MVK - Compact I/O modules

Field bus modules with fuse type IP67 are a main component of the machine, replacing elaborately wired, and thus expensive, terminal boxes. The field bus replaces the conventional parallel wiring. This saves a lot of space in the switch cabinet. The preferred placing of the modules is close to the process. They establish the connections from sensors and actuators to the controls via pre-configured cables. In comparison to conventional wiring technology, assembly, commissioning and servicing times are significantly shortened, lowering the costs of installation and maintenance. Set-up and easy localisation of errors via field bus at the control system.

Economical distribution – compact and robust

The I/O stage is located exactly where it is needed. Directly in the machine, in the immediate vicinity of sensors and actuators, dispensing with elaborate arrangements for leading sensor cables into the control cabinet.

→ Short I/O lines reduce installation expenditure
→ Plug-in connections avoid wiring errors and simplify servicing
→ Intricate parallel and hard-wire installation replaced by simple and fast connectors

Don't look for errors, find them – total diagnostic

That means detailed information on type and location of the error.

- Single-channel diagnostic
- Only the "affected" plug position shuts down, not the whole module
- Detailed message to controls and local LED indicator

→ Errors are found more rapidly, interferences are rectified faster
→ Minimizes system downtime
→ Shortens start-up time

Highest flexibility – through multifunctional I/Os

Whether input, output or diagnostic input, freely selectable parameterization of both signals for each individual M12 module slot.

Efficient use of modules.

→ Double valves occupy only one M12 module slot
→ No separate modules for inputs and outputs
→ No unplanned reserves
→ Maximum flexibility for expansions
→ Fewer variants required, minimizes inventory carrying costs

MVK metal – robust and watertight

Fully encapsulated field bus modules in metal housings are particularly robust and thus ideal for use in rough environments in mechanical engineering and plant construction. Endurance paired with water-tightness are the keywords in such environments.

Durable and robust design

- Surface-refined zinc diecast housing for effective protection against weld spatter
- Compound-filled electronic unit for maximum strength against shock/vibration
- Resistant to a whole series of coolants and lubricants

→ Robust design for universal applications
→ On-site installation ensures the shortest possible I/O line while reducing installation expenditure
→ Servicing simplified by clear connection configuration

MVK Plastic – Light, tight and versatile

MVK plastic modules have versatile, plugged connection technology, harmonized with the common field bus systems. With their light construction with housing protection IP67, these modules offer a convenient solution for rationalized, decentralized automation outside the immediate influence of caustic media.

Easiest service and maintenance at reduced storage costs

MVK modules with multifunctional plugs and Profibus interfaces are able to replace all functions of the MVK serie. They are suitable for "Service modules". Only one module for every situation. The adaption into the system is fully automatically and doesn't require any further interferences into the project softwares.

Module exchanging – address configuration – ready

- easy service and maintenance
- one module for every case minimizes storage cost
- reduces down time

MVK with metal housing

MVK-MP
8 DI + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI/DO

Page 2.2.3

MVK-MDN
8 DI + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI/DO

Page 2.2.5

MVK-MI
8 DI + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI/DO

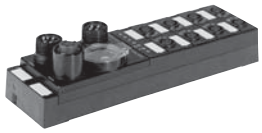
Page 2.2.7

MVK with plastic housing

MVK-P
8 DI + 8 x diagnostic/DI
4 DI 4 DO + 8 x diagnostic/DI
8 DO + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI/DO

8 DI + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI/DO

Page 2.2.4

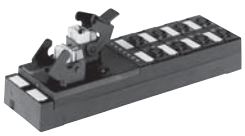


MVK-DN
8 DI + 8 x diagnostic/DI
4 DI 4 DO + 8 x diagnostic/DI
8 DO + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI/DO

Page 2.2.6

MVK-I
8 DI + 8 x diagnostic/DI
4 DI 4 DO + 8 x diagnostic/DI
8 DO + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI
8 DI/DO + 8 x diagnostic/DI/DO

