

USER MANUAL

Z-8TC-LAB

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Seneca Z-PC Line module: Z-8TC-LAB

The Z-8TC-LAB module acquires up to 8 single-ended signals (voltage-type, from the: signal generator or thermocouple) and it converts them to a digital format (normalized measure).

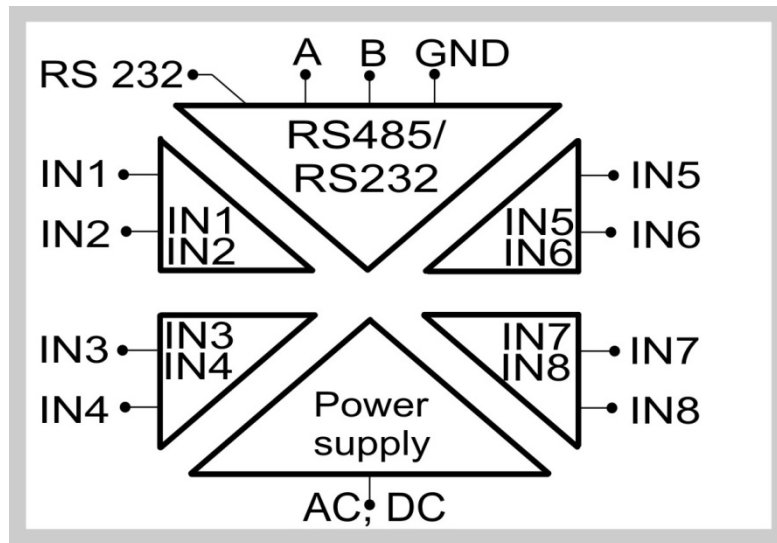
General characteristics

- It is possible to choose if measure is voltage (mV) or temperature (°C) type, for each couple of input signals: IN1 and IN2, IN3 and IN4, IN5 and IN6, IN7 and IN8
- It is possible to enable/disable each input
- Configuration of a filter applied to each couple of input signals
- It is possible to enable/disable cold-junction compensation, for each couple of input signals
- It is possible to configure module (node) address and baud-rate by Dip-Switches
- It is possible to add/remove the module to/from RS485-bus without disconnecting the communication or power supply
- It is possible to switch automatically from RS485 to USB or vice versa

Features

| INPUT | |
|--|---|
| Number | 8 |
| Resolution | 14bits (if filter=0-1); 15 bits (if filter=2-7) |
| Sampling frequency | Configurable between: 48Hz (if the filter is deactivated), 20Hz (if filter=1), 11Hz (if filter=2-7) |
| Rejection | 50Hz or 60 Hz |
| Filter (0-7) | IIR and FIR; configurable between: 0 (deactivated), from 1(min) to 7(max) |
| Accuracy | Initial: 0.1% of E.E.S. (Electrical End Scale) Thermal stability: < 100 ppm/°K EMI: < 1% |
| Protection | This module provides inputs protection against the ESD (up to 4kV) |
| Voltage-type IN (from the thermocouple) | Bipolar with E.S.S./E.E.S. (Electrical Start/End Scale) unchangeable between: -10.1mV..+81.4mV. TC-type: J, K, R, S, T, B, E, N. Automatic detection if a TC interruption occurs: if this option is enabled, test current:<50nA. Input impedance: > 10 MΩ |

| CONNECTIONS | |
|------------------------|--|
| RS485 interface | IDC10 connector for DIN 46277 rail (back-side panel) |
| USB interface | Micro USB connector |
| 1500 Vac ISOLATIONS | |
| | Between: power supply, RS485/USB, inputs 1/2, inputs 3/4, inputs 5/6, inputs 7/8 |



| POWER SUPPLY | |
|-------------------|---|
| Supply voltage | 10 – 40 Vdc or 19 – 28 Vac (50Hz - 60Hz) |
| Power consumption | Max: 0.6W |

The power supply transformer necessary to supply the module must comply with EN60742 (Isolated transformers and safety transformers requirements). To protect the power supply, it is recommended to install a fuse.

