

General information

Opto-couplers are used as an interface between different signal levels or to isolate one signal from another. Similar to function to a relay, the following points should be noted:

Opto-couplers have the following qualities:

- long life
- no mechanical wear and tear (solid state operation)
- silent operation
- no contact bounce
- shorter switching time

The modules are often used to enable the low voltage outputs of PLC's to control higher voltage and current loads. For example, a load voltage of 250 V AC, will be completely isolated from the PLC.

Control of DC loads

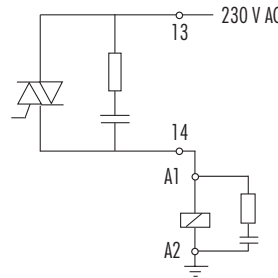
To control DC voltages, an opto-coupler with a transistor output is used. An opto-coupler can be used, for example, to convert an NPN output into a PNP output, or vice versa.

Modules are available to cover the input range 5 to 230 volts. Switched output current can be up to 40 A.

When switching inductive loads, it is advisable to prevent voltage transients by suppressing the load.

Control of AC loads

To control AC voltages, an opto-coupler with a triac output is used. Murrelektronik opto-couplers for AC switching incorporate a control circuit which ensures that the triac is switched on only when the AC voltage is at zero and is switched off only when the load current is zero. This eliminates the electro-magnetic interference which would otherwise be caused.

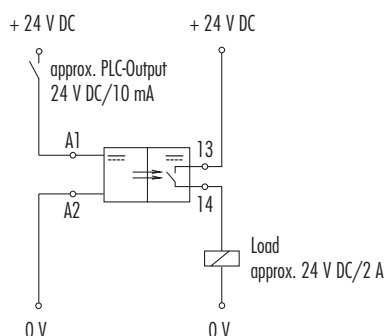


An RC snubber network is fitted internally across the triac switch. This is necessary to limit the rate of rise of the voltage. However, it does result to a small leakage current which will flow through the load when the switch is off.

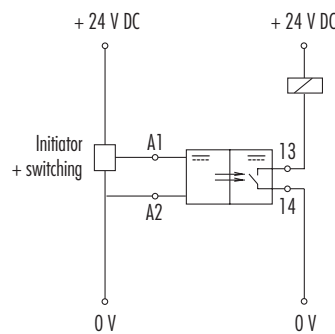
This must be taken into account when driving low power loads, where the leakage would be significant. By fitting a resistor or a resistor-capacitor network (e.g. Murrelektronik Art.-No. 20011) across the load, some of the leakage can be diverted away from the load.

Applications

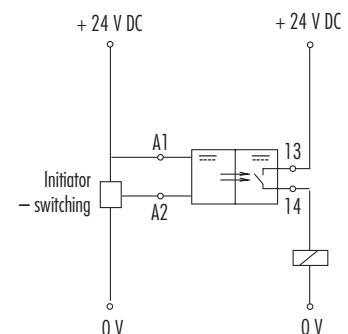
Application with electrical isolation



Conversion from PNP to NPN



Conversion from NPN to PNP



Opto-coupler modules



MIRO 6.2

Compact format which snaps on to 35 mm DIN-rail to EN 60715.

The potential plug bridge offers a rapid connection between modules to the transistor and triac versions without the need for additional terminals.

from page 3.4.3



MIRO 6.2 pluggable

Compact format. Snap on to DIN-rail mounting to EN 60715 (TH35) resp. (G32).

Fast connection via potential bridging link to blue and black.

Pluggable opto-coupler modules exchangeable.

Isolation plate for potential separation. With spring clamp terminals.

page 3.4.6



AMMS/EMMS

Built to a compact 12 mm format.

Galvanically separated inputs and outputs as well as maintenance free semi-conductor circuits guarantee smooth operation.

Input signals from 3.5...230 V can be processed. Transistor or triac circuits are used on the output side.

LED-status indicator, a label plate and mounting on to DIN-rail to EN 60715 (TH35) resp. (G32) are standard features.

from page 3.4.7



AMMDS

The ideal way to bring clarity to a control system.

The Murrelektronik advantages are:

- 12 mm compact format, galvanic separation between input and output, transistor or triac outputs.
- LED status indicator at the input, switching currents up to 2 A, label plate, plug-link on the input.
- Can be snapped on to DIN-rail to EN 60715 (TH35) resp. (G32).
- Potential rail with 12 mm spacing on the output.

from page 3.4.11

Power opto-coupler modules



AMS

22.5 mm wide MCVO housing with up to three galvanically separated opto-couplers or a single circuit with a nominal output current of up to 4 A.

DIN-rail mounting to EN 60715 (TH35) resp. (G32).

from page 3.4.14

Opto-coupler modules with pole changing switch



DC-MOTOR CONTROL

The DC MOTOR CONTROL can control DC motors with a nominal voltage of 24 V DC.

