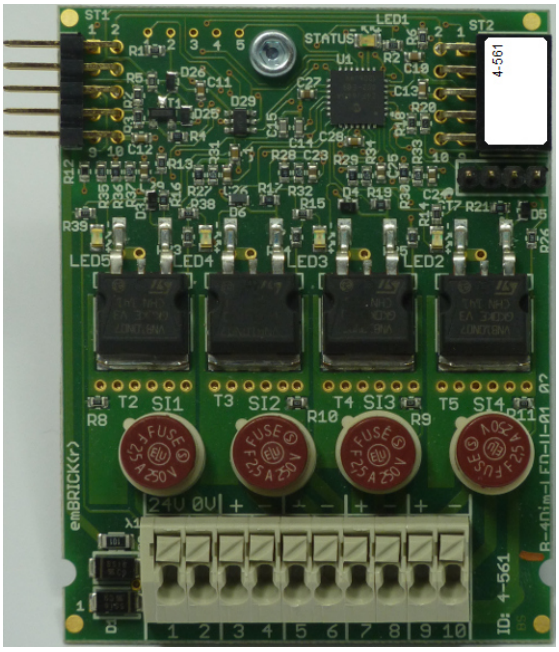
CAE_B-4DimLedU-01

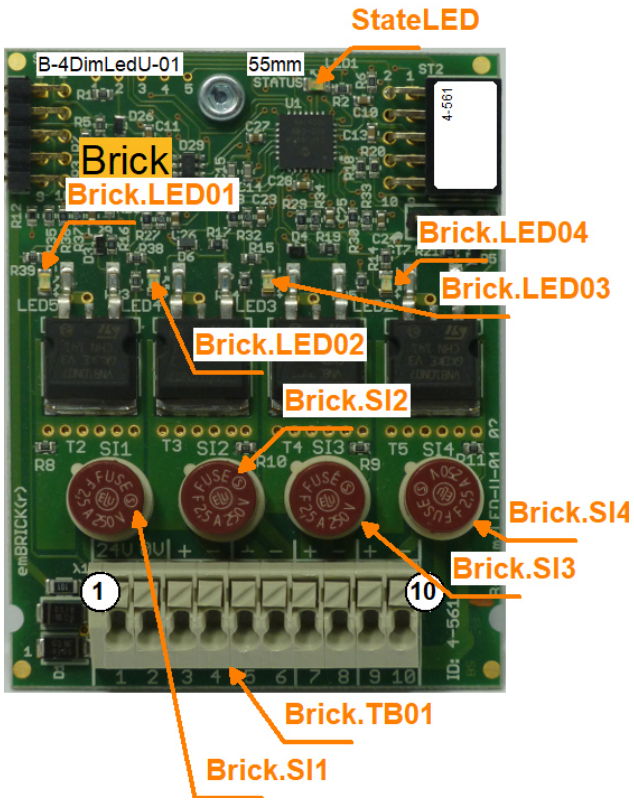


1.1 Description

ID: 4-561
Order No.: CAE_B-4DimLedU-01
Terminal: push-in (≤ 0.5mm²)
Size: 5 eU (55mm x 72mm)
BBFCP: 1-1-1
Weight: 40g

This module contains four independent PWM-LED outputs with a common supply of 12...40V and a selectable PWM-frequency of 83,3/500/1k or 2kHz. The PWM resolution is 24.000 steps.
Each of these channels can control a permanent resistive load of max. 2A and contains a quick acting 2,5AF melting fuse for output protection.

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 coloumn) in the preavious Illustrations.

ID	Model	Model / Series	Grid	Num. of term.	connection	elec. usage
Brick.TB01	Push-in Cage Clamp	Wago250-1##	3.5mm	10	Eindrähtig (starr) = 0.2 .. 1.5mm² Feindrähtig (flexibel) = 0.2 .. 1.5mm² Feindrähtig (mit Aderendhülsen) = 0.25 .. 1.0mm²	UL: 300V 5A VDE: 160V 8A

1.2.2 Terminal assignment

Here the assignment of individual terminals and there affilation to terminal blocks (Te block), terminal numbers (Te no.) and short description (T.desc.) aswell as there 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 therminal description (T.descr.) in the previous Illustration respectivly.
In the coloumn "usage" the technical-/ device-functional use is listed.

