

General Specifications

AI-917-00

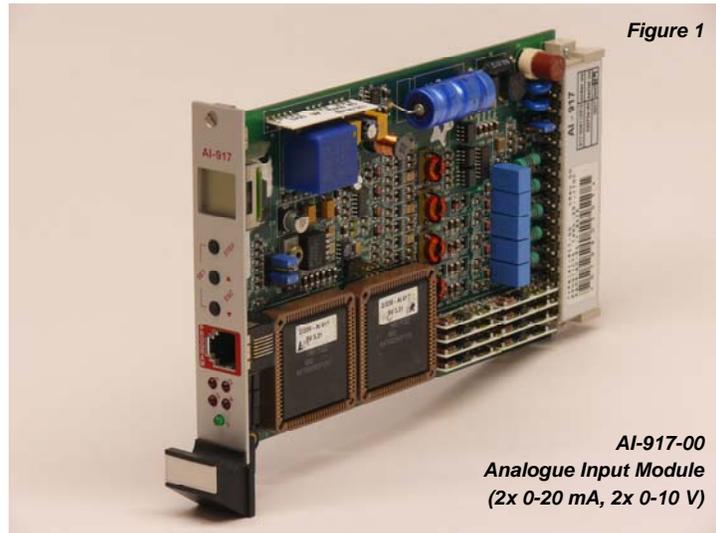
ProSafe-SLS™

GS48D17Z00-00E-N

Analogue Input Module (2x 0-20 mA, 2x 0-10 V)

■ GENERAL

This module has four analogue inputs and four logic pulse outputs.



The module is programmable, so the functionality depends on the loaded application program. Various standard application programs are available and specified in separate documents. The loaded program and its version can be read from the LCD front panel display and from the labels located on both CPUs.

The module has a number of typical characteristics:

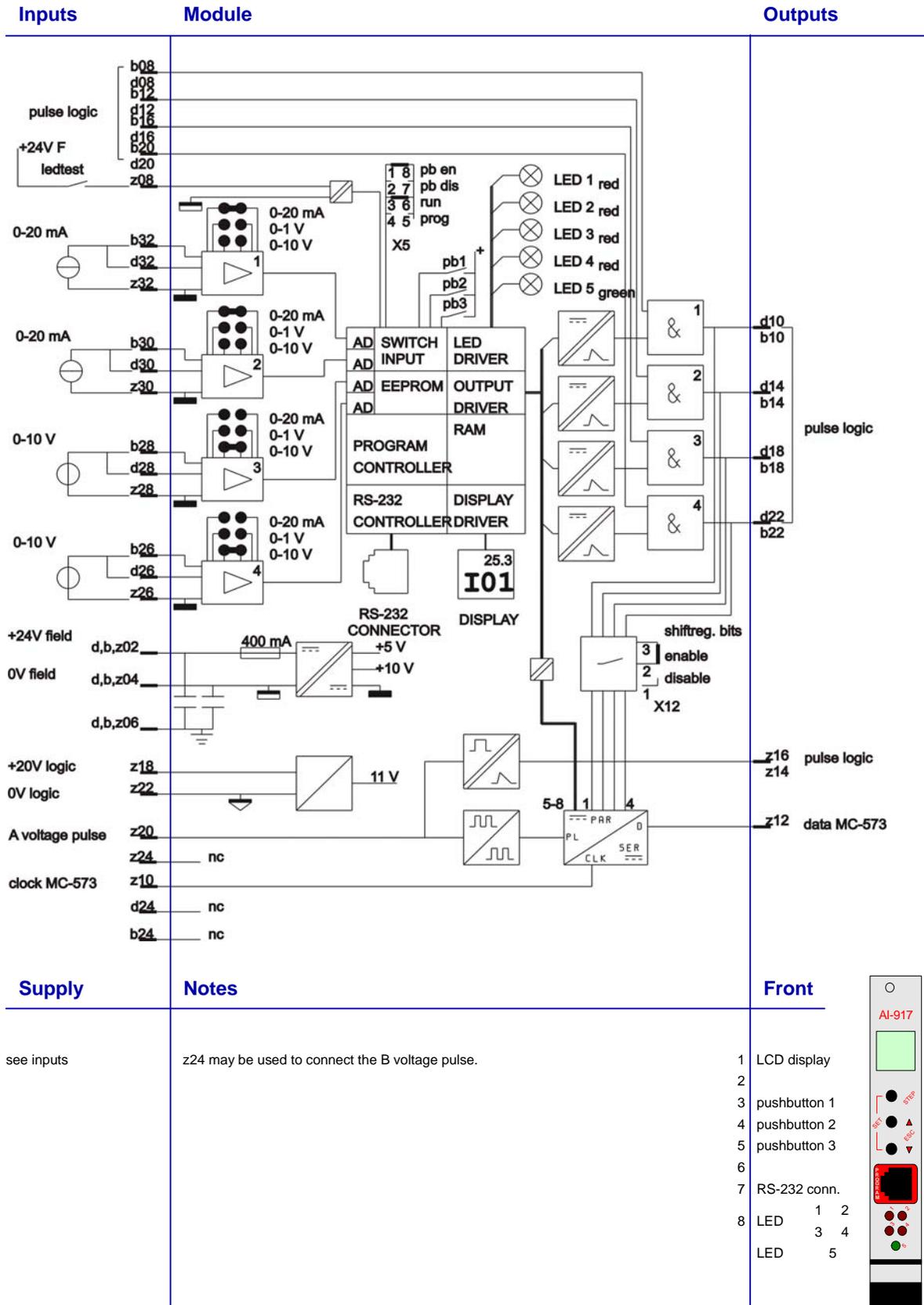
- Two channels 0-20 mA and two channels 0-10 V signal inputs (all inputs have common 0V),
- LED indication for output status and line fault
- LCD-display for indication of input levels and parameters (set point, hysteresis, time delay, etc.),
- Push buttons for controlling display items,
- Two independent processors for high safety level,
- Integrated output AND-gate for alarm groups,
- Shift register circuit for connection to the communication system.

