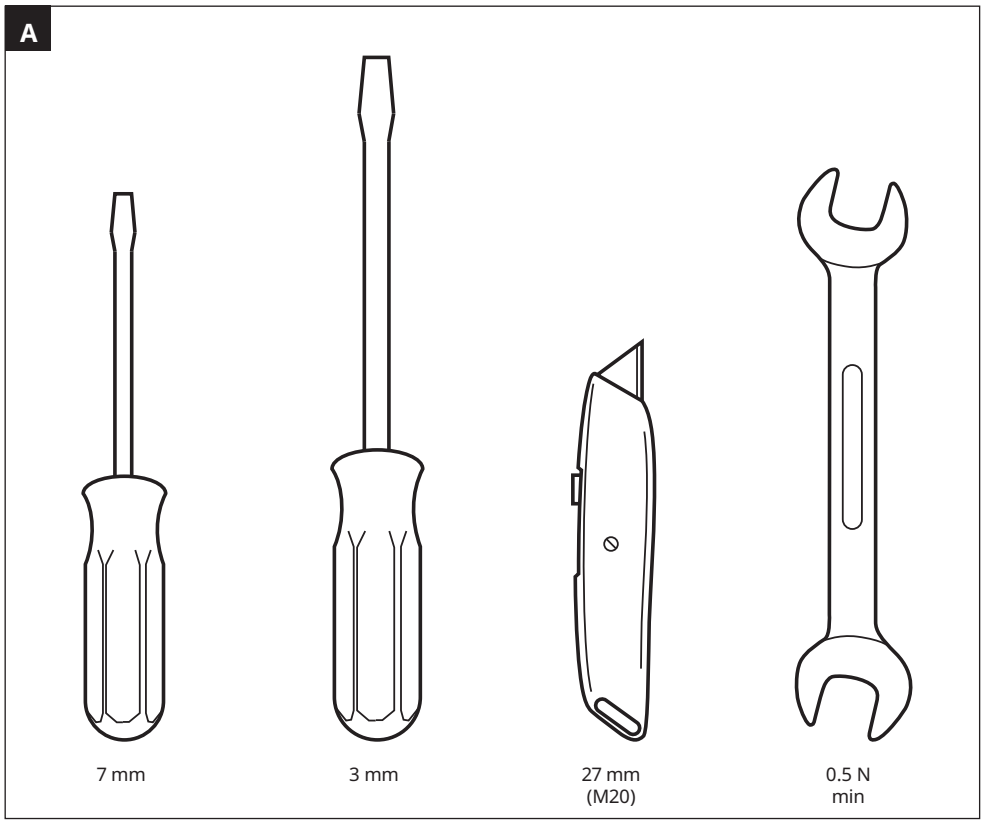
Raychem

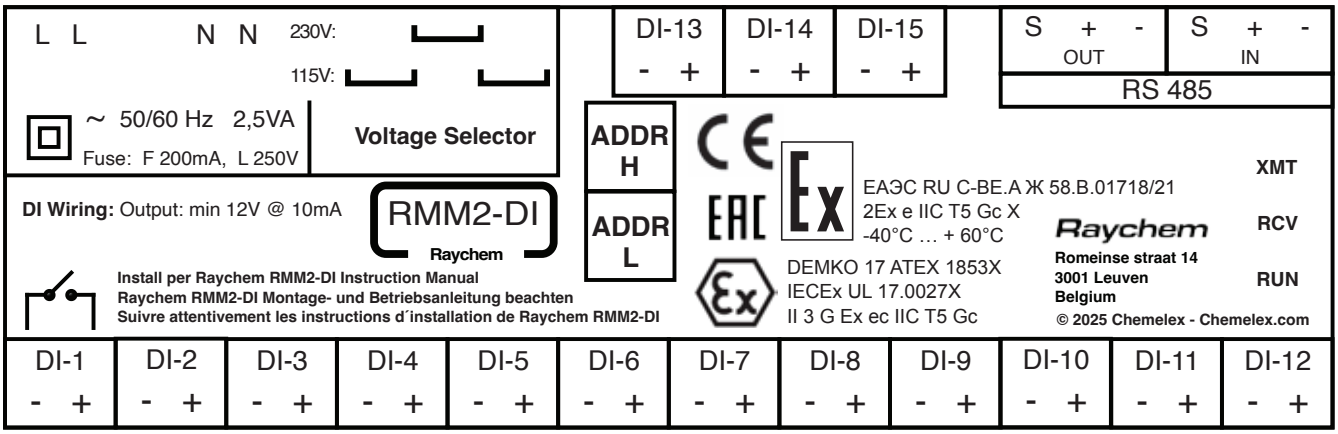
RMM2-DI

Remote monitoring module for digital inputs

chemelex


A
7 mm
3 mm
27 mm
(M20)
0.5 N
min

RMM2-DI


L L
N N
230V:
115V:
~ 50/60 Hz 2,5VA
Fuse: F 200mA, L 250V
Voltage Selector
DI Wiring: Output: min 12V @ 10mA
RMM2-DI
Raychem
Install per Raychem RMM2-DI Instruction Manual
Raychem RMM2-DI Montage- und Betriebsanleitung beachten
Suivre attentivement les instructions d´installation de Raychem RMM2-DI
DI-13 - +
DI-14 - +
DI-15 - +
ADDR H
ADDR L
EAЭC RU C-BE.A Ж 58.B.01718/21
2Ex e IIC T5 Gc X
-40°C … + 60°C
DEMKO 17 ATEX 1853X
IECEx UL 17.0027X
II 3 G Ex ec IIC T5 Gc
S + - OUT
S + - IN
RS 485
XMT
RCV
RUN
Raychem
Romeinse straat 14
3001 Leuven
Belgium
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DI-1 - +
DI-2 - +
DI-3 - +
DI-4 - +
DI-5 - +
DI-6 - +
DI-7 - +
DI-8 - +
DI-9 - +
DI-10 - +
DI-11 - +
DI-12 - +

RMM2-DI-8GL-EX-E and RMM2-DI-15GL-EX-E system

	DEMKO 17 ATEX 1760X II 3 G Ex ec IIC T5 Gc II 3 D Ex tc IIIC T60°C Dc -40°C ≤ Tamb ≤ +60°C
	IECEx UL 17.0026X Ex ec IIC T5 Gc Ex tc IIIC T60°C Dc -40°C ≤ Tamb ≤ +60°C
	RU C-BE.АЖ58.B.01718/21

RMM2-DI module

	DEMKO 17 ATEX 1853X UL22UKEX2685X II 3 G Ex ec IIC T5 Gc -40°C ≤ Tamb ≤ +60°C