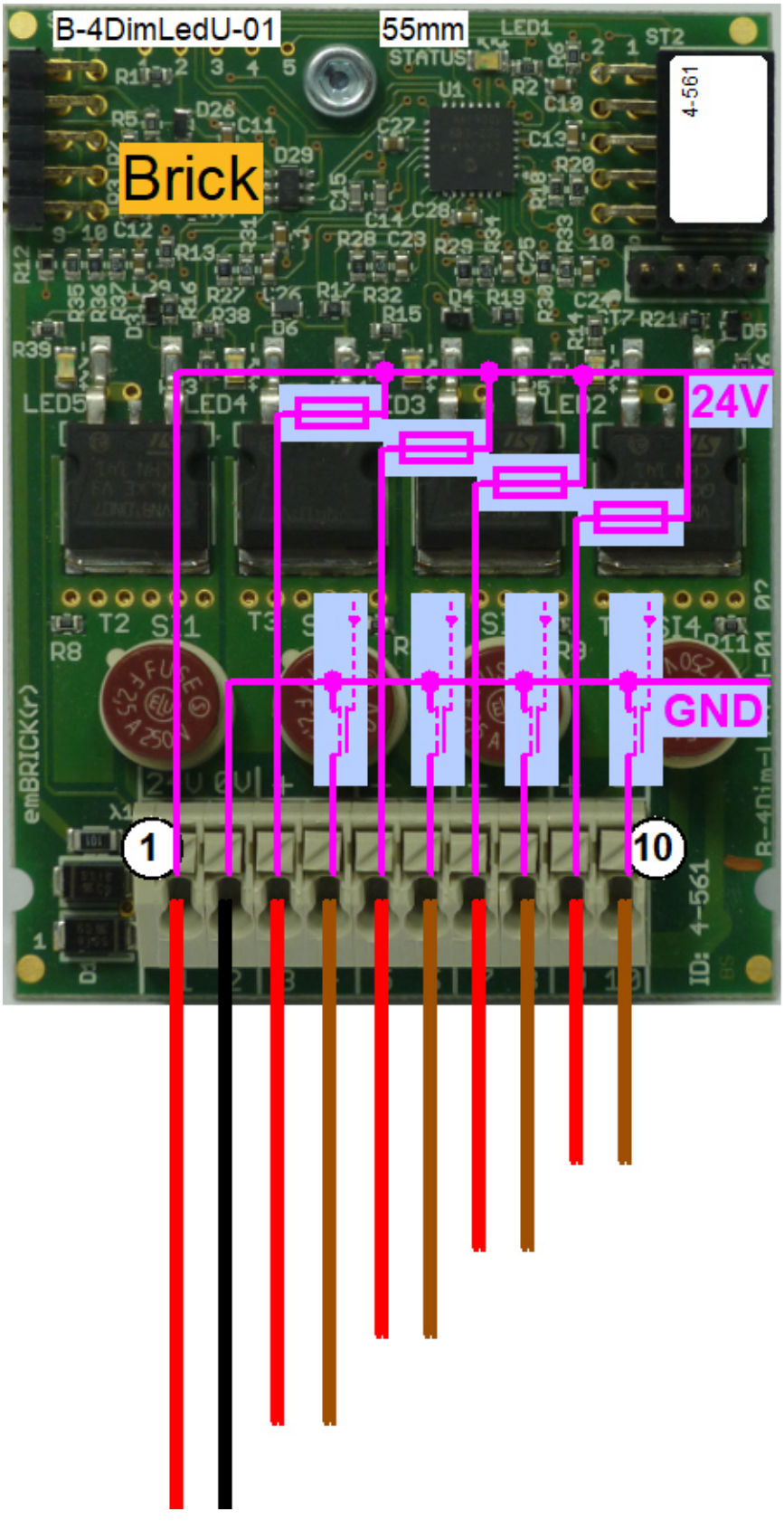
Te block	Te no.	T. descr.	Function	Usage
Brick.TB01	1	24V	power supply input 24V dc	-
Brick.TB01	2	GND	Phase, Supply	-
Brick.TB01	3	+	Dimmer	Analog output 1
Brick.TB01	4	-	Dimmer	Analog output 1
Brick.TB01	5	+	Dimmer	Analog output 2
Brick.TB01	6	-	Dimmer	Analog output 2
Brick.TB01	7	+	Dimmer	Analog output 3
Brick.TB01	8	-	Dimmer	Analog output 3
Brick.TB01	9	+	Dimmer	Analog output 4
Brick.TB01	10	-	Dimmer	Analog output 4

