USER MANUAL

ZC-4RTD

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Seneca Z-PC Line module: **ZC-4RTD**

The ZC-4RTD module acquires up to 4 RTD signals (through 4 inputs regardless and isolated with each other) e it converts them to a temperature or resistance measure, with two types of communication: CANopen protocol, ModBUS protocol (RS232 serial).

General characteristics

Hardware

- 4 isolated RTD inputs
- 2, 3, 4 wires measurement
- RTD type: PT100, PT500, PT1000, NI100
- 1500Vac isolations between 6 areas (4 inputs, power, CAN)
- Inputs protected against 4KV ESD

Software

- 3 different acquisition speeds
- A/D resolution: 13 or 14 bit
- Rejection programmable at 50 or 60 Hz
- Programmable value in case of fault or freezing of last reading
- Measurements available in: floating-point (MSW e LSW), integer (16 bit), tenths of degree, tenths ohms e hundredths ohms.

Communication

- CAN Interface with CANopen protocol: up to 1 Mbps speed.
- CANopen Baud rate and Node ID configurability by DIP-switches or software.
- Node guarding or heartbeat
- RS232 Serial Communication with MODBUS-RTU protocol
- Complete configurability through specific software downloadable in the website www.seneca.it.

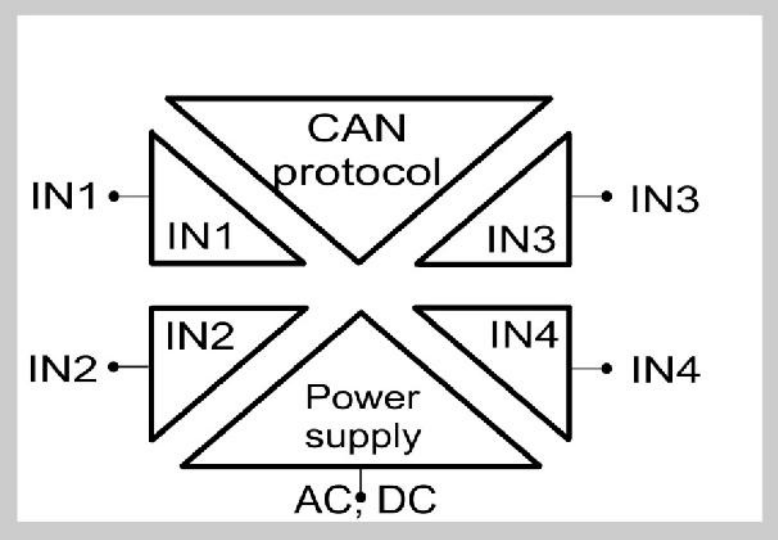
Features

CONVERSION/ ACCURACY SPECIFICATIONS	
ADC	13 or 14 bit
Class/ base precision	0.05
Calibration precision	0.04%
Linearity	0.025%
Thermal drift	< 50 ppm/°C
Sampling frequency	From 11 Hz to 48 Hz
Interference rejection	50 Hz or 60 Hz

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	Temperature range	Resistance range (RTD=Rx)	Burn-out error if (RTD=Rx)	Max wire resistance (Rf)	Rated current through RTD
RTD:PT100-type input (EN 60751)	From -200°C to 650°C	From 18.5Ω to 330Ω	Rx<18 Ω Rx>341 Ω	20 Ω	875µA
RTD:NI100-type input (DIN 43760)	From -60°C to 250°C	From 69Ω to 295Ω	Rx<60 Ω Rx>301 Ω	30 Ω	875µA
RTD:PT500-type input (EN 60751)	From -200°C to 750°C	From 92.5Ω to 1800Ω	Rx<90 Ω Rx>1851 Ω	30 Ω	333µA
RTD:PT1000-type input (EN 60751)	From -200°C to 210°C	From 185Ω to 1850Ω	Rx<180 Ω Rx>1851 Ω	30 Ω	333µA

CONNECTIONS	
Removable terminals	Removable 4-way screw terminals, 3.5 mm pitch
IDC10 rear connector	CAN interface and power supply (for DIN rail)
Stereophonic frontal jack	3.5 mm for RS232 connection (COM)
1500 Vac ISOLATIONS	
	Between: power supply, CAN, input 1, input 2, input 3, input 4



POWER SUPPLY	
Supply voltage	10 – 40 Vdc or 19 – 28 Vac (50Hz - 60Hz)
Power consumption	Max: 1.0 W

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NOTE: “0x” means an exadecimal number interpretation.

