



Read this document carefully before using this device. The guarantee will be expired by damaging of the device if you don't attend to the directions in the user manual. Also we don't accept any compensations for personal injury, material damage or capital disadvantages.

ENDA ET1124A RAIL MOUNTED FOUR INPUT PID TEMPERATURE CONTROLLER

Thank you for choosing ENDA ET1124A Rail mounted PID temperature controller.

- ▶ DIN Rail Mounting.
- ▶ Selectable Dual-set value.
- ▶ Selectable TC (J, K, L, T, S, R) or two-wire PT100 sensor (specify at order).
- ▶ **Auto calculation for PID parameters (SELF TUNE).**



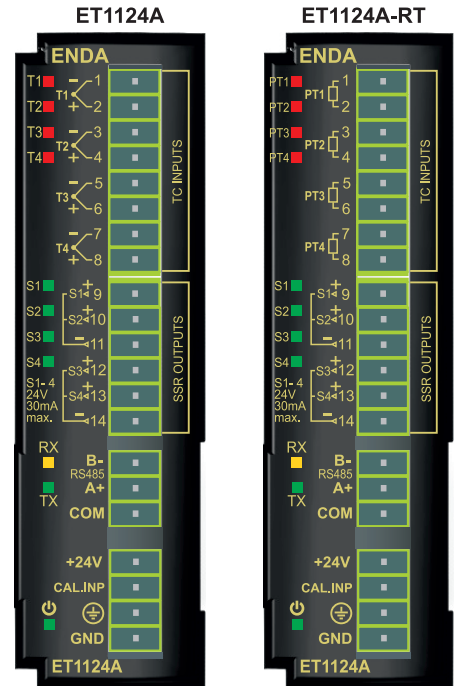
Selftune for automatic PID calculation or manually enter PID parameters if known.

- ▶ Control outputs can be disabled (Applied for measurement use).
- ▶ Four SSR Temperature control outputs.
- ▶ Manual controlling feature for SSR outputs.
- ▶ Soft-Start feature.
- ▶ Communication via RS485 Modbus protocol.
- ▶ Heating/Cooling control selection.
- ▶ Zero point input shift (Offset feature for input).
- ▶ In case of sensor failure, SSR positions can be selected or periodic operation can be performed.
- ▶ Can be programmed via Modbus.
- ▶ Modbus addressing, baud rate settings or default settings can be applied via DIP Switch.
- ▶ Heating error monitoring feature.
- ▶ Can be updated via RS485.
- ▶ CE Marked according to European Norms.

**RoHS
Compliant**



**ORDER CODE : ET1124A.....TC Input
ET1124A-RT.....PT100 Input**



ENVIRONMENTAL CONDITIONS

| | |
|-----------------------------|--|
| Ambient/storage temperature | 0 ... +50°C/-25 ... +70°C (with no icing). |
| Max. Relative humidity | 80% Relative humidity for temperatures up to 31°C, decreasing linearly to 50% at 40°C. |
| Protection rating | According to EN 60529 IP20. |
| Height | Max. 2000m. |

KEEP AWAY device from exposed to corrosive, volatile and flammable gases or liquids and **DO NOT USE** the device in similar hazardous locations.

ELECTRICAL CHARACTERISTICS

| | |
|---------------------|--|
| Supply | 24 VDC 20%. |
| Power Consumption | Max. 5VA. |
| Wiring | 1.5mm ² screw-terminal connections. |
| Line Resistance | Max. 100Ω Ohm. for thermocouple. Max. 1Ω ohm. for PT100 (Correction should be performed with the offset parameter.). |
| Data Retention | EEPROM (minimum 10 years). |
| EMC | EN 61326-1: 2013 |
| Safety Requirements | EN 61010-1: 2010 (Pollution degree 2, overvoltage category II) |

INPUTS

| | |
|------------------------------|--|
| T1...T4 Thermocouple | Four-channel terminal connections. User-defined J, K, L, T, S, R sensor inputs (valid for TC input devices). |
| PT1...PT4 PT100 Thermocouple | Four-channel terminal connections. PT100 sensor inputs (valid for PT100 input devices). |

OUTPUTS

| | |
|-----------------------------|---|
| S1...S4 SSR Control Outputs | Four-channel terminal connections. Short circuit protected SSR control output, 24VDC ±20% , 30mA max. |
|-----------------------------|---|

CONTROL

| | |
|-------------------|--|
| Control Type | Single set-point control. |
| Control Algorithm | On-Off / P, PI, PD, PID (selectable). |
| A/D Converter | 14 bits. |
| Sampling Time | 200ms (Minimum). |
| Proportional Band | Adjustable between 0% and 100%. If Pb=0%, On-Off control is selected. |
| Integral Time | Adjustable between 0.0 and 100.0 minutes. |
| Derivative Time | Adjustable between 0.00 and 25.00 minutes. |
| Control Period | Adjustable between 1 and 125 seconds. |
| Hysteresis | Adjustable between 1 and 50°C/F. |
| Output Power | The ratio of power at the setpoint value can be set between 0% and 100%. |

HOUSING

| | |
|--------------------|---|
| Housing Type | Rail-mounted box according to DIN 43 700. |
| Dimensions | W29xH90xD64mm |
| Weight | Approx. 200g (after packing) |
| Enclosure Material | Self extinguishing plastics used. |

Avoid any liquid contact when the device is switched on.
DO NOT clean the device with solvent (thinner, gasoline, acid etc.) and / or abrasive cleaning agents.