	IECEx UL 17.0027X Ex ec IIC T5 Gc
	RU C-BE.АЖ58.B.01718/21

CONDITIONS OF SAFE USE (RMM2-DI)

The equipment shall only be used in an area of at least pollution degree 2, as defined in EN/IEC 60664-1. The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP 54 in accordance with EN 60079-7.

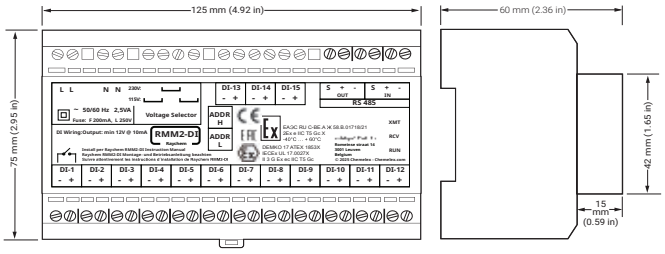
⚠ WARNING

This component is an electrical device. It must be installed correctly to ensure proper operation and to prevent frozen pipes, shock or fire. Read and carefully follow all the installation instructions.

Specific conditions of use (RMM2-DI-8GL-EX-E and RMM2-DI-15GL-EX-E)

- The equipment shall only be used in an area of maximum pollution degree 2, as defined in EN 60664-1.
- All unused holes will be closed by means of a suitably certified Ex blanking elements:
- Cable glands shall be approved M20 glands, (e.g.brand Bimed, type HIBM-X2).
- WARNING – Cable gland, Potential electrostatic charging hazard. Clean only with antistatic clothes.
- The cable glands/plugs and the relevant cables, shall be used where a protection against the risk of mechanical damage is provided, when they are suitable for low mechanical risk (4J) only.