CANOpen features

TECHNICAL DATA	
Baud rate	20, 50, 125, 250, 500, 800, 1000 kbps
Typical conversion time	20 ms for 4 channels
RTD supported	PT100, NI100, PT500, PT1000
Range in Ohm-meter mode	From 18 Ω to 1851 Ω
CANOpen TECHNICAL DATA	
NMT	Slave
	Node guarding, heartbeat
Node ID	HW switch or software
Number of PDO	2 TX
PDO modes	Event triggered, Sync (cyclic), Sync (acyclic)
PDO mapping	Variable
PDO linking	supported
Number of SDO	1 server
Error message	yes
Supported application	Cia 301 v4.02
Layer	Cia 401 v2.01

Supported RTD

PT100 – EN60751/A2 (ITS-90)		PT1000 – EN60751/A2 (ITS-90)	
Temperature range	-200°C..+600°C	Temperature range	-200°C..+210°C
PT500 – EN60751/A2 (ITS-90)		**NI100**	
Temperature range	-200°C..+750°C	Temperature range	-60°C..+250°C

CANOpen TPDOs transmission type supported

Object Value 0x180x Sub 2	TRANSMISSION TYPE
0	Synchronous - acyclic
From 1 to 240	Synchronous - cyclic
255	Asynchronous

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CANOpen PDOs mapping

OBJECTS FOR DEFAULT MAPPING				
PDO NR	**COB-ID**	**MAPPED OBJECTS**	**INDEX**	**SUBINDEX**
TPDO2	0x40000280 + NodeId	Value CH1 16 bit	0x6401	1
		Value CH2 16 bit	0x6401	2
		Value CH3 16 bit	0x6401	3
		Value CH4 16 bit	0x6401	4
TPDO3	0x40000380 + NodeId	Value CH1 float	0x6403	1
		Value CH2 float	0x6403	2
		Value CH3 float	0x6403	3
		Value CH4 float	0x6403	4

Note that TPDO COB-ID must start with 0x4.

CANOpen emergency message

The Emergency message is composed by:

2 bytes of EEC (Emergency error code)

1 bytes of ER (Error register)

Max of 5 bytes of MEF (Manufacturer error filled)

For EEC code 0xFF10, the emergency message is:

EMERGENCY MESSAGE				
BYTE 0	BYTE 1	BYTE 2	BYTE 3	BYTE 4
0xFF10		0x81	MEF	

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With this MEF:

MEF (Manufacturer-specific Error Field) for EEC 0xFF10		
BIT	**DESCRIPTION**	**OBJECT FOR ERROR DETAILS**
15	Channel 1 fail	0x2120 subindex 1
14	Channel 2 fail	0x2120 subindex 2
13	Channel 3 fail	0x2120 subindex 3
12	Channel 4 fail	0x2120 subindex 4
11	Channel 1 sensor error	0x2120 subindex 1
10	Channel 2 sensor error	0x2120 subindex 2
9	Channel 3 sensor error	0x2120 subindex 3
8	Channel 4 sensor error	0x2120 subindex 4
7	Channel 1 communication fail	0x2121 subindex 1
6	Channel 2 communication fail	0x2121 subindex 2
5	Channel 3 communication fail	0x2121 subindex 3
4	Channel 4 communication fail	0x2121 subindex 4

For “voltage error”, the emergency message is:

EMERGENCY MESSAGE				
BYTE 0	BYTE 1	BYTE 2	BYTE 3	BYTE 4
0xFF10		0x85	Object 0x2100	

For a “timeout command” or “error command”, the emergency message is:

EMERGENCY MESSAGE					
BYTE 0	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5
0xFF11		0x81	Channel NR	Object 0x2103 subindex channelID	

For “CPU ERROR” the Emergency message will be:

EMERGENCY MESSAGE						
BYTE 0	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6
0xFF20		0x81	Object 0x1002			

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EEC	
CODE	**DESCRIPTION**
0x0000	No error
0x1000	Generic error
0x4201	CPU temperature over HOT STOP ERROR
0x4202	CPU temperature over HOT STOP
0x4203	CPU temperature under COLD ERROR
0x8110	Communication Can Overrun
0x8120	Error passive
0x8130	Life Guard error
0x8140	Recovered from bus off
0xFF10	General input channels error
0xFF11	Command for input channel error
0xFF20	CPU error

ER							
BIT 7	**BIT 6**	**BIT 5**	**BIT 4**	**BIT 3**	**BIT 2**	**BIT 1**	**BIT 0**
Generic	0	Voltage	temperature	communication	0	0	Manufacture

Where bit equal to “0” means “no error”.

Object 0x1002: manufacturer status register

Object 0x1002 is the CPU status.

OBJECT 1002	
BIT	**DESCRIPTION**
31..10	NA
9	Good data value
8	Precision data value
7..1	NA
0	Flash CRC ERROR

Object 0x1006: communication window lenght

OBJECT 1006	
MIN VAL [ms]	**MAX VAL [ms]**
10	10000

Object 0x1007: synchronous window lenght

OBJECT 1007	
MIN VAL [ms]	**MAX VAL [ms]**
2	2000

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CANOpen manufacturer specific profile

If dip-switches are in “from memory” mode, the node address is selectable by **Object 0x2001**.

NODE ADDRESS (Object 0x2001)	
Object value	**Description**
0..127	Node address

If dip-switches are in “from memory” mode, the baud rate is selectable by **Object 0x2002**.

BAUDRATE (Object 0x2002)	
Object value	**Description**
1	20 kbit/s
2	50 kbit/s
3	125 kbit/s
4	250 kbit/s
5	500 kbit/s
6	800 kbit/s
7	1 Mbit/s

Object 0x2030 can be used to monitor the CPU temperature.