The module is suited for fail-safe applications.

The function of front indication LED's, push buttons and LCD display are determined by the application program. LED's 1 to 4 usually indicate the status of the four logic pulse outputs.

Each logic pulse output has an integrated AND-gate. This gate may be used to simplify the formation of alarm groups in, for example, fire & gas applications. The shift register bits 1-4 cannot be used in this case.

FUNCTIONAL DIAGRAM



■ SPECIFICATIONS

| | Description | Data |
|---------------|------------------------|--|
| General | No. of inputs | 4 |
| | No. of outputs | 4 |
| | Size | single Euro format 4TE (160x100x20 mm) |
| | Connector | DIN 41612 Bauform F 48p |
| | Identification | AI-917 on front |
| Environmental | Temperature (working) | -10 to +60 °C |
| | Temperature (storage) | -25 to +85 °C |
| | Relative humidity | max. 75%, no condensation |
| | EMC | EN 61000-6-2 Immunity EN 61000-6-4 Emission With an EMC system enclosure |
| | Shock | 15g, 11 ms |
| | Vibration | 10-55 Hz 0,075 mm, 57-150 Hz 1 g (0.076-0.011 mm) |
| Input | Current | 0 - 20 mA, 50 Ω (max. 50 mA) |
| | Voltage | 0 - 10 V, 5.5 kΩ (max. 30 V) |
| | Switches (3) | partly programmable |
| | Stability error | < 0.1% / 10°C |
| | Accuracy | ± 0.2% ± 1 bit |
| | Resolution | 1024 points over 21.6 mA / 10.8 V (10 bits) |
| | Led test | 18-30 V / 3.5-6 mA |
| | Clock | clock pulses from MC-573, level 0/11 V |
| Output | Pulse logic | current pulses 500 mA Capacity: 10 unit loads Status indication: programmable LED's |
| | Data | 8 bits serial data, level 0/11 V |
| | Display | LCD, programmable 2 Rows, first row: numeric value, second row: 1 alpha, 2 num. Characters |
| | RS232 serial interface | for programming only (adapter cable necessary) |
| Propagation | Start-up time | 8 s |
| | Program cycle | 40 ms (program dependent) |
| | Delay | programmable |
| Supply | Field supply | 18-30 Vdc (ripple < 1 V top-top), 70 mA (24 V) |
| | Logic supply | 20 Vdc, 10 mA |
| | Clock signal | A voltage pulse |
| Isolation | Analog circuit | 0.5 kV (test) |
| Dissipation | | 2 W |