Page 2.2.8



MVK-DESINA® LWL ECOFAST® and MVK-DESINA® CU ECOFAST®
8 DI/DO + 8 x diagnostic/DI

Page 2.2.9

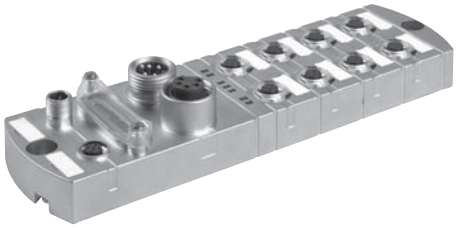
MURR ELEKTRONIK

Bus modules MVK metal Profibus-DP

Input/output module

Protection IP67

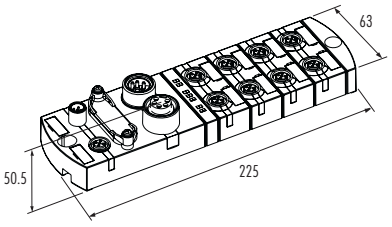
MVK-MP



Approvals c UL us

Ordering data		Art.-No.
8 DI	+ 8 x diagnostic/ DI	**55307**
8 DI/DO	+ 8 x diagnostic/ DI	**55308**
8 DI/DO	+ 8 x diagnostic/ DI/DO	**55309**

Field bus	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2
Type	Profibus-DP slave
Transfer protocol	Profibus-DP to EN50170
Operating modes	sync- and freeze-mode are supported
Transfer rate	up to 12 MBit/s
Inputs	
Type	for 3-wire sensors or mechanical switches, p-switching, IEC-1131-2 type 2 compatible
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, ≤ 200 mA per M12 port
Status indicator	1 yellow LED per input
Outputs	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, I-total ≤ 9 A
Switching current per output	1.6 A, short-circuit and overload protected
Filament lamp load	10 W
Max. switching frequency	resistive load: 50 Hz; inductive load: 20 Hz
Status indicator	1 yellow LED per output
Diagnostic	
Field bus	RUN-LED
Under voltage	combined LED and alarm to the master
Short-circuit sensor/actuator	2 red LEDs per channel to M12 port
Diagnostic to DESINA® (PIN 2)	PIN-2 diagnostic with 1 red LED per M12 port and signal to master; individually parameterized as digital input
	see technical data
General data	
Temperature range	0…+ 55 °C (storage temperature - 20…+ 70 °C)
Mounting method	2-hole screw mounting
Dimensions	225 x 63 x 50.5 mm (drill plan 208.5 ± 0.5 mm)
Dimension drawing	



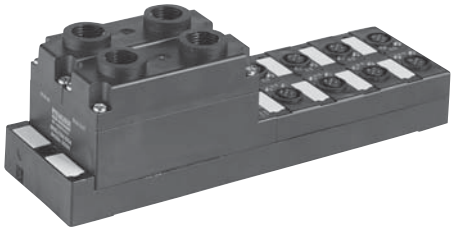
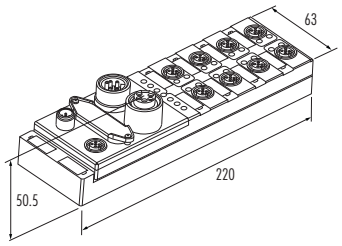
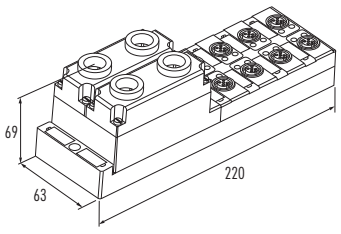
Notes	
	Contact layout from page 2.2.10. Further accessories from page 2.2.13. Connection cables can be found in chapter 1.4…