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ET1124A-EN-03-230316

TECHNICAL SPECIFICATIONS

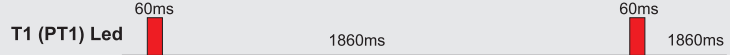
| | Input Type | Scale Range | Accuracy |
|---------------------------------|---------------------------------------|-------------------|--|
| For ET1124A-RT PT100 Devices | PT100 Resistance Thermometer EN 60751 | -199.9...600.0 °C | -199.9...999.9 °F ± 0,2% (for full scale) ± 1 digit |
| | PT100 Resistance Thermometer EN 60751 | -200...600 °C | -328....1112 °F ± 0,2% (for full scale) ± 1 digit |
| For ET1124A TC Devices | J (Fe-CuNi) Thermocouple EN 60584 | -30.0...600.0 °C | -22.0....999.9 °F ± 0,5% (for full scale) ± 1 digit |
| | J (Fe-CuNi) Thermocouple EN 60584 | -30....600 °C | -22....1112 °F ± 0,5% (for full scale) ± 1 digit |
| | K (NiCr-Ni) Thermocouple EN 60584 | -30.0...999.9 °C | -22.0....999.9 °F ± 0,5% (for full scale) ± 1 digit |
| | K (NiCr-Ni) Thermocouple EN 60584 | -30...1300 °C | -22....2372 °F ± 0,5% (for full scale) ± 1 digit |
| | L (Fe-CuNi) Thermocouple DIN 43710 | -30.0...600.0 °C | -22.0....999.9 °F ± 0,5% (for full scale) ± 1 digit |
| | L (Fe-CuNi) Thermocouple DIN 43710 | -30....600 °C | -22....1112 °F ± 0,5% (for full scale) ± 1 digit |
| | T (Cu-CuNi) Thermocouple EN 60584 | -30.0...400.0 °C | -22.0....752.0 °F ± 0,5% (for full scale) ± 1 digit |
| | T (Cu-CuNi) Thermocouple EN 60584 | -30....400 °C | -22.....752 °F ± 0,5% (for full scale) ± 1 digit |
| | S (Pt10Rh-Pt) Thermocouple EN 60584 | -40...1700 °C | -40....3092 °F ± 0,5% (for full scale) ± 1 digit |
| | R (Pt13Rh-Pt) Thermocouple EN 60584 | -40...1700 °C | -40....3092 °F ± 0,5% (for full scale) ± 1 digit |

T1 (PT1) LED ERROR MESSAGE DESCRIPTIONS

Error LED blinks periodically when an error condition occurs. Following charts are created as sample for T1 (PT1) LED indicator. Similar denote is valid for T2 (PT2), T3 (PT3) and T4 (PT4) LEDs according to the relevant Input register parameter.

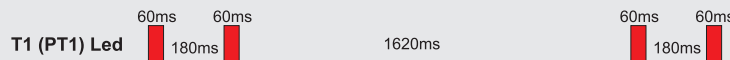
I3 = 1 : Sensor short circuited or temperature too low.

Error LED lights once for 60ms every 1860ms and cycle repeats every 1860ms. LED stops flashing when the error is cleared.



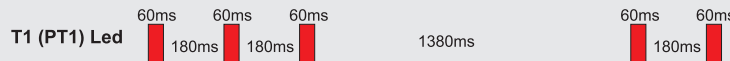
I3 = 2 : Lower scale error.

Error LED lights two times for 60ms every 180ms and the cycle repeats every 1620ms. LED stops flashing when the error is cleared.



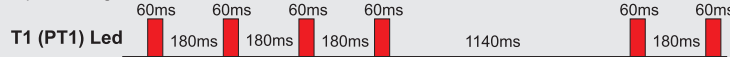
I3 = 3 : Upper scale error.

Error LED lights three times for 60ms every 180ms and the cycle repeats every 1380ms.



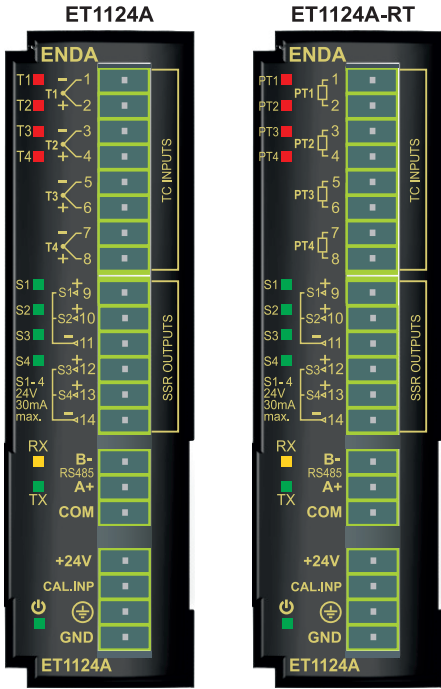
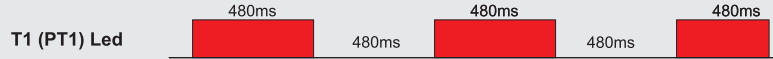
I3 = 4 : No communication with the sensor (Sensor not connected or sensor line is faulty).

Error LED lights four times for 60ms every 180ms and the cycle repeats every 1140ms. LED stops flashing when the error is cleared.



I3 = 5 : Output power error.

Error LED blinks each 480ms and the cycle repeats every 480ms.



CONNECTION DIAGRAM



ENDA ET1124A devices are intended for rail mounted installations. Make sure that the device is used only for intended purpose. The shielding must be grounded on the instrument side. During an installation, all of the cables that are connected to the device must be free of electrical power. The device must be protected against inadmissible humidity, vibrations, severe soiling. Make sure that the operation temperature is not exceeded. All input and output lines that are not connected to the supply network must be laid out as shielded and twisted cables. These cables should not be close to the power cables or components. The installation and electrical connections must be carried out by a qualified staff and must be according to the relevant locally applicable regulations.



- 1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
- 2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

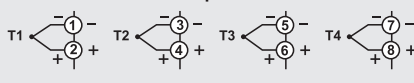


The logic output of the instrument is not electrically insulated from the internal circuits. Therefore, when using a grounded thermocouple, do not connect the logic output terminals to the earth.

SENSOR INPUTS

J-K-L-T-S-R Type Thermocouples :
Use the correct compensation cables for thermocouples. Do not use jointed cables. Make sure to connect to the right place and right polarities at the input terminals as shown in the figure.

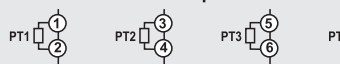
ET1124A Input Connection



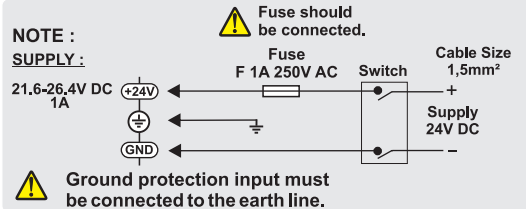
PT100 Input Devices:

Do not use jointed cables. Long cable causes incorrect temperature measurement.

