/м

MAX HEATING CIRCUIT LENGTH

Max heat cable circuit length, with Type C Circuit Breaker, m

Cable grade	CB Rating, A	Initial temperature, °C			
		10	0	-20	-40
CK-FS.250/9	16	177	177	171	134
	25	215	215	215	215
	32	215	215	215	215
CK-FS.250/19	16	114	114	114	95
	25	152	152	152	152
	32	152	152	152	152
CK-FS.250/29	16	82	74	70	68
	25	110	106	100	96
	32	110	110	110	110
CK-FS.250/38	16	65	65	65	58
	25	106	106	106	96
	32	106	106	106	106
CK-FS.250/48	16	62	52	45	43
	25	82	78	71	67
	32	88	84	82	80
CK-FS.250/64	16	42	40	36	34
	25	64	64	56	56
	32	76	71	67	64

DESCRIPTION

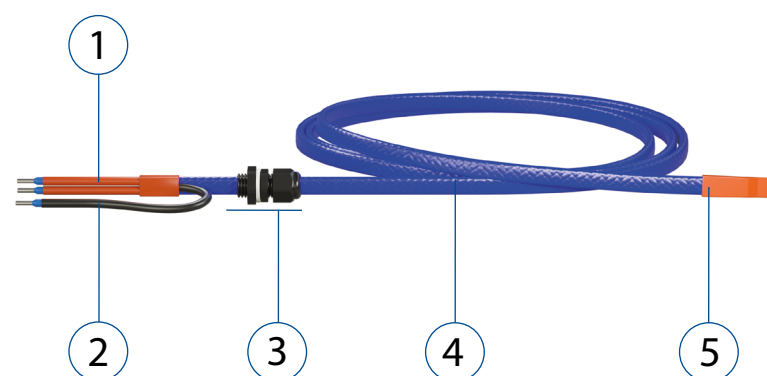
Parallel type self-regulating heating element CK-FS.S is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment, to warm floors, roads and ramps. A heat trace cable is embedded in concrete using a CK-IEK.F mounting kit.

Self-regulating heating element is supplied as a kit comprising a heat trace cable, connecting elements, and termination.

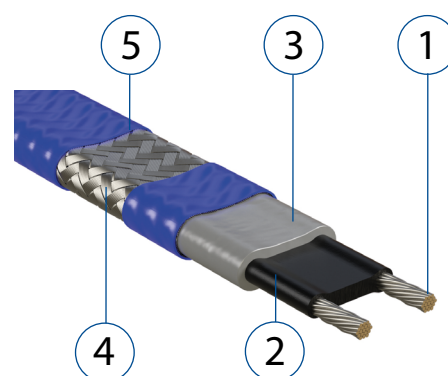
DESIGN

Heating element is sized to the Customer's specifications. The scope of supply includes a made-to-order heat trace cable, with wires for terminal connection and end termination, and a properly sized gland.

A gland is used to connect the cable into the power box while ensuring adequate tightness for hazardous area applications.



1. Cable connector to feeding terminals in the junction box
2. PE lead to connect cable screening braid to PE terminal in the power box
3. Cable gland to connect the cable into the power box for hazardous areas (assembly)
4. Heat trace cable
5. Termination



1. Nickel-plated copper wires
2. Semiconductor heating element
3. Electrical insulation
4. Tinned copper braid
5. Jacket for extra cable and braid protection

MODIFICATIONS

Parallel type self-regulating heating elements CK-FS.S are produced in several designs with various jackets of heat trace cables. The jacketing material is identified with a Roman letter at the end of the item number.

Jacketing material is as marked:

Thermoplastic.....**CK-FS.S/100-t**

P.O. DETAILS

To place a P.O., please select the item number of the heating element from the Marking table that suits your project specification, and specify the jacket material and design length (m).

E.g., a P.O. for a CK-FS.S type heating element with a heat trace cable, specific output = 102 W/m and design length = 30 m, should contain the following number:

CK-FS.S/100/30-t

GENERAL SPECIFICATION

Exposure temperature, max	121°C
Maintenance temperature, max	110°C
Supply voltage	~230 V
Jacket material	Thermoplastic, silicone
Wire material	Cu, Cu-Ni alloy
Type of heat cable	Parallel, self-regulating
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EA3C RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T3 Gb X, Ex 60079-30-1 IIIC T85°C...T200°C Db X

MARKING

Item #	Specific Output, @ 0°C
CK-FS.S/100	100 W/m

MAX HEATING CIRCUIT LENGTH

		Max heat cable circuit length, with Type C Circuit Breaker, m		
Cable grade	CB Rating, A	Initial temperature, °C		
		10	0	-20
CK-FS.S/100	16	35	50	44
	25	74	67	59
	32	80	76	72

DESCRIPTION

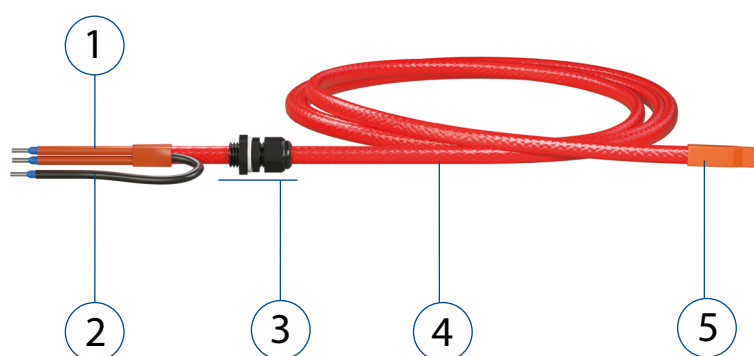
Parallel type power-limiting heating element CK-SL is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment for exposure to temperatures below 260 °C.

Power-limiting heating element is supplied as a kit consisting of a heat trace cable, connectors and termination.

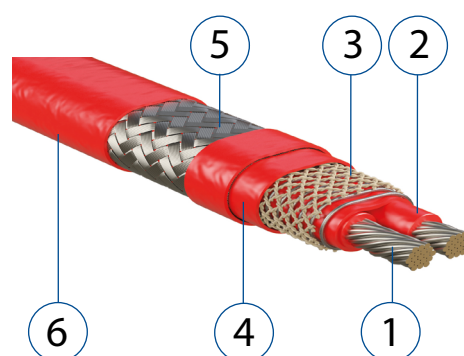
DESIGN

Heating element is sized to the Customer's specifications. The scope of supply includes a made-to-order heat trace cable, with wires for terminal connection and end termination, and a properly sized gland.

A gland is used to connect the cable into the power box while ensuring adequate tightness for hazardous area applications.



1. Cable connector to feeding terminals in the junction box
2. PE lead to connect cable screening braid to PE terminal in the power box
3. Cable gland to connect the cable into the power box for hazardous areas (assembly)
4. Heat trace cable
5. Termination



1. Nickel-plated copper wires
2. Electric insulation
3. Heating element
4. Electric insulation
5. Tinned copper braid
6. Jacket for extra cable and braid protection

P.O. DETAILS

To place a P.O., please select the item number of the heating element from the Marking table that suits your project specification, and specify the design length (m).

E.g., a P.O. for a CK-SL type heating element with a heat trace cable, specific output = 45 W/m and design length = 30 m, should contain the following number:

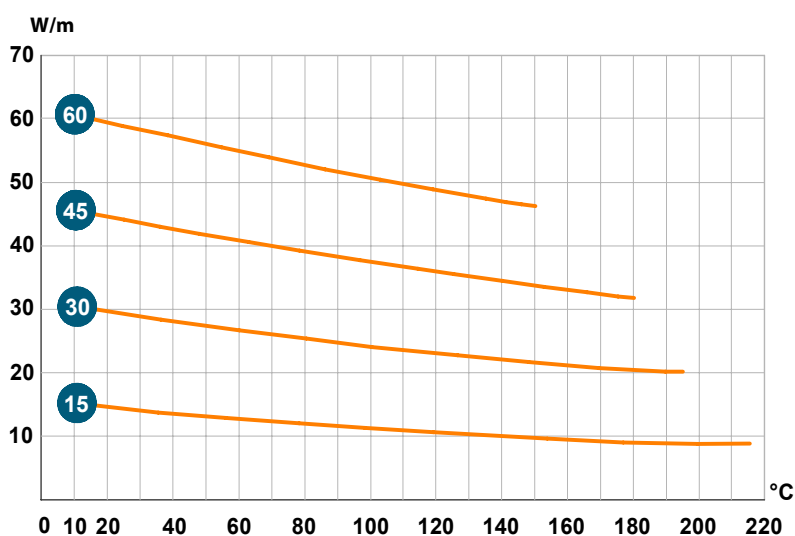
CK-SL/45/30

GENERAL SPECIFICATION

Exposure temperature, max	260°C
Maintenance temperature, max	215°C for CK-SL/15 195°C for CK-SL/30 180°C for CK-SL/45 150°C for CK-SL/60
Supply voltage	~230 V
Jacket material	Fluoropolymer
Type of heat cable	Parallel, max power
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EA3C RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T2 Gb X, Ex 60079-30-1 IIIC T85°C...T300°C Db X

OUTPUT RATING

Cable output vs. Temperature, @ 230 V



MARKING

Item #	Specific output, @ 10°C
CK-SL/15	15 W/m
CK-SL/30	30 W/m
CK-SL/45	45 W/m
CK-SL/60	60 W/m

MAX HEATING CIRCUIT LENGTH

Max heat cable circuit length, with Type C Circuit Breaker, m

Cable grade	CB Rating, A	Initial temperature, °C			
		10	0	-20	-40
CK-SL/15	16	167	167	167	167
	25	271	271	271	271
	32	375	375	375	375
CK-SL/30	16	85	85	85	85
	25	136	136	136	136
	32	180	180	180	180
CK-SL/45	16	57	57	57	57
	25	92	92	92	92
	32	120	120	120	120
CK-SL/60	16	44	44	44	44
	25	70	70	70	70
	32	91	90	86	82

DESCRIPTION

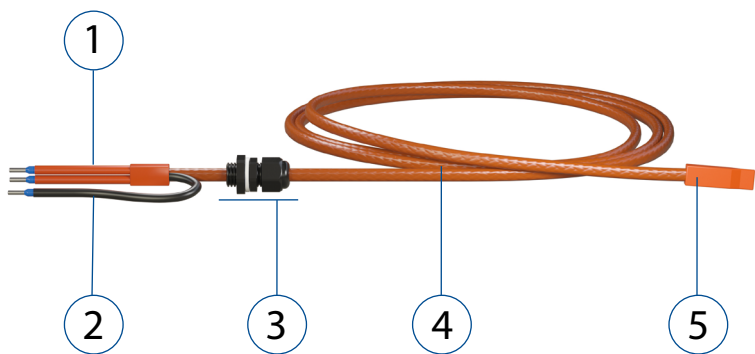
Parallel type constant wattage heating element CK-SL.C is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment for exposure to temperatures below 260 °C.

Constant wattage heating element is supplied as a kit consisting of a heat trace cable, connectors and end termination.

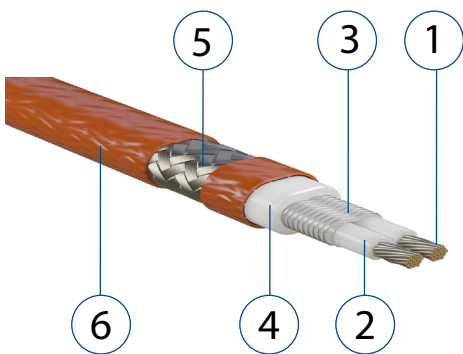
DESIGN

Heating element is sized to the Customer’s specifications. The scope of supply includes a made-to-order heat trace cable, with wires for terminal connection and termination, and a properly sized gland.

A gland is used to connect the cable into the power box while ensuring adequate tightness for hazardous area applications.



- 1. Cable connector to feeding terminals in the junction box
- 2. PE lead to connect cable screening braid to PE terminal in the power box
- 3. Cable gland to connect the cable into the power box for hazardous areas (assembly)
- 4. Heat trace cable
- 5. Termination



- 1. Nickel-plated copper wires
- 2. Electric insulation
- 3. Copper heating element
- 4. Electric insulation
- 5. Tinned copper braid
- 6. Jacket for extra cable and braid protection

MARKING

Item #	Specific output, @ 10°C	Maximum length, m
CK-SL.C/16	16 Bт/м	125
CK-SL.C/25	25 Bт/м	100
CK-SL.C/33	33 Bт/м	90
CK-SL.C/45	45 Bт/м	75
CK-SL.C/60	60 Bт/м	60

GENERAL SPECIFICATION

Exposure temperature, max	260°C
Maintenance temperature, max	200°C
Supply voltage	~230 V
Jacket material	Fluoropolymer
Conductor/heater wire material	Cu
Type of heating cable	Parallel, constant wattage
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EAЭC RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T2 Gb X, Ex 60079-30-1 IIIC T85°C...T300°C Db X

P.O. DETAILS

To place a P.O., please select the item number of the heating element from the Marking table that suits your project specification, and specify the design length (m).

E.g., a P.O. for a CK-SL.C type heating element with a heat trace cable, specific output = 33 W/m and design length = 30 m, fluoropolymer jacketed, should contain the following number:

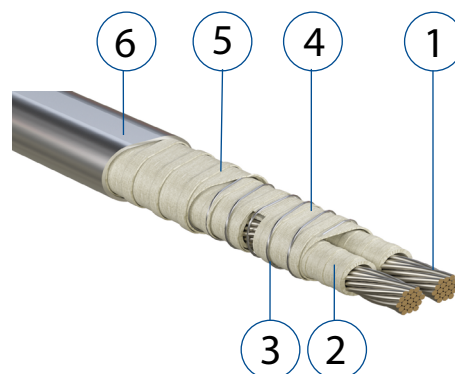
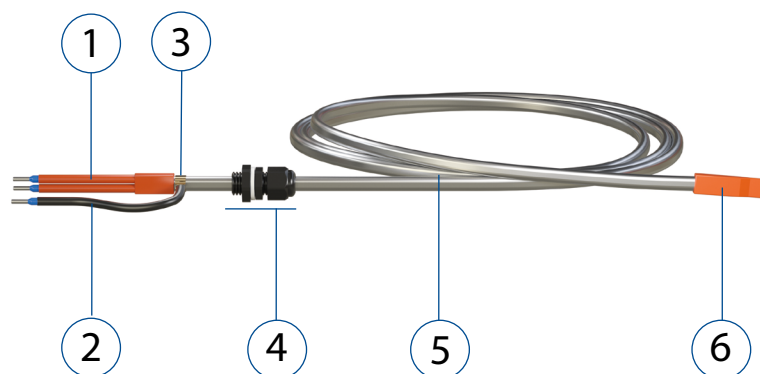
CK-SL.C/33/30-f

DESCRIPTION

Metal-jacketed constant wattage heating element CK-MI-2M is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment for exposure to temperatures below 425 °C.

Metal-jacketed constant wattage heating element is supplied as a kit consisting of a heat trace cable, cold gland, and end termination. As this is a parallel-type cable with a segmental heater, cold entry requires cable end fan-out for termination.

DESIGN



1. Wires connecting the cable to feeding terminal in the junction box
2. PE lead to connect cable screening braid to PE terminal in the power box
3. Clamp for PE lead connection to cable metal jacket
4. Cable gland to connect the cable into the power box for hazardous areas (assembly)
5. Metal jacketed heat trace cable
6. Termination

1. Nickel-plated copper wires
2. Electric insulation
3. Ni-Cr alloy heating element
4. Contact point
5. Electric insulation
6. Seamless metal jacket for extra cable protection

P.O. DETAILS

To place a P.O., please select the item number of the heating element from the Marking table that suits your project specification, and specify the design length (m).

E.g., a P.O. for a CK-MI-2M type heating element with a heat trace cable, specific output = 70 W/m and design length = 30 m, should contain the following number:

CK-MI-2M.70/30

GENERAL SPECIFICATION

Exposure temperature, max	425°C
Maintenance temperature, max	340°C
Supply voltage	~230 V
Jacket material	Al
Conductor/heater wire material	Cu, Cu-Ni alloy / Alloy 600
Type of heat cable	Parallel, segmented, constant wattage
ZoHazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EA3C RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T1 Gb X, Ex 60079-30-1 IIIC T85°C...T450°C Db X

MARKING

Item #	Specific output, W/m	Max length, m
CK-MI-2M.15	15	118
CK-MI-2M.30	30	83
CK-MI-2M.50	50	64
CK-MI-2M.70	70	54
CK-MI-2M.100	100	46
CK-MI-2M.150	150	37

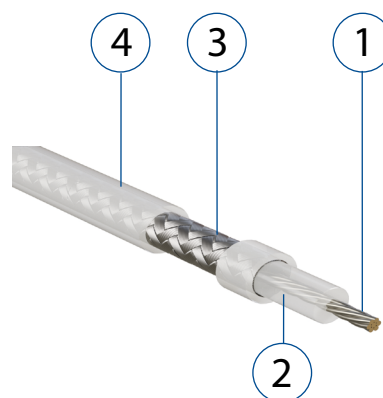
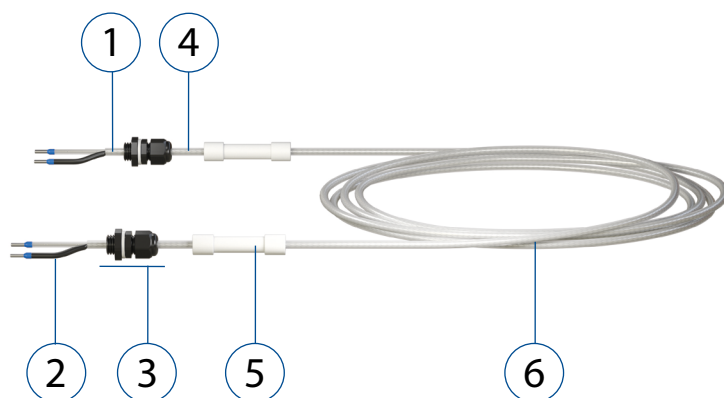
DESCRIPTION

Series type heating element CK-ML is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment for exposure to temperatures below 260 °C, to warm floors, roads and ramps.

Series type heating element is supplied as a kit consisting of a heat trace cable, connectors and cold lead cables.

DESIGN

Heating element is sized to the Customer's specifications. The scope of supply includes a made-to-order heat cable, with connectors and cold tails for connection into a junction box. A gland is used to connect the cable into the power box while ensuring adequate tightness for hazardous area applications.



1. Cold lead cable wire to be connected to the feeding terminal in the junction box
2. PE lead to connect cable screening braid to PE terminal in the power box
3. Cable gland to connect the cable into the power box for hazardous areas (assembly)
4. Cold lead cable
5. Cold lead connector
6. Heat trace cable

1. Ni-plated conductor
2. Electric insulation
3. Ni-plated copper braid
4. Jacket for extra cable and braid protection

MODIFICATIONS

Constant Wattage Heating Element CK-ML is has a few modifications:

CK-ML/X1/X2/X3/CLX4-X5-X6

X1 – conductor resistance, Ω/km ;

X2 – heating run length, m;

X3 – voltage between connecting wires, V;

X4 – cold lead cross section, sq.mm;

X5 - cold lead cable length (m) on both sides – only for nontypical length specification. The typical length of cold lead cable runs on both sides of the section is 1.5 m. Nontypical cold lead cable length is subject to manufacturer's confirmation.

X6 - jacket material index. A PFA jacket is used if the index is missing. An -LT index stands for a FEP jacket.

P.O. DETAILS

To place a P.O., please select the item number of the heating element from the Marking table that suits your project specification, and specify the design length (m).

E.g., a P.O. for a CK-ML type heating element with a heat trace cable, resistivity = 100 Ω/km and design length = 30 m, @ 230 V, PFA jacketed, should contain the following number:

CK-ML/100/1P/30

GENERAL SPECIFICATION

Exposure temperature, max, PFA jacket	260°C
Maintenance temperature, max, PFA jacket	200°C
Exposure temperature, max, FEP jacket	200°C
Maintenance temperature, max, FEP jacket	150°C
Supply voltage, max	~750 V
Jacket material	Fluoropolymer
Wire material	Cu, Ni-Cr, Cu-Ni alloy
Type of heat cable	Series type, constant wattage
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EAЭC RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T2 Gb X, Ex 60079-30-1 IIIC T85°C...T300°C Db X

MARKING

Item #	Resistivity @ 20 °C, Ω/km	Cable OD, sq.mm
CK-ML/1.8	1.8	7.20
CK-ML/2.9	2.9	7.00
CK-ML/4.4	4.4	6.30
CK-ML/7	7	5.50
CK-ML/7.1	7.1	5.10
CK-ML/7.2	7.2	5.54
CK-ML/9.7	9.7	4.75
CK-ML/10	10	5.10
CK-ML/11.6	11.6	4.90
CK-ML/11.7	11.7	4.90
CK-ML/11.9	11.9	4.60
CK-ML/15	15	4.70
CK-ML/17.4	17.4	4.30
CK-ML/17.8	17.8	4.60
CK-ML/24.8	24.8	4.30
CK-ML/25	25	4.60
CK-ML/31.5	31.5	4.90
CK-ML/32.7	32.7	4.60
CK-ML/50	50	4.70
CK-ML/62	62	4.28
CK-ML/65	65	4.40
CK-ML/68	68	4.40
CK-ML/80	80	4.30
CK-ML/100	100	4.90
CK-ML/142	142	4.20

MARKING

Item #	Resistivity @ 20 °C, Ω/km	Cable OD, sq.mm
CK-ML/150	150	4.60
CK-ML/170	170	3.90
CK-ML/178	178	3.96
CK-ML/200	200	4.40
CK-ML/240	240	4.00
CK-ML/250	250	4.00
CK-ML/320	320	4.50
CK-ML/330	330	3.80
CK-ML/340	340	3.88
CK-ML/360	360	4.30
CK-ML/370	370	4.30
CK-ML/380	380	4.40
CK-ML/410	410	4.28
CK-ML/480	480	4.30
CK-ML/490	490	4.05
CK-ML/500	500	3.96
CK-ML/590	590	3.96
CK-ML/600	600	4.20
CK-ML/665	665	3.90
CK-ML/700	700	4.10
CK-ML/730	730	4.10
CK-ML/765	765	3.84
CK-ML/810	810	4.30
CK-ML/1000	1000	4.20
CK-ML/1300	1300	3.75
CK-ML/1440	1440	4.10
CK-ML/1480	1480	3.71
CK-ML/1730	1730	4.10
CK-ML/1750	1750	4.10
CK-ML/1865	1865	3.96
CK-ML/2000	2000	4.20
CK-ML/2160	2160	4.10
CK-ML/2400	2400	4.00
CK-ML/2825	2825	3.78
CK-ML/3000	3000	4.10
CK-ML/3950	3950	3.66
CK-ML/4000	4000	3.66
CK-ML/5600	5600	3.54
CK-ML/5900	5900	3.54
CK-ML/7000	7000	3.5
CK-ML/8000	8000	3.80

CK-MI-xM (CK-MI-Mx)

Constant Wattage Heating Element

DESCRIPTION

up to 850°C

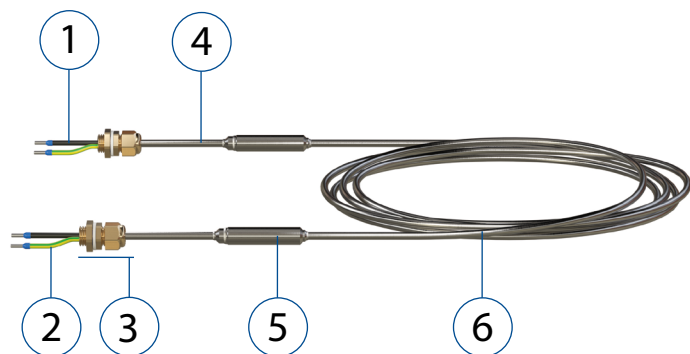


Mineral-insulated constant wattage heating element CK-MI-1M is used for freezing protection or to maintain material temperature in the pipelines, vessels and equipment for exposure to temperatures below 850 °C.

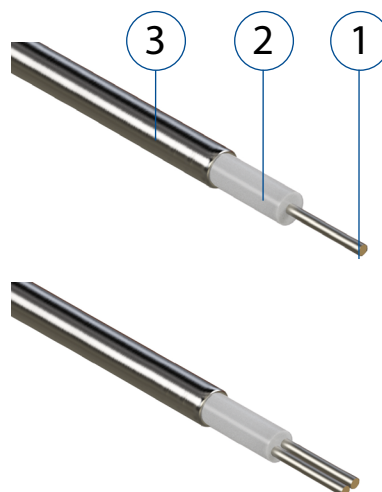
Mineral-insulated constant wattage heating element is supplied as a kit consisting of a heat trace cable, cold tails, a connection kit and cold lead cables.

DESIGN

Heating element is sized to the Customer's specifications. The scope of supply includes a made-to-order heat cable, with a brazed cold lead connector and a cold lead cable for junction box connection, and properly sized brass glands. A gland is used to connect the cable into the power box while ensuring adequate tightness for hazardous area applications.



1. Wire for cable connection to the feeding terminal in the junction box
2. PE lead to connect cable jacket to PE terminal in the power box
3. Brass cable gland to connect the cable into the power box for hazardous areas (assembly)
4. Cold lead cable
5. Cold lead connector
6. Heat trace cable



1. Solid conductor
2. Hot pressed MgO insulation
3. Seamless metal jacket

MODIFICATIONS

CK-MI-XM type constant wattage heating elements are produced in several modifications:

Constant wattage heating element CK-MI-X1M.X2/X3/X4/X5/CLX6-X7-X8

X1 – number of cores;

X2 – jacket material;

The jacket material is indicated by the corresponding Latin letter:

N – Alloy 400;

S – Stainless steel;

I – Alloy 600 ;

A – Alloy 825.

X3 – conductor resistance, Ω/km ;

X4 – heating run length, m;

X5 – voltage between connecting wires, V;

X6 – cold lead cross section, sq.mm;

X7 – cold lead cable length (m) on both sides – only for nontypical length specification. The typical length of cold lead cable runs on both sides of the section is 1 m. Nontypical cold lead cable length is subject to manufacturer's confirmation;

X8 - "-L" index for laser welded heating section.

CK-MI-xM (CK-MI-Mx)

Constant Wattage Heating Element

GENERAL SPECIFICATION

Exposure temperature, max for Alloy 400 jacketed cable (CK-MI-1M.N)	400°C max
Exposure temperature, max for SS jacketed cable (CK-MI-1M.S)	700°C max
Exposure temperature, max for Alloy 825 jacketed cable (CK-MI-1M.A)	700°C max
Exposure temperature, max for Alloy 600 jacketed cable (CK-MI-1M.I)	850°C max
Maintenance temperature, max	380 °C for Alloy 400; 670 °C for stainless steel ; 700 °C for Alloy 600; 670 °C for Alloy 825
Supply voltage	~600 V max
Connection	230 V - 1P, 380 V - 2P, 380 V - 3P (wye)
Jacket material	Alloy 825, Alloy 600, Alloy 400, Stainless Steel
Wire material	Cu, Ni-Cr, Cu-Ni alloy
Type of heat cable	Series type, constant wattage
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EAЭC RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T1 Gb X, Ex 60079-30-1 IIIC T85°C...T450°C Db X

P.O. DETAILS

E.g., a P.O. for a CK-MI.1M type heating element with a heat trace cable, stainless steel jacketed, resistivity = 2500 Ω/km and design length = 54 m, @ 230 V operating voltage, 2.5 sq.mm and 1 m long cold tail, should contain the following number:

CK-MI-1M.S/2500/54/230/CL2.5-1

MARKING

Item #	Resistivity @ 20 °C, Ω/km	Cable OD, sq.mm
CK-MI-1M.A/10000	10000	3.20
CK-MI-1M.A/6560	6560	4.30
CK-MI-1M.A/6300	6300	3.20
CK-MI-1M.A/5250	5250	4.30
CK-MI-1M.A/4270	4270	4.30
CK-MI-1M.A/4000	4000	3.20
CK-MI-1M.A/3280	3280	4.30
CK-MI-1M.A/2790	2790	4.30
CK-MI-1M.A/2500	2500	3.60
CK-MI-1M.A/2300	2300	4.30
CK-MI-1M.A/1650	1650	4.30
CK-MI-1M.A/1640	1640	4.30
CK-MI-1M.A/1600	1600	3.80
CK-MI-1M.A/1250	1250	4.30
CK-MI-1M.A/1000	1000	4.10
CK-MI-1M.A/980	980	4.30
CK-MI-1M.A/820	820	4.30
CK-MI-1M.A/660	660	4.40



CK-MI-xM (CK-MI-Mx)

Constant Wattage Heating Element

MARKING

Item #	Resistivity @ 20 °C, Ω/km	Cable OD, sq.mm
CK-MI-1M.A/630	630	4.50
CK-MI-1M.A/560	560	4.60
CK-MI-1M.A/490	490	4.30
CK-MI-1M.A/400	400	5.00
CK-MI-1M.A/330	330	4.30
CK-MI-1M.A/260	260	4.30
CK-MI-1M.A/250	250	5.60
CK-MI-1M.A/230	230	4.30
CK-MI-1M.A/200	200	4.30
CK-MI-1M.A/160	160	6.50
CK-MI-1M.A/130	130	4.40
CK-MI-1M.A/98	98	4.70
CK-MI-1M.A/66	66	5.10
CK-MI-1M.A/63	63	3.20
CK-MI-1M.A/33	33	4.30
CK-MI-1M.A/25	25	3.70
CK-MI-1M.A/21.4	21.4	4.00
CK-MI-1M.A/21	21	4.00
CK-MI-1M.A/17	17	4.60
CK-MI-1M.A/13.4	13.4	5.00
CK-MI-1M.A/13	13	5.00
CK-MI-1M.A/11	11	4.20
CK-MI-1M.A/8.5	8.5	5.80
CK-MI-1M.A/8	8	5.80
CK-MI-1M.A/7	7	4.90
CK-MI-1M.A/5.3	5.3	5.00
CK-MI-1M.A/5	5	5.00
CK-MI-1M.N/1600	1600	3.20
CK-MI-1M.N/1000	1000	3.40
CK-MI-1M.N/630	630	3.70
CK-MI-1M.N/400	400	4.00
CK-MI-1M.N/250	250	4.40
CK-MI-1M.N/160	160	4.90
CK-MI-1M.N/63	63	3.20
CK-MI-1M.N/40	40	3.40
CK-MI-1M.N/25	25	3.70
CK-MI-1M.N/17	17	4.60
CK-MI-1M.N/11	11	4.90
CK-MI-1M.N/7	7	5.30



CK-MI-xM (CK-MI-Mx)

Constant Wattage Heating Element

MARKING

Item #	Resistivity @ 20 °C, Ω/km	Cable OD, sq.mm
CK-MI-1M.N/4	4	5.90
CK-MI-1M.S/10000	10000	3.20
CK-MI-1M.S/6560	6560	3.20
CK-MI-1M.S/6300	6300	3.20
CK-MI-1M.S/4000	4000	3.20
CK-MI-1M.S/2790	2790	3.40
CK-MI-1M.S/2500	2500	3.40
CK-MI-1M.S/1600	1600	3.60
CK-MI-1M.S/1000	1000	3.90
CK-MI-1M.S/630	630	4.30
CK-MI-1M.S/400	400	4.70
CK-MI-1M.S/250	250	5.30
CK-MI-1M.S/160	160	6.50
CK-MI-1M.S/98	98	3.20
CK-MI-1M.S/63	63	3.20
CK-MI-1M.S/40	40	3.40
CK-MI-1M.S/25	25	3.70
CK-MI-1M.S/17	17	4.60
CK-MI-1M.S/11	11	4.20
CK-MI-1M.S/7	7	4.90
CK-MI-1M.S/4	4	5.90
CK-MI-1M.I/10000	10000	3.20
CK-MI-1M.I/6300	6300	3.20
CK-MI-1M.I/4000	4000	3.20
CK-MI-1M.I/2500	2500	3.40
CK-MI-1M.I/1600	1600	3.60
CK-MI-1M.I/1000	1000	3.90
CK-MI-1M.I/630	630	4.30
CK-MI-1M.I/400	400	4.70
CK-MI-1M.I/250	250	5.30
CK-MI-1M.I/160	160	6.50
CK-MI-2M.A/59000	59000	4.40
CK-MI-2M.A/36000	36000	4.00
CK-MI-2M.A/29500	29500	4.10
CK-MI-2M.A/24500	24500	4.00
CK-MI-2M.A/19700	19700	4.10
CK-MI-2M.A/16400	16400	4.10
CK-MI-2M.A/13200	13200	3.70



CK-MI-xM (CK-MI-Mx)

Constant Wattage Heating Element

MARKING

Item #	Resistivity @ 20 °C, Ω/km	Cable OD, sq.mm
CK-MI-2M.A/10400	10400	4.40
CK-MI-2M.A/9000	9000	3.90
CK-MI-2M.A/8200	8200	4.10
CK-MI-2M.A/6600	6600	4.30
CK-MI-2M.A/5600	5600	4.20
CK-MI-2M.A/4590	4590	4.10
CK-MI-2M.A/3750	3750	4.40
CK-MI-2M.A/3000	3000	4.10
CK-MI-2M.A/2300	2300	4.30
CK-MI-2M.A/1560	1560	4.50
CK-MI-2M.A/1240	1240	4.60
CK-MI-2M.A/965	965	4.50
CK-MI-2M.A/820	820	4.30
CK-MI-2M.A/660	660	4.10
CK-MI-2M.A/495	495	4.30
CK-MI-2M.A/330	330	4.70
CK-MI-2M.A/240	240	4.40
CK-MI-2M.A/190	190	4.50
CK-MI-2M.A/150	150	4.80
CK-MI-2M.A/105	105	4.70
CK-MI-2M.S/59000	59000	4.40
CK-MI-2M.S/36000	36000	4.00
CK-MI-2M.S/29500	29500	4.10
CK-MI-2M.S/24500	24500	4.00
CK-MI-2M.S/19700	19700	4.10
CK-MI-2M.S/16400	16400	4.10
CK-MI-2M.S/13200	13200	3.70
CK-MI-2M.S/10400	10400	4.40
CK-MI-2M.S/9000	9000	3.90
CK-MI-2M.S/8200	8200	4.10
CK-MI-2M.S/6600	6600	4.30
CK-MI-2M.S/5600	5600	4.20
CK-MI-2M.S/4590	4590	4.10
CK-MI-2M.S/3750	3750	4.40
CK-MI-2M.S/3000	3000	4.10
CK-MI-2M.S/2300	2300	4.30
CK-MI-2M.S/1560	1560	4.50
CK-MI-2M.S/1240	1240	4.60
CK-MI-2M.S/965	965	4.50



CK-MI-xM (CK-MI-Mx)

Constant Wattage Heating Element

MARKING

Item #	Resistivity @ 20 °C, Ω/km	Cable OD, sq.mm
CK-MI-2M.S/820	820	4.30
CK-MI-2M.S/660	660	4.10
CK-MI-2M.S/495	495	4.30
CK-MI-2M.S/330	330	4.70
CK-MI-2M.S/240	240	4.40
CK-MI-2M.S/190	190	4.50
CK-MI-2M.S/150	150	4.80
CK-MI-2M.S/105	105	4.70
CK-MI-2M.I/59000	59000	4.40
CK-MI-2M.I/36000	36000	4.00
CK-MI-2M.I/29500	29500	4.10
CK-MI-2M.I/24500	24500	4.00
CK-MI-2M.I/19700	19700	4.10
CK-MI-2M.I/16400	16400	4.10
CK-MI-2M.I/13200	13200	3.70
CK-MI-2M.I/10400	10400	4.40
CK-MI-2M.I/9000	9000	3.90
CK-MI-2M.I/8200	8200	4.10
CK-MI-2M.I/6600	6600	4.30
CK-MI-2M.I/5600	5600	4.20
CK-MI-2M.I/4590	4590	4.10
CK-MI-2M.I/3750	3750	4.40
CK-MI-2M.I/3000	3000	4.10
CK-MI-2M.I/2300	2300	4.30
CK-MI-2M.I/1560	1560	4.50
CK-MI-2M.I/1240	1240	4.60
CK-MI-2M.I/965	965	4.50
CK-MI-2M.I/820	820	4.30
CK-MI-2M.I/660	660	4.10
CK-MI-2M.I/495	495	4.30
CK-MI-2M.I/330	330	4.70
CK-MI-2M.I/240	240	4.40
CK-MI-2M.I/190	190	4.50
CK-MI-2M.I/150	150	4.80
CK-MI-2M.I/105	105	4.70

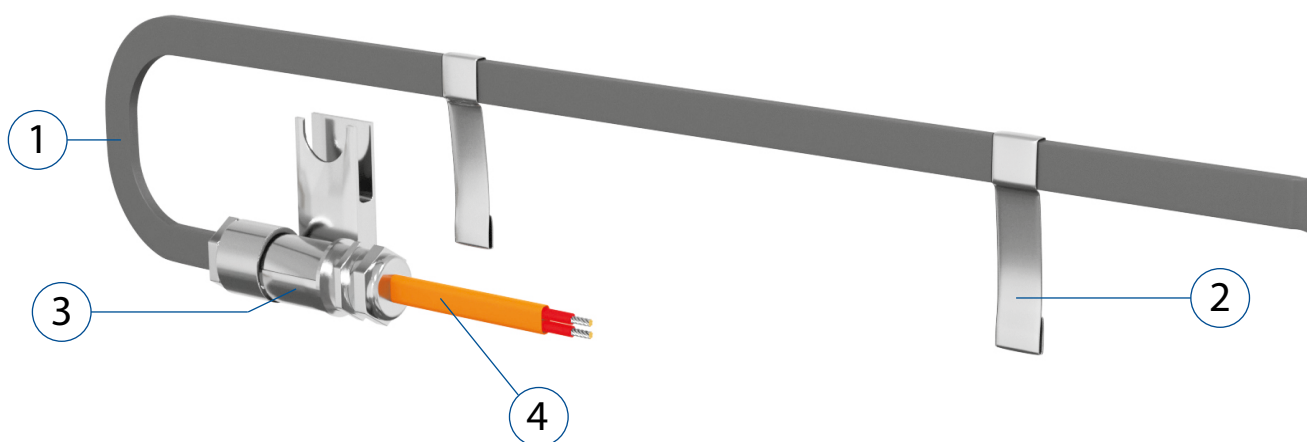




DESCRIPTION

The product is used to ensure smooth performance of railway tracks and points in the winter season. The purpose is to prevent icing and snow packs on the moving parts of the railway points and tracks.

DESIGN



1. Rail heating element assembly
2. Clip CK-FIX 2 to attach the heating element to rail
3. Clip CK-FIX 1 to attach the heating element head to rail
4. Flexible power cable

P.O. DETAILS

To place a P.O., please select the item number of the heating element from the Marking table that suits your project specification.

For example, to order the CK-TH-R heating element using a heating cable with a power of 1,5 kW and a length of 6,08 m, it is necessary to specify the following trade code:

CK-TH-R-6,08-1,5

CK-TH-R

Constant Wattage Heating Element for Heat Tracing of Railway Tracks and Points

GENERAL SPECIFICATION

Supply voltage	230 V, 50 Hz
Sheath material	Chrome Nickel Steel Incoloy 800
Type of heat cable	Series type, constant wattage
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EAЭC RU C-RU. HA67.B.00681/25,1 Ex eb IIC T6...T1 Gb X, Ex tb IIIC T85°C...T450°C Db X

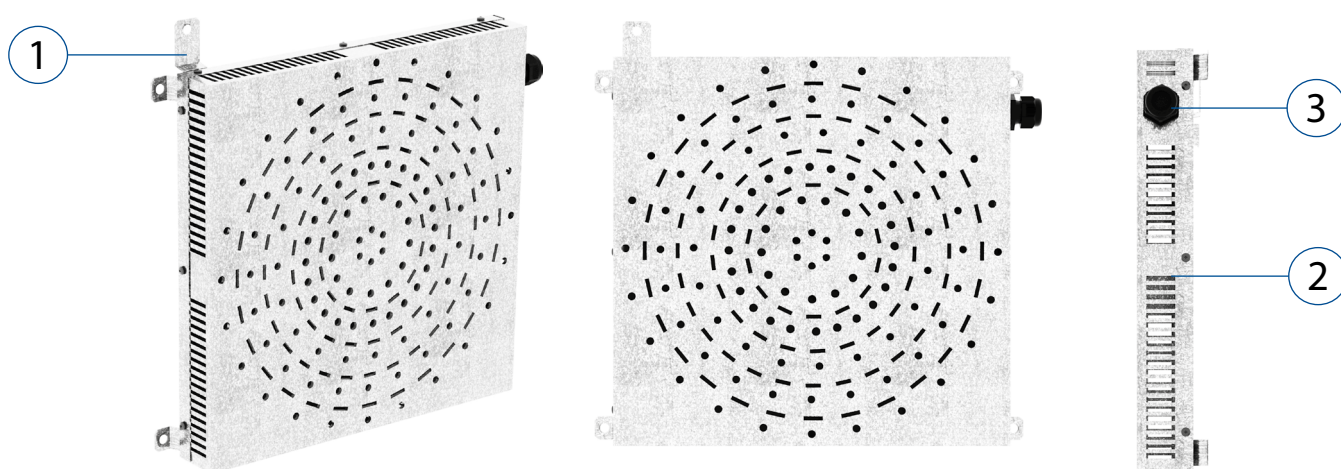
MARKING

Item #	Output, kW	Length, m
CK-TH-R-6,08-1,5	1,5	6,08
CK-TH-R-4,80-1,5	1,5	4,80
CK-TH-R-4,20-1,6	1,6	4,20
CK-TH-R-2,80-1,1	1,1	2,80
CK-TH-R-1,80-0,9	0,9	1,80
CK-TH-R-1,10-0,9	0,9	1,10

DESCRIPTION

CK-TN is a rectangular metal case used for instrument cabinet heat tracing, that accommodates a self-regulating heat trace cable, which maintains the temperature at no risk of overheating.