Bus modules MVK Profibus-DP

Input/output module

Protection IP67

Approvals

	MVK-P	MVK-P
		
Ordering data	**Art.-No.**	**Art.-No.**
8 DI + 8 x diagnostic/ DI	**55326**	[1] **55380**
4 DI 4 DO + 8 x diagnostic/ DI	**55328**	
8 DO + 8 x diagnostic/ DI	**55327**	
8 DI/DO + 8 x diagnostic/ DI	**55389**	[1] **55381**
8 DI/DO + 8 x diagnostic/ DI/DO	**55329**	[1] **55383**
Field bus		
Supply voltage	24 V DC (18…30.2 V), to EN61131-2	
Type	Profibus-DP Slave	
Transfer protocol	Profibus-DP to EN50170	
Operating modes	sync- and freeze-mode are supported	
Transfer rate	up to 12 MBit/s	
Inputs		
Type	for 3-wire sensors or mechanical switches, p-switching, IEC-1131-2 type 2 compatible	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, ≤ 200 mA per M12 port	
Status indicator	1 yellow LED per input	
Outputs		
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, I-total ≤ 9 A	24 V DC (18…30.2 V), to EN61131-2, I-total ≤ 12.8 A
Switching current per output	1.6 A, short-circuit and overload protected	
Filament lamp load	10 W	
Max. switching frequency	resistive load: 50 Hz; inductive load: 20 Hz	
Status indicator	1 yellow LED per output	
Diagnostic		
Field bus	RUN-LED	
Under voltage	combined LED and alarm to the master	
Short-circuit sensor/actuator	red LED per channel to M12 port	
Diagnostic to DESINA® (PIN 2)	PIN-2 diagnostic with 1 red LED per M12 port and signal to master; individually parameterized as digital input	
	see technical data	
General data		
Temperature range	0…+ 55 °C (storage temperature - 20…+ 70 °C)	
Mounting method	2-hole screw mounting	
Dimensions	220 x 63 x 50.5 mm (drill plan 208.5 ± 0.5 mm)	220 x 63 x 69 mm (drill plan 208.5 ± 0.5 mm)
Dimension drawing		
		
Notes		
	Contact layout from page 2.2.10. Further accessories from page 2.2.13. Connection cables can be found in chapter 1.4… [1] 2 shielded screw fixings supplied.	

Bus modules MVK metal DeviceNet

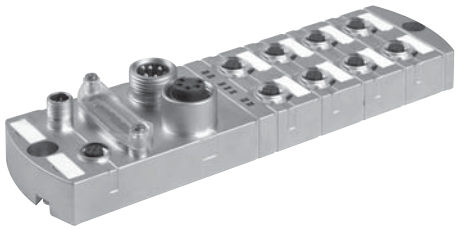
Input/output module

Protection IP67

DeviceNet CONFORMANCE TESTED

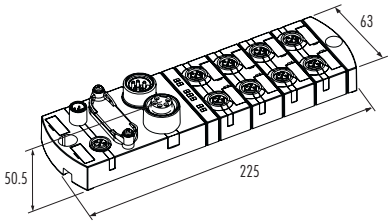
Approvals cULus

MVK-MDN



Ordering data		Art.-No.
8 DI	+ 8 x diagnostic/ DI	**55297**
4 DI 4 DO	+ 8 x diagnostic/ DI	**55298**
8 DI/DO	+ 8 x diagnostic/ DI/DO	**55299**

Field bus	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2
Type	prod. type 7; generic I/O module
Transfer protocol	CAN; layer 7 DeviceNet (ODVA conformance tested)
Operating modes	polling; change of state; cyclic
Transfer rate	125 kBit/s; 250 kBit/s; 500 kBit/s
Bus connector	micro connector (M12 connector)
Inputs	
Type	for 3-wire sensors or mechanical switches, p-switching, IEC-1131-2 type 2 compatible
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, ≤ 200 mA per M12 port
Status indicator	1 yellow LED per input
Outputs	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, I-total ≤ 9 A
Switching current per output	1.6 A, short-circuit and overload protected
Filament lamp load	10 W
Max. switching frequency	resistive load: 50 Hz; inductive load: 20 Hz
Status indicator	1 yellow LED per output
Diagnostic	
Field bus	MS-LED, NS-LED
Under voltage	combined LED and alarm to the master
Short-circuit sensor/actuator	2 red LED per channel to M12 port
Diagnostic to DESINA® (PIN 2)	PIN-2 diagnostic with 1 red LED per M12 port and signal to master; individually parameterized as digital input
	see technical data
General data	
Temperature range	0…+ 55 °C (storage temperature - 20…+ 70 °C)
Mounting method	2-hole screw mounting
Dimensions	225 x 63 x 50.5 mm (drill plan 208.5 ± 0.5 mm)
Dimension drawing	



Notes	
	Contact layout from page 2.2.10. Further accessories from page 2.2.13. Connection cables can be found in chapter 1.4…

Bus modules MVK DeviceNet mini

Input/output module

Protection IP67

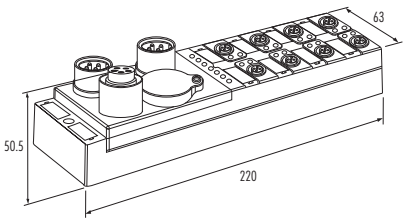
DeviceNet CONFORMANCE TESTED

Approvals c UL us

MVK-DN

Ordering data		Art.-No.
8 DI	+ 8 x diagnostic/ DI	**55311**
4 DI 4 DO	+ 8 x diagnostic/ DI	**55313**
8 DO	+ 8 x diagnostic/ DI	**55314**
8 DI/DO	+ 8 x diagnostic/ DI/DO	**55312**

