ABB ABB Series Service Manual

07 AC 91

1. Description

ABB Analog Input/Output Module 07 AC 91

2. Specifications

Specification	Value
In	general, the technical system data listed under "System data and system configuration" in chapter 1 of volume 2 of
the	"Advant Controller 31" system description are valid. Additional data or data which are different from the system data
are	listed as follows.
Permissible	temperature range during operation 0...55 °C
Rated	supply voltage 24 V DC
Max.	current consumption 0.2 A
Max.	power dissipation 5 W
Protection	against reversed polarity of power connection yes
Number	of binary inputs 1 as enabling input for the analog outputs
Number	of analog input channels 8 or 16, depending on the operating mode
Number	of analog output channels 8 or 16, depending on the operating mode
Electrical	isolation CS31 system bus interface from the rest of the unit,
1	binary input from the rest of the unit
Address	setting and configuration Coding switch under the cover located on the
right	side of the housing
Diagnosis	see chapter "Diagnosis and displays"
Operation	and error displays a total of 17 LEDs,
se	

3. Product Information

ABB Analog Input/Output Module 07 AC 91

16 inputs/outputs, configurable for ±10 V, 0...10 V, 0...20 mA,

8/12 bit resolution, 2 operating modes, CS31 system bus

Intended purpose

The analog input/output module 07 AC 91 is used as a

remote module on the CS31 system bus. It contains 16

analog input/output channels that can be configured in

two operating modes:

• Operating mode "12 bits":

8 input channels, individually configurable

±10 V or 0...20 mA, 12 bit resolution plus

8 output channels, individually configurable

±10 V or 0...20 mA, 12 bit resolution

• Operating mode "8 bits":

16 channels, configurable in pairs as inputs or

outputs, 0...10 V oder 0...20 mA, 8 bit resolution

• The configuration is set with DIL switches.

• The PLC offers an interconnection element

ANAI4_20 for measuring signals of 4...20 mA (refer

to 907 PC 331, connection element library).

The module 07 AC 91 uses up to eight input words on the

CS31 system bus plus up to eight output words. In the

operating mode "8 bits", 2 analog values are packed into

one word.

The operating voltage of the unit is 24 V DC. The CS31

system bus connection is electrically isolated from the

rest of the module..

Displays and operating elements on the

front panel

1 8 green LEDs for channel selection and diagnosis

2 8 green LEDs for analog value display of a channel

3 List of diagnosis information relating to the LEDs,

when they are used for diagnosis display

4 Red LED for error messages

5 Test button

Technical data for 07 AC 91

In general, the technical system data listed under "System data and system configuration" in chapter 1 of volume 2 of

the "Advant Controller 31" system description are valid. Additional data or data which are different from the system data

are listed as follows.

Technical data for the complete unit

Permissible temperature range during operation 0...55 °C

Rated supply voltage 24 V DC

Max. current consumption 0.2 A

Max. power dissipation 5 W

Protection against reversed polarity of power connection yes

Number of binary inputs 1 as enabling input for the analog outputs

Number of analog input channels 8 or 16, depending on the operating mode

Number of analog output channels 8 or 16, depending on the operating mode

Electrical isolation CS31 system bus interface from the rest of the unit,

1 binary input from the rest of the unit

Address setting and configuration Coding switch under the cover located on the

right side of the housing

Diagnosis see chapter "Diagnosis and displays"

Operation and error displays a total of 17 LEDs,

see chapter "Diagnosis and displays"

Method of connections removable screw-type terminal blocks

supply terminals, CS31 system bus max. 1 x 2.5 mm2 or max. 2 x 1.5 mm2

all other terminals max. 1 x 1.5 mm2

Max. length of the analog cables,

two-core shielded and cross section > 0.5 mm2 100 m

Conversion error of the analog values

(non-linearity, factory calibration and resolution) typ. 0.5 %, max. 1 %

Max. permissible potential difference between

terminal M (minus of the supply voltage) and

terminals AGND (minus of analog inputs and outputs) ± 1 V

Common reference potential for all analog signals AGND (minus terminal of analog inputs and outputs)

Electrical isolation of analog signals none (see also Fig. 5.4-2).

