

Analog Input/Output Extension Modules xAxT 20x-T(I/U)

Safety Information and Instructions

IMPORTANT

To avoid personal injury and device damage, the following notes and instructions must be followed.

- Please read the Module Manual of the specific product carefully before using the product. The Manual and all corresponding documents can be downloaded from the Selectron Information Platform Symphony Suite. For registration and download, visit <http://cockpit.selectron.ch/download>.
- The technical data in this document may be subject to change. Always consult the Module Manual for the final and most up-to-date information.
- Allow only appropriately trained personnel to handle the devices and pay attention to the ESD protection measures.
- Usage restriction: The designated product may only be used in an industrial environment (Class A product) in accordance with specifications in the manuals.
- To ensure a ground connection, a metallic top hat rail must be used. Due to the grounding function of the top hat rail, it must neither be plastic-coated nor anodized. In addition, the top hat rail must be grounded with a large surface area and low-impedance connection.
- To avoid the risk of destroying a module, it must never be mounted or removed under live voltage.
- Before supplying any voltage, make sure that the power supply connector is connected in order to follow the EMC standards.
- For analog modules, the cable must be shielded and the shield must be made from wire mesh (i.e., the cable is not wrapped with aluminum foil).

General Information

This document is applicable for the following Selectron products:



AIT 201-T
44430009.x*)

Analog Input exTension



AIT 202-T/I
44430010.x*)

Analog Input exTension



AOT 201-T
44430011.x*)

Analog Output exTension



SAIT 201-T/I
44430016.x*)

SIL Analog Input exTension



SAIT 201-T/U
44430017.x*)

SIL Analog Input exTension

*) .x = hardware revision of the product

Manufacturer

Selectron Systems AG | Bernstrasse 70 | 3250 Lyss | Switzerland | www.selectron.ch

Package Content

The package contains:

Article	Number
Device AIT 201-T or AIT 202-T/I or AOT 201-T or SAIT 201-T/I or SAIT 201-T/U	1

Available Accessories see [Page 10](#).

State of Delivery

In the state of delivery, the Firmware is already installed. Depending on the device application, further software installation or updates are required. Please refer to the Module Manual for further information.

Analog Input/Output Extension Modules xAxT 20x-T(I/U)

Technical Data

General

Environmental conditions	
Degree of Protection (IP Code according to IEC 60529)	IP20
Operating temperature according EN50155	-40...+70 °C
Storage temperature	-50...+85 °C
Dry Heat test, extended Temperature Range (10 Minutes); EN50155:2021	+95 °C
Operation altitude (max. with derating)	5000 m. a. s. l.
Operation altitude (no derating)	2000 m. a. s. l.

AIT 201-T

Analog Inputs	
Number of Inputs	8
Galvanic groups	1
Inputs per galvanic group	8
Input Resolution	12 Bit
Current nominal range	0...20.48 (0...32767 inc) mA
Current range underrun (configurable, Default=0)	0...20.38 (0...32607 inc) mA
Current range overrun (configurable, Default=20.10)	0.10...20.48 (160...32767 inc) mA
Voltage nominal range	0...10.24 (0...32767 inc) V DC
voltage range underrun (configurable, Default=0)	0...10.19 (0...32607 inc) V DC
voltage range overrun (configurable, Default=10.05)	0.05...10.24 (160...32767 inc) V DC
Max. error in range at 25 °C of scale end value	± 0.5%
Max. error in range -40...+70°C of scale end value	± 2%
Crosstalk Attenuation	>54dB
Non-linearity (over the whole range)	0.2%
Maximum non-destructive input value	±30 mA / ±30 V
Input Impedance (current mode / voltage mode)	≤0.125 (± 10%) / ≥90 (± 5%) kΩ
External supply 24 V DC for sensors	no
Input Type	single ended
Conversion time for all inputs	10 ms
Frequency of the input signal	≤30 Hz

AIT 202-T/I

Analog Inputs	
Number of Inputs	8
Galvanic groups	1
Inputs per galvanic group	8
Input Resolution	12 Bit
Current nominal range	0...20.48 (0...32767 inc) mA
Current range underrun (configurable, Default=0)	0...20.38 (0...32607 inc) mA
Current range overrun (configurable, Default=20.10)	0.10...20.48 (160...32767 inc) mA
Max. error in range at 25 °C of scale end value	± 0.5%
Max. error in range -40...+70°C of scale end value	± 2%
Crosstalk Attenuation	>54dB
Non-linearity (over the whole range)	0.2%