Field bus	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2
Type	prod. type 7; generic I/O module
Transfer protocol	CAN; layer 7 DeviceNet (ODVA conformance tested)
Operating modes	polling; change of state; cyclic
Transfer rate	125 kBit/s; 250 kBit/s; 500 kBit/s
Bus connector	mini connector (7/8")
Inputs	
Type	for 3-wire sensors or mechanical switches, p-switching, IEC-1131-2 type 2 compatible
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, ≤ 200 mA per M12 port
Status indicator	1 yellow LED per input
Outputs	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, I-total ≤ 9 A
Switching current per output	1.6 A, short-circuit and overload protected
Filament lamp load	10 W
Max. switching frequency	resistive load: 50 Hz; inductive load: 20 Hz
Status indicator	1 yellow LED per output
Diagnostic	
Field bus	MS-LED, NS-LED
Under voltage	combined LED and alarm to the master
Short-circuit sensor/actuator	red LED per channel to M12 port
Diagnostic to DESINA® (PIN 2)	PIN-2 diagnostic with 1 red LED per M12 port and signal to master; individually parameterized as digital input
	see technical data
General data	
Temperature range	0…+ 55 °C (storage temperature - 20…+ 70 °C)
Mounting method	2-hole screw mounting
Dimensions	220 x 63 x 50.5 mm (drill plan 208.5 ± 0.5 mm)
Dimension drawing	



Notes	
	Contact layout from page 2.2.10. Further accessories from page 2.2.13. Connection cables can be found in chapter 1.4…

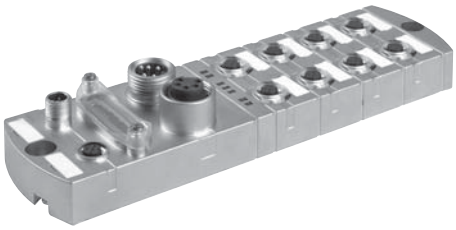
MURR ELEKTRONIK

Bus modules MVK Interbus

Input/output module

Protection IP67

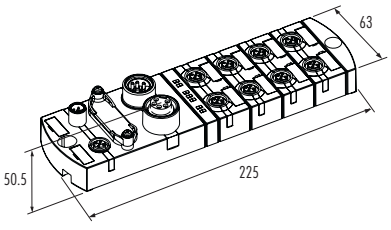
MVK-MI



Approvals

Ordering data		Art.-No.
8 DI	+ 8 x diagnostic/ DI	**55294**
8 DI/DO	+ 8 x diagnostic/ DI	**55295**
8 DI/DO	+ 8 x diagnostic/ DI/DO	**55296**

Field bus	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2
Type	remote bus/installations remote bus participants (slave)
Transfer protocol	Interbus to DIN EN 50254
Transfer rate	500 kBit/s
Inputs	
Type	for 3-wire sensors or mechanical switches, p-switching, IEC-1131-2 type 2 compatible
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, ≤ 200 mA per M12 port
Status indicator	1 yellow LED per input
Outputs	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, I-total ≤ 9 A
Switching current per output	1.6 A, short-circuit and overload protected
Filament lamp load	10 W
Max. switching frequency	resistive load: 50 Hz; inductive load: 20 Hz
Status indicator	1 yellow LED per output
Diagnostic	
Field bus	BA-, RD-, RC-LEDs
Under voltage	combined LED and alarm to the master
Short-circuit sensor/actuator	red LED per channel to M12 port
Diagnostic to DESINA® (PIN 2)	PIN-2 diagnostic with 1 red LED per M12 port and signal to master; individually parameterized as digital input
	see technical data
General data	
Temperature range	0…+ 55 °C (storage temperature - 20…+ 70 °C)
Mounting method	2-hole screw mounting
Dimensions	225 x 63 x 50.5 mm (drill plan 208.5 ± 0.5 mm)
Dimension drawing	



Notes	
	Contact layout from page 2.2.10. Further accessories from page 2.2.13. Connection cables can be found in chapter 1.4…