ET1124A-RT Input Connection

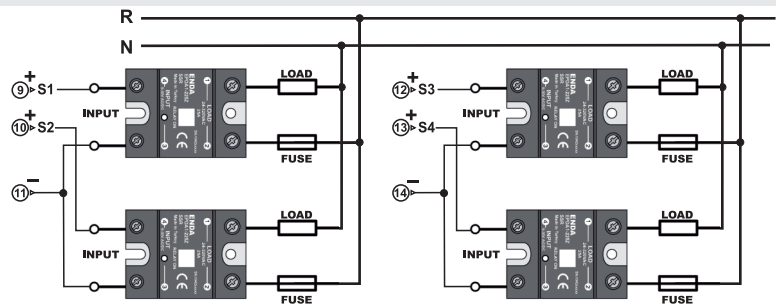


MAINS CONNECTION



CONTROL OUTPUTS CONNECTION SAMPLE

S1, S2, S3 and S4 SSR Outputs :
Each of the four SSR control outputs can drive loads with a maximum of 30mA 24VDC. SSR outputs are short circuit protected.

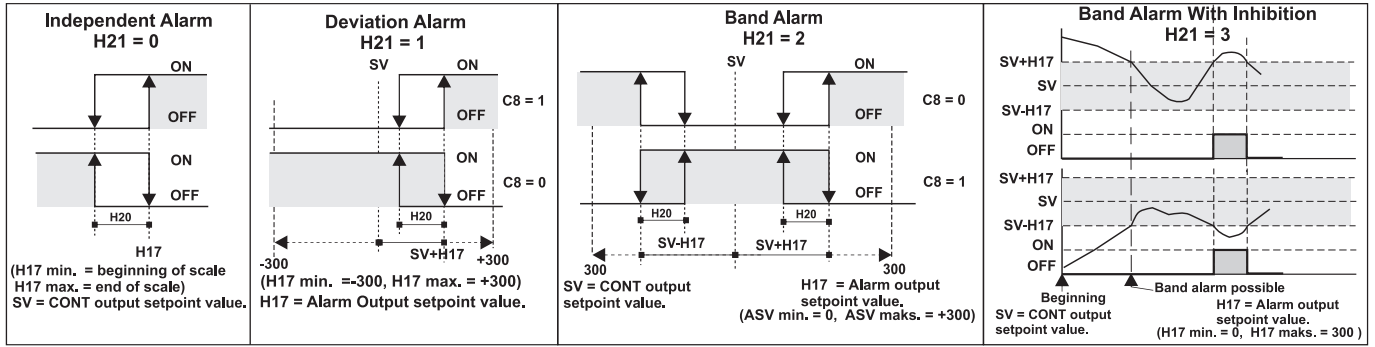


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ALARM OUTPUT TYPES

Following chart indicates the alarm output status for the D1 Parameter Number and it is sampled for CH1. Please see page 5 for details.