DESIGN



1. Metal case
2. Heat trace cable
3. Cable gland

P.O. DETAILS

To place a P.O., please select the item number of the heater from the Marking table that suits your project specification. A heater may be made to order with the overall dimensions and capacity based on customer preferences.

E.g., a P.O. for a 50 W CK-TN heater should contain the following number:

CK-TN-50-1

GENERAL SPECIFICATION

Maximum surface temperature	55°C
Rated voltage	230 V, 50 Hz
Heater power	up to 300 W
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EAЭC RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T3 Gb X, Ex 60079-30-1 IIIC T85°C...T200°C Db X
Overall dimensions, WxHxD*	360x360x41 mm max

* overall dimensions may vary as requested

MARKING

Item #	Overall dimensions, WxHxD	Output @ 10°C, W
CK-TN-50-1	240x240x22	50
CK-TN-75-1	240x240x22	75
CK-TN-75-3	300x300x22	75
CK-TN-100-2	240x240x41	100
CK-TN-100-3	300x300x22	100
CK-TN-150-5	360x360x22	150
CK-TN-150-2	240x240x41	150
CK-TN-150-4	300x300x41	150
CK-TN-200-5	360x360x22	200
CK-TN-200-4	300x300x41	200
CK-TN-300-6	360x360x41	300

CODING

Code	Value
CK-TN	Heater type
50	Heater power
1	Standard case size

DESCRIPTION

CK-TN-A is used for cabinet (including instrument cabinets) and enclosure heat tracing. Temperature is maintained at no overheating risk as a self-regulating heat cable is used as the heater.

OVERVIEW



P.O. DETAILS

To place a P.O., please select the item number of the heater from the Marking table that suits best your project specification.

E.g., a P.O. for a 20 W CK-TN-A heater should contain the following number:

CK-TN-A-20

GENERAL CHARACTERISTICS

Max surface temperature	55°C
Rated voltage	230 V, 50 Hz
Heater power	45 W max
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EAЭC RU C-RU. HA67.B.00681/25, Ex 60079-30-1 IIC T6...T3 Gb X, Ex 60079-30-1 IIIC T85°C...T200°C Db X
Overall dimensions, WxHxD*	600x20x40 mm max

* overall dimensions may vary as requested

MARKING

Item #	Overall dimensions, WxHxD	Output @ 10°C, W
CK-TN-A-20	300x20x40	20
CK-TN-A-30	400x20x40	30
CK-TN-A-45	600x20x40	45



DESCRIPTION

ACH is a forced air cooled heater. 750 W finned electric heating elements are used which are made of stainless steel, with 2 or 4 installed in each heater depending on the type. A cross fan is used for a quicker room warmup. The fan circuit is protected with a fuse. Two +100°C overheat protection thermostats are housed inside the heater to avoid heater exterior temperatures exceeding +50°C even in emergency cases.

An ACH is typically designed for use in temperature-controlled rooms, however, it may be optionally supplied with an adjustable thermostat which is mounted onto the heater top. The heater may be supplied with replaceable filter elements for use in contaminated rooms. Colour: RAL9005 (jet black). Powder coated. Climate version: УХЛ3. Please refer to the table below for ACH performance.

GENERAL SPECIFICATION

Rated voltage	230 V, 50/60 Hz
Power	1500 W, 3000 W
Design	Floor-mounted/Wall-mounted
IP rating	IP30, IP31, IP40, IP41
Filter element capability	Yes (option)
Adjustable thermostat capability	Yes (option)
Overall dimensions, wall-mounted (HxWxD)	278x402x355 mm
Overall dimensions, floor-mounted (HxWxD)	549x460x235, 756x460x235 mm

OVERVIEW



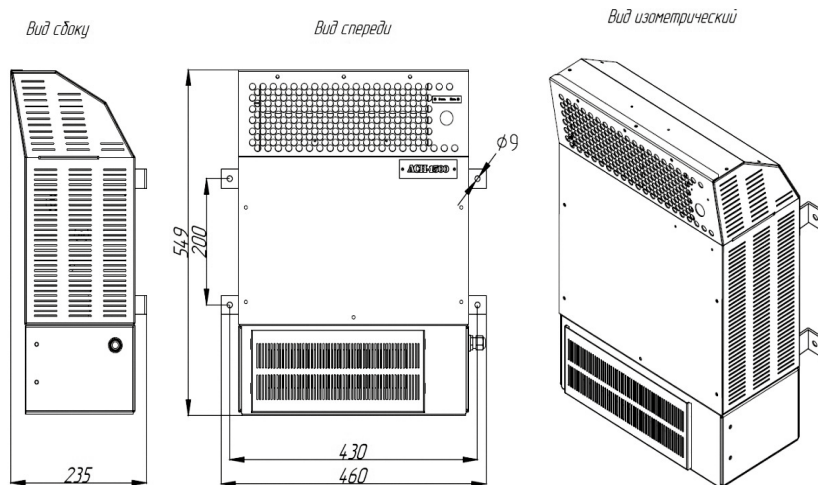


Fig. 1

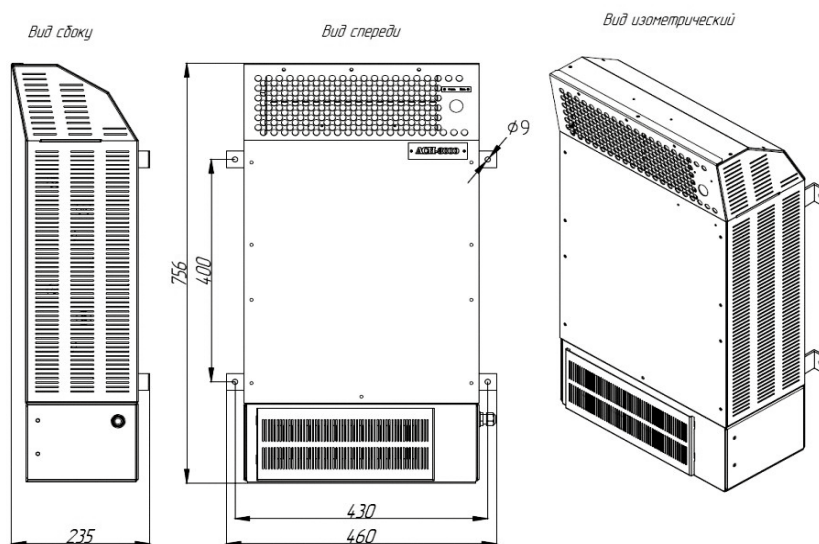


Fig. 2

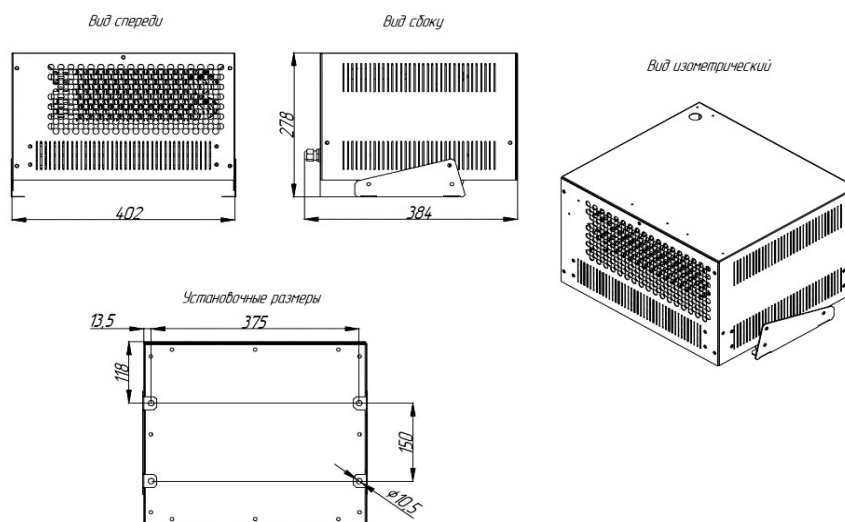
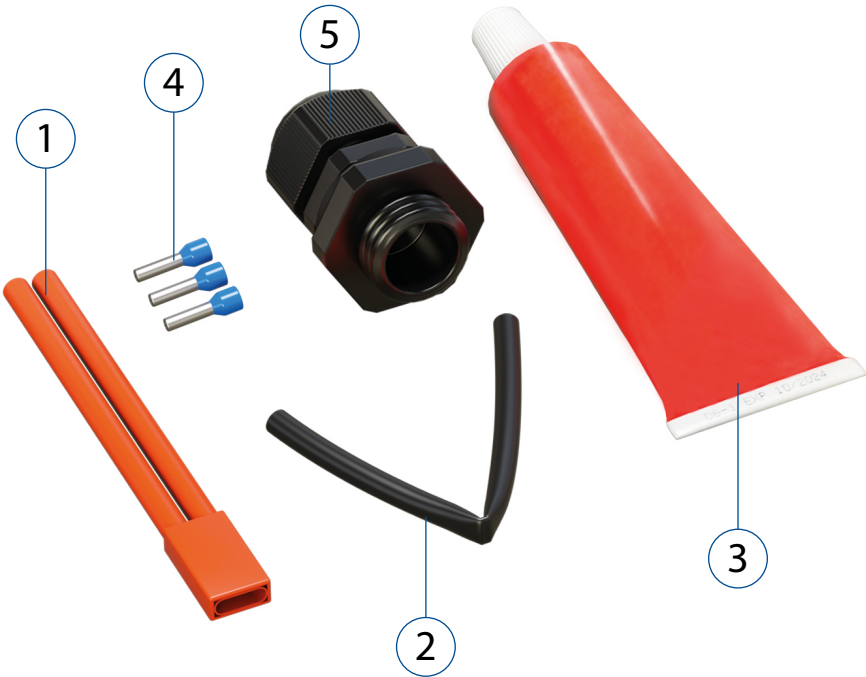


Fig. 3

DESCRIPTION

A connection kit for a polymer insulated heat trace cable. Compatibility: CK-FS, CK-SL and CK-SL.C heating elements.

DESIGN



- The kit includes:
- 1. Insulated gloves (1 pc.)
 - 2. Heat shrink tube for braid (1 pc.)
 - 3. RTV silicone (1 pc.)
 - 4. Insulated ferrule (3 pcs.)
 - 5. M20 gland with a locknut (1 pc.) (not in CK-FS.CONN.IN.A scope of supply)

MARKING

Item #
CK-FS.CONN.IN
CK-FS.CONN.IN.A
CK-FS.CONN.G

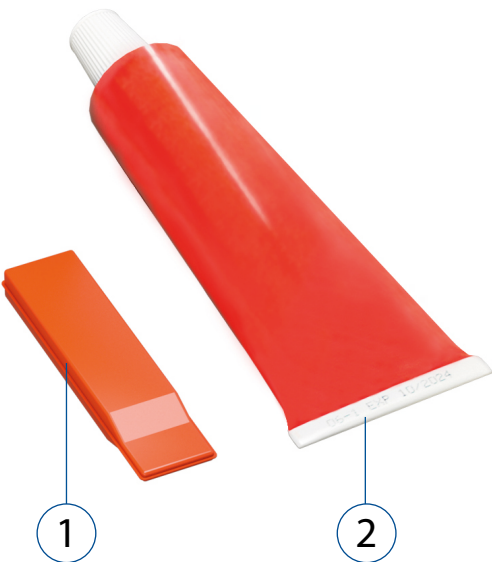
P.O. DETAILS

Please specify the following item number in your P.O. for a CK-FS.CONN.IN connection kit:
CK-FS.CONN.IN
Please specify the following item number in your P.O. for a CK-FS.CONN.IN connection kit without a gland:
CK-FS.CONN.IN.A
Please specify the following item number in your P.O. for a CK-FS polymer insulated heat trace cable gland:
CK-FS.CONN.G

DESCRIPTION

An end termination kit for a polymer insulated heat trace cable. Compatibility: CK-FS, CK-SL and CK-SL.C heating elements.

DESIGN



- The kit includes:
- 1. End termination (1 pc.)
 - 2. RTV silicone (1 pc.)

MARKING

Item #

CK-FS.CONN.E
CK-FS.CONN.G

P.O. DETAILS

Please specify the following item number in your P.O. for a CK-FS.CONN.E termination:
CK-FS.CONN.E
Please specify the following item number in your P.O. for a CK-FS.CONN.E termination:
CK-FS.CONN.G

DESCRIPTION

An connection kit for a polymer insulated heat trace cable. Compatibility: CK-FS, CK-SL and CK-SL.C heating elements.

DESIGN



- The kit includes:**
- 1. Insulated gloves (1 pc.)
 - 2. Heat shrink tube for braid (1 pc.)
 - 3. RTV silicone (1 pc.)
 - 4. Insulated ferrule (3 pcs.)
 - 5. M20 gland with a locknut (1 pc.) (not in CK-FS.CONN.A scope of supply)
 - 6. End termination (1 pc.)

MARKING

Item #
CK-FS.CONN
CK-FS.CONN.A
CK-FS.CONN.G

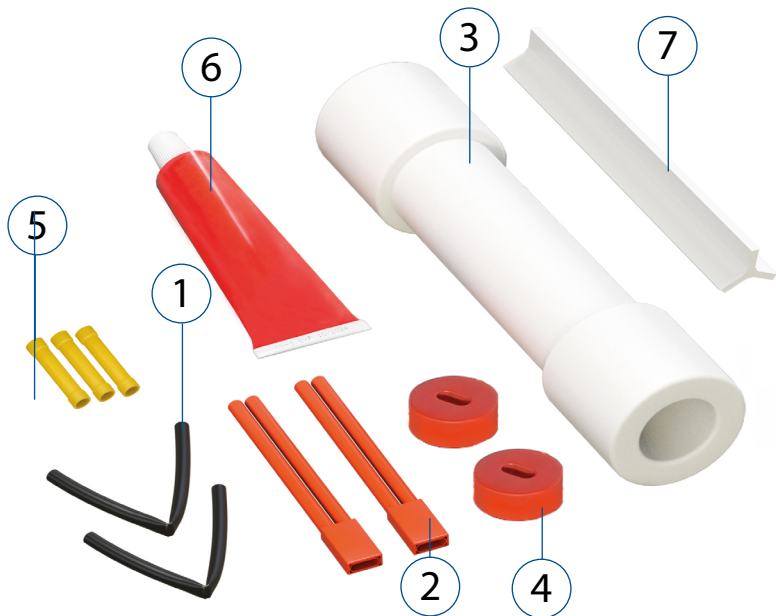
P.O. DETAILS

Please specify the following item number in your P.O. for a CK-FS.CONN kit:
CK-FS.CONN
Please specify the following item number in your P.O. for a CK-FS.CONN kit without a gland:
CK-FS.CONN.A
Please specify the following item number in your P.O. for a CK-FS polymer insulated heat trace cable gland:
CK-FS.CONN.G

DESCRIPTION

A connection/repair kit for a parallel resistance cable. Compatibility: CK-FS heating elements.

DESIGN



The connection / repair kit includes:

- 1. Heat shrink tube for braid (2 pcs.)
- 2. Insulated gloves (2 pcs.)
- 3. Connector (1 pc.)
- 4. Sealing bush (2 pcs.)
- 5. Connector (3 pcs.)
- 6. RTV silicone (1 pc.)
- 7. Spacer (1 pc.)

MARKING

Item #

CK-FS.CONN.SX

P.O. DETAILS

Please specify the following item number in your P.O. for a CK-FS.CONN.SX connection/repair kit:
CK-FS.CONN.SX

DESCRIPTION

A connection kit for a polymer insulated heat trace cable. Compatibility: CK-FS.S heating element.

DESIGN



- The kit includes:
- 1. Insulated gloves (1 pc.)
 - 2. Heat shrink tube for braid (1 pc.)
 - 3. RTV silicone (1 pc.)
 - 4. Insulated ferrule (3 pcs.)
 - 5. M25 gland with a locknut (1 pc.) (not in CK-FS/SMB.CONN.A scope of supply)
 - 6. End termination (1 pc.)

MARKING

Item #
CK-FS/SMB.CONN
CK-FS/SMB.CONN.A
CK-FS/SMB.CONN.G

P.O. DETAILS

Please specify the following item number in your P.O. for a CK-FS/SMB.CONN connection kit:
CK-FS/SMB.CONN
Please specify the following item number in your P.O. for a CK-FS/SMB.CONN connection kit without a gland:
CK-FS/SMB.CONN.A
Please specify the following item number in your P.O. for a CK-FS/SMB polymer insulated heat trace cable gland:
CK-FS/SMB.CONN.G

DESCRIPTION

A connection kit for a polymer insulated heat trace cable. Compatibility: CK-FS.S heating element.

DESIGN



- The kit includes:
- 1. Insulated gloves (1 pc.)
 - 2. Heat shrink tube for braid (1 pc.)
 - 3. RTV silicone (1 pc.)
 - 4. Insulated ferrule (3 pcs.)
 - 5. M25 gland with a locknut (1 pc.) (not in CK-FS/SMB.CONN.IN.A scope of supply)

MARKING

Item #
CK-FS/SMB.CONN.IN
CK-FS/SMB.CONN.IN.A
CK-FS/SMB.CONN.G

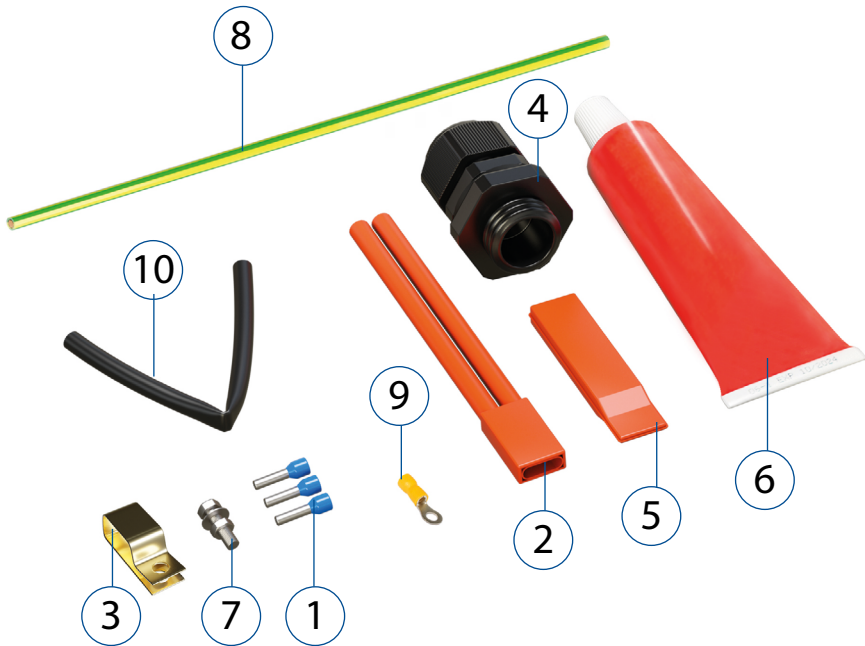
P.O. DETAILS

Please specify the following item number in your P.O. for a CK-FS/SMB.CONN connection kit:
CK-FS/SMB.CONN.IN
Please specify the following item number in your P.O. for a CK-FS/SMB.CONN.IN connection kit without a gland:
CK-FS/SMB.CONN.IN.A
Please specify the following item number in your P.O. for a CK-FS/SMB polymer insulated heat trace cable gland:
CK-FS/SMB.CONN.G

DESCRIPTION

A connection kit for a metal-sheathed heat trace cable. Compatibility: metal-sheathed CK-MI-2M, CK-FS heating elements.

DESIGN



- The kit includes:**
- 1. Insulated ferrule (3 pcs.)
 - 2. Insulated gloves (1 pc.)
 - 3. Clamp for PE wire connection to cable metal sheath (1 pc.)
 - 4. M20 gland with a locknut (1 pc.) (not in CK-MI-2M.CONN.A scope of supply)
 - 5. End termination (1 pc.)
 - 6. RTV silicone (1 pc.)
 - 7. Bolt, nut and washer (1 pc.)
 - 8. Grounding conductor (1 pc.)
 - 9. Insulated eye lug (1 pc.)

MARKING

Item #
CK-MI-2M.CONN (CK-MI-2M/FS-a.CONN)
CK-MI-2M.CONN.A (CK-MI-2M/FS-a.CONN.A)
CK-FS.CONN.G

P.O. DETAILS

Please specify the following item number in your P.O. for a CK-MI-2M.CONN connection kit:
CK-MI-2M.CONN or CK-MI-2M/FS-a.CONN
Please specify the following item number in your P.O. for a CK-MI-2M.CONN connection kit without a gland:
CK-MI-2M.CONN.A or CK-MI-2M/FS-a.CONN.A
Please specify the following item number in your P.O. for a CK-FS polymer insulated heat trace cable gland:
CK-FS.CONN.G

DESCRIPTION

An connection kit for a polymer insulated heat trace cable. Compatibility: CK-ML series type heating elements

DESIGN



- The kit includes:
- 1. Heat shrink tube for braid (2 pcs.)
 - 2. M20 gland with a locknut and sealing bush (assembly) (2 pcs.) (not in CK-CONN.T.A scope of supply)
 - 3. Insulated ferrule (4 pcs.)
 - 4. Ferrule connector (4 pcs.)
 - 5. 1.5 m cold lead (2 pcs.)
 - 6. Connector (2 pcs.)
 - 7. RTV silicone (1 pc.)

MODIFICATIONS

CK-CONN.T connection kit is offered in several designs depending on the cable section.

Cable sections are consistent with the marking below:

- Section 2.5 mm²**CK-CONN.T-2,5**
Section 6 mm²**CK-CONN.T-6**

MARKING

Item #

CK-CONN.T-2,5
CK-CONN.T-6
CK-CONN.T.A
CK-CONN.T.G

P.O. DETAILS

Please specify the following item number in your P.O. for a CK-CONN.T connection kit for use in conjunction with cable cross sections less than 2.5 mm2:

CK-CONN.T-2,5

Please specify the following item number in your P.O. for a CK-CONN.T connection kit without a gland:

CK-CONN.T.A

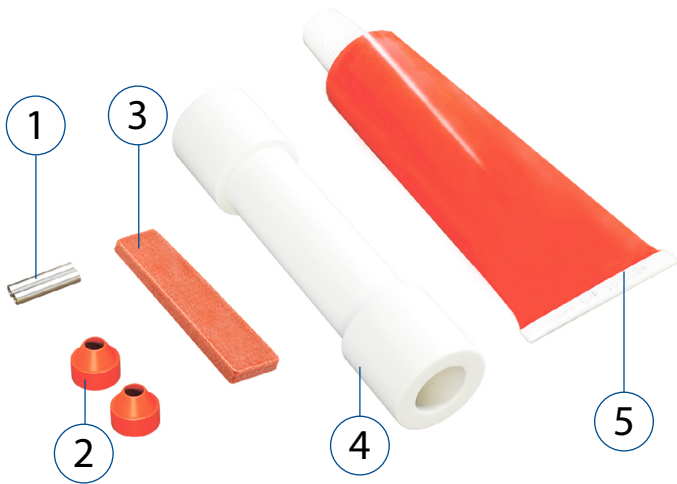
Please specify the following item number in your P.O. for a CK-ML series-type polymer insulated heat trace cable gland:

CK-CONN.T.G

DESCRIPTION

Connecting sleeve for polymer-insulated heating cables. Compatibility: CK-ML serial heating elements.

DESIGN



- The product includes
- 1. Ferrule connector (2 pc.)
 - 2. Sealing bush (2 pcs.)
 - 3. Spacer (1 pc.)
 - 4. Connector 1 pc.)
 - 5. RTV silicone (1 pc.)

MODIFICATIONS

A CK-CONN.T.SX connector is offered in several designs depending on the cable section.

Cable sections are consistent with the marking below:

Section 2.5 mm ²	CK-CONN.T.SX-2,5
Section 2.5 mm ²	CK-CONN.T.SX-6

MARKING

Item #
CK-CONN.T.SX-2,5
CK-CONN.T.SX-6

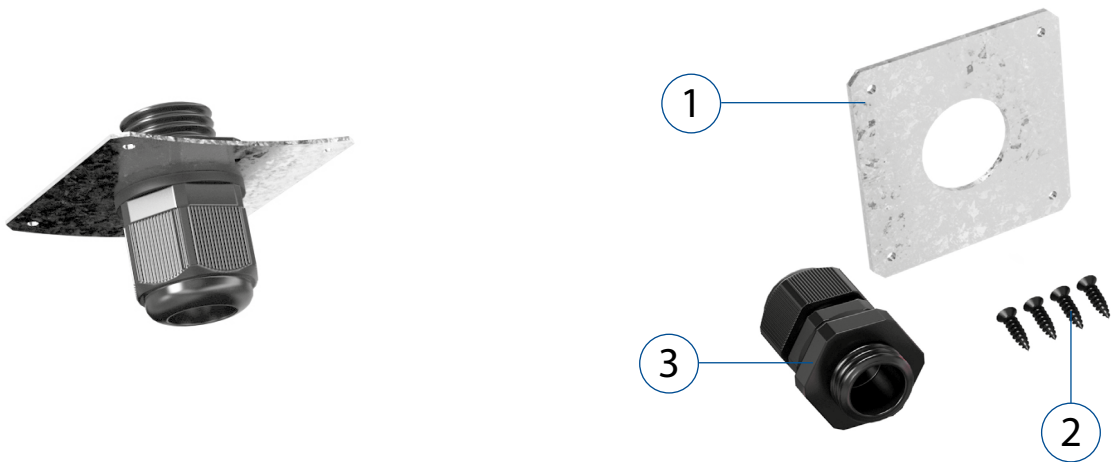
P.O. DETAILS

Please specify the following item number in your P.O. for a CK-CONN.T.SX connector for cable sections less than 2.5 mm²:
CK-CONN.T.SX-2,5

DESCRIPTION

The kit is used to draw a heat trace cable through thermal insulation ensuring protection against water ingress.

DESIGN



- The kit includes:
- 1. Fixing plate (1 pc.)
 - 2. M3x10 screw (4 pcs.)
 - 3. Gland, with locknut and O-ring (1 pc.)

MARKING

Item #

CK-IEK.S

CK-IEK.SO

P.O. DETAILS

Please specify the following item number in your P.O. for a CK-IEK.S kit:

CK-IEK.S

Please specify the following item number in your P.O. for a CK-IEK.SO temperature sensor penetration kit:

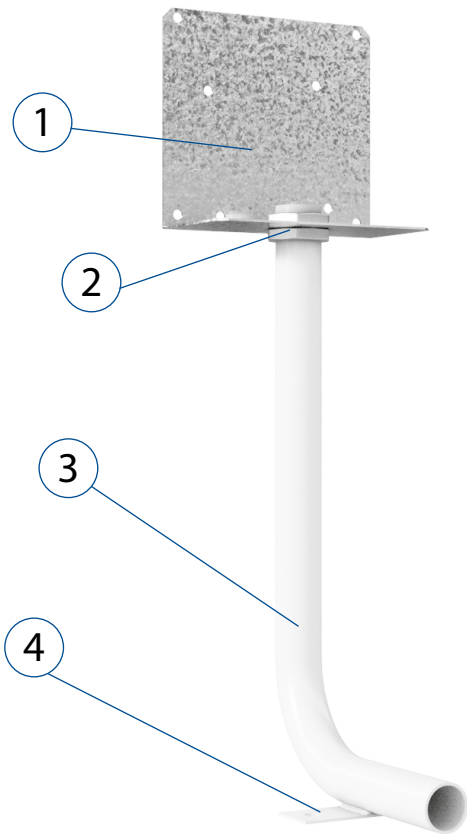
CK-IEK.SO

DESCRIPTION

A mounting kit for concrete penetration is used to attach a power junction box for heat traced poured concrete flooring, roads and ramps. A bracket support is fixed to the underlay of poured flooring. A heat trace cable is passed through the tube and into the power junction box.

The kit is used in conjunction with a CK-F5.S heating element and CK-HB/CK-MHB junction boxes.

DESIGN



1.
- Power box attachment base
2.
- Base to support attachment
3.
- Bracket support
4.
- Bracket loops

MARKING

Designation	Description
CK-IEK.F-HB	Used in conjunction with MexTRACE-HB-01-G power box
CK-IEK.F-TD	Used in conjunction with MexTRACE-PT100-EXE-G temperature sensor

P.O. DETAILS

Please specify the following item number in your P.O. for a CK-IEK.F bracket:
CK-IEK.F

CK-1000 Heat Trace Cable Entry Adapter

DESCRIPTION

CK-1000 may be of three types, e.g. CK-1000, CK-1000-E, and CK-1000-LP. Its modular design offers different height options depending on the pipeline insulation thickness.

DESIGN



GENERAL SPECIFICATION

Rated voltage	690 V, max
Rated current	32 A, max
Ambient temperature range	-60 to +60 °C
IP rating	IP 66
Certificate, Ex protection	Pursuant to CU TR 012/2011, # RU C-RU. HA62.B.01242/21, 1Ex eb IIC T6 Gb X, Ex tb IIIC T850C Db X. For CK-1000-LP: 1Ex eb mb IIC T6 Gb X, Ex tb IIIC T850C Db X
Max base exposure temperature	260 °C

MARKING

Item #	Purpose
CK-1000	Box entry adapter for up to three heat trace cables
CK-1000-E	Termination / tee adapter on top of lagging
CK-1000-LP-G	Heat trace cable termination adapter, with green LED
CK-1000-LP-R	Heat trace cable termination adapter, with red LED
CK-1000-LP-Y	Heat trace cable termination adapter, with yellow LED
CK-1000-SR	Junction box support (for series-type heating element or temperature sensor)
CK-1000-SR-E	Termination / tee adapter on top of lagging (for series-type heating element)
CK-320	CK-1000 fastening reducer for small size (32 mm max) pipelines

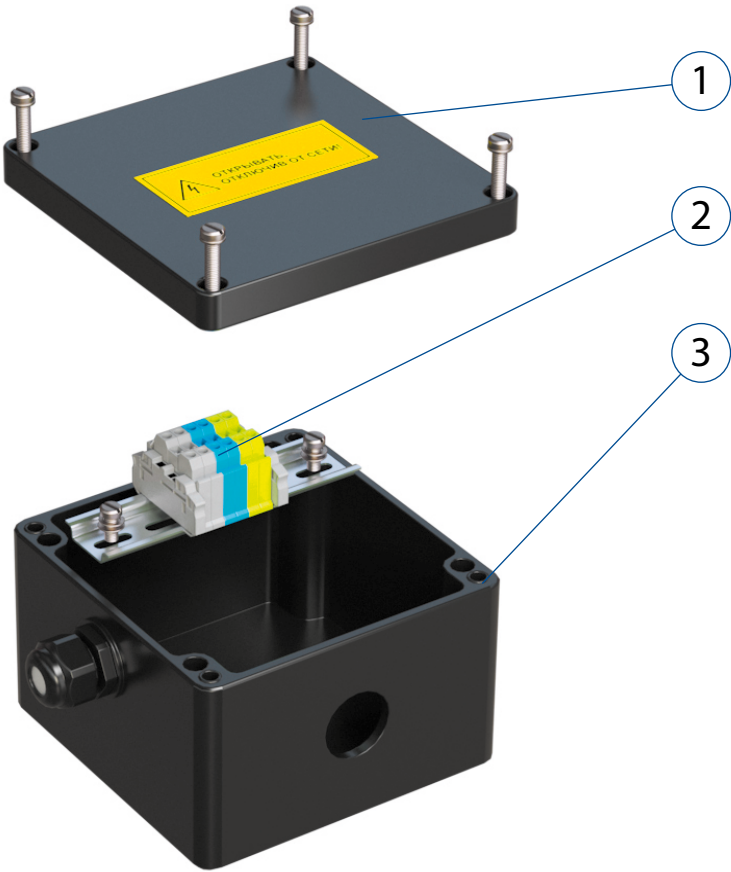
P.O. DETAILS

Please provide the following item number in your P.O. for a green LED heat trace cable termination adapter CK-1000-LP-G:
CK-1000-LP-G

DESCRIPTION

A power junction box is used for heating element to power cable connections. A junction box is mounted onto a heat traced pipe or equipment using a bracket or a support. The product is IP 66 explosion proof.

DESIGN



1. Cover
2. Connecting terminals
3. Body

GENERAL SPECIFICATION

Normal operating voltage, max	690 V, 50 Hz
Ambient temperature range	-60°C to +55°C
Hazardous area classification	Hazardous, normal
IP rating	IP 66
Certificate, Ex protection	Pursuant to CU TR 012/2011, # RU C-RU. AA71.B.00076/19, 1 Ex e IIC T6...T4 Gb X and Ex tb IIIC T800C...1300C Db X

MARKING

Item #	Scope of Supply	Description
MexTRACE-HB-01	Box body (1 pc.), separator plates (2 pcs.), clamps ¹ (4 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable ² entry (1 pc.)	Power box, single hole and single cable entry. For MexTRACE-HB-02 connection
MexTRACE-HB-02	Box body (1 pc.), separator plates (2 pcs.), pluggable jumpers (2 pcs.), clamps ¹ (6 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable ² entry (1 pc.)	Power box, two holes and single cable entry. For connection of one series type heating element, or two parallel type heating elements
MexTRACE-HB-03	Box body (1 pc.), separator plates (2 pcs.), clamps ¹ (10 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable ² entry (1 pc.)	Power box with three holes and one cable entry. For wye / delta connection of a series type heating element, or of three parallel type heating elements
MexTRACE-HB-01.L*	Box body (1 pc.), separator plates (2 pcs.), clamps ¹ (4 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable ² entry (1 pc.), LED ³ (1 pc.)	MexTRACE-HB-01 type power box with green LED on the body
MexTRACE-HB-02.L*	Box body (1 pc.), separator plates (2 pcs.), pluggable jumpers (2 pcs.), clamps ¹ (6 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable ² entry (1 pc.), LED ³ (1 pc.)	MexTRACE-HB-02 type power box with green LED on the body
MexTRACE-HB-03.L*	Box body (1 pc.), separator plates (2 pcs.), clamps ¹ (10 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable ² entry (1 pc.), LED ³ (1 pc.)	MexTRACE-HB-03 type power box with green LED on the body
MexTRACE-HB-03.S	Box body (1 pc.), support (1 pc.), separator plates (2 pcs.), clamps ¹ (10 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable ² entry (1 pc.)	MexTRACE-HB-03 type power box with CK-1000 support for three parallel type cables (slot holes)
MexTRACE-HB-03.SR	Box body (1 pc.), support (1 pc.), separator plates (2 pcs.), clamps ¹ (10 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.) (for constant wattage cable), threaded cable ² entry (1 pc.)	MexTRACE-HB-03 type power box with CK-1000-SR adapter, six round holes
MexTRACE-HB-03.SR.L*	Box body (1 pc.), support (1 pc.), separator plates (2 pcs.), clamps ¹ (10 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.) (for constant wattage cable), threaded cable ² entry (1 pc.), LED ³ (1 pc.)	MexTRACE-HB-03.SR type power box with green LED on the body
MexTRACE-HB-03.S.L*	Box body (1 pc.), support (1 pc.), separator plates (2 pcs.), clamps ¹ (10 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable ² entry (1 pc.), LED ³ (1 pc.)	MexTRACE-HB-03.S type power box with green LED on the body
MexTRACE-HB-01-G	Box body (1 pc.), separator plates (2 pcs.), clamps ¹ (3 pcs.), DIN rail (1 pc.), 1" O-ring (1 pc.), 1" locknut (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable ² entry (1 pc.)	Power box with an opening for CK-IEK.F. For cable heat tracing of open areas

Trade code	Configuration	Description
MexTRACE-HB-03.S-T	Box body (1 pc.), support (1 pc.), separator plates (2 pcs.), clamps¹ (10 pcs.), pluggable jumpers (6 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.)	MexTRACE-HB-03 type power box with CK-1000 adapter for three parallel type cables (slot holes). A box for tee connection of heating elements. W/o cable entry
MexTRACE-HB-03.SR-P	Box body (1 pc.), support (1 pc.), separator plates (2 pcs.), clamps¹ (10 pcs.), pluggable jumpers (2 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.) (for constant wattage cable)	MexTRACEHB-03 type power box with CK-1000-SR adapter with six round holes. To be used as a termination or pull box for series type heating sections. W/o cable entry
MexTRACE-HB-04-P	Box body (1 pc.), end insulators (2 pcs.), clamps¹ (6 pcs.), DIN rail (1 pc.), kit of fasteners (1 pc.), nameplate (1 pc.). There are 4 M20 holes in the box.	Power box with four holes M20. It is intended for use as a pass-through box for the serial heating element. Without cable gland
MexTRACE-HB-06-P	Box body (1 pc.), separator plates (2 pcs.), clamps¹ (6 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.)	Power box with six M20 holes. To be used as a pull box for a for series-type heating element. W/o cable entry
MexTRACE-HB-02-K	Box body (1 pc.), separator plates (2 pcs.), clamps¹ (6 pcs.), pluggable jumpers (2 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.). There are 2 holes M20 in the box	Power box with two M20 holes. To be used as a termination box for a series-type heating element. W/o cable entry.
MexTRACE-HB-03-K	Box body (1 pc.), separator plates (2 pcs.), clamps¹ (6 pcs.), pluggable jumpers (4 pcs.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.)	Power box with three M20 holes. To be used as a termination box for a series-type heating element. W/o cable entry.

¹ - Cable wire cross section: 0.5-6 mm².

² - Cable entry type: plastic. Wired power cable size: 13-18 mm for M25 entry.

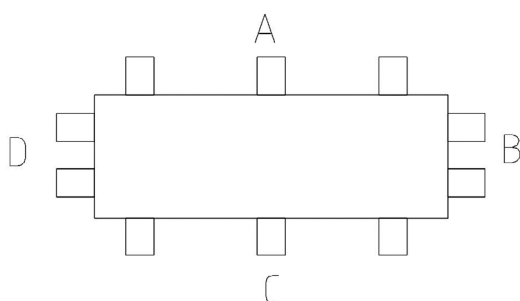
³ - LED colour to be consistent with symbol item #7. A green LED will be wherever the colour index is not provided.

Please select a modification for non-typical box specifications:

MODIFICATIONS

MexTRACE-HB series power junction boxes are offered in various designs, e.g.:

BOX SIDE IDENTIFICATION



Indexes:

Power junction box MexTRACE-HB-XX/XX/XX/XX/X/X.X

1 2 3 4 5 6 7

1 - Number of outgoing heating elements; if a gland is required, please indicate the type which is subject to the heating cable used. For modifications including an entry adapter (S, SR), please indicate 03. The required box side may additionally be specified.

TYPE OF GLAND

Designation	Description
xF	Gland M20 for self-regulating cable
xH	Gland M25 for self-regulating cable of over 64 W/m
xN	Gland M20 for for constant wattage cable
xP	Hole for M20 gland
xR	Hole for M25 gland
xT	Plugged hole M20
xV	Plugged hole M25

Where x is the quantity.

E.g.: MexTRACE-HB-1H(C),2F(C)/XX/XX/XX/X/X.X

means a box for two self-regulating heating sections (power output below 64 W/m) and one self-regulating heating section (power output over 64 W/m), in assembly with glands. Gland entries are located on side C.

2 – box unit size (selected based on required quantity and sizes of cable entries).