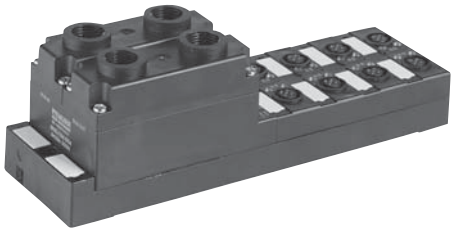
Bus modules MVK Interbus

Input/output module

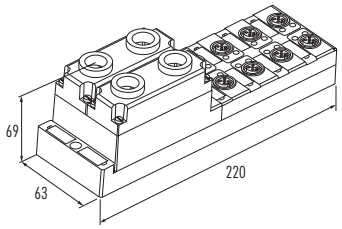
Protection IP67

Approvals

MVK-I



Ordering data		Art.-No.	Art.-No.
8 DI + 8 x diagnostic/ DI	housing blue/black	**55330**	
4 DI 4 DO + 8 x diagnostic/ DI	housing black	**55331**	
8 DO + 8 x diagnostic/ DI	housing gray/black	**55332**	
8 DI/DO + 8 x diagnostic/ DI	housing black		**55336**
8 DI/DO + 8 x diagnostic/ DI/DO	housing black	**55335**	
Field bus			
Supply voltage	24 V DC (18…30.2 V), to EN61131-2		
Type	remote bus/installations remote bus participants (slave)		
Transfer protocol	Interbus to DIN EN 50254		
Transfer rate	500 kBit/s		
Inputs			
Type	for 3-wire sensors or mechanical switches, p-switching, IEC-1131-2 type 2 compatible		
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, ≤ 200 mA per M12 port		
Status indicator	1 yellow LED per input		
Outputs			
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, I-total ≤ 12.8 A		
Switching current per output	1.6 A, short-circuit and overload protected	2 A, short-circuit and overload protected	
Filament lamp load	10 W		
Max. switching frequency	resistive load: 50 Hz; inductive load: 20 Hz		
Status indicator	1 yellow LED per output		
Diagnostic			
Field bus	BA-, RD-, RC-LEDs		
Under voltage	combined LED and alarm to the master		
Short-circuit sensor/actuator	red LED per channel to M12 port		
Diagnostic to DESINA® (PIN 2)	PIN-2 diagnostic with 1 red LED per M12 port and signal to master; individually parameterized as digital input		
	see technical data		
General data			
Temperature range	0…+ 55 °C (storage temperature - 20…+ 70 °C)		
Mounting method	2-hole screw mounting		
Dimensions	220 x 63 x 69 mm (drill plan 208.5 ± 0.5 mm)		
Dimension drawing			



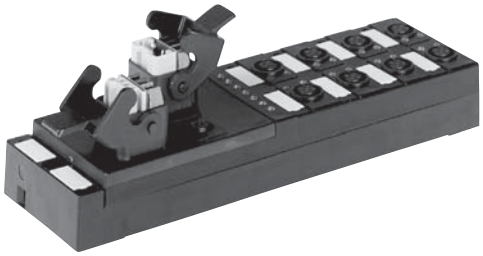
Notes	
	4 separate voltages for bus electronic/sensor, actuator on left side and actuator on right side. Cable compression glands are not supplied. Contact layout from page 2.2.10. Further accessories from page 2.2.13. Connection cables can be found in chapter 1.4…

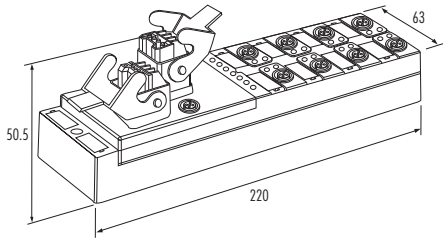
Bus modules MVK DESINA®

Input/output module

Protection IP67

Approvals

	MVK-DESINA® LWL ECOFAST® fibre optic cable (F.O.)	**MVK-DESINA® CU ECOFAST®** copper
		
