MBM - Modular I/O system IP20

Bus system MBM
Our MBM system with IP20 protection can be aligned to your requirements. All applications can be realized with help of modular I/O modules.

Mounting
The unit can be DIN-rail mounted.

Plug in connection technology
The connection is via screw or spring clamp plug in terminals, which allows a fast module change. Potential terminals can be snapped on, too. Additional terminal blocks are not necessary.

Diagnostics
The extensive use of LEDs on the module and messages over the field bus to the master helps to diagnose and locate faults.

Protection against over voltage, over load, short-circuit and reverse polarity
High levels of protection are achieved through well designed fusing for the power supply, input and output terminals.

Galvanic separation
All the inputs and outputs are optically isolated from the field bus. The separate connections of bus nodes and I/O sector make it easy to implement emergency OFF circuits.

Labelling
The large exchangeable label strip for the signals and the module can be labelled manually, or with a printer or plotter.

Open bus system
Murrelektronik supports Profibus-DP with the product range MBM.

Module range
The wide range of modules has been designed to cover most industrial applications.

Certification
All units are certified for the respective bus system. The modules also work with modules from other manufactures.

MBM

MBM Bus nodes
Bus nodes Profibus-DP

page 2.3.2

MBM Expansion modules
DI8
DI16
DO8/0.5 A
DO16/0.5 A
DI4 DO4/0.5 A
DO4R
DO8R
AI4
AO4

from page 2.3.3

Bus nodes

Protection IP20

MBM

Profibus-DP

Ordering data			Art.-No.
Data rate up to 1.5 MBit/s			55016
Data rate up to 12 MBit/s			55018
Screw terminal block	3 x 2-pole		55940
Spring clamp terminal block	3 x 2-pole		55950
Technical data			
Supply voltage		24 V DC (18…30.2 V DC) to EN 61131-2	
Current usage min./max.		approx. 100 mA/1.3 A	
Field bus			
Connection		SUB-D 9-pole	
Addressing		1…99 via rotary switch	
Data rate		9.6 kBit/s…1.5(12) MBit/s	
Galvanic separation		opto-coupler	
Expansion interface			
Capacity		up to 16 expansion modules [1]	
Diagnostic			
Status indicator		bus specific LEDs with label	
Voltage		green LEDs with label	
General data			
Temperature range		0…+55 °C	
Mounting method		DIN-rail mounting to EN60715	
Dimensions H x W x D		116 x 96 x 60 mm	

Accessories			Art.-No.
Terminal block fastener			55896
Spare labels	1 piece = 8 labels		55967
Local adapter			55910
System connection cable	0.5 m		55911
Manual	german/english	bus nodes – up-to-date files can be downloaded under www.murrelektronik.com	
GSD-/type data		up-to-date files can be downloaded under www.murrelektronik.com	
Notes			
		Dimension drawing, contact layouts and accessories from page 2.3.10. [1] Follow project advice.	

Expansion module

MBM

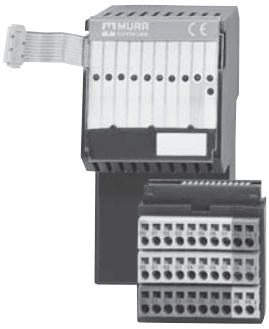
Input/output module
digital 4-way

Protection IP20

Ordering data		**Art.-No.**
4 digital inputs and outputs		**55882**
3-wire screw terminal block		**55832**
3-wire spring clamp terminal block		**55852**
Technical data		
System supply	via system connection from the bus node	
Load weight [1]	1.00	
Galvanic separation	opto-coupler	
Inputs		
Inputs	4	
Input signals	24 V DC, guide line to EN 61131-2	
Input delay time	approx. 1 ms	
Sensor supply	24 V DC (18…30.2 V DC) to EN 61131-2, I-total max. 0.7 A overload protected	
Status indicator	per input 1 yellow LED with label	
Connection	3-wire via terminal block	
Outputs		
Outputs	4	
Supply voltage	24 V DC (18…30.2 V DC) to EN 61131-2, I-total 2 A	
Switching current per output	typ. 0.5 A, 100 % ED, short-circuit protected	
Filament lamp load	2 W	
Max. switching frequency	at ohmic: 100 Hz, at inductive load: 1…4 Hz (independent of the current load per output)	
Status indicator	per output 1 yellow LED with label	
Special function	output status in the case of a bus fault - parameters definable	
Connection	3-wire via terminal block and additional common terminal block	
Diagnostic		
Status indicator	green LED with label	
Sensor supply	green LED with label and return signal to the bus node	
Overload sensor supply	red LED with label and return signal to the bus node	
General data		
Temperature range	0…+55 °C	
Mounting method	DIN-rail mounting to EN60715	
Dimensions H x W x D	116 x 56 x 60 mm	

Accessories		**Art.-No.**
Terminal block fastener		**55896**
Spare labels	1 piece = 8 labels	**55589**
Manual	german/english	digital expansions – up-to-date files can be downloaded under www.murrelektronik.com
Notes		
		Dimension drawing, contact layouts and accessories from page 2.3.10. [1] Follow project advice.