SIZING TABLE

Dimensions (WxHxD), mm	Size
113x113x85	113
182x152x109	182
280x271x145	280
544x271x145	544

Example:

MexTRACE-HB-XX/113/XX/XX/X/X.X – For a 113x113x85 box.

3 – quantity and sizes of cable entries (sized M16 to M63, up to 48 entries depending on box unit size). “G” means plugged. “Mb” means a metal gland for an armoured cable. “Gr” means an earth tag on a metal gland for an armoured cable. The box entry side may additionally be indicated.

Indexes: XX MXX.XX (XX)

3.1 - number of entries;

3.2 - gland size;

3.3 - entry type index;

3.3.1 - plugged gland “G”

3.3.2 - metal cable gland for armoured cable “mb”/ non-armoured cable “m”;

3.3.3- earth tag “Gr”;

3.3.4 - hole “O”;

3.3.5 - plugged hole “OG”;

3.4 - entry side.

If a cable gland is not identified, a plastic gland is used.

Example

means a box with a plastic gland and plastic plug on side D, one hole on side A.

4 – size and number of clamp screws used. “Z” means spring clamps. “PE” stands for earth terminals. For earth bar requirement, please indicate “PE bar”. “b”, “g” and other indexes are used for terminal colour identification.

TYPES OF CLAMPS

Designation	Description
K1	For 0,14 to 4 mm² cables
K2	For 0,14 to 6 mm² cables
K3	For 0,2 to 10 mm² cables
K4	For 0,5 to 16 mm² cables
K5	For 1,5 to 25 mm² cables
K6	For 1,5 to 50 mm² cables

Example:

MexTRACE-HB-XX/XX/XX/2g, 2b, 2PE-K3/X/X.X - For terminal screws;

MexTRACE-HB-XX/XX/XX/2g, 2b, 2PE.Z-K3/X/X.X – For two gray and two blue terminal screws and two PE spring terminals. .

5 – means jumpers.

Indexes: XX¹XX²

1 2

1 – number of jumpers;

2 – number of jumper pins.

Example: MexTRACE-HB-XX/XX/XX/XX/4P2, 5P4/X.X

Jumper cross section similar to clamps.

6 – “S” for support (CK-1000) to fix the box on a pipeline or equipment.

Note: for boxes mounted on CK-1000 support, please provide only the number of cable glands, terminals, and LED requirement. Compatible sizes: 182.

Example: MexTRACE-HB-XX/XX/XX/XX/X/S.X

7 – “L” means indicator LED. The colour is specified additionally, i.e. G for green, B for blue, Y for yellow, R for red etc. as required in the engineering specification.

Example: MexTRACE-HB-XX/XX/XX/XX/X/X.L-G

CK-HB power junction box, with a support for mounting onto piping, green LED.

ORDERING INFORMATION

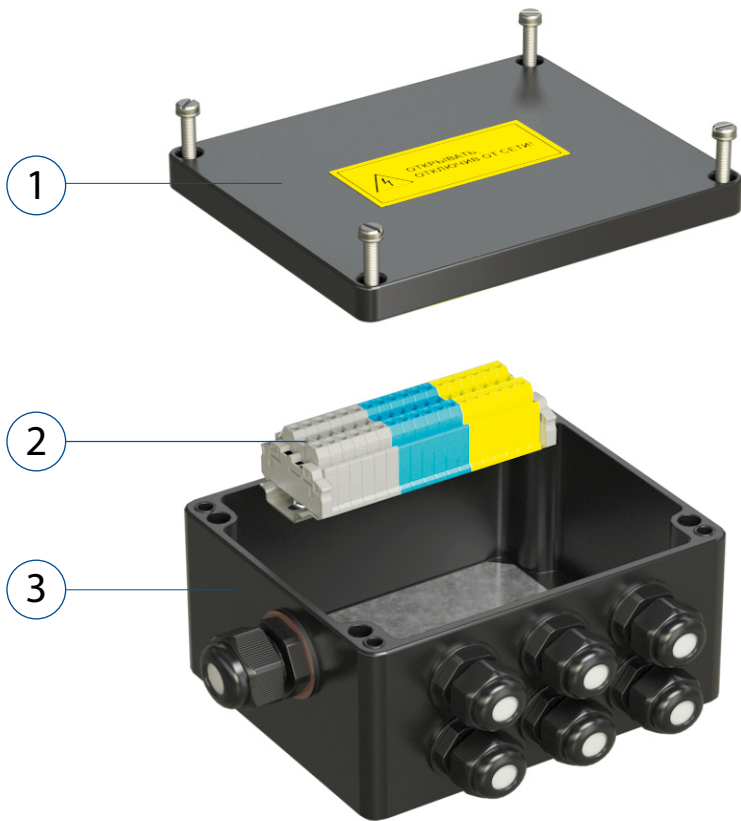
E.g. a MexTRACE-HB power junction box for a single self-regulating cable having a M20 gland on side C, 182x152x109, single M25 plug and single M20 plug, two K1 type clamp screws with gray terminals, two K1 type clamp screws with blue terminals, two K1 type spring clamps with PE terminals, three K1 type jumpers for 2 terminals, with LED and support, should have the following identification:

MexTRACE-HB-1F(C)/182/1M25.G, 1M20.G/2g, 2b, 2PE.Z-K1/3P2/S.L

DESCRIPTION

Power junction box type MexTRACE-MHB for hazardous areas is intended for various applications: a terminal box for power cable connections, heat trace cable connections, a case for Ex components.

DESIGN



1. Cover
2. Connecting terminals
3. Body

MARKING

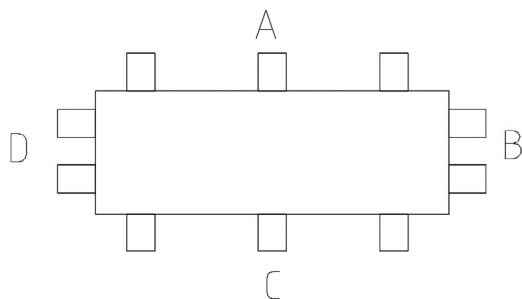
Item #	Scope of Supply	Description
MexTRACE-MHB-06	Box body of 280 size (1 pc.), separator plates (2 pcs.), jumpers (14 pcs.), clamps (14 pcs.), earth bar (1 pc.), DIN rail (1 pc.), metalware kit (1 pc.), nameplate (1 pc.), threaded cable entry M25 (6 pcs.), threaded cable entry M32 (1 pc.)	Junction box for a single incoming and six outgoing power cables

Box specification:
Cable entry type: plastic;
Wired power cable size: 13-18 mm for M25 entry;
14-21 mm for M32 entry;
Cable wire cross section 0.5-6 mm².

Please select a modification for non-typical box specifications:

MODIFICATIONS

MexTRACE-MHB series power junction boxes are offered in various designs, e.g.:



Distribution terminal box MexTRACE-MHB- XX/XX/XX/X/X
1 2 3 4 5

1 – quantity and sizes of cable entries. The required box side may additionally be specified.

Indexes: XX MXX.XX (XX)
1.1 1.2 1.3 1.4

- 1.1 – number of entries;
- 1.2 - gland size;
- 1.3 - entry type index:
 - plugged gland “G”
 - metal cable gland for armoured cable “mb”/ non-armoured cable “m”;
 - earth tag “Gr”;
 - hole “O”;
 - plugged hole “OG”;
- 1.4 - entry side.

If a cable gland is not specified, a plastic gland is used.

Example: MexTRACE-MHB-1M25.G(D),6M25.O(A)/XX/XX/X/X
means a box with a plastic gland and plastic plug on side D, six holes on side A.

2 – box size (based on required entry quantities and sizes).

SIZING TABLE

Dimensions (WxHxD), mm	Size
113x113x85	113
182x152x109	182
280x271x145	280
544x271x145	544

Example:
MexTRACE-MHB-XX/182/XX/X/X – For a 182x152x109 box

3 – size and number of clamp screws used. “Z” means spring clamps. “PE” stands for earth terminals. For earth bar requirement, please indicate “PE bar”. “b”, “g” and other indexes are used for terminal colour identification..

TYPES OF CLAMPS

Designation	Description
K1	For 0,14 to 4 mm² cables
K2	For 0,14 to 6 mm² cables
K3	For 0,2 to 10 mm² cables
K4	For 0,5 to 16 mm² cables
K5	For 1,5 to 25 mm² cables
K6	For 1,5 to 50 mm² cables

Example:

MexTRACE-MHB-XX/XX/4g, 4b, 4PE-K3/X/X - For terminal screws;

MexTRACE-MHB-XX/XX/4g, 4b, 4PE.Z-K3/X/X – For 4 gray, 4 blue terminal screws and 4 PE spring terminals.

4 – means jumpers.

Indexes: XXPPXX

1 2

1 - number of jumpers;

2 - number of jumper pins.

Example: MexTRACE-MHB-XX/XX/XX/5P2, 4P4/X

Jumper cross section similar to clamps.

5 – “L” means indicator LED (green).

Example: MexTRACE-MHB-XX/XX/XX/X/L

GENERAL SPECIFICATION

Power frequency	50 Hz
Supply voltage	690 V max, with dead earthed neutral TN-S
Ambient temperature range	-60°C to +55°C
Cable entry	bottom
IP rating	IP 66
Certificate, Ex protection	Pursuant to CU TR 012/2011, # RU C-RU. AA71.B.00076/19, 1 Ex e IIC T6...T4 Gb X and Ex tb IIIC T800C...1300C Db X
Material	Glass fiber reinforced thermoset polyester

P.O. DETAILS

E.g., a MexTRACE-MHB power junction box for six connections, 182x152x109, having two M32 plastic glands with a plastic plug on side A, six M25 holes with plugs on side C, six K3 type clamp screws with gray terminals, six K3 type clamp screws with blue terminals, six K3 type spring clamps with PE terminals, two K3 type jumpers having six pins, and a LED, should have the following identification:

MexTRACE-MHB-2M32.G(A), 6M25.OG(C)/182/6g, 6b, 6PE.Z-K3/2P6/L

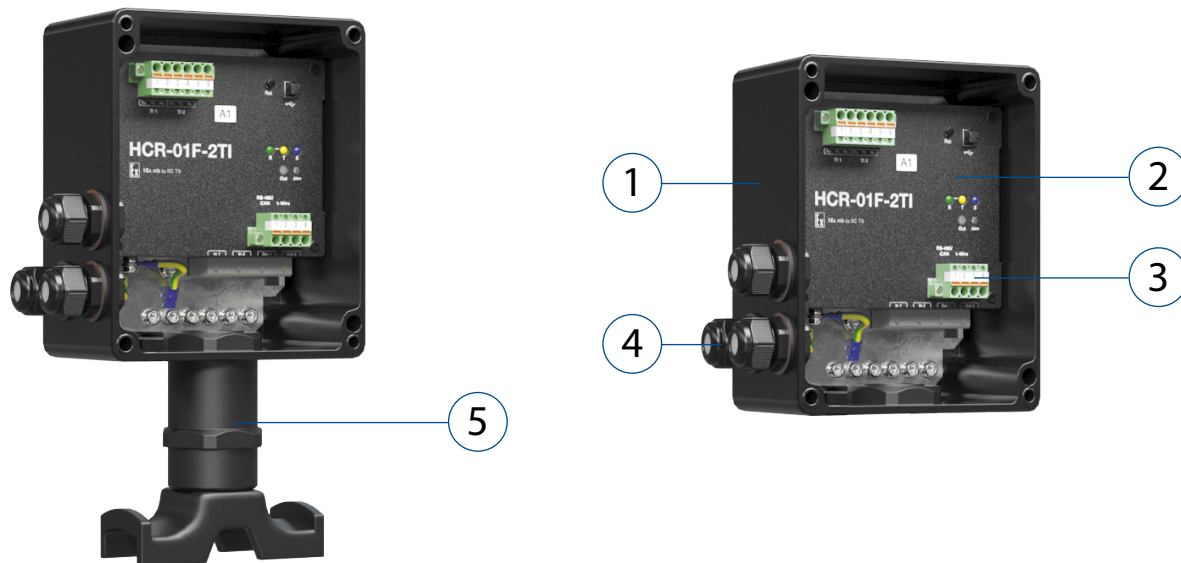
EXAMPLE OF POWER JUNCTION BOX DESIGN



MexTRACE-RMO-EXE-01-1

Single-Channel Thermostat

DESIGN



1. X proof housing
2. X-proof single-channel load control
3. Terminals
4. Cable glands
5. Heat trace cable entry adapter

DESCRIPTION

A MexTRACE-RMO-EXE-01-1 single-channel thermostat is used to control one heat tracing line and monitor the heating element. The thermostat can provide load control based both on its own measurements and data received from external modules. Piping temperature-based control is possible with load current characteristics rather than temperature sensing.

MexTRACE-RMO-EXE-01-1 measures operating current, residual (leakage) current, and has interlock functions based on these.

The thermostat may be used independently or as part of automated EHT systems.

Data exchange with the monitoring / control system is provided via RS-485/CAN serial interface.

Any setting and modes, and firmware updates are possible via a USB service port.

The product may optionally have a NFC-Port via 1-Wire to enable configuration with a smartphone without having to open the enclosure or isolate the device used in hazardous zones. Configuration is possible in power off state, e.g. during commissioning.

Commutation is done with a triac-relay combo that has an enhanced lifespan of up to 1,000,000 cycles, as compared to alternatives having a life of up to 100,000 cycles.

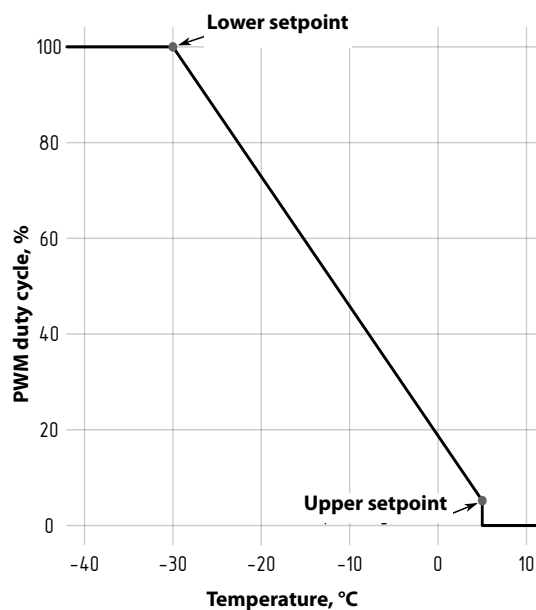
The thermostat has a powerdown feature to enable power adjustment at 1 to 100% of heat trace cable rated output. The device is useful for reducing the starting currents of the heating section thus providing a soft start.

MexTRACE-RMO-EXE-01-1

Single-Channel Thermostat

Heating sections are controlled by switching between the following modes:

- "Heater OFF" – The line is always off.
- "Heater ON." – The line is always on.
- "Remote" - The line is controlled with higher level signals via communication interfaces.
- "Thermal Relay" - The device supports custom object temperature relying on temperature sensor data .
- "PWM"-The line is alternately turned on and off subject to user-defined interval and PWM duty cycle duration.
- "Proportional PWM" - PWM duty cycle duration is interpolated linearly between two points, i.e. between the upper and lower setpoints. The temperature and duration of the duty cycle are defined for each setpoint. As long as air temperature does not exceed the lower setpoint, the duty cycle value remains constant and equal to the value at the given setpoint. If air temperature exceeds the upper setpoint, the duty cycle value is equal to zero, i.e. the line is off. The time the line goes on between the upper and lower limits is determined by interpolation.



MexTRACE-RMO-EXE-01-1

Single-Channel Thermostat

GENERAL SPECIFICATION

Rated voltage	230 V, 50 Hz
Control lines	1
Operating current	30 A max (starting current 40 A max)
Interface (option)/ protocol	RS-485(CAN) / ModBus RTU (CANopen)
Earth system	TN-S, TN-C, TN-C-S
IP rating	IP 66
Certificate, Ex protection	Pursuant to CU TR 012/2011, # RU C-RU. AM02.B.00668/22, 1Ex eb mb IIC T5 Gb X, 1Ex eb mb [ia Ga] IIC T5 Gb X, Ex tb IIIC T100 °C Db X
Type of temperature sensors	Pt100; Pt1000; Ni100; Cu 100; Cu 50; 100 M; 50 M; Pt 50; 50 Π; 100 Π; 1000 Π J, K, N, L, E, R, T, A1, A2, A3, S, B, M, 0(4) to 20 mA analog signal
Number of temperature sensor connections	2
Temperature sensor wiring diagram	three-wire, two-wire
AC switching voltage	0 to 480 V
Load current range	0 to 40 A
Residual current range	0 to 400 mA
Operating temperature range	-60 to +55 °C
Dimensions, WxHxD	152x180x109 mm

MODIFICATIONS

MexTRACE-RMO-EXE-01-1 series products are available in several designs.

Indexes:

Single-channel thermostat MexTRACE-RMO-EXE-01-1/XXX/XXX/XMXX/XX/XM20/X/L-X/TXX/XX/X/X
1 2 3 4 5 6 7 8 9 10 11

1 – Type of bracket:

S – CK-1000 type adapter. Applicable for box size 182. L type low temperature sensors are connected via an adapter, while no adapter is used for H type high temperature sensors. Mineral insulated heating sections are not used with an adapter. The product enables heating section L-N connection;

126 – bracket. Applicable for box size 182. L type low temperature sensors are connected via a cable entry, whereas H type high temperature sensors are connected into the cable entries of the sensor. The product enables heating section L-N connection;

R – an individual frame should be used. Applicable for box size 280. L type low temperature sensors are connected via a cable entry, whereas H type high temperature sensors are connected into the cable entries of the sensor. The product enables heating section L-N and L-L connection.

2 – Box size:

182 – 182x152x109 mm dimensions. This unit size provides for a single heating section connection, with no power cable daisy chain wiring;

280 – 280x271x145 mm dimensions. This unit size is applicable for designs having power and control cable terminals. This option allows for up to three heating section connections. Power and interface cables are to be daisy chained.

3 – Cable gland size for power cable: XM20/XM25/XM32

where X is the number of cable glands (1 or 2), 2 cable glands being available for box size 280 only.

Interface cable entry size: two M20 cable glands are assumed for all modifications (not identified with an index). All cable glands are supplied plugged.

MexTRACE-RMO-EXE-01-1

Single-Channel Thermostat

4 – cable entry types for power, interface and control cables:

- A – armoured cable glands;
 - AM – entries for armoured cables in metal hoses;
 - NM – metal entries for non-armoured cables;
 - NP – plastic entries for non-armoured cables.
- Plastic entries are used for L type temperature sensors.

5 – number of XM20 holes for heating section wiring, plugged:

- X – number of holes (for a bracket or frame);
- 0 – no holes (for use with CK-1000).

6 – external earth bolt on box body:

- 1 – yes;
- 0 – no.

7 – LED indication (LED module) on box body:

- LP – spreader on box body;
- 0 – no spreader on box body;

8 – Temperature sensors:

- T0 – No temperature sensors;
- X.T1 – One temperature sensor;
- X.T2 – Two temperature sensors;
- Tout – outer (ambient) air sensor.
- X – Type of temperature sensor:
- H – High temperature (MexTRACE-PT100-EXE-1-SE);
- L – Low temperature (MexTRACE-PT100-EXE-SE).

9 – Type of temperature sensor:

- TI – RTD;

AI – 0(4) to 20 mA analog signal. For control devices with 0(4) to 20 mA type sensor, please select MexTRACE-PT100.4/20-EXE or MexTRACE-PT100.4/20-EXE-1 on a CK-26 bracket (temperature sensors, control cable and brackets are not in the scope of supply).

10 – Type of control device:

- A – for single-phase load (230 V);

- B – for single-phase load (230 V) and two-phase load (380 V). This type of control device is suitable for box size 280 only.

B type control devices require 230 V power supply.

11 – NFC module:

- NFC – yes;
- 0 – no.

Example:

MexTRACE-RMO-EXE-01-1/126/182/1M25/2/A/0/-/T2/TI/A/0 is a thermostat for a single series-type heating section connection for 230 V power supply, bracket-mounted. The product will have a cable entry for an M25 armoured power cable, a cable entry for an M20 armoured interface cable, two plastic glands for temperature sensors, and two temperature sensors.

MexTRACE-RMO-EXE-01-1

Single-Channel Thermostat

MARKING

Typical Devices and Scope of Supply:

Item #	Description
MexTRACE-RMO-EXE-01-1	Thermostat for a single parallel or series type heating section (230 V) attachable with CK-1000, with plastic cable glands. The product includes an M25 power cable gland, two interface cable glands, and plugs. A feature is provided for two low-temperature sensors. Temperature sensors are provided separately.
MexTRACE-RMO-EXE-01-1.L.T1	MexTRACE-RMO-EXE-01-1 in assembly with one MexTRACE-PT100-EXE-SE type temperature sensing element
MexTRACE-RMO-EXE-01-1.S.L.T1	MexTRACE-RMO-EXE-01-1 attachable with CK-1000, in assembly with one MexTRACE-PT100-EXE-SE type temperature sensing element
MexTRACE-RMO-EXE-01-1.H.T1	MexTRACE-RMO-EXE-01-1 in assembly with one MexTRACE-PT100-EXE-1-SE type temperature sensing element
MexTRACE-RMO-EXE-01-1.L.T2	MexTRACE-RMO-EXE-01-1 in assembly with two MexTRACE-PT100-EXE-SE type temperature sensing elements
MexTRACE-RMO-EXE-01-1.S.L.T2	MexTRACE-RMO-EXE-01-1 attachable with CK-1000, in assembly with two MexTRACE-PT100-EXE-SE type temperature sensing elements
MexTRACE-RMO-EXE-01-1.H.T2	MexTRACE-RMO-EXE-01-1 in assembly with two MexTRACE-PT100-EXE-1-SE type temperature sensing elements
MexTRACE-RMO-EXE-01-1.Tout	MexTRACE-RMO-EXE-01-1 in assembly with one outdoor air temperature sensor

Box specification:

Cable entry type: plastic;

Wired power cable size: 13-18 mm for M25 entry;

14-21 mm for M32 entry;

Cable wire cross section 0.5-6 mm².

P.O. DETAILS

Please provide the following item number in your P.O. for a MexTRACE-PT100-EXE-SE thermostat with two temperature sensors:

MexTRACE-RMO-EXE-01-1.L.T2

Please provide the following item number in your P.O. for a controller:

HCR-01F-2TI Ex

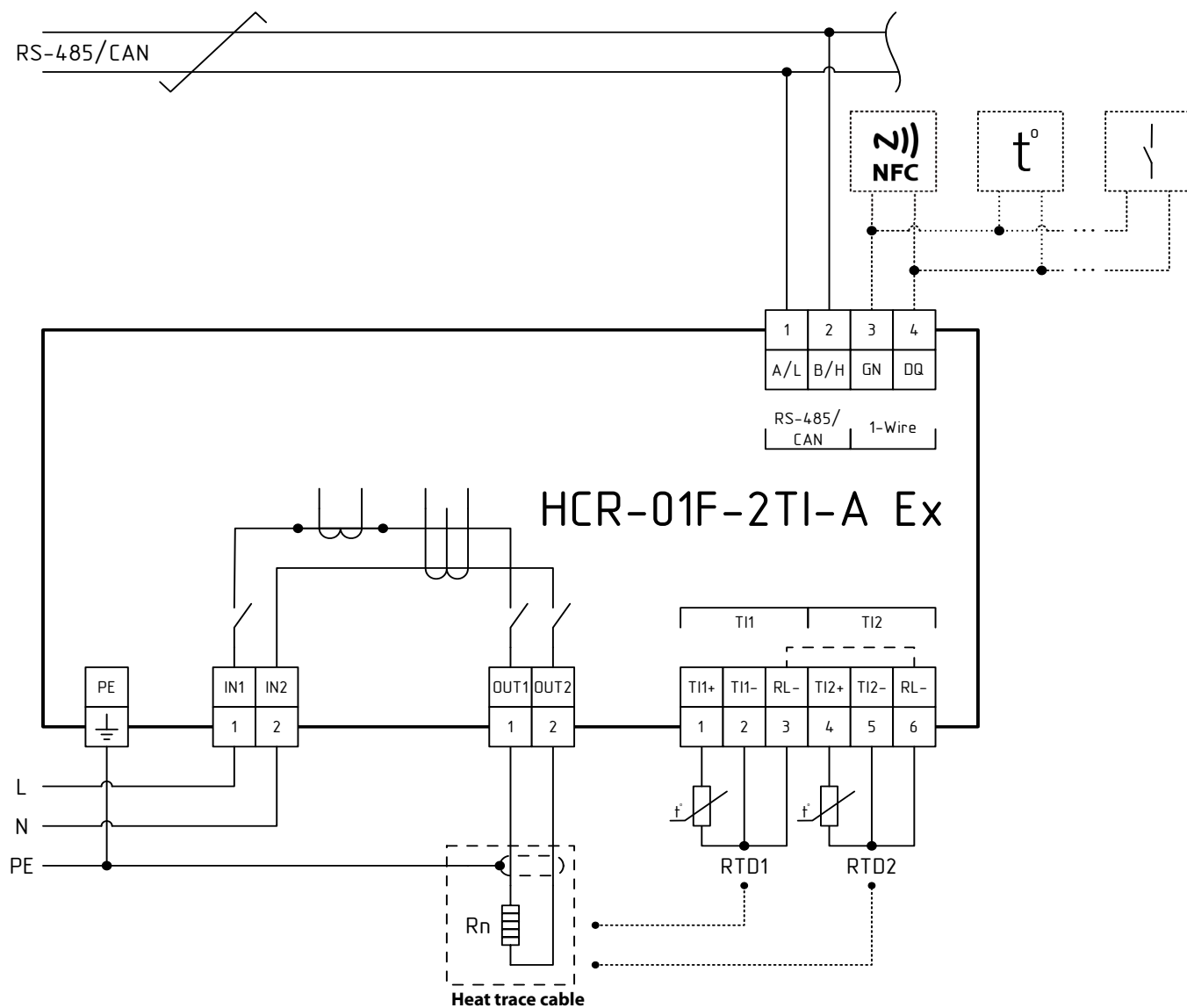
HCR-01F-2TI-A Ex

HCR-01F-2AI Ex (Type of temperature sensor: 0(4) to 20 mA analog signal)

HCR-01F-2AI-A Ex (Type of temperature sensor: 0(4) to 20 mA analog signal)

Single-Channel Thermostat

One-phase load connection

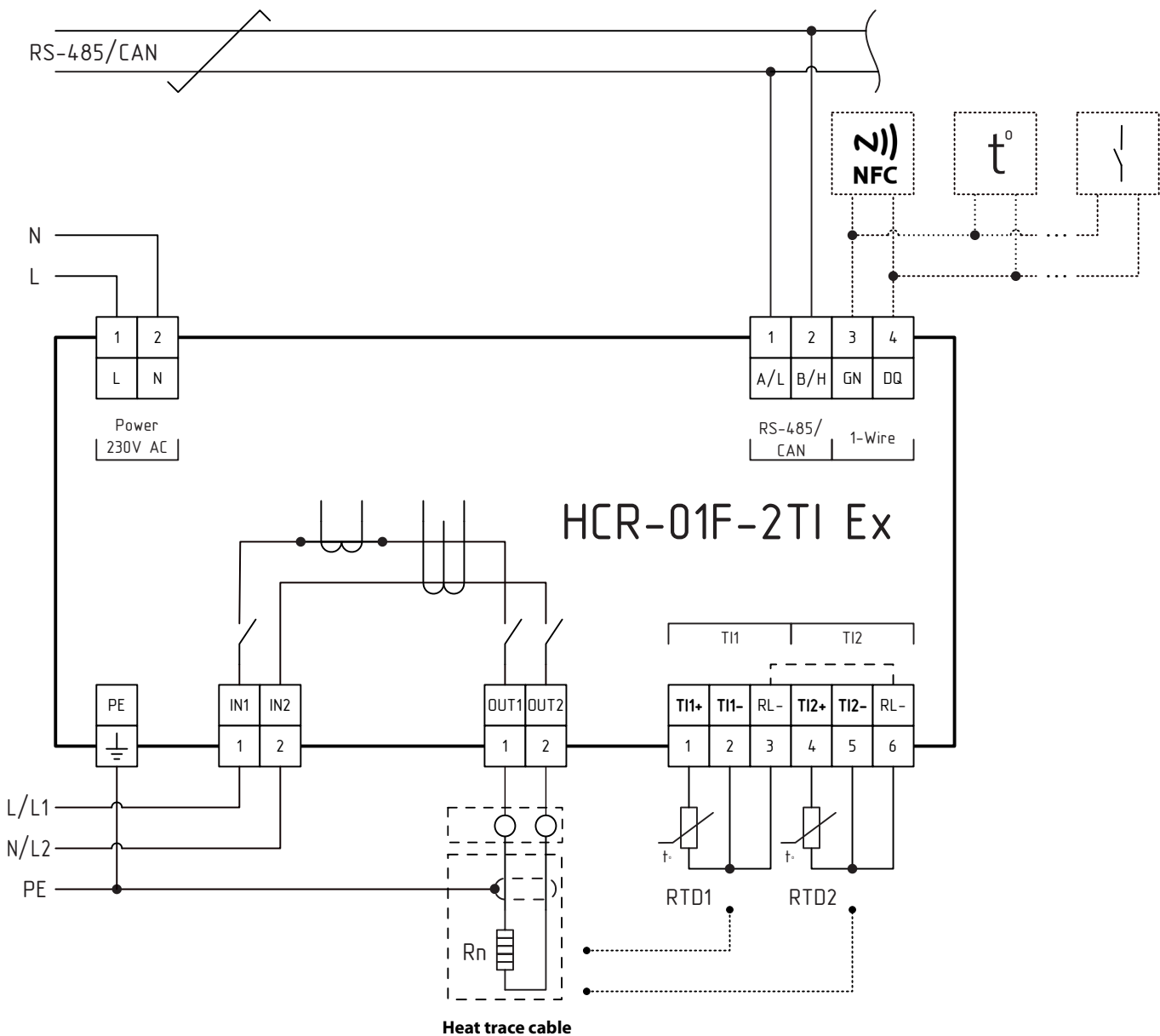


MexTRACE-RMO-EXE-01-1

Single-Channel Thermostat

CIRCUIT DIAGRAM (EXAMPLE)

Two-phase load connection



MexTRACE-RMO-EXE-01-3

Single-Channel Thermostat

DESIGN



1. X-proof housing
2. X-proof single-channel load control
3. Terminals
4. Cable glands
5. Heat trace cable entry adapter

DESCRIPTION

Single-channel thermostat MexTRACE-RMO-EXE-01-3 is used to control one heat tracing line and monitor the heating element.

The product is used to ensure local load control based on internal measurements with two temperature sensors.

The thermostat can be operated independently or as part of automated electrical heating systems.

Communication with the monitoring/control system is via the dry contact of the alarm relay or via the RS-485 interface.

Rotary switches are used to set the target temperature and limiter trip temperature.

In-depth configuration of parameters, modes of operation and updating of the device firmware can be done through the Web interface of the built-in server, available via a wireless Wi-Fi connection.

The device features bright status LEDs and a transparent filter fitted on its cover.

Commutation is done with a triac-relay combo that has an enhanced lifespan of up to 1,000,000 cycles, as compared to alternatives having a life of up to 100,000 cycles.

The thermostat has a power reduction function that allows you to adjust the power in the range from 1 to 100% of the nominal power of the heating cable. Device makes it possible to reduce starting currents of heating section, provides smooth start-up.

Device contains built-in hardware limiter of maximum temperature with possibility of connection of separate sensor and functionally independent from operability of main regulator based on microcontroller.

GENERAL SPECIFICATION

Rated voltage	230 V, 50 Hz
Control lines	1
Operating current	40 A max (starting current 40 A max)
Interface	dry contact, RS-485/MobBus RTU
Earth system	TN-S, TN-C, TN-C-S
IP rating	IP 66
Certificate, Ex protection	Pursuant to CU TR 012/2011, # RU C-RU. AM02.B.00668/22, 1Ex eb mb IIC T5 Gb X, Ex tb IIIC T100 °C Db X
Type of temperature sensors	Pt100; Ni100; Cu 100; Cu 50; 100 M; 50 M; Pt 50; 50 Π; 100 Π
Number of temperature sensors connections	2
Temperature sensor wiring diagram	three-wire
AC switching voltage	0 to 264 V
Operating temperature range	-60 to +55 °C
Dimensions WxHxD	182x152x109 mm

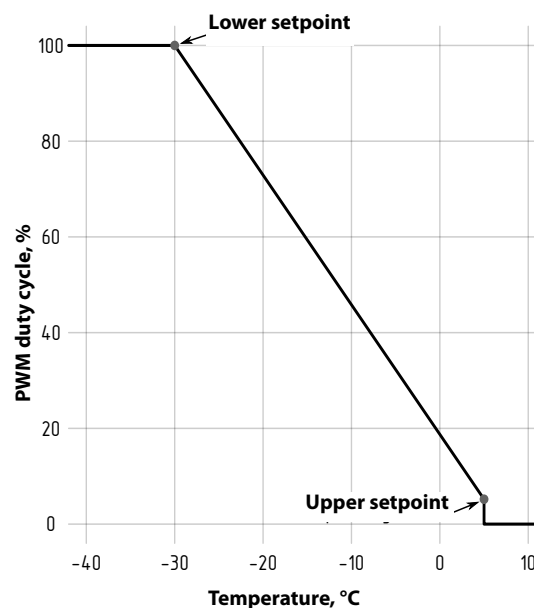


MexTRACE-RMO-EXE-01-3

Single-Channel Thermostat

Heating sections are controlled by switching between the following modes:

- "Heater OFF" – The line is always off.
- "Heater ON." – The line is always on.
- "Remote" - The line is controlled with higher level signals via communication interfaces.
- "Thermal Relay" - The device supports custom object temperature relying on temperature sensor data .
- "PWM"-The line is alternately turned on and off subject to user-defined interval and PWM duty cycle duration.
- "Proportional PWM" - PWM duty cycle duration is interpolated linearly between two points, i.e. between the upper and lower setpoints. The temperature and duration of the duty cycle are defined for each setpoint. As long as air temperature does not exceed the lower setpoint, the duty cycle value remains constant and equal to the value at the given setpoint. If air temperature exceeds the upper setpoint, the duty cycle value is equal to zero, i.e. the line is off. The time the line goes on between the upper and lower limits is determined by interpolation.



MARKING

Item #	Description
MexTRACE-RMO-EXE-01-3	Single-channel thermostat. To be used in conjunction with support bracket CK-101 or CK-126
MexTRACE-RMO-EXE-01-3.L.T1	Single-channel thermostat. To be used in conjunction with support bracket CK-101 or CK-126. Includes one MexTRACE-PT100-EXE-SE sensor
MexTRACE-RMO-EXE-01-3.H.T1	Single-channel thermostat. To be used in conjunction with support bracket CK-101 or CK-126. Includes one MexTRACE-PT100-EXE-1-SE sensor
MexTRACE-RMO-EXE-01-3.L.T2	Single-channel thermostat. To be used in conjunction with support bracket CK-101 or CK-126. Includes two MexTRACE-PT100-EXE-SE sensors
MexTRACE-RMO-EXE-01-3.H.T2	Single-channel thermostat. To be used in conjunction with support bracket CK-101 or CK-126. Includes two MexTRACE-PT100-EXE-1-SE sensors
MexTRACE-RMO-EXE-01-3.S	Single-channel thermostat. Includes CK-1000 for heat trace cable connection
MexTRACE-RMO-EXE-01-3.S.L.T1	Single-channel thermostat. Includes CK-1000 for heat trace cable connection and one MexTRACE-PT100-EXE-SE sensor
MexTRACE-RMO-EXE-01-3.S.L.T2	Single-channel thermostat. Includes CK-1000 for heat trace cable connection and two MexTRACE-PT100-EXE-SE sensors

Box specification:

Cable entry type: plastic;

Wired power cable size: 13-18 mm for M25 entry;

14-21 mm for M32 entry;

Cable wire cross section 0.5-6 mm².

P.O. DETAILS

Please provide the following item number in your P.O. for an X-proof single-channel load control / temperature control:

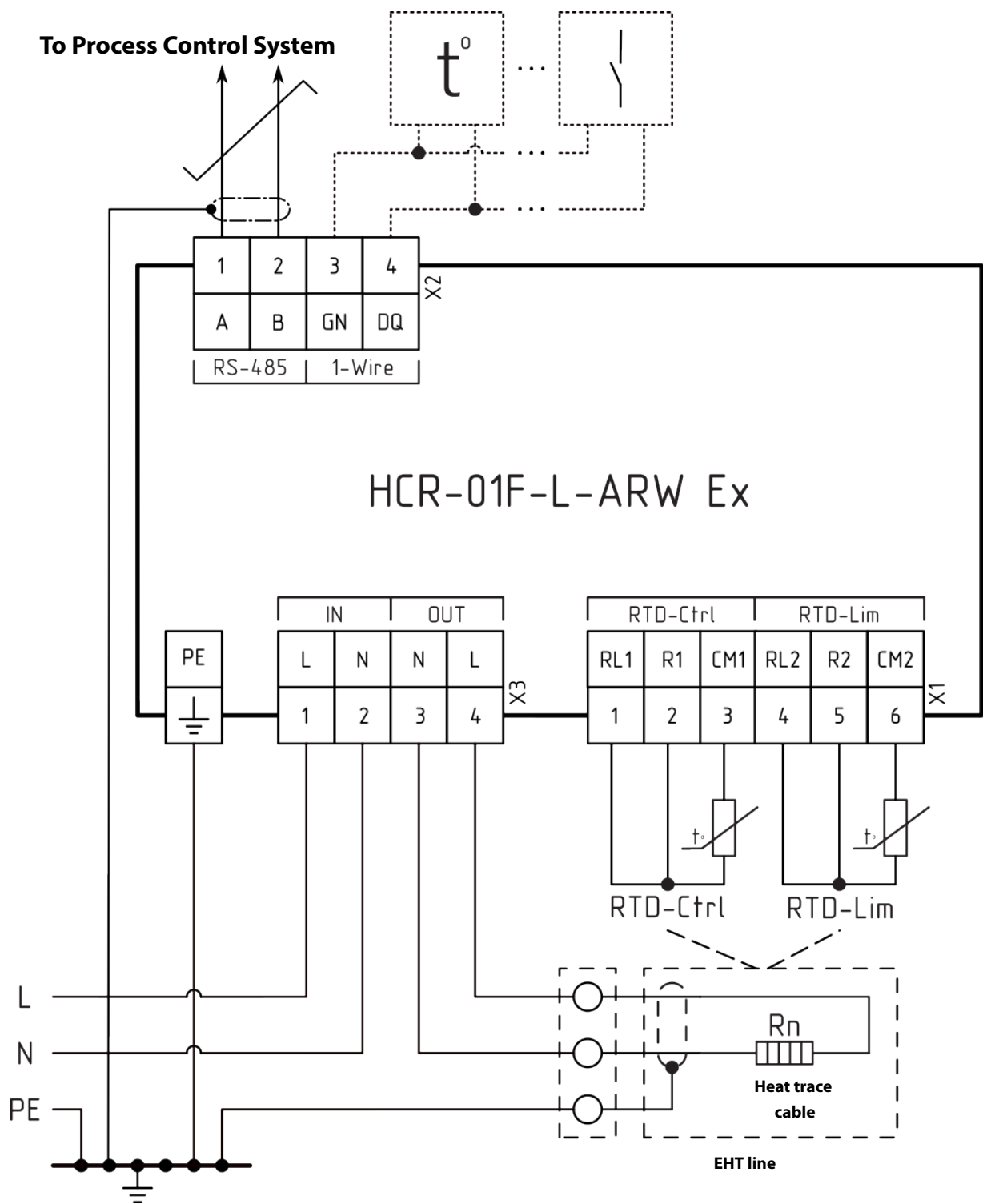
MexTRACE-RMO-EXE-01-3

MexTRACE-RMO-EXE-01-3

Single-Channel Thermostat

CIRCUIT DIAGRAM (EXAMPLE)

Load Connection. RS-485 interface

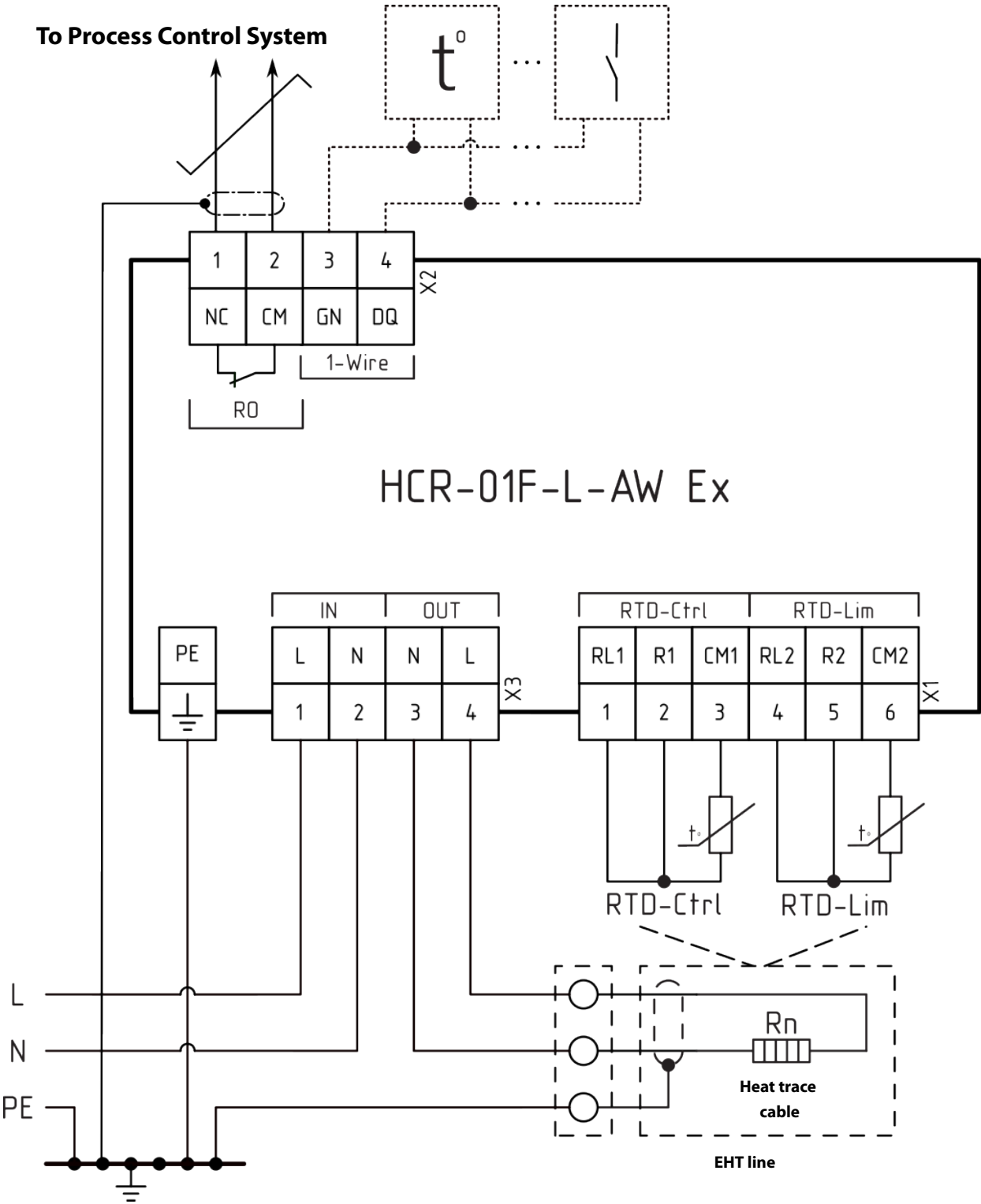


MexTRACE-RMO-EXE-01-3

Single-Channel Thermostat

CIRCUIT DIAGRAM (EXAMPLE)

Load Connection. Dry contact interface



MexTRACE-RMO-EXE-03

Three-Channel Thermostat

DESIGN



1. X-proof housing
2. X-proof three-phase load control
3. Terminals
4. Cable glands

DESCRIPTION

Three-channel (three-phase) thermostat type MexTRACE-RMO-EXE-03 is used to control three single-phase heat tracing lines or one three-phase heat tracing line and monitor the heating elements.