Ordering data	**Art.-No.**	**Art.-No.**
8 DI/DO + 8 x diagnostic/ DI	**55325**	**55378**
Technical data		
Supply voltage	24 V DC (18…30.2 V), to EN61131-2	
Type	Profibus-DP slave	
Transfer protocol	Profibus-DP to EN50170	
Operating modes	sync- and freeze-mode are supported	
Transfer rate	up to 12 MBit/s	
Inputs		
Type	for 3-wire sensors or mechanical switches, p-switching, IEC-1131-2 type 2 compatible	
Supply voltage	24 V DC (18…30.2 V), to EN61131-2, ≤ 200 mA per M12 female	
Status indicator	1 LED yellow per input	
Outputs		
Supply voltage	24 V DC (18…30.2 V), to EN61131-2; I-total ≤ 10 A	
Switching current per output	1.6 A, short-circuit and overload protected	
Filament lamp load	10 W	
Max. switching frequency	resistive load: 50 Hz; inductive load: 20 Hz	
Status indicator	1 LED yellow per output	
Diagnostic		
Field bus	RUN-LED	
Under voltage	combined LED and alarm to the master	
Short-circuit sensor/actuator	red LED per channel to M12 port	
Diagnostic to DESINA® (PIN 2)	PIN 2 diagnostic with 1 red LED per M12 port and signal to master; individually parameterized as digital input	
	see technical data	
General data		
Temperature range	0…+55 °C (storage temperature -20…+75 °C)	
Mounting method	2-hole screw mounting	
Dimensions H x W x D	220 x 63 x 50.5 mm (drill plan 208.5 ± 0.5 mm)	
Dimension drawing		

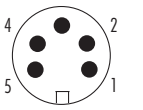
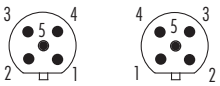


Notes	
	Contact layout from page 2.2.10. Further accessories from page 2.2.13. Connection cables can be found in chapter 1.4…

MURR ELEKTRONIK

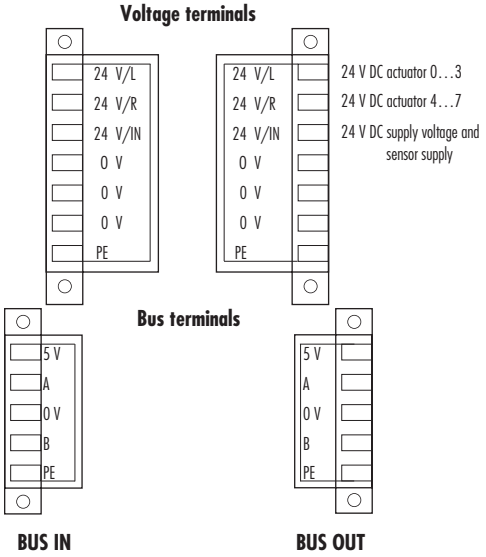
Contact layout for MVK-MP and MVK-P

Art.-No. 55307, 55308, 55309, 55326, 55327, 55328, 55329, 55389

POWER IN Male 7/8"	POWER OUT Female 7/8"	BUS IN Male M12	BUS OUT Female M12
			

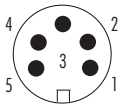
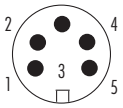
PIN 1:	GND	PIN 1:	5 V
PIN 2:	GND	PIN 2:	A-wire (green)
PIN 3:	PE	PIN 3:	0 V
PIN 4:	24 V supply voltage and sensor supply	PIN 4:	B-wire (red)
PIN 5:	actuator supply	PIN 5:	shield
Top view of module		Connection:	shield

Art.-No. 55380, 55381, 55383



Contact layout for MVK-MDN

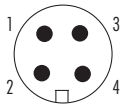
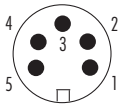
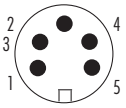
DeviceNet

POWER IN Male 7/8"	POWER OUT Female 7/8"	BUS IN Male M12	BUS OUT Female M12
			

PIN 1:	GND	PIN 1:	shield
PIN 2:	GND	PIN 2:	V+
PIN 3:	PE	PIN 3:	V–
PIN 4:	24 V supply voltage and sensor supply	PIN 4:	CAN_H
PIN 5:	actuator supply	PIN 5:	CAN_L
Top view of module		Connection:	shield

Contact layout for MVK-DN

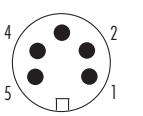
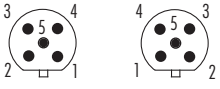
DeviceNet

POWER Male 7/8"	BUS IN Male 7/8"	BUS OUT Female 7/8"
		

PIN 1:	24 V actuator 00…03 + sensor supply	PIN 1:	shield
PIN 2:	PE	PIN 2:	V+
PIN 3:	24 V actuator 04…07	PIN 3:	V–
PIN 4:	GND	PIN 4:	CAN_H
		PIN 5:	CAN_L
Top view of module			

