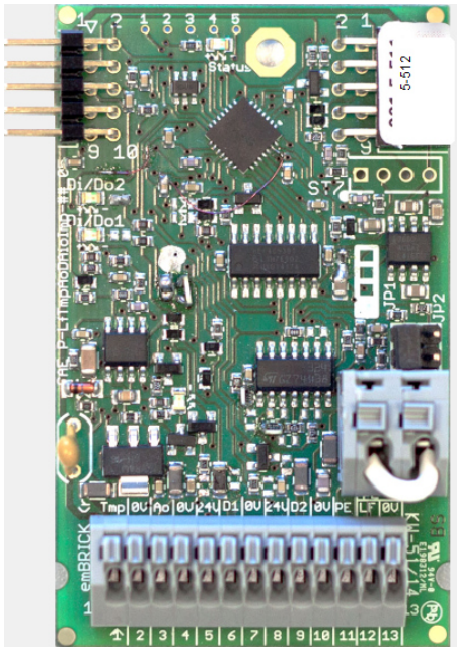
CAE_P-LfTmpAoDAioImp-02

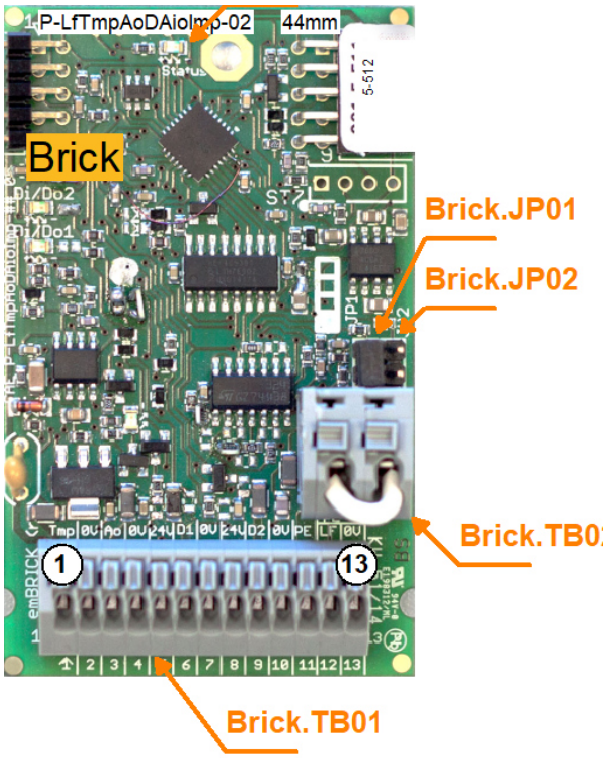


1.1 Description

ID: 5-512
Order No.: CAE_P-LfTmpAoDAioImp-02
Terminal: push-in (for ≤ 0.5mm²)
Size: 4 eU (44mm x 72mm)
BBFCP: 1-1-1
Weight: 40g

This module contains all IOs for a typical conductivity measurement with a range of 1 ... 4000µS/cm (configurable). It supports the common cell constants of k = 0.01... 1.0 (configurable). An integrated temperature input (KTY81) supplies the necessary temperature compensation.
A special pulse input allows the direct adaption of a hall or reed-contact flow and volume sensor from 0.01 up to 250Hz.
Additionally one universal analog current (0..10V) input and one output (0..20mA) can be used for other analog sensors/actors.
Furthermore a semiconductor pulse output is present to control e.g. dosing pumps.