The thermostat can provide load control based both on its own measurements and data received from external modules. Piping temperature-based control is possible with load current characteristics rather than temperature sensing.

MexTRACE-RMO-EXE-03 measures operating current, residual (leakage) current, and has interlock functions based on these.

The thermostat may be used independently or as part of automated EHT systems.

Data exchange with the monitoring / control system is provided via RS-485/CAN serial interface. Any setting and modes, and firmware updates are possible via a USB service port.

The product may optionally have a NFC-Port via 1-Wire to enable configuration with a smartphone without having to open the enclosure or isolate the device used in hazardous zones. Configuration is possible in power off state, e.g. during commissioning.

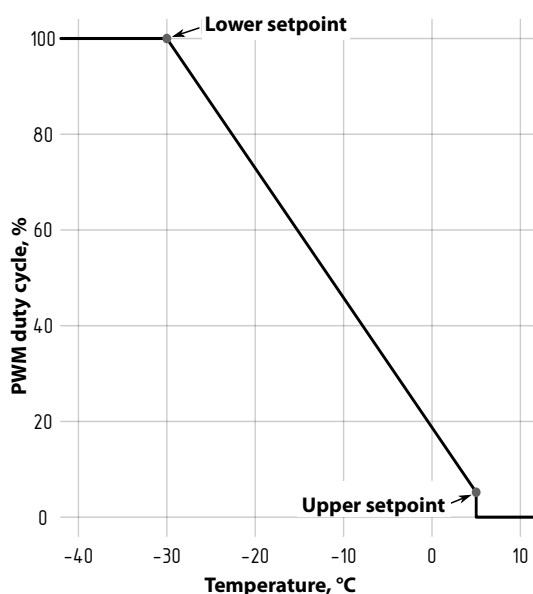
Commutation is done with a triac-relay combo that has an enhanced lifespan of up to 1,000,000 cycles, as compared to alternatives having a life of up to 100,000 cycles.

MexTRACE-RMO-EXE-03

Three-Channel Thermostat

Heating sections are controlled by switching between the following modes:

- "Heater OFF" – The line is always off.
- "Heater ON" – The line is always on.
- "Remote" - The line is controlled with higher level signals via communication interfaces
- "Thermal Relay" - The device supports custom object temperature relying on temperature sensor data
- "PWM" - The line is alternately turned on and off subject to user-defined interval and PWM duty cycle duration.
- "Proportional PWM" - PWM duty cycle duration is interpolated linearly between two points, i.e. between the upper and lower setpoints. The temperature and duration of the duty cycle are defined for each setpoint. As long as air temperature does not exceed the lower setpoint, the duty cycle value remains constant and equal to the value at the given setpoint. If air temperature exceeds the upper setpoint, the duty cycle value is equal to zero, i.e. the line is off. The time the line goes on between the upper and lower limits is determined by interpolation.



MexTRACE-RMO-EXE-03

Three-Channel Thermostat

GENERAL SPECIFICATION

Rated voltage	230 V, 50 Hz
Control lines	3
Operating current	30 A max at three-phase connection (starting current 40 A max)
Interface (option) / protocol	RS-485(CAN) / ModBus RTU (CANopen)
Earth system	TN-S, TN-C, TN-C-S
IP rating	IP 66
Certificate, Ex protection	Pursuant to CU TR 012/2011, # RU C-RU. AM02.B.00668/22, 1Ex eb mb IIC T5 Gb X, 1Ex eb mb [ia Ga] IIC T5 Gb X, Ex tb IIIC T100 °C Db X
Type of temperature sensors	Pt100; Pt1000; Ni100 ; Cu 100 ; Cu 50; 100 M; 50 M; Pt 50; 50 П; 100 П; 1000 П
Number of temperature sensor connections	3 max
Temperature sensor wiring diagram	three-wire, two-wire
AC switching voltage	0 to 480 V
Load current range	0 to 40 A
Residual current range	0 to 400 mA
Operating temperature range	-60 to +55 °C
Dimensions WxHxD	280x271x145 mm

MARKING

Item #

MexTRACE-RMO-EXE-03

P.O. DETAILS

Please provide the following item number in your P.O. for a distribution and control module (three control lines):

MexTRACE-RMO-EXE-03

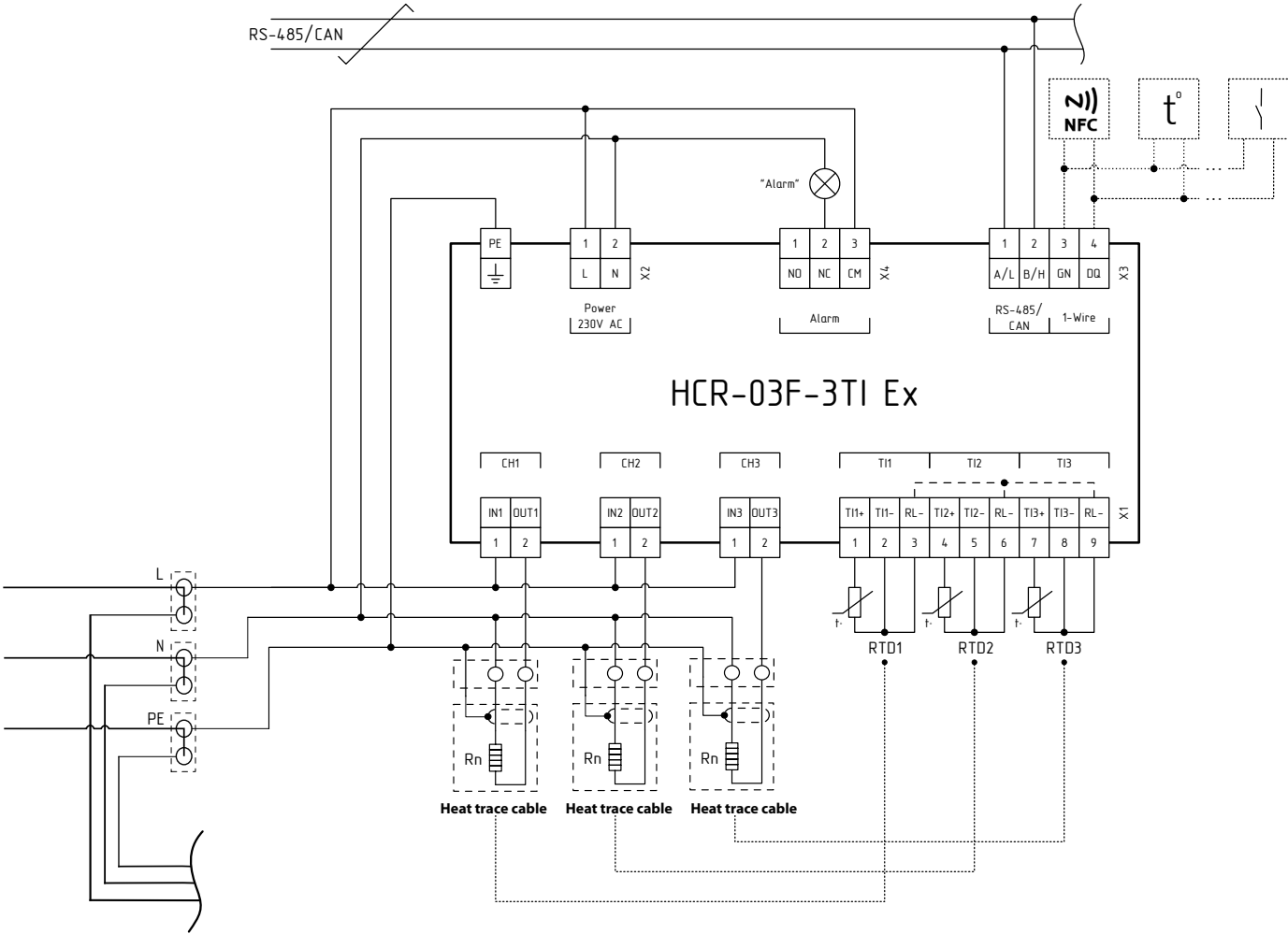
Please provide the following item number in your P.O. for a controller:

HCR-03F-3TI EX

MexTRACE-RMO-EXE-03

Three-Channel Thermostat

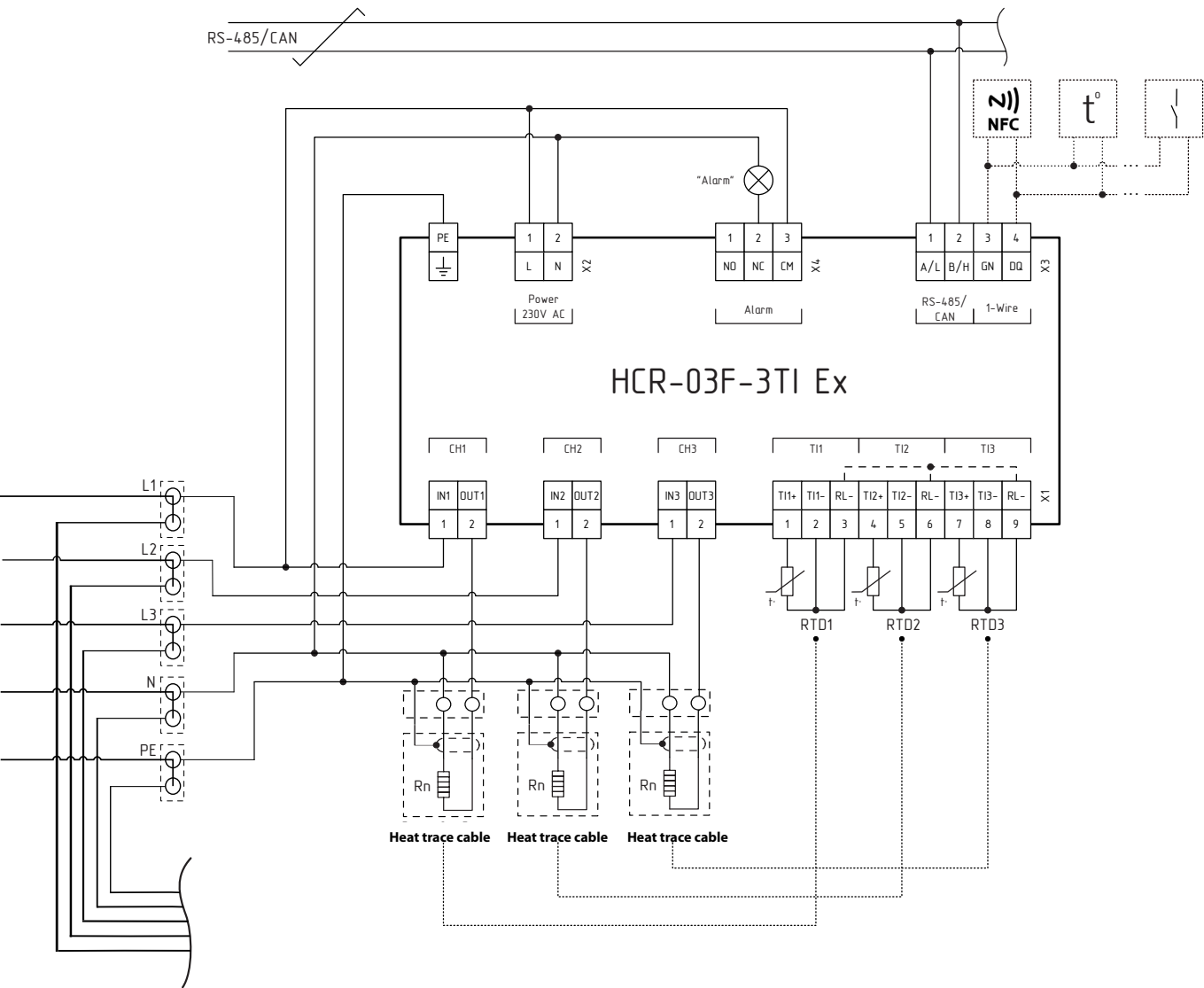
CIRCUIT DIAGRAM (EXAMPLE)



MexTRACE-RMO-EXE-03

Three-Channel Thermostat

CIRCUIT DIAGRAM (EXAMPLE)



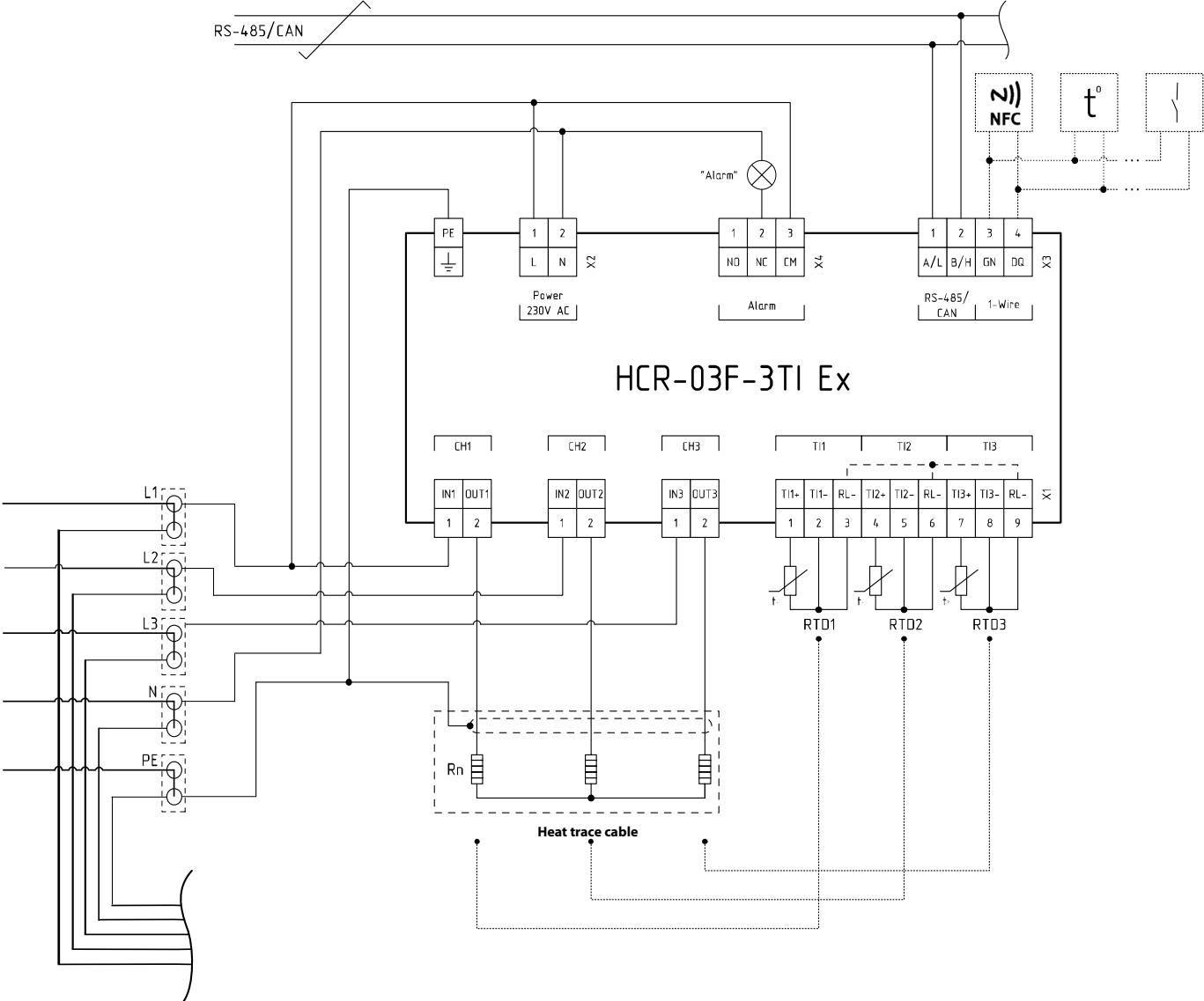
Equipment



MexTRACE-RMO-EXE-03

Three-Channel Thermostat

CIRCUIT DIAGRAM (EXAMPLE)



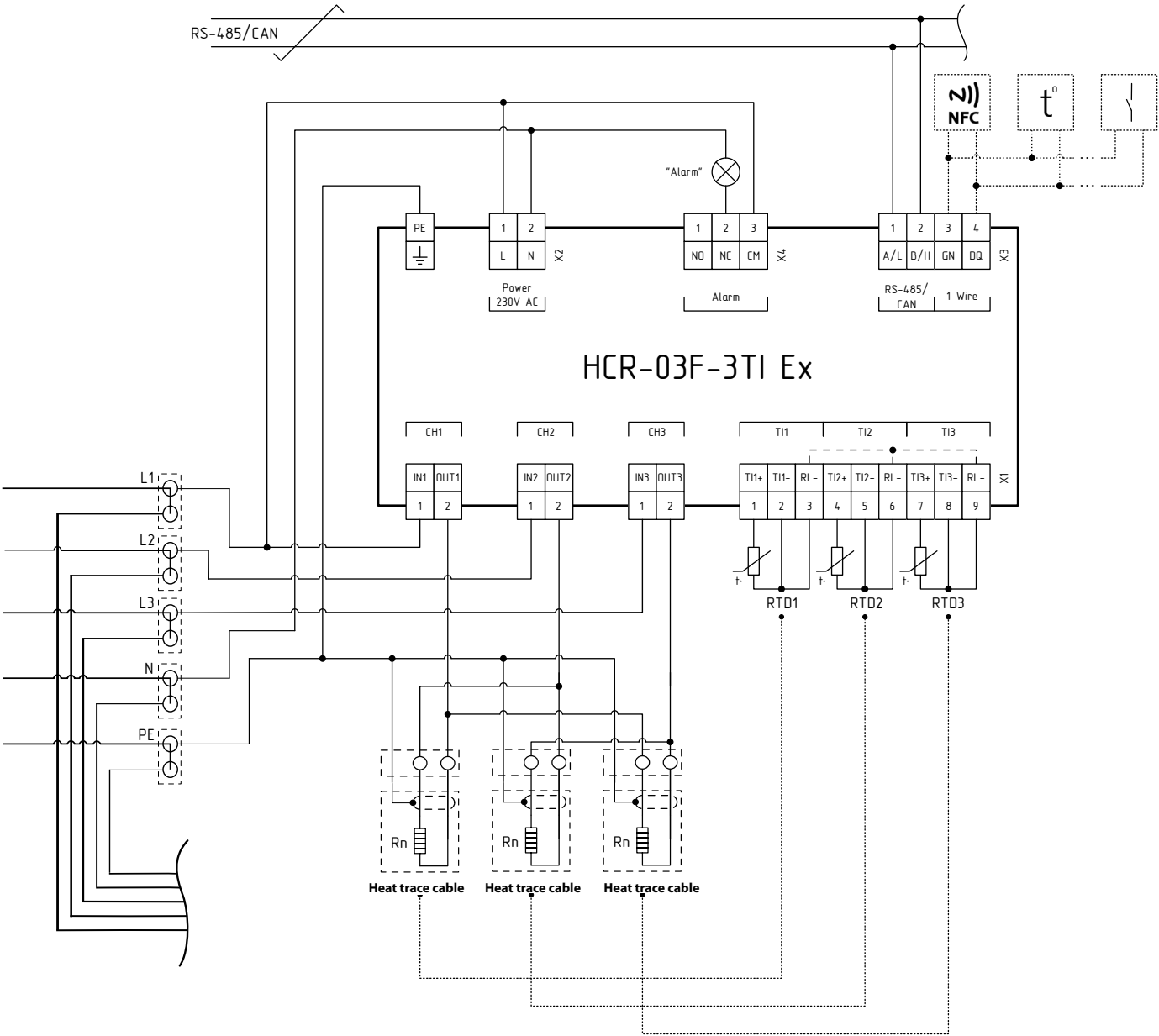
Equipment



MexTRACE-RMO-EXE-03

Three-Channel Thermostat

CIRCUIT DIAGRAM (EXAMPLE)



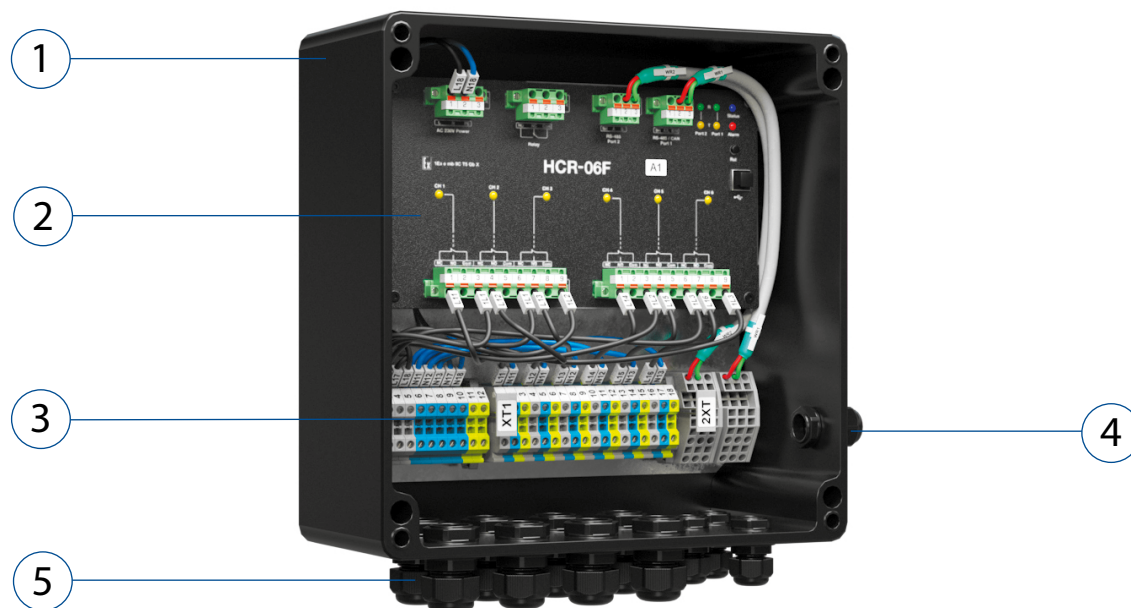
Equipment



MexTRACE-RMO-EXE-06

Six-Channel Thermostat

DESIGN



1. X-proof housing
2. X-proof load control device
3. Terminals
4. Feeding cable glands
5. Heating cable glands

DESCRIPTION

Distribution and control module type MexTRACE-RMO-EXE-06 is a device used to monitor and control six heat tracing lines as part of an automated EHT control system.

The unit is capable of delivering control over heating circuits based on the feedback from a MexTRACE-RMM-EXE type measuring and control module or its own measurement.

MexTRACE-RMO-EXE-06 is supplied as a kit in a X-proof body accommodating a controller and terminals.

The housing accommodates two power cable glands, two communication cable glands, and six cable glands to hook up heating elements.

An Ex controller provides automatic and remote discrete control of user power and electrical current measurement. The device may be operated both independently and as part of automated supervisory and process control systems. Number of channels: six (6).

When operated automatically, the device allows for consumed power control based on load current feedback or the signals from a partner measuring module, which is connected via a dedicated RS-485 serial interface. The product is applicable in explosive gas environments (gas group IIC as per GOST R IEC 60079-0-2011).

Data exchange with the monitoring / control system is provided via RS-485/CAN serial interface.

The thermostat has a powerdown feature to enable power adjustment at 1 to 100% of heat trace cable rated output. The device is useful for reducing the starting currents of the heating section thus providing a soft start.

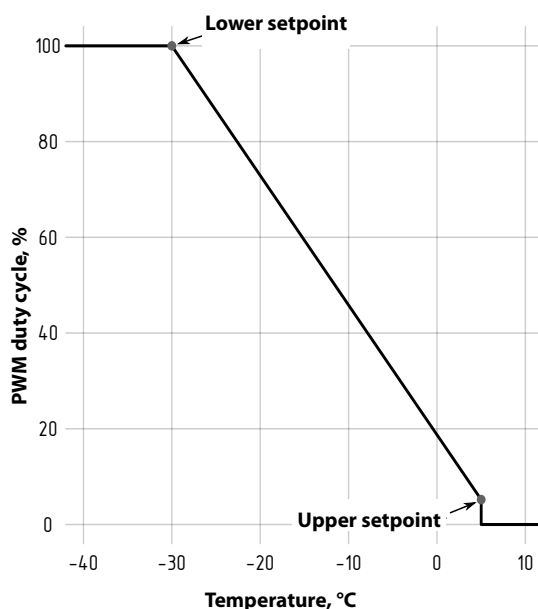
The product may optionally have a NFC-Port via 1-Wire to enable configuration with a smartphone without having to open the enclosure or isolate the device used in hazardous zones. Configuration is possible in power off state, e.g. during commissioning.

MexTRACE-RMO-EXE-06

Six-Channel Thermostat

Heating sections are controlled by switching between the following modes:

- "Heater OFF" – The line is always off.
- "Heater On" – The line is always on.
- "Remote" - The line is controlled with higher level signals via communication interfaces
- "Thermal Relay" - The device supports custom object temperature relying on temperature sensor data.
- "PWM" - The line is alternately turned on and off subject to user-defined interval and PWM duty cycle duration.
- "Proportional PWM" - PWM duty cycle duration is interpolated linearly between two points, i.e. between the upper and lower setpoints. The temperature and duration of the duty cycle are defined for each setpoint. As long as air temperature does not exceed the lower setpoint, the duty cycle value remains constant and equal to the value at the given setpoint. If air temperature exceeds the upper setpoint, the duty cycle value is equal to zero, i.e. the line is off. The time the line goes on between the upper and lower limits is determined by interpolation.



GENERAL SPECIFICATION

Rated voltage	230/400 V, 50 Hz
Control lines	6
Operating current	per line 12 A max (starting current of each line 15 A max, total current of all lines 30 A max, total starting current of all lines 40 A max)
Interface (option) / protocol I	RS-485(CAN) / ModBus RTU (CANopen)
Earth system	TN-S, TN-C, TN-C-S
IP rating	IP 66
Certificate, Ex protection	Pursuant to CU TR 012/2011, # RU C-RU. AM02.B.00668/22, 1Ex eb mb IIC T5 Gb X, 1Ex eb mb [ia Ga] IIC T5 Gb X, Ex tb IIIC T100 °C Db X
AC switching voltage	0 to 250 V
Load current range	0 to 30 A
Operating temperature range	-60 to +55 °C
Dimensions WxHxD	271x280x145 mm

MexTRACE-RMO-EXE-06

Six-Channel Thermostat

MODIFICATIONS

MexTRACE-RMO-EXE-06 series products are available in several designs.

Indexes:

Six-channel thermostat MexTRACE-RMO-EXE-06/XXX/XXX/XXX/XXX/XXX

1 2 3 4 5

1 – Supply voltage: 230 V or 400 V.

2 – Additional devices wired to 1-wire interface:

0 – no additional devices;

NFC – an NFC port provided to enable major settings in a smart phone without having to open up the enclosure;

DTS – a digital outdoor air temperature sensor provided.

3 – Type of EHT line control contacts:

NC – normally closed, power off to heating sections in case of controller failure;

NO – normally open, uncontrolled power on to heating sections in case of controller failure.

4 – Types of cable glands:

A - armoured cable glands;

AM - glands for armoured cables in metal hoses;

NM - metal glands for non-armoured cables;

NP - plastic glands for non-armoured cables.

5 – Temperature sensors:

T0 – no temperature sensors;

Tout – outdoor air temperature sensor.

Example:

MexTRACE-RMO-EXE-06/230/NFC/NC/NP/T0 - is a thermostat for 230 V power supply for connection of six heating sections, with plastic glands for non-armoured cables, an NFC module, NC, no temperature sensors. The product includes six M25 plastic glands, two M20 plastic glands, and one M32 plastic gland. Power terminals are intended for max 6 mm² cable wiring.

MARKING

Item #	Description
MexTRACE-RMO-EXE-06	A thermostat for connection of six heating sections. 230 V power supply. The product includes six M25 plastic glands, two M20 plastic glands, and one M32 plastic gland. Power terminals are intended for max 6 mm² cable wiring. NC type.
MexTRACE-RMO-EXE-06.Tout	MexTRACE-RMO-EXE-06 in assembly with one outdoor air temperature sensor

Box specification:

Cable entry type: plastic;

Wired power cable size: 13-18 mm for M25 entry;

14-21 mm for M32 entry;

Cable wire cross section 0.5-6 mm².

P.O. DETAILS

Please provide the following item number in your P.O. for a distribution and control module (6 control lines):

MexTRACE-RMO-EXE-06

Please provide the following item number in your P.O. for a distribution and control module (6 control lines) in assembly with an outdoor air temperature sensor:

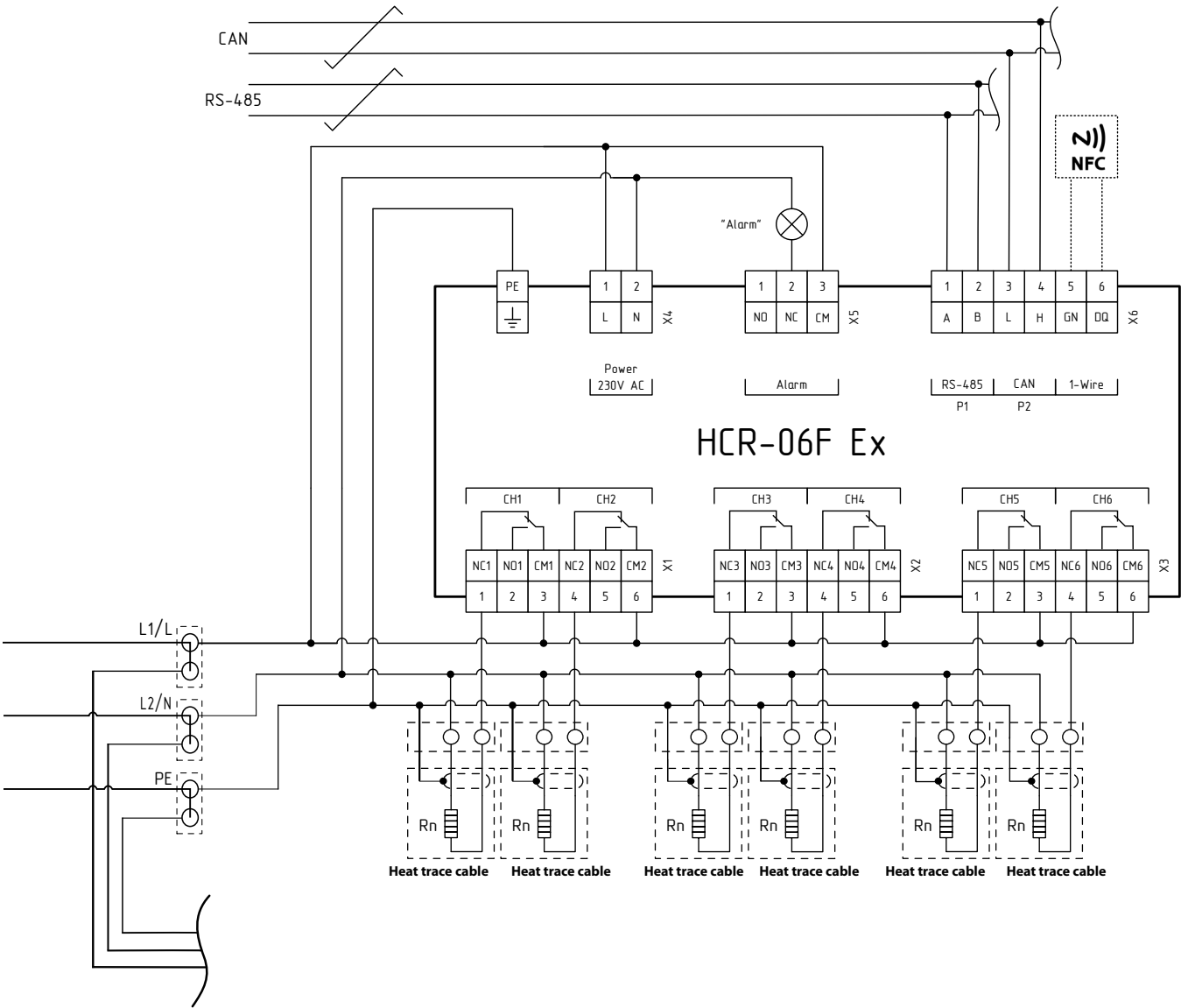
MexTRACE-RMO-EXE-06.Tout

Please provide the following item number in your P.O. for a controller: **HCR-06F Ex**

MexTRACE-RMO-EXE-06

Six-Channel Thermostat

CIRCUIT DIAGRAM (EXAMPLE)



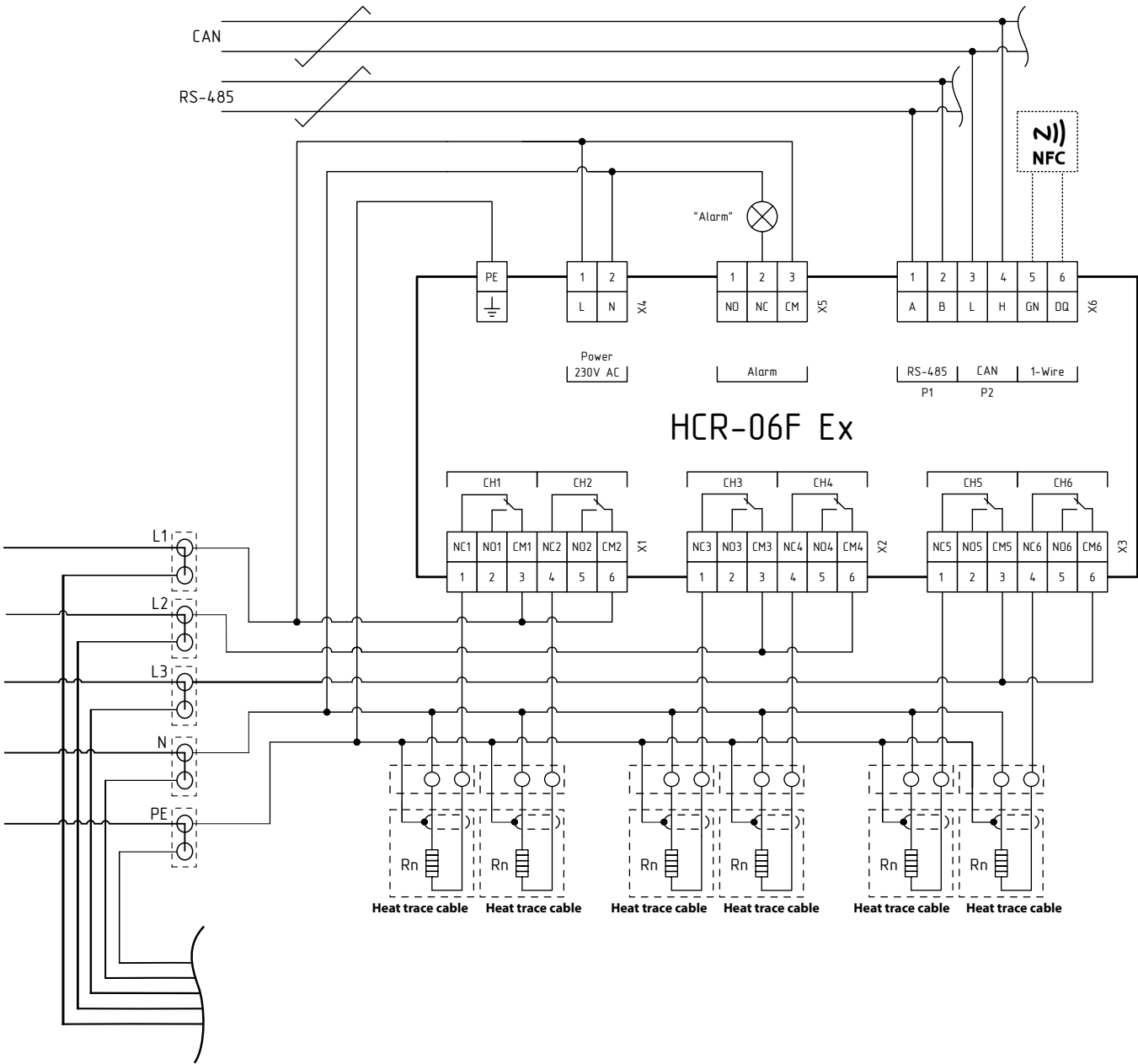
Equipment



MexTRACE-RMO-EXE-06

Six-Channel Thermostat

CIRCUIT DIAGRAM (EXAMPLE)



Equipment



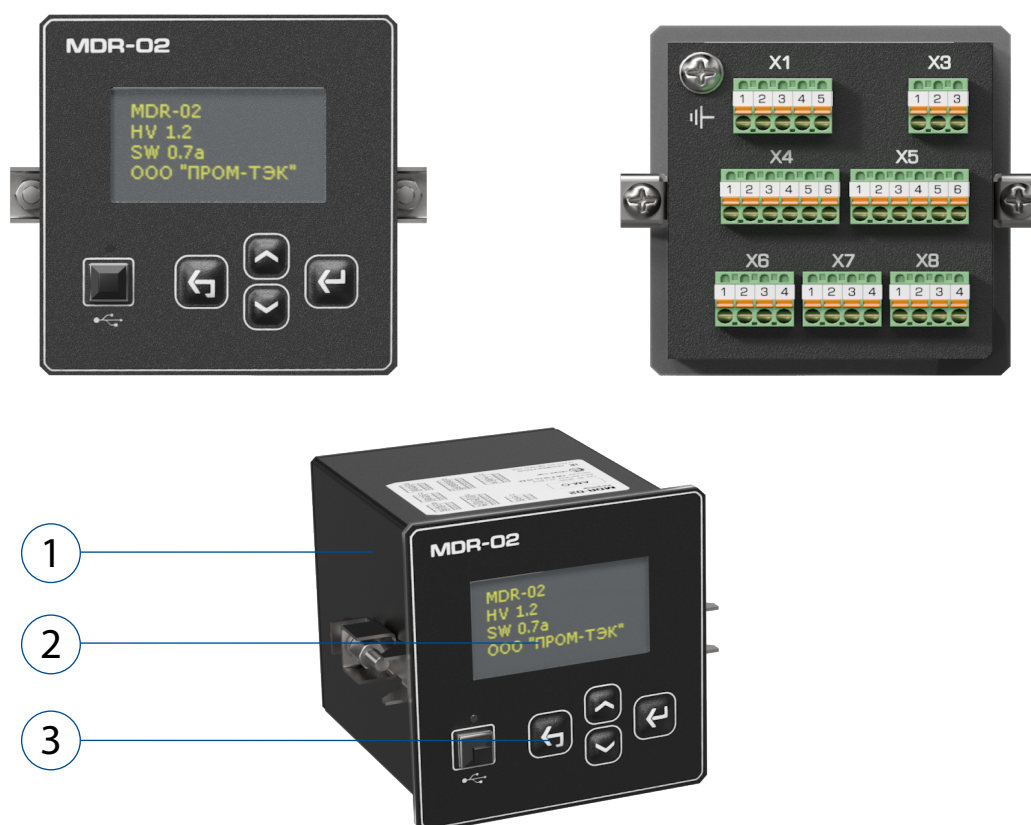
DESCRIPTION

MDR-02 type multi-purpose temperature control is used for measuring, indication and automatic discrete control of process variables based on 0(4) to 20 mA DC RTD or sensor signals.

