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Switching and controlling in the switch cabinet

- Relays
- Opto-coupler
- Solid state relays
- Intelligent interface technology


MURR
ELEKTRONIK
Art.No. 3000-16013-3100020
Made in Italy
Optocoupler
Pickup
Motor guard
Imp. extension

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MIRO – INTERFACE TECHNOLOGY
MINIMUM SPACE – MAXIMUM FUNCTIONALITY

Application areas

- Manufactoring industry
- Plastic processing
- Building automation
- Automotive industry
- Process technology

MARKET REQUIREMENT

The intelligent modularity saves space and provides easy, flexible replaceability.

Be it in the manufacturing industry, building automation or process technology, the signals that are transferred between process peripherals and control systems must always be transmitted reliably and potential-free. These control concepts can be achieved in extremely confined spaces using Murrelektronik relay and opto-coupler modules.

These products ensure that your costs are reduced by increasing interference immunity and therefore improving the availability of machinery and system components. Slimline housing designs require less space and therefore reduce the size of your switch cabinet. The intelligent modularity of MIRO relays and opto-couplers using plug-on modules makes the replacement of switching elements both easy and low cost.

SWITCHING AND CONTROLLING IN THE SWITCH CABINET – ALL FROM A SINGLE SOURCE

RELAYS

- Single and multiple channels
- Potential bridging link
- Input/output relays
- Control 5...230 V AC/DC
- Slimline housing design
- Pluggable version
- Galvanic separation

OPTO-COUPLER

- Single and multiple channels
- Potential bridging link
- Overload protection
- 0.5...10 A DC
- Slimline housing design
- Pluggable version
- Galvanic separation

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SOLID STATE RELAYS

- For AC voltage
- Single and multiple phases
- Zero voltage switch
- 0.5...30 A AC
- Pluggable version

INTELLIGENT INTERFACE MODULES

- Analog converters
- Comparator modules
- Temperature converters
- Pole changing switches
- Motor temperature monitoring
- Timer

RELAYS

MIRO 6.2 pluggable

- 6.2 mm slimline, pluggable relays
- Potential bridging link to input and output
- Sockets and plug modules available separately
- Input/output relays
- UL-approvals

MIRO 6.2

- 6.2 mm slimline coupling relays
- Potential bridging link to input and output
- H-O-A versions
- Input/output relays
- Different input voltages

MIRO 12.4

- 12.4 mm slimline, compact coupling relays
- Multi-channel variants
- Input/output relays
- Different input voltages

OPTO-COUPLERS

MIRO 6.2 pluggable

- 6.2 mm slimline, pluggable relays
- 2 A and 4 A opto-couplers
- Current limitation (4 A)
- Sockets and plug modules available separately
- Potential bridging link to input and output

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MIRO 6.2

- 6.2 mm slimline coupling relays
- 0.5...10 A
- Potential bridging link
- up to 20 kHz

SPECIAL VERSIONS

- 10 A / 1 KHz power opto-coupler
- Multiple voltage versions

MIRO – compact & functional

MIRO – the coupling module in terminal block format
Coupling modules in the form of relay and opto-coupler modules are indispensable in controller and system construction. Coupling modules are needed for signal amplification, signal adaptation, potential separation, potential-free transfers to other parts of the system and for increasing interference immunity.

Using the MIRO range of modules will cut your costs and block out interference and overvoltage from PLC boards and construction cards. MIRO interface modules will increase the operational reliability of your system and reduce the size of your switch cabinet.

MIRO – a wide range of products in the housing
Regardless of whether they are relays (input and output relays), opto-couplers or intelligent converter modules – all modules are available with the same housing concept.

MIRO – terminal relay – just 6.2 mm wide
1 relay, 1 C/O contact with bridging link
just 6.2 mm wide. The modules are suitable for clipping onto a 35 mm DIN-rail in accordance with EN 60175.
The screw terminal or spring clamp terminal connection (Cage Clamp®) leaves nothing to be desired.

MIRO – easy access
The terminals are arranged in such a way that the connecting terminals are easy to access, even with high-level cable ducts.