ENDA ET1124A PID TEMPERATURE CONTROLLER MODBUS ADDRESS MAP

1.1 Memory Map for Thermostat Holding Registers

| Parameter Number | Holding Register Addresses Decimal (Hex) | Data Type | Data Content | Read / Write Permission | Factory defaults |
|------------------|--|-----------|---|-------------------------|------------------|
| H0 | 0000d (0000h) | Word | Sensor selection parameter for T1 input (Specified in parentheses are applicable for ET1124A-RT) : 0 = J Decimal (PT100 Decimal), 1 = J (PT100), 2 = K Decimal, 3 = K, 4 = L Decimal, 5 = L, 6 = T Decimal, 7 = T, 8 = S, 9 = R, | R / W | 1 |
| H1 | 0001d (0001h) | Word | Filter coefficient for T1 input (Can be set from 1 to 100. If set to 1, digital filter will be disabled) | R / W | 20 |
| H2 | 0002d (0002h) | Word | Offset value for T1 input (Adjustable between -100 and 100) | R / W | 0 |
| H3 | 0003d (0003h) | Word | Temperature setpoint value for S1 output (Adjustable between H5 and H6 parameters) | R / W | 400 |
| H4 | 0004d (0004h) | Word | Secondary temperature setpoint value for S1 output (Adjustable between H5 and H6 parameters) | R / W | 500 |
| H5 | 0005d (0005h) | Word | Minimum setpoint value for S1 output (Adjustable between Lower scale and H6 parameters) | R / W | 0 |
| H6 | 0006d (0006h) | Word | Maximum setpoint value for S1 output (Adjustable between Upper scale and H5 parameters) | R / W | 600 |
| H7 | 0007d (0007h) | Word | Proportional band set value for S1 output (Adjustable between 0.0 and 100.0%) | R / W | 4.0 |
| H8 | 0008d (0008h) | Word | Hysteresis value for S1 output (Adjustable between 1 and 50 °C/°F) | R / W | 2 |
| H9 | 0009d (0009h) | Word | Integral time value for S1 output (Adjustable between 0.0 and 100.0 minutes) | R / W | 4.0 |
| H10 | 0010d (000Ah) | Word | Derivative time value for S1 output (Adjustable between 0.00 and 25.00 minutes) | R / W | 1.00 |
| H11 | 0011d (000Bh) | Word | Period time set value for S1 output (Adjustable between 1 and 125 seconds) | R / W | 25 |
| H12 | 0012d (000Ch) | Word | S1 output value at setpoint (Adjustable between 0.0% and 100.0%) | R / W | 0.0 |
| H13 | 0013d (000Dh) | Word | S1 output value at sensor failure (Adjustable between 0.0% and 100.0%) | R / W | 0.0 |
| H14 | 0014d (000Eh) | Word | Soft start time for S1 output at power-up (Adjustable between 0 and 250 minutes) | R / W | 0 |
| H15 | 0015d (000Fh) | Word | Manual output percentage value for S1 output (Adjustable between 0.0% and 100.0%) | R / W | 50.0 |
| H16 | 0016d (0010h) | Word | Function Control Parameter (Self tune stops if 23040d (5A00h) value is entered) (Self tune starts if 23041d (5A01h) value is entered) (if 23042d (5A02h) value is entered, CH1 parameters will return to factory values) | R / W | 0 |
| H17 | 0017d (0011h) | Word | Temperature alarm setpoint value for T1 input (can be set between H18 and H19 parameter value). | R / W | 500 |
| H18 | 0018d (0012h) | Word | Lower limit for alarm setpoint value (can be set between Lower limit value and H19 parameter value) | R / W | 0 |
| H19 | 0019d (0013h) | Word | Upper limit for alarm setpoint value (can be set between H18 parameter value and Upper limit value) | R / W | 600 |
| H20 | 0020d (0014h) | Word | Hysteresis value for the alarm (can be set between 1 and 50 °C or °F) | R / W | 50 |
| H21 | 0021d (0015h) | Word | Output type selection for alarm (Values can be set from 0 to 3) 0 = Independent alarm, 1 = Deviation alarm, 2 = Band alarm, 3 = Active alarm after in band time. | R / W | 0 |
| H22 | 0022d (0016h) | Word | Heating control duration for S1 output. Heating control is not performed when set to 0. Up to 1000 seconds can be set. An error message will be generated at the end of the time if the temperature value is not changed. | R / W | 60 |
| H23 | 0023d (0017h) | Word | Configuration registers for CH1 (Holding registers for C0 - C9 configuration coils). B15 B14 B13 B12 B11 B10 B9 B8 B7 B6 B5 B4 B3 B2 B1 B0 - - - - - C9 C8 C7 C6 C5 C4 C3 C2 C1 C0 See instructions on chapter 1.2 coil descriptions for the meaning of bits | R / W | 0302H |
| H50 | 0050d (0032h) | Word | Thermocouple sensor, parameter selections for T2 (Set such as H0) | R / W | 3 |
| H51 | 0051d (0033h) | Word | Filter coefficient for T2 input (Can be set from 1 to 100. If set to 1, digital filter will be disabled) | R / W | 20 |
| H52 | 0052d (0034h) | Word | Offset value for T2 input (Adjustable between -100 and 100) | R / W | 0 |
| H53 | 0053d (0035h) | Word | Temperature setpoint value for S2 output (Adjustable between H55 and H56 parameters) | R / W | 400 |
| H54 | 0054d (0036h) | Word | Secondary temperature setpoint value for S2 output (Adjustable between H55 and H56 parameters) | R / W | 500 |
| H55 | 0055d (0037h) | Word | Minimum setpoint value for S2 output (Adjustable between Lower scale and H56 parameters) | R / W | 0 |
| H56 | 0056d (0038h) | Word | Maximum setpoint value for S2 output (Adjustable between Upper scale and H55 parameters) | R / W | 600 |
| H57 | 0057d (0039h) | Word | Proportional band set value for S2 output (Adjustable between 0.0 and 100.0%) | R / W | 4.0 |
| H58 | 0058d (003Ah) | Word | Hysteresis value for S2 output (Adjustable between 1 - 50 °C/°F) | R / W | 2 |
| H59 | 0059d (003Bh) | Word | Integral time value for S2 output (Adjustable between 0.0 and 100.0 minutes) | R / W | 4.0 |
| H60 | 0060d (003Ch) | Word | Derivative time value for S2 output (Adjustable between 0.00 and 25.00 minutes) | R / W | 1.00 |
| H61 | 0061d (003Dh) | Word | Period time set value for S2 output (Adjustable between 1 and 125 seconds) | R / W | 25 |
| H62 | 0062d (003Eh) | Word | S2 output value at setpoint (Adjustable between 0.0% and 100.0%) | R / W | 0.0 |
| H63 | 0063d (003Fh) | Word | S2 output value at sensor failure (Adjustable between 0.0% and 100.0%) | R / W | 0.0 |
| H64 | 0064d (0040h) | Word | Soft start time for S2 output at power-up (Adjustable between 0 and 250 minutes) | R / W | 0 |
| H65 | 0065d (0041h) | Word | Manual output percentage value for S2 output (Adjustable between 0.0% and 100.0%) | R / W | 50.0 |
| H66 | 0066d (0042h) | Word | Function Control Parameter. See H16 parameter. | R / W | 0 |
| H67 | 0067d (0043h) | Word | Temperature alarm setpoint value for T2 input. Can be set between H68 and H69 parameters. | R / W | 500 |
| H68 | 0068d (0044h) | Word | Lower limit for alarm setpoint value. Can be set between lower scale and H69 parameter. | R / W | 0 |
| H69 | 0069d (0045h) | Word | Upper limit for alarm setpoint value. Can be set between H68 parameter and upper scale. | R / W | 600 |
| H70 | 0070d (0046h) | Word | Hysteresis value for alarm. Can be set between 1 and 50 °C or °F. | R / W | 50 |
| H71 | 0071d (0047h) | Word | Output type selection for alarm. Can be set to 0 and 3. 0 = Independent alarm, 1 = Deviation alarm, 2 = Band alarm, 3 = Active alarm after in band time. | R / W | 0 |
| H72 | 0072d (0048h) | Word | Heating control duration for S1 output. Heating control is not performed when set to 0. Up to 1000 seconds can be set. An error message will be generated at the end of the time if the temperature value is not changed. | R / W | 60 |
| H73 | 0073d (0049h) | Word | Configuration registers for CH2 (Holding registers for C50 - C59 configuration coils). B15 B14 B13 B12 B11 B10 B9 B8 B7 B6 B5 B4 B3 B2 B1 B0 - - - - - C9 C8 C7 C6 C5 C4 C3 C2 C1 C0 See instructions on chapter 1.2 coil descriptions for the meaning of bits | R / W | 0302H |

