ABB ABB Series Service Manual

AX521

1. Description

1SAP 250 100 R0001 AX521, analog input/output module, 4 AI,

3. Product Information

1SAP 250 100 R0001 AX521, analog input/output module, 4 AI,
4 AO, U/I/Pt100, 12 bits including sign,
2-wires
Process voltage
Rated value 24 V DC
Max. ripple 5 %
Protection against reversed voltage Yes
Rated protection fuse on UP 10 A fast
Galvanic isolation Yes, per module
Current consumption
From 24 V DC power supply at the terminals
UP/L+ and ZP/M of the CPU/communication
interface module
Ca. 2 mA
From UP at normal operation 0.15 A + output loads
Inrush current from UP (at power up) 0.020 A2s
Max. length of analog cables, conductor cross section
> 0.14 mm²
100 m
Weight 300 g
Mounting position Horizontal mounting or
Vertical mounting with derating (output load
reduced to 50 % at 40 °C per group)
Cooling The natural convection cooling must not be
hindered by cable ducts or other parts in
the control cabinet.
Temperature +0.1 °C
Internal power supply Via the I/O bus interface (I/O bus)
External power supply Via the terminals ZP and UP (process
voltage 24 V DC)
Number of channels per module 4
Distribution of channels into groups 1 group of 4 channels
Input type Bipolar (not with current or Pt100/Pt1000/Ni1000)
Galvanic isolation
Between the channels No
Between the channels and I/O bus Yes
Between the channels and process supply
voltage (UP, ZP)
No
Configurability 0 V ... 10 V, -10 V ... +10 V, 0 mA ... 20 mA,
4 mA ... 20 mA, Pt100/1000, Ni1000 (each input
can be configured individually)
Channel input resistance Voltage: > 100 kW
Current: ca. 330 W
Time constant of the input filter Voltage: 100 µs
Current: 100 µs
Indication of the input signals One LED per channel
Conversion cycle 2 ms (for 8 inputs + 8 outputs), with Pt/Ni... 1 s
Resolution Range 0 V ... 10 V: 12 bits
Range -10 V ... +10 V: 12 bits including sign
Range 0 mA ... 20 mA: 12 bits
Range 4 mA ... 20 mA: 12 bits
Conversion error of the analog values caused
by non-linearity, adjustment error at factory
and resolution within the normal range
Typ. ± 0.5 % of full scale
at 25 °C
Max. ± 1 % of full scale (all ranges)
at 0 °C ... 60 °C or EMC disturbance

Unused voltage inputs Are configured as "unused"

Unused current inputs Have a low resistance, can be left open-circuited

Overvoltage protection Yes

Number of channels per module Max. 4

Distribution of channels into groups 1 group of 4 channels

Input signal delay Typ. 8 ms, configurable from 0.1 to 32 ms

Indication of the input signals 1 LED per channel

Input signal voltage 24 V DC

Signal 0 -30 V ... +5 V

Undefined signal +5 V ... +13 V

Signal 1 +13 V ... +30 V

Input current per channel

Input voltage +24 V Typ. 7 mA

Input voltage +5 V Typ. 1.4 mA

Input voltage +15 V Typ. 4.3 mA

Input voltage +30 V < 9 mA

Input resistance ca. 3.5 kW

Effect of incorrect input terminal connection Wrong or no signal detected, no damage up to

35 V

Number of channels per module 4, all channels for voltage and current

Distribution of channels into groups 1 group of 4 channels

Output type Bipolar with voltage, unipolar with current

Galvanic isolation

Between the channels No

Between the channels and I/O bus Yes

Between the channels and process

supply voltage (UP, ZP)

No

Configurability -10 V ... +10 V, 0 mA ... 20 mA, 4 mA ... 20 mA (each

output can be configured individually), current outputs

only channels 0 ... 3

Output resistance (load), as current

output

0 W ... 500 W

Output loadability, as voltage output Max. ± 10 mA

Indication of the output signals One LED per channel

Resolution 12 bits including sign

Settling time for full range change (resistive load, output signal within specified

tolerance)

Typ. 5 ms

Conversion error of the analog values

caused by non-linearity, adjustment error

at factory and resolution within the normal

range

Typ. ± 0.5 % of full scale

at 25 °C

Max. ± 1 % of full scale (all ranges)

at 0 °C ... 60 °C or EMC disturbance

Unused outputs Can be left open-circuited

24 V DC

Voltage 24 V (-15 %, +20 %)

Protection against reverse polarity Yes

100 V AC...240 V AC wide-range supply

Voltage 100 V ... 240 V (-15 %, +10 %)

Frequency 50/60 Hz (-6 %, +4 %)

Allowed interruptions of power supply, according to EN 61131-2

DC supply Interruption < 10 ms, time between 2 interruptions > 1 s, PS2

AC supply Interruption < 0.5 periods, time between 2 interruptions > 1 s

Temperature

Operating 0 °C ... +60 °C: Horizontal mounting of modules.

0 °C ... +40 °C: Vertical mounting of modules.

Output load reduced to 50 % per group.

Storage -40 °C ... +70 °C

Transport -40 °C ... +70 °C

Humidity Max. 95 %, without condensation

Air pressure

Operating > 800 hPa / < 2000 m

Storage > 660 hPa / < 3500 m