DESCRIPTION



The Remote Monitoring Module for Digital Inputs (Raychem RMM2-DI) provides the capability for the Raychem NGC controller family to read the status of devices remotely, like circuit breakers, and can link them back to the electrical heat-tracing circuits.

The RMM2-DI has in total 15 digital inputs. Multiple RMM2-DI units can communicate via a single RS-485 cable with a single User Interface, providing centralized monitoring capabilities. Depending upon the control system selected the number of RMM2-DI units per system can differ. For technical assistance, call your local Chemelex representative or the Chemelex service center.

Specifications

Part number	1244-018083
EAN	5414506018479
Supply voltage (nominal)	115/230 VAC, ±10%, jumper selectable, 50/60 Hz
Power consumption	2,5 VA
Ambient operating range:	–40°C to +60°C (-40 °F to 140 °F)
Relative humidity:	5 to 95%, noncondensing
Digital Input:	2-wire, 12V, 10 mA minimal output
Digital Input wire, RS-485 & power connections:	2 x 1.5 mm^2 cable (default). Terminals can handle 0.2 mm^2 to 4 mm^2 (AWG 12-24) for solid wire, 0.2 mm^2 to 2.5 mm^2 (AWG 14-24) for stranded wire
RS-485 cable:	Shielded, single twisted pair, max. 1,200 m (~3,900 feet)
Replaceable fuse:	F 200 mA/250 V, Wickmann part number 19370-034-K (FAST BLOW)

Parts (Supplied)

- RMM2-DI installation instruction
- RMM2-DI Heat tracing Remote Monitoring Module for Digital Inputs
- 1 x Replacement fuse
- 1 x Jumper for voltage selection

INSTALLATION OF RMM2-DI-XGL-EX-E MODULE IN ENCLOSURE IN HAZARDOUS AREAS

The RMM2-DI unit is available as hazardous area approved unit. The RMM2-DI is mounted in an enclosure and both together are approved for Hazardous Locations. The following table shows various hazardous area approved RMM2-DI-8GL-EX-E AND RMM2-DI- 15GL-EX-E solutions. All units contain the RMM2-DI units inside the enclosure.

Part number	Part description	Enclosure size [mm] x [mm] x [mm]	# RMM2-DI	# Glands for DI signals
1244-018858	RMM2-DI-8GL-EX-E	160x260x91	1	8
1244-018859	RMM2-DI-15GL-EX-E	160x360x91	1	15

All shipments include a replacement fuse and jumper for voltage selection.

Info: for convenience, the different part descriptions will be referenced as RMM2-DI-xGL-EX-E in this document, with the 'x' referring to the number of glands in the box for Digital Input signals.

Installation materials (Not supplied)

- Fasteners: 4 screws for 6 mm holes for mounting enclosures

Installation procedure for the RMM2-DI-xGL-EX-E

- Mount RMM2-DI-xGL-EX-E enclosure and install cables
- Connect power and earth wiring and select voltage operating range using the supplied jumpers
- Connect DI wiring to the RMM2-DI-xGL-EX-E

Notes

- Installation to be performed by suitable trained personnel
- Keep the RMM2-DI clean and dry prior to installation to avoid damage to internal components
- When RMM2-DI is used for DIN-rail installation in a local customised panel or enclosure, additional earth terminals for DI-wiring and power cables may be required when earthing or shielding is applied.. Terminals shall be able to handle wires from 0.2 to 4 mm^2

Mount RMM2-DI-xGL-EX-E enclosure and install cables

The enclosure is suitable for use in ATEX / IECEx Zone2 areas. Do not mount the enclosure in Zone 1 or Zone 0 areas. For installations in Zone 1 areas contact Chemelex. Mount the enclosure using suitable screws (Hole diameter 6 mm). Install power cables, RS-485 cable(s) and Digital Input cables into the enclosure using glands supplied. Keep stopping plugs in unused entries.

Installation and configuration procedure RMM2-DI

The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with EN/IEC 60079-7.