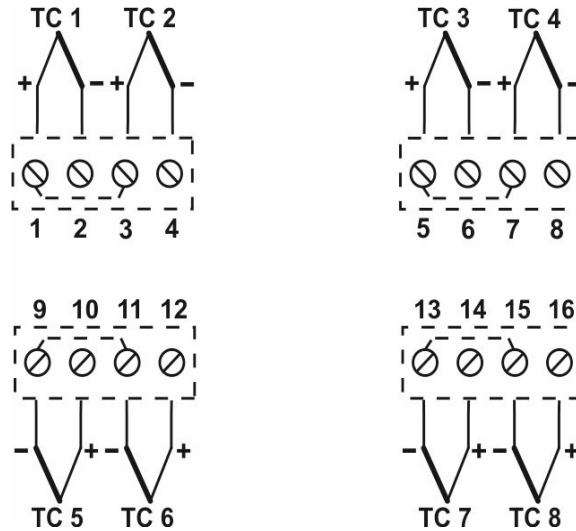
Input connections

The Z-8TC-LAB module has a digital thermometer (DT sensor) internally to compensate the cold-junction effect, if a thermocouple is connected to input.



To decrease the signal-acquisition errors due to noise effects, short-circuit each unused TC-type input to the GND, for each couple of inputs. In particular:

- unused screw terminal 1 and/or 3 to the screw terminal 2 or 4 (GND for input 1 and input 2);
- unused screw terminal 5 and/or 7 to the screw terminal 6 or 8 (GND for input 3 and input 4);
- unused screw terminal 9 and/or 11 to the screw terminal 10 or 12 (GND for input 5 and input 6);
- unused screw terminal 13 and/or 15 to the screw terminal 14 or 16 (GND for input 7 and input 8).



In the following figure are shown the cable colors for each type of thermocouple.

| THERMOCOUPLE | ALLOY | ANSI MC96.1 (USA) | | DIN43710 (D) | | IEC 584-3 (EUROPE) | |
|--------------|----------------|-------------------|--------|--------------|------|--------------------|--------|
| | | - | + | - | + | - | + |
| TC J | Fe-Co | red | white | blue | red | white | black |
| TC K | Cr-Al | red | yellow | green | red | white | green |
| TC R | Pt13%Rh-Pt | red | black | white | red | white | orange |
| TC S | Pt10%Rh-Pt | red | black | white | red | white | orange |
| TC T | Cu-Co | red | blue | brown | red | white | brown |
| TC E | Cr-Co | red | purple | black | red | white | purple |
| TC B | Pt30%Rh-Pt6%Rh | red | grey | red | grey | white | grey |
| TC N | Nicrosil-Nisil | red | brown | / | / | white | pink |

The input scale range values, for selected thermocouple-type input, are shown in the following table.

| TC-type | Scale range | TC-type | Scale range |
|---------|----------------|---------|---------------|
| J | -210°C..1200°C | S | -50°C..1768°C |
| K | -200°C..1372°C | R | -50°C..1768°C |
| E | -200°C..1000°C | B | 250°C..1820°C |
| N | -210°C..1300°C | T | -200°C..400°C |

Dip-switches table



In the following tables: box without circle means Dip-Switch=0 (OFF state); box with circle means Dip-Switch=1 (ON state).