CPU TEMPERATURE (Object 0x2030)	
Subindex	**Description**
1	Actual temperature [°C/10]
2	Temperature for HOT STOP ERROR [°C/10] 95.0°C
3	Temperature for HOT ERROR [°C/10] 90.0°C
4	Temperature for COLD ERROR [°C/10] -25.0°C

The HOT STOP temperature sends in pre-operational the station.

The HOT ERROR and the COLD ERROR temperature sends the Emergency Object.

The Object is Read Only.

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Object 0x2100 contains the channel status:

CHANNEL STATUS (Object 0x2100)		
BIT	**Description**	**Object for error details**
15	Channel 1 fail	0x2120 subindex 1
14	Channel 2 fail	0x2120 subindex 2
13	Channel 3 fail	0x2120 subindex 3
12	Channel 4 fail	0x2120 subindex 4
11	Channel 1 sensor error	0x2120 subindex 1
10	Channel 2 sensor error	0x2120 subindex 2
9	Channel 3 sensor error	0x2120 subindex 3
8	Channel 4 sensor error	0x2120 subindex 4
7	Channel 1 communication fail	0x2121 subindex 1
6	Channel 2 communication fail	0x2121 subindex 2
5	Channel 3 communication fail	0x2121 subindex 3
4	Channel 4 communication fail	0x2121 subindex 4
3..0	NA	NA

Object 0x2106, **0x2107**, **0x2108**, **0x2109** contain the channels configuration:

CHANNELS SETUP (Object 0x2106 – 0x2107 – 0x2108 – 0x2109)	
Subindex	**Description**
1	RTD sensor type 0= PT100 1=NI100 2=PT500 3=PT1000
2	Measure type (0=°C, 1=Ω)
3	Three wires connection 0=two or four wires connection 1=three wires connection
4	Frequency rejection (1=60Hz, 0=50Hz)
5	Filter value
6	Channel enable 0=channel disabled 1=channel enabled

FILTER VALUES	
Value	**Filter type**
0	Disabled
1	Average filter
2	Hires + average filter
3	Hires + average + exponential (level 1) filter
..	…
7	Hires + average + exponential (level 5) filter

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Object 0x2125 – FAULT ACTIONS

Object 0x2125 sets the fault actions.

FAULT ACTIONS (Object 0x2125)	
BIT	**Description**
15	Fault action CH1 0=load 0x2160, 1=last good
14	Fault action CH2 0=load 0x2160, 1=last good
13	Fault action CH3 0=load 0x2160, 1=last good
12	Fault action CH4 0=load 0x2160, 1=last good

Object 0x2160 – FAULT VALUES

Object 0x2160 contains the floating point value (32 bit) to load in fault case.

The measure unit can be: °C or Ω.

0x2160	
Subindex	**Description**
1	Channel 1 fault value
2	Channel 2 fault value
3	Channel 3 fault value
4	Channel 4 fault value

DIP-SWITCH configuration

BAUD-RATE (Dip-Switches: SW1)			
1	2	3	Meaning
			Only Baud-Rate is acquired from memory(EEPROM)
		●	20 kbps
	●		50 kbps
	●	●	125 kbps
●			250 kbps
●		●	500 kbps
●	●		800 kbps
●	●	●	1 Mbps

ADDRESS (Dip-Switches: SW1)							
4	5	6	7	8	9	10	Meaning
							Only address is acquired from memory(EEPROM)
						●	Address=1
					●		Address=2
					●	●	Address=3
				●			Address=4
				●		●	Address=5
X	X	X	X	X	X	X	……
●	●	●	●	●	●	●	Address=127

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CANOpen LED description

SERVICE (DIAGNOSTIC) LED DESCRIPTION		
LED	**LED status**	**Meaning**
RUN	Blinking light	Pre-operational mode
	Single flash	Stop mode
	ON	Operational mode
ERROR	Single flash	At least one error counter has reached or exceed the warning level
	Double flash	Guard event
	Triple flash	The SYNC has not received within the configurated communication cycle timeout period
	ON	The CAN controller is bus off
	OFF	No error
FAIL	Blinking	Data receiving from RS232
	ON	At least one channel is in error mode
POWER	ON	Power supply

Object for analog data

Object 0x6401 contains the 16 bit (signed) values for channels 1..4 in [°C/10], [Ω/10], [Ω/100].

16 BIT INTEGER INPUT (Object 0x6411)	
Subindex	**Description**
1	Channel 1 16 bit input value
2	Channel 2 16 bit input value
3	Channel 3 16 bit input value
4	Channel 4 16 bit input value

Object 0x6403 contains the floating point (32 bit) values for channel 1..4 in [°C] or [Ω].

32 BIT REAL INPUT (Object 0x6403)	
Subindex	**Description**
1	Channel 1 floating point value
2	Channel 2 floating point value
3	Channel 3 floating point value
4	Channel 4 floating point value

Object 0x6423 interrupt enable:

If the value is “1”, the station can generate asynchronous TxPDO.