Contact layout for MVK-MI

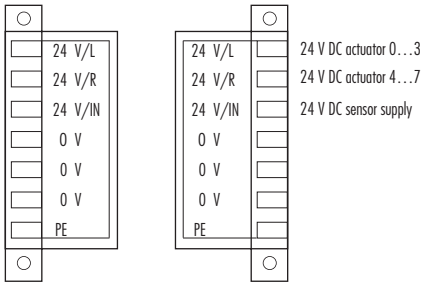
InterBus

POWER IN Male 7/8"	POWER OUT Female 7/8"	BUS IN Male M12	BUS OUT Female M12
			

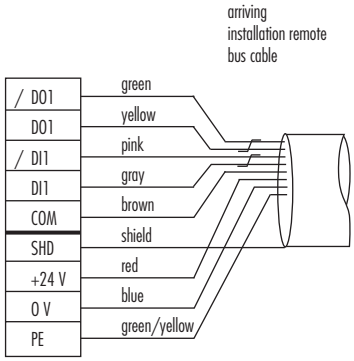
PIN 1:	GND	PIN 1:	DO
PIN 2:	GND	PIN 2:	/DO
PIN 3:	PE	PIN 3:	DI
PIN 4:	24 V supply voltage and sensor supply	PIN 4:	/DI
PIN 5:	actuator supply	PIN 5:	GND
Top view of module		Connection:	shield

MVK-I for remote bus installer or user

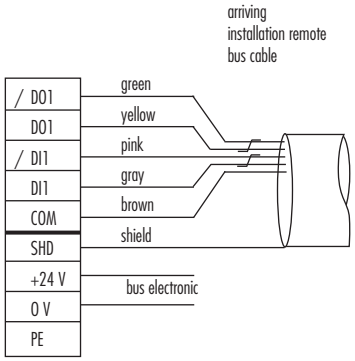
Voltage terminals



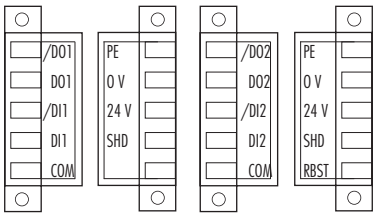
Connection as installation remote bus user



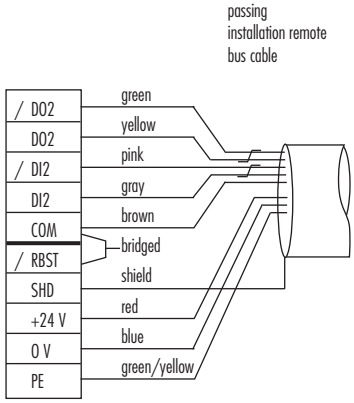
Connection as remote bus user



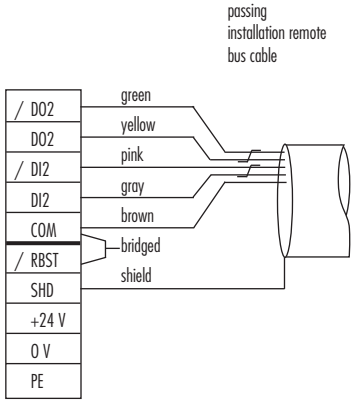
Bus terminals



Connection as installation remote bus user

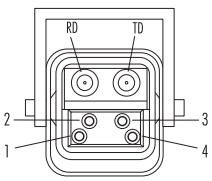


Connection as remote bus user



Contact layout for MVK-DESINA® LWL ECOFAST® and MVK-DESINA® CU ECOFAST®

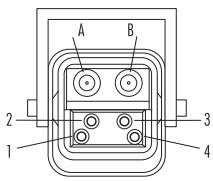
Male/female LWL



TD: transmit data (LWL)
RD: receive data (LWL)
PIN 1: 24 V equal channels supply not switched (U_{ns})
PIN 2: GND
PIN 3: GND
PIN 4: 24 V unequal channels supply switched (U_s)