| BAUD-RATE (Dip-Switches: DIP-SWITCH STATUS) | | | | | | |
|---|----|---------------------------|---|---|---|---|
| 1 | 2 | Meaning | | | | |
| | | Baud-rate=9600 Baud | | | | |
| | ● | Baud-rate=19200 Baud | | | | |
| ● | | Baud-rate=38400 Baud | | | | |
| ● | ● | Baud-rate=57600 Baud | | | | |
| ADDRESS (Dip-Switches: DIP-SWITCH STATUS) | | | | | | |
| 3 | 4 | 5 | 6 | 7 | 8 | Meaning |
| | | | | | | Address and Baud-Rate are acquired from memory(EEPROM) |
| | | | | | ● | Address=1 |
| | | | | ● | | Address=2 |
| | | | | ● | ● | Address=3 |
| | | | ● | | | Address=4 |
| X | X | X | X | X | X | |
| ● | ● | ● | ● | ● | ● | Address=63 |
| RS485 TERMINATOR (Dip-Switches: DIP-SWITCH STATUS) | | | | | | |
| 9 | 10 | Meaning | | | | |
| | | RS485 terminator disabled | | | | |
| | ● | RS485 terminator enabled | | | | |

Modbus RTU Register table

| Name | Range | Interpretation of register | R/W | Default | Address |
|--------------------|--|----------------------------|-----|-------------------|------------|
| MachineID | / | MSB, LSB | R | | 40001 |
| | Id_Code (Module ID) | | | 0x18 (24 decimal) | Bit [15:8] |
| | Ext_Rev (Module version) | | | | Bit [7:0] |
| Errors | / | Bit | R | | 40002 |
| | Input 1 and input 2 error: 0=there isn't; 1=there is | | | / | Bit 15 |
| | Input 3 and input 4 error: 0=there isn't; 1=there is | | | / | Bit 14 |
| | Input 5 and input 6 error: 0=there isn't; 1=there is | | | / | Bit 13 |
| | Input 7 and input 8 error: 0=there isn't; 1=there is | | | / | Bit 12 |
| | Input 1 burn-out error (if TC-type input): 0=there isn't; 1=there is | | | / | Bit 11 |
| | Input 2 burn-out error (if TC-type input): 0=there isn't; 1=there is | | | / | Bit 10 |
| | Input 3 burn-out error (if TC-type input): 0=there isn't; 1=there is | | | / | Bit 9 |
| | Input 4 burn-out error (if TC-type input): 0=there isn't; 1=there is | | | / | Bit 8 |
| | Input 5 burn-out error (if TC-type input): 0=there isn't; 1=there is | | | / | Bit 7 |
| | Input 6 burn-out error (if TC-type input): 0=there isn't; 1=there is | | | / | Bit 6 |
| | Input 7 burn-out error (if TC-type input): 0=there isn't; 1=there is | | | / | Bit 5 |
| | Input 8 burn-out error (if TC-type input): 0=there isn't; 1=there is | | | / | Bit 4 |
| | Input 1 and input 2 communication error: 0=there isn't; 1=there is | | | / | Bit 3 |
| | Input 3 and input 4 communication error: 0=there isn't; 1=there is | | | / | Bit 2 |
| | Input 5 and input 6 communication error: 0=there isn't; 1=there is | | | / | Bit 1 |
| | Input 7 and input 8 communication error: 0=there isn't; 1=there is | | | / | Bit 0 |
| Errors IN1-2 IN3-4 | / | Bit | R | | 40037 |
| | Supply-voltage error for input 1 and input 2: 0=there isn't; 1=there is | | | / | Bit 15 |
| | RS485-reception error for input 1 and input 2: 0=there isn't; 1=there is | | | / | Bit 14 |
| | Memory error (EEPROM) for input 1 and input 2: 0=there isn't; 1=there is | | | / | Bit 13 |
| | These bits aren't used | | | / | Bit [12:9] |