MIRO – pluggable
If your application requires frequent switch element replacements, the MIRO 6.2 series is the answer. The relay or opto-coupler can be replaced.

SOLID STATE RELAYS

MIRO 6.2 triac

- 6.2 mm wide housing
- Potential bridging link
- Pluggable version available
- With zero voltage switching
- Different input voltages
- 0.5...2 A

MIRO triac

- Single-phase
- 5...10 A
- With zero voltage switching
- Switching voltage up to 400 V AC
- Different input voltages

MIRO triac

- Single-phase, 2-phase and 3-phase
- 20...30 A
- With zero voltage switching
- Switching voltage up to 660 V AC

INFORMATION

AC voltages can be switched without causing wear using **triacs or thyristors as semiconductor switches**. Solid state power switches are often a substitute for contactors in cases where frequent switching occurs. Zero voltage switches minimize the in-rush current and reduce the number of switching torque faults.

Example applications are: plastic processing, rubber processing, building heating, industrial furnace construction, the automotive industry and the food and drink industry

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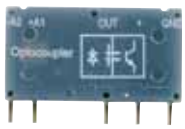
INTELLIGENT INTERFACE TECHNOLOGY

MIRO analog modules

- U/U, U/I, I/I and I/U converters
- Comparator modules
- Temperature converters for PT100
- Potentiometer modules
- Pole-changing switches for DC motors

MIRO 6.2 timer

- Relay output and opto-coupler output
- Multifunctional modules
- Galvanic separation
- Adjustment per potentiometer and DIP-switch



MIRO 6.2 plug module

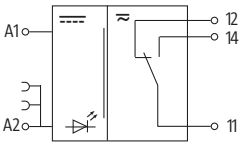
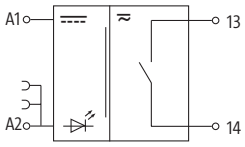
- Input/output relays
- Opto-coupler 2 A
- Opto-coupler 4 A with current limiting
- Solid state relays 230 V/0.5 A
- Impulse expansion module

INFORMATION

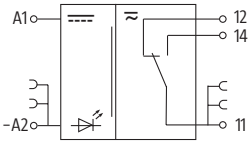
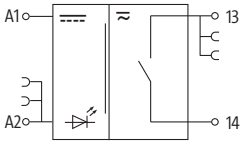
In measuring and control technology, many measuring signals occur that are needed for **monitoring and indicating** the status of mechanical processes.
Before these measuring variables can be used by programmable logical controllers and process computers they must be converted into **digital informationen** or **standardized signals** (0...20 mA, 4...20 mA or 0...10 V).

RELAY MODULES

Output relays

	MIRO 6.2 1 C/O contact		MIRO 6.2 1 N/O contact	
				
Circuit diagram				
Common connection up to max. 50 V AC/DC At connection voltages of 110 and 230 V A2 does not feature potential sockets				
Ordering data		**Art.-No.**		**Art.-No.**
Connection voltage	spring clamp/screw terminals		spring clamp/screw terminals	
12 V DC	cUL	6652050		
24 V DC	UL + CSA	6652000	UL + CSA	6652002
24 V AC/DC	UL + CSA	6652001	cUL	6652015
48 V DC	UL + CSA	6652020		
110 V AC/DC	UL + CSA	6652030		
230 V AC/DC	UL + CSA	6652040		
Technical data				
Switching voltage	12...250 V AC/DC			
Switching current	10 mA...6 A (switching capabilities to EN 60947-5-1)			

Input relays

	MIRO 6.2 1 C/O contact		MIRO 6.2 1 N/O contact	
				
Circuit diagram				
Common connection up to max. 50 V AC/DC At connection voltages of 110 and 230 V A2 does not feature potential sockets				
Ordering data		**Art.-No.**		**Art.-No.**
Connection voltage	spring clamp/screw terminals		spring clamp/screw terminals	
24 V DC	UL + CSA	6652005	UL + CSA	6652004
24 V AC/DC	UL + CSA	6652003		
48 V DC	UL + CSA	6652021		
110 V AC/DC	UL + CSA	6652031		
230 V AC/DC	UL + CSA	6652041		
Technical data				
Switching voltage	12...250 V AC/DC			
Switching current	1 mA...50 mA (when the listet values are exceeded the gold plating is destroyed, then will take on the properties of an output type)			