Via 2 inputs the motor can be directly switched into left or right wheel operation.

page 3.4.16

Terminal opto-coupler

Transistor output

with enhanced features

MIRO 6.2

Transistor 0.5 A

MIRO 6.2

Transistor 2 A

MIRO 6.2

Transistor 10 A

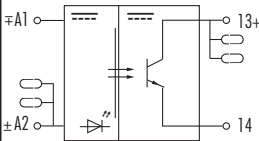
MIRO 6.2

Transistor 10 A
overload and short-circuit protection



Circuit diagram

Common connection up to max. 50 V AC/DC



Ordering data

	Art.-No.	Art.-No.	Art.-No.	Art.-No.
Input voltage	Spring clamp/screw terminals	Spring clamp/screw terminals	Spring clamp/screw terminals	Spring clamp/screw terminals
5 V DC		UL + CSA 6652502		
24 V DC	UL + CSA 6652500	UL + CSA 6652501	6652520	²⁾ 6652521
48 V DC	UL + CSA 6652505			
110 V AC/DC	UL + CSA 6652506	UL + CSA 6652508		
230 V AC	UL + CSA 6652507	UL + CSA 6652508		

Input

ON/OFF/Control current	5 V DC	4 ... 5.5 V DC / 0 ... 2 V DC / 6 mA		
	24 V DC	10 ... 44 V DC / 0 ... 3 V DC / 6 mA	10 ... 53 V DC / 0 ... 5 V DC / 10 mA	
	48 V DC	18 ... 56 V DC / 0 ... 12 V DC / 6 mA		
	110 V AC/DC	70 ... 130 V AC/DC / 0 ... 30 V AC/DC / 6 mA (at Art.-No. 6652508 90 ... 250 V AC)		
	230 V AC	90 ... 250 V AC / 0 ... 30 V AC / 7 mA (at Art.-No. 6652508 15 mA)		

Status indicator

yellow LED

Output

Switching element	Transistor	Transistor		
Switching current min./max.	0.1 mA/0.5 A (see de-rating curve)	1 mA/2 A (no de-rating)	1 mA/10 A (see de-rating curve)	¹⁾ 1 mA/10 A (see de-rating curve)
Switched voltage	5 ... 48 V DC	5 ... 48 V DC	5 ... 48 V DC	
Saturation voltage (across output)	≤ 1.2 V DC	≤ 0.3 V DC	≤ 0.12 V DC	
Leakage current (when output is open)	< 0.3 mA		< 25 µA	
Switching time ON/OFF	100/700 µs	1/5 ms, (3/10 ms at Art.-No. 6652508)	2/5 ms (at 10 A load)	
Switching frequency ohmic/inductive	500/30 Hz	10/1 Hz	1 Hz	

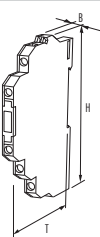
General data

Test isolation voltage	3.75 kV AC	2.5 kV AC	2.75 kV AC	
Temperature range	-20...+60 °C			
Housing	flame retardant black plastic			
Mounting method	DIN-rail mounting to EN 60715			
Dimensions H x B x T	78 x 6.2 x 65 mm			

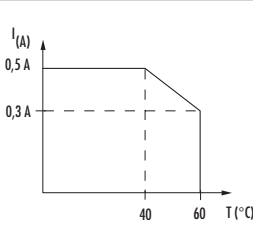
Accessories

Bridging link max. 2 A	Art.-No. 90961
Bridging comb 10-pole, red	Art.-No. 90976
End caps, 2 pieces, red	Art.-No. 90982
Bridging comb 10-pole, blue	Art.-No. 90975
End caps, 2 pieces, blue	Art.-No. 90980
Wire chain 16-pole	Art.-No. 90977
Label plate	Art.-No. 90901

Dimension drawing

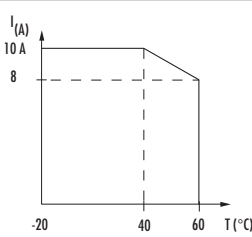


De-rating curve



Transistor 0.5 A

De-rating curve



Transistor 10 A

Notes

For screw-type terminal connection, the item number changes from 6652... to 52... (i.e. the prefix 66 is dropped).
¹⁾ Pulse switched overload and short-circuit protection. ²⁾ Art.-No. 6652522 resp. 52522 with 5 A switching current.

Terminal opto-coupler

**fast transistor output
C/O contact**

with enhanced features

MIRO 6.2

Transistor 2 A
with soldering terminal



MIRO 6.2

Transistor 0.5 A
with C/O output

MIRO 6.2

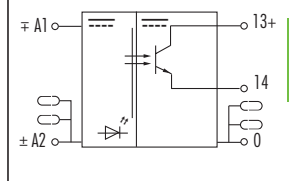
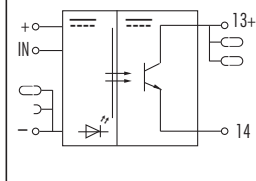
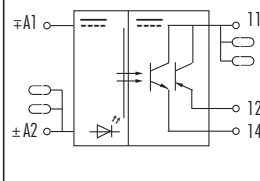
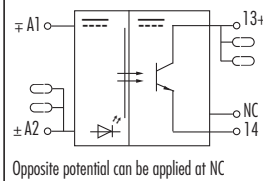
Transistor 0.5 A
control current 0.1 mA
¹⁾max. switching frequency 20 kHz

MIRO 6.2

Transistor 2 A
short-circuit protected
max. 1 kHz switching frequency

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
5 V DC				
24 V DC	UL	UL + CSA	UL + CSA	
48 V DC	6652512	6652510	¹⁾ 6652511	6652503
110 V AC/DC				
230 V AC				