| | | | |
|--------------------|--|---------------|------------|
| | CRC EEPROM error for input 1 and input 2: 0=there isn't; 1=there is. If "1", it is not possible to save in memory (EEPROM) | / | Bit 8 |
| | Supply-voltage error for input 3 and input 4: 0=there isn't; 1=there is | / | Bit 7 |
| | RS485-reception error for input 3 and input 4: 0=there isn't; 1=there is | / | Bit 6 |
| | Memory error (EEPROM) for input 3 and input 4: 0=there isn't; 1=there is | / | Bit 5 |
| | These bits aren't used | / | Bit [4:1] |
| | CRC EEPROM error for input 3 and input 4: 0=there isn't; 1=there is. If "1", it is not possible to save in memory (EEPROM) | / | Bit 0 |
| Errors IN5-6 IN7-8 | / | Bit | R |
| | Supply-voltage error for input 5 and input 6: 0=there isn't; 1=there is | / | Bit 15 |
| | RS485-reception error for input 5 and input 6: 0=there isn't; 1=there is | / | Bit 14 |
| | Memory error (EEPROM) for input 5 and input 6: 0=there isn't; 1=there is | / | Bit 13 |
| | These bits aren't used | / | Bit [12:9] |
| | CRC EEPROM error for input 5 and input 6: 0=there isn't; 1=there is. If "1", it is not possible to save in memory (EEPROM) | / | Bit 8 |
| | Supply-voltage error for input 7 and input 8: 0=there isn't; 1=there is | / | Bit 7 |
| | RS485-reception error for input 7 and input 8: 0=there isn't; 1=there is | / | Bit 6 |
| | Memory error (EEPROM) for input 7 and input 8: 0=there isn't; 1=there is | / | Bit 5 |
| | These bits aren't used | / | Bit [4:1] |
| | CRC EEPROM error for input 7 and input 8: 0=there isn't; 1=there is. If "1", it is not possible to save in memory (EEPROM) | / | Bit 0 |
| Config IN1-2 | / | Bit | R/W |
| | Input1 enabling: 0=deactivated; 1=activated | 1 | Bit 15 |
| | Input2 enabling: 0=deactivated; 1=activated | 1 | Bit 14 |
| | Input1 and input 2 measure type: 1=voltage [mV]; 0=temperature [°C] | 0 | Bit 13 |
| | Cold-junction compensation for input 1 and input2: 0=deactivated; 1=activated | 1 | Bit 12 |
| | Rejection: 0=50Hz; 1=60Hz | 0 | Bit 11 |
| | Filter applied to acquired input1 and input2. To know the configurations of bit40054.[10:8], see table1 | 0b010 | Bit [10:8] |
| | Thermocouple type of input 1. To know the configurations of bit40054.[7:4], see table 2 | 0b0000 (TC J) | Bit [7:4] |
| | Thermocouple type of input 2. To know the configurations of bit40054.[3:0], see table 2 | 0b0000 (TC J) | Bit [3:0] |
| Config IN3-4 | / | Bit | R/W |
| | Input3 enabling: 0=deactivated; 1=activated | 1 | Bit 15 |
| | Input4 enabling: 0=deactivated; 1=activated | 1 | Bit 14 |
| | Input3 and input 4 measure type: 1=voltage [mV]; 0=temperature [°C] | 0 | Bit 13 |
| | Cold-junction compensation for input 3 and input4: 0=deactivated; 1=activated | 1 | Bit 12 |
| | Rejection: 0=50Hz; 1=60Hz | 0 | Bit 11 |