MURR ELEKTRONIK

Expansion module	**MBM** Input module digital 8-way	**MBM** Input module digital 16-way
Protection IP20		

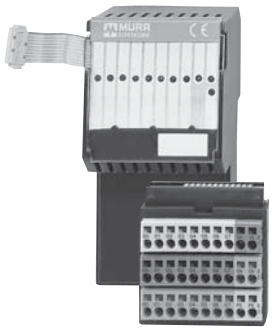
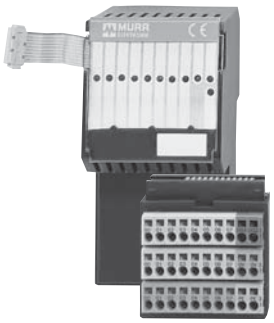
Ordering data		**Art.-No.**	**Art.-No.**
8 digital inputs		**55920**	
16 digital inputs			**55921**
1-wire screw terminal block			**55943**
1-wire spring clamp terminal block			**55953**
2-wire screw terminal block	p-switching	**55834**	
3-wire screw terminal block	p-switching	**55944**	
2-wire spring clamp terminal block	p-switching	**55854**	
3-wire spring clamp terminal block	p-switching	**55954**	
Common screw terminal block f. 3-wire connection			**55990**
Spring clamp terminal block f. 3-wire connection			**55995**
Technical data			
System supply	via system connection from the bus node		
Load weight [1]	1.37	1.28	
Galvanic separation	opto-coupler		
Inputs			
Inputs	8	16	
Input characteristics	p-switching		
Input signals	24 V DC, guide line to EN 61131-2		
Input delay time	approx. 1 ms		
Sensor supply	24 V DC (18…30.2 V DC), to EN 61131-2, I-total max. 0.7 A overload protected		
Status indicator	per input 1 yellow LED with label		
Connection	2- or 3-wire, dependent on terminal block	3-wire via terminal block and additional common terminal block	
Diagnostic			
Status indicator	green LED with label		
Sensor supply	green LED with label and return signal to the bus node		
Overload sensor supply	red LED with label and return signal to the bus node		
General data			
Temperature range	0…+55 °C		
Mounting method	DIN-rail mounting to EN60715		
Dimensions H x W x D	116 x 56 x 60 mm		

Accessories			**Art.-No.**
Terminal block fastener			**55896**
Spare labels	1 piece = 8 labels		**55966**
Manual	german/english	digital expansions – up-to-date files can be downloaded under www.murrelektronik.com	

Notes

Dimension drawing, contact layouts and accessories from page 2.3.10. [1] Follow project advice.

MURR ELEKTRONIK

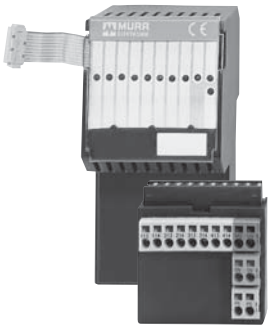
Expansion module	**MBM** Output module digital 8-way	**MBM** Output module digital 16-way
Protection IP20		
Ordering data	**Art.-No.**	**Art.-No.**
8 digital outputs 0.5 A	**55922**	
16 digital outputs 0.5 A		**55923**
1-wire screw terminal block (2 x 8 Bit)		**55948**
2-wire screw terminal block (1 x 8 Bit)	**55835**	
3-wire screw terminal block (2 x 4 Bit)	**55946**	
3-wire screw terminal block (1 x 8 Bit)	**55945**	
1-wire spring clamp terminal block (2 x 8 Bit)		**55958**
2-wire spring clamp terminal block (1 x 8 Bit)	**55855**	
3-wire spring clamp terminal block (2 x 4 Bit)	**55956**	
3-wire spring clamp terminal block (1 x 8 Bit)	**55955**	
Common screw terminal block f. 3-wire connection		**55991**
Spring clamp terminal block f. 3-wire connection		**55996**
Technical data		
System supply	via system connection from the bus node	
Load weight [1]	1.44	1.31
Galvanic separation	opto-coupler	
Outputs		
Outputs	8	16
Supply voltage	24 V DC (18…30.2 V DC), I-total ≤ 4 A	24 V DC (18…30.2 V DC), I-total ≤ 8 A
Switching current per output	typ. 0.5 A, short-circuit protected	0.5 A, 100 % ED, short-circuit protected
Filament lamp load	2 W	
Max. switching frequency	at ohmic: 100 Hz, at inductive load: 1…4 Hz (independent of the current load per output)	
Status indicator	per output 1 yellow LED with label	
Special function	output status in the case of a bus fault - parameters definable	
Connection	2- or 3-wire, dependent on terminal block	3-wire via terminal block and additional common terminal block
Diagnostic		
Status indicator	green LED with label	
Output supply	green LED with label and return signal to the bus node	
Output overload	red LED with label and return signal to the bus node	
General data		
Temperature range	0…+55 °C	
Mounting method	DIN-rail mounting to EN60715	
Dimensions H x W x D	116 x 56 x 60 mm	
Functional description		
	Using the correct terminal blocks, it is possible to split the power supply of Art.-No. 55922 into two groups, each containing 4 outputs or one group of 8.	
Accessories	**Art.-No.**	**Art.-No.**
Terminal block fastener	**55896**	**55896**
Spare labels 1 piece = 8 labels	**55963**	**55969**
Manual german/english	digital expansions – up-to-date files can be downloaded under www.murrelektronik.com	
Notes		
	Dimension drawing, contact layouts and accessories from page 2.3.10. [1] Follow project advice.	

