ABB ABB Series Service Manual

07 KT 94

1. Description

ABB Advant Controller 07 KT 94 GJR5252100R0161

3. Product Information

ABB Advant Controller 07 KT 94 GJR5252100R0161

Number of digital inputs 24

Number of digital transistor outputs 16

Number of digital inputs/outputs 8

Number of analog inputs 8

Number of analog outputs 4

I/O expansion via CS31 system bus by up to 992 digital inputs

992 digital outputs

224 analog input channels

224 analog output channels

max. 31 remote modules altogether

Number of serial interfaces 2 (for programming or connection to man-machine communication)

Number of parallel interfaces 1 special interface for connection of a communication processor (for networking with other bus systems)

Integrated memory Flash EPROM 512 kB

(240 kB program + 120 kB user data)

RAM 2 MB

(240 kB program with on-line programming)

Resolution of the integrated real-time clock 1 second

Data of the integrated high-speed hardware counter

Number of operating modes 7

Counting range -32768...+32767 (16 bits signed integer)

Counting frequency max. 50 kHz

Processing time, 65 % bits, 35 % words typ. 0.3 ms/kB program

Number of software timers any (max. 80 simultaneously active)

delay time of the timers 1 ms...24.8 days

Number of up/down counter software blocks any

Number of bit flags 8192

Number of word flags 8192

Number of double word flags 1024

Number of step chains 256

Number of constants KW 1440

Number of constants KD 384

Diagnosis Cycle time monitoring, battery monitoring, detection of syntax errors and checksum monitoring

Indication of operating statuses and errors 60 LEDs altogether

Wiring method removable screw-type terminal blocks

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

or max. 2 x 1.5 mm2

(see also page 4-9)

all other terminals max. 1 x 1.5 mm2

4.7.2 Power supply

Rated supply voltage 24 V DC

Current consumption max. 0.35 A

Protection against reversed polarity yes

4.7.3 Lithium battery

Battery for backup of RAM contents Battery module 07 LE 90

Lifetime at 25°C typ. 5 years

4.7.4 Digital inputs

Number of channels per module 24

Distribution of channels into groups 3 groups of 8 channels each

Common reference potential

for group 1 (8 channels) ZP0 (channels 62,00...62,07)

for group 2 (8 channels) ZP1 (channels 62,08...62,15)

for group 3 (8 channels) ZP2 (channels 63,08...63,15)

Electrical isolation between the groups,

between groups and other circuitry

(see also Fig. 4-4)

Signal coupling of input signals with optocoupler

Configuration possibilities of the inputs

Input signal delay typ. 7 ms (configurable to 1 ms)

Channels E 62,00 and 62,01 configurable for the high-speed counter

Signalling of input statuses one green LED per channel,

the LEDs correspond functionally to the input signals

Input signal voltage

Signal 0 -30 V...+ 5 V

Signal 1 +13 V...+ 30 V

Input current per channel

Input voltage = +24 V typ. 7.0 mA

Input voltage = + 5 V > 0.2 mA

Input voltage = +13 V > 2.0 mA

Input voltage = +30 V < 9.0 mA

Max. cable length, unshielded 600 m

Max. cable length, shielded 1000 m

4.7.5 Digital outputs

Number of channels per module 16 transistor outputs

Distribution of channels into groups 2 groups of 8 channels each

Common supply voltage

for group 1 UP3 (channels 62,00...62,07)

for group 2 UP4 (channels 62,08...62,15)

Electrical isolation between the groups,

between groups and other circuitry

(see also Fig. 4–4)

Signalling of output statuses one yellow LED per channel,

the LEDs correspond functionally to the output signals

Output current

Rated value 500 mA with UP3/4 = 24 V

Maximum value 625 mA with UP3/4 = 24 V + 25%

Leakage current with signal 0 < 0.5 mA

Demagnitization of inductive loads internally with a varistor

Switching frequency with inductive loads max. 0.5 Hz

Switching frequency with lamp loads max. 11 Hz with max. 5 W

Max. cable length 400 m (pay attention to voltage drops)