Modbus address

The Modbus address is set via 2 hexadecimal rotary switches. ADDR H is setting the high address number;
ADDR L is for the low address number. See appendix A for conversion between hexadecimal and decimal address range.

Installation of power supply and earth wiring

- Select the voltage operating range. Connect the supplied wire jumpers to the appropriate terminals to select input voltage. The RMM2-DI is supplied with a jumper to be used for 230 volts.
- Connect wiring from power source to designated terminals on RMM2-DI. Use only copper conductors. Connect power cable wires to the terminals marked L and N on the RMM2-DI. If power is being daisy chained, be sure to maintain polarity of L and N wiring for incoming and outgoing wires. The terminals accept stranded wires from 0.2 – 2.5 mm^2. (0.2 - 4 mm^2 solid wire).

Installation digital input wiring

- Connect Digital Input cables to the RMM2-DI

REMARK

The RMM2-DI has two terminals per Digital input. The Minimum power per DI connection supplied by RMM2-DI module is 12V 10mA (Sink/source). The resistance of the sum of the closed contact plus the resistance of the wire to and from the contact may not exceed 10 Ohm.

Record the location/identification for each digital input

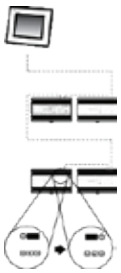
RMM2-DI terminal number	Device identification on drawing #	Device Tag description
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

RS-485 Modbus address and wiring

SELECT Raychem RS-485 ADDRESS AND CONNECT THE RS-485 BUS CABLES

- Each RMM2-DI connected to a Raychem NGC-control and monitoring system must have a unique address; if two RMM2-DIs are assigned the same address, communication faults will result. To ensure that an unique address to each RMM2-DI unit has been assigned, apply the following
  - Review the Raychem NGC system layout; if a layout document does not exist, create one. If it has not already been done, assign an RS-485 address to each RMM2-DI (range from 1 to 247).
  - If you are adding one or more RMM2-DI units to an existing Raychem NGC network, confirm that the RS-485 addresses for existing RMM2-DI units correspond to the system layout. See for details the programming guide of the Raychem NGC system. By checking the RS-485 addresses on an existing system, you can avoid potential conflicts that would be confusing and time consuming to troubleshoot otherwise. Record the RS-485 address selected for the Remote Monitoring Module you are currently installing, and label the exterior of the enclosure with the address assigned to the RMM2-DI. See for address range and hexadecimal address switch appendix A.

- Do not make connections to the RS-485 bus while it is connected to an operating Raychem NGC network. Damage and/or alarms could result. The RS-485 bus allows units with unique addresses to be connected together along a common bus. To add a new unit to the network, simply connect the RS-485 bus from the last unit to the new one, or insert the new unit between two existing units on the bus. The order in which units are attached to the RS-485 bus does not matter. There are just two constraints on the RS-485 network
  - Each RMM2-DI must be assigned a unique address.
  - The RS-485 bus must be a continuous string from the first network device to the last RMM2-DI in the system.



Note

The RS-485 bus operates at 5 V, and equipment connected to it could be damaged by exposure to higher voltages. Take precautions to avoid exposing the RS-485 wiring to discharge of static electricity or other sources of high voltage potential; in particular, avoid contact with the power supply wiring.

The RMM2-DI has two sets of terminals for connections to the RS-485 bus. One terminal block allows the RMM2-DI to connect to the RS-485 bus, the second allows a continuation of the bus to other RMM2-DI units on the network. Observe polarity, which is indicated on the RMM2-DI. Connect the incoming RS-485 bus to the set of terminals marked "IN", observing the polarity noted on the cover of the RMM2-DI; use the terminal marked "S" for the shielof the RS-485 cable. Connect the continuation of the RS-485 bus to the set of terminals marked "OUT" in the same manner (not required for the last RMM2-DI in the network).

IMPORTANT

Do not connect the shield of the RS-485 cables to the general provided grounding terminal. Connect the shield only to the RMM2-DI terminals provided. To avoid the potential for spurious ground loops, the RS-485 cable shield should be connected to ground only in the Raychem unit. For the last RMM2-DI in the network, terminate the RS-485 bus by removing the shorting block on jumper location from 2–3 and placing it across pins 1–2 (See drawing).