Expansion module

MBM

Output module
relay 4-way

Protection IP20



Ordering data			**Art.-No.**
4 N/O relays			**55925**
1-wire screw terminal block	(4 x 1 Bit)		**55941**
3-wire screw terminal block	(1 x 4 Bit)		**55592**
1-wire spring clamp terminal block	(4 x 1 Bit)		**55951**
3-wire spring clamp terminal block	(1 x 4 Bit)		**55597**
Technical data			
System supply		via system connection from the bus node	
Load weight [1]		1.36	
Galvanic separation		opto-coupler/relay	
Outputs			
Supply voltage		24 V DC (18…30.2 V DC) to EN 61131-2	
Current usage		≤ 50 mA	
Contact material		AgNi 0.15 + htv	
Switching capability 24 V		AC1: 5 A/ AC15: 2 A/ DC13: 1.3 A	
Switching capability 110 V		AC1: 5 A/ AC15: 2 A/ DC13: 250 mA	
Switching capability 230 V		AC1: 5 A/ AC15: 2 A/ DC13: 100 mA	
Min. load per output		1 mA	
Status indicator		per output 1 yellow LED with label	
Special function		output status in the case of a bus fault - parameters definable	
Connection		1-/3-wire via terminal block	
Diagnostic			
Status indicator		green LED with label	
Relay supply		green LED with label and return signal to the bus node	
General data			
Temperature range		0…+55 °C	
Mounting method		DIN-rail mounting to EN60715	
Dimensions H x W x D		116 x 56 x 60 mm	

Accessories			**Art.-No.**
Terminal block fastener			**55896**
Spare labels	1 piece = 8 labels		**55961**
Manual	german/english	digital expansions – up-to-date files can be downloaded under www.murrelektronik.com	

Notes

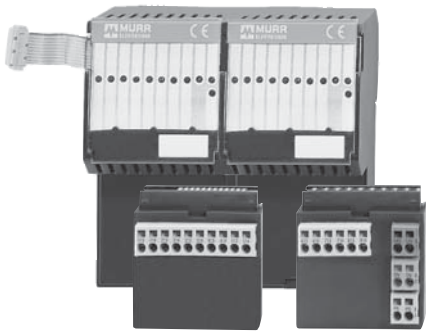
Dimension drawing, contact layouts and accessories from page 2.3.10. [1] Follow project advice.

Expansion module

MBM

Output module
relay 8-way

Protection IP20



Ordering data		**Art.-No.**
8 N/O relays		**55927**
1-wire screw terminal block	(left)	**55949**
1-wire screw terminal block	(right)	**55831**
1-wire spring clamp terminal block	(left)	**55959**
1-wire spring clamp terminals	(right)	**55851**

Technical data	
System supply	via system connection from the bus node
Load weight [1]	1.32
Galvanic separation	opto-coupler/relay
Outputs	
Supply voltage	24 V DC (18…30.2 V DC) to EN 61131-2
Current usage	≤ 120 mA
Contact material	AgSnO2
Switching capability 24 V	AC1: 5 A/ AC15: 3 A/ DC13: 1 A
Switching capability 110 V	AC1: 5 A/ AC15: 3 A/ DC13: 200 mA
Switching capability 230 V	AC1: 5 A/ AC15: 3 A/ DC13: 100 mA
Min. load per output	10 mA
Status indicator	per output 1 yellow LED with label
Special function	output status in the case of a bus fault - parameters definable
Connection	1-wire via terminal block
Diagnostic	
Status indicator	green LED with label
Relay supply	green LED with label and return signal to the bus node
General data	
Temperature range	0…+55 °C
Mounting method	DIN-rail mounting to EN60715
Dimensions H x W x D	116 x 112 x 60 mm