Short-circuit proof / overload proof yes

Protection of the outputs against reversed polarity yes

Forcing of 24 V DC at the outputs possible yes

Total load (via UP3 or UP4) max. 4 A

4.7.6 Digital inputs/outputs

Number of channels per module 8 inputs/outputs

Distribution of channels into groups 1 group with 8 channels

Common reference potential ZP5 (channels E/A 63,00...E/A 63,07)

Common voltage supply UP5 (channels E/A 63,00...E/A 63,07)

Electrical isolation between the group and the other circuitry (see Fig. 4–4)

Signal coupling of the input signals with optocoupler

Configuration possibilities of the inputs

Input signal delay, channels E 63,00...E 63,07 typ. 7 ms (configurable to 1 ms)

Signalling of input/output statuses one yellow LED per channel,

the LEDs correspond functionally to the I/O signals

Input signal voltage (if used as inputs) for details see Fig. 4-16 as well as the chapter

"Circuit configuration of the digital inputs/outputs"

Signal 0 -6 V...+ 5 V

Signal 1 +13 V...+ 30 V

Input current per channel see Digital inputs

Output current / switching frequency / inductive loads see Digital outputs

Max. cable length see Digital inputs/outputs

4.7.7 Analog inputs

Number of channels per module 8

Distribution of channels into groups 1 group with 8 channels
Common reference potential
for group 1 (8 channels) AGND1 (channels 06,00...06,07)
Electrical isolation none (see also Fig. 4–4).
Max. permissible potential difference between
Terminal M (minus pole of the power supply voltage)
and terminal AGND (analog I/O minus pole) ± 1 V
Signalling of input statuses none
Configuration possibilities(each channel), see 4.4.7 0...10 V, 0...5 V, ±10 V, ±5 V (also with differential signal)
0...20 mA, 4...20 mA
Pt100 -50...+400°C and -50...+70°C
(2-wire and 3-wire configuration)
digital input
Input impedance per channel, voltage input > 100 kΩ
current input ca. 330 Ω
digital input ca. 4 kΩ
Resolution 10 to 12 bits, depending on the configuration,
see also Fig. 4-19
Resolution range ±10 V ca. 5 mV
range 0...10 V ca. 5 mV
range 0...20 mA ca. 5 µA
range 4...20 mA ca. 4 µA
Relationship between input signal and hex code -100 %...0...+100 % = 8008H...0000H...7FF8H
(-32760...0...32760 decimal)
Conversion inaccuracy caused by non-linearity,
temperature sensitivity, ageing, adjustment error on
delivery and resolution: U, I typ. 0.5 %, max. 1 %
Pt100 typ. 1 °C, max. 2 °C
Threshold,
if analog input is configured as digital input ca. 7 V
Max. cable length,
2-core shielded and cross section ≥ 0,5 mm2 100 m
4.7.8 Analog outputs
Number of channels per module 4
Reference potential AGND2 (channels 06,00...06,03)
Electrical isolation none (see also Fig. 4–4).
Max. permissible potential difference between
Terminal M (minus pole of the power supply voltage)
and terminal AGND (analog I/O minus pole) ± 1 V
Signalling of output statuses none
Output signal ranges (configurable) -10 V...0...+10 V
0...20 mA
4...20 mA
4.7.12 LED displays
LEDs for indication of:
– Statuses of digital inputs 1 green LED per channel
– Statuses of digital outputs 1 yellow LED per channel
– Statuses of digital inputs/outputs 1 yellow LED per channel
– Power supply on 1 green LED
– Battery 1 red LED
– Program is running (RUN) 1 green LED
– Error classes (FK1, FK2, FK3) 1 red LED per error class
– CS31 system bus is running (BA) 1 green LED
– bus-specific errors (BE, RE, SE) 3 red LEDs
– Overload/short-circuit of digital outputs 1 red LED
4.7.13 High-speed hardware counter (see 4.6 High-speed counter)
Data of the integrated high-speed hardware counter:
Configurable in 7 operating modes
Counting range -32768...+32767 (16 bits)

Counting frequency max. 50 kHz

Used inputs E 62,00 and E 62,01

Used outputs A 62,00

4.7.14 Mechanical data

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

The DIN rail is located in the middle between the upper

and the lower edge of the module.

Fastening by screws with 4 screws M4.

Width x height x depth 240 x 140 x 85 mm

Wiring method by removable terminal blocks with screw-type terminals

Power 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 1.6 kg