RELAY MODULES

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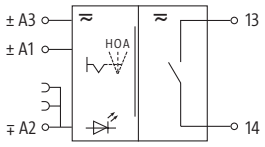
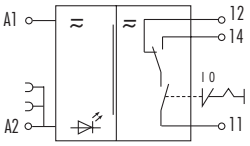
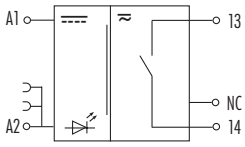
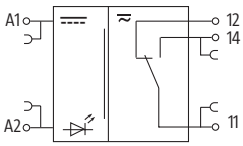
Output relays

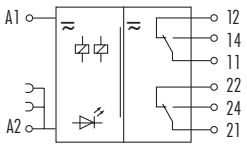
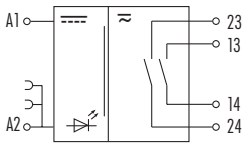
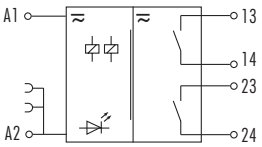
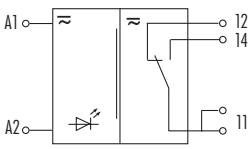
	MIRO 6.2 1 N/O contact with protected H-O-A switch	MIRO 6.2 1 C/O contact with isolation function	MIRO 6.2 1 N/O contact with soldering terminal
			Common return for NC
Circuit diagram			
Common connection up to max. 50 V AC/DC At connection voltages of 110 and 230 V A2 does not feature potential sockets			
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**
Connection voltage	spring clamp/screw terminals	spring clamp/screw terminals	spring clamp/screw terminals
24 V DC			UL + CSA **6652006**
24 V AC/DC	UL + CSA **6652007**	UL + CSA **6652010**	
Technical data			
Switching voltage	12...250 V AC/DC		
Switching current	10 mA...6 A (switching capabilities to EN 60947-5-1)		

Pluggable relays

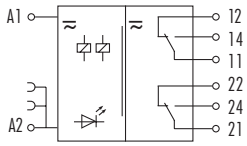
	MIRO 6.2 pluggable Output relay, 1 C/O contact	MIRO 6.2 Plug module Output relay, 1 C/O contact	MIRO 6.2 Plug module Input relay, 1 C/O contact
			
Circuit diagram			
[1]To be used with - Art.-No. 3000-16013-2100010 - Art.-No. 3000-16013-3100020 [2]To be used with - Art.-No. 3000-16013-3100030			
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**
Connection voltage	spring clamp terminals		
24 V DC	UL + CSA 3000-16013-2100010	[1]**3000-16023-2100010**	[1] **3000-16023-2100030**
24 V AC/DC	UL + CSA 3000-16013-3100020		
60 V DC		[2]**3000-16023-2100020**	
230 V AC/DC	UL + CSA 3000-16013-3100030		
Technical data			
Switching voltage	12...250 V AC/DC		
Switching current	10 mA...6 A (switching capabilities to EN 60947-5-1)		1 mA...50 mA (when the listet values are exceeded the gold plating is destroyed, then will take on the properties of an output type)

RELAY MODULES

Output relays

	MIRO 12.4 2 C/O contacts with enhanced features	MIRO 12.4 2 N/O contacts	MIRO 12.4 2 N/O contacts	MIRO 12.4 1 C/O contact multi-voltage input
				
Circuit diagram				
At connection voltages of 110 and 230 V A2 does not feature potential sockets				
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**	**Art.-No.**
Connection voltage	spring clamp/screw terminals	spring clamp/screw terminals	spring clamp/screw terminals	screw terminals
24 V DC	cUL **6652102**	**6652106**	**6652104**	**52160**
24 V AC/DC	cUL **6652103**			**52160**
48 V DC	cUL **6652120**			**52160**
110 V AC/DC	cUL **6652130**			**52160**
230 V AC/DC	cUL **6652140**			**52160**
Technical data				
Switching voltage	12...250 V AC/DC			
Switching current	10 mA...6 A			
Max. power rating (voltage dependent)	1500 VA/120 W			