ENDA ET1124A PID TEMPERATURE CONTROLLER MODBUS ADDRESS MAP

1.1 Memory Map for Thermostat Holding Registers (continue).

| Parameter Number | Holding Register Addresses Decimal (Hex) | Data Type | Data Content | Read / Write Permission | Factory defaults | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|--|-----------|---|-------------------------|------------------|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|-------|-------|
| H100 | 0100d (0064h) | Word | Thermocouple sensor, parameter selections for T3 (Set such as H0) | R / W | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H101 | 0101d (0065h) | Word | Filter coefficient for T3 input (Can be set from 1 to 100. If set to 1, digital filter will be disabled) | R / W | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H102 | 0102d (0066h) | Word | Offset value for T3 input (Adjustable between -100 and 100) | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H103 | 0103d (0067h) | Word | Temperature setpoint value for S3 output (Adjustable between H105 and H106 parameters) | R / W | 400 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H104 | 0104d (0068h) | Word | Secondary temperature setpoint value for S3 output (Adjustable between H105 and H106 parameters) | R / W | 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H105 | 0105d (0069h) | Word | Minimum setpoint value for S3 output (Adjustable between Lower scale and H106 parameters) | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H106 | 0106d (006Ah) | Word | Maximum setpoint value for S3 output (Adjustable between Upper scale and H105 parameters) | R / W | 600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H107 | 0107d (006Bh) | Word | Proportional band set value for S3 output (Adjustable between 0.0 and 100.0%) | R / W | 4.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H108 | 0108d (006Ch) | Word | Hysteresis value for S3 output (Adjustable between 1 and 50 °C/°F) | R / W | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H109 | 0109d (006Dh) | Word | Integral time value for S3 output (Adjustable between 0.0 and 100.0 minutes) | R / W | 4.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H110 | 0110d (006Eh) | Word | Derivative time value for S3 output (Adjustable between 0.00 and 25.00 minutes) | R / W | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H111 | 0111d (006Fh) | Word | Period time set value for S3 output (Adjustable between 1 and 125 seconds) | R / W | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H112 | 0112d (0070h) | Word | S3 output value at setpoint (Adjustable between 0.0% and 100.0%) | R / W | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H113 | 0113d (0071h) | Word | S3 output value at sensor failure (Adjustable between 0.0% and 100.0%) | R / W | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H114 | 0114d (0072h) | Word | Soft start time for S3 output at power-up (Adjustable between 0 and 250 minutes) | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H115 | 0115d (0073h) | Word | Manual output percentage value for S3 output (Adjustable between 0.0% and 100.0%) | R / W | 50.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H116 | 0116d (0074h) | Word | Function Control Parameter (Self tune stops if 23040d (5A00h) value is entered) (Self tune starts if 23041d (5A01h) value is entered) (if 23042d (5A02h) value is entered, CH1 parameters will return to factory values) | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H117 | 0117d (0075h) | Word | Temperature alarm setpoint value for T3 input (can be set between H118 and H119 parameter value). | R / W | 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H118 | 0118d (0076h) | Word | Lower limit for alarm setpoint value (can be set between Lower limit value and H119 parameter value) | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H119 | 0119d (0077h) | Word | Upper limit for alarm setpoint value (can be set between H118 parameter value and Upper limit value) | R / W | 600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H120 | 0120d (0078h) | Word | Hysteresis value for the alarm (can be set between 1 and 50 °C or °F) | R / W | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H121 | 0121d (0079h) | Word | Output type selection for alarm (Values can be set from 0 to 3) 0 = Independent alarm, 1 = Deviation alarm, 2 = Band alarm, 3 = Active alarm after in band time. | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H122 | 0122d (007Ah) | Word | Heating control duration for S3 output. Heating control is not performed when set to 0. Up to 1000 seconds can be set. An error message will be generated at the end of the time if the temperature value is not changed. | R / W | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H123 | 0123d (007Bh) | Word | Configuration registers for CH1 (Holding registers for C100 - C109 configuration coils). <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">B15</td><td style="border: 1px solid black; padding: 2px;">B14</td><td style="border: 1px solid black; padding: 2px;">B13</td><td style="border: 1px solid black; padding: 2px;">B12</td><td style="border: 1px solid black; padding: 2px;">B11</td><td style="border: 1px solid black; padding: 2px;">B10</td><td style="border: 1px solid black; padding: 2px;">B9</td><td style="border: 1px solid black; padding: 2px;">B8</td><td style="border: 1px solid black; padding: 2px;">B7</td><td style="border: 1px solid black; padding: 2px;">B6</td><td style="border: 1px solid black; padding: 2px;">B5</td><td style="border: 1px solid black; padding: 2px;">B4</td><td style="border: 1px solid black; padding: 2px;">B3</td><td style="border: 1px solid black; padding: 2px;">B2</td><td style="border: 1px solid black; padding: 2px;">B1</td><td style="border: 1px solid black; padding: 2px;">B0</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">C9</td><td style="border: 1px solid black; padding: 2px;">C8</td><td style="border: 1px solid black; padding: 2px;">C7</td><td style="border: 1px solid black; padding: 2px;">C6</td><td style="border: 1px solid black; padding: 2px;">C5</td><td style="border: 1px solid black; padding: 2px;">C4</td><td style="border: 1px solid black; padding: 2px;">C3</td><td style="border: 1px solid black; padding: 2px;">C2</td><td style="border: 1px solid black; padding: 2px;">C1</td><td style="border: 1px solid black; padding: 2px;">C0</td> </tr> </table> See instructions on chapter 1.2 coil descriptions for the meaning of bits | B15 | B14 | B13 | B12 | B11 | B10 | B9 | B8 | B7 | B6 | B5 | B4 | B3 | B2 | B1 | B0 | - | - | - | - | - | - | - | C9 | C8 | C7 | C6 | C5 | C4 | C3 | C2 | C1 | C0 | R / W | 0302H |
| B15 | B14 | B13 | B12 | B11 | B10 | B9 | B8 | B7 | B6 | B5 | B4 | B3 | B2 | B1 | B0 | | | | | | | | | | | | | | | | | | | | | | | |
| - | - | - | - | - | - | - | C9 | C8 | C7 | C6 | C5 | C4 | C3 | C2 | C1 | C0 | | | | | | | | | | | | | | | | | | | | | | |