1.2.3 LED Indications

ID	Type	Specification	Type / Usage
Brick.LED01	SMD-LED	green	Shows state of Analog output 1
Brick.LED02	SMD-LED	green	Shows state of Analog output 2
Brick.LED03	SMD-LED	green	Shows state of Analog output 3
Brick.LED04	SMD-LED	green	Shows state of Analog output 4
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 Analog Outputs

The control unit has the following analog outputs:

Identifier	Analog output 1
Type	12 ... 40V
Range	0 ... 100%
max. Voltage	40V DC
max. Current	2A
Filter	
Component	
Remark	PWM frequency adjustable

Identifier	Analog output 2
Type	12 ... 40V
Range	0 ... 100%
max. Voltage	40V DC
max. Current	2A
Filter	
Component	
Remark	PWM frequency adjustable

Identifier	Analog output 3
Type	12 ... 40V
Range	0 ... 100%
max. Voltage	40V DC
max. Current	2A
Filter	
Component	
Remark	PWM frequency adjustable

Identifier	Analog output 4
Type	12 ... 40V
Range	0 ... 100%
max. Voltage	40V DC
max. Current	2A
Filter	
Component	
Remark	PWM frequency adjustable

1.4.2 Fuses

The controller owns the following internal fuses for providing safety for the device and partially for the connected sensors/ actors:

ID	Type	Nom. Current	Characteristic	Usage
Brick.SI 1	2.5AF	2A	fast	Analog output 1
Brick.SI 2	2.5AF	2A	fast	Analog output 2
Brick.SI 3	2.5AF	2A	fast	Analog output 3
Brick.SI 4	2.5AF	2A	fast	Analog output 4

1.4.3 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)

1.4.4 Developer Notes

• Depending on the electrical application, the user has to install sufficient additional components to fulfill the EMC-standads.

• To save a secure usement each output is fused with 2.5AF.

• Use electrical compatible LEDs or LED-Stripes to your supply voltage, in other cases the LED might not go off totaly or will get broken.

1.4.5 Technican Notes

• State-Dimmer not functional at the moment

1.5 Process Data Image

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

Byte	Function	rCAssign
00..01	Analog Output 1 0...24000 Dig. ≡ 0....100%	...+eB_W0,0,...
02..03	Analog Output 2 0...24000 Dig. ≡ 0…100%	...+eB_W1,0,...
04..05	Analog Output 3 0...24000 Dig. ≡ 0…100%	...+eB_W2,0,...
06..07	Analog Output 4 0...24000 Dig. ≡ 0…100%	...+eB_W3,0,...
08	PWM-Freqency (Little Endian) Bit 1-0 11 = 3 (2k Hz) 10 = 2 (1k Hz) 01 = 1 (500 Hz) 00 = 0 (83,3 Hz)	...+eB_B8,0,0,... ...+eB_B8,0,1,... ...+eB_B8,0,2,... ...+eB_B8,0,3,... ...+eB_B8,0,4,... ...+eB_B8,0,5,... ...+eB_B8,0,6,... ...+eB_B8,0,7,...

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

Byte	Function	rCAssign
00..01	State-Dimmer 1 Bit 9-0 ...StateD: State Dimmer X (Little Endian) 11 1111 1111 = 1023 ... ...00 0000 1010 = 10 Fuse OK ...00 0000 1001 = 9 ... 00 0000 0000 = 0 Fuse broken	...+eB_W0,0,...
02..03	State-Dimmer 2 Bit 9-0 ...StateD: State Dimmer X (Little Endian) 11 1111 1111 = 1023 ... ...00 0000 1010 = 10 Fuse OK ...00 0000 1001 = 9 ... 00 0000 0000 = 0 Fuse broken	...+eB_W1,0,...
04..05	State-Dimmer 3 Bit 9-0 ...StateD: State Dimmer X (Little Endian) 11 1111 1111 = 1023 ... ...00 0000 1010 = 10 Fuse OK ...00 0000 1001 = 9 ... 00 0000 0000 = 0 Fuse broken	...+eB_W2,0,...
06..07	State-Dimmer 4 Bit 9-0 ...StateD: State Dimmer X (Little Endian) 11 1111 1111 = 1023 ... ...00 0000 1010 = 10 Fuse OK ...00 0000 1001 = 9 ... 00 0000 0000 = 0 Fuse broken	...+eB_W3,0,...
08..09	State 24V 0...1023 Dig. ≡ 0...42,7V	...+eB_W4,0,...

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:

emBrick GmbH	Alfred-Nobel-Straße 2 D-55411 Bingen am Rhein	+49 (0)6721-48035-70	https://www.embrick.de/ https://www.embrick.de/shop/ support@embrick.de