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| <b>MAŁKOWSKI MARTECH</b><br>Czołowo, ul. Leśna 57, 62-035 Kórnik<br>tel. +48 61 222 75 00 fax. +48 61 222 75 01<br>email: biuro@malkowski.pl, www.malkowski.pl | <b>FIRE PROTECTION BI-PARTING<br/>         SLIDING DOOR type: MARC-R EI120</b> | number:<br><b>MM_R-2en</b>    |
|  | <b>FIRE PROTECTION<br/>         DEVICE CHARACTERISTICS</b>                     | revision:<br><b>2 01/2021</b> |

## 1. DEVICE REQUIREMENTS

### 1.1 GENERAL REQUIREMENTS

- fire protection doors are construction products defined in the EN 16034:2014-11 harmonised product reference standard. Therefore, they must be labelled with the “CE” mark, and the prerequisite for marketing them is the manufacturer’s obligation to issue a related Declaration of Performance which indicates their intended use in a building,
- the Declaration of Performance issued for fire protection doors should have parameters specified for at least one of the following essential fireproof product characteristics in compliance with the product reference standards, i.e. EN 16034:2014-11 and EN 13241+A2:2016-10:
  - fire resistance,
  - ability to release and durability of the ability to release,
  - self-closing,
  - durability of self-closing against degradation,
  - resistance to wind load;

### 1.2 REQUIREMENTS FOR BUILDING/INSTALLATION CONDITIONS

- possibility to install in construction partitions made of various materials,
- both indoor and outdoor application,
- possibility of corridor installation;

### 1.3 REQUIRED DEVICE PARAMETERS

- fire resistance class range as per PN-EN 13501-2:2016: **EI<sub>1</sub>30, EI<sub>1</sub>60, EI<sub>2</sub>60, EI<sub>2</sub>120**,
- reaction to fire class as per PN-EN 13501-1:2019-02: **A1**,
- resistance to wind load as per PN-EN 12424:2002: **1, 2, 3 or 4**,
- use category (number of working cycles) as per EN 16034:2014-11: **C0, C1, C2, C3, C4 or C5**,
- anti-corrosion class as per PN-EN ISO 12944-2:2018: **C1, C2, C3, C4 or C5**,
- acoustic insulating power as per PN-EN ISO 717-1:2013: at least **25** dB, optionally up to **45** dB,
- thermal insulating power as per PN-EN 12428:2013-06: do **1,5** W/m<sup>2</sup>K,
- door leaf weight: up to **30** kg/m<sup>2</sup> for class EI60 and up to **40** kg/m<sup>2</sup> for class EI120;

### 1.4 REQUIREMENTS FOR DEVICE DESIGN/EQUIPEMENT

- possibility to manufacture with pass doors, also without a threshold,
- possibility to install a larger number of pass doors,
- possibility to manufacture in smoke-proof version class **S<sub>a</sub>** and **S<sub>200</sub>** as per PN-EN 13501-2:2016,
- possibility to manufacture as ex-proof version as per PN-EN, ATEX,
- the use an electric drive also with a gravitational closing system,
- possibility to connect a wide range of electric equipment such as fire alarm systems, door position monitoring, access control,
- possibility of locking the leaf in the closed position,
- door elements come with the possibility of finishing the surface in any colour from the RAL palette or come in a stainless version,
- the door manufacturer should provide an extended technical description of the device (in section 2 of this Fire Protection Device Characteristics) as well as the Application, Operation and Maintenance Manual to ensure correct and safe assembly, installation, operation, maintenance and disassembly;



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## 2. DEVICE DESCRIPTION

The fire protection bi-parting sliding door type MARC-R consists of the following basic components: two door leaves, running rail, labyrinth sealing components and pass door (optional).

The door leaf is 100 mm thick and comprises panels which can be 400 to 1200 mm in width, top and bottom profiles, reinforcements and galvanized steel sheet cladding thickness 0,5 – 0,7 mm. Panels are filled with mineral wool slabs, type PRO<sub>MM</sub>17. Inside the mineral wool filling, in the central portions of each panel, there are vertical bars of steel, grade S235JR as per PN-EN 10025-2:2019-11, diameter 8,0 mm, with threaded ends. The bars are connecting the top profile with the bottom profile with M8 washers and nuts. On either side of a leaf, there are vertical galvanised steel sheets, grade DX51D+Z275 as per PN-EN 10346:2015-09, thickness 0,5 – 0,7 mm glued to each filling surface with an adhesive, type PRO<sub>MM</sub>2, PRO<sub>MM</sub>12 or O-PA.