Input relays

	MIRO 12.4 2 C/O contacts with enhanced features
	
Circuit diagram	
At connection voltages of 110 and 230 V A2 does not feature potential sockets	
Ordering data	**Art.-No.**
Connection voltage	spring clamp/screw terminals
24 V DC	cUL **6652110**
24 V AC/DC	cUL **6652111**
48 V DC	cUL **6652126**
110 V AC/DC	cUL **6652136**
230 V AC/DC	cUL **6652146**
Technical data	
Switching voltage	12...250 V AC/DC
Schaltstrom	1 mA...50 mA (when the listet values are exceeded the gold plating is destroyed, then will take on the properties of an output type)
Max. power rating (voltage dependent)	1500 VA/120 W

OPTO-COUPLER MODULES

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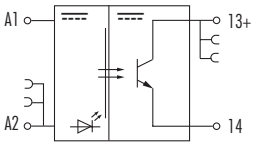
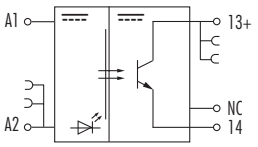
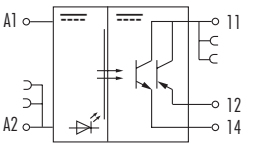
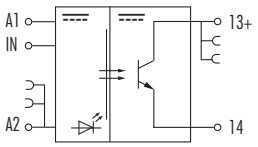
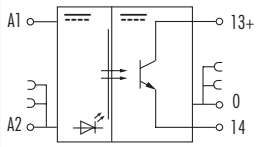
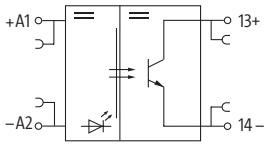
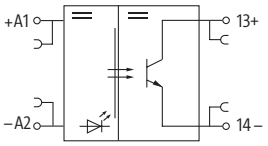
Transistor output

	MIRO 6.2	MIRO 6.2	MIRO 6.2	MIRO 6.2
	Transistor 0.5 A	Transistor 2 A	Transistor 10 A	Transistor 10 A overload and short-circuit protected
				
Circuit diagram				
Common connection up to max. 50 V AC/DC				
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**	**Art.-No.**
Connection voltage	spring clamp/screw terminals	spring clamp/screw terminals	spring clamp/screw terminals	spring clamp/screw terminals
5 V DC		UL + CSA **66**52502		
24 V DC	UL + CSA **66**52500	UL + CSA **66**52501	**66**52520	**66**52521
48 V DC	UL + CSA **66**52505			
110 V AC/DC	UL + CSA **66**52506	UL + CSA **66**52508		
230 V AC	UL + CSA **66**52507	UL + CSA **66**52508		
Technical data				
Switching voltage	5...48 V DC			
Switching current	0.1 mA...0.5 A	1 mA...2 A	1 mA...10 A	1 mA...10 A

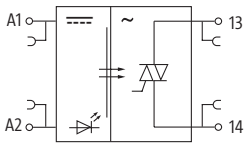
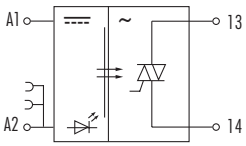
Fast transistor output

	MIRO 6.2	MIRO 6.2	MIRO 6.2	MIRO 6.2
	Transistor 2 A with soldering terminal	Transistor 0.5 A with C/O contact	Transistor 0.5 A control current 0.1 mA max. switching frequency 20 kHz	Transistor 2 A short-circuit protected max. switching frequency 1 kHz
	 Common return for NC			
Circuit diagram				
Common connection up to max. 50 V DC				
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**	**Art.-No.**
Control voltage input	spring clamp/screw terminals	spring clamp/screw terminals	spring clamp/screw terminals	spring clamp/screw terminals
24 V DC	UL **66**52512	UL + CSA **66**52510	UL + CSA **66**52511	**66**52503
Technical data				
Switching voltage	5...48 V DC			10...35 V DC
Switching current	1 mA...2 A overload protection	0.1 mA...0.5 A		1 mA...2 A short-circuit protected

