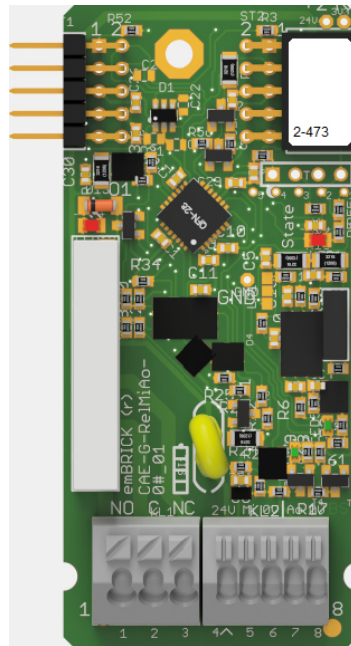


CAE_G-RelMiAo-01



1.1 Description

ID: 2-473

Order No.: CAE_G-RelMiAo-01 (-p)

Terminal: push-in (for $< 0.5\text{mm}^2$)

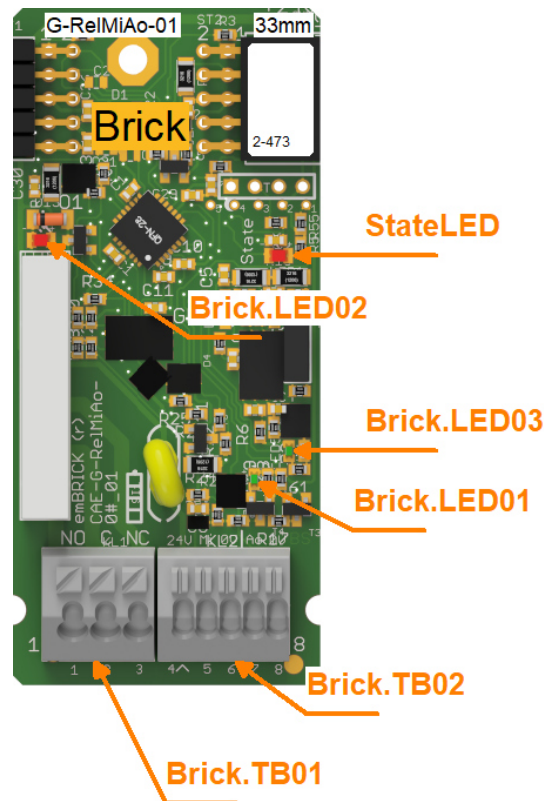
Size: 3 eU (33mm x 72mm)

BBFCP: 1-1-1

Weight: 30g

As a universal small supplement brick this module offers 1 potential-free relay change-over contact using up to 240Vac and one voltage (0..10V) output. Moreover it contains a multi input to use as an analog, digital or impulse channel (configured by software).

1.2 Connectors and Indication-/Operation-Elements



1.2.1 Terminal block (TB)

The following illustration the technical details for Terminal blocks are listed. The location of a specific block is documented with the ID (left column) in the previous illustrations.

ID	Model	Model / Series	Grid	Num. of term.	connection	elec. usage
Brick.TB01	Cage Terminal	WAGO250	3.5mm	3	up to 1.5mm ²	signal level
Brick.TB02	Cage Terminal	WAGO250	2.5mm	5	up to 0.5mm ² or 0,8mm	signal level

1.2.2 Terminal assignment

Here the assignment of individual terminals and their affiliation to terminal blocks (Te block), terminal numbers (Te no.) and short description (T.desc.) as well as their electrical function and usage are explained.

The associated mechanical and electrical properties are stated with the specific terminal block in the previous chapter. The position of a terminal is dedicated through the "Te block" and the actual terminal number (Te no.) or the terminal description (T.desc.) in the previous illustration respectively.

In the column "usage" the technical-/ device-functional use is listed.

Te block	Te no.	T. descr.	Function	Usage
Brick.TB01	1	NO	Relay, normally open contact, isolated	Rel1
Brick.TB01	2	C	Relay, change over contact, isolated	Rel1