Input

ON/OFF/Control current	5 V DC			
	24 V DC	10 ... 44 V DC	/ 0 ... 5 V DC	/ 6 mA
	48 V DC			4.2 ... 30 V DC / 0 ... 2 V DC / 0.1 mA
	110 V AC/DC			10 ... 48 V DC / 0 ... 5 V DC / 6 mA
	230 V AC			

Status indicator yellow LED

Output

Switching element	Transistor			
Switching current min./max.	²⁾ 1 mA/2 A overload protection	0.1 mA/0.5 A (see de-rating curve)		1 mA/2 A short-circuit protected
Switched voltage	5 ... 48 V DC			10 ... 35 V DC
Saturation voltage (across output)	≤ 0.35 V DC	≤ 1.2 V DC		≤ 1.2 V DC
Leakage current (when output is open)	< 0.1 mA			
Switching time ON/OFF	5/10 ms	40/150 µs	12/12 µs	90/120 µs
Switching frequency ohmic/inductive	10 Hz	1 kHz	20 kHz	1 kHz

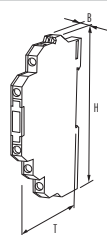
General data

Test isolation voltage	2.5 kV AC	3.75 kV AC		
Temperature range	-20 ... +60 °C			
Housing	flame retardant black plastic			
Mounting method	DIN-rail mounting to EN 60715			
Dimensions H x B x T	90 x 6.2 x 65 mm			

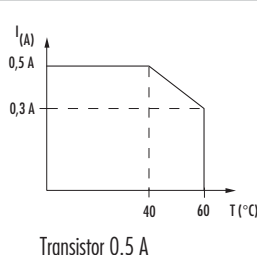
Accessories

Bridging link max. 2 A	90961
Bridging comb 10-pole, red	90976
End caps, 2 pieces, red	90982
Bridging comb 10-pole, blue	90975
End caps, 2 pieces, blue	90980
Wire chain 16-pole	90977
Label plate	90901

Dimension drawing



De-rating curve



Notes

For screw-type terminal connection, the item number changes from 6652... to 52... (i.e. the prefix 66 is dropped).
¹⁾ 30 kHz switching frequency with spring terminals available under Art.-No. 526071. ²⁾ Making current limitation.

Terminal opto-coupler
with enhanced features

MIRO 6.2
Triac 0.5 A

MIRO 6.2
Triac 0.5 A
with enhanced features

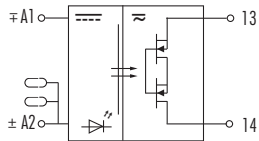
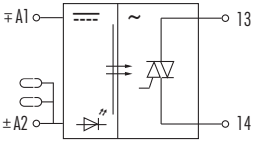
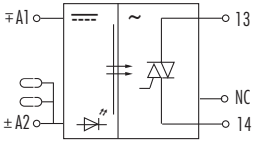
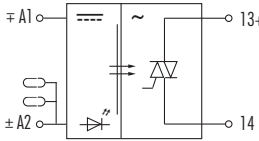
MIRO 6.2
Triac 1 A

MIRO 6.2
Transistor 1 A
with multiple voltage output AC/DC



Circuit diagram

Common connection up to max. 50 V AC/DC



Ordering data

	Art.-No.	Art.-No.	Art.-No.	Art.-No.
Input voltage	Spring clamp/screw terminals	Spring clamp/screw terminals	Spring clamp/screw terminals	Spring clamp/screw terminals
5 V DC	UL 6652551			
24 V DC	UL 6652550	UL 6652560	6652571	6652572
48 V DC	6652555			
110 V AC/DC	UL 6652556			
230 V AC	UL 6652557			

Input

ON/OFF/Control current	5 V DC	4.0 ... 5.5 V DC / 0 ... 2 V DC / 6 mA		
	24 V DC	10 ... 44 V DC / 0 ... 3 V DC / 6 mA	10 ... 53 V DC / 0 ... 3 V DC / 9 mA	10 ... 53 V DC / 0 ... 5 V DC / 10 mA
	48 V DC	18 ... 56 V DC / 0 ... 12 V DC / 6 mA		
	110 V AC/DC	70 ... 130 V AC/DC / 0 ... 35 V AC/DC / 4 mA		
	230 V AC	140 ... 250 V AC / 0 ... 80 V AC / 7 mA		

Status indicator

yellow LED

Output

Switching element	Triac	Triac	Transistor
Switching current min./max.	0.1 mA/0.5 A (see de-rating curve)	0.01 mA/1.0 A (see de-rating curve)	1 mA/1.0 A (see de-rating curve)
Switched voltage	24 ... 250 V AC	12 ... 280 V AC	5 ... 250 V AC/5 ... 350 V DC
Saturation voltage (across output)	≤ 1.5 V AC	≤ 1.5 V AC	≤ 0.7 V AC/DC
Leakage current (when output is open)	< 0.3 mA	< 1 mA	< 25 µA
Switching time ON/OFF	10/10 ms	10/10 ms	3/6 ms
Switching frequency ohmic/inductive	20 Hz	2 Hz	10 Hz

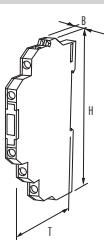
General data

Test isolation voltage	2.5 kV AC		2.75 kV AC
Temperature range	-20...+60 °C		
Housing	flame retardant black plastic		
Mounting method	DIN-rail mounting to EN 60715		
Dimensions H x B x T	78 x 6.2 x 65 mm	90 x 6.2 x 65 mm	78 x 6.2 x 65 mm