| | | | |
|-------------------|---|------------------|------------|
| | Filter applied to acquired input3 and input4. To know the configurations of bit40055.[10:8], see table1 | 0b010 | Bit [10:8] |
| | Thermocouple type of input 3. To know the configurations of bit40055.[7:4], see table 2 | 0b0000 (TC J) | Bit [7:4] |
| | Thermocouple type of input 4. To know the configurations of bit40055.[3:0], see table 2 | 0b0000 (TC J) | Bit [3:0] |
| Config IN5-6 | / | Bit | R/W |
| | Input5 enabling: 0=deactivated; 1=activated | 1 | Bit 15 |
| | Input6 enabling: 0=deactivated; 1=activated | 1 | Bit 14 |
| | Input5 and input 6 measure type: 1=voltage [mV]; 0=temperature [°C] | 0 | Bit 13 |
| | Cold-junction compensation for input 5 and input6: 0=deactivated; 1=activated | 1 | Bit 12 |
| | Rejection: 0=50Hz; 1=60Hz | 0 | Bit 11 |
| | Filter applied to acquired input5 and input6. To know the configurations of bit40055.[10:8], see table1 | 0b010 | Bit [10:8] |
| | Thermocouple type of input 5. To know the configurations of bit40056.[7:4], see table 2 | 0b0000 (TC J) | Bit [7:4] |
| | Thermocouple type of input 6. To know the configurations of bit40056.[3:0], see table 2 | 0b0000 (TC J) | Bit [3:0] |
| Config IN7-8 | / | Bit | R/W |
| | Input7 enabling: 0=deactivated; 1=activated | 1 | Bit 15 |
| | Input8 enabling: 0=deactivated; 1=activated | 1 | Bit 14 |
| | Input7 and input 8 measure type: 1=voltage [mV]; 0=temperature [°C] | 0 | Bit 13 |
| | Cold-junction compensation for input 7 and input8: 0=deactivated; 1=activated | 1 | Bit 12 |
| | Rejection: 0=50Hz; 1=60Hz | 0 | Bit 11 |
| | Filter applied to acquired input7 and input8. To know the configurations of bit40057.[10:8], see table1 | 0b010 | Bit [10:8] |
| | Thermocouple type of input 7. To know the configurations of bit40057.[7:4], see table 2 | 0b0000 (TC J) | Bit [7:4] |
| | Thermocouple type of input 8. To know the configurations of bit40057.[3:0], see table 2 | 0b0000 (TC J) | Bit [3:0] |
| Configuration aux | / | Bit | R/W |
| | Floating point (32bits) registers interpretation. If bit 40058.15=0, FP32bit_MSW is most significant word of 32bits registers and FP32bit_LSW is less significant word of 32bit registers; if bit40058.15=1, FP32bit_LSW is most significant word of 32bits registers and FP32bit_MSW is less significant word of 32bit registers | 0 | Bit 15 |
| | These bits aren't used | / | Bit [14:8] |
| | Module behavior if there is input 1 error: 0=register 40059 is overwritten in 40003 (word register) and in 40011,40012(floating point register); 1= content of register 40003 (word) and 40011, 40012 (FP) is the last measure acquired through input 1 correctly | 0 | Bit 7 |
| | Module behavior if there is input 2 error: 0=register 40060 is overwritten in 40004 (word register) and in 40013,40014(floating point register); 1= content of register 40004 (word) and 40013, 40014 (FP) is the last measure acquired through input 2 correctly | 0 | Bit 6 |
| | Module behavior if there is input 3 error: 0=register 40061 is overwritten in 40005 (word register) and in 40015,40016(floating point register); 1= content of register | 0 | Bit 5 |