If the value is “0”, the station can not generate asynchronous TxPDO.

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Object 0x6424 interrupt upper limit integer

If enabled (see object 0x6423), an interrupt is triggered when the analogue input is equal or rises above the given value.

As long as the trigger condition is met, every change of the analogue input data generates a new interrupt.

INTERRUPT UPPER LIMIT 16 BIT INTEGER (OBJECT 0X6424)	
Subindex	**Description**
1	Channel 1 upper limit integer [°C/10], [Ω/10], [Ω/100]
2	Channel 2 upper limit integer [°C/10], [Ω/10], [Ω/100]
3	Channel 3 upper limit integer [°C/10], [Ω/10], [Ω/100]
4	Channel 4 upper limit integer [°C/10], [Ω/10], [Ω/100]

Object 0x6425 interrupt lower limit integer

If enabled (see object 0x6423), an interrupt is triggered when the analogue input falls below the given value.

As long as the trigger condition is met, every change of the analogue input data generates a new interrupt.

INTERRUPT LOWER LIMIT 16 BIT INTEGER (OBJECT 0X6425)	
Subindex	**Description**
1	Channel 1 lower limit integer [°C/10], [Ω/10], [Ω/100]
2	Channel 2 lower limit integer [°C/10], [Ω/10], [Ω/100]
3	Channel 3 lower limit integer [°C/10], [Ω/10], [Ω/100]
4	Channel 4 lower limit integer [°C/10], [Ω/10], [Ω/100]

Object 0x6426 interrupt delta unsigned

The object sets the delta value (rising or falling above or below the last communicated value) for interrupt-enabled analogue inputs (if object 0x6423 enables the interrupt).

INTERRUPT DELTA UNSIGNED INTEGER 16 BIT (OBJECT 0X6426)	
Subindex	**Description**
1	Channel 1 delta unsigned [°C/10], [Ω/10], [Ω/100]
2	Channel 2 delta unsigned [°C/10], [Ω/10], [Ω/100]
3	Channel 3 delta unsigned [°C/10], [Ω/10], [Ω/100]
4	Channel 4 delta unsigned [°C/10], [Ω/10], [Ω/100]

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Object 0x6429 interrupt upper limit float

This object sets the converted upper limits for interrupt-enabled analogue inputs (see 0x6423 object). As long as the trigger condition is met, every change of the analogue input data generates a new interrupt.

INTERRUPT UPPER LIMIT FLOAT (OBJECT 0X6429)	
Subindex	**Description**
1	Channel 1 upper limit float [°C], [Ω]
2	Channel 2 upper limit float [°C], [Ω]
3	Channel 3 upper limit float [°C], [Ω]
4	Channel 4 upper limit float [°C], [Ω]

Object 0x642A interrupt lower limit float

This object sets the lower limits for interrupt-enabled analogue inputs (see 0x6423 object). As long as the trigger condition is met, every change of the analogue input data generates a new interrupt.

INTERRUPT LOWER LIMIT FLOAT (OBJECT 0X6425)	
Subindex	**Description**
1	Channel 1 lower limit float [°C], [Ω]
2	Channel 2 lower limit float [°C], [Ω]
3	Channel 3 lower limit float [°C], [Ω]
4	Channel 4 lower limit float [°C], [Ω]

Object 0x642B interrupt delta float

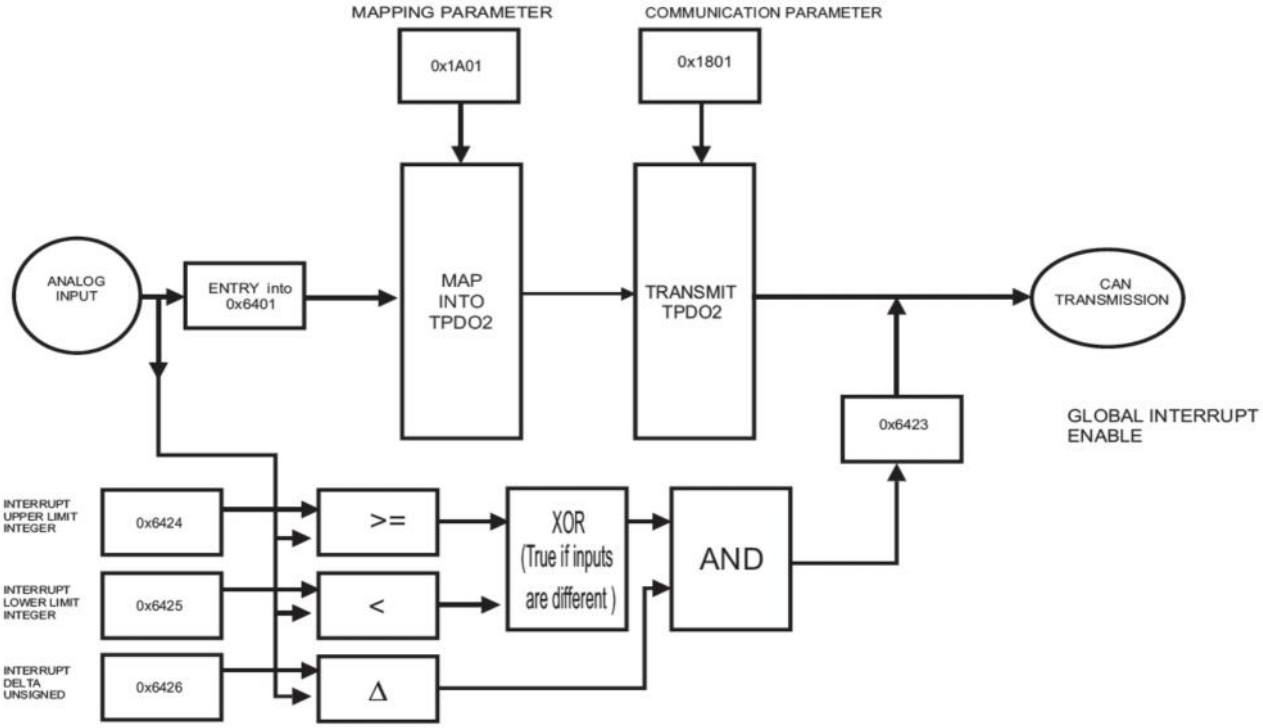
The object sets the delta value (rising or falling above or below the last sample) in float format for interrupt-enabled analogue inputs (if object 0x6423 enables the interrupt).