OPTO-COUPLER MODULES

Transistor output	MIRO 6.2 pluggable Transistor 2 A	MIRO 6.2 plug module Transistor 2 A	MIRO 6.2 pluggable Transistor 4 A	MIRO 6.2 plug module Transistor 4 A
				
Circuit diagram				
[1] To be used with - Art.-No. 3000-32512-2100010 [2] To be used with - Art.-No. 3000-32512-2100020				
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**	**Art.-No.**
Control voltage input	spring clamp terminals		spring clamp terminals	
24 V DC	UL 3000-32512-2100010	[1] **3000-32522-2100010**	UL 3000-32512-2100020	[2] **3000-69012-2100050**
Technical data				
Switching voltage	5...48 V DC		5...30 V DC	
Switching current	1 mA...2 A		1 mA...4 A short-circuit protected	

SOLID STATE RELAYS

Triac output Zero voltage switch	MIRO 6.2 pluggable Triac 0.5 A	MIRO 6.2 plug module Triac 0.5 A	MIRO 6.2 Triac 0.5 A	MIRO 6.2 Triac 1 A
				
Circuit diagram				
[1] To be used with - Art.-No. 3000-34013-2100010				
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**	**Art.-No.**
Connection voltage	spring clamp terminals		spring clamp/screw terminals	spring clamp/screw terminals
5 V DC			UL 6652551	
24 V DC	3000-34013-2100010	[1] **3000-69011-2100060**	UL 6652550	6652571
115 V AC			UL 6652556	
230 V AC			UL 6652557	
Technical data				
Switching voltage	12... 250 V AC		24 ... 250 V AC	12 ... 280 V AC
Switching current	0.01 mA...0.5 A		0.1 mA...0.5 A	0.01 mA...1.0 A

SOLID STATE RELAYS

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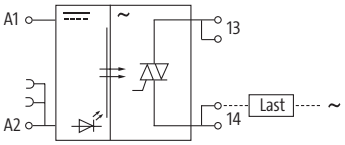
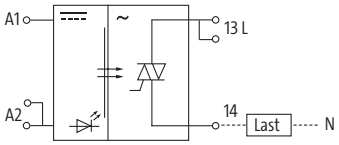
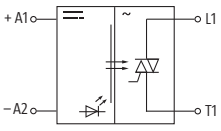
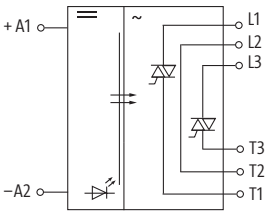
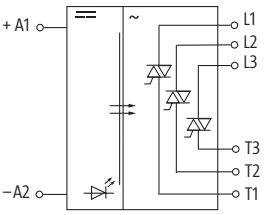
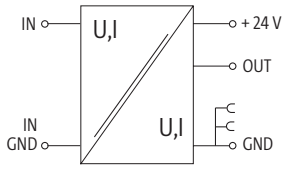
Triac output Zero voltage switch	AMMDS triac Triac 2 A	MIRO triac Triac 5 A	MIRO triac Triac 10 A
			
Circuit diagram			
			
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**
Control voltage input	screw terminals	screw-plug terminals	screw-plug terminals
24 V DC	UL **50092**	**3000-36001-2000020**	**3000-36001-2000025**
115 V AC		**3000-36001-2000022**	**3000-36001-2000027**
230 V AC		**3000-36001-3000023**	**3000-36001-3000028**
Technical data			
Switching voltage	24...280 V AC	12...400 V AC	
Switching current	1 mA...2 A	10 mA...5 A	100 mA...10 A
Surge current	70 A		

Triac output Zero voltage switch	MIRO triac Triac 30 A	MIRO triac Triac 2 x 25 A	MIRO triac Triac 3 x 20 A
			