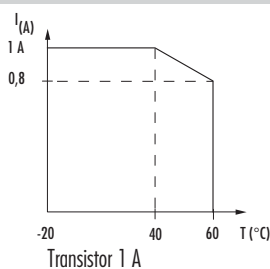
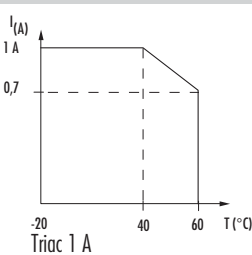
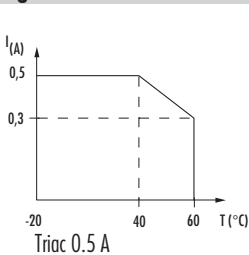
Accessories

Bridging link max. 2 A	90961
Bridging comb 10-pole, red	90976
End caps, 2 pieces, red	90982
Bridging comb 10-pole, blue	90975
End caps, 2 pieces, blue	90980
Wire chain 16-pole	90977
Label plate	90901

Dimension drawing



De-rating curves



Notes

For screw-type terminal connection, the item number changes from 6652... to 52... (i.e. the prefix 66 is dropped).

Terminal opto-coupler

MIRO 6.2

Transistor 2 A
with output isolation link



MIRO 6.2

Triac 0.5 A
with output isolation link



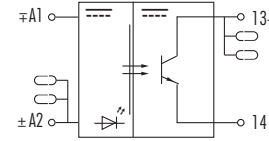
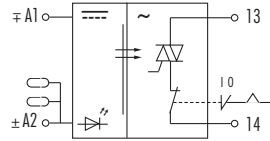
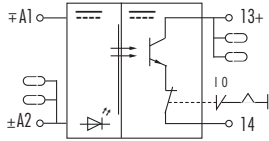
MIRO 6.2 Pluggable

Transistor



Circuit diagram

Common connection up to max. 50 V DC



Ordering data

Art.-No.

Art.-No.

Art.-No.

Input voltage	Spring clamp/screw terminals	Spring clamp/screw terminals	Spring clamp terminals
5 V DC			
24 V DC	UL + CSA	6652513	UL
48 V DC			
110 V AC/DC			
230 V AC			

Input			
ON/OFF/Control current	5 V DC		
	24 V DC	10...53 V DC / 0...5 V DC / 7 mA	17...30 V DC / 0...5 V DC / 7 mA
	48 V DC		
	110 V AC/DC		
	230 V AC		

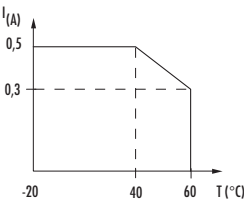
Status indicator	yellow LED		—
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Output			
Switching element	Transistor	Triac	Transistor
Switching current min./max.	1 mA/2 A	0.1 mA/0.5 A (see de-rating curve)	1 mA/2 A
Switched voltage	5...48 V DC	24...250 V AC	1.5...24 V DC
Saturation voltage (across output)	≤ 0.3 V DC	≤ 15 V AC	≤ 0.15 V AC
Leakage current (when output is open)	< 0.3 mA	< 0.3 mA	< 10 µA
Switching time ON/OFF	1/5 ms	10/10 ms	0.1/0.3 ms
Switching frequency ohmic/inductive	10/1 Hz	20/1 Hz	1000/100 Hz

General data			
Test isolation voltage	2.5 kV AC		
Temperature range	-20...+60 °C		
Housing	flame retardant black plastic		
Mounting method	DIN-rail mounting to EN 60715		
Dimensions H x B x T	78 x 6.2 x 65 mm		

Accessories	Art.-No.
Bridging link max. 2 A	90961
Bridging comb 10-pole, red	90976
End caps, 2 pieces, red	90982
Bridging comb 10-pole, blue	90975
End caps, 2 pieces, blue	90980
Wire chain 16-pole	90977
Label plate	90901

De-rating curve



Accessories	Art.-No.
Bridging link, blue	3000-90000-0300010
Bridging link, black	3000-90000-0300020
Removable opto-coupler	3000-32522-2100010
Isolation plate	3000-90000-0300030

Notes

For screw-type terminal connection, the item number changes from 6652... to 52... (i.e. the prefix 66 is dropped)

Mini-opto-coupler

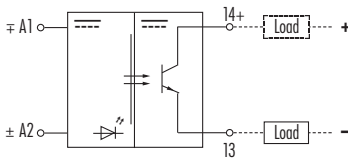
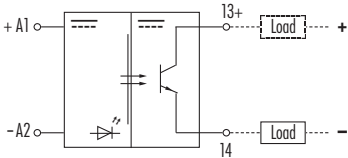
Transistor output

AMMS

AMMS



Circuit diagram



Ordering data

Control voltage input	Art.-No.	Art.-No.
3.5...5.5 V DC	50041	
24 V DC		50040

Input

Voltage range "ON"	3.5...5.5 V DC	10...53 V DC
Voltage range "OFF"	0...0.8 V DC	0...3 V DC
Nominal current	6 mA	
Status indicator	red LED	

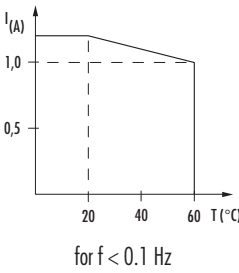
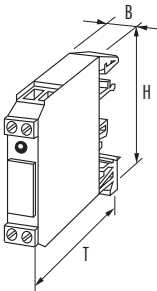
Output