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.TB00	Cage Terminal	WAGO250	2.5mm	13	up to 0.5mm² or 0,8mm	50V/1A
Brick.TB01	Cage Terminal	WAGO250	3.5mm	2	up to 1.5mm²	250V, 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	Tmp	Input Temperature Sensor	Temperature
Brick.TB01	2	0V	Ground Sensor	Temperature

Brick.TB01	3	OUT	Current Output	Analog output
Brick.TB01	4	0V	Ground	Analog output
Brick.TB01	5	24V	Sensor supply +24V	Analog input
Brick.TB01	6	IN	Input	Analog input
Brick.TB01	7	0V	Ground	Analog input
Brick.TB01	8	V+	Sensor supply +24V	Pulse Input
Brick.TB01	9	In	Input	Pulse Input
Brick.TB01	10	0V	Ground	Pulse Input
Brick.TB01	11	PE	Shield	Conductivity
Brick.TB01	12	LF	Input Conductivity Sensor (Cond.)	Conductivity
Brick.TB01	13	0V	Ground	Conductivity
Brick.TB01	14	PE	Shield	Potential equalization
Brick.TB01	15	0V	Ground	Potential equalization

1.2.3 Jumper overview (JP)

The individuell jumpers, their combination to logical jumper groups and their usage are stated below. The location of individual jumpers is determined through the jumper ID (left coloumn) in the previous Illustrations.

ID	Jumper Block	Usage
Brick.JP00	Brick.JP-LF	Cond. Range Selection
Brick.JP01	Brick.JP-LF	Cond. Range Selection

1.2.4 Jumpergroups and configuration

Hereafter possible jumper groups settings are described. They refer to jumper-ID of the previous listings. A "o" symbolises a disconnected jumper, a "x" symbolises a connected jumper.

Jumper Block	Selections	Effect
Brick.JP-LF	A: JP1=o JP2=o B: JP1=x JP2=o C: JP1=o JP2=x	Selection of the possible measuring range: Depending on which measuring range you want to measure, the jumper must be plugged in accordingly. This depends firstly on the K value of the probe used and secondly on the set measurement gain. Example: Probe with a K-value of 1.0 Conductivity to be measured max. Approx. 1000µS / cm From the list below, option B would be suitable. Jumper 1 must be plugged in and the Meas.-Ampl./Gain set to 10% in the Conductivity Sensor menu so that a measurement range up to 1000 µS/cm can be measured with a K = 1.0 probe. A: 250µS/cm (K=1.0 with Meas.-Ampl./Gain = 10%), ADC-Value: approx. 395 25µS/cm (K=0.1 with Meas.-Ampl./Gain = 10%), ADC-Value: approx. 395 25µS/cm (K=1.0 with Meas.-Ampl./Gain = 100%), ADC-Value: approx. 395