Circuit diagram			
			
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**
Control voltage input	screw terminals	screw terminals	screw terminals
24 V DC	UL/cUL **3000-36001-2000040**	UL/cUL **3000-36001-2000050**	UL/cUL **3000-36001-2000060**
Technical data			
Switching voltage	42 V...660 V AC		
Switching current	30 A	2 x 25 A	3 x 20 A
Surge current	400 A	600 A	

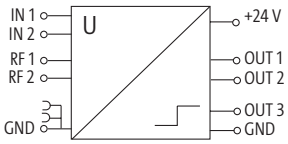
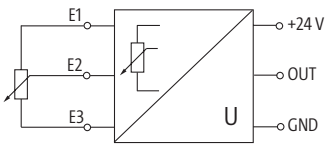
INTELLIGENT INTERFACE TECHNOLOGY

Analog converters

	MU..W 6.2	**MI..W 6.2**	**MI..W 6.2**
	INPUT 0 ... 10 V DC	INPUT 0 ... 20 mA	INPUT 4 ... 20 mA
			
Circuit diagram			
			
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**
OUTPUT	spring clamp/screw terminals	spring clamp/screw terminals	spring clamp/screw terminals
0...10 V DC/20 mA	**6644205**	**6644212**	**6644213**
0...20 mA	**6644232**	**6644226**	
4...20 mA	**6644233**	**6644228**	
Technical data			
Supply voltage	24 V DC		
Input resistance; input voltage/current	approx. 200 kOhm; approx. 250 Ohm		
Output load	$R_L \geq 500$ Ohm at output voltage; $R_L \leq 500$ Ohm at output current		

Comparator modules

Potentiometer converter

	MAK	**MIRO 12.4**
	Input signal, voltage DC	Potentiometer
		
Circuit diagram		
		
Ordering data	**Art.-No.**	**Art.-No.**
Input signal, voltage DC	spring clamp/screw terminals	screw terminals
Potentiometer	**6644110**	**3000-62004-8200010**
Technical data		
Supply voltage	24 V DC	24 V DC
Input resistance	100 kOhm	> 2.5 MOhm
Input range	–	470 Ohm ...10 kOhm
Output	3 transistor outputs	0...10 V
Description		
	The DC- or AC-voltage comparator for analog voltage, which, i. e. will generate from pressure, temperature, or other sensors. The analog input values are compared to internal or external reference voltages to over or underflow.	The potentiometer converter is be used to convert resistive load into a voltage signal. A higher linearity will be achieved due a lower loop stream. The sensor cables are monitored for line breaks and short-circuits.

INTELLIGENT INTERFACE TECHNOLOGY

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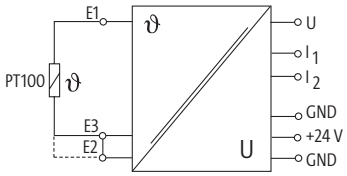
Temperature converters for PT100 sensors

MTW 12.4

2-/3-wire

Circuit diagram



Ordering data		**Art.-No.**
INPUT	spring clamp/screw terminals	
– 50 ...+50 °C		6644330
– 50 ...+150 °C		6644331
0 ...100 °C		6644332
0 ...200 °C		6644334
0 ...600 °C		6644336
Technical data		
Supply voltage range	20...30 V DC, smoothed	
Cable resistance (without PT100)	at 3-wire technology max. 100 Ohm	
Output signals at 0...10 V DC	max. 25 mA, overload protected	
Output signals at 4...20 mA	max. 500 Ohm R_L	
Tolerance	± 1 % from end value	

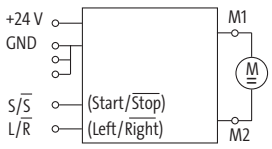
Motor control

Pole changing switches

MIRO 12.4

Pole changing switches for DC motors

Circuit diagram



Ordering data		**Art.-No.**
Control voltage input	spring clamp/screw terminals	
24 V DC		6650140
Technical data		
Switching voltage	19.2...30 V DC	
Switching current	3 A	