Switching element	Transistor
Switching voltage min./max.	4.5...53 V DC
Switching current min./max.	1 mA...1.2 A
Saturation voltage (across output)	≤ 1.2 V DC
Leakage current (when output is open)	< 0.3 mA
Switching time ON/OFF	100/700 μs
Switching frequency ohmic/inductive	500/30 Hz ¹⁾

General data

Test isolation voltage	3.75 kV AC
Temperature range	-20...+60 °C
Housing	flame retardant black plastic
Mounting method	DIN-rail mounting to EN 60715 (TH 35) or (G 32)
Dimensions H x B x T	56 x 12 x 64 mm

Dimension drawing/Load curve



Notes

¹⁾ Max. switching frequency 500 Hz at resistive load and max. 0.2 A.
Accessories can be found in chapter 3.13

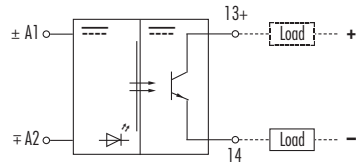
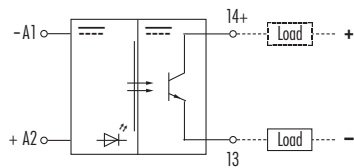
Mini-opto-coupler
Transistor output

AMMS

AMMS



Circuit diagram



Ordering data

	Art.-No.	Art.-No.
Control voltage input		
4...30 V DC	50010	
24 V DC		50070

Input

Voltage range "ON"	4...30 V DC	10...53 V DC
Voltage range "OFF"	0...2 V DC	0...3 V DC
Nominal current	10 mA	6 mA
Status indicator	red LED	LED red

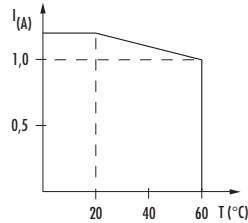
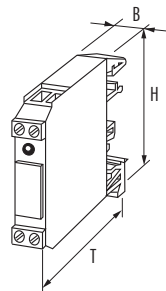
Output

Switching element	Transistor	Transistor
Switching voltage min./max.	4.5...44 V DC	4.5...40 V DC
Switching current min./max.	1 mA...1.2 A	10 mA...2 A
Saturation voltage (across output)	≤ 1.2 V DC	< 0.1 V DC
Leakage current (when output is open)	< 0.3 mA	0.1 mA
Switching time ON/OFF	65/65 μs	2/8 ms
Switching frequency ohmic/inductive	7 kHz/10 Hz ¹⁾	2.5 Hz

General data

Test isolation voltage	3.75 kV AC	2.5 kV AC
Temperature range	-20...+60 °C	
Housing	flame retardant black plastic	
Mounting method	DIN-rail mounting to EN 60715 (TH 35) or (G 32)	
Dimensions H x B x T	56 x 12 x 64 mm	

Dimension drawing/Load curve



for f < 0.1 Hz

Art.-No. 50010

Notes

¹⁾ max. switching frequency at Art.-No. 50010: 7 kHz at resistive load and max. 0.3 A.
Accessories can be found in chapter 3.13

Mini-opto-coupler

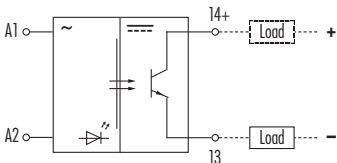
Transistor output

EMMS

AMMS



Circuit diagram



Ordering data

Art.-No.

Control voltage input	
110/230 V AC	50105

Input

Voltage range "ON"	93.5 ... 253 V AC
Voltage range "OFF"	0 ... 40 V AC
Nominal current	10 mA
Status indicator	LED red

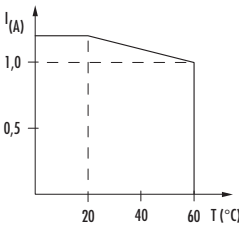
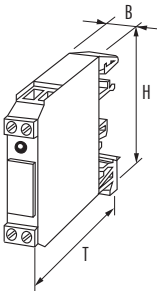
Output

Switching element	Transistor
Switching voltage min./max.	4.5 ... 53 V DC
Switching current min./max.	1 mA ... 1.2 A
Saturation voltage (across output)	≤ 1.2 V DC
Leakage current (when output is open)	< 0.3 mA
Switching time ON/OFF	20/50 ms
Switching frequency ohm.	5 Hz

General data

Test isolation voltage	3.75 kV AC
Temperature range	-20 ... +60 °C
Housing	flame retardant black plastic
Mounting method	DIN-rail mounting to EN 60715 (TH 35) or (G 32)
Dimensions H x B x T	56 x 12 x 64 mm

Dimension drawing/Load curve



for f < 0.1 Hz

Notes

Accessories can be found in chapter 3.13

Mini-opto-coupler

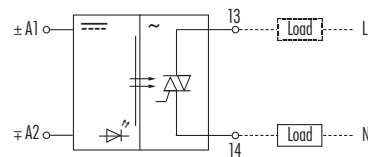
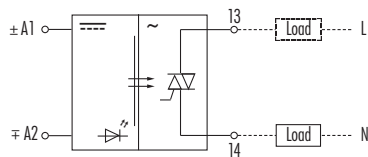
Triac output