The device provides measurement of current consumed using external transformers, indication of switching device status, and additional interlocking when using in-built discrete inputs. The device has a 24 V power supply for sensors with a standardized 0(4) to 20 mA output signal. A monochrome graphical OLED display is provided for display of readings and variables.

The product may operate both independently and as part of an automated supervisory and process control system. Data exchange with the monitoring / control system is provided via RS-485/CAN serial interface. The operating conditions and variables are set with front panel push buttons or via a USB service interface, which is also used to get firmware updates.

DESIGN



1. Body
2. Monochrome graphic display
3. Control pushbuttons

P.O. DETAILS

Please provide the following item number in your P.O. for an MDR-02 temperature control:

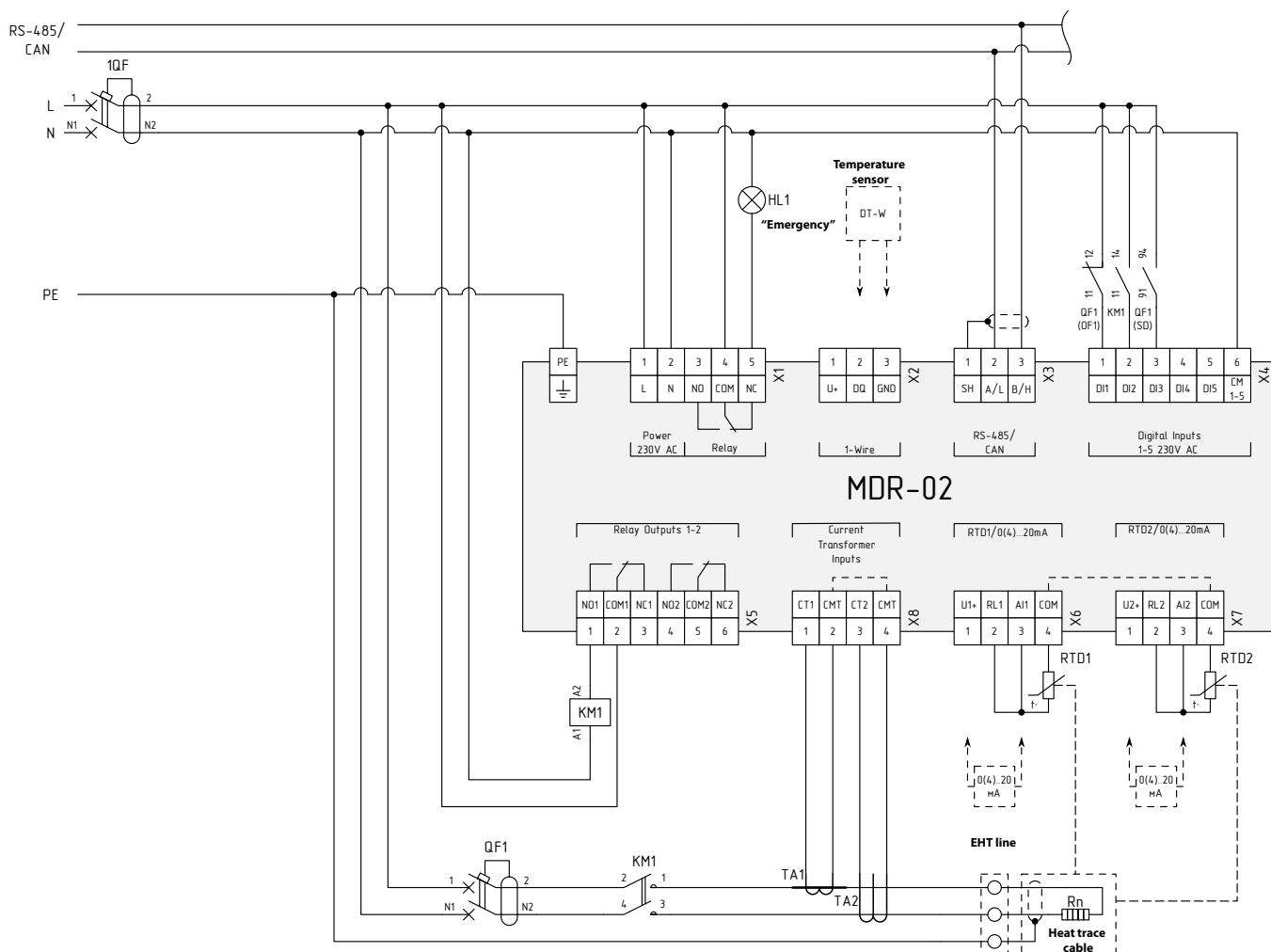
MDR-02-AM (230 V, 50 Hz power supply) or **MDR-02-DM** (24 V DC power supply)

GENERAL SPECIFICATION

Measurements	
RTD analog inputs	
Input channels	2
Sensor hookup	Three-wire
Types of supported sensors	50M/100M/PT50/PT100/PT1000/50П/100П/100H
Allowable basic percent error limits for temperature measurements, max	0,2 %
Analog input 0(4) to 20 mA DC	
Input channels	2
Current range	0 to 22 mA
Allowable basic percent error limits for amperage measurements, max	0,1 %
Analog input 0 to 50 mA AC	
Current range	0 to 50 mA
Allowable basic percent error limits for for amperage measurements, max	0,2 %
Discrete input	
Input channels	5
AC logic high (1)	90 to 244 V
AC logic low (0)	0 to 40 V
Control	
Control channels	
Channels	2
Type	Relay, toggle
AC load capacity, A, max	0 to 16 A (30 A for 4 s)
AC switching voltage	0 to 250 V
Communication interfaces & protocols	
Type	RS-485/CAN
Nr.	1
Data protocols	Modbus RTU/CANopen
Data rate	4.8 to 115,2/50 to 1000 kbps
Power Supply	
Supply voltage	
AC source (frequency)	85 to 244 V (47 to 63 Hz)
DC source	100 to 370 V
Power consumption, max	20 VA
Miscellaneous	
Operating conditions	
Temperature	-40 to +60 °C
Relative humidity	30 to 90 %
Atmospheric pressure	84 to 106.7 kPa
Overall dimensions (H×W×D), mm	96x109x110
IP rating, body / front panel	IP30/IP54
Monochrome OLED resolution	128x64 pixels
Weight, kg, max	0,6 kg

EXAMPLE OF MDR-02 USE

Single heat tracing line. Heat trace cable switching via an external contactor switch

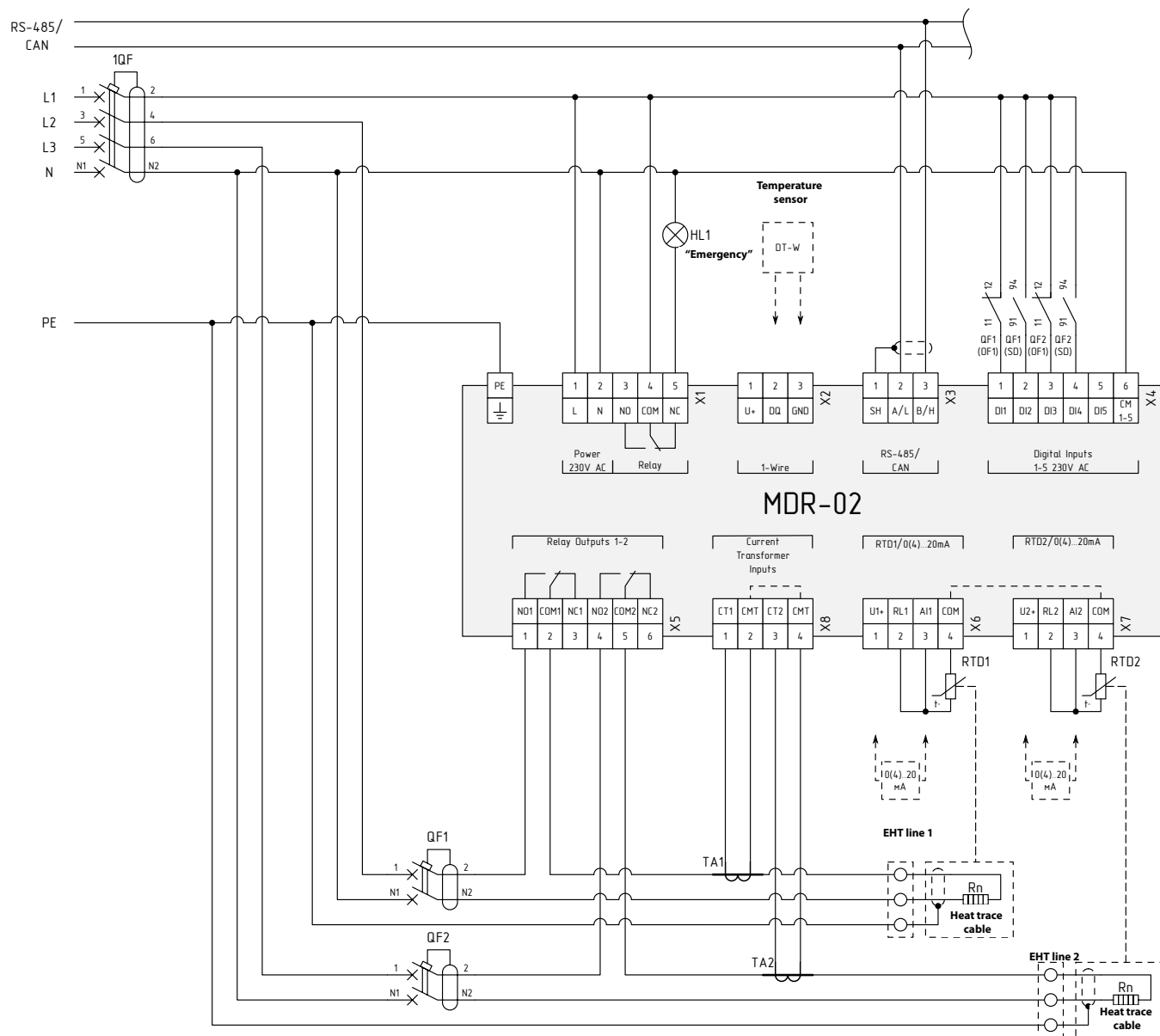


FEATURES

1. Two-point temperature regulation
2. Connectivity for external 1WTS single-wire temperature sensors to measure outdoor air and EHT control cabinet temperature, etc.
3. EHT line load current measurement
4. EHT line leakage current measurement
5. Contactor and automatic switch status monitoring
6. RS-485/CAN communication with control system

EXAMPLE OF MDR-02 USE

Two heat tracing lines. Heat trace cable switching via embedded relays. Note: load current not to exceed 16 A for direct connect scenarios.



FEATURES

1. Connectivity for external 1WTS single-wire temperature sensors to measure outdoor air and EHT control cabinet temperature, etc.
2. EHT line load current measurement
3. Contactor and automatic switch status monitoring
4. RS-485/CAN communication with control system

MexTRACE-RMM-EXE

Temperature Measurement and Conversion Module

DESCRIPTION

A MexTRACE-RMM-EXE type measuring module serves to measure temperature as part of integrated automated EHT control.

MexTRACE-RMM-EXE can accommodate up to twelve (12) Pt100 type sensors for ambient or EHT piping temperature measurements. The modules of this type are connected to the communications cabinet via RS-485, to ensure integrated temperature control. One twisted pair RS-485 cable links up to 32 MexTRACE-RMM-EXE type modules, to enable control of up to 384 external temperature sensors.

MexTRACE-RMM-EXE is supplied as a kit in a X-proof body accommodating a controller and terminals. The housing accommodates two glands to connect and daisy-chain power, two glands to connect and daisy-chain a communication cable, and 12 glands to hook up temperature sensors.

DESIGN



1. X-proof junction box
2. X-proof measuring controller
3. Terminal block
4. Communication cable glands
5. Power feed cable glands
6. Temperature sensor glands

P.O. DETAILS

Please provide the following item number in your P.O. for a MexTRACE-RMM-EXE type temperature measurement and conversion module:

MexTRACE-RMM-EXE

MexTRACE-RMM-EXE

Temperature Measurement and Conversion Module

GENERAL SPECIFICATION

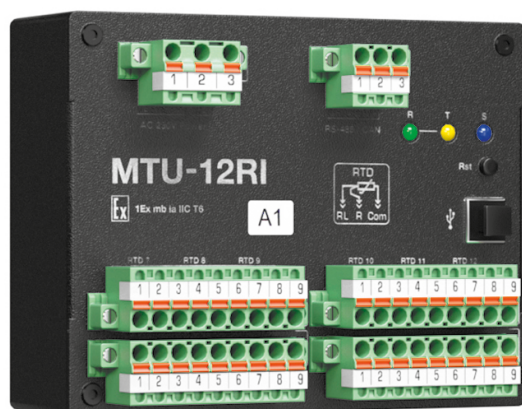
Rated voltage	230 V, 50 Hz
Earth system	TN-S, TN-C, TN-C-S
Measuring lines	12
Line type	Temperature, for Pt100 100 H Cu 100 Cu 50 100 M 50 M Pt 50 50 Π 100 Π
Range	-100...+700°C
Temperature sensor wiring	Three-wire
IP rating	IP 66
Interface (interface 2) / protocol	RS-485(CAN) / ModBus RTU (CANopen)
Certificate, Ex protection	Pursuant to CU TR 012/2011, # RU C-RU. AM02.B.00688/22, 1Ex eb mb [ia Ga] IIC T6 Gb X, Ex tb IIIC T85°C Db X
Overall dimensions WxHxD	280x271x145 mm

MARKING

Item #

MexTRACE-RMM-EXE

MTU-12RI EX MEASURING CONTROLLER (MAY BE DELIVERED SEPARATELY)



A measuring controller is an explosion proof input device for RTD sensor signal pre-processing, intended for use in automated EHT systems.

The product is applicable in explosive gas environments (gas group IIC). The measuring channels are Ex ia (intrinsically safe) protected.

Data exchange with the monitoring / control system is provided via RS-485/CAN serial interfaces. Any setting and modes, and firmware updates are possible via a USB service port.

P.O. DETAILS

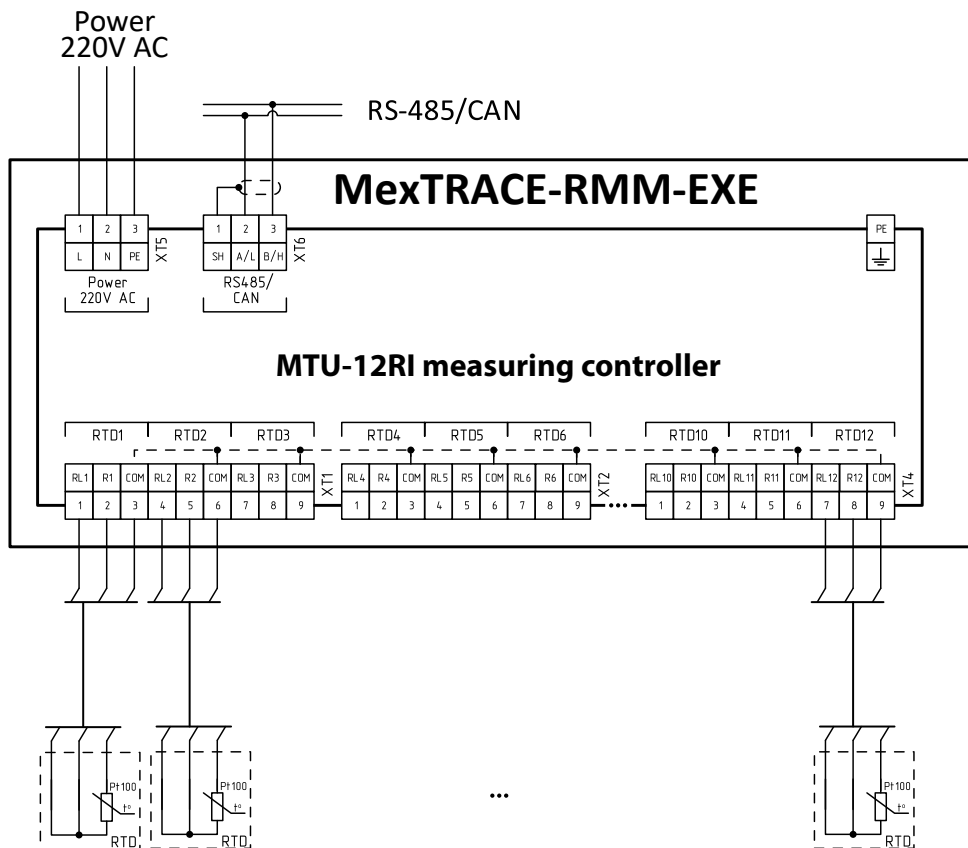
Please provide the following item number in your P.O. for a measuring controller:

MTU-12RI Ex

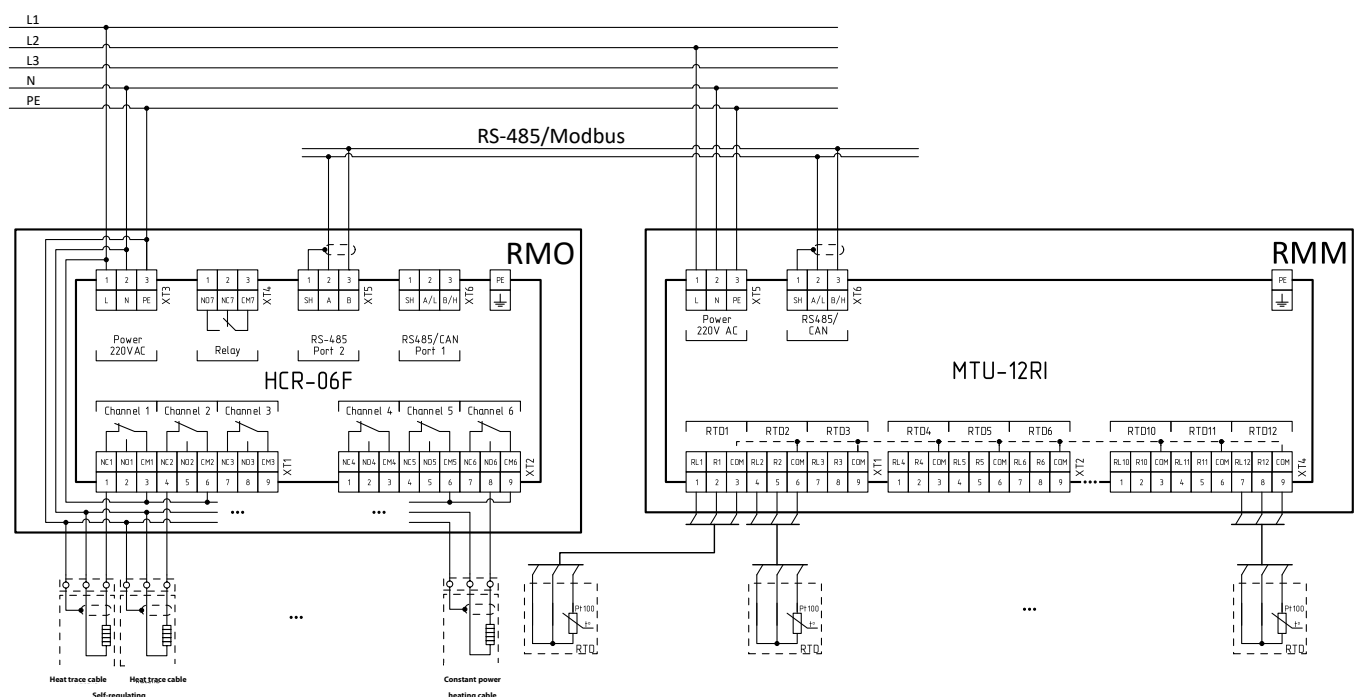
MexTRACE-RMM-EXE

Temperature Measurement and Conversion Module

CIRCUIT DIAGRAM (EXAMPLE)



EXAMPLE OF MEXTRACE-RMM-EXE APPLICATION AS A SMART MEASUREMENT MODULE FOR A CONTROL MODULE

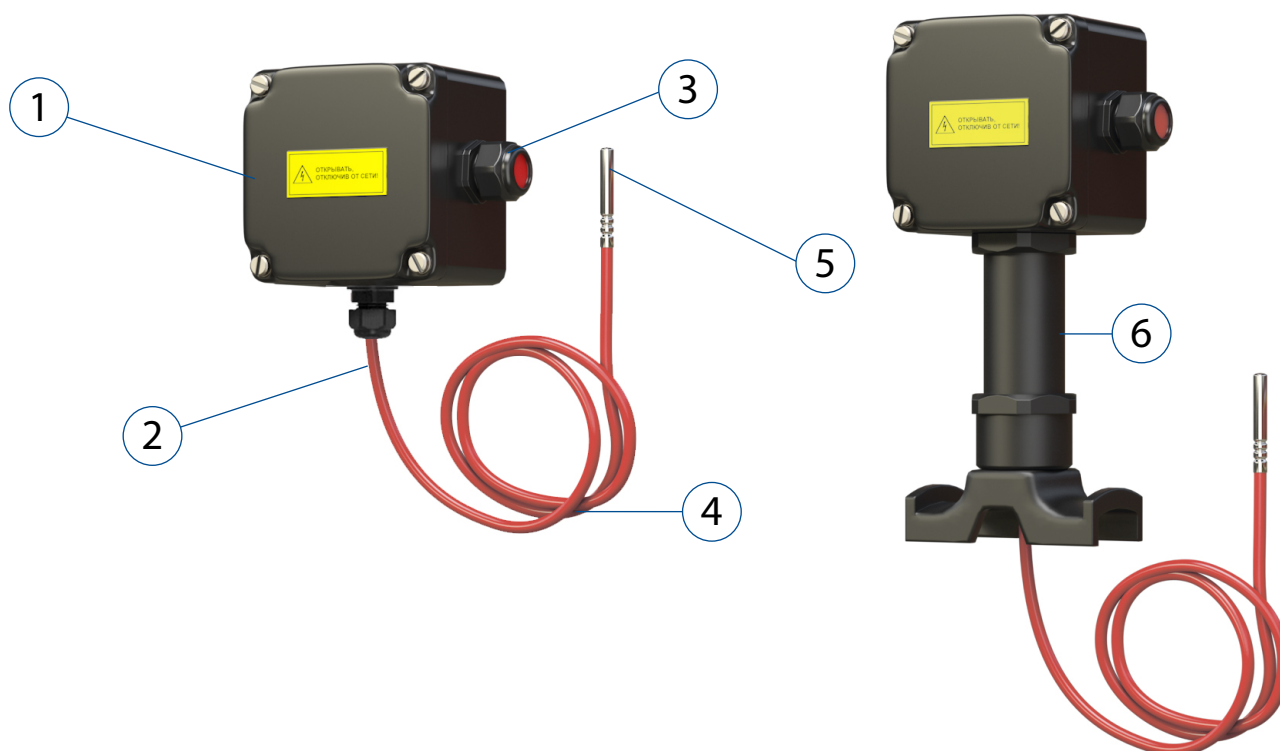


DESCRIPTION

An Ex temperature sensor is used in centralized process control systems for measuring the temperature of the facilities, measuring at temperatures of +260 °C max.

A MexTRACE-PT100-EXE type Ex temperature sensor is supplied as a kit comprising a temperature sensor, a connection kit and an X-proof junction box accommodating terminal blocks.

DESIGN



1. X-proof junction box
2. Sensor cable gland
3. Control cable gland
4. Temperature sensor flexible cable
5. Temperature sensing element
6. Adapter for inserting temperature sensor flexible cable into box

P.O. DETAILS

Please provide the item number in your P.O. for a temperature sensor using the Marking table below. E.g., a P.O. for a 4-20 mA MexTRACE-PT-100-EXE Ex temperature sensor kit should have the following item number:

MexTRACE-PT100-EXE-4/20

MexTRACE-PT100-EXE

Temperature Sensor for Hazardous Areas

GENERAL SPECIFICATION

Temperature range	-60°C...+260°C
Ambient temperature	-60°C...+55°C
Sensor Type Standard	Standard Pt 100
Sensor accuracy	Class B
IP rating	IP 66
Hazardous area classification	Hazardous area (class 1 or 2), normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, # EAEU RU C-RU. HA67.B.00180/21, 1ExeiallCT6Gb X, 1ExdiallCT6Gb X, ExtbIIlCT85°CDB X

MARKING

Item #	Sensor type	4-20 mA output	Description
MexTRACE-PT100-EXE	PT100		Temperature sensor in assembly with 1. X-proof junction box 2. Sensor cable gland 3. Control cable gland 4. Temperature sensor flexible cable (1 m) 5. Sleeved RTD
MexTRACE-PT100-EXE	PT100		Temperature sensor in assembly with 1. X-proof junction box 2. Sensor cable gland 3. Control cable gland 4. Temperature sensor flexible cable (1 m) 5. Sleeved RTD 6. Adapter for inserting temperature sensor flexible cable into box
MexTRACE-PT100-EXE.S-4/20	PT100	+	MexTRACE-PT100-EXE.S in assembly with a resistance to 4-20 mA signal converter with adapter for inserting temperature sensor flexible cable into box.
MexTRACE-PT100-EXE-4/20	PT100	+	MexTRACE-PT100-EXE in assembly with a resistance to 4-20 mA signal converter
MexTRACE-PT100-EXEнв	PT100		MexTRACE-PT100-EXE without a flexible sensor cable
MexTRACE-PT100-EXEнв-4/20	PT100	+	MexTRACE-PT100-EXEнв in assembly with a resistance to 4-20 mA signal converter
MexTRACE-PT100-EXE-SE	PT100		Temperature sensor (temperature sensing element) in assembly with 1. Temperature sensor flexible cable (1 m) 2. Sleeved RTD
MexTRACE-PT100-EXE-G	PT100		MexTRACE-PT100-EXE Temperature Sensor with an outlet for CK-IEK.F-TD. Used for open air area temperature control. For unit size 182, an X-proof box is provided.

Box specification:

Cable entry type: plastic;

Wired power cable size: 13-18 mm for M25 entry;

14-21 mm for M32 entry;

Cable wire cross section 0.5-6 mm².



MexTRACE-PT100-EXE-1

Temperature Sensor for Hazardous Areas

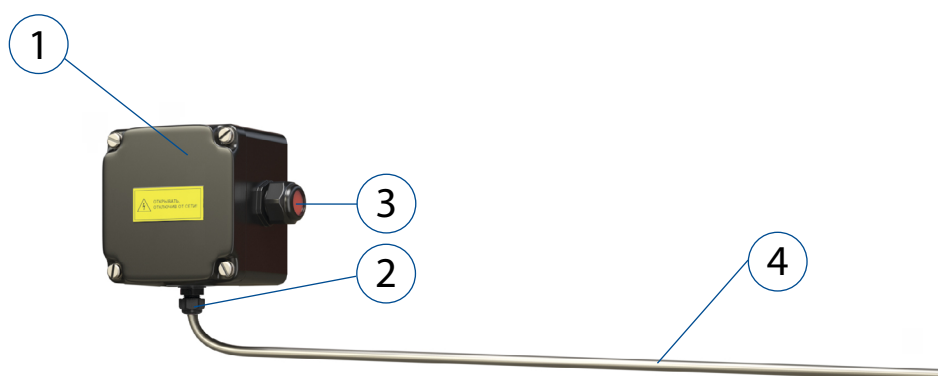
550°C
!!!

DESCRIPTION

An Ex temperature sensor is used in centralized process control systems for measuring the temperature of the facilities, measuring at temperatures of +550 °C max.

a MexTRACE-PT100-EXE-1 type Ex sensor is supplied as a kit comprising a temperature sensor, a connection kit and an X-proof junction box accommodating terminal blocks.

DESIGN



1. X-proof junction box
2. Sensor cable gland
3. Control cable gland
4. Temperature sensing element

P.O. DETAILS

Please provide the following item number in your P.O. for a temperature sensor using the Marking table below. E.g., a P.O. for a 4-20 mA MexTRACE-PT-100-EXE-1 type Ex high temperature sensor should have the following item number:

MexTRACE-PT100-EXE-1-4/20

MexTRACE-PT100-EXE-1

Temperature Sensor for Hazardous Areas

GENERAL SPECIFICATION

Temperature range	-60°C...+550°C
Ambient temperature	-60°C...+55°C
Sensor Type Standard	Standard Pt 100
Sensor accuracy	Class B
IP rating	IP 66
Hazardous area classification	Hazardous area (class 1 or 2), normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, #EAEU RU C-RU. HA67.B.00180/21, 1ExeialICT6Gb X, 1ExdialICT6Gb X, ExtbIIICT85°CDb X

MARKING

Item #	Sensor type	4-20 mA output	Description
MexTRACE-PT100-EXE-1	PT100		Temperature sensor in assembly with 1. X-proof junction box; 2. Sensor cable gland; 3. Control cable gland; 4. Temperature sensor flexible section (1 m); 5. Temperature sensing element.
MexTRACE-PT100-EXE-1-4/20	PT100	+	MexTRACE-PT100-EXE in assembly with a resistance to 4-20 mA signal converter
MexTRACE-PT100-EXE-1-SE	PT100		Temperature sensor flexible section with a cable gland (1 m)

Box specification:

Cable entry type: plastic;

Wired power cable size: 13-18 mm for M25 entry;

14-21 mm for M32 entry;

Cable wire cross section 0.5-6 mm².

DESCRIPTION

A sticker made of elastic, monomeric, calendered and concealable film with an acrylic-based adhesive layer. Weather and temperature-resistant. The label is attached to a heat traced line every 6 meters. The warning can be issued in four languages.

GENERAL VIEW



GENERAL SPECIFICATION

Size	77x200 mm
Material	Elastic, monomeric, calendered and concealable film with an acrylic-based adhesive layer (adhesive range -40 °C / +100 °C)
Min application temperature	+10°C

MARKING

Item #	Marking language
LAB-01	Russian
LAB-02	English
LAB-03	French
LAB-04	German

P.O. DETAILS

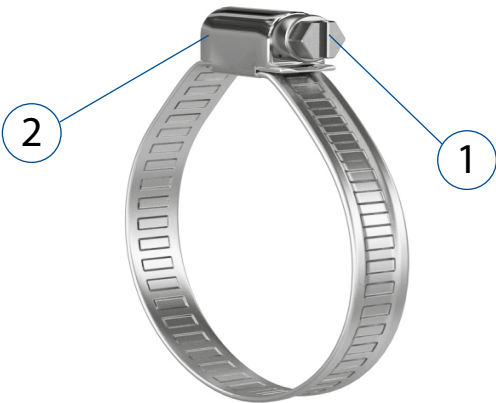
Please provide the item number in your P.O. for a warning label using the Marking table below. E.g.:
LAB-02

**Customer information may be added*

DESCRIPTION

A mounting strap screw is used to tighten metal straps. It consists of a Ni-plated steel bushing and a galvanized steel screw. The bushing is slipped over a metal strap, the screw is driven into the bushing tightening the strap.

GENERAL VIEW



The product includes:

1. Screw
2. Metal bushing

MARKING

Item #

CK-BUC

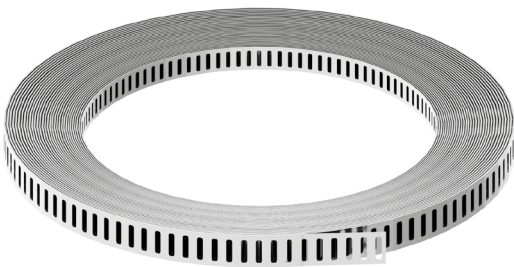
P.O. DETAILS

Please provide the following item number in your P.O. for a CK-BUC mounting strap screw:
CK-BUC

DESCRIPTION

Metal straps are used to attach integrated power in units, junction boxes and end terminations onto piping (on top of lagging), and support brackets and tubular tails under thermal insulation.

GENERAL VIEW



GENERAL SPECIFICATION

Roll length	30 m
Material	Zinc aluminum

MARKING

Item #
CK-PFS

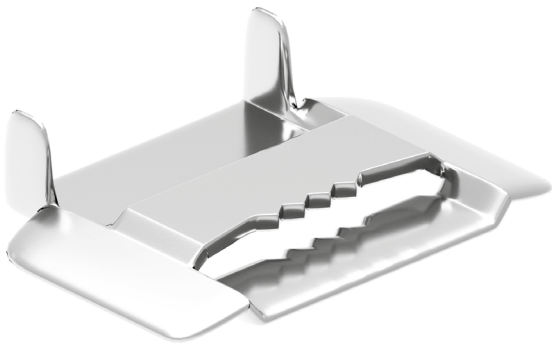
P.O. DETAILS

Please provide the following item number in your P.O. for a CK-PFS mounting strap tape:
CK-PFS

DESCRIPTION

A mounting strap retainer is used to tighten metal straps.

GENERAL VIEW



MARKING

Item #

CK-STI

P.O. DETAILS

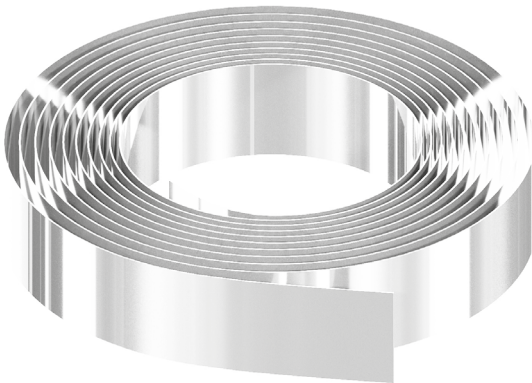
Please provide the following item number in your P.O. for a CK-STI mounting strap retainer:

CK-STI

DESCRIPTION

Metal straps are used to attach integrated power in units, junction boxes and end terminations onto piping (on top of lagging), and support brackets and tubular tails under thermal insulation.

GENERAL VIEW



GENERAL SPECIFICATION

Roll length	30 m
Material	Stainless steel

MARKING

Item #
CK-SBT

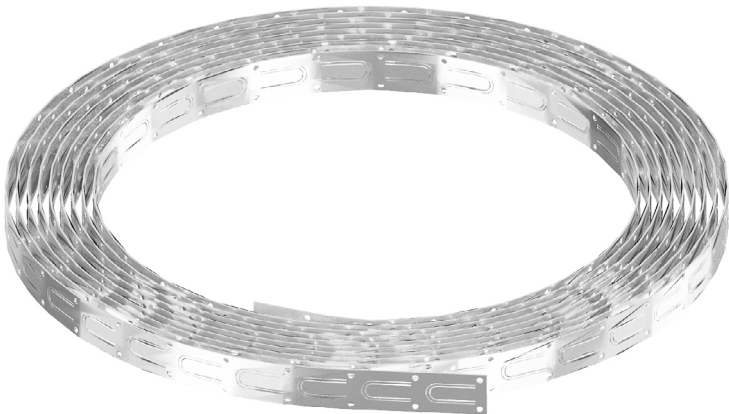
P.O. DETAILS

Please provide the following item number in your P.O. for a CK-SBT mounting strap tape:
CK-SBT

DESCRIPTION

A strap is used to attach heat trace cables onto walls, tanks, vessels etc.

GENERAL VIEW



GENERAL SPECIFICATION

Min installation temperature	-60°C
Max operation temperature	700°C
Width	20 mm
Thickness	550 µm
Clamp pitch	25 mm
Roll length	10 m

MARKING

Item #

H-spacer

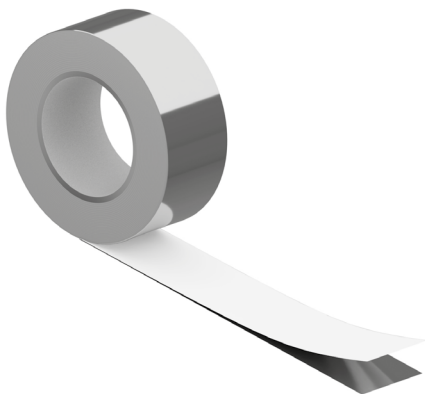
P.O. DETAILS

Please provide the following item number in your P.O. for an H-spacer strap:
H-spacer

DESCRIPTION

An aluminium tape is used to gluing heat trace cables and temperature sensors. The product can withstand temperatures of 300°C max.

GENERAL VIEW



GENERAL SPECIFICATION

Min installation temperature	0°C
Max operation temperature	300°C
Tape thickness for AT-75/100	100 µm
Tape thickness for AT-75/100-50	50 µm
Roll length	50 m

MARKING

Item #	Width
AT-75/100	75 mm
AT-75/100-50	50 mm

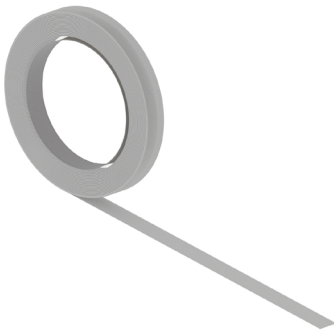
P.O. DETAILS

Please provide the following item number in your P.O. for an Al tape:
AT-75/100
AT-75/100-50

DESCRIPTION

A fibreglass tape is used to attach polymer-insulated heating elements.

GENERAL VIEW



GENERAL SPECIFICATION

Min installation temperature	up to -20°C
Max exposure temperature	260°C
Width	11 mm
Roll length	50 m

MARKING

Item #

FT/HTP

P.O. DETAILS

Please provide the following item number in your P.O. for an FT/HTP fibreglass tape:
FT/HTP

DESCRIPTION

Installation wire is used to attach mineral insulated heat trace cables.

GENERAL VIEW



GENERAL SPECIFICATION

Material	Steel
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MODIFICATIONS

RMI-IW installation wire is available in a few modifications depending on the material used. The respective material is identified with a Roman letter index at the end of the item number.

The material is consistent with the following marking:

Galvanized.....	RMI-IW.Z
Stainless steel.....	RMI-IW.S

Wire size is identified with a digit at the end of the item number.

