The two standard digital ports can be configured as inputs or outputs – they are customizable for each application.

The four safety ports ensure that almost all digital safety requirements are integrated into the installation.

The two IO-Link ports offer a wide range of functions: they integrate smart devices into the fieldbus system and they also enable the system to be expanded cost-effectively via IO-Link hubs.
What makes the MVK Fusion fieldbus module unique is its variety. It combines three basic functions: standard digital sensors and actuators, safety digital sensors and actuators and IO-Link. This combination is new and innovative. It enables unique and groundbreaking automation concepts to be realized. Installation becomes simpler and faster.

MVK Fusion makes complex configurations easier because they can be done entirely by the engineering tool in the safety control system. Software developers and electrical engineers no longer need in-depth knowledge of other manufacturers’ tools and manuals.

MVK Fusion makes it possible to have fewer fieldbus modules per unit. Some applications might only require a single module. This opens up new opportunities for many automation applications!
Flexibility within Safety Applications

MVK Fusion integrates all safety aspects into one module:

- Safety sensors signals are transmitted over the three safe input ports, each of which have two channels. Emergency stop buttons, light curtains, two-handed units, safety doors, etc. can be qualified up to Performance Level e.

- The safety output port has two safe outputs that can be configured according to the application (PP, PM or PPM switching). You can integrate a wide variety of actuator types like double valves and valve islands that still qualify up to Performance Level e.

- A special Class B IO-Link port ensures that IO-Link devices like valve islands and hubs can be easily and safely switched-off complying with safety standards up to Performance Level d.

MVK Fusion lets you achieve high safety standards, protecting both man and machine.

Safety Configuration within a Mouse Click

MVK Fusion makes configuring safety sensors and actuators extremely easy: select the safety function in the safety control system engineering tool, and within a few mouse clicks configuration is done.

The users – usually the software developer or the electrical engineer – do not require any special knowledge to configure the module. The MVK Fusion module eliminates the extra verification work step (CRC calculation) and doesn’t require additional manufacturer-specific software. This speeds up the process because it prevents entry of incorrect data.

High Performance

MVK Fusion is excellent for high power applications when reliability cannot be compromised. The module is one hundred percent compatible with PROFINET solutions.

MVK Fusion is suitable for Conformance Class C (IRT), Shared Device and Netload Class III applications.
A Wide Range of Uses and Comprehensive Diagnostics

- Rugged, fully-molded metal housing made for a wide range of uses – like extreme welding applications.
- MVK Fusion saves error information with a time stamp on an integrated web server, even in the event of power failure, helping you identify errors and reduce downtimes.
- The safety address is set directly on the module via rotary switch – MVK Fusion can also be restored to its default setting via the address 000.
- The module functions at high outdoor temperatures (up to 60° C) in combination with high currents (up to 16 A). We offer an optional heat sink for these extreme conditions, which extends the life of the module.
- Unique to the market, the module can be used in at very high altitudes: up to 3,000 meters (10,000 feet).
- Every single channel is monitored for problems like overloads, sensor shorts or short circuits – the comprehensive diagnostics detect errors quickly, so they can be analyzed and fixed.

Technical Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Art.-No.</th>
<th>Art.-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVK PN FDI6/3 FDO2/1 DIO4 IOL2 IRT PP</td>
<td>55510</td>
<td>5551001</td>
</tr>
</tbody>
</table>

**Connections**
- Fieldbus: 10/100 Mbit/s, Push Pull RI45 Data connector
- Sensor-system/actuator supply: Push Pull 5-pole, 24 V DC (EN 61131-2), galvanic separated supply US1 to US2
- I/O ports: M12, 5-pole, A-coded

**PROFINET**
- Specification: V2.3, Conformance Class C (IRT)
- PROFINET Netload Class: III
- PROFInet Energy: V1.2 (grade 1: shutdown LED and outputs X4, X5; grade 2: additional shutdown inputs & IO-Link X4, X5, X6, X7)
- Shared Device: yes, for 2 controls
- MRP: yes

**PROFIsafe V2.6.1**
- PL (Performance Level): X0, X1, X2 and X3 up to PLe, X7 (pin 2) up to Pls
- Category: X0, X1, X2 and X3 up to category 4, X7 (pin 2) up to category 3
- SIL: X0, X1, X2 and X3 up to SIL3, X7 (pin 2) up to SIL2
- safe input: M12, 5-pole, A-coded: 6 FDI X0, X1, X2 (per port max. 700mA)
- safe output: M12, 5-pole, A-coded: 2 FDO X3 (pin 2 und pin 4, pp-, pm-, ppm-switch / sum current max. 2 A); 1 FDO X7 (pin 2, pp-switch / max. 2 A)

**IO-Link**
- Specification: Version 1.1.2
- Operating modes: COM1, COM2, COM3
- Port Class: 1 x Typ A (X6); 1 Typ B (X7) with safe shutdown PIN2 (US2)
- Nominal current US1 (Pin 1-3): max. 700 mA
- Nominal current US2 (Pin 2-5) X7: max. 2 A

**Input**
- Operating voltage: EN 61131-2: 24 V
- Number of channels: max. 7 (X4/X5 pin 2/4 each at US2, X6 pin 2/4 and X7 pin 4 each at US1)
- Total current: max. 1.4 A (Total current from X4 and X5 pin1)

**Output**
- Operating voltage: EN 61131-2: 24 V
- Number of channels: max. 5 (4x X4/X5, pin 2 and pin 4 each at US2 and X7 pin 2 (IO-Link) at US2)
- Total current: max. 8 A (Total current from X3, X4, X5 pin2 and pin 4 plus X7 Pin2)
- Invert voltage resistant: yes