The U-shaped top profile is made of steel sheet, thickness 3,0 mm, grade DX51D+Z275 as per PN-EN 10346:2015-09, and the bottom profile is made of steel sheet of the same grade, but 2,0 mm thick.

Along the labyrinth sealing component edge of the leaves, there is a profile made of 2.0 mm thick steel sheet and two layers of strips made of fire-proof slabs, type PRO<sub>MM</sub>3. The steel closing profile is also a part of the vertical labyrinth seal, with an intumescent gasket attached along the whole height of the closing profile, type PRO<sub>MM</sub>15.

The lintel edge of the leaves are protected on either side with fire-proof slab strips, type PRO<sub>MM</sub>3. The leaf edges (except for the lintel edge) are finished with 0,5 – 0,7 mm thick steel sheet profiles, grade DX51D+Z275 as per PN-EN 10346:2015-09 fastened with steel rivets to the bottom profile and cladding metal sheets.

Type PRO<sub>MM</sub>15 gasket is located along the vertical labyrinth edges.

The door movement system comprises steel trolleys by Małkowski-Martech S.A., a steel running rail, and a closing system with counterweight.

The steel trolley is made up of two pairs of bearings with an outer diameter of 40 mm, connected to a steel base. The 160 x 90 mm outer cross-section running rail is made of galvanised steel sheet profiles, grade DX51D+Z275 as per PN-EN 10346:2015-09, thickness 3,0 mm.

The anchoring element type depends on the building partition material.

The running rail with the top door leaf steel profile creates a horizontal labyrinth sealing connection. Intumescent gaskets, type PRO<sub>MM</sub>15, are attached along the whole height of the labyrinth sealing connection. The door movement system is also secured with fire-proof slab strips, type PRO<sub>MM</sub>3, and guarded by steel sheet profiled sections, grade DX51D+Z275 as per PN-EN 10346:2015-09, thickness 0,5 – 0,7 mm.

The closing system consists one Kendrion (or other supplier with the same parameters) GT 70R001.11, 1372N electromagnetic holder, cable pulleys, steel cable with a diameter of not less than 3,0 mm and counterweight made of coiled steel sheet or steel disc.

The door can be optionally equipped with VIC type electric drives by Małkowski-Martech S.A.

On the sides of the open leaves, along the vertical edges from the building partition, labyrinth sealing elements are placed. That elements are made of a Z-shaped section, profiled from 2.0 mm thick, grade DX51D+Z275 as per PN-EN 10346:2015-09. Along the labyrinth sealing elements, at their entire height, an intumescent gasket, type PRO<sub>MM</sub>15 is placed.

