

User Information

Correct use

MVisio I/O-Module is a multifunctional Plug-In I/O-Module and function as optional extension Module for MVisio HMI's. It allows the direct connection of configurable digital and analogue in- and outputs to the HMI.

The Plug-In I/O-Module allows beside the connection of simple digital and analogue inputs as well configuration of these connection as encoder- or counter inputs and as inputs for voltage-, current-, resistance- and temperature measurement.

Features

- Combination of MVisio HMI and I/O-Module leads to a full functional PLC
- 20 optical isolated digital inputs
- 12 optical isolated digital outputs
- 4 differential / 8 Single-Ended non galvanic isolated configurable 12-Bit analogue inputs for voltage-, current-, resistance-, or temperature measurement
- 4 not galvanic isolated, configurable 12-Bit analogue outputs
- 1 Pt100-input for the cold junction compensation of thermocouples
- Supply and connection of the Module via HMI MVisio 7 (Order-No. 589100), HMI MVisio Pro 5 (Order-No. 589103), HMI MVisio Pro 7 (Order-No. 589102) (no supply via MVisio Lite)
- Direct installation saves space in the control cabinet

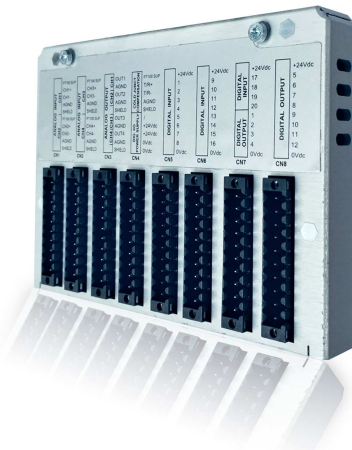


Image 1: Plug-In I/O-Module

Safety Precautions



- The installation and operation 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 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 connection of the device must only take place when the voltage supply is switched off.
- The wiring of the device must be done in conformance with the instructions given in this operating manual.
- Opening of the device and any manipulations to the device are not allowed and shall result in loss of warranty and warranty claims.
- 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.

Non-observance of the instructions above will cause the loss of warranty.

Montage

The Module is designed for operation with MVisio HMI's and can be installed on the back of the HMI's in simple four steps.

To connect the Module to the HMI MVisio Pro (5"-Variant) the adaptor Module (Order-No. : 589106) is necessary.

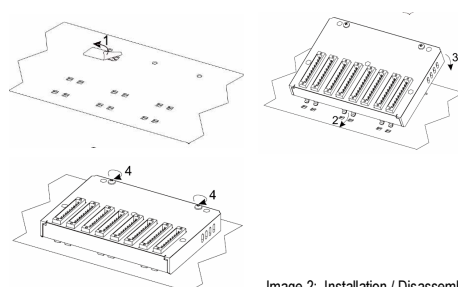


Image 2: Installation / Disassembly

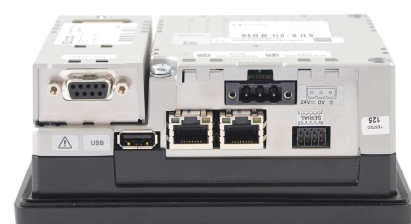


Image 3: HMI MVisio Pro (5"-Variant) with Adapter

User Information

Installation

Before installation and commissioning please read the section „Safety Precautions“. Digital inputs and outputs can be supplied externally as well as by the I/O- Module with DC24 V, the Pt100 are supplied by the Module.

- Connect the analogue input signals to CH1-CH4 of the rows CN1 and CN2
- Connect the analogue output signals to CH1-CH4 of the row CN3
- Connect the Pt100 compensation to the pins 1-5 of the row CN4
- Apply DC24V to the pins 7 and 8 of the row CN4 for supplying the digital connection
- Connect to the pins 9 and 10 of row CN4 the ground for the digital connection
- Connect the digital input to the pins 2 - 9 of the rows CN5 and CN6 and to the pins 2 - 5 of the row CN7
- Connect the digital outputs to the pins 6 - 9 of the rows CN7 and to the pins 2 - 9 of the row CN8
- The maximum cable length is 30 m
- Does the device not show any function after commissioning, it should be send back to the manufacturer without opening. By opening the device the warranty is void.
- Please note the advice in section „Technical Data“

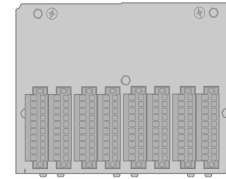


Image 3: Plug-in Terminal

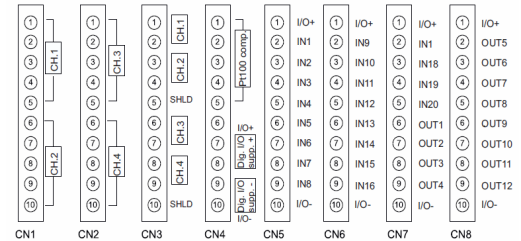


Image 4: Pin assignment

Connection Signal

CN1	Analogue Inputs
CN2	Analogue Inputs
CN3	Analogue Outputs
CN4	Pt100 Compensation+ I/O-Supply Voltage
CN6	Digital Inputs
CN7	Digital In - and Outputs
CN8	Digital Outputs
I/O+ / I/O-	Supply Voltage for digital In - and Outputs

Maintenance

In case of correct installation the device is maintenance free.

What to do in case of failure?

The device does not execute any function:

- Check the wiring in accordance with the Pin assignment.
- Is the provided software loaded?