AMMS

AMMS



Circuit diagram



At Art.-No. 50031
+ A1; - A2

Ordering data

	Art.-No.	Art.-No.	Art.-No.
Control voltage input			
TTL (3.5...5.5 V DC)			50031
24 V DC	50032	50030	

Input

Voltage range "ON"	10...53 V DC	10...53 V DC	3.5...5.5 V DC
Voltage range "OFF"	0...5 V DC	0...3 V DC	0...0.8 V DC
Nominal current	15 mA	10 mA	
Status indicator	red LED	LED red	

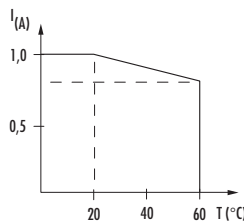
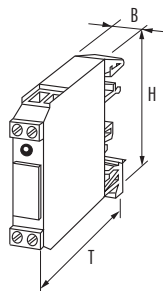
Output

Switching element	Triac	Triac	
Switching voltage min./max.	24...253 V AC	24...253 V AC	
Switching current min./max.	1 mA...0.1 A	50 mA...1 A	
Saturation voltage (across output)	< 1.3 V AC	≤ 1.3 V AC	
Leakage current (when output is open)	< 0.1 mA	< 5 mA	
Switching time ON/OFF	10/10 ms		
Switching frequency ohm.	25 Hz		

General data

Test isolation voltage	2.5 kV AC		
Temperature range	-20...+60 °C		
Housing	flame retardant black plastic		
Mounting method	DIN-rail mounting to EN 60715 (TH 35) or (G 32)		
Dimensions H x B x T	56 x 12 x 64 mm		

Dimension drawing/Load curve



Art.-No. 50030/50031

Notes

Accessories can be found in chapter 3.13

Mini-opto-coupler

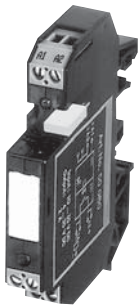
Transistor output

Double terminals on the output side

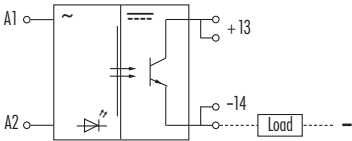
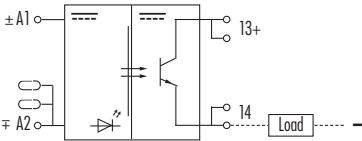
AMMDS
with negative plug-link

AMMDS
with negative plug-link

AMMDS

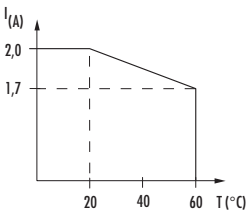
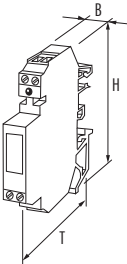


Circuit diagram



Ordering data	Art.-No.	Art.-No.	Art.-No.
Control voltage input			
24 V DC	50081	50080	
230 V AC			50110
Input			
Voltage range "ON"	10...53 V DC		195...253 V AC
Voltage range "OFF"	0...3 V DC		0...110 V AC
Nominal current	6 mA		10 mA
Status indicator	red LED		LED red
Plug link	Art.-No. 90960 included with module		no plug-link facility
Output			
Switching element	transistor switched positive	transistor switched positive	transistor switched positive
Switching voltage min./max.	4...40 V DC	4...35 V DC	4...40 V DC
Switching current min./max.	1 mA...0.1 A	10 mA...2 A (short-circuit protected)	1 mA...0.1 A
Saturation voltage (across output)	< 1.2 V DC	< 0.5 V DC	< 1.2 V DC
Leakage current (when output is open)	< 0.3 mA	< 0.3 mA	< 0.3 mA
Switching time ON/OFF	2/2 ms	2/15 ms	20/45 ms
Switching frequency ohmic/inductive	300/40 Hz	10/1 Hz	10/1 Hz
General data			
Test isolation voltage	3.75 kV AC	2.5 kV AC	3.75 kV AC
Temperature range	-20...+60 °C		
Housing	flame retardant black plastic		
Mounting method	DIN-rail mounting to EN 60715 (TH 35) or (G 32)		
Dimensions H x B x T	82 x 12 x 68 mm		

Dimension drawing/Load curve



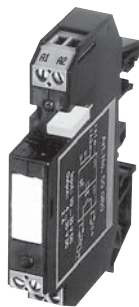
Art.-No. 50080

Notes

Accessories can be found in chapter 3.13

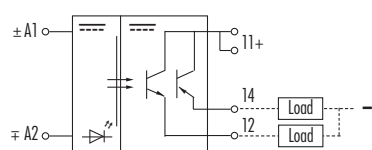
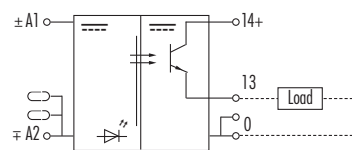
Mini-opto-coupler
Transistor output
Negative plug-link

AMMDS
double terminals on the output side
for rapid switching



AMMDU
with electronic C/O contact

Circuit diagram



Ordering data

	Art.-No.	Art.-No.
Control voltage input 24 V DC	50082	50085

Input

Voltage range "ON"	10...35 V DC	10...53 V DC
Voltage range "OFF"	0...5 V DC	0...6 V DC
Nominal current	15 mA	10 mA
Status indicator	red LED	red LED
Plug link	Art.-No. 90960 included with module	no plug-link facility