| H150 | 0150d (0096h) | Word | Thermocouple sensor, parameter selections for T4 (Set such as H0) | R / W | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H151 | 0151d (0097h) | Word | Filter coefficient for T4 input (Can be set from 1 to 100. If set to 1, digital filter will be disabled) | R / W | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H152 | 0152d (0098h) | Word | Offset value for T4 input (Adjustable between -100 and 100) | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H153 | 0153d (0099h) | Word | Temperature setpoint value for S4 output (Adjustable between H155 and H156 parameters) | R / W | 400 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H154 | 0154d (009Ah) | Word | Secondary temperature setpoint value for S4 output (Adjustable between H155 and H156 parameters) | R / W | 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H155 | 0155d (009Bh) | Word | Minimum setpoint value for S4 output (Adjustable between Lower scale and H156 parameters) | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H156 | 0156d (009Ch) | Word | Maximum setpoint value for S4 output (Adjustable between Upper scale and H155 parameters) | R / W | 600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H157 | 0157d (009Dh) | Word | Proportional band set value for S4 output (Adjustable between 0.0 and 100.0%) | R / W | 4.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H158 | 0158d (009Eh) | Word | Hysteresis value for S4 output (Adjustable between 1 - 50 °C/°F) | R / W | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H159 | 0159d (009Fh) | Word | Integral time value for S4 output (Adjustable between 0.0 and 100.0 minutes) | R / W | 4.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H160 | 0160d (00A0h) | Word | Derivative time value for S4 output (Adjustable between 0.00 and 25.00 minutes) | R / W | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H161 | 0161d (00A1h) | Word | Period time set value for S4 output (Adjustable between 1 and 125 seconds) | R / W | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H162 | 0162d (00A2h) | Word | S4 output value at setpoint (Adjustable between 0.0% and 100.0%) | R / W | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H163 | 0163d (00A3h) | Word | S4 output value at sensor failure (Adjustable between 0.0% and 100.0%) | R / W | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H164 | 0164d (00A4h) | Word | Soft start time for S4 output at power-up (Adjustable between 0 and 250 minutes) | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H165 | 0165d (00A5h) | Word | Manual output percentage value for S4 output (Adjustable between 0.0% and 100.0%) | R / W | 50.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H166 | 0166d (00A6h) | Word | Function Control Parameter (Self tune stops if 23040d (5A00h) value is entered) (Self tune starts if 23041d (5A01h) value is entered) (if 23042d (5A02h) value is entered, CH4 parameters will return to factory values) | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H167 | 0167d (00A7h) | Word | Temperature alarm setpoint value for T4 input. Can be set between H168 and H169 parameters. | R / W | 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H168 | 0168d (00A8h) | Word | Lower limit for alarm setpoint value. Can be set between lower scale and H169 parameter. | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H169 | 0169d (00A9h) | Word | Upper limit for alarm setpoint value. Can be set between H168 parameter and upper scale. | R / W | 600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H170 | 0170d (00AAh) | Word | Hysteresis value for alarm. Can be set between 1 and 50 °C or °F. | R / W | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H171 | 0171d (00ABh) | Word | Output type selection for alarm. Can be set to 0 and 3. 0 = Independent alarm, 1 = Deviation alarm, 2 = Band alarm, 3 = Active alarm after in band time. | R / W | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H172 | 0172d (00ACh) | Word | Heating control duration for S4 output. Heating control is not performed when set to 0. Up to 1000 seconds can be set. An error message will be generated at the end of the time if the temperature value is not changed. | R / W | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H173 | 0173d (00ADh) | Word | Configuration registers for CH4 (Holding registers for C150 - C159 configuration coils). <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">B15</td><td style="border: 1px solid black; padding: 2px;">B14</td><td style="border: 1px solid black; padding: 2px;">B13</td><td style="border: 1px solid black; padding: 2px;">B12</td><td style="border: 1px solid black; padding: 2px;">B11</td><td style="border: 1px solid black; padding: 2px;">B10</td><td style="border: 1px solid black; padding: 2px;">B9</td><td style="border: 1px solid black; padding: 2px;">B8</td><td style="border: 1px solid black; padding: 2px;">B7</td><td style="border: 1px solid black; padding: 2px;">B6</td><td style="border: 1px solid black; padding: 2px;">B5</td><td style="border: 1px solid black; padding: 2px;">B4</td><td style="border: 1px solid black; padding: 2px;">B3</td><td style="border: 1px solid black; padding: 2px;">B2</td><td style="border: 1px solid black; padding: 2px;">B1</td><td style="border: 1px solid black; padding: 2px;">B0</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">-</td><td style="border: 1px solid black; padding: 2px;">C9</td><td style="border: 1px solid black; padding: 2px;">C8</td><td style="border: 1px solid black; padding: 2px;">C7</td><td style="border: 1px solid black; padding: 2px;">C6</td><td style="border: 1px solid black; padding: 2px;">C5</td><td style="border: 1px solid black; padding: 2px;">C4</td><td style="border: 1px solid black; padding: 2px;">C3</td><td style="border: 1px solid black; padding: 2px;">C2</td><td style="border: 1px solid black; padding: 2px;">C1</td><td style="border: 1px solid black; padding: 2px;">C0</td> </tr> </table> See instructions on chapter 1.2 coil descriptions for the meaning of bits | B15 | B14 | B13 | B12 | B11 | B10 | B9 | B8 | B7 | B6 | B5 | B4 | B3 | B2 | B1 | B0 | - | - | - | - | - | - | - | C9 | C8 | C7 | C6 | C5 | C4 | C3 | C2 | C1 | C0 | R / W | 0302H |
| B15 | B14 | B13 | B12 | B11 | B10 | B9 | B8 | B7 | B6 | B5 | B4 | B3 | B2 | B1 | B0 | | | | | | | | | | | | | | | | | | | | | | | |
| - | - | - | - | - | - | - | C9 | C8 | C7 | C6 | C5 | C4 | C3 | C2 | C1 | C0 | | | | | | | | | | | | | | | | | | | | | | |
| H200 | 0200d (00C8h) | Word | Modbus communication speed (Baudrate). 0 = 2400bps, 1 = 4800bps, 2 = 9600bps, 3 = 19200bps, 4 = 38400bps, 5 = 57600bps, 6 = 115200bps. ATTENTION!! User must set Parity = None, Stop Bit = 1 and Data Length = 8 on the device that provides the Modbus connection. These settings are set as factory default in ET1124A and are not possible to change by the user. | R / W | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H201 | 0201d (00C9h) | Word | Elapse time duration for switching off the outputs when the RS485 signal is interrupted. Can be set between 2 and 9999 seconds. Attention : C11 parameter must be set to 1 for enabling this timer. | R / W | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