INTERRUPT DELTA UNSIGNED FLOAT (OBJECT 0X6426)	
Subindex	**Description**
1	Channel 1 delta float [°C], [Ω]
2	Channel 2 delta float [°C], [Ω]
3	Channel 3 delta float [°C], [Ω]
4	Channel 4 delta float [°C], [Ω]

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CANOpen functional diagram

For integer values



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CANOpen Object dictionary

COMMUNICATION PROFILE AREA						
INDEX	**SUB INDEX**	**NAME**	**DESCRIPTION**	**TYPE**	**ACCESS**	**DEFAULT**
0x1000	0	Device type	Profile 401=0x191	UNSIGNED 32	RO	0x00040191
0x1001	0	Error register	Error register (DS401)	UNSIGNED 8	RO	0
0x1002	0	Manufacturer Status register	Status register	UNSIGNED 32	RO	0
0x1005	0	SYNC COB-ID	The device consumes the SYNC message	UNSIGNED 32	RW	0x00000080
0x1006	0	Comm. window lenght	Sync interval [us]	UNSIGNED 32	RW	0
0x1007	0	Synchronous window lenght	The window [us] for the PDO transmission after the SYNC	UNSIGNED 32	RW	0
0x1008	0	Manufacturer Device name	Device name	VISIBLE STRING	RO	“ZC-4RTD”
0x1009	0	Manufacturer HW version	Hardware version	VISIBLE STRING	RO	“SC000000”
0x100A	0	Manufacturer SW version	Software version	VISIBLE STRING	RO	“SW001120”
0x100C	0	Guard Time	[ms]	UNSIGNED 16	RW	0
0x100D	0	Life time factor	Max delay between two guarding telegrams= Guard_Time · Life_Time_Factor	UNSIGNED 8	RW	0
0x1010	0	Store parameters/ number of mapped object	Max subindex number	UNSIGNED 8	RO	8
	1	Save all parameters	Store not volatile parameters (write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
	2	Save communication parameters	Store not volatile parameters (write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
	3	Save application parameters	Store not volatile parameters (write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
	4	Save manufacturer parameters	Store not volatile parameters (write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
	5	Save CH1 parameters	Store not volatile parameters (write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1

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	6	Save CH2 parameters	Store not volatile parameters (write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
	7	Save CH3 parameters	Store not volatile parameters (write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
	8	Save CH4 parameters	Store not volatile parameters (write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
0x1011	0	Restore default/ number of mapped object	Max subindex number	UNSIGNED 8	RO	8
	1	Restore all parameters	Restore not volatile parameters (write in ASCII “load” for store process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
	2	Restore communication parameters	Restore not volatile parameters (write in ASCII “load” for store process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
	3	Restore application parameters	Restore not volatile parameters (write in ASCII “load” for store process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
	4	Restore Manufacturer parameters	Restore not volatile parameters (write in ASCII “load” for store process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
	5	Restore CH1 parameters	Restore not volatile parameters (write in ASCII “load” for store process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
	6	Restore CH2 parameters	Restore not volatile parameters (write in ASCII “load” for store process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
	7	Restore CH3 parameters	Restore not volatile parameters (write in ASCII “load” for store process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
	8	Restore CH4 parameters	Restore not volatile parameters (write in ASCII “load” for store process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0