Accessories			**Art.-No.**
Terminal block fastener			**55896**
Spare labels	1 piece = 8 labels		**55939**
Manual	german/english	digital expansions – up-to-date files can be downloaded under www.murrelektronik.com	

Notes

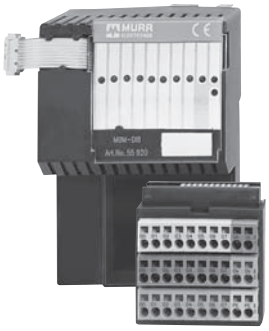
Dimension drawing, contact layouts and accessories from page 2.3.10. [1] Follow project advice.

Expansion module

MBM

Input module
analog 4-way

Protection IP20



Ordering data	**Art.-No.**	**Art.-No.**
4 analog inputs	**55891**	**55929**
2-/3-/4-wire screw terminal block	**55947**	**55947**
2-/3-/4-wire spring clamp terminal block	**55957**	**55957**

Technical data		
System supply	via system connection from the bus node	
Load weight [1]	1.80	
Galvanic separation	opto-coupler between system and inputs	
Inputs		
Supply voltage	24 V DC (18…30.2 V DC) to EN 61131-2	
Current usage	approx. 50 mA	
Response time	approx. 12 ms/module	approx. 80 ms/module
Master connection	via terminal block	
Voltage inputs		
Type	differential input, load resistance 220 kOhm	
Input range	± 10 V DC	
Resolution	12 Bit + sign	
Current inputs		
Type	differential input, load approx. 270 Ohm	
Input range 1	± 20 mA	
Input range 2	4…20 mA with cable break recognition	
Resolution	12 Bit + sign	
PT 100 Inputs		
Type	4-wire connection, sensor supply 15 V DC/2.5 mA per channel	
Input range	-56…+456 °C, internally linearization	
Resolution	12 Bit	
Diagnostic		
Status indicator	green LED with label	
Input supply	green LED with label and return signal to the bus node	
General data		
Temperature range	0…+55 °C	
Mounting method	DIN-rail mounting to EN60715	
Dimensions H x W x D	116 x 76 x 60 mm	
Functional description		
	Every single input can measure current, voltage or temperature.	

Accessories		**Art.-No.**	**Art.-No.**
Terminal block fastener		**55896**	**55896**
Spare labels	1 piece = 8 labels	**55965**	**55965**
Manual	german/english	analog expansions – up-to-date files can be downloaded under www.murrelektronik.com	

Notes

Dimension drawing, contact layouts and accessories from page 2.3.10. [1] Follow project advice.

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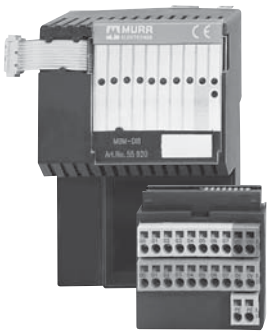
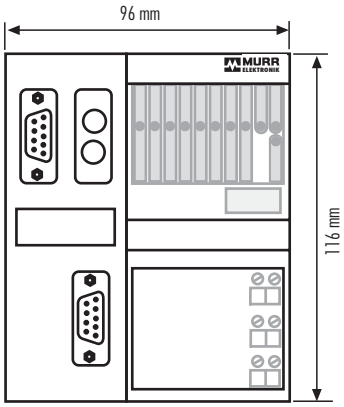
MBM

Expansion module	**MBM** Output module analog 4-way	**MBM** Output module analog 4-way
Protection IP20		
Ordering data	**Art.-No.**	**Art.-No.**
4 analog outputs	**55931**	**55930**
3-wire screw terminal block	**55942**	**55838**
3-wire spring clamp terminal block	**55952**	**55858**
Technical data		
System supply	via system connection from the bus node	
Load weight [1]	1.23	1.56
Galvanic separation	opto-coupler	
General outputs		
Supply voltage	24 V DC (18…30.2 V DC) to EN 61131-2	
Current usage	120 mA	
Response time	typ. 1 ms/module	
Actuator connection	via terminal block	
Voltage outputs		
Characteristics	short-circuit protected, load resistance > 750 Ohm	
Range	0…10 V DC	± 10 V DC
Resolution	12 Bit/channel	11 Bit + sign/channel
Current outputs		
Load	–	500 Ohm
Range	–	0…20 mA
Resolution	–	11 Bit/channel
Diagnostic		
Status indicator	green LED with label	
Output supply	green LED with label and return signal to the bus node	
General data		
Temperature range	0…+55 °C	
Mounting method	DIN-rail mounting to EN60715	
Dimensions H x W x D	116 x 76 x 60 mm	116 x 56 x 60 mm

Accessories		**Art.-No.**	**Art.-No.**
Terminal block fastener		**55896**	**55896**
Spare labels	1 piece = 8 labels	**55898**	**55898**
Manual	german/english	digital expansions – up-to-date files can be downloaded under www.murrelektronik.com	
Notes			
		Dimension drawing, contact layouts and accessories from page 2.3.10. [1] Follow project advice.	

