Multifunctional MVisio I/O-Module

Intended Use

The MVisio I/O-Module is a multifunctional plug-in I/O Module and serves as an optional addition for the MVisio_7 HMI. It allows to directly connect the configurable digital and analogue inputs and outputs to the HMI.

Next to connecting simple digital and analogue inputs and outputs, the Module allows a configurations of these connections as Encoder- or Counter-Inputs, as well as Inputs for Voltage, Current, Resistance and Temperature measurements

Features

- *20 optically galvanic isolated digital inputs*
- *12 optically galvanic isolated digital outputs*
- *Up to 8 not galvanic isolated configurable 12-Bit analog Inputs for Voltage, Current, Resistance and Temperature measurement (4 differential / 8 Single-Ended*
- *4 not galvanic isolated configurable 12-Bit analogue outputs*
- *1 Pt100-Input for cold junction compensation of Thermocouples*
- *Voltage Supply of the Module through the MVisio_7 HMI (Order-No. 589100)*

Fig. 1 Plug-In I/O-Module

Safety Precautions

- The installation and commissioning must be carried out by qualified personnel only.
  - Who is familiar with the professional handling of machine equipment
  - Who is familiar with the valid rules of the industrial safety and accident prevention
  - Who read and understood the operating instructions and the system manual
- The safe function of the device during machine operation cannot be guaranteed in case of wrong connection or improper operation. This may lead to fatal injuries.
- Pay attention to country specific regulations.
- The electrical installation must be preformed after disconnecting the device and the machine from the mains supply.
- The wiring must be carried out according to the instructions of this operating manual

- Opening the device, any manipulation of the device and the avoidance of the safety facilities are not permitted.
- All relevant safety regulations and standards must be attended to.
- Non-observance of the safety regulations may cause death, severe injuries or substantial damage to property.
- Before use, please read the operating instructions and keep it in a safe place. Make sure that the operating instructions are always available for installation, initial operation and maintenance.
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Non-observance of the instructions above will cause the loss of warranty

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Assembly

The Module if meant to operate with the MVisio_7 HMI and can be plugged-in at the back of the HMI in 4 simple steps.
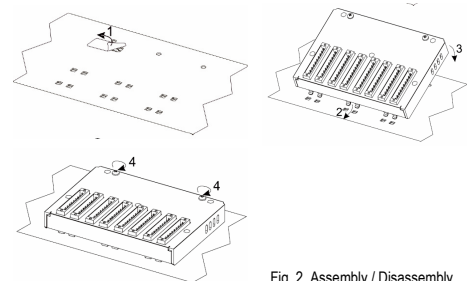

Fig. 2 Assembly / Disassembly

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ZANDER AACHEN

User Information

English translation

Installation

Please read the section "Safety Precautions" before installing and commissioning the device.

The digital In– and Outputs can be powered externally, as well as through the I/O-Module with DC24 V.

The Pt100 Inputs are powered through the I/O-Module.

- At CH1-CH4 in rows CN1 and CN2 connect the analogue Inputs
- At CH1-CH4 in row CN3 connect the analogue Outputs
- At pins 1-5 of row CN4 connect the Pt100 for cold junction compensation
- At pins 7 and 8 in row CN4 connect DC24 V for the supply voltage of the digital inputs and outputs
- At pins 9 and 10 in row CN4 connect the ground for the digital inputs and outputs
- At pins 2 - 9 in rows CN5 and CN6, as well as pins 2 - 5 in row CN7 connect the digital inputs
- At pins 6 - 9 in rows CN7, as well as pins 2 - 9 in row CN8 connect the digital output
- The maximum cable length must not exceed 30 m
- If the device does not operate after initial start, it must be send back to the manufacturer unopened. If the device was opened the guarantee claim is void.
- Please consider the information in the section "Technical Data"
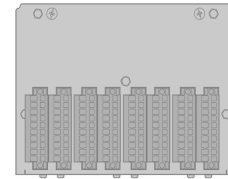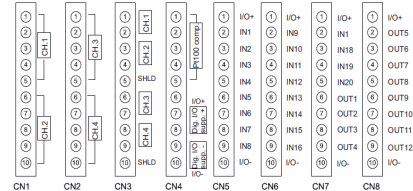

Fig. 3 Plug-In Terminals

Fig. 4 Pin assignment

Anschl.	Signal
CN1	Analog Inputs
CN2	Analog Inputs
CN3	Analog Output
CN4	Pt100 compensation + I/O-Voltage supply
CN5	Digital Inputs
CN6	Digital Inputs
CN7	Digital In– and Outputs
CN8	Digital Outputs
I/O+ / I/O-	Supply voltage for the digital In– and Outputs

Maintenance

No servicing is required. Repairs of the device are only allowed to be made by the manufacturer

What to do in Case of a Fault?

The devices does not execute any function:
- Check the wiring in accordance with the connection diagram.
- Did you download the planned program?

If the fault persists, please follow the steps which are described in the section "Commissioning Procedure"

If the fault still persists, the related device must be replaced. The replacement of individual parts of the device is not permitted.

Opening the device is not permitted and results in void of the guarantee claim.