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0x1014	0	COB-ID emergency Object		UNSIGNED 32	RO	$NODEID+ 0x80
0x1017	0	Heartbeat producer time	Time (ms) 0x0000=there is not heartbeat service	UNSIGNED 16	RW	0
0x1018	0	Identity object/ number of mapped object	Max subindex number	UNSIGNED 8	RO	4
	1	Vendor ID	Seneca srl	UNSIGNED 32	RO	0x00000249
	2	Product code	ZC-4RTD Machine ID Code	UNSIGNED 32	RO	0x0000001B
	3	Revision number		UNSIGNED 32	RO	0
	4	Serial number		UNSIGNED 32	RO	0
0x1200	0	1st SDO port/ number of mapped object	Max subindex number	UNSIGNED 8	RO	2
	1	COB-ID SDO Client-> Server	COB-ID of receive SDO	UNSIGNED 32	RO	$NODEID+ 0x600
	2	COB-ID SDO Server-> Client	COB-ID of transmit SDO	UNSIGNED 32	RO	$NODEID+ 0x580
0x1801	0	2nd transmit PDO parameters	Number of mapped objects	UNSIGNED 8	RO	3
	1	COB-ID used by PDO	COB-ID of TxPDO2	UNSIGNED 32	RW	$NODEID+ 0x40000280
	2	Transmission type	Transmission type for TxPDO2 0x00=synchronous – acyclic 0x01 to 0xF0=synchronous – cyclic 0xFF=asynchronous	UNSIGNED 8	RW	0xFF
	3	Inhibit time	Min delay for the next PDO (ms/10)	UNSIGNED 16	RW	0x0000
0x1802	0	3rd transmit PDO parameters	Max subindex number	UNSIGNED 8	RO	3
	1	COB-ID used by PDO	COB-ID of TxPDO3	UNSIGNED 32	RW	$NODEID+ 0x40000380
	2	Transmission type	Transmission type for TxPDO3 0x00=synchronous – acyclic 0x01 to 0xF0=synchronous – cyclic 0xFF=asynchronous	UNSIGNED 8	RW	0xFF
	3	Inhibit time	Min delay for the next PDO (ms/10)	UNSIGNED 16	RW	0x0000
0x1A01	0	2nd transmit PDO mapping parameter	Number of mapped objects	UNSIGNED 8	RW	4
	1	1st object to be mapped	First object (default: CHANNEL 1 16 bits input)	UNSIGNED 32	RW	0x64010110 Object=0x6401 Subindex=1

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						Length=16bit
	2	2nd object to be mapped	Second object (default: CHANNEL 2 16 bits input)	UNSIGNED 32	RW	0x64010210 Object=0x6401 Subindex=2 Length=16bit
	3	3rd object to be mapped	Third object (default: CHANNEL 3 16 bits input)	UNSIGNED 32	RW	0x64010310 Object=0x6401 Subindex=3 Length=16bit
	4	4th object to be mapped	Fourth object (default: CHANNEL 4 16 bits input)	UNSIGNED 32	RW	0x64010410 Object=0x6401 Subindex=4 Length=16bit
0x1A02	0	3rd transmit PDO mapping parameter	Number of mapped objects	UNSIGNED 8	RW	0
	1	1st object to be mapped	First object (default: NONE)	UNSIGNED 32	RW	0
	2	2nd object to be mapped	Second object (default: NONE)	UNSIGNED 32	RW	0
	3	3rd object to be mapped	Third object (default: NONE)	UNSIGNED 32	RW	0
	4	4th object to be mapped	Fourth object (default: NONE)	UNSIGNED 32	RW	0

MANUFACTURER PROFILE AREA

INDEX	SUB INDEX	NAME	DESCRIPTION	TYPE	ACCESS	DEFAULT
0x2001	0	Module address	Station address (only if dip switch 4,5,6,7,8,9,10 are OFF)	UNSIGNED 8	RW	0x7F=127
0x2002	0	Baudrate	Station Baudrate (only if dip switch 1,2,3 are OFF) 1=20kbps 2=50kbps 3=125kbps 4=250kbps 5=500kbps 6=800kbps 7=1Mbps	UNSIGNED 8	RW	0x01
0x2003	0	Master firmware code		UNSIGNED 16	RO	1122
0x2030	0	Device temperature/ number of parameters	Max subindex number	UNSIGNED 8	RO	4
	1	Internal temperature	Station internal temperature [°C/10]	INTEGER 16	RO	0