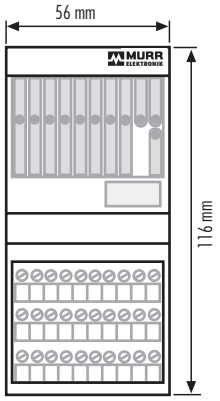
Dimension drawing MBM Bus nodes

(Art.-No. 55016, 55018)

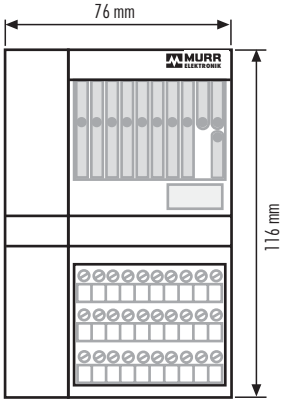


Dimension drawing MBM Expansion modules

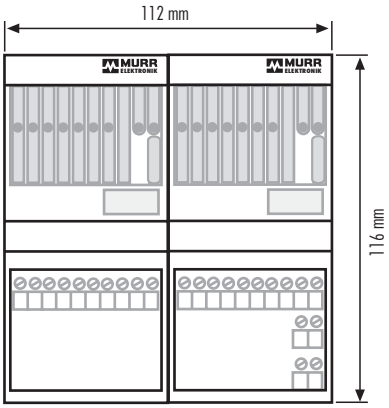
(Art.-No. 55920…926, 55930)



(Art.-No. 55929, 55931, 55891)

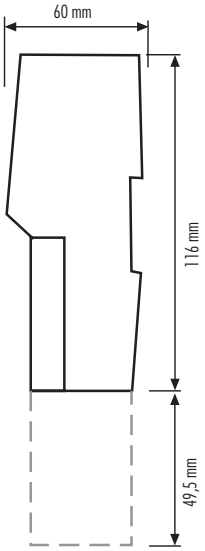


(Art.-No. 55927)



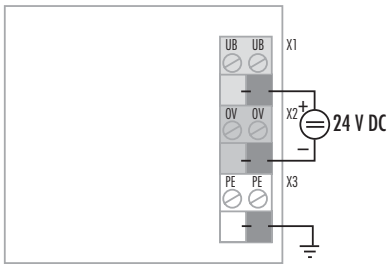
Dimension drawing MBM bus modules, side view

simplified representation
(with potential terminals 3-row)



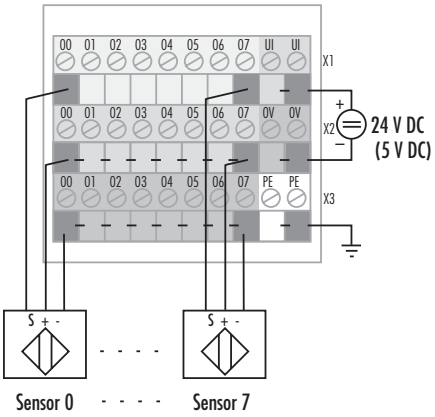
Connection examples for MBM bus nodes Art.-No. 55016 and 55018