Dimension Drawing
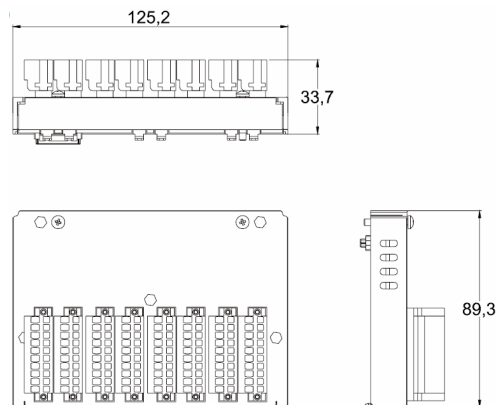

125,2

33,7

89,3

Fig. 5 Dimension of the Plug-In I/O Module

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Technical Data

Operating Voltage	DC 24 V, +25%/-50%
System Supply	From the HMI
Connection technology	plug-in spring terminals
Electrical isolation	optically, 1500 V_{rms}

Digital Inputs

Quantity galvanisch	20 dig. Inputs, DC 24 V, pnp, optically galvanic isolated
Input voltage range	DC 12-30 V (min. 3 mA), DC 35 V max. for 500 ns
On-state voltage/current	DC 12-30 V (min. 3 mA); 6 mA at DC 24 V, 9 mA at DC 30 V
Off-state voltage /current	max. DC 6 V, 1 mA
Input impedance	3.3 kΩ
Input filter delay	200 ns for E-Input, 50 µs for S-Input
Debounce filter	programmable 0.1 to 20 ms
Galvanic isolation	1500 V_{rms}
E/200 ns	IN1, IN2, IN5, IN6, IN9, IN10, IN13, In14
S/50 µs IN19,	IN3, IN4, IN7, IN8, IN11, IN12, IN15, IN16, IN17, IN18, IN20

Encoder-Inputs

Quantity	2 (A, B, Z, M)
A & B & Z & M	IN1 & IN2 & IN3 & IN4, IN5 & IN6 & IN7 & IN8
Input frequency	max. 1 MHz
Pulse width	min. 500 ns
Count range	32 Bit

Counter Inputs

Quantity	2 (one pulse and one gate Inputs. If not used, the gate inputs is available as a normal digital Input)
Pulse and gate Input pairs	IN1 & IN2, IN5 & IN6
Input frequency	max. 1 MHz
Pulse width	min. 500 ns
Count range	32 Bit

Frequncy Input

Quantity	2
Frequency Inputs	IN1, IN5
Input frequency	max. 20 kHz, min. 1 Hz
Pulse width	min 500 µs
Accuracy	0.005%

Digital Outputs

Quantity	12 dig. Outputs, pnp, optically galvanic isolated
Output voltage	DC 12-30 V
Output current	0.5 A per channel, total current of all Outputs max. 1.4 A
Output delay time	max. 150 µs
Output protection	Overcurrent and overtemperature protected driver
Galvanic isolation	1500 V_{rms}

Analogue Inputs

Quantity	Up to 8 multifunctional , configurable analogue Inputs (8 Single Ended / 4 differential), not galvanic isolated. The e reference potential of the analogue inputs (COM-AGND) are internally connected to the reference potential M of the HMI.
Input or measurement type	Voltage Input, current input, temperature measurement (various types of thermocouples or Pt100 RTD) with incorporated external cold junction compensation.
A/D resolution	12 Bit
Accuracy at 25°C	0.1%

Voltage Inputs

Quantity	Up to 8 (8 Single-Ended, 4 differential)
Input linearity error	0.1%
Input range and accuracy (from measurement end value)	Bipolar (± 100 mV) : 0.1%
	Bipolar (± 500 mV) : 0.2%
	Bipolar (± 1 V) : 0.1%
	Bipolar (± 5 V) : 0.1%
	Bipolar (± 10 V) : 0.1%
	Unipolar (0-1 V) : 0.1%
	Unipolar (0-10 V) : 0.1%
Permissible voltage	max. ± DC 15 V
Input impedance	>10 MΩ

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User Information

English translation

Technical Data

Current Inputs	
Quantity	Up to 4 differential Inputs, externally supplied
Input range	0-20 mA or 4-20 mA
Input impedance	200 Ω
Input linearity error	0.1%
Permissible voltage	max. ± DC 15 V

Thermocouple Inputs	
Quantity	Up to 4
Thermocouple types	E (-270°C bis 1000°C)
	J (-210°C bis 760°C)
	K (-270°C bis 1370°C)
	R (0°C bis 1768°C)
	S (0°C bis 1768°C)
	T (-270°C bis 400°C)
Cold Junction Compensation	External via Pt100 comp. Input (CN4, Pin 1-5). The characteristics of this input are similar to those of the Pt100 (RTD) inputs

Pt100 (RTD)-Inputs	
Quantity	4 for 2-, 3- or 4-wire configuration. In 2- or 3- wire configuration, 4 Inputs remain free for single ended measurements. Wire break or short circuit protection.
Supply	1.2 mA from the Module
Measurement temperature range	-100°C to 850°C
Pt100 accuracy at 25°C (4 selectable ranges)	Range 1: 0-157 Ω, 0.1% accuracy
	Range 2: 0-530 Ω, 0.1% accuracy
	Range 3: 0-1020 Ω, 0.1% accuracy
	Range 4: 0-8800 Ω, 0.1% accuracy

Analog Outputs	
Quantity	4, not galvanic isolated
Resolution	12 Bit

Voltage Outputs	
Type	Single-Ended
Voltage range	± DC 12 V
Load impedance	min. 1 kΩ
Load capacity	max. 10 nF
Linearity error	0.15%

Current Outputs	
Type	Current source
Current range	0-20 mA or 4-20 mA
Load impedance	max. 470 Ω
Linearity error	0.2%

Enviromental Data	
Operating Temperature	0°C to 50°C
Storage Temperature	-20°C to 70°C
Operating humidity	5-85 % relative humidity, non condensing
Protection calss	IP20

Connection Technology	
Connector Type	8 male connectors 10 pol. , 3.5 mm grid / Weidmueller - Omnimate BLZF 3.5/180F

Order-No.

Order- No. 589105	I/O Module for MVisio_7 HMI, digital In/Out 20/12, analogue In/Out 8/4

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Ver. A
E61-434-00