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	2	Hi Hi temperature	Critical hot temperature (all operations stop) [°C/10]	INTEGER 16	RO	950
	3	Hi temperature	Warning for too hot temperature [°C/10]	INTEGER 16	RO	900
	4	Low temperature	Critical low temperature (all operations stop) [°C/10]	INTEGER 16	RO	-250
0x2100	0	Channel global status		UNSIGNED 16	RO	0
0x2104	0	Channels CMD	Max subindex number	UNSIGNED 8	RO	4
	1	CMD CH1	Writing 0xC0DE will return the channel fw code into 0x2015	UNSIGNED 16	RW	0
	2	CMD CH2	Writing 0xC0DE will return the channel fw code into 0x2015	UNSIGNED 16	RW	0
	3	CMD CH3	Writing 0xC0DE will return the channel fw code into 0x2015	UNSIGNED 16	RW	0
	4	CMD CH4	Writing 0xC0DE will return the channel fw code into 0x2015	UNSIGNED 16	RW	0
0x2105	0	Channels AUX CMD	Max subindex number	UNSIGNED 8	RO	4
	1	AUX CMD CH1	Fw code return value	UNSIGNED 16	RW	0
	2	AUX CMD CH2	Fw code return value	UNSIGNED 16	RW	0
	3	AUX CMD CH3	Fw code return value	UNSIGNED 16	RW	0
	4	AUX CMD CH4	Fw code return value	UNSIGNED 16	RW	0
0x2106	0	Channel 1 setup	Number of parameters	UNSIGNED 8	RO	6
	1	CH1 sensor type	Channel 1 sensor type 0=PT100 1=NI100 2=PT500 3=PT1000	UNSIGNED 8	RW	0
	2	CH1 – Measure type	0=°C, 1=Ω	UNSIGNED 8	RW	0
	3	CH1 – Wire compensation	0=2 or 4 wires connection 1=3 wires connection	UNSIGNED 8	RW	1
	4	CH1 – Frequency rejection	0=50Hz 1=60Hz	UNSIGNED 8	RW	0
	5	CH1 - Filter	0=None, 1=Min, 7=Max	UNSIGNED 8	RW	2

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	6	CH1 - Enable	0=channel disabled 1=channel enabled	UNSIGNED 8	RW	1
0x2107	0	Channel 2 setup	Number of parameters	UNSIGNED 8	RO	6
	1	CH2 sensor type	Channel 2 sensor type 0=PT100 1=NI100 2=PT500 3=PT1000	UNSIGNED 8	RW	0
	2	CH2 – Measure type	0=°C, 1=Ω	UNSIGNED 8	RW	0
	3	CH2 – Wire compensation	0=2 or 4 wires connection 1=3 wires connection	UNSIGNED 8	RW	1
	4	CH2 – Frequency rejection	0=50Hz 1=60Hz	UNSIGNED 8	RW	0
	5	CH2 - Filter	0=None, 1=Min, 7=Max	UNSIGNED 8	RW	2
	6	CH2 - Enable	0=channel disabled 1=channel enabled	UNSIGNED 8	RW	1
0x2108	0	Channel 3 setup	Number of parameters	UNSIGNED 8	RO	6
	1	CH3 sensor type	Channel 3 sensor type 0=PT100 1=NI100 2=PT500 3=PT1000	UNSIGNED 8	RW	0
	2	CH3 – Measure type	0=°C, 1=Ω	UNSIGNED 8	RW	0
	3	CH3 – Wire compensation	0=2 or 4 wires connection 1=3 wires connection	UNSIGNED 8	RW	1
	4	CH3 – Frequency rejection	0=50Hz 1=60Hz	UNSIGNED 8	RW	0
	5	CH3 - Filter	0=None, 1=Min, 7=Max	UNSIGNED 8	RW	2
	6	CH3 - Enable	0=channel disabled 1=channel enabled	UNSIGNED 8	RW	1
0x2109	0	Channel 4 setup	Number of parameters	UNSIGNED 8	RO	6
	1	CH4 sensor type	Channel 4 sensor type 0=PT100 1=NI100 2=PT500 3=PT1000	UNSIGNED 8	RW	0

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	2	CH4 – Measure type	0=°C, 1=Ω	UNSIGNED 8	RW	0
	3	CH4 – Wire compensation	0=2 or 4 wires connection 1=3 wires connection	UNSIGNED 8	RW	1
	4	CH4 – Frequency rejection	0=50Hz 1=60Hz	UNSIGNED 8	RW	0
	5	CH4 - Filter	0=None, 1=Min, 7=Max	UNSIGNED 8	RW	2
	6	CH4 - Enable	0=channel disabled 1=channel enabled	UNSIGNED 8	RW	1
0x2125	0	Fault actions mask	1=last good 0=load object 0x2160 Bit 11..0 not used	UNSIGNED 16	RW	0xF000
0x2154	0	Wire resistance value [Ω/100]	Max subindex number	UNSIGNED 8	RO	4
	1	CHANNEL1-Wire resistance value [Ω/100]	3rd wire resistance value [Ω/100]	UNSIGNED 16	RO	0
	2	CHANNEL2-Wire resistance value [Ω/100]	3rd wire resistance value [Ω/100]	UNSIGNED 16	RO	0
	3	CHANNEL3-Wire resistance value [Ω/100]	3rd wire resistance value [Ω/100]	UNSIGNED 16	RO	0
	4	CHANNEL4-Wire resistance value [Ω/100]	3rd wire resistance value [Ω/100]	UNSIGNED 16	RO	0
0x2160	0	Fault value	Max subindex number	UNSIGNED 8	RO	4
	1	CHANNEL1 Fault value [°C,Ω]	Float value	REAL 32	RW	850.0
	2	CHANNEL2 Fault value [°C,Ω]	Float value	REAL 32	RW	850.0
	3	CHANNEL3 Fault value [°C,Ω]	Float value	REAL 32	RW	850.0
	4	CHANNEL4 Fault value [°C,Ω]	Float value	REAL 32	RW	850.0