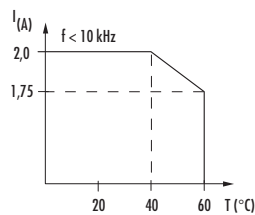
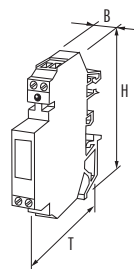
Output

Switching element	Transistor	Transistor
Switching voltage min./max.	5...35 V DC	4.5...53 V DC
Switching current min./max.	1 mA...2 A	1 mA...1 A
Saturation voltage (across output)	< 0.5 V DC	< 1.5 V DC
Leakage current (when output is open)	< 0.3 mA	< 0.3 mA
Switching time ON/OFF	7/6 µs	25/75 µs
Switching frequency ohmic/inductive	30 kHz/200 Hz	1 kHz/10 Hz

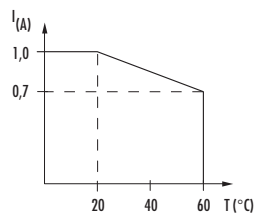
General data

Test isolation voltage	2.5 kV AC
Temperature range	-20...+60 °C
Housing	flame retardant black plastic
Mounting method	DIN-rail mounting to EN 60715 (TH 35) or (G 32)
Dimensions H x B x T	82 x 12 x 68 mm

Dimension drawing/Load curve



Art.-No. 50082



Art.-No. 50085

Notes

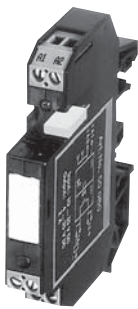
Accessories can be found in chapter 3.13

Mini-opto-coupler

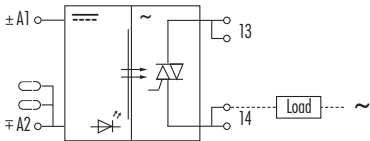
Triac output or all
voltage version

with double terminals on the
output side

AMMDS
with negative plug-link



Circuit diagram



Ordering data

	Art.-No.
Control voltage input	
24 V DC	50092

Input

Voltage range "ON"	10...35 V DC
Voltage range "OFF"	0...3 V DC
Nominal current	6 mA
Status indicator	red LED
Plug link	Art.-No. 90960 included with module

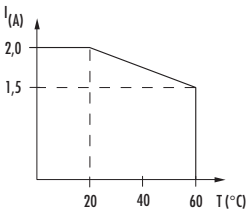
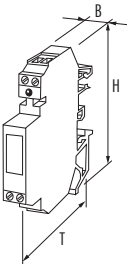
Output

Switching element	Triac
Switching voltage min./max.	24...280 V AC
Switching current min./max.	50 mA...2 A
Saturation voltage (across output)	≤ 1 V
Leakage current (when output is open)	≤ 2 mA
Switching time ON/OFF	10/10 ms
Switching frequency ohmic/inductive	20/5 Hz

General data

Test isolation voltage	2.5 kV AC
Temperature range	-20...+60 °C
Housing	flame retardant black plastic
Mounting method	DIN-rail mounting to EN 60715 (TH 35) or (G 32)
Dimensions H x B x T	82 x 12 x 68 mm

Dimension drawing/Load curve



Art.-No. 50092

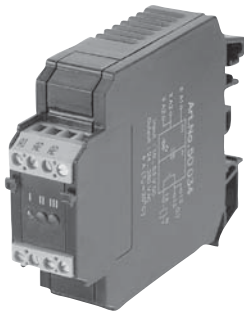
Notes

Accessories can be found in chapter 3.13

MCVO Opto-coupler modules

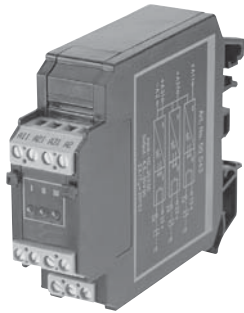
Transistor output

AMS

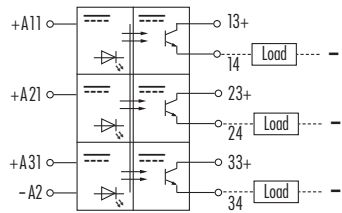
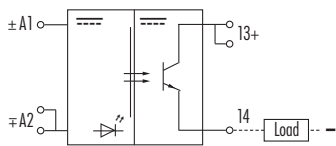


AMS

3-way Transistor



Circuit diagram



common negative for all 3 inputs = -A2

Ordering data

Art.-No.

Art.-No.

Control voltage input

24 V DC

50044

50043

Input

Voltage range "ON"

10...53 V DC ¹⁾

Voltage range "OFF"

0...3 V DC

Nominal current

10 mA

Status indicator

red LED

red LED per input

Output

Switching element

transistor switched positive

transistor switched positive

Switching voltage min./max.

4.5...53 V DC

4.5...35 V DC

Switching current min./max.