Technical data of the binary input (enabling input for analog outputs)

The analog outputs must be enabled by a binary 1 signal (24V) at terminals 25 (+) and 26 (-).

Signal level 0 signal (-30...+5 V) voltage outputs are at 0 V,

current outputs are at 0 mA

1 signal (+13...+30 V) analog outputs are active

Electrical isolation yes, i.e. the reference potential and the

control signal must be connected

Technical data of analog inputs

Number of channels per module, oper. mode"12 bits" 8

Number of channels per module, oper. mode "8 bits" up to 16

Configurability oper. mode "12 bits" ±10 V, 0...20 mA (each channel can be configured

individually)

Configurability oper. mode "8 bits" 0...10 V, 0...20 mA (channels can be configured in

pairs)

Signalization of input signals see diagnosis

Input resistance per channel voltage input > 100 kΩ

current input approx. 330 Ω

The current input has a self-protecting feature. If the current gets too high, the current input shunt is switched off and

the value for "overflow" is output. Re-activation is attempted again in increments of approx. 1 second to facilitate the

correct measurement as soon as the current regains acceptable limits.

Time constant of the input filter 470 µs for voltage,

100 µs for current

Conversion cycle (over 8 inputs + 8 outputs) 8 ms

Resolution range ±10 V oper. mode "12 bit" 5 mV (11 bit plus sign)

range 0...20 mA oper. mode "12 bit" 5 µA (12 bit without sign)

Resolution range 0...10 V oper. mode "8 bit" 40 mV (8 bit without sign)

range 0...20 mA oper. mode "8 bit" 80 µA (8 bit without sign)

Relationship between input signal and hexcode -100 %...0...100 % = 8008H...0000H...7FF8H

operating mode "12 bits" (-32760...0...32760 decimal)

Relationship between input signal and hexcode 0...100 % = 00H...FFH

operating mode "8 bits" (0...255 decimal)

Voltage inputs not used can be bridged to increase noise immunity

Current inputs not used are low in ohms, can remain open

Technical data of analog outputs

Number of channels per unit, oper. mode "12 bits" 8

Number of channels per unit, oper. mode "8 bits" up to 16

Configurability oper. mode "12 bits" ±10 V, 0...20 mA (each channel can be configured

individually)

Configurability oper. mode "8 bits" 0...10 V, 0...20 mA (channels can be configured in

pairs)

Signalization of output channels see diagnosis

Output loadability as voltage output max. +20 mA (source, current flows out of the

output)

max. -10 mA (sink, current flows into the output)

Output load resistance (burden), if current output 0...500 Ω

Resolution see "analog inputs"

Relationship between output signal and hexcode see "analog inputs"

Outputs not used remain open

Connection to the CS31 system bus

Interface standard EIA RS-485

Electrical isolation from the rest of the unit

Mechanical data

Mounting on DIN rail according to DIN EN 50022-35, 15 mm deep.

The DIN rail is positioned centrally between the upper

and the lower edges of the module.

Mounting with screws by 4 screws M4

Width x height x depth 120 x 140 x 85 mm

Wiring method removable terminal blocks with screw-type terminals

supply terminals, CS31 system bus max. 1 x 2.5 mm2

or max. 2 x 1.5 mm2

all other terminals max. 1 x 1.5 mm2

Weight 450 g

Installation dimensions see Fig. 5.4-9

Installation instructions

Installation position vertical, connector terminals must point upward and

downward

Cooling The natural convection cooling must not be blocked

by cable ducts or other components installed in the

cabinet.

Ordering data

Module 07 AC 91 Order No. GJR5 2523 00 R0101

Scope of delivery Analog input and output module 07 AC 91

1 2-pole terminal block (grid space 3.81 mm)

1 3-pole terminal block (grid space 5.08 mm)

1 5-pole terminal block (grid space 5.08 mm)

4 8-pole terminal blocks (grid space 3.81 mm)