Analog Input/Output Extension Modules xAxT 20x-T(I/U)

Analog Inputs	
Maximum non-destructive input value	±30 mA
Input Impedance (current mode / voltage mode)	0.296 (± 5%) / --- kΩ
External supply 24 V DC for sensors	no
Input Type	single ended
Conversion time for all inputs	10 ms
Frequency of the input signal	≤30 Hz

SAIT 201-T/I

Analog Inputs	
Number of Inputs	4
Galvanic groups	1
Inputs per galvanic group	4
Input Resolution	12 Bit
Current nominal range	0...20.48 (0...32767 inc) mA
Current range underrun (configurable, Default=0)	0...20.38 (0...32607 inc) mA
Current range overrun (configurable, Default=20.10)	0.10...20.48 (160...32767 inc) mA
Max. error in range at 25 °C of scale end value	tbd
Max. error in range -40...+70°C of scale end value	tbd
Crosstalk Attenuation	tbd
Non-linearity (over the whole range)	tbd
Maximum non-destructive input value	±30 mA
Input Impedance (current mode / voltage mode)	≤0.3 / --- kΩ
External supply 24 V DC for sensors	no
Input Type	single ended
Conversion time for all inputs	10 ms
Frequency of the input signal	≤30 Hz

SAIT 201-T/U

Analog Inputs	
Number of Inputs	4
Galvanic groups	1
Inputs per galvanic group	4
Input Resolution	12 Bit
Voltage nominal range	0...10.24 (0...32767 inc) V DC
voltage range underrun (configurable, Default=0)	0...10.19 (0...32607 inc) V DC
voltage range overrun (configurable, Default=10.05)	0.05...10.24 (160...32767 inc) V DC
Max. error in range at 25 °C of scale end value	tbd
Max. error in range -40...+70°C of scale end value	tbd
Crosstalk Attenuation	tbd
Non-linearity (over the whole range)	tbd
Maximum non-destructive input value	±30 V
Input Impedance (current mode / voltage mode)	--- / ≥10 kΩ
External supply 24 V DC for sensors	no
Input Type	single ended
Conversion time for all inputs	10 ms
Frequency of the input signal	≤30 Hz

Analog Input/Output Extension Modules xAxT 20x-T(I/U)

AOT 201-T

Analog Outputs	
Number of Outputs	4
Galvanic groups	1
Outputs per galvanic group	4
Output Resolution	12 Bit
Max. error in range at 25 °C of scale end value	± 0.5%
Max. error in range -40..+70°C of scale end value	± 2%
Crosstalk Attenuation	tbd
Non-linearity (across the entire range)	± 0.2%
Current nominal range	-20...+20 (-32000 ...+32000 inc) mA
Voltage nominal range	-10...+10 (-32000 ...+32000 inc) V DC
Load Conditions	resistive loads
Current Load resistance	≤600 Ω
Voltage Load resistance	≥1 kΩ
SW Configurable	per Channel (I/U)

Analog Input/Output Extension Modules xAxT 20x-T(I/U)

Power Supply

The module is powered from the connected xDDE or xCPU module via the Ethernet Extension Bus (EBus), it has no separate external power supply.

Grounding

Functional grounding is provided through the device housing. The earth connection at the power supply connector serves exclusively as protective grounding.

Power Consumption

The typical power consumption on the EBus of the analog **input** modules (AIT) is < 1 W.

The typical power consumption on the EBus of the AOT 201-T is < 3 W.

Analog Input/Output Extension Modules xAxT 20x-T(I/U)

Terminal Assignment

AIT 201-T / AIT 202-T/I

Signal type	Description	Contact on TBA
AI00...AI03	Inputs on Terminal connector X1	X1: 00 / 02 / 04 / 06
AI04...AI07	Inputs on Terminal connector X2	X2: 00 / 02 / 04 / 06
GND	Reference Ground for corresponding input	X1: 01 / 03 / 05 / 07 X2: 01 / 03 / 05 / 07
SHD	Shield for inputs on corresponding Terminal connector	X1: 09 X2: 09
	Unused contacts	X1: 08 X2: 08