Top view of module

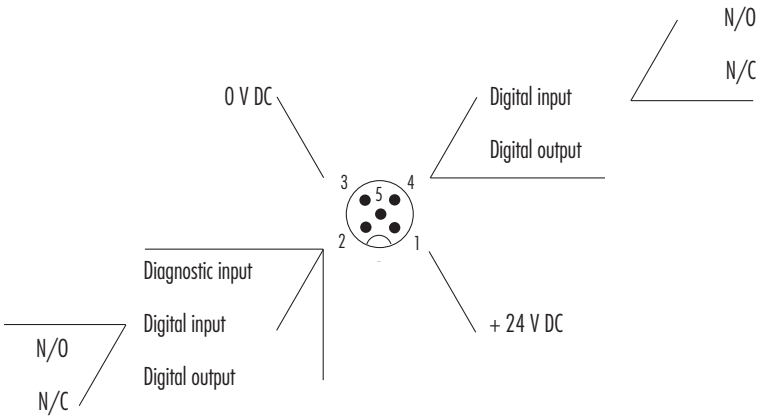
Male/female CU



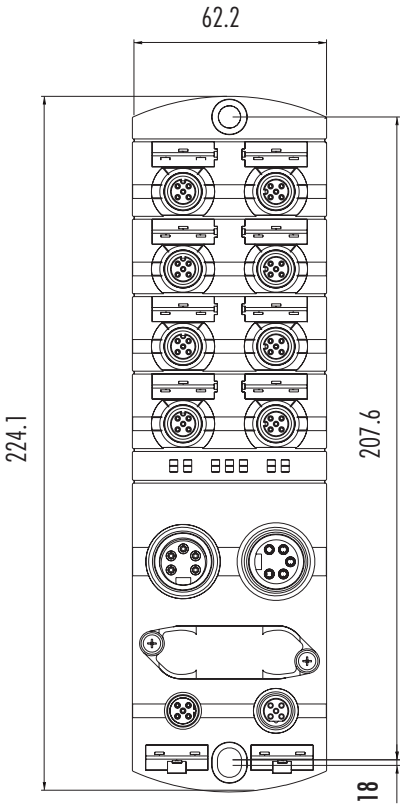
Data A: bus cable
Data B: bus cable
PIN 1: 24 V equal channels supply not switched (U_{ns})
PIN 2: GND
PIN 3: GND
PIN 4: 24 V unequal channels supply switched (U_s)

Top view of module

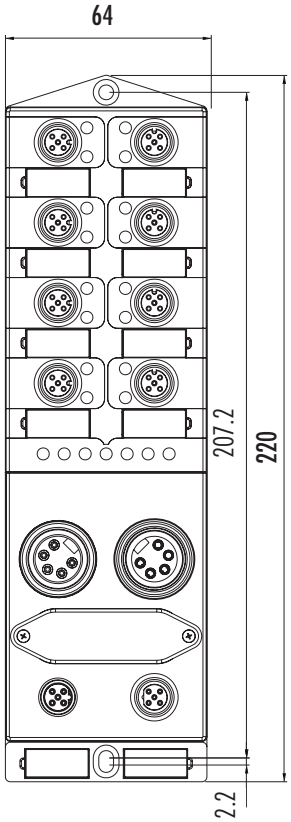
Possible parameterizations for multi functional I/Os



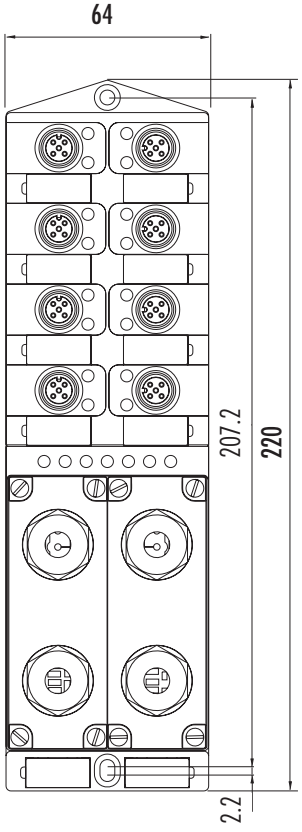
Drill plan for MVK metal housing



Drill plan for MVK plastic housing



Drill plan for MVK-I plastic housing



Installation technology			Art.-No.
	**DESINA® terminator**		**7000-33021-0000000**
	**DESINA® addressing or coding plug**		**55379**

Installation technology			Art.-No.
	Blind cap hybrid field bus connector	Set (1 piece)	**67584**
	**Blind plug 7/8″**		**55390**
	Addressing lid metal	Set (1 piece)	**55317**

Other		
	**MVK manuals** available to download from www.murrelektronik.com	PROFIBUS DeviceNet Interbus

Notes

Further system accessories on request.