| | | | |
|----------------|---|-------------|------------|
| | 40005 (word) and 40015, 40016 (FP) is the last measure acquired through input 3 correctly | | |
| | Module behavior if there is input 4 error: 0=register 40062 is overwritten in 40006 (word register) and in 40017,40018(floating point register); 1= content of register 40006 (word) and 40017, 40018 (FP) is the last measure acquired through input 4 correctly | 0 | Bit 4 |
| | Module behavior if there is input 5 error: 0=register 40063 is overwritten in 40007 (word register) and in 40019,40020(floating point register); 1= content of register 40007 (word) and 40019, 40020 (FP) is the last measure acquired through input 5 correctly | 0 | Bit 3 |
| | Module behavior if there is input 6 error: 0=register 40064 is overwritten in 40008 (word register) and in 40021,40022(floating point register); 1= content of register 40008 (word) and 40021,40022(FP) is the last measure acquired through input 6 correctly | 0 | Bit 2 |
| | Module behavior if there is input 7 error: 0=register 40065 is overwritten in 40009 (word register) and in 40023,40024(floating point register); 1= content of register 40009 (word) and 40023,40024(FP) is the last measure acquired through input 7 correctly | 0 | Bit 1 |
| | Module behavior if there is input 8 error: 0=register 40066 is overwritten in 40010 (word register) and in 40025,40026(floating point register); 1= content of register 40010 (word) and 40025,40026(FP) is the last measure acquired through input 8 correctly | 0 | Bit 0 |
| Baudrate Delay | Delay: from 0x00=0 to 0xFF=255 | MSB, LSB | R/W |
| | Baud-rate for RS485 (baud-rate of module/node if parameters are configured by memory modality): 0=4800; 1=9600; 2=19200; 3=38400; 4=57600; 5=115200; 6=1200; 7=2400 | 38400 | Bit [15:8] |
| | Delay for RS485 (delay of communication response: pauses between the end of Rx message and the start of Tx message). 1 pause=6 characters | 0 | Bit [7:0] |
| Address Parity | Address: from 0x01=1 to 0xFF=255 | MSB, LSB | R/W |
| | Address for RS485 (baud-rate of module/node if parameters are configured by memory modality) | 1 | Bit [15:8] |
| | Parity for RS485: 0=there isn't; 1=even parity; 2=odd parity | 0 | Bit [7:0] |
| Reset | 0xCCCC | Word | R/W |
| | Reset of module, if reg.40041=0xCCCC | / | |
| INPUT 1 | | | |
| IN1 | / | Bit | R/W |
| | Measure of input 1 [°C/10] (if bit 40054.13=0), [10·mV] (if bit 40054.13=1) | / | 40003 |
| IN1 MSW | | FP32bit MSW | R |
| IN1 LSW | | FP32bit LSW | R |
| | Floating point measure of input 1 [°C] (if bit40054.13=0), [mV] (if bit40054.13=1). To interpret the FP32bit register, see bit40058.15 | / | |
| IN1 Fault | Between: -32000, 32000 | Word | R/W |
| | Fault value of input 1 [°C/10] (if bit40054.13=0), [mV/100] (if bit40054.13=1) | 20000 | 40059 |