If the error persists, please follow the steps which are described in the section „Installation“.

If this does not fix the error, the device has to be send back to the manufacturer for inspection.

Opening the device is not permitted and lead to the loss of warranty.

Dimension Drawing

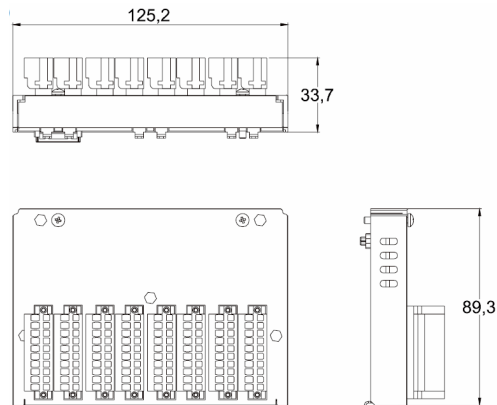


Image 5: Dimension Plug-In I/O-Module



Technical Data

Supply voltage	DC 24 V, +25%/-50%
System power supply	From the MVisio HMI
Voltage supply connection	Pluggable strip with cage clamp terminals
Electrical isolation	optical, 1500 V _{rms}
Digital Inputs	
Number	20 dig. Inputs, DC 24 V, pnp, optical galvanic isolated
Voltage range	DC 12-30 V (min. 3 mA), DC 35 V max. for 500 ns
Signal Voltage / Signal current High-Level	DC 12-30 V (min. 3 mA); 6 mA with DC 24 V, 9 mA with DC 30 V
Signal Voltage / Signal current Low-Level	max. DC 6 V, 1 mA
Input impedance	3,3 kΩ
Input delay max.	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	IN3, IN4, IN7, IN8, IN11, IN12, IN15, IN16, IN17, IN18, IN19, IN20
Encoder-Inputs	
Number	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
Counting range	32 Bit
Counter-Inputs	
Number	2 (each per pulse- and one gate input; if the gate input is not used it can be used as standard digital input)
Pairs for Pulse- and Gate inputs	IN1 & IN2, IN5 & IN6
Input frequency	max. 1 MHz
Pulse width	min. 500 ns
Counting range	32 Bit
Frequency-Inputs	
Number	2
Frequency inputs	IN1, IN5
Input frequency	max. 20 kHz, min. 1 Hz
Pulse width	min 500 μs
Accuracy	0,005%
Digital Outputs	
Number	12 dig. Outputs, pnp, optical galvanic isolated
Output voltage	DC 12-30 V
Output current	0,5 A per channel, sum current of all outputs max. 1,4 A
Output delay	max. 150 μs
Overload protection	Overcurrent und excessive temperature
Galvanic Isolation	1500 V _{rms}
Analogue Inputs	
Number	up to 8 Single-Ended / 4 differentiated, configurable, multifunctional, analogue Inputs, not galvanic isolated. Reference potential of the analogue Inputs (COM-AGND) are internally connected with the reference potential M of the HMI
Input- or Measurand	Voltage input, current input, temperature measurement (various types of thermocouples or PT100 RTD) with integrated external cold junction compensation
A/D-Resolution	12 Bit
Accuracy at 25°C	0,1%
Voltage Inputs	
Number	8 Single-Ended, 4 (differential)
Linearity Error	0,1%
Input and accuracy (of measuring 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%
Permitted Voltage	max. ± DC 15 V
Input Impedance	>10 MΩ

Technical Data

Current Input	
Number	4 differential Inputs externally supplied
Input field	0-20 mA or 4-20 mA
Input impedance	200 Ω
Linearity Error	0,1%
Permissible Voltage	max. ± DC 15 V
Thermocouple-Inputs	
Number	4
Thermocouple-Types	E (-270°C up to 1000°C) J (-210°C up to 760°C) K (-270°C up to 1370°C) R (0°C up to 1768°C) S (0°C up to 1768°C) T (-270°C up to 400°C)
Cold junction compensation	Externally by according Pt100-comp. (CN4, Pin 1-5). The characteristic of the inputs comply with these of the Pt100 RTD Inputs
Pt100 (RTD)-Inputs	
Number	up to 4 for 2-, 3- or 4-wire. Wire breakage and short-circuit monitoring. In 2- or 3-wire operation the inputs for single-ended-measuring remain free .
Supply	1,2 mA out of the module
Temperature range for measurement	-100°C up to 850° C
Pt100 accuracy at 25°C (4 measuring range)	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
Analogue Outputs	
Number	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	active Outputs
Current range	0-20 mA or 4-20 mA
Load impedance	max. 470 Ω
Linearity error	0,2%
Environmental conditions	
Operating temperature	0°C up to 50°C
Storage temperature	-20°C up to 70°C
Relative humidity	5-85 % relative humidity, no condensation
Degree of protection	IP20
Connection technology	
Connector-Type	8 plugs 10 pol. , 3,5 mm grid / Weidmueller - Omnimate BLZF 3.5/180F / tension clamb connection
Conductor connection	max. AWG 16, max. 1,5 mm² with ferrule

Order-No.

Order-No. 589105	I/O Module for MVisio HMI, Digital In/Out 20/12, Analogue In/Out 8/4
Order-No. 589106	Adapter Module

Compatible HMI's Order-No.

Order-No. 589100	HMI MVisio_7 (7"-Variant)
Order-No. 589103	HMI MVisio Pro 5 (5"-Variant)
Order-No. 589102	HMI MVisio Pro 7 (7"-Variant)