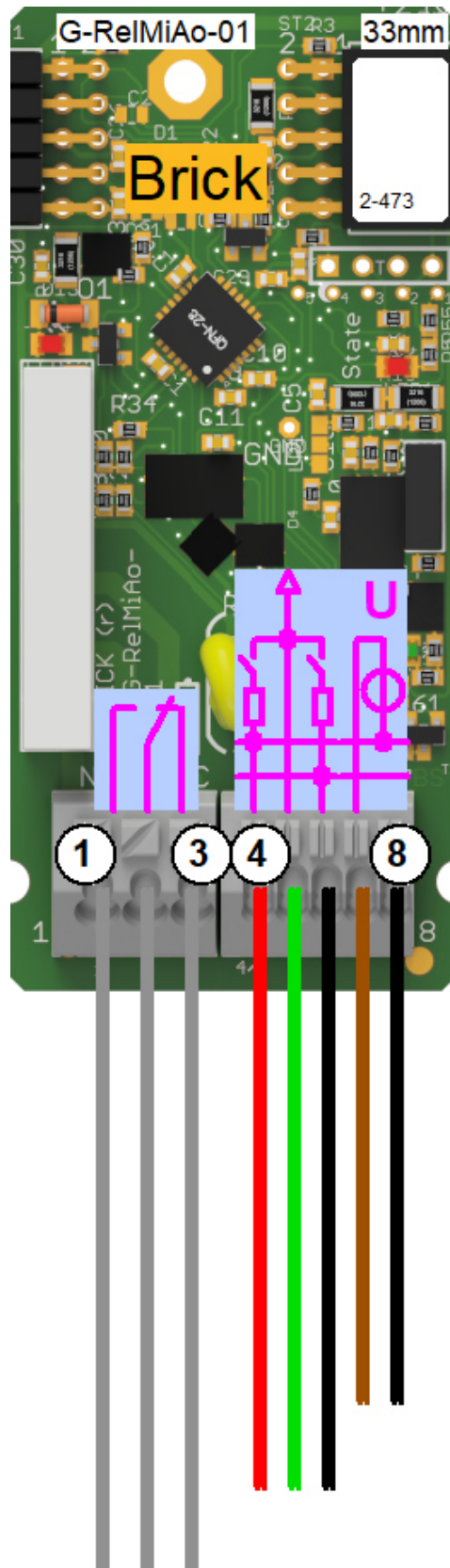
Brick.TB01	3	NC	Relay, normally close contact, isolated	Rel1
Brick.TB02	4	24V	Sensor supply +24V	Mi1
Brick.TB02	5	MI	Multilnput	Mi1
Brick.TB02	6	0V	Ground	Mi1
Brick.TB02	7	OUT	Voltage Output	Analog output
Brick.TB02	8	0V	Ground	Analog output

1.2.3 LED Indications

ID	Type	Specification	Type / Usage
Brick.LED01	SMD-LED	green	Shows state of Shows state of Mi1 – only digital signals with PullUP
Brick.LED02	SMD-LED	green	Shows state of Rel1
Brick.LED03	SMD-LED	green	Shows state of Analog output
Brick.StateLED	SMD-LED	yellow	communicationstate Brick

1.3 Input-/Output Scheme

The following diagram shows the adaption of the control unit. To avoid overlapping, some wires are displayed interrupted and dashed.



1.4 Technical Data

1.4.1 Digital Inputs

The control unit has the following digital inputs / switch inputs:

Identifier	Mi1
Type	Input for ext. isolated contact, NPN switching against GND
Low Volt.	< 5,1V
High Volt.	> 5,6V
Input Current	ca. 6mA
Component	-
Remark	

Identifier	Mi1
Type	signalinput for ext. 24V
Low Volt.	< 5,1V
High Volt.	> 5,6V
Input Current	> 1mA @24V
Component	-
Remark	dauerhaft 24V überlastungsfest

1.4.2 Digital Outputs

The control unit has the following digital outputs / switching outputs:

Identifier	Rel1
Type	Relay, change over contact, isolated
max. Switching Volt.	250V AC
max. Switching Cur.	5A AC, Contact 6A
max. Perm. Current	3A AC
nom. Cycles	see datasheet
Component	FTR, LYCA024V
Remark	-

1.4.3 Analog Inputs

The control unit has the following analogue inputs / measuring inputs:

Identifier	Mi1
Type	Current Input
Range	0/4 ... 20mA, 2/3-wire
Input/Load Resistor	175 Ohm
Resolution	10 Bit

Accuracy	0.5%
Linearity	0.2%
Filter	400 Hz
Linearization	
Model / Series	
Remark	Stromfest bis dauerhaft 25mA @ U < 5,0V

Identifier	Mi1
Type	Voltage Input
Range	0 ... 10V
Input/Load Resistor	>50k
Resolution	10 Bit
Accuracy	0.5%
Linearity	0.2%
Filter	10 Hz
Linearization	
Model / Series	
Remark	dauerhaft 24V überlastungsfest

1.4.4 Analog Outputs

The control unit has the following analog outputs:

Identifier	Analog output
Type	voltage output, 2/3 wire
Range	0 ... 10V
max. Voltage	
max. Current	
Filter	
Component	
Remark	

1.4.5 Pulse and Counting Inputs

The control unit has the following pulse inputs / counter inputs:

Identifier	Mi1
Type	Impuls/Digital input, universal 2/3 wire
Threshold	5,1 / 5,6V
Input Circuit	n-switching
Sensitivity	rising slope
Gate Time (Frequ.Mode)	10ms ... 65s
Resolution (Per.Mode)	1 ... 50ms
Filter	hardware, 1st order, fcut off = approx. 1.5kHz

Component	-
Remark	dauerhaft 24V überlastungsfest

1.4.6 User Notes

- Blinking behavior StateLED:
Each Morse code is 3 seconds long!
not initialized = flashing continuously at approx. 5Hz
no communication = short-long-short
too little communication = short-short-short
disturbed communication = short-long-long
OK = continuous flashing at approx. 1Hz (0.6-1.5Hz)

1.4.7 Developer Notes

- The sensor supply is protected by a 0.2A polyfuse.