**General Data**
- Temperature range: -20°C ... +60°C
- Dimensions H x W x D: 225 x 63 x 102 mm
## Accessories

### MVK Fusion heat sink

> An optional heat sink for extreme conditions expands the conditions of use

- **Art.-No.** 5551002

### MVK Metal Safety

- **MVK ProfiNet/PROFIsafe Compact Module, metal, DI16/8, IRT, push-pull connection**
  - **Art.-No.** 55562
- **MVK ProfiNet/PROFIsafe Compact Module, metal, DI8/4 DO4, IRT, push-pull connection**
  - **Art.-No.** 55563
- **MVK ProfiNet/PROFIsafe Compact Module, metal, DI16/8, IRT, 7/8" power connection**
  - **Art.-No.** 55556
- **MVK ProfiNet/PROFIsafe Compact Module, metal, DI8/4 DO4, IRT, 7/8" power connection**
  - **Art.-No.** 55557

### IO-Link Hubs

- **MVPl2 plastic DI16 IOL, Compact module, IO-Link version 1.1, Port Class Type A**
  - **Art.-No.** 59401
- **MVPl2 plastic DI8 DO8 IOL, Compact module, IO-Link version 1.1, Port Class Type B**
  - **Art.-No.** 59402
- **MVPl2 metal 8xM12 DI8 DO8 IOL K3, Compact module, IO-Link version 1.1, Port Class Type B (galvanic separated)**
  - **Art.-No.** 55518
- **MVPl2 metal 8xM12 DI16 IOL, Compact module, IO-Link version 1.1, Port Class Type A**
  - **Art.-No.** 55519

### E-Stop and Reset Button

- **E-Stop Button, 2 N/C, width 42 mm, M12 connection (4-pin)**
  - **Art.-No.** 69000
- **E-Stop Button, 2 N/C, width 42 mm, M12 connection (5-pin)**
  - **Art.-No.** 69001
- **E-Stop Button with illumination, 2 N/C, width 42 mm, M12 connection (8-pin)**
  - **Art.-No.** 69002
- **E-Stop/Reset Button, 2 N/C, 1 N/O, width 42 mm, M12 connection (8-pin)**
  - **Art.-No.** 69003
- **E-Stop with illumination Button, 2 N/C, 1 N/O, width 42 mm, M12 connection (8-pin)**
  - **Art.-No.** 69004
- **Reset Button, 1 N/O, width 42 mm, M12 connection (4-pin)**
  - **Art.-No.** 69010
- **2 Reset Button, 2 N/O, width 42 mm, M12 connection (4-pin)**
  - **Art.-No.** 69011
- **2 Reset Button with illumination, 2 N/O, width 42 mm, M12 connection (8-pin)**
  - **Art.-No.** 69012
- **Reset Button with illumination, 1 N/O, width 42 mm, M12 connection (8-pin)**
  - **Art.-No.** 69013
- **E-Stop Button, 2 N/C, width 72 mm, M12 connection (4-pin)**
  - **Art.-No.** 55550
- **E-Stop Button, 2 N/C, width 72 mm, M12 connection (5-pin)**
  - **Art.-No.** 69041
- **E-Stop Button with protective collar, 2 N/C, width 72 mm, M12 connection (4-pin)**
  - **Art.-No.** 69040
- **E-Stop Button with protective collar, 2 N/C, width 72 mm, M12 connection (5-pin)**
  - **Art.-No.** 69042
- **E-Stop Button with illumination, 2 N/C, width 72 mm, M12 connection (8-pin)**
  - **Art.-No.** 69043

### Adaptor & T-coupler

- **Adaptor M12 male / M12 female shielded AIDIA**
  - **Art.-No.** 7030-42291-0000000
- **Adaptor M12 male / M12 female shielded for PIN adjustment (2-4/2-3-5)**
  - **Art.-No.** 333497
- **T-coupler (SlimLine) for connection of M12 8-pin devices at MVK Metal Safety**
  - **Art.-No.** 7030-42602-0000000
- **T-coupler (SlimLine) for connection of M12 8-pin Pilz Sensors (e.g. PSEN s1-0.5p, s1-1.0p, cs3.1p, cs4.1p) at MVK Metal Safety module**
  - **Art.-No.** 7030-42603-0000000
- **T-coupler (SlimLine) for connection of M12 8-pin Euchner CES A... sensors at MVK Metal Safety module**
  - **Art.-No.** 7030-42642-0000000
- **T-coupler (SlimLine) for connection of M12 8-pin Euchner CEPxAP... CTP-AP... sensors at MVK Metal Safety module**
  - **Art.-No.** 7030-42662-0000000
- **T-coupler (SlimLine) for connection of M12 8-pin Schmersal AZM400 sensors at MVK Metal Safety module**
  - **Art.-No.** 7030-42671-0000000
- **T-coupler (SlimLine) for connection of M12 8-pin E-Stop button at MVK Metal Safety module (not for article 69012)**
  - **Art.-No.** 7030-42622-0000000
- **T-coupler (SlimLine) M12 male Sp/2x M12 female Sp for connection of 2 one-channel sensors at one FDI port**
  - **Art.-No.** 7000-41155-0000000
- **T-coupler (Slim-line) for connection of 69012**
  - **Art.-No.** 7030-42623-0000000

### Cable fixation

- **8xM12 black, to lock the plug position of actor/sensor cables**
  - **Art.-No.** 55554
- **M12 male 0°/M12 female 0° connecting cables**
  - **Art.-No.** **7030-40041-126XXXX**
- **4 pole AIDA, PUR 4x0.34 yellow UL/CSA**
  - **Art.-No.** **7030-40021-634XXXX**

More information about MVK Fusion as well as accessories, data sheets, installation instructions etc. can be found in the online shop at shop.murrelektronik.com