Spring clamp terminal block Art.-No. 55950
Screw terminal block Art.-No. 55940

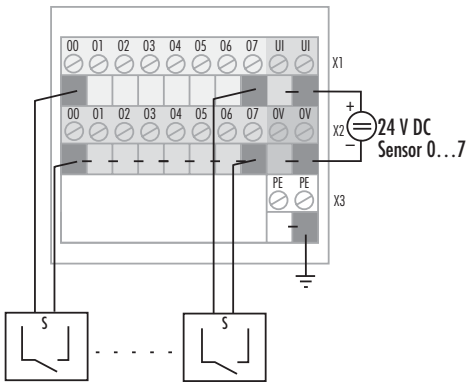


Connection examples for MBM digital 8-way input modules Art.-No. 55920

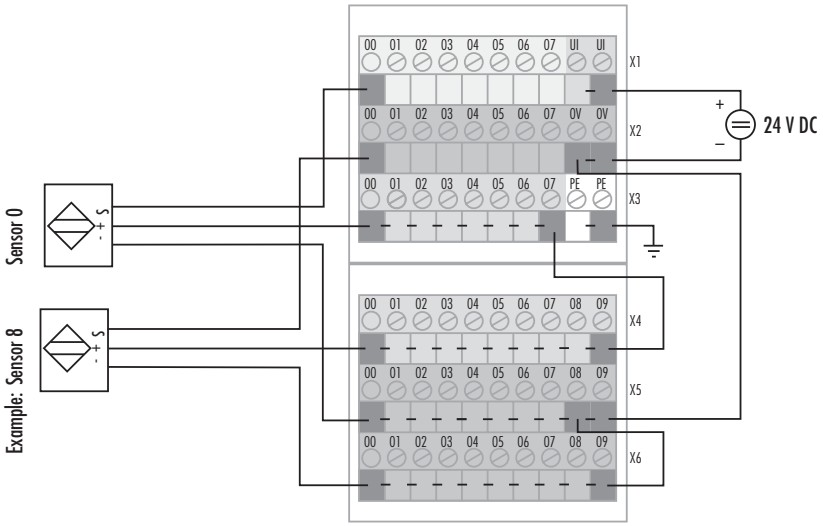
Spring clamp terminal block Art.-No. 55954
Screw terminal block Art.-No. 55944



Spring clamp terminal block Art.-No. 55854
Screw terminal block Art.-No. 55834



Connection example for MBM digital 16-way input module Art.-No. 55921

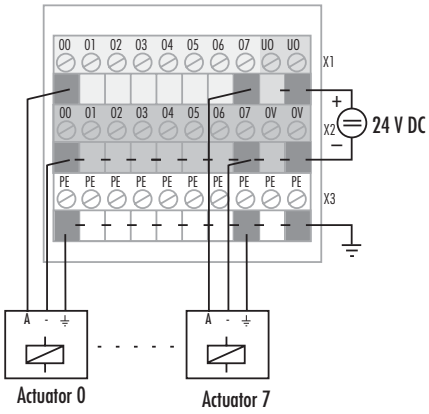


Spring clamp terminal block Art.-No. 55953
Screw terminal block Art.-No. 55943

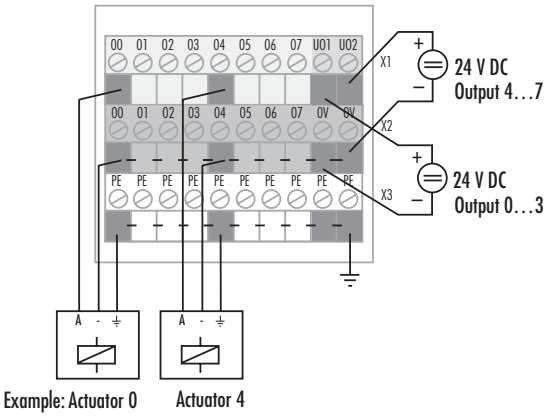
Common spring clamp terminal block Art.-No. 55995
Common screw terminal block Art.-No. 55990

Connection examples for MBM digital 8-way output modules Art.-No. 55922

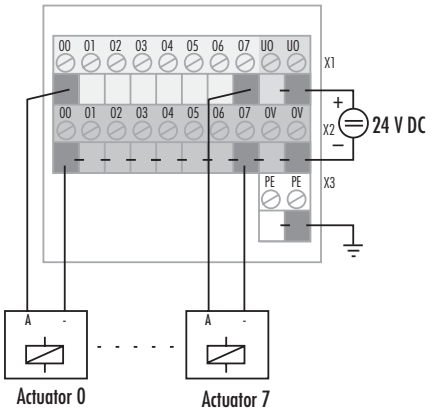
Spring clamp terminal block Art.-No. 55955
Screw terminal block Art.-No. 55945



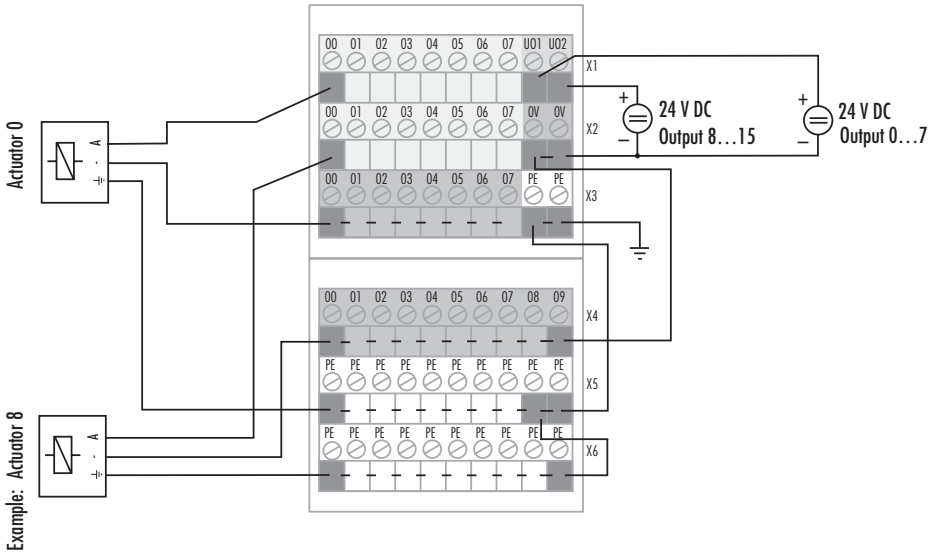
Spring clamp terminal block Art.-No. 55956
Screw terminal block Art.-No. 55946