1.5 Process Data Image

1.5.1 Outgoing Process Data (from bus master to this brick)

Byte	Function	rCAssign
00..01	Analog-Output 0...15100 Dig. \equiv 0...10.0 V	...+eB_W0,0,...
02..03	Pulse Input Control - Mi1 Bit 15-10 ...MODE: Pulse Input operating Mode 110010 = Mode Period Duration with Time Grid 50ms 110001 = Mode Period Duration with Time Grid 49ms ... 000010 = Mode Period Duration with Time Grid 2ms 000001 = Mode Period Duration with Time Grid 1ms 000000 = Mode Fixed Gate Time Bit 9-0 ...MSET: Mode Settings in Mode "Period Duration": Filter Period in ms, to filter out con-tact chattering (Little Endian): 11 1111 1111 = Filter Period 1023ms ... 00 0000 0000 = Filter Period 0ms In Mode "Fixed Gate Time" Mode Settings has no effect	...+eB_W1,0,...
04..05	Pulse Input Attribute - Mi1 Bit 15-0: ...ATTR: Additional Pulse Input Attributes in Mode "Period Duration": Timeout for 0-setting (Little Endian): 1111 1111 1111 1111 = 65535 * Time Grid ... 0000 0000 0000 0000 = 0 in Mode "Fixed Gate Time": Gate Time in ms (Little Endian):	...+eB_W2,0,...

	<p>1111 1111 1111 1111 = 65535ms ... 0000 0000 0000 0000 = 0ms</p>																
<p>06</p>	<p>Bit 0 ...Mi1-Config1: mode Input 1 1 = corresponding pullup is ACTIV 0 = corresponding pullup is INACTIV Bit 1 ...Mi1-Config2: mode Input 2 1 = corresponding pullup is ACTIV 0 = corresponding pullup is INACTIV Bit 2 ...Relais: Relais Output 1 = activate corresponding Relay 0 = deactivate corrensponding Relais</p> <table border="1" data-bbox="368 573 1169 750"> <thead> <tr> <th></th> <th>AI Voltage</th> <th>AI Current</th> <th>Pulse</th> <th>Pulse + Pullup</th> </tr> </thead> <tbody> <tr> <td>MI1-Config1</td> <td>INACTIV</td> <td>INACTIV</td> <td>INACTIV</td> <td>ACTIV</td> </tr> <tr> <td>MI1-Config2</td> <td>INACTIV</td> <td>ACTIV</td> <td>INACTIV</td> <td>INACTIV</td> </tr> </tbody> </table>		AI Voltage	AI Current	Pulse	Pulse + Pullup	MI1-Config1	INACTIV	INACTIV	INACTIV	ACTIV	MI1-Config2	INACTIV	ACTIV	INACTIV	INACTIV	<p>...+eB_B6,0,0,... ...+eB_B6,0,1,... ...+eB_B6,0,2,... ...+eB_B6,0,3,... ...+eB_B6,0,4,... ...+eB_B6,0,5,... ...+eB_B6,0,6,... ...+eB_B6,0,7,...</p>
	AI Voltage	AI Current	Pulse	Pulse + Pullup													
MI1-Config1	INACTIV	INACTIV	INACTIV	ACTIV													
MI1-Config2	INACTIV	ACTIV	INACTIV	INACTIV													

1.5.2 Incoming Process Data (from this brick to the bus master)

Byte	Function	rCAssign
00..01	Analog Input - Mi1 0...894 Dig. \equiv 0...20 mA ... or 0...933 Dig. \equiv 0...10 V	...+eB_W0,0,...
02..03	Puls Input Sum - Mi1 Bit 15-14 ...TR: Time Reference; 2 Bit Counter that counts up every millisecond. Can be used to compensate the clock deviation of the emBRICK®-module. Bit 13-0 ...Pulse Input Sum Value; Increments on falling edge; Resets to zero on overflow (Little Endian): 11 1111 1111 1111 = 16383 ...00 0000 0000 0000 = 0	...+eB_W1,0,...
04..05	Puls Input Difference - Mi1 Bit 15-0 ...PIDV: Pulse Input Difference Value in Mode "Fixed Gate Time": Displays all fallen edges monitored in the timeframe defined in Pulse Input Attribute x	...+eB_W2,0,...
06	Bit 0 = digital status of Pulse Input Mi1	...+eB_B6,0,+eB_B6,1,+eB_B6,2,+eB_B6,3,+eB_B6,4,+eB_B6,5,+eB_B6,6,+eB_B6,7, ...

1.6 History

On the following page you will find a list of changes that have been made to the product.

1.6.1 History

Date	Entry scope (HW, SWappl, SWapi, Release)	Entry type (enhancement, improvement, bugfix, release)	Version	Status (development, implemented, tested)	Responsible	Reason for the modification	Items of modification	Impact for (end-)customer	Comment	Location in model/source
xxxx-xx-xx		Release	0.99	Tested	NSt					

For questions please contact:

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