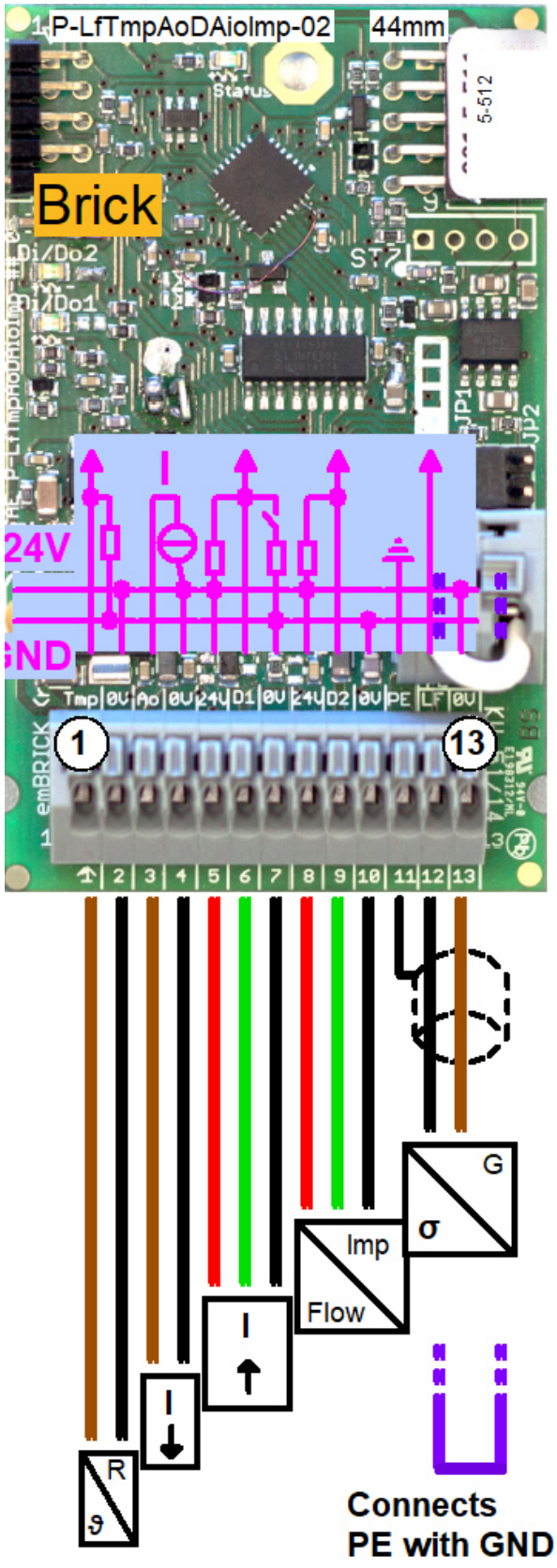
		B: 1000µS/cm (K=1.0 with Meas.-Ampl./Gain = 10%), ADC-Value: approx. 410 100µS/cm (K=0.1 with Meas.-Ampl./Gain = 10%), ADC-Value: approx. 410 100µS/cm (K=1.0 with Meas.-Ampl./Gain = 100%), ADC-Value: approx. 410 C: 4300µS/cm (K=1.0 with Meas.-Ampl./Gain = 10%), ADC-Value: approx. 410 430µS/cm (K=0.1 with Meas.-Ampl./Gain = 10%), ADC-Value: approx. 410 The jumper is usually plugged once into the basic configuration of the device. If the jumper is changed after calibrations have been made, they must be redone.

1.2.5 LED Indications

ID	Type	Specification	Type / Usage
Brick.LED00	SMD-LED	green	Shows state of Analog output
Brick.LED01	SMD-LED	green	Shows state of Pulse Input
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 Inputs

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

Identifier	Analog input
Type	Voltage Input
Range	0 ... 10V
Input/Load Resistor	>50k
Resolution	
Accuracy	0.5%
Linearity	0.2%
Filter	100Hz
Linearization	
Model / Series	
Remark	Sensor power supply (24V) is provided; note overall capacity

Identifier	Conductivity
Type	Conductivity, conductive sensor
Range	0 ... 5000µS/cm @ K=1.0
Input/Load Resistor	-
Resolution	0.2%
Accuracy	2%
Linearity	1%
Filter	Tau = 1s
Linearization	Temperature compensation 2.2%/K
Model / Series	for cell constant K=0.01 ... 10
Remark	-

Identifier	Temperature
Type	Temperature input, PT1000, 0...50°C
Range	0 ... 50°C
Input/Load Resistor	-
Resolution	0.1%
Accuracy	2%
Linearity	1%
Filter	Tau = 1s
Linearization	-
Model / Series	PT1000
Remark	-

1.4.2 Analog Outputs

The control unit has the following analog outputs:

Identifier	Analog output

Type	Current Output
Range	0 ... 20mA
max. Voltage	Vo < 12V
max. Current	25mA
Filter	1st order, fcut off = approx. 2Hz
Component	-
Remark	Load Resistor 0...600 Ohm

1.4.3 Pulse and Counting Inputs

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

Identifier	Pulse Input
Type	Impuls/Digital input, universal 2/3 wire
Threshold	0.6 / 1V
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	Sensor power supply (24V) is provided; note overall capacity

1.4.4 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)

1.5 History

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

1.5.1 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					

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