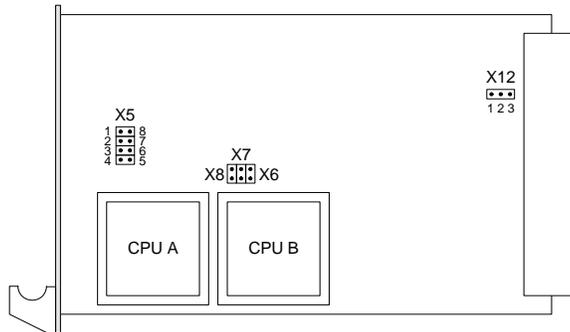
■ NOTES

Jumpers

The following jumpers can be found on the AI-917 module:

| Jumper | Pin | Function Description |
|--------|-------|---------------------------------|
| X5 | 1 - 8 | Enable pushbuttons 2 and 3 |
| | 2 - 7 | Disable pushbuttons 2 and 3 |
| | 3 - 6 | Module in run mode |
| | 4 - 5 | Module in programming mode |
| X6 | | Enable calibration |
| X7 | | Factory test only |
| X8 | | Factory test only |
| X12 | 2 - 3 | Enable shift register bits 1-4 |
| | 1 - 2 | Disable shift register bits 1-4 |

= default jumper position



Jumpers X6, X7 and X8 must be not connected (no jumper placed).

Module Fault

To indicate a module fault, all five LED's on the front panel will blink. All pulse outputs will be disabled (logic 0) and a fault code will be indicated on the LCD-display

| | |
|------------|----------------------------|
| 100 | Program halted on line 100 |
| A54 | Error 54 detected by CPU-A |

Faults can be detected by processor A or by processor B. On the LCD-display the processor name is followed by a fault number listed below:

| Fault | Description | Remedy |
|-------|--------------------------------|---------------------------------|
| 11 | Input 1 discrepancy | Check input 1 |
| 12 | Input 2 discrepancy | Check input 2 |
| 13 | Input 3 discrepancy | Check input 3 |
| 14 | Input 4 discrepancy | Check input 4 |
| 15 | Program discrepancy | Replace module |
| 20 | Communication error | Check programming cable |
| 21 | No data from parallel CPU | Replace module |
| 22 | User program halted | Replace module |
| 23 | Unused interrupt | Replace module |
| 24 | Watch dog time out | Check program or replace module |
| 38 | User program fault | Check program or replace module |
| 39 | Operating system fault | Replace module |
| 40 | RAM-Memory CRC error | Switch power or replace module |
| 41 | Unable to switch off output 1 | Switch power or replace module |
| 42 | Unable to switch off output 2 | Switch power or replace module |
| 43 | Unable to switch off output 3 | Switch power or replace module |
| 44 | Unable to switch off output 4 | Switch power or replace module |
| 45 | Power supply fault (internal) | Replace module |
| 46 | General CPU fault | Replace module |
| 49 | General input conversion fault | Replace module |
| 51 | RAM check fault | Replace module |
| 52 | EEPROM CRC-error | Switch power or replace module |
| 53 | Wrong program statement | Check program or replace module |
| 54 | Wrong program statement | Check program or replace module |
| 55 | Wrong program counter | Check program or replace module |

Reading Set Points

- By operating the upper push button (STEP) various input values and settings can be displayed. Keep this button pressed to step automatically.
- Although dependent on the application program, the first display item is usually the input 1 (I01) value (xxx.x). The last display item is usually the loaded application program number (Cnn) with calculated program checksum value (xxxx). This checksum is called CRP and indirectly specifies the application program version. See the application program document for details.
- The middle push button ("up") and lower push button ("down") are usually not used for "reading set points". Some application programs however use these buttons for manual control according to the application program document.

Changing Set Points

Note that some display items cannot be changed because they are read only, for example input value, calculated value and program number.

- To enter "changing set points" mode the upper and lower push button must be operated simultaneously (SET combination). The lower display row flashes to indicate set points can be changed.
- Select the involved set point by operating the upper push button (STEP). Keep this button pressed to step automatically.
- Adjust settings by using the middle push button ("up") or lower push button ("down"). Keep the button pressed to accelerate (principle 0.0, 0.1, 0.2, 0.3 ... 0.9, 1.0, 2.0, 3.0 ... 9.0, 10.0, 20.0, 30.0 ...).
Note: When reaching an over range value (display shows -9.9.9.9 flashing), do not store this invisible value but leave the "changing set points" mode as described below. If the over range value is stored accidentally the module must be reprogrammed.
- Store the new value by operating the upper push button (STEP).
- To leave the "changing set points" mode operate the middle and lower push button simultaneously (ESC combination) or wait for approximately 20 seconds until the display stops flashing.

Disable Changing Set Points

For some safety applications set point changing may not be allowed if the module is in normal operation. For this situation changing set points must be disabled by setting jumper X5 from position 1-8 (enable, default setting) to position 2-7 (disable).

Changing set points is only possible in a shut-down situation or with proper override facilities because the module has to be pulled out of the rack to alter the jumper setting.

■ NOTES

■ NOTES

■ NOTES