ABB ABB Series Service Manual

07 KT 97

1. Description

07 KT 97 ABB

3. Product Information

07 KT 97 ABB | 07KT97 Central Unit Basic Unit

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

(480 kB program + configuration data)

RAM 2 MB

(480 kB program with on-line programming

+ 256 kB variables)

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 in the addressable flag area 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

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 2.1-9)

all other terminals max. 1 x 1.5 mm2

2.1.7.2 Power supply

Rated supply voltage 24 V DC

Current consumption max. 0.35 A

Protection against reversed polarity yes

2.1.7.3 Lithium battery

Battery for backup of RAM contents Battery module 07 LE 90

Lifetime at 25°C typ. 5 years

2.1.7.4 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. 2.1–4)

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

2.1.7.5 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. 2.1–4)

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

2.1.7.6 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 other circuitry (see Fig. 2.1-4)

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. 2.1-13 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

2.1.7.7 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. 2.1–4).

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 2.1.4.7 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

Digital I/O: 24 Digital Inputs, 16 Digital Outputs, and 8 additional configurable Digital Inputs/Outputs.

Analog Inputs: 8 channels.

Pt100 Support: Yes.

Digital Configuration: Yes, analog inputs are configurable as digital inputs.

Analog Outputs: 4 channels.

20 mA Support: Yes.

Terminals 20 to 27: Assigned to E 63,08 to E 63,15.

Performance: Processing time is typically 0.3 ms for 1 kB of program (65% bits, 35% words).

Order Number: GJR5 2530 00 R

Communication: Includes CS 31 - Field bus.

Memory:

Program Memory: 480 kByte Flash EPROM and RAM.

Plug-in Memory: Smart Media Card (Flash) for data storage and reloading the SPS-program.

Data Memory: 8192 bits, 8192 words (16 bit), and 1024 double words (32 bit).

Variables: 256 k Variables (all output variables, binary or analogue), including 16 k RETAIN.

Performance: Cycle time for 1 Kbyte (65% binary values and 35% words) is 0.22 ms.

Inputs/Outputs:

Integral I/O: 24 DI, 16 DO, and 8 DC.

Maximum DI/DO: 1040 in total.

Integral AI/AO: 8 AI and 4 AO.

Maximum AI/AO: 232 AI and 228 AO.

Execution & Control:

Programming System: 907AC1131.

Program Execution: Cyclic, time controlled Multitasking (20 Tasks).

Logic Components: Unrestricted Timers and Counters; 256 Sequencers (of 16 sequences).

Fast Counters: 1 to 2 (various operating modes, max. 50 kHz).

Special Functions: Protocols such as Profibus DP, ARCNET®, MODBUS®; PI and PID controllers; 32 bit arithmetic; ASCII communication; Floating Point Arithmetic.

Hardware Details: Password protection, exchangeable battery, real-time clock, withdrawable terminal blocks with screw terminals, and mounting with or without DIN rail.