The cross section is consistent with the following marking:

0,8 mm.....	RMI-IW.Z-0,8
1,4 mm.....	RMI-IW.S-1,4
1,5 mm.....	RMI-IW.Z-1,5

MARKING

Item #	Roll length, m
RMI-IW.Z-0,8	95
RMI-IW.Z-1,5	25
RMI-IW.S-0,8	95
RMI-IW.S-1,4	100

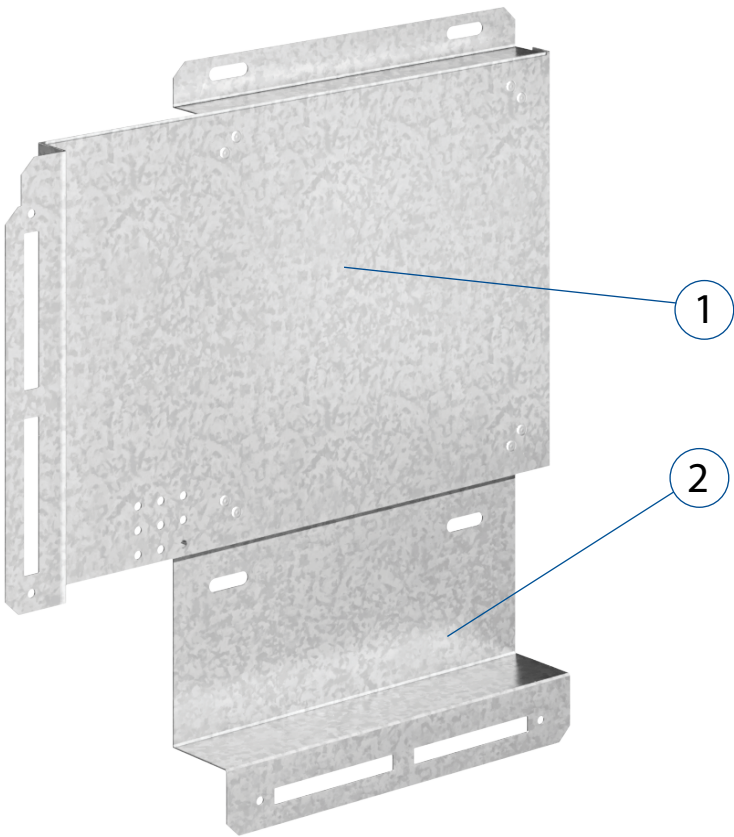
P.O. DETAILS

Please provide the following item number in your P.O. for a 0.8 mm RMI-IW SS wire:
RMI-IW.S-0,8

DESCRIPTION

The frame is used to attach a 280 sized power junction box, a typical MexTRACE-MHB-6 box.
** sizes may vary upon Customer's demand*

DESIGN



1.

Junction box attachment base
2.

Attachment clip for appropriate wires

MARKING

Item #
SF-MHB-6

P.O. DETAILS

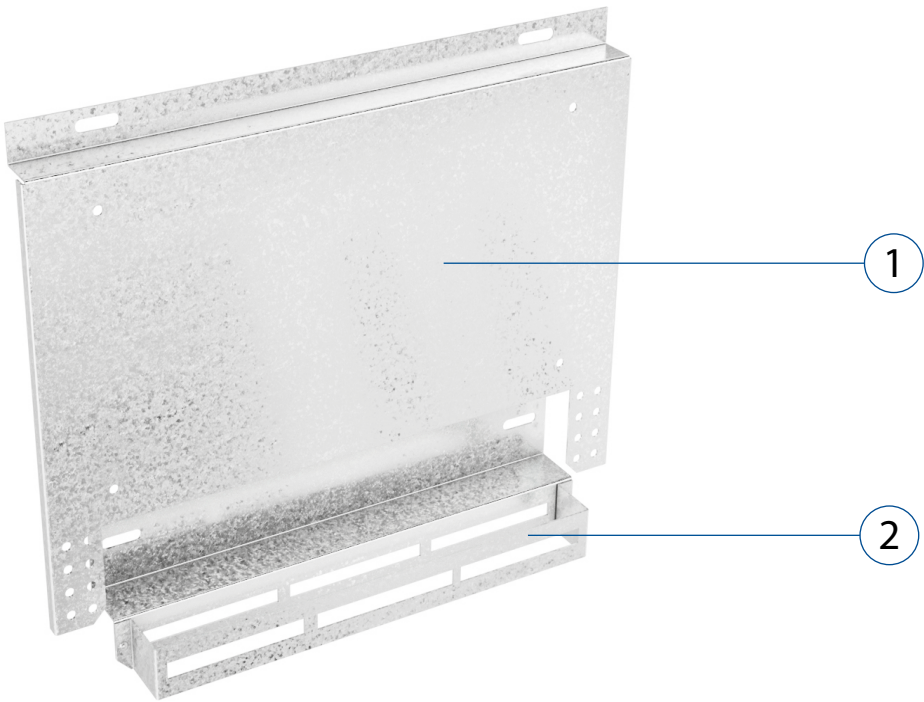
Please provide the following item number in your P.O. for a MexTRACE-MHB-6 power junction box frame:
SF-MHB-6

SF-MHB-12 Power Junction Box Frame

DESCRIPTION

The frame is used to attach a power junction box.
Compatibility: **MexTRACE-MHB and MexTRACE-HB sizes: 400, 544**
** the dimensions are subject to change upon the customer request.*

DESIGN



- 1. Junction box attachment base
- 2. Attachment clip for appropriate wires

MARKING

Item #

SF-MHB-12

P.O. DETAILS

Please provide the following item number in your P.O. for a SF-MHB-12 power junction box frame:
SF-MHB-12

SF-RMM-EXE-RMO

Frame for 6-channel thermal regulator MexTRACE-RMO-EXE-06

DESCRIPTION

The frame is used to attach a smart measurement and control module, or a smart distribution and control module, also available with metal cable entries **SF-RMM-EXE-RMO-M**. Compatibility: **MexTRACE-RMO-EXE-03**, **MexTRACE-RMO-EXE-06**.

Sizes **SF-RMM-EXE-RMO** 379,5x446,2 mm.

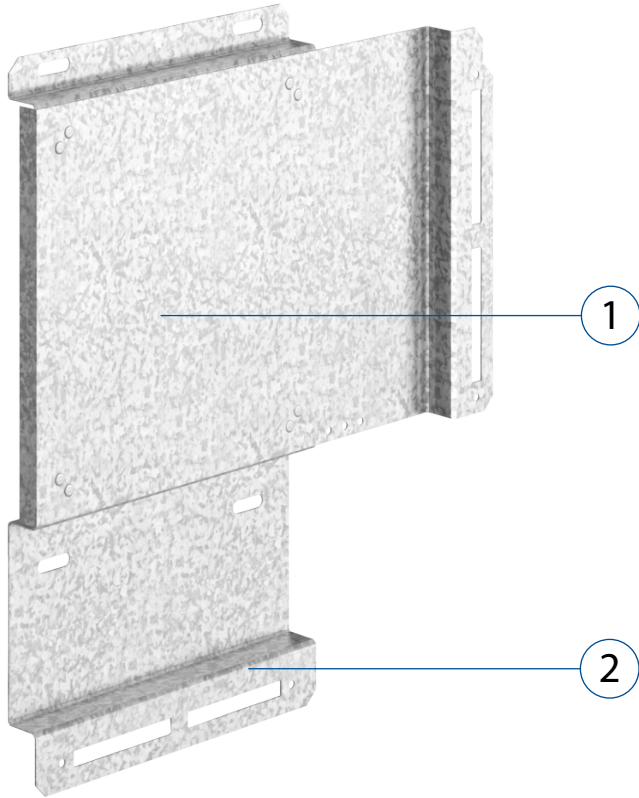
Sizes **SF-RMM-EXE-RMO-M** 642x511,1 mm.

** sizes may vary upon Customer's demand*

DESIGN



SF-RMM-EXE-RMO



SF-RMM-EXE-RMO-M

- 1. Measurement and control module base
- 2. Attachment clip for appropriate wires

MARKING

Item #

SF-RMM-EXE-RMO

SF-RMM-EXE-RMO-M

P.O. DETAILS

Please provide the following item number in your P.O. for a SF-RMM-EXE-RMO frame for 6-channel thermal regulator MexTRACE-RMO-EXE-06

SF-RMM-EXE-RMO

Please provide the following item number in your P.O. for a SF-RMM-EXE-RMO frame for 6-channel thermal regulator MexTRACE-RMO-EXE-06 with metal cable entries

SF-RMM-EXE-RMO-M

SF-RMM-EXE

Frame for the module to measure and convert temperature sensor signals MexTRACE-RMM-EXE

DESCRIPTION

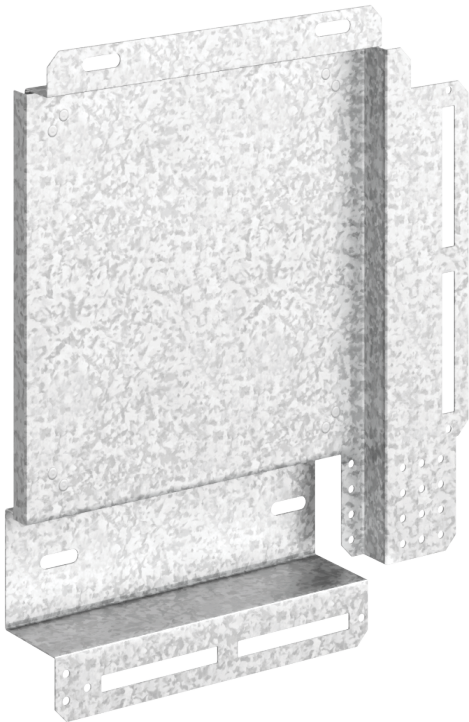
The frame is used to attach a smart measurement and control module, or a smart distribution and control module, also available with metal cable entries **SF-RMM-EXE-M**. Compatibility: **MexTRACE-RMM-EXE**.

Sizes **SF-RMM-EXE** 379,5x446,2 mm.

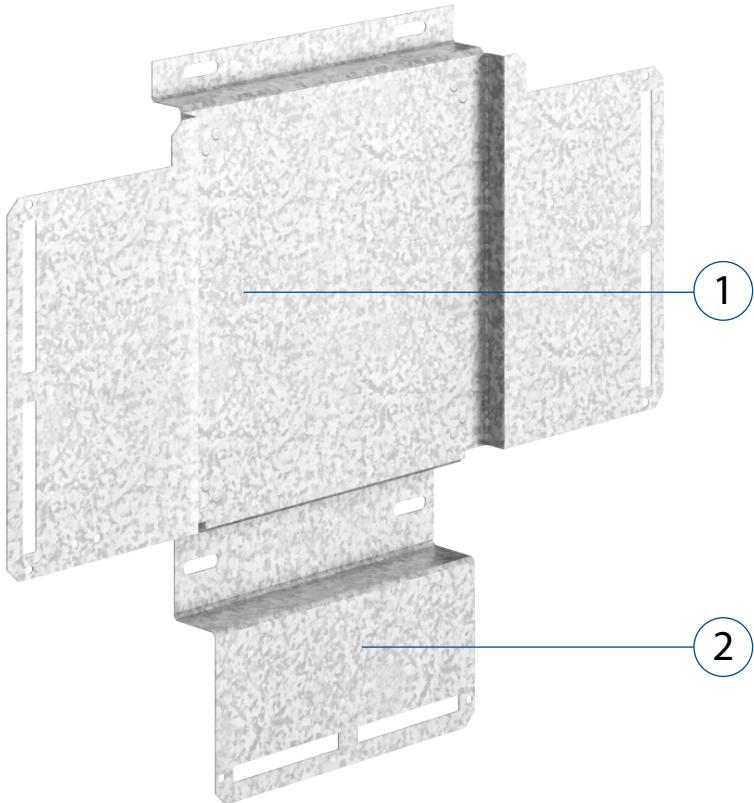
Sizes **SF-RMM-EXE-M** 642x511,1 mm.

** sizes may vary upon Customer's demand*

DESIGN



SF-RMM-EXE



SF-RMM-EXE-M

- 1. Measurement and control module base
- 2. Attachment clip for appropriate wires

MARKING

Item #

SF-RMM-EXE
SF-RMM-EXE-M

P.O. DETAILS

Please provide the following item number in your P.O. for a SF-RMM-EXE frame for the module to measure and convert temperature sensor signals MexTRACE-RMM-EXE

SF-RMM-EXE

Please provide the following item number in your P.O. for a SF-RMM-EXE frame for 6-channel thermal regulator MexTRACE-RMM-EXE with metal cable entries

SF-RMM-EXE-RMO-M

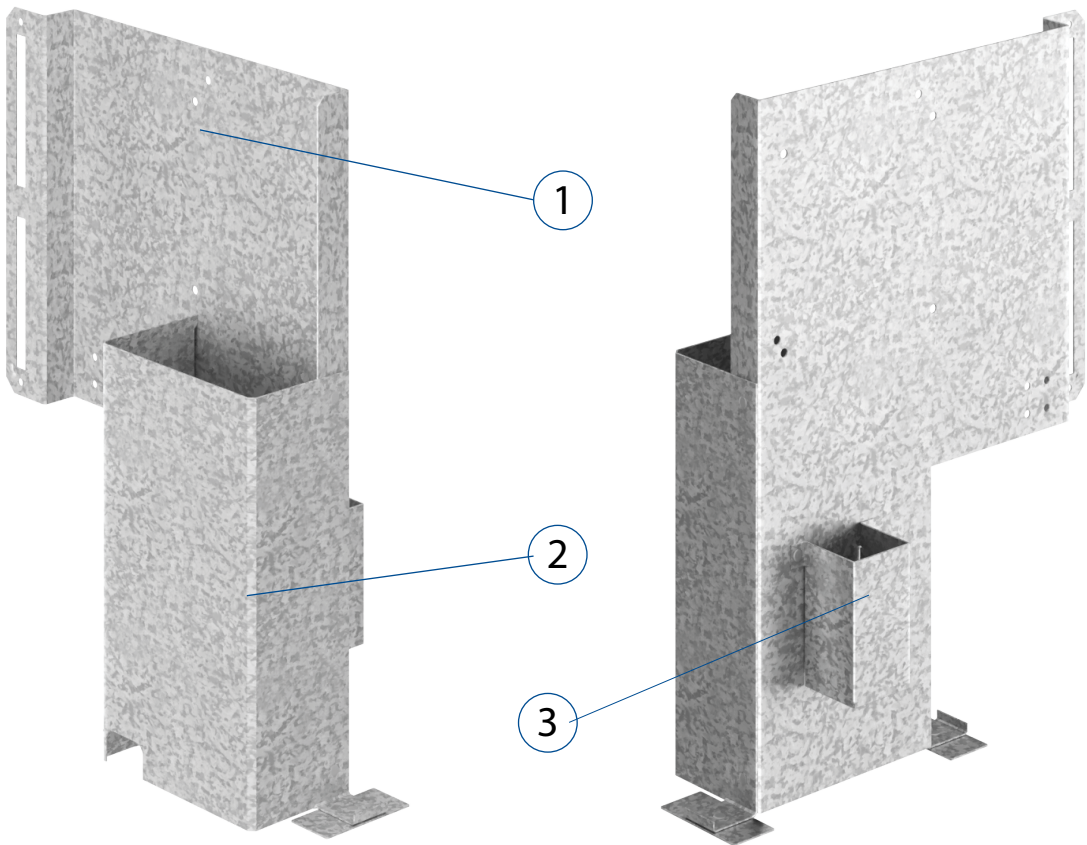
CK-126 Support Bracket (Multi-Purpose)

DESCRIPTION

Brackets are used to attach devices like power junction boxes or temperature sensors onto pipelines. A bracket is designed in a way that all incoming and outgoing cables are shielded to prevent any incidental damage. Support brackets are installed with mounting clamps that are not in the scope of supply.

Compatibility: **MexTRACE-MHB, MexTRACE-HB with sizes: 122, 182 and MexTRACE-PT100**

DESIGN



- 1. Power box attachment base
- 2. Bracket support with an internal cable duct
- 3. Temperature sensor box gland shield

MARKING

Item #

CK-126

P.O. DETAILS

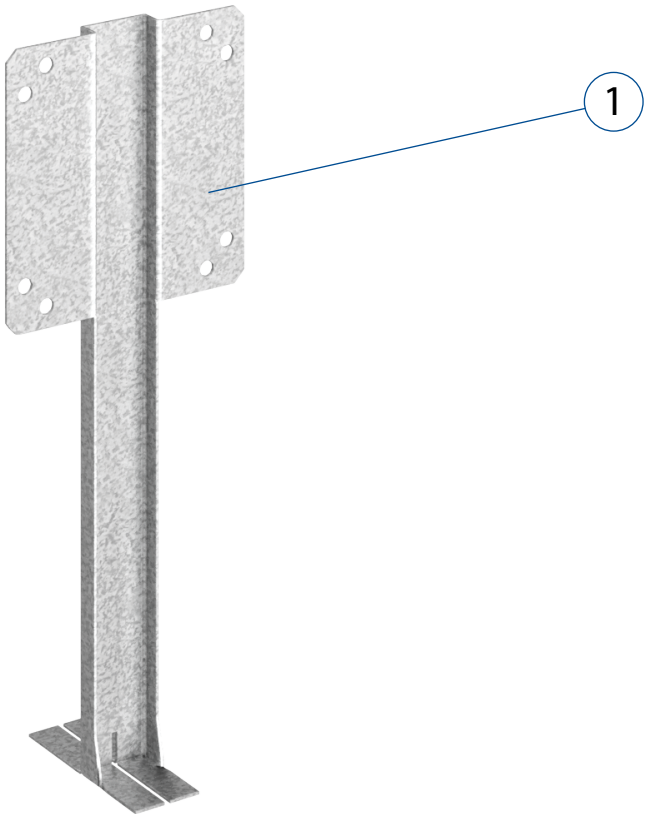
Please provide the following item number in your P.O. for a CK-126 bracket:
CK-126

DESCRIPTION

Support brackets are used to attach instruments like temperature sensors onto pipelines. A support bracket is made of galvanized steel. Distance between pipe and plate: 160 mm. Support brackets are mounted using clamps that are not in the scope of supply.

Compatibility: **MexTRACE-PT100-EXE**

DESIGN



- 1. Support bracket

MARKING

Item #

CK-26

P.O. DETAILS

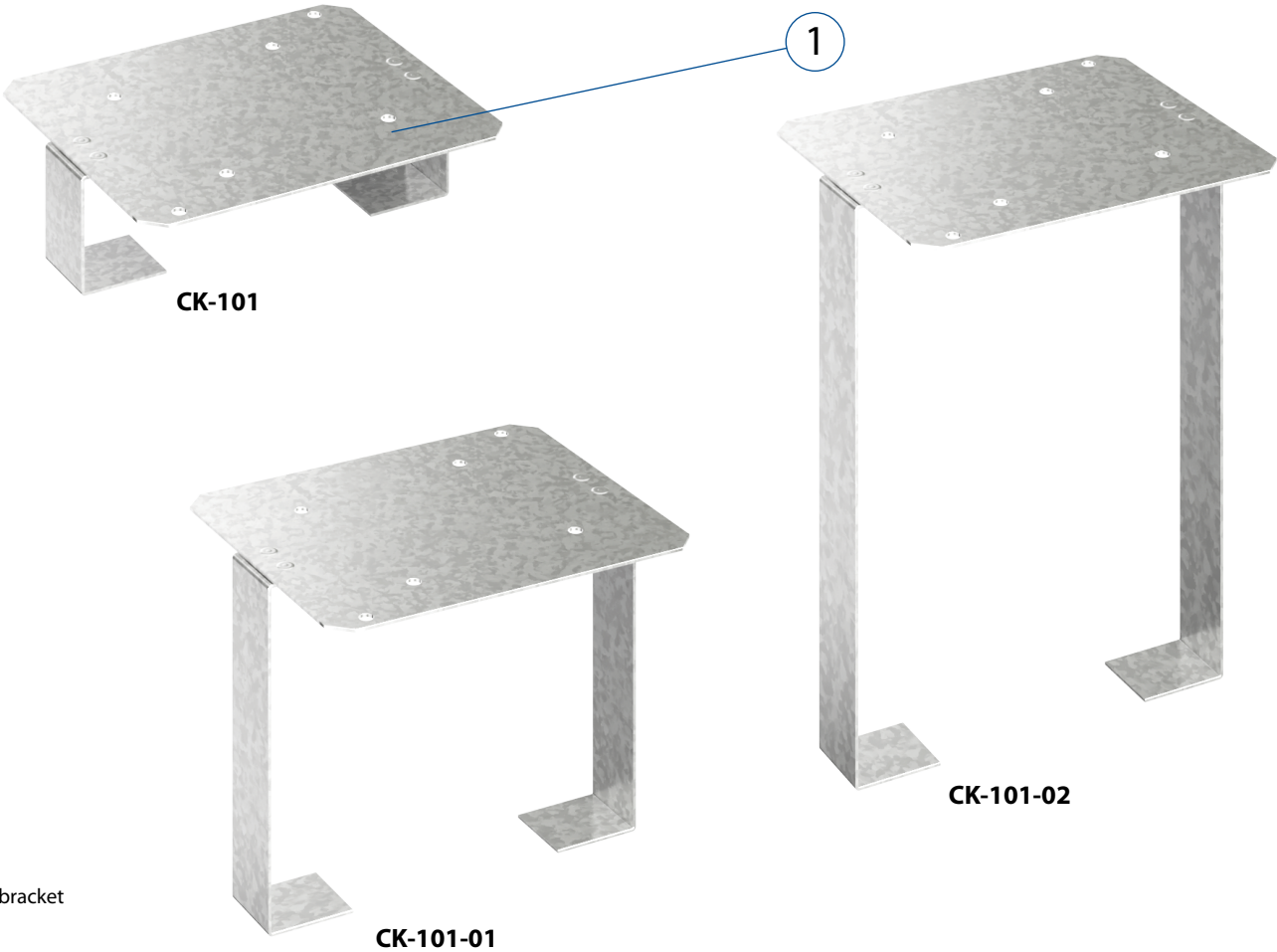
Please provide the following item number in your P.O. for a MexTRACE-PT100-EXE support bracket for temperature sensor:
CK-26

DESCRIPTION

Brackets are used to attach devices like power junction boxes and temperature sensors onto impulse lines (except for PI) and instrument cabinets. A support bracket is made of galvanized steel. Distance between pipe and plate: 50 mm. Support brackets are mounted using clamps that are not in the scope of supply.

Compatibility: **MexTRACE-MHB, MexTRACE-HB with sizes: 122, 182**

DESIGN



MARKING

Item #

CK-101

CK-101-01

CK-101-02

P.O. DETAILS

Please provide the following item number in your P.O. for a CK-101 support bracket with a support length of 51.5 mm:

CK-101

Please provide the following item number in your P.O. for a CK-101 support bracket with a support length of 151.5 mm:

CK-101-01

Please provide the following item number in your P.O. for a CK-101 support bracket with a support length of 251.5 mm:

CK-101-02

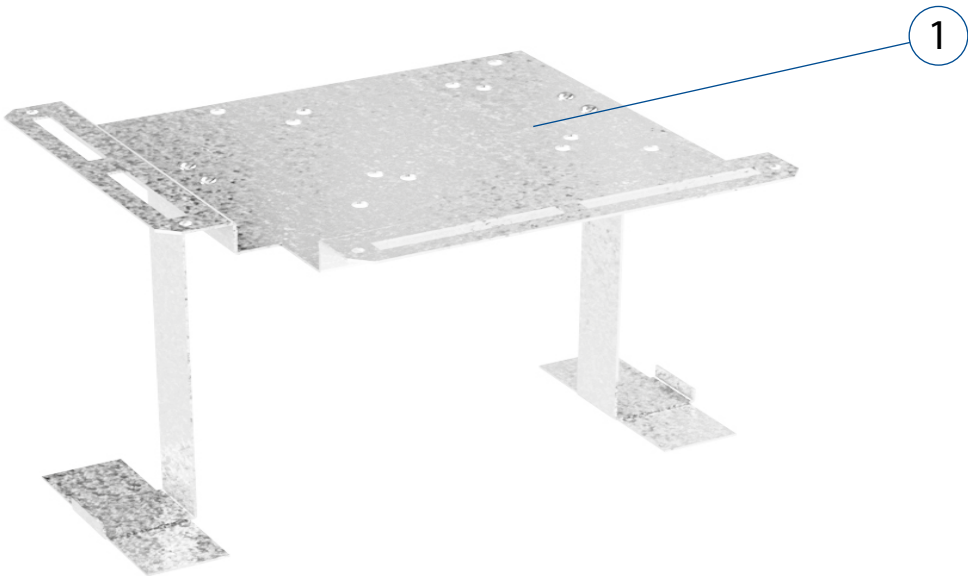
DESCRIPTION

Support brackets are used to attach equipment like power junction boxes onto pipelines. The product is powder coated to make it weatherproof and resistant to mechanical impact. Support brackets are mounted using clamps that are not in the scope of supply.

Compatibility: **MexTRACE-MHB, MexTRACE-HB with sizes: 182**

** sizes may vary upon Customer's demand.*

DESIGN



- 1. Support bracket

MARKING

Item #

CK-201

P.O. DETAILS

Please provide the following item number in your P.O. for a CK-201 support bracket:

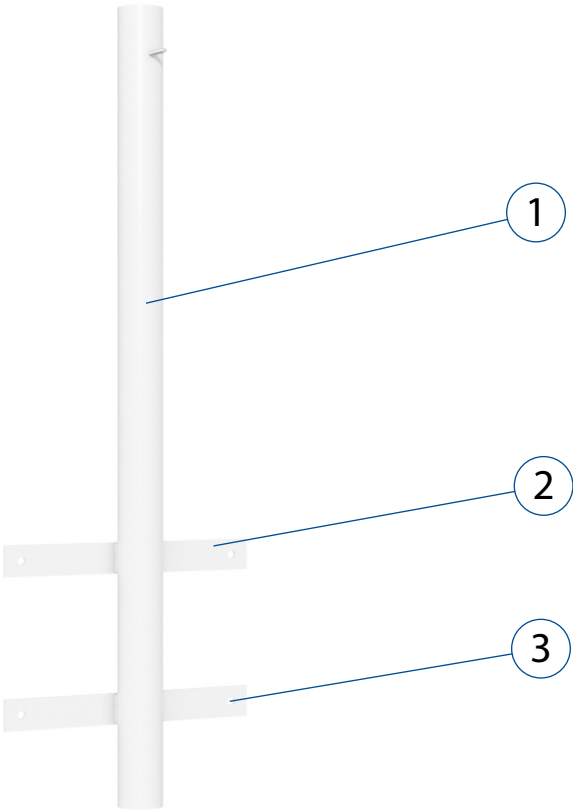
CK-201

DESCRIPTION

A bracket is a pole used to attach support brackets. The product is suitable for fixing power junction boxes in immediate vicinity of vessels and equipment mounted onto concrete foundations or with curbed edge.

Compatibility: **CK-101, CK-126 and CK-201**

DESIGN



1. Steel pipe
2. Galvanized bar
3. Stud anchor (4 pcs.)

MARKING

Item #
CK-401

P.O. DETAILS

Please provide the following item number in your P.O. for a CK-401 support bracket:

CK-401

DESCRIPTION

SF-K-CUBE is used with Ex control and protection panels.

DESIGN



- 1. Shield
- 2. Frame

GENERAL SPECIFICATION

Frame material	Galvanized steel DX51D+Z275-M-A 3 mm thick
Shield material	Galvanized steel DX51D+Z275-M-A 1.5 mm thick
Size (WxHxD)	1545x2259x1088 mm
Weight	90 kg

MARKING

Item #
SF-K-CUBE

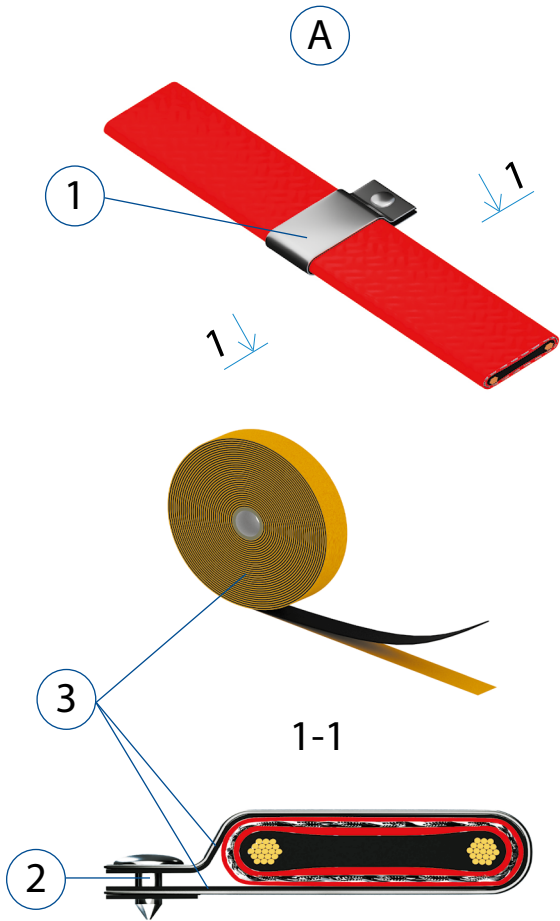
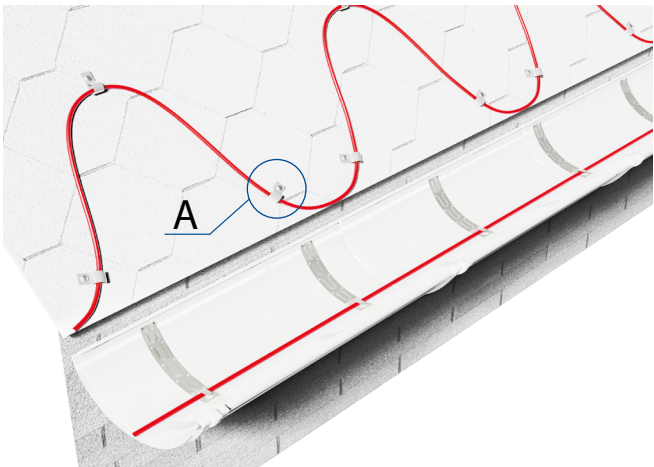
P.O. DETAILS

Please provide the following item number in your P.O. for a SF-K-CUBE control and protection panel frame:
SF-K-CUBE

DESCRIPTION

A fastener kit for roofing and gutter heat tracing (20 pcs./kit)

DESIGN



The kit includes:

- 1. Galvanized strap (W=20 mm, L=100 mm) with d=4 mm rivet holes (20 pcs.)
- 2. 3x10 mm rivets (20 pcs.)
- 3. Butyl rubber tape (W=40 mm, 1.5 mm thick (1 pc.)

MARKING

Item #

CK-FIX-R

P.O. DETAILS

Please provide the following item number in your P.O. for a CK-FIX-R fastener kit:
CK-FIX.R

DESCRIPTION

A fastener kit is used to fix a heat trace cable in downspouts.

DESIGN



A connection/repair kit includes:

- | | |
|------------------------------|--|
| 1. M8 threaded pin (0.5 m) | 6. 2.5x100 plastic wire clamp (1 set (100 pcs.)) |
| 2. M8 nut (2 pcs.) | 7. M20 plastic gland (1 pc.) |
| 3. M8 fender washer (2 pcs.) | 8. 100-120 mm metal clamp band (2 pcs.) |
| 4. Dia 2 steel wire (20 m) | 9. Rubber insert (1 pc.) |
| 5. Wire U-clip (3 pcs.) | 10. Thimble (1 pc.) |
| | 11. Edge protector (1 m) |

MARKING

Item #

CK-FIX-G

P.O. DETAILS

Please provide the following item number in your P.O. for a CK-FIX-G fastener kit:

CK-FIX-G



GENERAL SPECIFICATION

ATEX code for products below 25 A	1Ex d e IIC T6 Gb X
ATEX code for products below 40 A	1Ex d e IIC T5 Gb X
Rated breaking capacity	6 kA
Type	AC - alternating current, A - alternating and pulsed direct current
Operating ambient temperature	-20 to +50 °C
Storage temperature	-20 to +50 °C
Rated voltage	230 V
Auxiliary contacts	230 V AC/24 V DC
Rated auxiliary contact current	1A AC / 1 A DC
Breaking capacity	as per data sheets
Rated impulse withstand voltage	as per data sheets
Switching wear resistance	10000
Mechanical wear resistance	20000
Housing Characteristics	
Material	Fibre reinforced thermoset polyester
Color	white
Dimensions HxWxD	
Modular design 1	155x67x116 mm
Modular design 2	155x83x116 mm
Orientation	Vertical, horizontal

Rated current	Modular design 1					
	Curve: B					
	Rated breaking capacity: 6 kA					
	1P+N					
	Differential protection current and rated residual current					
	A 30 mA	A 100 mA	A 300 mA	AC 30 mA	AC 100 mA	AC 300 mA
6 A	M(ex)DCB-1P+N-6-B-A-30-6	M(ex)DCB-1P+N-6-B-A-100-6	M(ex)DCB-1P+N-6-B-A-300-6	M(ex)DCB-1P+N-6-B-AC-30-6	M(ex)DCB-1P+N-6-B-AC-100-6	M(ex)DCB-1P+N-6-B-AC-300-6
10 A	M(ex)DCB-1P+N-10-B-A-30-6	M(ex)DCB-1P+N-10-B-A-100-6	M(ex)DCB-1P+N-10-B-A-300-6	M(ex)DCB-1P+N-10-B-AC-30-6	M(ex)DCB-1P+N-10-B-AC-100-6	M(ex)DCB-1P+N-10-B-AC-300-6
16 A	M(ex)DCB-1P+N-16-B-A-30-6	M(ex)DCB-1P+N-16-B-A-100-6	M(ex)DCB-1P+N-16-B-A-300-6	M(ex)DCB-1P+N-16-B-AC-30-6	M(ex)DCB-1P+N-16-B-AC-100-6	M(ex)DCB-1P+N-16-B-AC-300-6
20 A	M(ex)DCB-1P+N-20-B-A-30-6	M(ex)DCB-1P+N-20-B-A-100-6	M(ex)DCB-1P+N-20-B-A-300-6	M(ex)DCB-1P+N-20-B-AC-30-6	M(ex)DCB-1P+N-20-B-AC-100-6	M(ex)DCB-1P+N-20-B-AC-300-6
25 A	M(ex)DCB-1P+N-25-B-A-30-6	M(ex)DCB-1P+N-25-B-A-100-6	M(ex)DCB-1P+N-25-B-A-300-6	M(ex)DCB-1P+N-25-B-AC-30-6	M(ex)DCB-1P+N-25-B-AC-100-6	M(ex)DCB-1P+N-25-B-AC-300-6
32 A	M(ex)DCB-1P+N-32-B-A-30-6	M(ex)DCB-1P+N-32-B-A-100-6	M(ex)DCB-1P+N-32-B-A-300-6	M(ex)DCB-1P+N-32-B-AC-30-6	M(ex)DCB-1P+N-32-B-AC-100-6	M(ex)DCB-1P+N-32-B-AC-300-6
40 A	M(ex)DCB-1P+N-40-B-A-30-6	M(ex)DCB-1P+N-40-B-A-100-6	M(ex)DCB-1P+N-40-B-A-300-6	M(ex)DCB-1P+N-40-B-AC-30-6	M(ex)DCB-1P+N-40-B-AC-100-6	M(ex)DCB-1P+N-40-B-AC-300-6

Rated current	Modular design 1					
	Curve: C					
	Rated breaking capacity: 6 kA					
	1P+N					
	Differential protection current and rated residual current					
	A 30 mA	A 100 mA	A 300 mA	AC 30 mA	AC 100 mA	AC 300 mA
6 A	M(ex)DCB-1P+N-6-C-A-30-6	M(ex)DCB-1P+N-6-C-A-100-6	M(ex)DCB-1P+N-6-C-A-300-6	M(ex)DCB-1P+N-6-C-AC-30-6	M(ex)DCB-1P+N-6-C-AC-100-6	M(ex)DCB-1P+N-6-C-AC-300-6
10 A	M(ex)DCB-1P+N-10-C-A-30-6	M(ex)DCB-1P+N-10-C-A-100-6	M(ex)DCB-1P+N-10-C-A-300-6	M(ex)DCB-1P+N-10-C-AC-30-6	M(ex)DCB-1P+N-10-C-AC-100-6	M(ex)DCB-1P+N-10-C-AC-300-6
16 A	M(ex)DCB-1P+N-16-C-A-30-6	M(ex)DCB-1P+N-16-C-A-100-6	M(ex)DCB-1P+N-16-C-A-300-6	M(ex)DCB-1P+N-16-C-AC-30-6	M(ex)DCB-1P+N-16-C-AC-100-6	M(ex)DCB-1P+N-16-C-AC-300-6
20 A	M(ex)DCB-1P+N-20-C-A-30-6	M(ex)DCB-1P+N-20-C-A-100-6	M(ex)DCB-1P+N-20-C-A-300-6	M(ex)DCB-1P+N-20-C-AC-30-6	M(ex)DCB-1P+N-20-C-AC-100-6	M(ex)DCB-1P+N-20-C-AC-300-6
25 A	M(ex)DCB-1P+N-25-C-A-30-6	M(ex)DCB-1P+N-25-C-A-100-6	M(ex)DCB-1P+N-25-C-A-300-6	M(ex)DCB-1P+N-25-C-AC-30-6	M(ex)DCB-1P+N-25-C-AC-100-6	M(ex)DCB-1P+N-25-C-AC-300-6
32 A	M(ex)DCB-1P+N-32-C-A-30-6	M(ex)DCB-1P+N-32-C-A-100-6	M(ex)DCB-1P+N-32-C-A-300-6	M(ex)DCB-1P+N-32-C-AC-30-6	M(ex)DCB-1P+N-32-C-AC-100-6	M(ex)DCB-1P+N-32-C-AC-300-6
40 A	M(ex)DCB-1P+N-40-C-A-30-6	M(ex)DCB-1P+N-40-C-A-100-6	M(ex)DCB-1P+N-40-C-A-300-6	M(ex)DCB-1P+N-40-C-AC-30-6	M(ex)DCB-1P+N-40-C-AC-100-6	M(ex)DCB-1P+N-40-C-AC-300-6

Rated current	Modular design 2					
	Curve: B					
	Rated breaking capacity: 6 kA					
	1P+N with aux contacts					
	Differential protection current and rated residual current					
	A 30 mA	A 100 mA	A 300 mA	AC 30 mA	AC 100 mA	AC 300 mA
6 A	M(ex)DCB-1P+N-6-B-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-B-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-B-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-B-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-B-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-B-AC-300-OF+SD(1NO/NC)-6
10 A	M(ex)DCB-1P+N-10-B-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-B-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-B-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-B-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-B-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-B-AC-300-OF+SD(1NO/NC)-6
16 A	M(ex)DCB-1P+N-16-B-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-B-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-B-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-B-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-B-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-B-AC-300-OF+SD(1NO/NC)-6
20 A	M(ex)DCB-1P+N-20-B-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-B-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-B-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-B-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-B-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-B-AC-300-OF+SD(1NO/NC)-6
25 A	M(ex)DCB-1P+N-25-B-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-B-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-B-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-B-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-B-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-B-AC-300-OF+SD(1NO/NC)-6
32 A	M(ex)DCB-1P+N-32-B-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-B-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-B-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-B-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-B-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-B-AC-300-OF+SD(1NO/NC)-6
40 A	M(ex)DCB-1P+N-40-B-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-B-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-B-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-B-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-B-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-B-AC-300-OF+SD(1NO/NC)-6

Rated current	Modular design 2					
	Curve: C					
	Rated breaking capacity: 6 kA					
	1P+N with aux contacts					
	Differential protection current and rated residual current					
	A 30 mA	A 100 mA	A 300 mA	AC 30 mA	AC 100 mA	AC 300 mA
6 A	M(ex)DCB-1P+N-6-C-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-C-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-C-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-C-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-C-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-6-C-AC-300-OF+SD(1NO/NC)-6
10 A	M(ex)DCB-1P+N-10-C-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-C-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-C-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-C-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-C-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-10-C-AC-300-OF+SD(1NO/NC)-6
16 A	M(ex)DCB-1P+N-16-C-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-C-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-C-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-C-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-C-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-16-C-AC-300-OF+SD(1NO/NC)-6
20 A	M(ex)DCB-1P+N-20-C-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-C-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-C-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-C-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-C-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-20-C-AC-300-OF+SD(1NO/NC)-6
25 A	M(ex)DCB-1P+N-25-C-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-C-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-C-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-C-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-C-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-25-C-AC-300-OF+SD(1NO/NC)-6
32 A	M(ex)DCB-1P+N-32-C-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-C-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-C-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-C-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-C-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-32-C-AC-300-OF+SD(1NO/NC)-6
40 A	M(ex)DCB-1P+N-40-C-A-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-C-A-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-C-A-300-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-C-AC-30-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-C-AC-100-OF+SD(1NO/NC)-6	M(ex)DCB-1P+N-40-C-AC-300-OF+SD(1NO/NC)-6