Decimal	Hex (High, Low)	Decimal	Hex (High, Low)	Decimal	Hex (High, Low)	Decimal	Hex (High, Low)	Decimal	Hex (High, Low)
1	0,1	36	2,4	71	4,7	106	6,A	141	8,D
2	0,2	37	2,5	72	4,8	107	6,B	142	8,E
3	0,3	38	2,6	73	4,9	108	6,C	143	8,F
4	0,4	39	2,7	74	4,A	109	6,D	144	9,0
5	0,5	40	2,8	75	4,B	110	6,E	145	9,1
6	0,6	41	2,9	76	4,C	111	6,F	146	9,2
7	0,7	42	2,A	77	4,D	112	7,0	147	9,3
8	0,8	43	2,B	78	4,E	113	7,1	148	9,4
9	0,9	44	2,C	79	4,F	114	7,2	149	9,5
10	0,A	45	2,D	80	5,0	115	7,3	150	9,6
11	0,B	46	2,E	81	5,1	116	7,4	151	9,7
12	0,C	47	2,F	82	5,2	117	7,5	152	9,8
13	0,D	48	3,0	83	5,3	118	7,6	153	9,9
14	0,E	49	3,1	84	5,4	119	7,7	154	9,A
15	0,F	50	3,2	85	5,5	120	7,8	155	9,B
16	1,0	51	3,3	86	5,6	121	7,9	156	9,C
17	1,1	52	3,4	87	5,7	122	7,A	157	9,D
18	1,2	53	3,5	88	5,8	123	7,B	158	9,E
19	1,3	54	3,6	89	5,9	124	7,C	159	9,F
20	1,4	55	3,7	90	5,A	125	7,D	160	A,0
21	1,5	56	3,8	91	5,B	126	7,E	161	A,1
22	1,6	57	3,9	92	5,C	127	7,F	162	A,2
23	1,7	58	3,A	93	5,D	128	8,0	163	A,3

Decimal	Hex (High, Low)	Decimal	Hex (High, Low)	Decimal	Hex (High, Low)	Decimal	Hex (High, Low)	Decimal	Hex (High, Low)
24	1,8	59	3,B	94	5,E	129	8,1	164	A,4
25	1,9	60	3,C	95	5,F	130	8,2	165	A,5
26	1,A	61	3,D	96	6,0	131	8,3	166	A,6
27	1,B	62	3,E	97	6,1	132	8,4	167	A,7
28	1,C	63	3,F	98	6,2	133	8,5	168	A,8
29	1,D	64	4,0	99	6,3	134	8,6	169	A,9
30	1,E	65	4,1	100	6,4	135	8,7	170	A,A
31	1,F	66	4,2	101	6,5	136	8,8	171	A,B
32	2,0	67	4,3	102	6,6	137	8,9	172	A,C
33	2,1	68	4,4	103	6,7	138	8,A	173	A,D
34	2,2	69	4,5	104	6,8	139	8,B	174	A,E
35	2,3	70	4,6	105	6,9	140	8,C	175	A,F
176	B,0	192	C,0	208	D,0	224	E,0	240	F,0
177	B,1	193	C,1	209	D,1	225	E,1	241	F,1
178	B,2	194	C,2	210	D,2	226	E,2	242	F,2
179	B,3	195	C,3	211	D,3	227	E,3	243	F,3
180	B,4	196	C,4	212	D,4	228	E,4	244	F,4
181	B,5	197	C,5	213	D,5	229	E,5	245	F,5
182	B,6	198	C,6	214	D,6	230	E,6	246	F,6
183	B,7	199	C,7	215	D,7	231	E,7	247	F,7
184	B,8	200	C,8	216	D,8	232			
185	B,9	201	C,9	217	D,9	233			
186	B,A	202	C,A	218	D,A	234			
187	B,B	203	C,B	219	D,B	235			
188	B,C	204	C,C	220	D,C	236			
189	B,D	205	C,D	221	D,D	237			
190	B,E	206	C,E	222	D,E	238			
191	B,F	207	C,F	223	D,F	239			

Note: Modbus numbers between 248 and 255 cannot be used.

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