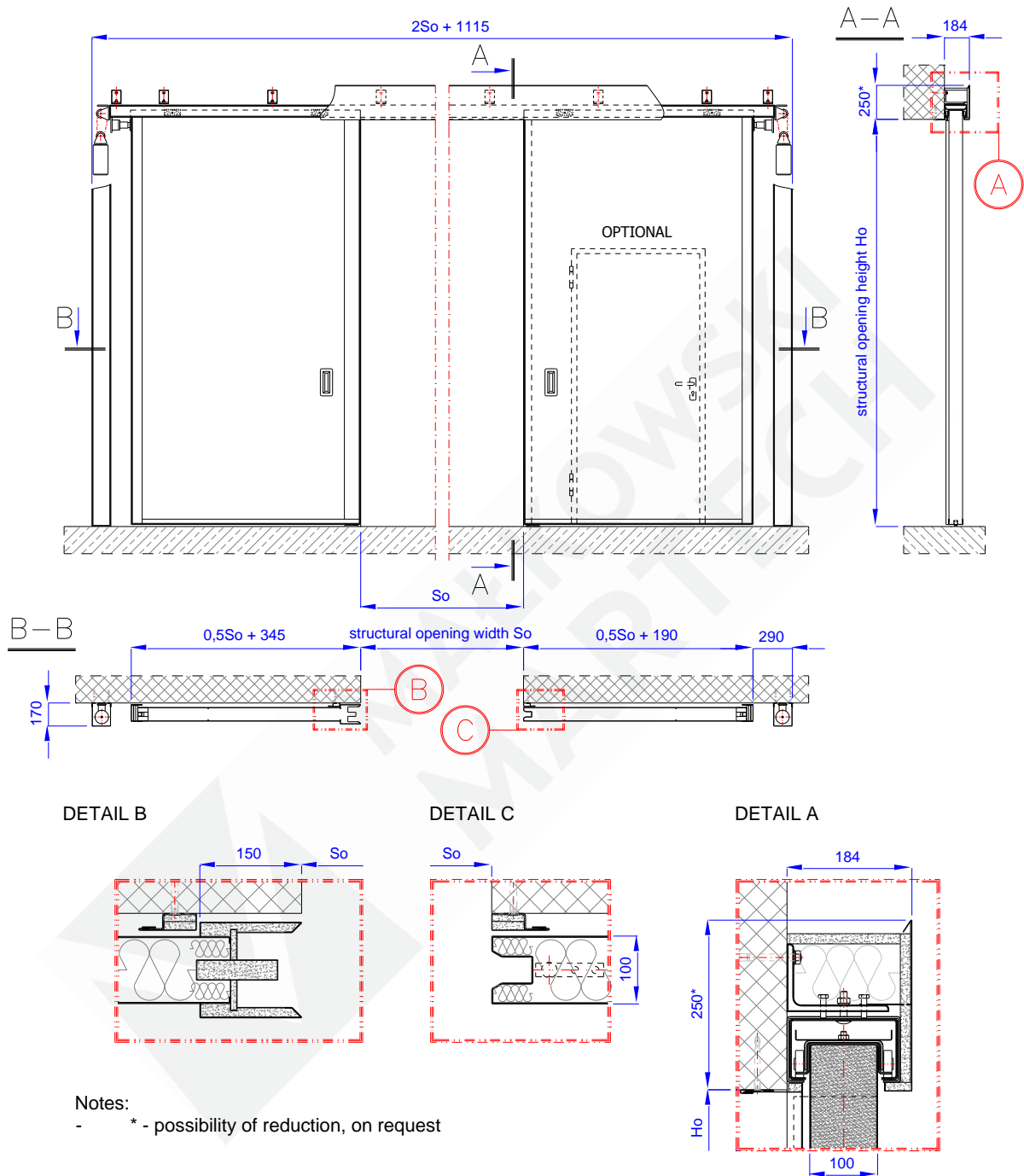
At the labyrinth sealing element height, guide roller is fitted to the floor. Guide roller is made of a steel M8 bolt and steel roller, diameter 30 mm.

The door leaf can be optionally provided with single leaf hinged pass door with the leaf thickness of 60 mm. The pass door cladding is made from two suitably press-formed steel sheets, 0,5 – 0,7 mm thick. The door infill is made from mineral wool with a minimum density of 170 kg/m<sup>3</sup>, class A1 as per PN-EN 13501-1. The mineral wool infill is protected by fireproof panel strips along the vertical and lintel edges. The cladding steel sheets on both sides of the door are bonded with a fire-rated adhesive compound to the infill over the whole surface.

The pass door could be manufactured with or without a threshold.



**3. DRAWINGS**



**Fig. 1 – Fire protection bi-parting sliding door MARC-R EI120**



|  |  |                               |
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#### 4. DEVICE SPECIFICATION

|   |  |
|---|--|
| Name  | <b>Fire protection bi-parting sliding door</b> |
| Type  | <b>MARC-R</b>                                  |
| Fire-resistance class [as per PN-EN 13501-2:2016]     | <b>EI<sub>2</sub>120</b>                       |
| Reaction to fire class [as per PN-EN 13501-1:2019-02] | <b>A1</b>                                      |
| Manufacturer  | <b>Małkowski-Martech S.A.</b>                  |
| Certificate of Constancy of Performance               | <b>2434-CPR-0096</b>                           |
| Operating manual document                             | <b>Use, Operation and Maintenance Manual</b>   |