General Control Parameters

CH4 Output and Input Control Parameters

CH3 Output and Input Control Parameters

ENDA ET1124A PID TEMPERATURE CONTROLLER MODBUS ADDRESS MAP

1.2 Memory Map for Control Coils

| | Parameter Number | Coil Addresses Decimal (Hex) | Data Type | Data Content | Read / Write Permission | Factory defaults |
|---------------------|------------------|------------------------------|---|--|-------------------------|------------------|
| CH1 Coil Parameters | C0 | 0000d (0000h) | Bit | S1 output configuration (0 = Heating , 1 = Cooling) | R / W | 0 |
| | C1 | 0001d (0001h) | Bit | S1 output controlling selection (0 = Monitoring (Outputs are OFF), 1 = S1 output is active) | R / W | 1 |
| | C2 | 0002d (0002h) | Bit | Setpoint selection for S1. If C2 is set to 0, its performed according to H3, if C2 is set to 1, performed to the H4 parameter. | R / W | 0 |
| | C3 | 0003d (0003h) | Bit | Manual control bit for S1output. (C3 = 0 automatic control, C = 1 (According to the output percentage in the H15 parameter is performed to S1 output when the C3 parameter is set to 1). | R / W | 0 |
| | C4 | 0004d (0004h) | Bit | Self-tune control selection (C4 = 0 selftune stops, C4 = 1 selftune starts). | R / W | 0 |
| | C5 | 0005d (0005h) | Bit | S1 output format selection bit in case of T1 probe error (if C5 = 0, the output is performed according to the percentage value in H13 parameter in case of T1 error, according to the last proportional output value in the set value if C5 = 1). | R / W | 0 |
| | C6 | 0006d (0006h) | Bit | Decimal point selection for T1 sensor (0 = 0, 1 = 0.0) | R / W | 0 |
| | C7 | 0007d (0007h) | Bit | Temperature unit selection for T1 sensor (0 = °C, 1 = °F) | R / W | 0 |
| | C8 | 0008d (0008h) | Bit | Alarm condition (0 = The alarm is ON at the lower setpoint. ,1 = The alarm is ON at the upper setpoint. | R / W | 0 |
| | C9 | 0009d (0009h) | Bit | Alarm output status at probe failure. (0 = Off , 1 = On) | R / W | 0 |
| C10 | 0010d (000Ah) | Bit | Lost connection control for RS485 (0 = Off , 1 = On) | R / W | 0 | |
| CH2 Coil Parameters | C50 | 0050d (0032h) | Bit | S2 output configuration (0 = Heating , 1 = Cooling) | R / W | 0 |
| | C51 | 0051d (0033h) | Bit | S2 output controlling selection (0 = Monitoring (Outputs are OFF), 1 = S2 output is active) | R / W | 1 |
| | C52 | 0052d (0034h) | Bit | Setpoint selection for S2. If C52 is set to 0, its performed according to H53, if C52 is set to 1, performed to the H54 parameter. | R / W | 0 |
| | C53 | 0053d (0035h) | Bit | Manual control bit for S2 output. (C53 = 0 automatic control, C53 = 1 (According to the output percentage in the H65 parameter is performed to S2 output when the C53 parameter is set to 1). | R / W | 0 |
| | C54 | 0054d (0036h) | Bit | Self-tune control selection (C54 = 0 selftune stops, C54 = 1 selftune starts). | R / W | 0 |
| | C55 | 0055d (0037h) | Bit | S2 output format selection bit in case of T2 probe error (if C55 = 0, the output is performed according to the percentage value in H63 parameter in case of T2 error, according to the last proportional output value in the set value if C55 = 1). | R / W | 0 |
| | C56 | 0056d (0038h) | Bit | Decimal point selection for T2 sensor (0 = 0, 1 = 0.0) | R / W | 0 |
| | C57 | 0057d (0039h) | Bit | Temperature unit selection for T2 sensor (0 = °C, 1 = °F) | R / W | 0 |
| | C58 | 0058d (003Ah) | Bit | Alarm condition (0 = The alarm is ON at the lower setpoint. ,1 = The alarm is ON at the upper setpoint. | R / W | 0 |
| C59 | 0059d (003Bh) | Bit | Alarm output status at probe failure. (0 = Off , 1 = On) | R / W | 0 | |
| CH3 Coil Parameters | C100 | 0100d (0064h) | Bit | S3 output configuration (0 = Heating , 1 = Cooling) | R / W | 0 |
| | C101 | 0101d (0065h) | Bit | S3 output controlling selection (0 = Monitoring (Outputs are OFF), 1 = S3 output is active) | R / W | 1 |
| | C102 | 0102d (0066h) | Bit | Setpoint selection for S3. If C102 is set to 0, its performed according to H103, if C102 is set to 1, performed to the H104 parameter. | R / W | 0 |
| | C103 | 0103d (0067h) | Bit | Manual control bit for S3 output. (C103 = 0 automatic control, C53 = 1 (According to the output percentage in the H115 parameter is performed to S3 output when the C103 parameter is set to 1). | R / W | 0 |
| | C104 | 0104d (0068h) | Bit | Self-tune control selection (C104 = 0 selftune stops, C104 = 1 selftune starts). | R / W | 0 |
| | C105 | 0105d (0069h) | Bit | S3 output format selection bit in case of T3 probe error (if C105 = 0, the output is performed according to the percentage value in H113 parameter in case of T3 error, according to the last proportional output value in the set value if C105 = 1). | R / W | 0 |
| | C106 | 0106d (006Ah) | Bit | Decimal point selection for T3 sensor (0 = 0, 1 = 0.0) | R / W | 0 |
| | C107 | 0107d (006Bh) | Bit | Temperature unit selection for T3 sensor (0 = °C, 1 = °F) | R / W | 0 |
| | C108 | 0108d (006Ch) | Bit | Alarm condition (0 = The alarm is ON at the lower setpoint. ,1 = The alarm is ON at the upper setpoint. | R / W | 0 |
| C109 | 0109d (006Dh) | Bit | Alarm output status at probe failure. (0 = Off , 1 = On) | R / W | 0 | |
| CH4 Coil Parameters | C150 | 0150d (0096h) | Bit | S4 output configuration (0 = Heating , 1 = Cooling) | R / W | 0 |
| | C151 | 0151d (0097h) | Bit | S4 output controlling selection (0 = Monitoring (Outputs are OFF), 1 = S4 output is active) | R / W | 1 |
| | C152 | 0152d (0098h) | Bit | Setpoint selection for S4. If C152 is set to 0, its performed according to H153, if C152 is set to 1, performed to the H154 parameter. | R / W | 0 |
| | C153 | 0153d (0099h) | Bit | Manual control bit for S4 output. (C153 = 0 automatic control, C153 = 1 (According to the output percentage in the H165 parameter is performed to S4 output when the C153 parameter is set to 1). | R / W | 0 |
| | C154 | 0154d (009Ah) | Bit | Self-tune control selection (C154 = 0 selftune stops, C154 = 1 selftune starts). | R / W | 0 |
| | C155 | 0155d (009Bh) | Bit | S4 output format selection bit in case of T4 probe error (if C155 = 0, the output is performed according to the percentage value in H163 parameter in case of T4 error, according to the last proportional output value in the set value if C155 = 1). | R / W | 0 |
| | C156 | 0156d (009Ch) | Bit | Decimal point selection for T4 sensor (0 = 0, 1 = 0.0) | R / W | 0 |
| | C157 | 0157d (009Dh) | Bit | Temperature unit selection for T4 sensor (0 = °C, 1 = °F) | R / W | 0 |
| | C158 | 0158d (009Eh) | Bit | Alarm condition (0 = The alarm is ON at the lower setpoint. ,1 = The alarm is ON at the upper setpoint. | R / W | 0 |
| C159 | 0159d (009Fh) | Bit | Alarm output status at probe failure. (0 = Off , 1 = On) | R / W | 0 | |