GENERAL SPECIFICATION

ATEX code for products below 25 A	1Ex d e IIC T6 Gb X
ATEX code for products below 40 A	1Ex d e IIC T5 Gb X
Rated breaking capacity	6 kA
Type	AC - alternating current, A - alternating and pulsed direct current
Operating ambient temperature	-20 to +50 °C
Storage temperature	-20 to +50 °C
Rated operating voltage	
Power contacts 1P	230/400 V AC
Power contacts 2P	400 V AC
Auxiliary contacts	230 V AC/24 V DC
Rated auxiliary contact current	1 AC / 1 A DC
Tripping characteristics	B: $3I_n \leq I_m \leq 5I_n$ C: $5I_n \leq I_m \leq 10I_n$
Breaking capacity	as per data sheets
Rated impulse withstand voltage	as per data sheets
Switching wear resistance	below 32 A: 20000; 32 A and more: 10000
Housing Characteristics	
Material	Fibre reinforced thermoset polyester
Color	White
Dimensions HxWxD	
Modular design 1	155x67x116 mm
Modular design 2	155x83x116 mm
Orientation	Vertical, horizontal

Rated current	Modular design 1	
	1P	
	Rated breaking capacity: 6 kA	
	Curve	
	B	C
1 A	-	M(ex)CB-1P-1-C-6
2 A	-	M(ex)CB-1P-2-C-6
4 A	-	M(ex)CB-1P-4-C-6
6 A	M(ex)CB-1P-6-B-6	M(ex)CB-1P-6-C-6
10 A	M(ex)CB-1P-10-B-6	M(ex)CB-1P-10-C-6
16 A	M(ex)CB-1P-16-B-6	M(ex)CB-1P-16-C-6
20 A	M(ex)CB-1P-20-B-6	M(ex)CB-1P-20-C-6
25 A	M(ex)CB-1P-25-B-6	M(ex)CB-1P-25-C-6
32 A	M(ex)CB-1P-32-B-6	M(ex)CB-1P-32-C-6
40 A	M(ex)CB-1P-40-B-6	M(ex)CB-1P-40-C-6

Rated current	Modular design 1	
	1P + aux contacts (OF + SD)	
	Rated breaking capacity: 6 kA	
	Curve	
	B	C
1 A	-	M(ex)CB-1P-1-C-OF+SD-6
2 A	-	M(ex)CB-1P-2-C-OF+SD-6
4 A	-	M(ex)CB-1P-4-C-OF+SD-6
6 A	M(ex)CB-1P-6-B-OF+SD-6	M(ex)CB-1P-6-C-OF+SD-6
10 A	M(ex)CB-1P-10-B-OF+SD-6	M(ex)CB-1P-10-C-OF+SD-6
16 A	M(ex)CB-1P-16-B-OF+SD-6	M(ex)CB-1P-16-C-OF+SD-6
20 A	M(ex)CB-1P-20-B-OF+SD-6	M(ex)CB-1P-20-C-OF+SD-6
25 A	M(ex)CB-1P-25-B-OF+SD-6	M(ex)CB-1P-25-C-OF+SD-6
32 A	M(ex)CB-1P-32-B-OF+SD-6	M(ex)CB-1P-32-C-OF+SD-6
40 A	M(ex)CB-1P-40-B-OF+SD-6	M(ex)CB-1P-40-C-OF+SD-6

Rated current	Modular design 1	
	2P	
	Rated breaking capacity: 6 kA	
	Curve	
	B	C
1 A	-	M(ex)CB-2P-1-C-6
2 A	-	M(ex)CB-2P-2-C-6
4 A	-	M(ex)CB-2P-4-C-6
6 A	M(ex)CB-2P-6-B-6	M(ex)CB-2P-6-C-6
10 A	M(ex)CB-2P-10-B-6	M(ex)CB-2P-10-C-6
16 A	M(ex)CB-2P-16-B-6	M(ex)CB-2P-16-C-6
20 A	M(ex)CB-2P-20-B-6	M(ex)CB-2P-20-C-6
25 A	M(ex)CB-2P-25-B-6	M(ex)CB-2P-25-C-6
32 A	M(ex)CB-2P-32-B-6	M(ex)CB-2P-32-C-6
40 A	M(ex)CB-2P-40-B-6	M(ex)CB-2P-40-C-6

Rated current	Modular design 2	
	2P + aux contacts (OF + SD)	
	Rated breaking capacity: 6 kA	
	Curve	
	B	C
1 A	-	M(ex)CB-2P-1-C-OF+SD-6
2 A	-	M(ex)CB-2P-2-C-OF+SD-6
4 A	-	M(ex)CB-2P-4-C-OF+SD-6
6 A	M(ex)CB-2P-6-B-OF+SD-6	M(ex)CB-2P-6-C-OF+SD-6
10 A	M(ex)CB-2P-10-B-OF+SD-6	M(ex)CB-2P-10-C-OF+SD-6
16 A	M(ex)CB-2P-16-B-OF+SD-6	M(ex)CB-2P-16-C-OF+SD-6
20 A	M(ex)CB-2P-20-B-OF+SD-6	M(ex)CB-2P-20-C-OF+SD-6
25 A	M(ex)CB-2P-25-B-OF+SD-6	M(ex)CB-2P-25-C-OF+SD-6
32 A	M(ex)CB-2P-32-B-OF+SD-6	M(ex)CB-2P-32-C-OF+SD-6
40 A	M(ex)CB-2P-40-B-OF+SD-6	M(ex)CB-2P-40-C-OF+SD-6

Rated current	Modular design 2	
	3P	
	Rated breaking capacity: 6 kA	
	Curve	
	B	C
1 A	-	M(ex)CB-3P-1-C-6
2 A	-	M(ex)CB-3P-2-C-6
4 A	-	M(ex)CB-3P-4-C-6
6 A	M(ex)CB-3P-6-B-6	M(ex)CB-3P-6-C-6
10 A	M(ex)CB-3P-10-B-6	M(ex)CB-3P-10-C-6
13 A	M(ex)CB-3P-13-B-6	M(ex)CB-3P-13-C-6
16 A	M(ex)CB-3P-16-B-6	M(ex)CB-3P-16-C-6
20 A	M(ex)CB-3P-20-B-6	M(ex)CB-3P-20-C-6
25 A	M(ex)CB-3P-25-B-6	M(ex)CB-3P-25-C-6
32 A	M(ex)CB-3P-32-B-6	M(ex)CB-3P-32-C-6
40 A	M(ex)CB-3P-40-B-6	M(ex)CB-3P-40-C-6



GENERAL SPECIFICATION

ATEX code for products below 25 A	1Ex d e IIC T6 Gb X
ATEX code for products below 63 A	1Ex d e IIC T5 Gb X
Operating ambient temperature	-20 to +50 °C
Storage temperature	-20 to +50 °C
Rated voltage	230 V
Auxiliary contacts	230 V AC/ 24 V DC
Rated auxiliary contact current	1 A AC / 1 A DC
Breaking capacity	as per data sheets
Rated impulse withstand voltage	as per data sheets
Switching wear resistance	10000
Mechanical wear resistance	20000
Housing Characteristics	
Material	Fibre reinforced thermoset polyester
Color	white
Overall dimensions HxWxD	
Modular design 1	155x67x116 mm
Modular design 2	155x83x116 mm
Orientation	Vertical, horizontal

Equipment

M(ex)DCB.1 Ex Differential Breaker

P.O. Number	Modular Design	Number of poles	Rated switching current	Differential Protection	Rated Resid Current	Number and type of signal contacts
M(ex)DCB.1-1P+N-25-AC-30	1	1P+N	25 A	AC (sinewave AC earth leakage protection)	30 mA	-
M(ex)DCB.1-1P+N-40-AC-30	1	1P+N	40 A		30 mA	
M(ex)DCB.1-1P+N-25-AC-100	1	1P+N	25 A		100 mA	
M(ex)DCB.1-1P+N-40-AC-100	1	1P+N	40 A		100 mA	
M(ex)DCB.1-1P+N-25-AC-300	1	1P+N	25 A		300 mA	
M(ex)DCB.1-1P+N-40-AC-300	1	1P+N	40 A		300 mA	
M(ex)DCB.1-1P+N-25-A-30	1	1P+N	25 A	A (sinewave AC & pulsating DC earth leakage protection)	30 mA	-
M(ex)DCB.1-1P+N-40-A-30	1	1P+N	40 A		30 mA	
M(ex)DCB.1-1P+N-25-A-100	1	1P+N	25 A		100 mA	
M(ex)DCB.1-1P+N-40-A-100	1	1P+N	40 A		100 mA	
M(ex)DCB.1-1P+N-25-A-300	1	1P+N	25 A		300 mA	
M(ex)DCB.1-1P+N-40-A-300	1	1P+N	40 A		300 mA	
M(ex)DCB.1-1P+N-25-AC-30-OF+SD(1NO/NC)	2	1P+N	25 A	AC (sinewave AC earth leakage protection)	30 mA	OF 1CO contact SD 1CO trip indicating contact
M(ex)DCB.1-1P+N-40-AC-30-OF+SD(1NO/NC)	2	1P+N	40 A		30 mA	
M(ex)DCB.1-1P+N-25-AC-100-OF+SD(1NO/NC)	2	1P+N	25 A		100 mA	
M(ex)DCB.1-1P+N-40-AC-100-OF+SD(1NO/NC)	2	1P+N	40 A		100 mA	
M(ex)DCB.1-1P+N-25-AC-300-OF+SD(1NO/NC)	2	1P+N	25 A		300 mA	
M(ex)DCB.1-1P+N-40-AC-300-OF+SD(1NO/NC)	2	1P+N	40 A		300 mA	
M(ex)DCB.1-1P+N-25-A-30-OF+SD(1NO/NC)	2	1P+N	25 A	A (sinewave AC & pulsating DC earth leakage protection)	30 mA	
M(ex)DCB.1-1P+N-40-A-30-OF+SD(1NO/NC)	2	1P+N	40 A		30 mA	
M(ex)DCB.1-1P+N-25-A-100-OF+SD(1NO/NC)	2	1P+N	25 A		100 mA	
M(ex)DCB.1-1P+N-40-A-100-OF+SD(1NO/NC)	2	1P+N	40 A		100 mA	
M(ex)DCB.1-1P+N-25-A-300-OF+SD(1NO/NC)	2	1P+N	25 A		300 mA	
M(ex)DCB.1-1P+N-40-A-300-OF+SD(1NO/NC)	2	1P+N	40 A		300 mA	



GENERAL SPECIFICATION

ATEX code for products below 25 A	1Ex d e IIC T6 Gb X
ATEX code for products below 63 A	1Ex d e IIC T5 Gb X
Operating ambient temperature	-20 to +50 °C
Storage temperature	-20 to +50 °C
Rated voltage	
Power contacts 1P	250 V AC
Auxiliary contacts	230 V AC/ 24 V DC
Rated auxiliary contact current	2A AC / 1A DC
Rated impulse voltage	as per data sheets
Wear resistance (on-off cycles)	
Switching	100000
Connection Characteristics	
Housing Characteristics	
Material	Fibre reinforced thermoset polyester
Color	white
Dimensions HxWxD	
Modular design 1	155x63x110 mm
Modular design 2	155x79x110 mm
Orientation	Vertical, horizontal

Equipment

P.O. Number	Modular design	Number and type of power contacts	Number and type of signal contacts	Rated switching current
M(ex)CON-10A-2NO-230AC	1	2 NO	-	10 A
M(ex)CON-16A-2NO-230AC	1	2 NO	-	16 A
M(ex)CON-20A-2NO-230AC	1	2 NO	-	20 A
M(ex)CON-25A-2NO-230AC	1	2 NO	-	25 A
M(ex)CON-32A-2NO-230AC	1	2 NO	-	32 A
M(ex)CON-40A-2NO-230AC	1	2 NO	-	40 A
M(ex)CON-10A-2NO-1NO/1NC-230AC	2	2 NO	1 CO	10 A
M(ex)CON-16A-2NO-1NO/1NC-230AC	2	2 NO	1 CO	16 A
M(ex)CON-20A-2NO-1NO/1NC-230AC	2	2 NO	1 CO	20 A
M(ex)CON-25A-2NO-1NO/1NC-230AC	2	2 NO	1 CO	25 A
M(ex)CON-32A-2NO-1NO/1NC-230AC	2	2 NO	1 CO	32 A
M(ex)CON-40A-2NO-1NO/1NC-230AC	2	2 NO	1 CO	40 A





GENERAL SPECIFICATION

ATEX code	1Ex d e IIC T6 Gb X
Operating ambient temperature	-20 to +50 °C
Storage temperature	-20 to +50 °C

Contact Part Characteristics

Material of switching contacts	AgNi
Max switching voltage	250 V AC/ 30 V DC
Max switching current	5 A
Rated switching current	1 A

Housing Characteristics

Material	Fibre reinforced thermoset polyester
Color	White

Dimensions HxWxD

Modular design 1	155x63x110 mm
Orientation	vertical, horizontal

Equipment

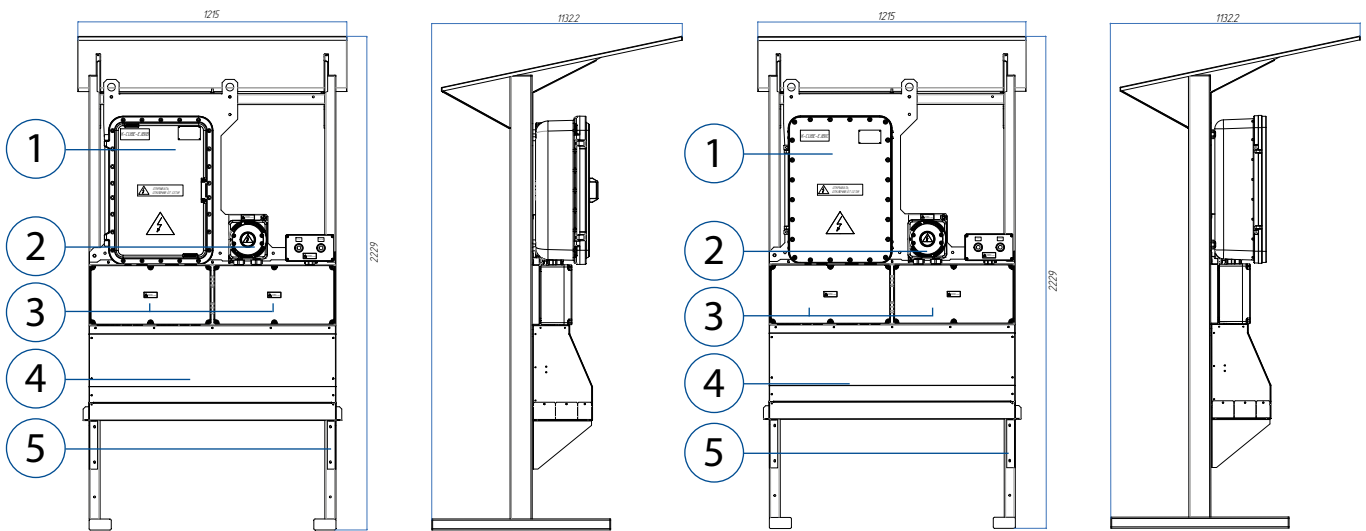
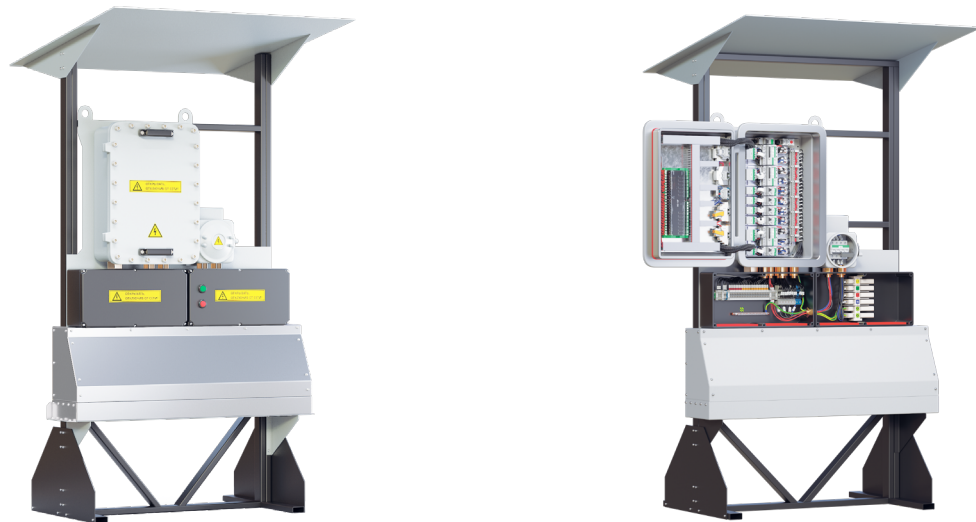
P.O. Number	Modular design	Rated Control Voltage	Number and type of contacts	Active Part Characteristics			
				Coil Current	Operate Time	Release time	Lost power
M(ex)R-24-DC-2NO	1	= 24 V	2 NO	37,5 mA	≤20 ms	≤20 ms	~1,2 W
M(ex)R-24-DC-3NO	1	= 24 V	3 NO	37,5 mA	≤20 ms	≤20 ms	~1,2 W
M(ex)R-24-DC-2NO+1NC	1	= 24 V	2 NO & 1 NC	37,5 mA	≤20 ms	≤20 ms	~1,2 W
M(ex)R-230-AC-2NO	1	~230 V	2 NO	14 mA	≤20 ms	≤20 ms	~1,2 W
M(ex)R-230-AC-3NO	1	~230 V	3 NO	14 mA	≤20 ms	≤20 ms	~1,2 W
M(ex)R-230-AC-2NO+1NC	1	~230 V	2 NO & 1 NC	14 mA	≤20 ms	≤20 ms	~1,2 W

DESCRIPTION

A K-CUBE-EJB X-proof integrated switchgear receives and distributes electrical power, controls electrical equipment and protects it against short circuits and overloads. The LV switchgear is used as part of power supply, control and automation as distribution switchboards, power distribution stations, control and automation panels and cabinets.

A K-CUBE-EJB is basically applied in automated EHT control systems. Its switching units are delivered in plug-in modules for a quick installation or replacement in hazardous conditions. A K-CUBE-EJB includes a hard wired logic controller maintaining an EHT / lighting / etc. control system operable even in case of PLC loss. The product is supplied as a kit comprising an Ex enclosure accommodating switches, protection and communication devices, and an Ex enclosure accommodating an input breaker, two Ex terminal boxes, and a cable duct for cable protection.

DESIGN



For IIB atmospheres

For IIC atmospheres

1. X-proof equipment panel
2. X-proof automatic input breaker
3. X-proof input panel
4. Cable tray for external connection
5. SF-K-CUBE frame (purchased under a separate P.O.)

P.O. DETAILS

The panel may be a typical design mounted on a frame and having an input breaker, a shield, terminal boxes and an enclosure, or pursuant to customer data sheets. Please use the item number from the Marking Table below in your P.O. for a typical design X-proof protection and control panel.

E.g., a P.O. for a K-CUBE-EJB protection and control panel for IIB atmospheres, 80 A input breaker, should be identified as **K-CUBE-EJBIIB-80-11**

CONTROLS

- A K-CUBE-EJB has the following types of control:
- Remote control, effected remotely via an automated EHT control system
 - Auto control, i.e. based on controller internal logic. In case of EHT control communication loss, the controller will interrogate the sensors and undertake control of the EHT system based on the latest setpoints received prior to loss of communication.
- Panel de-energizing for maintenance purposes:
- De-energized locally using an X-proof panel switch

MARKING

Item #	Atmosphere	Rated current, A	Outgoing lines
K-CUBE-EJBIIB-80-11	IIB	80	10
K-CUBE-EJBIIC-80-10	IIC	80	10
K-CUBE-EJBIIB-125-11	IIB	125	10
K-CUBE-EJBIIC-125-10	IIC	125	10

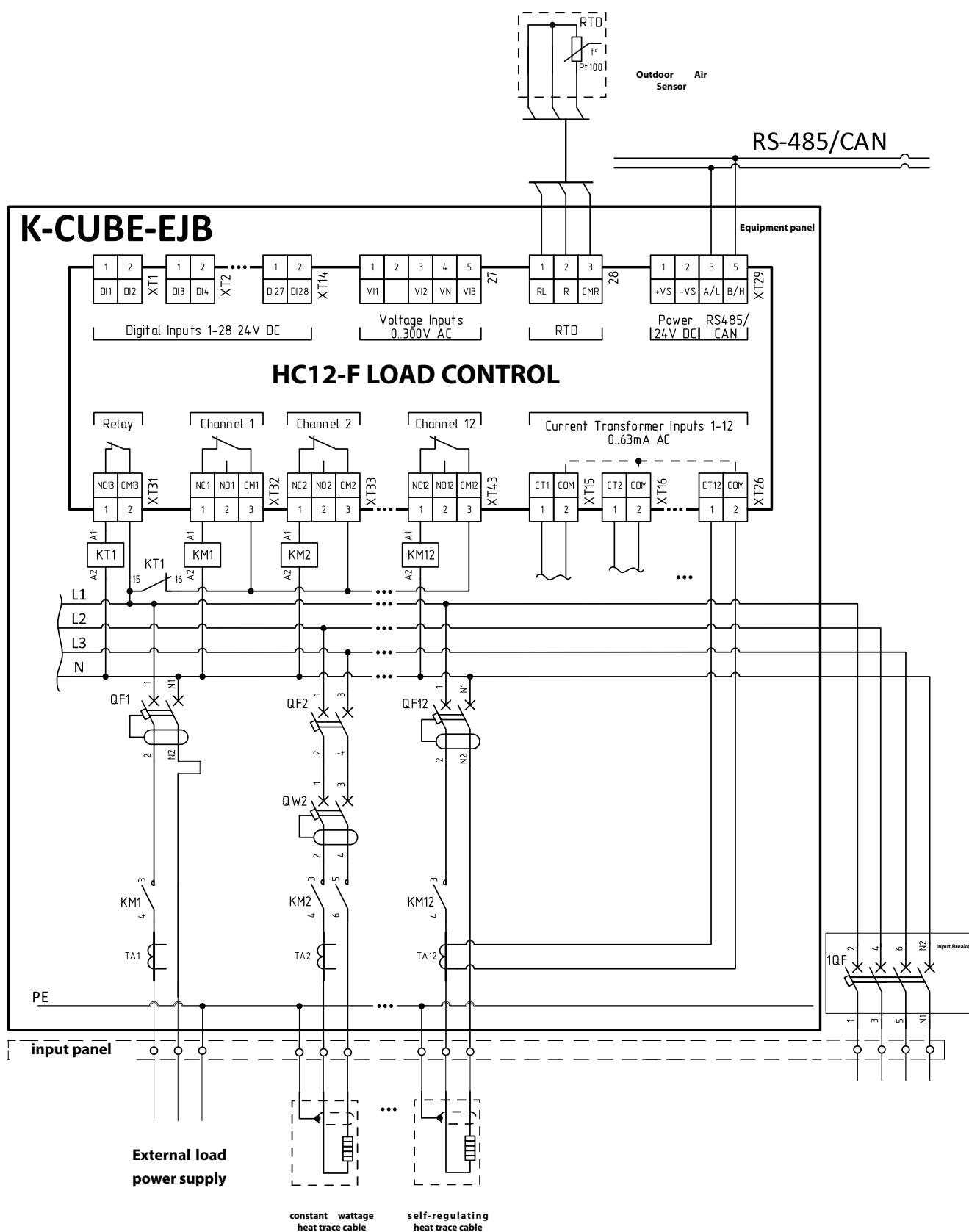
SWITCHING & PROTECTION DEVICES

Protection switching devices are selected based on data sheets.

GENERAL SPECIFICATION

Mains Supply	
Normal operating conditions	
Rated voltage	230/400 V (TT, IT, TN-S, TN-C, TN-C-S)
Certificate, Ex protection	1Ex d e IIB T6...T4 Gb X/1Ex d e IIB+H2 T6...T4 Gb X /1Ex d e IIC T6...T4 Gb X
Frequency	50 Hz
Voltage of control circuits and automatic controls	12/24/48/230 V
Design Characteristics	
Equipment panel	
Dimensions (WxHxD), max	500x700x300 mm
Cable entry	as per data sheets
IP rating	65/66
Internal heating with a thermostat	as per data sheets
Input panel	
Dimensions (WxHxD), max	550x300x200 mm
Cable entry	as per data sheets
IP rating	66
Automatic input switch	
Dimensions (WxHxD), max	300x300x200 mm
Cable entry	as per data sheets
IP rating	66

CIRCUIT DIAGRAM (EXAMPLE)



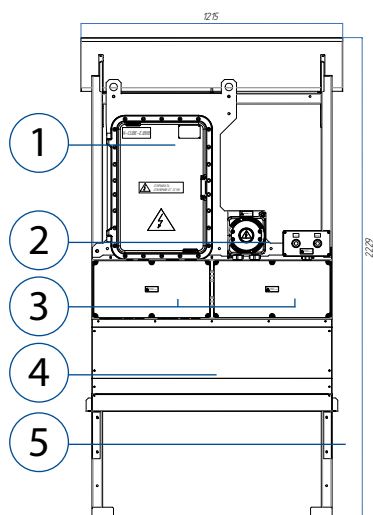
K-CUBE-EJB-C-10-2 Control and Communication Switchboard

DESCRIPTION

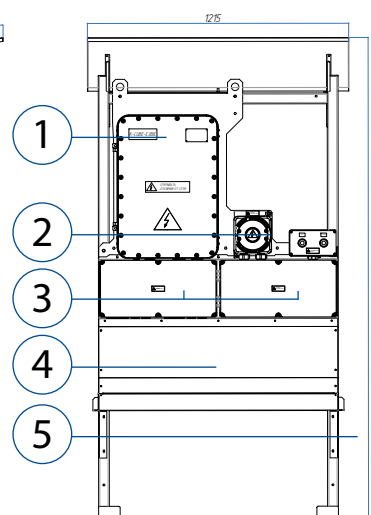
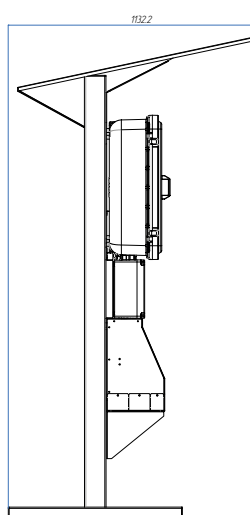
K-CUBE-EJB-C-10-2 is an Ex control and communication switchboard to accommodate interface converters and data acquisition and communication equipment.

A K-CUBE-EJB-C-10-2 is supplied as a kit consisting of an Ex enclosure accommodating communication devices, an Ex enclosure accommodating an input breaker, two Ex terminal boxes, and a cable tray for external connections.

DESIGN



For IIB atmospheres



For IIC atmospheres

1. X-proof equipment panel
2. X-proof automatic input breaker
3. X-proof input panel
4. Cable tray for external connection
5. SF-K-CUBE frame (purchased under a separate P.O.)

K-CUBE-EJB-C-10-2 Control and Communication Switchboard

P.O. DETAILS

The product may be a typical design mounted on a frame and supplied with an input breaker, a shield, terminal boxes and an enclosure, or as per data sheets.

Please use the item number from the Marking Table below in your P.O. for an X-proof protection and control panel.

E.g., **K-CUBE-EJBIIB-C-10-2**

SWITCHING & PROTECTION DEVICES

Thermal-magnetic circuit breakers are used to protect the cable network and electrical equipment against fault currents. Magnetic tripping current must not exceed 10, C curve.

The communications cabinet accommodates an equipment panel with protective devices and devices that collect, convert and transmit data, a panel for external connections having power and control cable terminals, and an input panel with a load break switch.

GENERAL SPECIFICATION

Mains Supply	
Normal operating conditions	
Rated voltage	230/400 V (TT, IT, TN-S, TN-C, TN-C-S)
Certificate, Ex protection	1Ex d e IIB T6...T4 Gb X/1Ex d e IIB+H2 T6...T4 Gb X /1Ex d e IIC T6...T4 Gb X
Frequency	50 Hz
Voltage of control circuits and automatic controls	12/24/48/230 V
Design Characteristics	
Equipment panel	
Dimensions (WxHxD), max	500x700x300 mm
Cable entry	as per data sheets
IP rating	65/66
Internal heat tracing with thermostat	as per data sheets
Input panel and external connection panel	
Dimensions (WxHxD), max	550x300x200 mm
Cable entry	as per data sheets
IP rating	66
Automatic input breaker	
Dimensions (WxHxD), max	300x300x200 mm
Cable entry	bottom
IP rating	66

MARKING

Item #	Design
K-CUBE-EJBIIB-C-10-2	IIB
K-CUBE-EJBIIC-C-10-2	IIC

Equipment

MexTRACE-BOX(e)

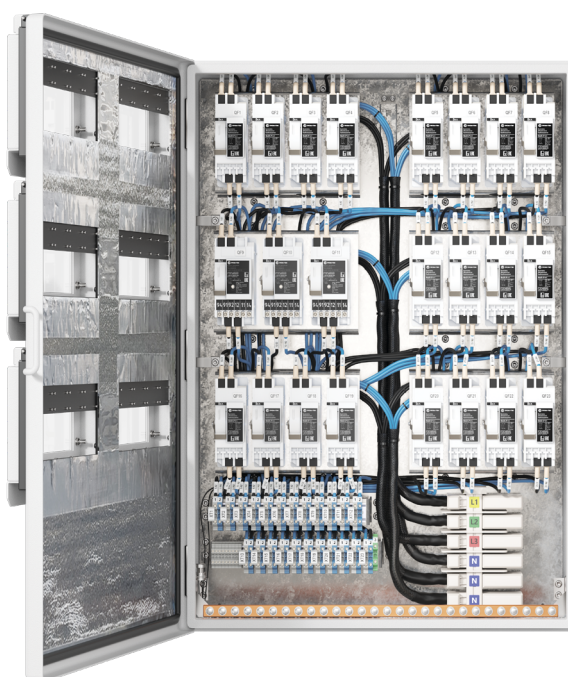
X-proof Cabinet

DESCRIPTION

Explosion proof MexTRACEBOX(e) series low-voltage systems receive and distribute electrical power, control electrical equipment and provide fault current / overload protection.

The product is used as part of power supply, control and automation systems as distribution switchboards, power distribution stations, control and automation panels and cabinets, the principal application of MexTRACEBOX(e) being automated electrical heat tracing control systems.

DESIGN



MexTRACE-BOX(e)

X-proof Cabinet

FEATURES

- All equipment mounted in MexTRACE-BOX(e) is generally fixed. Other options are possible on demand
- MexTRACE-BOX(e) cabinets may be as much as IP66, and have a very ergonomic and aesthetic design
- MexTRACE-BOX(e) cabinets are intended for normal and hazardous areas
- The colour of MexTRACE-BOX(e) is subject to the customer's preferences for ergonomic, aesthetic or regulatory reasons as approved for the facilities concerned
- MexTRACE-BOX(e) has built-in electrical heat tracing

GENERAL CHARACTERISTICS

Rated voltage Ue	max 5000 V
Frequency, F	50 Hz
Rated current, A	max 200 A
Earth system	TT, IT, TN-C, TN-C-S, TN-S
Operating temperature range	-60..+90°C
Certificate, Ex protection	Pursuant to CU TR 012/2011, №TC RU C-RU.AA71.B.00546/24, 1 Ex db eb mb [ia Ga] IIC T6 ... T4 Gb X, 1 Ex eb IIC T6 ... T4 Gb X, Ex tb IIC T85°C. .. T135°C Db X
IP rating	66 max

P.O. DETAILS

A distribution and control cabinet is fabricated based on data sheets and specifications.

EXAMPLE OF PRODUCT DESIGN



K-PANEL

Distribution and Control Board, with Pluggable and Fixed Switches

DESCRIPTION

Low-voltage package systems of K-PANEL series receive and distribute three-phase AC, 50 Hz, 0.4 kV and 0.69 kV electrical power in dead-earthed or insulated neutral, and provide electrical equipment control and fault current / overload protection.

A K-PANEL product is used as part of power supply, control and automation systems as distribution switchboards, power distribution stations, control and automation panels and cabinets. The products are also suitable as low-voltage distribution switchgears in integrated transformer substations.

DESIGN

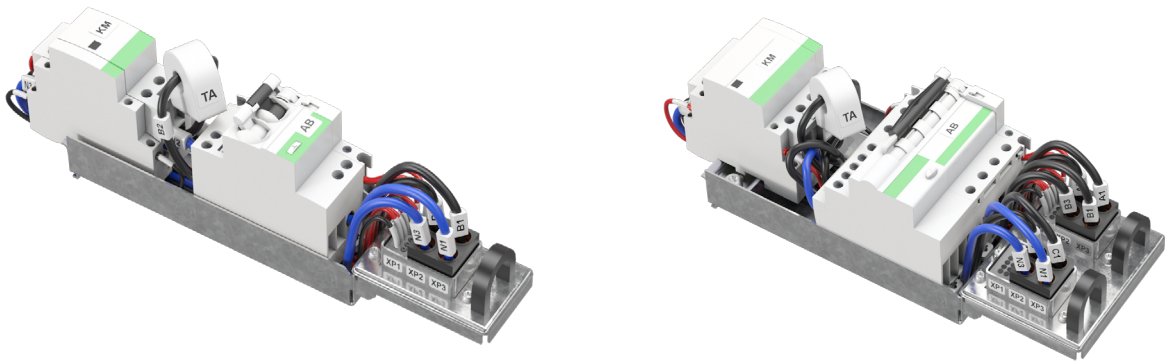


FEATURES

- Top or backside location of main distribution busbars
- All K-PANEL equipment may have either a fixed or pluggable configuration. Plug-in design is achieved by using ready-to-use typical pluggable modules (K-MODE)
- K-PANEL panels have max. IP54 rating
- K-PANEL panels may be sectioned to 4b to ensure safe operation
- The K-PANEL colour depends on the customer's preferences
- Max main busbar current is 3,200 A

GENERAL SPECIFICATION

Rated insulation voltage	1000 V
Rated voltage	400 V
Frequency	50 Hz
Rated impulse withstand voltage	12 kV
Rated secondary voltage, V	12/24/48/230
Overvoltage category	IV
Rated current (max) In	3200 A
Rated short-time withstand current Icw	85 kA (rms value)/1 s
Peak withstand rating Ipk	187 kA
Earth system	TT, IT, TN-C, TN-C-S, TN-S
Certificate	Pursuant to CU TR 004/2011, CU TR 020/2011, #EAEU RU C-RU.MIO62.B.01270/19



K-MODE-P DESCRIPTION

Modular	1	2
Poles	1P+N	2P; 2P+N; 3P; 3P+N
Rated voltage V	230	400
Rated current, A	6-63	6-63
Rated trip current, kA	as per data sheets	
Differential protection, mA	30; 100; 300	30; 300;300
Magnetic tripping	as per data sheets	
Current measurement range, A	0 to 50	
Status indication (on, emergency)	Yes	

P.O. DETAILS

Distribution and control switchboards are fabricated based on data sheets and specifications.

Equipment

DESCRIPTION

Low-voltage systems of K-BLOCK series receive and distribute three-phase AC, 50 Hz, 0.4 kV and 0.69 kV electrical power in dead-earthed or insulated neutral, control electrical equipment and provide fault current / overload protection.

A K-BLOCK LV package is used as part of power supply, control and automation systems as distribution switchboards, power distribution stations, control and automation panels and cabinets. K-BLOCK LV packages are also applicable as low-voltage distribution switchgears in integrated transformer substations.

DESIGN



FLEXIBLE DESIGN AND ENGINEERING SOLUTIONS

The modular design of K-BLOCK series LV package allowing for multiple pillar designs and protection and switching device configurations makes it easy and convenient to tailor the product to any applications.

MAXIMUM POWER DISTRIBUTION CAPACITY

The main distribution busbar max current of 7,300 A secures sufficient power supply to most energy-consuming power systems at 0.4/0.69 kV.

RELIABILITY

By using advanced top-quality materials to fabricate K-BLOCK series systems, protection and switching devices from major global manufacturers, and state-of-the-art production facilities, with quality control effected at each stage of production, we have ensured all capability to manufacture reliable equipment that runs for many years at minimized costs.

What is more, a K-BLOCK package system is highly serviceable and maintainable due to its modular design, streamlined assembly and upgrade capability.

SAFETY

High protection IP rating (up to IP54) guarantees high level integrity, while maximum form of separation (4b) provides for high personnel safety and allows for multiple repairs and routing activities without de-energizing the switchboard busbars. A wide choice of protective devices and switches makes it possible to ensure best protection and reliable operation of your electrical equipment. Multiple integrated interlocks are also useful in enhancing personnel safety and uninterrupted power supply.

P.O. DETAILS

A draw-out distribution and control board is fabricated based on data sheets and specifications.

GENERAL SPECIFICATION

Mechanical Characteristics

Cable entry	top/bottom
Pillar maintenance	one-side/two-side access
IP (protection against ingress of solids and liquids)	max 54
IK (protection against mechanical impacts)	max 10
Form of separation	4b

Pillar sizes

Height	2200/2350 mm (including a 100 mm base)
Width	325/650/1000/1550 mm
Depth	500/600/800/900/1000/1100/1200/1300/1400 mm
Average weight	650 kg
Enclosure & case parts	Zinc galvanized steel, polymerized epoxy-polyester powder coating (SP03); >50 µm
Enclosure color	As specified by Customer

Electrical Performance

Rated insulation voltage (Ui)	1000 V
Rated voltage	690/400 V
Frequency (F)	50 Hz
Rated secondary voltage	12/24/48/230 V
Overvoltage category	IV
Degree of pollution	3
Rated current of horizontal main busbars	7300 A max
Rated current of main busbars in CB sections	6300 A max
Rated current of vertical distribution busbars	6300; 4000; 2100; 1500 A
Rated short-time withstand current (I _{cw}), 1 sec, horizontal main busbars (rated peak value current I _{pk})	50/80/100/150 kA rms value (110/176/220/330 kA)
Rated short-time withstand current (I _{cw}), 1 sec, vertical distribution busbars (rated peak value current I _{pk})	50/80/100 kA rms value (110/176/220/330 kA)
Rated conditional short-circuit current	150 kA max
IEC internal arc protection (100 kA, rms value), sec	0,3
Earth system	TT, IT, TN-S, TN-C, TN-C-S
Certificate	Pursuant to CU TR 004/2011, CU TR 020/2011, #EAEU RU C-RU.MIO62.B.01286/19

DESCRIPTION

K-PANEL-C.S is a central EHT control panel for automatic heat tracing control of pipelines, equipment, floors and instrument lines. An integrated controller exchanges data with field equipment (sensors and actuators) and the EHT control server via ModBus TCP. The panel switches support data exchange via a fibre optic ring.

An EHT central control panel is supplied as a kit consisting of a panel, programmable controller, EHT control server, switches and auxiliary equipment.

DESIGN



Components:

1. Panel
2. Programmable controller
3. Industrial Ethernet switch
4. RS-485 to Ethernet converters (up to 4 pcs.)
5. Data acquisition controller
6. EHT control server
7. Optical termination box
8. 24 V power supply
9. Uninterrupted power supply
10. Fans (2 pcs.)
11. Power, control and interface cable terminals

GENERAL SPECIFICATION

Mains Supply

Voltage	230/400 V (TT, IT, TN-S, TN-C, TN-C-S)
Frequency	50 Hz
Voltage of control circuits and automatic controls	12/24/48/230 V

Design Characteristics

IP rating	54 max
Body material	steel
Dimensions (WxHxD)	630x1250x410 mm

MARKING

Item #

K-PANEL-C.S

PROTECTIVE AND SWITCHING DEVICES

Thermal-magnetic (combo) circuit breakers are used to protect the control circuits against short circuits.

P.O. DETAILS

Please use the item number from the Marking Table in your P.O. for a central control panel.