| STRUCTURAL AND QUALITY-RELATED PARAMETERS   | (S – standard, O – option, Z – on request)   |                       |
|---|--|-----------------------|
| Leaf weight   | 40 [kg/m <sup>2</sup> ]  |                       |
| Leaf thickness  | 100 [mm]   |                       |
| Dimensions [clear opening, W x H]   | < 16 000 x 6 000 [mm]<br>> 16 000 x 6 000 [mm]   | S<br>O                |
| Minimum lintel clear height   | 195 [mm]   | S                     |
| Installation location   | internal<br>external [installed inside the building]<br>external [installed on the building exterior]  | S<br>S<br>O           |
| Installation requirements   | wall-mounted<br>corridor-mounted [niche]   | S<br>S                |
| Pass door [clear opening, W x H]  | (900 - 1 200) x 2 000 [mm]<br>> 1 200 x 2 000 [mm]   | O<br>O                |
| Using category [as per EN 16034:2014-11]  | C0 [1 – 499]<br>C1 [500 – 9 999], C2 [10 000 – 49 999]<br>C3 [50 000 – 99 999]<br>C4 [100 000 – 199 999], C5 [> 200 000]   | S<br>O<br>O<br>Z      |
| Resistance to wind load [as per PN-EN 12424:2002]   | 1 [≤ 300 Pa]<br>2 [≤ 450 Pa], 3 [≤ 700 Pa], 4 [≤ 1000 Pa]  | S<br>O                |
| Anti-corrosion class [as per PN-EN ISO 12944-2:2018]  | C1, C2, C3<br>C4, C5   | S<br>O                |
| Smoke-proof version [as per PN-EN 13501-2:2016]   | S <sub>a</sub> , S <sub>200</sub>  | Z                     |
| Acoustic insulating power [as per PN-EN ISO 717-1:2013]   | R <sub>w</sub> (C;C <sub>tr</sub> ) = 26 (-2;-3) [dB]<br>R <sub>w</sub> (C;C <sub>tr</sub> ) = 51 (-2;-6) [dB]   | S<br>O                |
| Thermal insulating power [as per PN-EN 12428:2013-06]   | 0,45 [W/m <sup>2</sup> K]  | S                     |
| Ex-proof version [as per PN-EN, ATEX]   | EX II 2G IIB T3 (T4)   | Z                     |
| Stainless version [as per PN-EN ISO 10088-1]  |  | O                     |
| Thermal fuse trigger  |  | Z                     |
| Door leaf and covers colour   | galvanized, RAL 7035, 9002, 9010<br>any RAL palette [not available with A1 class]  | S<br>O                |
| Drive unit type [as a standard, the door is kept by an electromagnetic holder, release and closed with counterweight] | electric 24 V DC [opening only]<br>electric 24 V DC [closing / opening]  | O<br>O                |
| Controller - fire alarm control panel [as per PN-EN 54-2:1997+AC:1999+A1:2006]  | w/UPS, pre-wired with the field fire alarm system<br>and/or local smoke/heat detectors   | O                     |
| Electrical components [available only with a fire alarm control panel]  | technical key switch<br>electromagnetic holder<br>detectors [smoke or heat, smoke and heat]<br>signalling device [sounder, optical]<br>leaf open and / or closed position sensor | S<br>S<br>O<br>O<br>O |