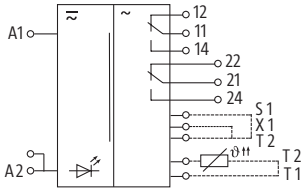
INTELLIGENT INTERFACE TECHNOLOGY

MCVO Motor monitoring with thermal triggering

RM

1 relay; 2 C/O contacts

Circuit diagram



Ordering data		Art.-No.
Supply voltage	screw terminals	
24 V DC		51010
Technical data		
Switching voltage	250 V AC/DC	
Switching current	10 mA...8 A	
Total cold resistance (between T1 and T2)	≤ 1.5 kOhm	
Operate / reset	2.5...3.6 kOhm (relay de-energize) /1.5...2.3 kOhm (relay energize)	
Function diagram		
	The thermal triggering device monitors motors which are equiped with PTC resistor sensors to DIN 44081. Temperature resistors will be serial switched and galvanically isolated connected to terminals T1 and T2. Minimal changes of temperature will trip the relay. A red LED shows the fault optically. A bridge link X1/T2 enables fault latching. Via bridge S1/T2, remote resetting can be realized.	

Timer

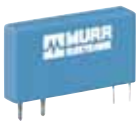
Relay output

MIRO 6.2 pluggable

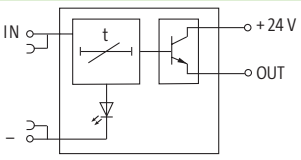
Impulse expansion

MIRO 6.2 plug module

Impulse expansion



Circuit diagram



Ordering data	Art.-No.	Art.-No.
Supply voltage	spring clamp terminals	
24 V DC	3000-18512-0100010	3000-69012-2100020
Technical data		
Switching voltage	24 V DC	
Switching current	0.1 mA...100 mA	
Time range	40 ms	

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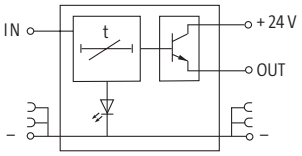
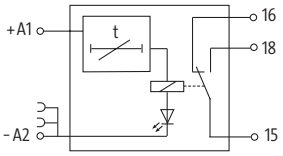
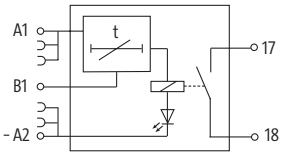
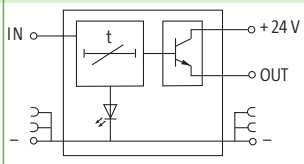
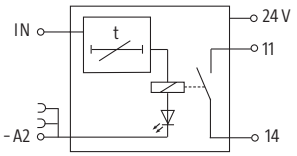
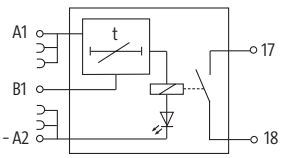
Timer	**MIB 6.2 mm** Transistor output One shot	**MIRO 6.2 timer** Relay output Switch on delay	**MIRO 6.2 timer** Relay output Switch off delay
			
Circuit diagram			
			
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**
Connection voltage	spring clamp/screw terminals	spring clamp/screw terminals	spring clamp/screw terminals
24 V DC	UL + CSA **6652320**	UL + CSA **6652300**	UL + CSA **6652310**
Technical data			
Switching voltage	12...250 V AC/DC		
Switching current	1 mA...100 mA		10 mA...6 A
Time range	100 ms...10 sec	10 ms...10 sec	100 ms...100 sec

Timer multifunction **- One shot** **- Switch on delay** **- Switch off delay** **- Modulation**	**MIRO 6.2 timer** Transistor output	**MIRO 6.2 timer** Relay output	**MIRO 6.2 timer** Relay output with modulation
			
Circuit diagram			
			
Ordering data	**Art.-No.**	**Art.-No.**	**Art.-No.**
Supply voltage	spring clamp/screw terminals	spring clamp/screw terminals	spring clamp/screw terminals
24 V DC	**3000-18512-0200010**	**3000-18513-0200013**	UL + CSA **6652350**
24 V DC	**3000-18502-0200010**	**3000-18503-0200012**	
Technical data			
Switching voltage	24 V DC	12...250 V AC/DC	
Switching current	1 mA...100 mA	10 mA...6 A	
Time range	10 ms...10 sec	100 ms...100 sec	100 ms...300 sec

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