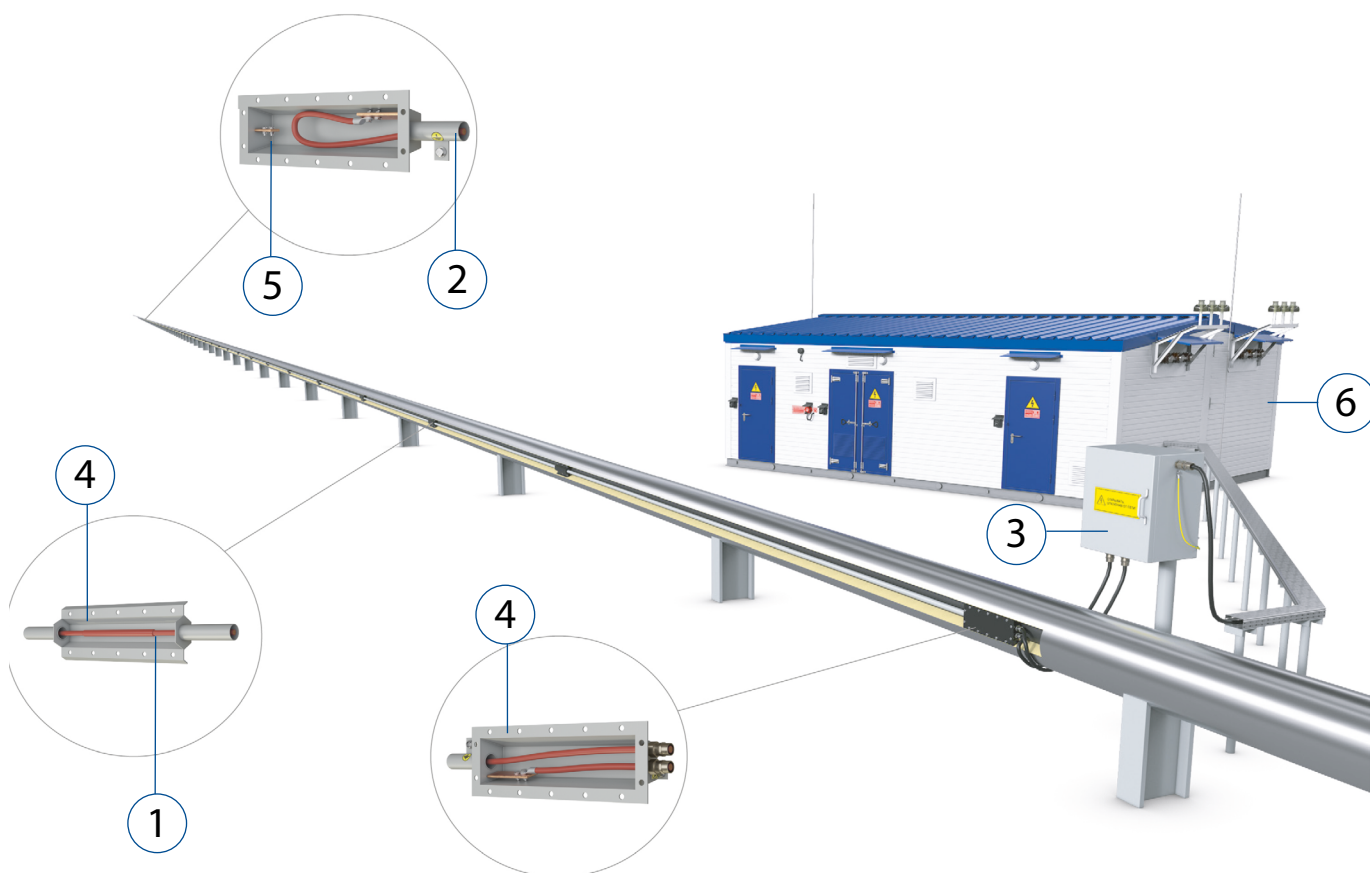
DESCRIPTION

A CK-CE system is used for freezing protection or maintaining material temperature in pipelines over 1,500 m long, enabling tracing pipelines of up to 30 km without a parallel supply line.

A heating element consists of a 20-60 mm OD ferromagnetic steel tube with a wall thickness of min. 3.0 mm accommodating an insulated copper wire sized 10 - 50 mm².

The conductor is electrically connected to the tube at the end of the leg, while AC voltage is introduced between the tube and the conductor at the beginning of the leg. AC voltage is calculated based on the heat output requirement and the heat traced piperun length. The skin effect conductor is powered by a power board installed in a KTP M type packaged transformer substation.

DESIGN



1. CK/Π skin effect conductor
2. Steel heat tube
3. CK/ΠK feed box
4. CK/CK junction box
5. CK/KK termination box
6. KTP M packaged transformer substation

GENERAL SPECIFICATION

Max exposure temperature, max	260°C
Max maintaining temperature, max	200°C
Supply voltage , max	5 kV
Conductor material	Copper
Specific ourput, max	165 W/m
Hazardous area classification	Hazardous, normal
Certificate, Ex protection	Pursuant to CU TR 012/2011, #EAEU RU C-RU. MI062.B.01422/19, 1Ex e IIC T6...T2 Gb X

P.O. DETAILS

A CK-CE system is ordered based on data sheets and specifications.

DESCRIPTION

Fully pre-fab and ready-to-operate packaged transformer substations (KTP M) supply power to the Customer's industrial facilities and process plants and are delivered split into transportable modules.

Fully pre-fab and ready-to-operate KTP M products are delivered with every required system, including internal systems like lighting, ventilation, heating etc., and are fully factory tested in assembly with all utility systems.

GENERAL VIEW

A KTP M product is a modular package disintegrated into transportable modules for shipping by rail, truck, or marine transport. The product is structurally designed as a metal welded frame with rigging elements and connections, insulated with sandwich panels on top and at sides, which thickness is subject to climatic conditions. The colour palette will be consistent with the Customer's brand book.

The KTP M product may be equipped with personal protection equipment and spares, maintenance platforms, load grippers (crossbars) and other accessories as demanded by the Customer.

DESIGN



MODIFICATIONS

Packaged transformer substation units may be used for installation of

- MV cubicles (below 35 kV),
- Dry type and oil-filled power transformers,
- LV cubicles (below 1 kV),
- Control cabinets for EHT system / power supply control / process control / etc.,
- Miscellaneous electricals (capacitors, VSD, UPS etc.)

P.O. DETAILS

A packaged transformer substation (KTP M) is fabricated based on data sheets and specifications

INTERNAL UTILITY SYSTEMS

- Fully pre-fab and ready-to-operate КТП M packaged transformer substations are fitted out with internal systems, i.e.
- lighting (primary and emergency, i.e. escape / standby),
 - heating (electrical, water),
 - ventilation (natural, forced),
 - air conditioning (monoblocks, split systems, including Ex systems),
 - earth and lightning protection,
 - local automation systems suitable for integration into the facility system (power control, telemetry etc.),
 - other systems upon demand (telephony, radio etc.).

GENERAL SPECIFICATION

Seismic stability, MSK64	9
Building fire resistance	1,2,3,4,5
Overall dimensions	as per data sheets
Type of MoC	Noncombustible (HГ)
Internal systems	Included **
Fire and intrusion alarms	Included **
Transportation	Rail, truck, water

* scope of КТП M technical specification

MARKING

Item #
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INTRODUCTION

KSE Platform Server is a hardware and software package used for centralized supervisory control and servicing of EHT equipment in a plant. KSE Platform Server Software is used as part of EHT systems.

KSE Platform Server ware has a three-tier architecture:

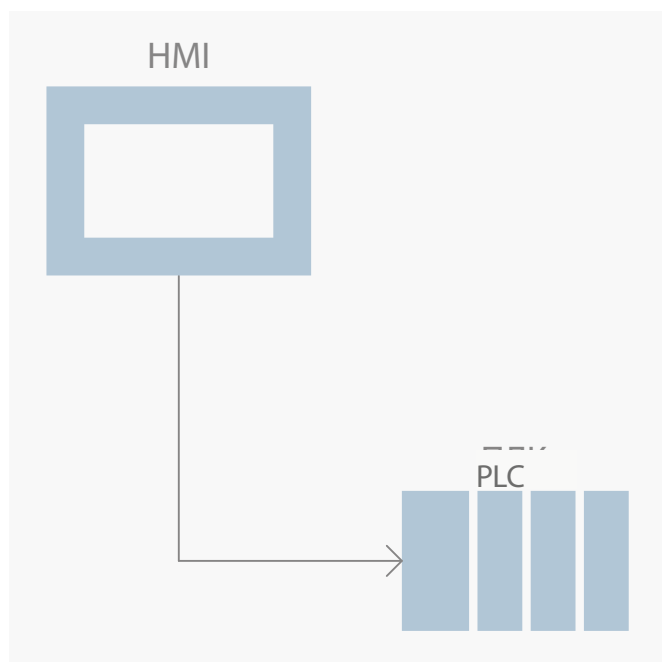
Zero tier is the level of instruments and actuators, and consists of heating line monitor sensors and a required number of actuators (switching devices, heat tracing lines, protection devices).

First tier is the level of PLCs, I/O devices, interface converters that acquire zero tier information, process and generate commands for actuators.

Second tier consists of operator workstations, I/O servers, active network equipment and peripheral devices (printers, external data storage etc.). The second tier provides process and system data access to process personnel, engineers and office staff and managers, and data transfer to the plant process control level.

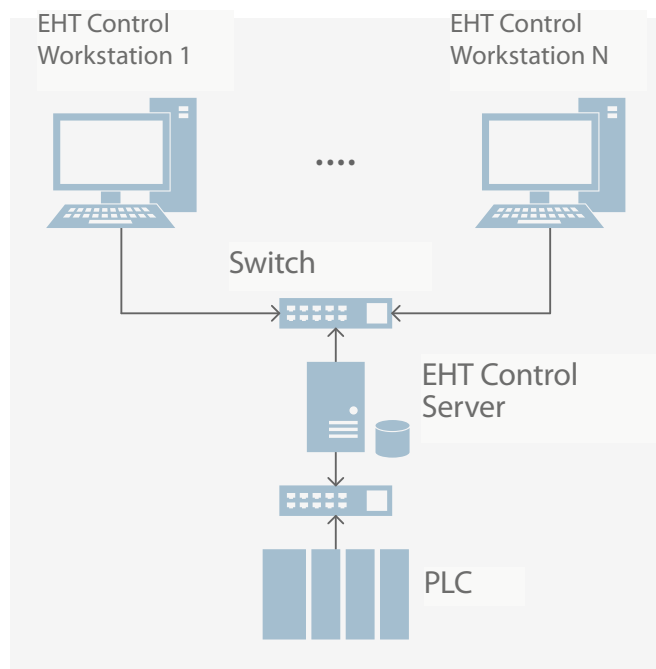
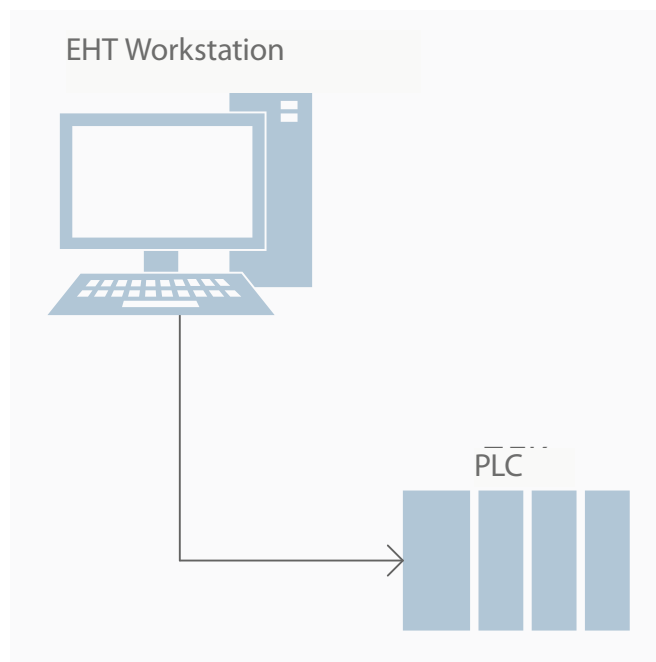
The second tier may be of various types:

1. Cabinet type: HMI panel, minimalistic interface, easy field use and no extra features



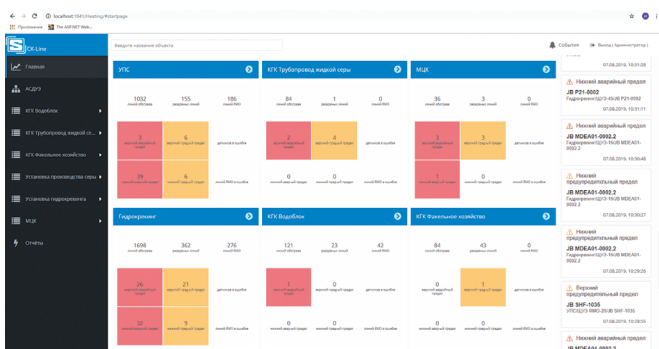
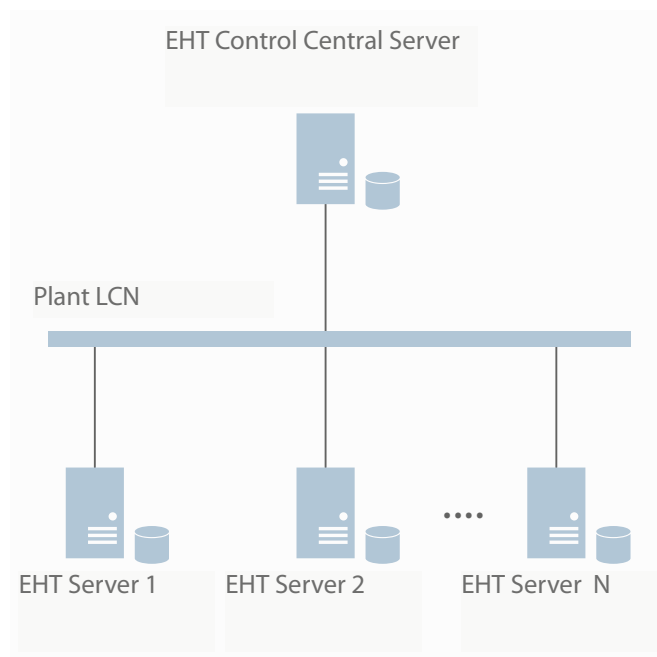
2. Desktop type (SingleNode). A full-fledged EHT system workstation, full data access, best value for money.

3. Desktop type, client-server architecture: 1 server + 2 EHT system workstations. Powerful, reliable and functional. Workstations could well be thin clients, to partially make up for server costs. The number of workstations may be extended at the user's discretion; the workstations may be located remotely in different process rooms and offices. Desktop workstations may be combined with panel PCs on a board.



4. Central heating: data consolidation from several local KSE Platform Server servers. This feature allows for consolidation of control of a few KSE Platform Server hardware and software packages in a single HMI interface. Supervisory control of a large number of field equipment effected via a single control centre. This option involves extra costs, while at the same time, it minimizes the number of staff to service the EHT equipment throughout the plant (field, site etc.).

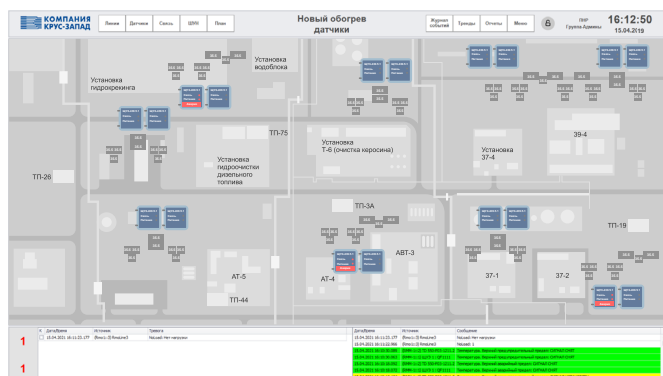
We included a SCADA KSE Platform-based KSE Platform Server software package for all above options except for the first one.



KSE PLATFORM SERVER DESCRIPTION

Basic functions:

- Heat trace line control pursuant to a preset sequence or as defined by operator
- Equipment setting, changing automatic control and regulation modes
- Event acquisition and historization, report generation
- Communications hardware (controller connection diagram) and heating equipment (plant plan depicting lines) troubleshooting feature
- EHT line power supply control (board status mimics, event logging, historical trends)
- Regular EHT line status reporting
- Historical trending based on EHT line characteristics
- Metering of electric power used for heat tracing
- EHT line energy performance



ADVANTAGES

1. EHT line remote control upon the operator's command enables:

- Combined independent control of each EHT line by the relative temperature of heating element plus manual switch on/off feature
- Flexible control of feeding substation loads
- Partial off-loading of feeding substations upon command from the operator's workstation
- Taking equipment offline for maintenance upon command from the workstation
- Enhanced capability of putting EHT equipment on-stream without potential overload of feeding substations

2. Flexible settings and due consideration of EHT line operation modes enables:

- Reducing operational expenses through automated EHT control in the most efficient conditions based on preset temperature settings as required by the process
- Comparison of the current EHT settings against the design values, printout of line reports with non-design settings

3. Keeping a regulatory EHT data base enables:

- Keeping track of EHT equipment run time, including lines, number of switching operations and circuit breaker trips
- Formation of records (EHT line registers, switching equipment registers, EHT line protection equipment registers)
- EHT equipment maintenance scheduling
- Computer-aided make and printing of as-built documentation for EHT equipment maintenance
- Formation of routine switching logs

4. The basic functions of KSE Platform Server enable:

- Investigation of emergency situations through review of the event log and historical trends

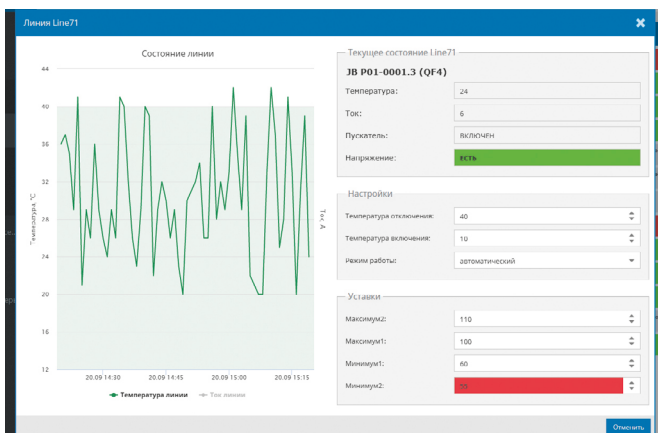
PURPOSES

KSE Platform Server software helps achieve the following purposes:

- Higher energy performance of EHT process
- Lower overhead costs related to EHT maintenance
- Higher reliability of EHT equipment resulting from general

process reliability

- Reduced emergency rate due to upsets of EHT equipment



КТК Водоблок									
Линия 1	Водоблок 1	Водоблок 2	Водоблок 3	Водоблок 4	Водоблок 5	Водоблок 6	Водоблок 7	Водоблок 8	Водоблок 9
Линия 2	Водоблок 10	Водоблок 11	Водоблок 12	Водоблок 13	Водоблок 14	Водоблок 15	Водоблок 16	Водоблок 17	Водоблок 18
Линия 3	Водоблок 19	Водоблок 20	Водоблок 21	Водоблок 22	Водоблок 23	Водоблок 24	Водоблок 25	Водоблок 26	Водоблок 27
Линия 4	Водоблок 28	Водоблок 29	Водоблок 30	Водоблок 31	Водоблок 32	Водоблок 33	Водоблок 34	Водоблок 35	Водоблок 36
Линия 5	Водоблок 37	Водоблок 38	Водоблок 39	Водоблок 40	Водоблок 41	Водоблок 42	Водоблок 43	Водоблок 44	Водоблок 45
Линия 6	Водоблок 46	Водоблок 47	Водоблок 48	Водоблок 49	Водоблок 50	Водоблок 51	Водоблок 52	Водоблок 53	Водоблок 54
Линия 7	Водоблок 55	Водоблок 56	Водоблок 57	Водоблок 58	Водоблок 59	Водоблок 60	Водоблок 61	Водоблок 62	Водоблок 63
Линия 8	Водоблок 64	Водоблок 65	Водоблок 66	Водоблок 67	Водоблок 68	Водоблок 69	Водоблок 70	Водоблок 71	Водоблок 72
Линия 9	Водоблок 73	Водоблок 74	Водоблок 75	Водоблок 76	Водоблок 77	Водоблок 78	Водоблок 79	Водоблок 80	Водоблок 81
Линия 10	Водоблок 82	Водоблок 83	Водоблок 84	Водоблок 85	Водоблок 86	Водоблок 87	Водоблок 88	Водоблок 89	Водоблок 90
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Линия 40	Водоблок 352	Водоблок 353	Водоблок 354	Водоблок 355	Водоблок 356	Водоблок 357	Водоблок 358	Водоблок 359	Водоблок 360
Линия 41	Водоблок 361	Водоблок 362	Водоблок 363	Водоблок 364	Водоблок 365	Водоблок 366	Водоблок 367	Водоблок 368	Водоблок 369
Линия 42	Водоблок 370	Водоблок 371	Водоблок 372	Водоблок 373	Водоблок 374	Водоблок 375	Водоблок 376	Водоблок 377	Водоблок 378
Линия 43	Водоблок 379	Водоблок 380	Водоблок 381	Водоблок 382	Водоблок 383	Водоблок 384	Водоблок 385	Водоблок 386	Водоблок 387
Линия 44	Водоблок 388	Водоблок 389	Водоблок 390	Водоблок 391	Водоблок 392	Водоблок 393	Водоблок 394	Водоблок 395	Водоблок 396
Линия 45	Водоблок 397	Водоблок 398	Водоблок 399	Водоблок 400	Водоблок 401	Водоблок 402	Водоблок 403	Водоблок 404	Водоблок 405
Линия 46	Водоблок 406	Водоблок 407	Водоблок 408	Водоблок 409	Водоблок 410	Водоблок 411	Водоблок 412	Водоблок 413	Водоблок 414
Линия 47	Водоблок 415	Водоблок 416	Водоблок 417	Водоблок 418	Водоблок 419	Водоблок 420	Водоблок 421	Водоблок 422	Водоблок 423
Линия 48	Водоблок 424	Водоблок 425	Водоблок 426	Водоблок 427	Водоблок 428	Водоблок 429	Водоблок 430	Водоблок 431	Водоблок 432
Линия 49	Водоблок 433	Водоблок 434	Водоблок 435	Водоблок 436	Водоблок 437	Водоблок 438	Водоблок 439	Водоблок 440	Водоблок 441
Линия 50	Водоблок 442	Водоблок 443	Водоблок 444	Водоблок 445	Водоблок 446	Водоблок 447	Водоблок 448	Водоблок 449	Водоблок 450
Линия 51	Водоблок 451	Водоблок 452	Водоблок 453	Водоблок 454	Водоблок 455	Водоблок 456	Водоблок 457	Водоблок 458	Водоблок 459
Линия 52	Водоблок 460	Водоблок 461	Водоблок 462	Водоблок 463	Водоблок 464	Водоблок 465	Водоблок 466	Водоблок 467	Водоблок 468
Линия 53	Водоблок 469	Водоблок 470	Водоблок 471	Водоблок 472	Водоблок 473	Водоблок 474	Водоблок 475	Водоблок 476	Водоблок 477
Линия 54	Водоблок 478	Водоблок 479	Водоблок 480	Водоблок 481	Водоблок 482	Водоблок 483	Водоблок 484	Водоблок 485	Водоблок 486
Линия 55	Водоблок 487	Водоблок 488	Водоблок 489	Водоблок 490	Водоблок 491	Водоблок 492	Водоблок 493	Водоблок 494	Водоблок 495
Линия 56	Водоблок 496	Водоблок 497	Водоблок 498	Водоблок 499	Водоблок 500	Водоблок 501	Водоблок 502	Водоблок 503	Водоблок 504
Линия 57	Водоблок 505	Водоблок 506	Водоблок 507	Водоблок 508	Водоблок 509	Водоблок 510	Водоблок 511	Водоблок 512	Водоблок 513
Линия 58	Водоблок 514	Водоблок 515	Водоблок 516	Водоблок 517	Водоблок 518	Водоблок 519	Водоблок 520	Водоблок 521	Водоблок 522
Линия 59	Водоблок 523	Водоблок 524	Водоблок 525	Водоблок 526	Водоблок 527	Водоблок 528	Водоблок 529	Водоблок 530	Водоблок 531
Линия 60	Водоблок 532	Водоблок 533	Водоблок 534	Водоблок 535	Водоблок 536	Водоблок 537	Водоблок 538	Водоблок 539	Водоблок 540
Линия 61	Водоблок 541	Водоблок 542	Водоблок 543	Водоблок 544	Водоблок 545	Водоблок 546	Водоблок 547	Водоблок 548	Водоблок 549
Линия 62	Водоблок 550	Водоблок 551	Водоблок 552	Водоблок 553	Водоблок 554	Водоблок 555	Водоблок 556	Водоблок 557	Водоблок 558
Линия 63	Водоблок 559	Водоблок 560	Водоблок 561	Водоблок 562	Водоблок 563	Водоблок 564	Водоблок 565	Водоблок 566	Водоблок 567
Линия 64	Водоблок 568	Водоблок 569	Водоблок 570	Водоблок 571	Водоблок 572	Водоблок 573	Водоблок 574	Водоблок 575	Водоблок 576
Линия 65	Водоблок 577	Водоблок 578	Водоблок 579	Водоблок 580	Водоблок 581	Водоблок 582	Водоблок 583	Водоблок 584	Водоблок 585
Линия 66	Водоблок 586	Водоблок 587	Водоблок 588	Водоблок 589	Водоблок 590	Водоблок 591	Водоблок 592	Водоблок 593	Водоблок 594
Линия 67	Водоблок 595	Водоблок 596	Водоблок 597	Водоблок 598	Водоблок 599	Водоблок 600	Водоблок 601	Водоблок 602	Водоблок 603
Линия 68	Водоблок 604	Водоблок 605	Водоблок 606	Водоблок 607	Водоблок 608	Водоблок 609	Водоблок 610	Водоблок 611	Водоблок 612
Линия 69	Водоблок 613	Водоблок 614	Водоблок 615	Водоблок 616	Водоблок 617	Водоблок 618	Водоблок 619	Водоблок 620	Водоблок 621
Линия 70	Водоблок 622	Водоблок 623	Водоблок 624	Водоблок 625	Водоблок 626	Водоблок 627	Водоблок 628	Водоблок 629	Водоблок 630
Линия 71	Водоблок 631	Водоблок 632	Водоблок 633	Водоблок 634	Водоблок 635	Водоблок 636	Водоблок 637	Водоблок 638	Водоблок 639
Линия 72	Водоблок 640	Водоблок 641	Водоблок 642	Водоблок 643	Водоблок 644	Водоблок 645	Водоблок 646	Водоблок 647	Водоблок 648
Линия 73	Водоблок 649	Водоблок 650	Водоблок 651	Водоблок 652	Водоблок 653	Водоблок 654	Водоблок 655	Водоблок 656	Водоблок 657
Линия 74	Водоблок 658	Водоблок 659	Водоблок 660	Водоблок 661	Водоблок 662	Водоблок 663	Водоблок 664	Водоблок 665	Водоблок 666
Линия 75	Водоблок 667	Водоблок 668	Водоблок 669	Водоблок 670	Водоблок 671	Водоблок 672	Водоблок 673	Водоблок 674	Водоблок 675
Линия 76	Водоблок 676	Водоблок 677	Водоблок 678	Водоблок 679	Водоблок 680	Водоблок 681	Водоблок 682	Водоблок 683	Водоблок 684
Линия 77	Водоблок 685	Водоблок 686	Водоблок 687	Водоблок 688	Водоблок 689	Водоблок 690	Водоблок 691	Водоблок 692	Водоблок 693
Линия 78	Водоблок 694	Водоблок 695	Водоблок 696	Водоблок 697	Водоблок 698	Водоблок 699	Водоблок 700	Водоблок 701	Водоблок 702
Линия 79	Водоблок 703	Водоблок 704	Водоблок 705	Водоблок 706	Водоблок 707	Водоблок 708	Водоблок 709	Водоблок 710	Водоблок 711
Линия 80	Водоблок 712	Водоблок 713	Водоблок 714	Водоблок 715	Водоблок 716	Водоблок 717	Водоблок 718	Водоблок 719	Водоблок 720
Линия 81	Водоблок 721	Водоблок 722	Водоблок 723	Водоблок 724	Водоблок 725	Водоблок 726	Водоблок 727	Водоблок 728	Водоблок 729
Линия 82	Водоблок 730	Водоблок 731	Водоблок 732	Водоблок 733	Водоблок 734	Водоблок 735	Водоблок 736	Водоблок 737	Водоблок 738
Линия 83	Водоблок 739	Водоблок 740	Водоблок 741	Водоблок 742	Водоблок 743	Водоблок 744	Водоблок 745	Водоблок 746	Водоблок 747
Линия 84	Водоблок 748	Водоблок 749	Водоблок 750	Водоблок 751	Водоблок 752	Водоблок 753	Водоблок 754	Водоблок 755	Водоблок 756
Линия 85	Водоблок 757	Водоблок 758	Водоблок 759	Водоблок 760	Водоблок 761	Водоблок 762	Водоблок 763	Водоблок 764	Водоблок 765
Линия 86	Водоблок 766	Водоблок 767	Водоблок 768	Водоблок 769	Водоблок 770	Водоблок 771	Водоблок 772	Водоблок 773	Водоблок 774
Линия 87	Водоблок 775	Водоблок 776	Водоблок 777	Водоблок 778	Водоблок 779	Водоблок 780	Водоблок 781	Водоблок 782	Водоблок 783
Линия 88	Водоблок 784	Водоблок 785	Водоблок 786	Водоблок 787	Водоблок 788	Водоблок 789	Водоблок 790	Водоблок 791	Водоблок 792
Линия 89	Водоблок 793	Водоблок 794	Водоблок 795	Водоблок 796	Водоблок 797	Водоблок 798	Водоблок 799	Водоблок 800	Водоблок 801
Линия 90	Водоблок 802	Водоблок 803	Водоблок 804	Водоблок 805	Водоблок 806	Водоблок 807	Водоблок 808	Водоблок 809	Водоблок 810
Линия 91	Водоблок 811	Водоблок 812	Водоблок 813	Водоблок 814	Водоблок 815	Водоблок 816	Водоблок 817	Водоблок 818	Водоблок 819
Линия 92	Водоблок 820	Водоблок 821	Водоблок 822	Водоблок 823	Водоблок 824	Водоблок 825	Водоблок 826	Водоблок 827	Водоблок 828
Линия 93	Водоблок 829	Водоблок 830	Водоблок 831	Водоблок 832	Водоблок 833	Водоблок 834	Водоблок 835	Водоблок 836	Водоблок 837
Линия 94	Водоблок 838	Водоблок 839	Водоблок 840	Водоблок 841	Водоблок 842	Водоблок 843	Водоблок 844	Водоблок 845	Водоблок 846
Линия 95	Водоблок 847	Водоблок 848	Водоблок 849	Водоблок 850	Водоблок				

SYSTEM ARCHITECTURE

- Client-server architecture
- OPC UA as a transport protocol
- Failure-free configurations made possible with backup of client applications and servers
- Modbus - client
- OPCUA - server
- OPCUA - client
- OPCDA - client

ENVIRONMENT

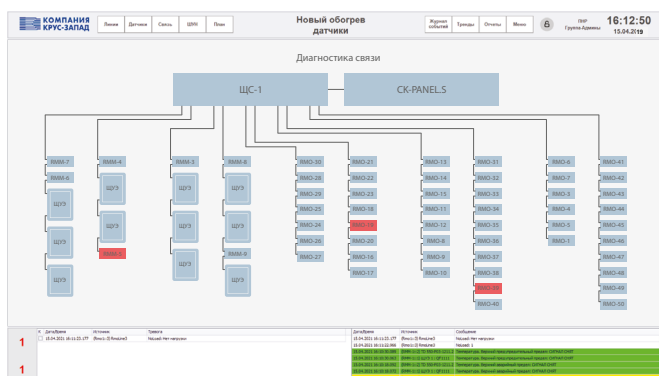
- An extensive environment including a mimic editor, user script support, running mimics in debug mode from studio, convenient tools for app diagnostics and debugging
- Multiple user development capability
- Supported development over network (development studio uses OPCUA protocol to connect to the server)
- Powerful and simple tools for data backup and recovery integrated into the environment

DATA HISTORIAN

- High performance data historian: data storage, aggregation, and retrieval
- All configurations and historical data are stored in a single embedded data base
- A long list of supported units (as per OPCUA specification)

MIMICS

- Vector graphics supported
- Embedded graphics controls library for EHT implementation
- A tool is provided to create / expand and embedded graphics controls library
- HMI windowing capability

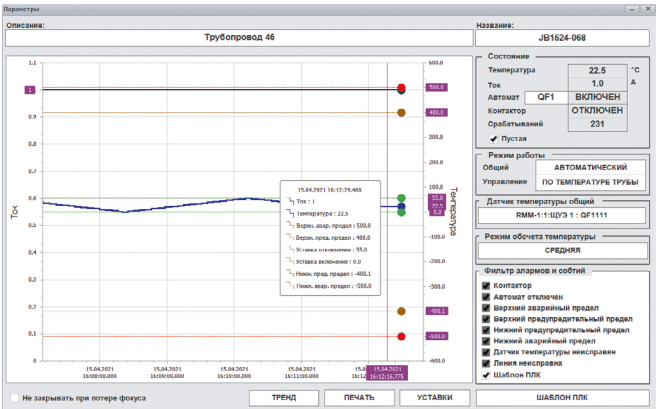
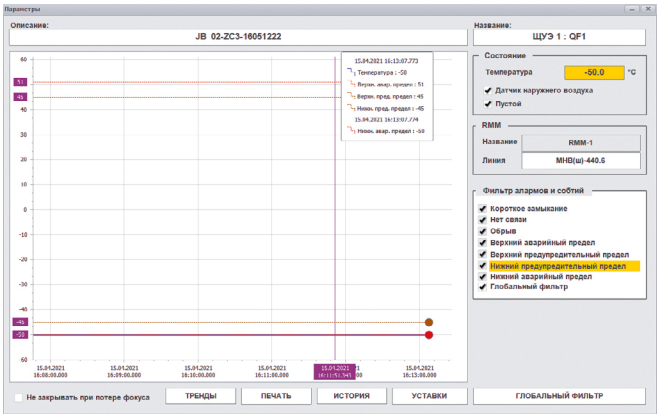


EVENTS

- Embedded emergency and warning event display client (current events, histories)
- Embedded alarm display client

TRENDS

- Embedded graphic trend display client (current and historical data)



REPORTS

- Embedded report editor: on-demand or scheduled report generation, report display in API operator environment

API

```
1  -- функция добавления группы
2  function addgroup(groupId, groupFolder)
3      local err = nil
4      local groupName = 'Group' .. tostring(groupId)
5      local groupFolder = groupFolder or groupFolder
6      if groupFolder == nil then
7          groupFolder, err = groupsFolder:createTagFolder(groupName, groupName, '')
8          if err == nil then return err and
9              groupFolder:AddRoleWritePermission('setters')
10             groupFolder:AddRoleWritePermission('engineers')
11         else
12             return 'Группа '..groupName..' уже существует'
13         end
14         return nil
15     end
16
17 -- функция удаления группы
18 function deletegroup(groupId, groupFolder)
19     local err = nil
20     local groupName = 'Group' .. tostring(groupId)
21     local groupFolder = groupFolder or groupFolder
22     if groupFolder == nil then return 'Группа '..groupName..' не существует' and
23         groupFolder:Delete()
24     end
25     return nil
26 end
```

- User client implementation capability (full server access via external API)

SAFETY

- Compatibility with Kaspersky Industrial Cyber Security software endorsed by Kaspersky Lab
- Built-in SCADA integrity control tool
- Safety functions: password complexity configuration, password history

KSE Platform Server SERVICE

EHT Service Software

DESCRIPTION

- KSE Platform Server SERVICE Software is intended
- to create a well-structured EHT system data base covering all facilities,
 - to optimize and increase the performance efficiency of EHT maintenance personnel, and
 - to facilitate and streamline use of the application by the maintenance personnel.
- KSE Platform Server SERVICE is used
- to find out which equipment needs to be serviced / repaired on-site;
 - to record any changes in equipment location resulting from re-installation;
 - to keep track of any activities done on the equipment, with dates and names of the responsible personnel;
 - to form a report of findings in native (Excel) format.



FEATURES

KSE Platform Server SERVICE has the following functionality:

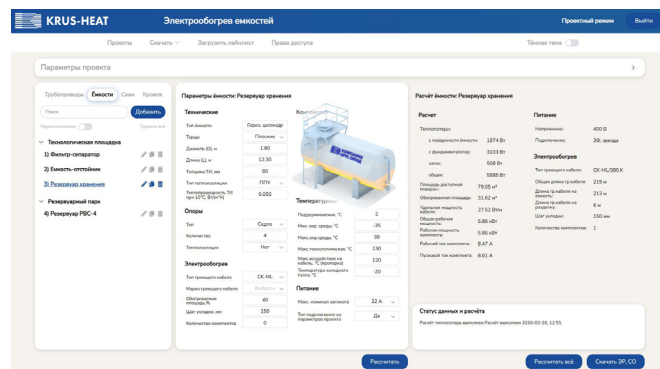
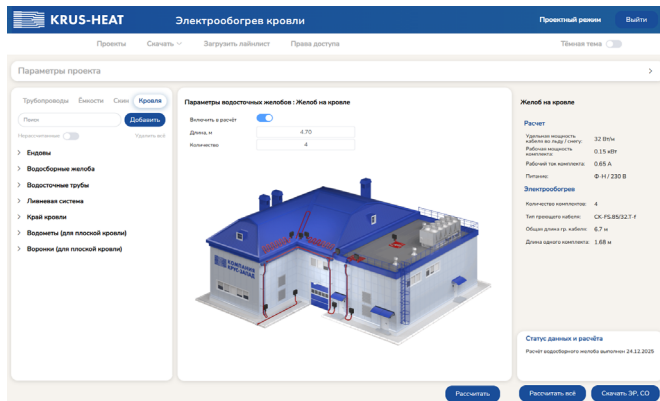
1. Mobility – the app can be installed both on a PC and on a mobile or tablet
2. Rapid access to information – the app allows quick access to technical details or required variables of the chosen facility via search function, since all on-site electrical equipment location data are stored in digital form
3. Scalability – new objects can be added on the plan and the existing objects can be modified
4. Photo reporting – photo reporting is available for individual EHT elements

DESCRIPTION

KRUS-HEAT is an engineering tool for EHT systems which is applied for EHT simulation using all types of self-regulating and constant power cables and skin effect heat tracing systems.

Product Capability

- Piping heat tracing calculations
- Vessel heat tracing calculations
- Data upload/download
- Formation of an equipment specification
- Automatic P.O. placement based on EHT calculations
- Advantages:
 - Selection of heat trace cables from various manufacturers (subject to Customer's requirements)
 - Automatic selection of a heat trace cable for a pipeline or vessel based on a stabilized model in conformity with the Russian regulations
 - Quick data upload/download
 - High accuracy
 - User-friendly interface and a Russian language manual



А	В	С	Д	Е	Ж	З	И	К	Л	М	Н	О	П	Р	С	Т	У	В	Х	Ц	АА
12	МВБ-1000-ТМ-06-307-012	250	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
13	СН 50500-FBO-001.1	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
14	СН 50500-FBO-001.2	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
15	СН 50500-FBO-001.3	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
16	СН 50500-FBO-001.4	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
17	СН 50500-FBO-001.5	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
18	СН 50500-FBO-001.6	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
19	СН 50500-FBO-001.7	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
20	СН 50500-FBO-001.8	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
21	СН 50500-FBO-001.9	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
22	СН 50500-FBO-001.10	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
23	СН 50500-FBO-001.11	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
24	СН 50500-FBO-001.12	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
25	СН 50500-FBO-001.13	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
26	СН 50500-FBO-001.14	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
27	СН 50500-FBO-001.15	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
28	СН 50500-FBO-001.16	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
29	СН 50500-FBO-001.17	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
30	СН 50500-FBO-001.18	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
31	СН 50500-FBO-001.19	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250
32	СН 50500-FBO-001.20	120	1815	-	25	-	-	-	65	95	250	250	250	250	250	250	250	250	250	250	250

А	В	С	Д	Е	Ж	З	И	К
1	Наименование и техническая характеристика	Спецификация оборудования и материалов	Тип, марка, обозначение документа, описания листа	Мат. обозначение (фирма-поставщик)	Завод-изготовитель (фирма-поставщик)	Единица измерения	Количество	Масса единицы, кг
2	Позиция							
3	1	Трубопроводы						
4	2	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	3	
5	3	Диаметр: 100 мм	Диаметр: 100 мм			шт.	20	
6	4	Длина: 100 м	Длина: 100 м			шт.	2	
7	5	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	52	
8	6	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	3	
9	7	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	243	
10	8	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	284	
11	9	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	22	
12	10	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	3	
13	11	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	338	
14	12	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	566	
15	13	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	1	
16	14	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	505	
17	15	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	8075	
18	16	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	437	
19	17	Материал: сталь, нержавеющая сталь	Материал: сталь, нержавеющая сталь			шт.	27	