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## 5. ELECTRICAL DIAGRAM

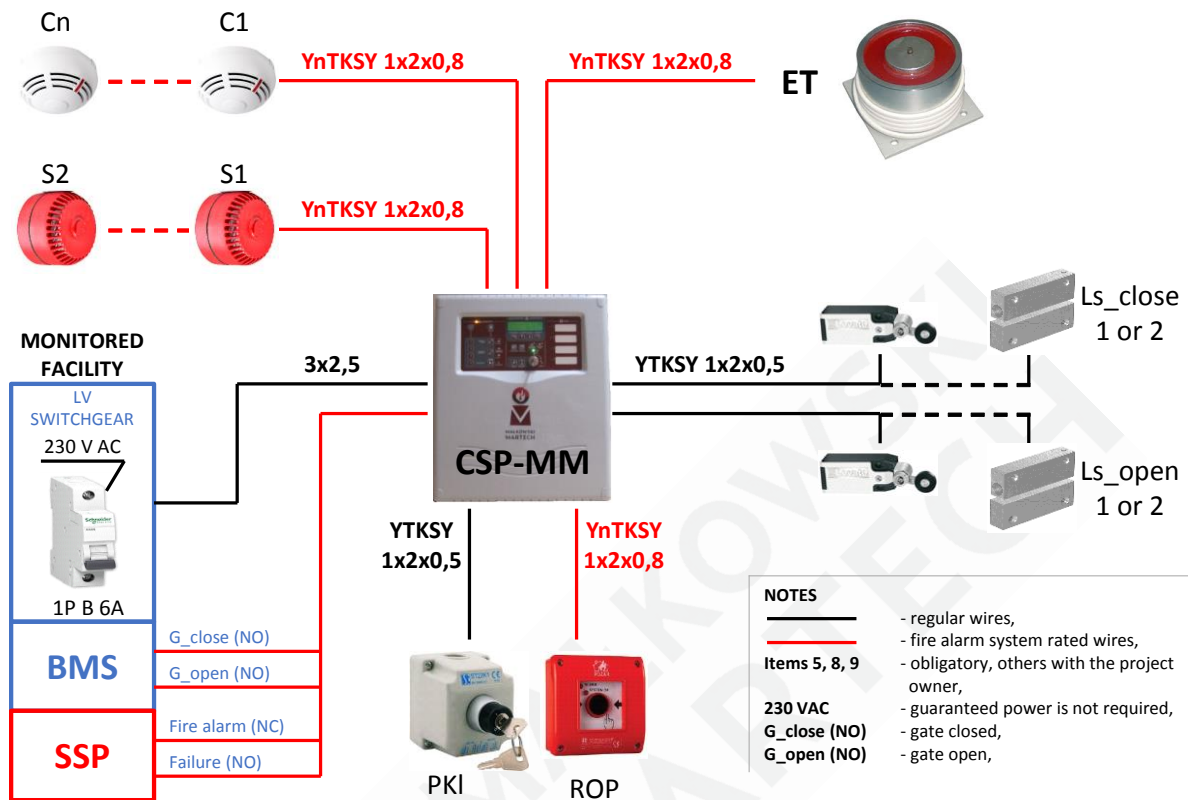
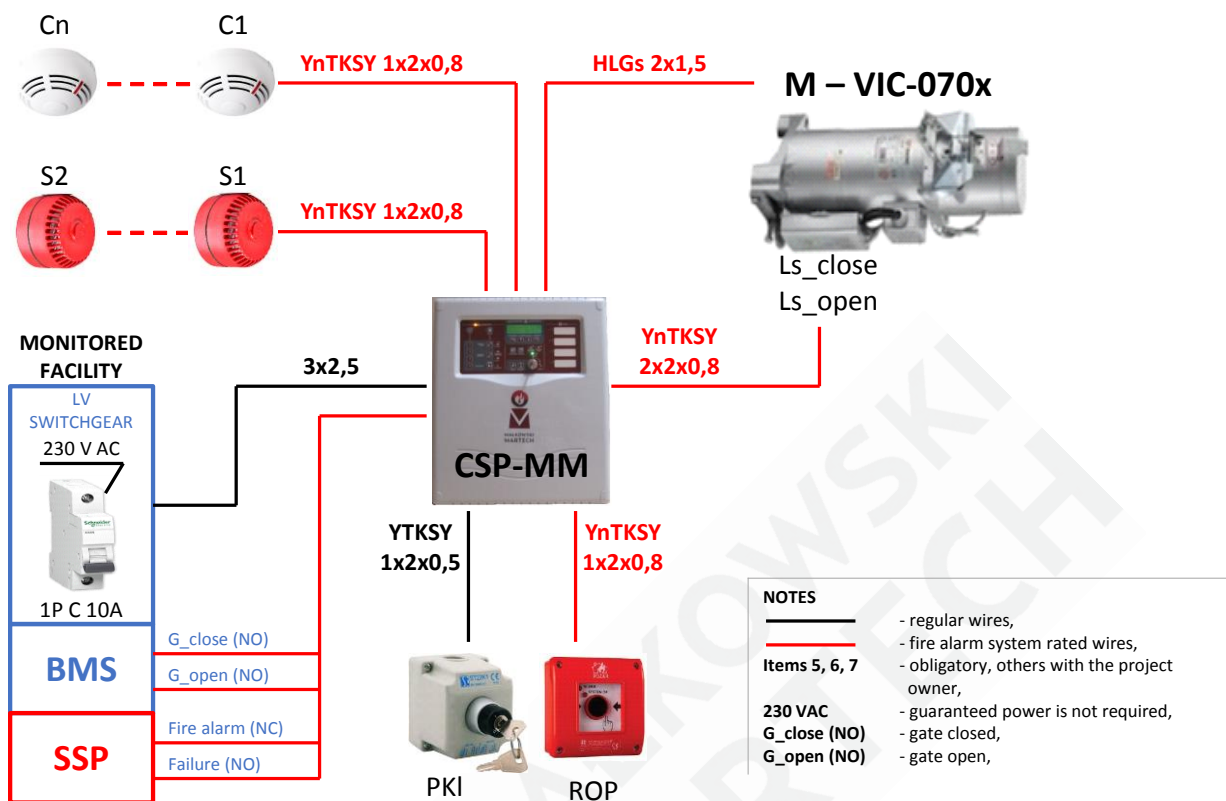