| INPUT 2 | | | | | |
|--------------------|--|-------------|-----|-------|-------|
| IN2 | / | Bit | R/W | | 40004 |
| | Measure of input 1 [°C/10] (if bit 40054.13=0), [10·mV] (if bit 40054.13=1) | | | / | |
| IN2 MSW | | FP32bit_MSW | R | | 40013 |
| IN2 LSW | | FP32bit_LSW | R | | 40014 |
| | Floating point measure of input 2 [°C] (if bit40054.13=0), [mV] (if bit40054.13=1). To interpret the FP32bit register, see bit40058.15 | | | / | |
| IN2 Fault | Between: -32000, 32000 | Word | R/W | | 40060 |
| | Fault value of input 1 [°C/10] (if bit40054.13=0), [mV/100] (if bit40054.13=1) | | | 20000 | |
| IN1-2 ColdJunction | | Word | R | | 40028 |
| | Input 1-2 cold junction temperature [°C/10] | | | / | |
| INPUT 3 | | | | | |
| IN3 | / | Bit | R/W | | 40005 |
| | Measure of input 3 [°C/10] (if bit 40055.13=0), [10·mV] (if bit 40055.13=1) | | | / | |
| IN3 MSW | | FP32bit_MSW | R | | 40015 |
| IN3 LSW | | FP32bit_LSW | R | | 40016 |
| | Floating point measure of input 1 [°C] (if bit40055.13=0), [mV] (if bit40055.13=1). To interpret the FP32bit register, see bit40058.15 | | | / | |
| IN3 Fault | Between: -32000, 32000 | Word | R/W | | 40061 |
| | Fault value of input 3 [°C/10] (if bit40055.13=0), [mV/100] (if bit40055.13=1) | | | 20000 | |
| INPUT 4 | | | | | |
| IN4 | / | Bit | R/W | | 40006 |
| | Measure of input 4 [°C/10] (if bit 40055.13=0), [10·mV] (if bit 40055.13=1) | | | / | |
| IN4 MSW | | FP32bit_MSW | R | | 40017 |
| IN4 LSW | | FP32bit_LSW | R | | 40018 |
| | Floating point measure of input 4 [°C] (if bit40055.13=0), [mV] (if bit40055.13=1). To interpret the FP32bit register, see bit40058.15 | | | / | |
| IN4 Fault | Between: -32000, 32000 | Word | R/W | | 40062 |
| | Fault value of input 4 [°C/10] (if bit40055.13=0), [mV/100] (if bit40055.13=1) | | | 20000 | |
| IN3-4 ColdJunction | | Word | R | | 40029 |
| | Input 3-4 cold junction temperature [°C/10] | | | / | |
| INPUT 5 | | | | | |
| IN5 | / | Bit | R/W | | 40007 |
| | Measure of input 5 [°C/10] (if bit 40056.13=0), [10·mV] (if bit 40056.13=1) | | | / | |
| IN5 MSW | | FP32bit_MSW | R | | 40019 |
| IN5 LSW | | FP32bit_LSW | R | | 40020 |
| | Floating point measure of input 5 [°C] (if bit40056.13=0), [mV] (if bit40056.13=1). To interpret the FP32bit register, see bit40058.15 | | | / | |
| IN5 Fault | Between: -32000, 32000 | Word | R/W | | 40063 |

| | | | | | |
|--------------------|--|-------------|-----|-------|-------|
| | Fault value of input 5 [°C/10] (if bit40056.13=0), [mV/100] (if bit40056.13=1) | | R/W | 20000 | |
| INPUT 6 | | | | | |
| IN6 | / | Bit | R/W | | 40008 |
| | Measure of input 6 [°C/10] (if bit 40056.13=0), [10·mV] (if bit 40056.13=1) | | | / | |
| IN6 MSW | | FP32bit_MSW | R | | 40021 |
| IN6 LSW | | FP32bit_LSW | R | | 40022 |
| | Floating point measure of input 6 [°C] (if bit40056.13=0), [mV] (if bit40056.13=1). To interpret the FP32bit register, see bit40058.15 | | | / | |
| IN6 Fault | Between: -32000, 32000 | Word | R/W | | 40064 |
| | Fault value of input 6 [°C/10] (if bit40056.13=0), [mV/100] (if bit40056.13=1) | | | 20000 | |
| IN5-6ColdJunction | | Word | R | | 40030 |
| | Input 5-6 cold junction temperature [°C/10] | | | / | |
| INPUT 7 | | | | | |
| IN7 | / | Bit | R/W | | 40009 |
| | Measure of input 7 [°C/10] (if bit 40057.13=0), [10·mV] (if bit 40057.13=1) | | | / | |
| IN7 MSW | | FP32bit_MSW | R | | 40023 |
| IN7 LSW | | FP32bit_LSW | R | | 40024 |
| | Floating point measure of input 7 [°C] (if bit40057.13=0), [mV] (if bit40057.13=1). To interpret the FP32bit register, see bit40058.15 | | | / | |
| IN7 Fault | Between: -32000, 32000 | Word | R/W | | 40065 |
| | Fault value of input 7 [°C/10] (if bit40057.13=0), [mV/100] (if bit40057.13=1) | | | 20000 | |
| INPUT 8 | | | | | |
| IN8 | / | Bit | R/W | | 40010 |
| | Measure of input 8 [°C/10] (if bit 40057.13=0), [10·mV] (if bit 40057.13=1) | | | / | |
| IN8 MSW | | FP32bit_MSW | R | | 40025 |
| IN8 LSW | | FP32bit_LSW | R | | 40026 |
| | Floating point measure of input 8 [°C] (if bit40057.13=0), [mV] (if bit40057.13=1). To interpret the FP32bit register, see bit40058.15 | | | / | |
| IN8 Fault | Between: -32000, 32000 | Word | R/W | | 40066 |
| | Fault value of input 8 [°C/10] (if bit40057.13=0), [mV/100] (if bit40057.13=1) | | | 20000 | |
| IN7-8 ColdJunction | | Word | R | | 40031 |
| | Input 7-8 cold junction temperature [°C/10] | | | / | |