SAIT 201-T/I / SAIT 201-T/U

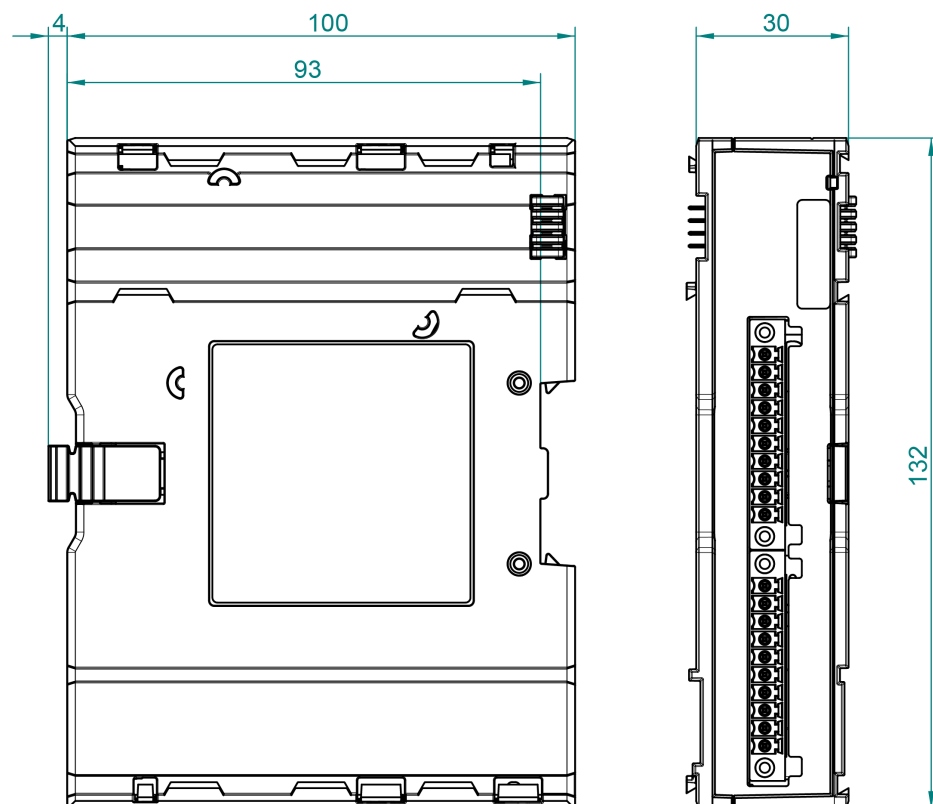
Signal type	Description	Contact on TBA
AI00...AI01	Inputs on Terminal connector X1	X1: 00 and 04
AI02...AI03	Inputs on Terminal connector X2	X2: 00 and 04
GND	Reference Ground for corresponding input	X1: 01 and 05 X2: 01 and 05
SHD	Shield for inputs on corresponding Terminal connector	X1: 09 X2: 09
	Unused contacts	X1: 02, 03, 06, 07, 08 X2: 02, 03, 06, 07, 08

AOT 201-T

Signal type	Description	Contact on TBA
AO00...AO01	Outputs on Terminal connector X1	X1: 00 and 04
AO02...AO03	Outputs on Terminal connector X2	X2: 00 and 04
GND	Reference Ground for corresponding output	X1: 01 and 05 X2: 01 and 05
SHD	Shield for outputs on corresponding Terminal connector	X1: 09 X2: 09
	Unused contacts	X1: 02, 03, 06, 07, 08 X2: 02, 03, 06, 07, 08

Analog Input/Output Extension Modules xAxT 20x-T(I/U)

Dimensions



Analog Input/Output Extension Modules xAxT 20x-T(I/U)

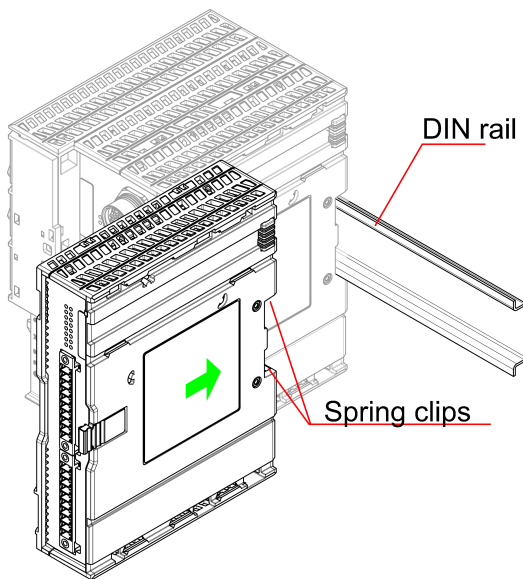
Installation / Mounting

Required tools and accessories:

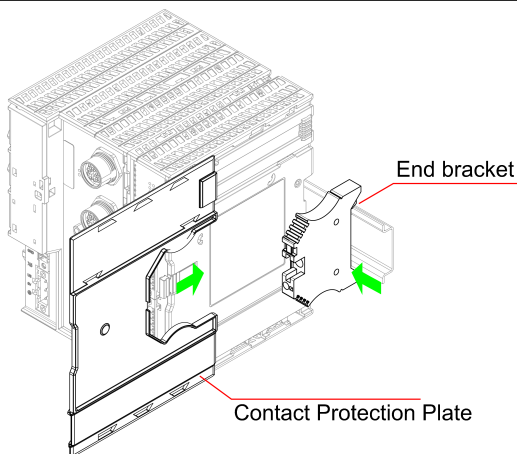
- Slotted screwdriver (3.0 × 100) for the fixation of the end bracket.
- If required: Contact Protection Plate CPP 201 and end bracket EBS 270/TS for the fixation on the right side of the module island.

NOTE

For the wiring it is recommended to temporarily place a flat plate on the upper ventilation slots as protection against the ingress of foreign materials (e.g. insulation residues). After wiring, the plate must be removed again for proper operation (air passage must be free during operation).



Align and insert the upper and lower guides on the left-hand side of the housing into the grooves of the adjacent module on the DIN rail. Push the module until the spring clips snap onto the DIN rail.



If required: Mount the next module as described above.

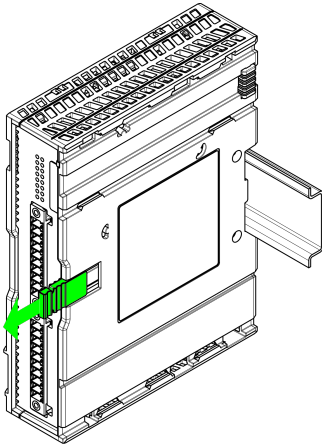
In case that no additional module is required, mount and fix the Contact Protection Plate and another end bracket from the right side of the extension module.

NOTE

Please refer to Module Manual for complete and detailed installation instructions.

Analog Input/Output Extension Modules xAxT 20x-T(I/U)

Deinstallation

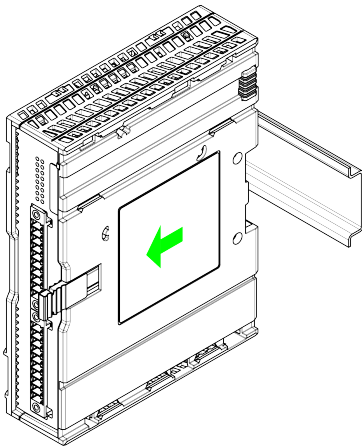


Turn off the Power Supply of the connected xCPU or xDDE to ensure the absence of voltage.

Disconnect all connectors (TBAs).

If used: Remove Cable Bundling Aid, Contact Protection Plate and/or end bracket from the module.

Pull the Lock/Unlock Lever.



Remove the module from the DIN rail.



NOTE

Please refer to Module Manual for complete and detailed installation instructions.

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Storage and Disposal

Storage of the Equipment

The rooms in which the **packaged** equipment is stored must have the following properties:

- well ventilated and vibration free
- Protection against moisture, frost, heat, dust, and sand (for temperature values, see the Technical Data chapter)
- Protection from vermin, rodents, termites, etc.
- the relative humidity must not fall below 20% and must not exceed 75%
- the relative humidity must not change by more than 15% within 24 hours

Decommissioning and Disposal

At the end of their service life, the corresponding modules must be replaced with new ones in a professional manner and the old ones disposed of according to local, regional and national regulations.

The modules and components comply with EU Directive 2011/65/EU RoHS.

Electronic waste must be disposed of according to the current legal regulations of the respective countries. In addition, it is possible to send old equipment to Selectron Systems AG for disposal.

Available Accessories

Product Name	Art. No.	Description
TBA 201	44470003	Connection terminal block with 10 positions to be used as I/O signal, US, 0V and/or GND connections (depending on module), Push-in spring connection, Single Connections, Screw locking mechanism
TBA 211	44470005	Connection terminal block with 10 positions to be used as I/O signal, US, 0V and/or GND connections (depending on module), Push-in spring connection, Double Connections, Screw locking mechanism
EBS 270/TS	44470011	End bracket Screwed, TS-35
CBA 201	44470015	Cable Bundling Aid
CPP 201	44470012	Contact Protection Plate
SC 201	44470013	Shield clamp for 1 cable
SC 202	44470014	Shield clamp for 2 cables