Fig. 2 – MARC-R control system with electromagnetic holder

| No. | Figure item code | Item type                        | Item name   | Item code            | Rec. qty | Notes                                       |
|-----|------------------|----------------------------------|---|----------------------|----------|---|
| 1   | C1 - Cn          | point fire detector              | optical smoke detector                              | DRP-100              | 2        | model DRP-100, is recommended, max. 32 pcs. |
|     |                  |                                  | class A1R heat detector                             | DCP-100              | 2        |   |
|     |                  |                                  | some and heat                                       | DMP-100              | 2        |   |
| 2   | C1 - Cn          | detector receptable              | standard fire detector receptacle                   | DB100                | 2        | qty = detector qty                          |
| 3   | ROP              | manual call point                | standard manual call point                          | ROP-100/PL           | 1        | max. 10 pcs.                                |
| 4   | S1, S2           | signalling device                | fire alarm sounder, low base                        | SPP-100              | 1        | max. 2 lines                                |
| 5   | ET               | electromagnetic holder           | land holder   | EM-xxxx              | 1        |   |
| 6   | Ls_close         | limit switch „1” mag. sensor „2” | mechanical limit switch, magnetic reed relay switch | KB F1 S11 MS-240-S45 | 1        | application option, selection 1 or 2        |
| 7   | Ls_open          | limit switch „1” mag. sensor „2” | mechanical limit switch, magnetic reed relay switch | KB F1 S11 MS-240-S46 | 1        |   |
| 8   | PKI              | key switch                       | key switch operated K1 control box                  | SP22K1/07-1          | 1        |   |
| 9   | CSP-MM           | controller                       | standard fire alarm control panel                   | CSP-MM 1(2)          | 1        |   |





**Fig. 3 – MARC-R control system with externally-mounted 24 V DC drive unit  
 variant I – closing/opening with drive; variant II – closing with counterweight, opening with drive**

| No. | Figure item code | Item type           | Item name                         | Item code   | Rec. qty | Notes                                    |
|-----|------------------|---------------------|-----------------------------------|-------------|----------|--|
| 1   | C1 - Cn          | point fire detector | optical smoke detector            | ID100       | 2        | model ID100, is recommended, max. 6 pcs. |
|     |                  |                     | class A1R heat detector           | ID200       | 2        |  |
|     |                  |                     | some and heat                     | ID300       | 2        |  |
| 2   | C1 - Cn          | detector receptable | standard fire detector receptacle | EB0010      | 2        | qty = detector qty                       |
| 3   | ROP              | manual call point   | standard manual call point        | ROP OP1     | 1        | max. 10 pcs.                             |
| 4   | S1, S2           | signalling device   | fire alarm sounder, low base      | SPP-100     | 1        | max. current 200 mA                      |
| 5   | M                | electric drive      | Internal (tubular)                | VIC-070x    | 1        |  |
| 6   | PKzM             | console             | remote console                    | PKzM        | 1        |  |
| 7   | CSP-MM           | controller          | standard fire alarm control panel | CSP-MM 1(2) | 1        |  |