0.1...4 A

10 mA...2 A (short-circuit protected)

Saturation voltage (across output)

< 1.5 V DC

< 0.5 V DC

Leakage current (when output is open)

< 10 mA

< 0.3 mA

Switching time ON/OFF

8/14 μ s

2/15 ms

Switching frequency ohmic/inductive

2 kHz/4 Hz

10/1 Hz

General data

Test isolation voltage

3.75 kV AC

2.5 kV AC

Temperature range

-20...+60 °C

Housing

flame retardant black plastic

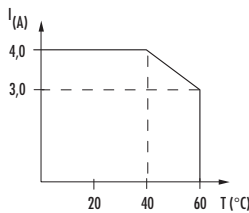
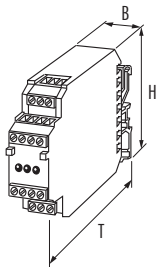
Mounting method

DIN-rail mounting to EN 60715 (TH 35) or (G 32)

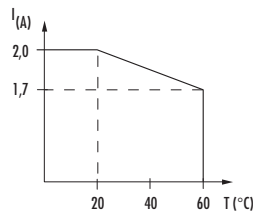
Dimensions H x B x T

75 x 22.5 x 102 mm

Dimension drawing/Load curve



Art.-No. 50044



Art.-No. 50043

Notes

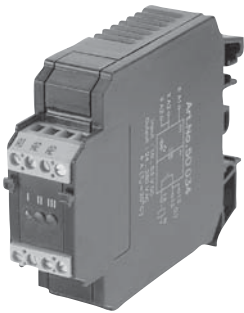
Accessories can be found in chapter 3.13

¹⁾ 230 V AC control voltage on request

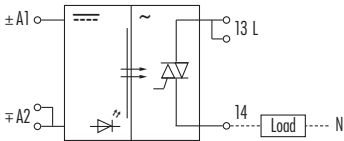
MCVO Opto-coupler modules

Triac output

AMS



Circuit diagram



Ordering data

Art.-No.

Control voltage input	
24V DC	50034

Input

Voltage range "ON"	10...53 V DC ¹⁾
Voltage range "OFF"	0...3 V DC
Nominal current	6 mA
Status indicator	red LED

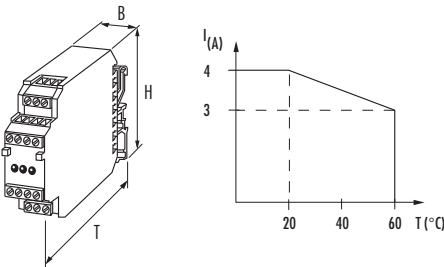
Output

Switching element	Triac
Switching voltage min./max.	24...253 V AC
Switching current min./max.	50 mA...4 A
Saturation voltage (across output)	< 1.4 V
Leakage current (when output is open)	< 10 mA
Switching time ON/OFF	10/20 ms
Switching frequency ohmic/inductive	30/5 Hz

General data

Test isolation voltage	3.75 kV AC
Temperature range	-20...+60 °C
Housing	flame retardant black plastic
Mounting method	DIN-rail mounting to EN 60715 (TH 35) or (G 32)
Dimensions H x B x T	75 x 22.5 x 102 mm

Dimension drawing/Load curve



Notes

Accessories can be found in chapter 3.13
¹⁾ 230 V AC control voltage on request

Pole changing switch for
DC motors

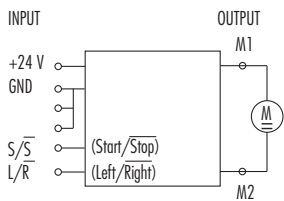
Start-stop/left-right
Active stop modus

Over current or
temperature indication

MIRO 12.4
DC MOTOR CONTROL



Circuit diagram

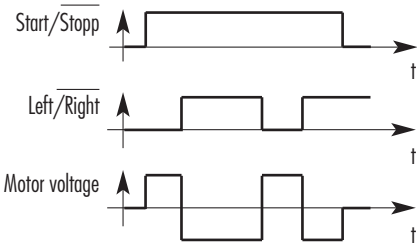
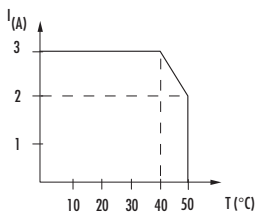
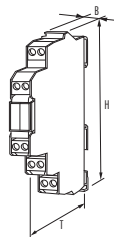


Ordering data	Art.-No.
Control voltage input	Spring clamp/screw terminals
24V DC	6650140
Input	
Voltage range "ON"	15...30 V DC
Voltage range "OFF"	0...5 V DC
Nominal current	max. 10 mA
Status indicator	yellow LED - right running, green LED - left running
Output	
Switching element	Transistor
Switching voltage min./max.	19.2...30 V DC
Switching current max.	3 A (see de-rating curve)
Highest current	approx. 6 A for 100 ms
Saturation voltage (across output)	< 1.4 V
Leakage current (when output is open)	< 10 mA
Switching time ON/OFF	1.2/10 ms
Switching frequency ind.	max. 1 Hz (motor dependant)
Changing time	50 ms
Status indicator	LED red failure (overvoltage/overtemperature)
General data	
Test isolation voltage	no separation
Temperature range	0...+50 °C
Housing	flame retardant black plastic
Mounting method	DIN-rail mounting to EN 60715 (TH 35) or (G 32)
Dimensions H x B x T	90 x 12.4 x 65 mm

Dimension drawing

De-rating curve

Time diagram



Notes

For screw-type terminal connection, the item number changes from 6650... to 50... (i.e. the prefix 66 is dropped)
Accessories can be found in chapter 3.13