STANDARD DEVICE PROFILE AREA

INDEX	SUB INDEX	NAME	DESCRIPTION	TYPE	ACCESS	DEFAULT
0x6401	0	16 bit input	Number of input	UNSIGNED 8	RO	4
	1	CH1 16 bit	Channel 1 value [°C/10] or [Ω/10]:Pt100, Ni100;	INTEGER 16	RO	

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			[Ω/100]:others			
	2	CH2 16 bit	Channel 2 value [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RO	
	3	CH3 16 bit	Channel 3 value [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RO	
	4	CH4 16 bit	Channel 4 value [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RO	
0x6403	0	Float input	Number of input float	UNSIGNED 8	RO	4
	1	CH1 float	Channel 1 value [°C,Ω]	REAL 32	RO	
	2	CH2 float	Channel 2 value [°C,Ω]	REAL 32	RO	
	3	CH3 float	Channel 3 value [°C,Ω]	REAL 32	RO	
	4	CH4 float	Channel 4 value [°C,Ω]	REAL 32	RO	
0x6423	0	Interrupt global enable	0=disable asynchronous TxPDO 1=enable asynchronous TxPDO	BOOLEAN	RW	0
0x6424	0	Analogue interrupt upper limit – 16 bit	Number upper value 16 bit	UNSIGNED 8	RO	4
	1	CH1 interrupt upper value	Analogue interrupt upper limit – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RW	0
	2	CH2 interrupt upper value	Analogue interrupt upper limit – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RW	0
	3	CH3 interrupt upper value	Analogue interrupt upper limit – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RW	0
	4	CH4 interrupt upper value	Analogue interrupt upper limit – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RW	0
0x6425	0	Analogue interrupt lower limit – 16 bit	Number lower value 16 bit	UNSIGNED 8	RO	4

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	1	CH1 interrupt lower value	Analogue interrupt lower limit – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RW	0
	2	CH2 interrupt lower value	Analogue interrupt lower limit – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RW	0
	3	CH3 interrupt lower value	Analogue interrupt lower limit – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RW	0
	4	CH4 interrupt lower value	Analogue interrupt lower limit – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	INTEGER 16	RW	0
0x6426	0	Analogue interrupt delta – 16 bit	Max subindex number	UNSIGNED 8	RO	4
	1	CH1 interrupt delta value	Analogue interrupt delta value – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	UNSIGNED 32	RW	0
	2	CH2 interrupt delta value	Analogue interrupt delta value – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	UNSIGNED 32	RW	0
	3	CH3 interrupt delta value	Analogue interrupt delta value – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	UNSIGNED 32	RW	0
	4	CH4 interrupt delta value	Analogue interrupt delta value – 16 bit [°C/10] or [Ω/10]:Pt100, Ni100; [Ω/100]:others	UNSIGNED 32	RW	0
0x6429	0	Analogue interrupt upper limit – 32 bit	Number upper value 16 bit	REAL 32	RO	4
	1	CH1 interrupt upper value	Analogue interrupt upper limit – 16 bit [°C] or [Ω]	REAL 32	RW	0
	2	CH2 interrupt upper value	Analogue interrupt upper limit – 16 bit [°C] or [Ω]	REAL 32	RW	0

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	3	CH3 interrupt upper value	Analogue interrupt upper limit – 16 bit [°C] or [Ω]	REAL 32	RW	0
	4	CH4 interrupt upper value	Analogue interrupt upper limit – 16 bit [°C] or [Ω]	REAL 32	RW	0
0x642A	0	Analogue interrupt lower limit – 16 bit	Number lower value 16 bit	UNSIGNED 8	RO	4
	1	CH1 interrupt lower value	Analogue interrupt lower limit – 16 bit [°C] or [Ω]	REAL 32	RW	0
	2	CH2 interrupt lower value	Analogue interrupt lower limit – 16 bit [°C] or [Ω]	REAL 32	RW	0
	3	CH3 interrupt lower value	Analogue interrupt lower limit – 16 bit [°C] or [Ω]	REAL 32	RW	0
	4	CH4 interrupt lower value	Analogue interrupt lower limit – 16 bit [°C] or [Ω]	REAL 32	RW	0
0x642B	0	Analogue interrupt delta – 16 bit	Max subindex number	UNSIGNED 8	RO	4
	1	CH1 interrupt delta value	Analogue interrupt delta value – 32 bit [°C] or [Ω]	REAL 32	RW	0
	2	CH2 interrupt delta value	Analogue interrupt delta value – 32 bit [°C] or [Ω]	REAL 32	RW	0
	3	CH3 interrupt delta value	Analogue interrupt delta value – 32 bit [°C] or [Ω]	REAL 32	RW	0
	4	CH4 interrupt delta value	Analogue interrupt delta value – 32 bit [°C] or [Ω]	REAL 32	RW	0

Easy-SETUP

To configure the Seneca Z-PC Line modules, it is possible to use Easy-SETUP software, free-downloadable from the www.seneca.it; the configuration can be performed by RS232 or RS485 bus communication.

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