Spring clamp terminal block Art.-No. 55855
Screw terminal block Art.-No. 55835



Connection example for MBM digital 16-way output module Art.-No. 55923

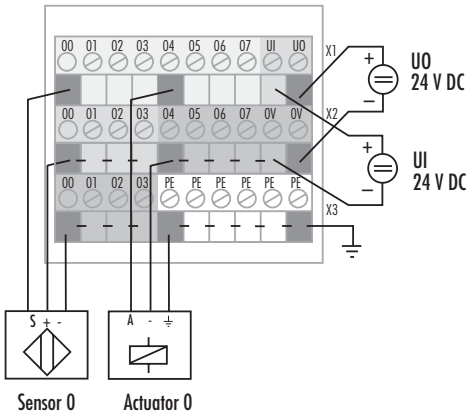


Spring clamp terminal block Art.-No. 55958
Screw terminal block Art.-No. 55948

Common spring clamp terminal block Art.-No. 55996
Common screw terminal block Art.-No. 55991

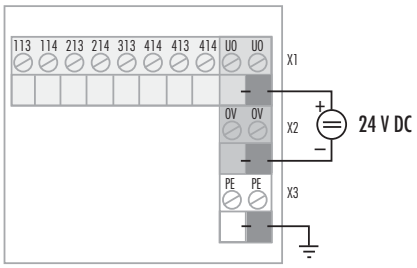
Connection example for MBM digital input/output module Art.-No. 55882

Spring clamp terminal block Art.-No. 55852
Screw terminal block Art.-No. 55832

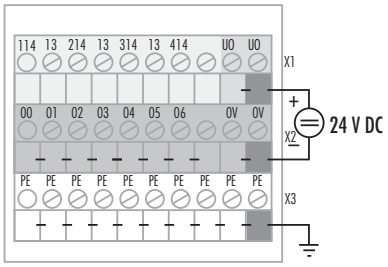


Connection examples for MBM 4-way relay module Art.-No. 55925

Spring clamp terminal block Art.-No. 55951
Screw terminal block Art.-No. 55941

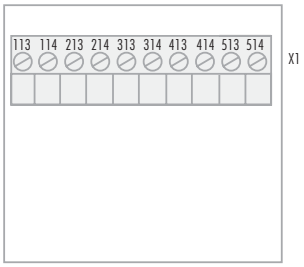


Spring clamp terminal block Art.-No. 55597
Screw terminal block Art.-No. 55592

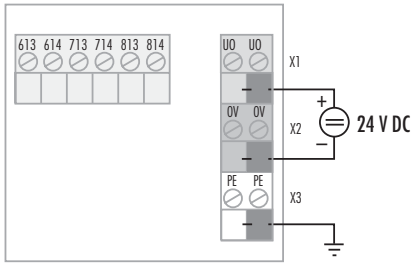


Connection examples for MBM 8-way relay module Art.-No. 55927

Spring clamp terminal block Art.-No. 55959
Screw terminal block Art.-No. 55949

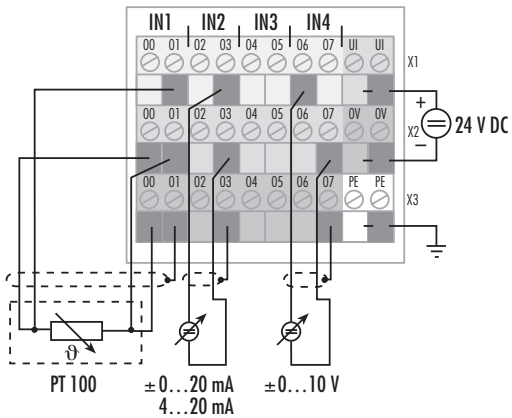


Spring clamp terminal block Art.-No. 55851
Screw terminal block Art.-No. 55831



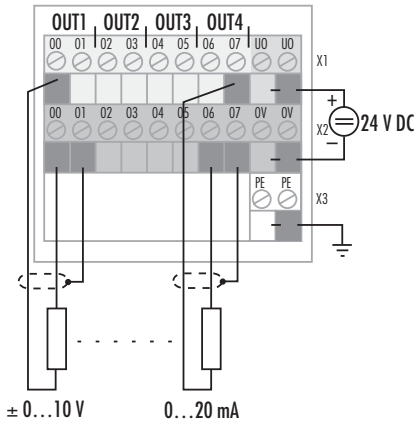
Connection example for MBM analog input module Art.-No. 55891 and 55929