TABLE 1 – CONFIGURATIONS FOR FILTER APPLIED TO ACQUIRED INPUTS
IN1 and IN2 (bit40054.[10:8]), IN3 and IN4 (bit40055.[10:8]), IN5 and IN6 (bit40056.[10:8]), IN7 and IN8 (bit40057.[10:8])

| Bit[10:8] | Filter type | BIT ADC | SAMPLING Hz | Propagation time (if IN<T) | Propagation time (if IN>T) |
|------------------|--------------------|----------------|--------------------|--------------------------------------|--------------------------------------|
| 0b000 | Deactivated | 14 | 48 | 45ms | 45ms |
| 0b001 | Average | 14 | 20 | 236ms | 103ms |
| 0b010 | Average | 15 | 11 | 405ms | 179ms |
| 0b011 | Average + exp | 15 | 11 | 1s | 179ms |
| 0b100 | Average + exp | 15 | 11 | 3s | 179ms |
| 0b101 | Average + exp | 15 | 11 | 8s | 179ms |
| 0b110 | Average + exp | 15 | 11 | 24s | 179ms |
| 0b111 | Average + exp | 15 | 11 | 72s | 179ms |



Threshold value: T=0.75mV



Propagation time: interval time between a step change of input electrical signal and corresponding change of measure in register (at 115kBaud). The propagation times shown in table 1 refer to 50Hz rejection; to obtain the propagation times refer to 60Hz rejection, divide them for 1.2.

TABLE 2 – THERMOCOUPLE TYPE OF INPUT
IN 1 (bit40054.[7:4]), IN 2 (bit40054.[3:0]), IN 3 (bit40055.[7:4]), IN 4 (bit40055.[3:0])
IN 5 (bit40056.[7:4]), IN 6 (bit40056.[3:0]), IN 7 (bit40057.[7:4]), IN 8 (bit40057.[3:0])

| Bit [7:4] | TC for IN1, IN3, IN5, IN7 | Bit [3:0] | TC for IN2, IN4, IN6, IN8 |
|-----------|---------------------------|-----------|---------------------------|
| 0b0000 | TC J | 0b0000 | TC J |
| 0b0001 | TC K | 0b0001 | TC K |
| 0b0010 | TC R | 0b0010 | TC R |
| 0b0011 | TC S | 0b0011 | TC S |
| 0b0100 | TC T | 0b0100 | TC T |
| 0b0101 | TC B | 0b0101 | TC B |
| 0b0110 | TC E | 0b0110 | TC E |
| 0b0111 | TC N | 0b0111 | TC N |

LEDs for signalling

In the front-side panel there are 4 LEDs and their state refers to important operating conditions of the module.

| LED | LED status | Meaning |
|------------|-------------------|--|
| PWR | Constant light | The module power is on |
| ERR | Constant light | The module has at least one of the errors described in RS485 Registers table |
| | Blinking light | Module failure |
| RX | Constant light | Verify if the bus connection is corrected |
| | Blinking light | The module received a data packet |
| TX | Blinking light | The module sent a data packet |
| | Constant light | Module failure |

CONFIGURATION SOFTWARE

To configure Z-8TC-LAB with a PC please download the Easy Setup suite or Z-NET suite.

The softwares are free-downloadable from www.seneca.it.