Spring clamp terminal block Art.-No. 55957
Screw terminal block Art.-No. 55947



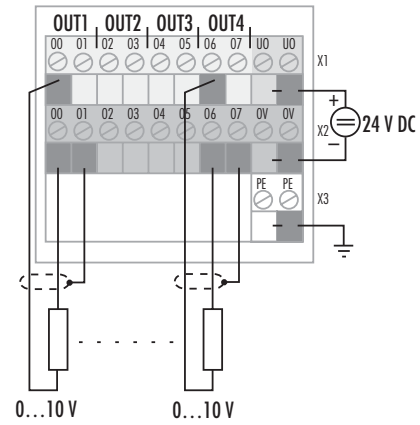
Connection examples for MBM analog output modules Art.-No. 55930

Spring clamp terminal block Art.-No. 55858
Screw terminal block Art.-No. 55838



Connection examples for MBM analog output modules Art.-No. 55931

Spring clamp terminal block Art.-No. 55952
Screw terminal block Art.-No. 55942



Screw terminal block				Art.-No.
	for MBM-P	3 x 2-pole	Supply voltage	**55940**
	for MBM DI8	3 x 10-pole	3-wire	**55944**
	for MBM DI16	3 x 10-pole	1-wire	**55943**
	for MBM DO8/0.5 A	3 x 10-pole	3-wire	**55946**
	for MBM DO8/0.5 A	3 x 10-pole	3-wire	**55945**
	for MBM DO16/0.5 A	3 x 10-pole	1-wire	**55948**
	for MBM DO4R	1 x 10-pole	1-wire	**55941**
	for MBM AI4	3 x 10-pole	2-, 3-, 4-wire	**55947**
	for MBM AO4U; MBM AO4	2 x 10-pole	3-wire	**55942**
	for MBM-P DI8 (2 x UB)	3 x 10-pole	3-wire	**55976**
	for MBM DI4 DO4	3 x 10-pole	3-wire	**55832**
	for MBM DO8/0.5 A	2 x 10-pole	2-wire	**55835**
	for MBM DO4R	3 x 10-pole	3-wire	**55592**
	for MBM DO8R (left)	1 x 10-pole	1-wire	**55949**
	for MBM DO8R (right)	1 x 6-pole	1-wire	**55831**
Spring clamp terminal block				**Art.-No.**
	for MBM-P	3 x 2-pole	Supply voltage	**55950**
	for MBM DI8	3 x 10-pole	3-wire	**55954**
	for MBM DI16	3 x 10-pole	1-wire	**55953**
	for MBM DO8/0.5 A	3 x 10-pole	3-wire	**55956**
	for MBM DO8/0.5 A	3 x 10-pole	3-wire	**55955**
	for MBM DO16/0.5 A	3 x 10-pole	1-wire	**55958**
	for MBM DO4R	1 x 10-pole	1-wire	**55951**
	for MBM AI4	3 x 10-pole	2-, 3-, 4-wire	**55957**
	for MBM AO4U; MBM AO4	2 x 10-pole	3-wire	**55952**
	for MBM-P DI8 (2 x UB)	3 x 10-pole	3-wire	**55977**
	for MBM DI4 DO4	3 x 10-pole	3-wire	**55852**
	for MBM DO8/0.5 A	2 x 10-pole	2-wire	**55855**
	for MBM DO4R	3 x 10-pole	3-wire	**55597**
	for MBM DO8R (left)	1 x 10-pole	1-wire	**55959**
	for MBM DO8R (right)	1 x 6-pole	1-wire	**55851**
Common terminal block				**Art.-No.**
Screw terminal block	MBM DI16	3 x 10-pole	3-wire	**55990**
	MBM DO16/0.5 A	3 x 10-pole	3-wire	**55991**
Spring clamp terminal block	MBM DI16	3 x 10-pole	3-wire	**55995**
	MBM DO16/0.5 A	3 x 10-pole	3-wire	**55996**
System cables				**Art.-No.**
	MBM System connection cable 0.5 m to local adapter			**55911**
Connectors and cables				**Art.-No.**
	Profibus connector	without PG-connection		**55762**
	Profibus connector	with PG-connection		**55766**
	Profibus data cable	per meter		**55770**
System components				**Art.-No.**
	repeater,			**56960**
	master, gateways			on request
Others				**Art.-No.**
	MBM-TL terminal-lock			**55896**