1.3 Memory Map for Output Status Indicator Bits

| | Parameter Number | Discrete Input Addresses | Data Type | Data Content | Read / Write Permission |
|-----|------------------|--------------------------|-----------|---|-------------------------|
| CH1 | D0 | 0000d (0000h) | Bit | S1 Control output status (0 = OFF ,1 = ON) | Read Only |
| | D1 | 0001d (0001h) | Bit | Alarm status for T1 input. (0 = OFF ,1 = ON) | Read Only |
| | D2 | 0002d (0002h) | Bit | Heating error status for S1 output. (0 = No error ,1 = The heating operation can not perform) | Read Only |
| CH2 | D50 | 0050d (0032h) | Bit | S2 Control output status (0 = OFF ,1 = ON) | Read Only |
| | D51 | 0051d (0033h) | Bit | Alarm status for T2 input. (0 = OFF ,1 = ON) | Read Only |
| | D52 | 0052d (0034h) | Bit | Heating error status for S2 output. (0 = No error ,1 = The heating operation can not perform) | Read Only |
| CH3 | D100 | 0100d (0064h) | Bit | S3 Control output status (0 = OFF ,1 = ON) | Read Only |
| | D101 | 0101d (0065h) | Bit | Alarm status for T3 input. (0 = OFF ,1 = ON) | Read Only |
| | D102 | 0102d (0066h) | Bit | Heating error status for S3 output. (0 = No error ,1 = The heating operation can not perform) | Read Only |
| CH4 | D150 | 0150d (0096h) | Bit | S4 Control output status (0 = OFF ,1 = ON) | Read Only |
| | D151 | 0151d (0097h) | Bit | Alarm status for T4 input. (0 = OFF ,1 = ON) | Read Only |
| | D152 | 0152d (0098h) | Bit | Heating error status for S4 output. (0 = No error ,1 = The heating operation can not perform) | Read Only |

1.4 Memory Map for Software Revision Input Registers

| | | | | |
|-------------------|----------------|--------|---|-----------|
| Software Revision | 65200d (FEB0h) | 8 Word | Software name and update is read in ASCII format and as 8 word. Format yy aa gg.SS dd ss i.e : RD.21 08 20.07 09 37 | Read Only |
|-------------------|----------------|--------|---|-----------|

Memory Format :

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | |
| D | R | . | 0 | 1 | 2 | 8 | . | 0 | 7 | 0 | 9 | 0 | 7 | 3 |

NOTE : To view each word correctly by changing the byte sequences should be displayed as ASCII TEXT

1.5 Memory Map for Input Registers

| | Parameter Number | Input Register Addresses Decimal (Hex) | Data Type | Data Content | Read / Write Permission |
|--------------------|------------------|--|-----------|---|-------------------------|
| CH1 Input Register | I0 | 0000d (0000h) | Word | Measured temperature value for T1 input (decimal point, if the C6 parameter is set to 1). | Read Only |
| | I1 | 0001d (0001h) | Word | Current temperature setpoint value for S1 output. | Read Only |
| | I2 | 0002d (0002h) | Word | Output power percent for S1 output. | Read Only |
| | I3 | 0003d (0003h) | Word | Error codes for T1 input : 0 = No error, 1 = Short circuit, 2 = Lower scale error, 3 = Upper scale error, 4 = No connection, 5 = Output power error. | Read Only |
| | I4 | 0004d (0004h) | Word | Selftune status codes for S1 : 0 = No error, 1 = Initial temperature is higher than 60% setpoint value, 2 = PID parameters calculating, 3 = Power set parameters calculating. | Read Only |
| CH2 Input Register | I50 | 0050d (0032h) | Word | Measured temperature value for T2 input (decimal point, if the C56 parameter is set to 1). | Read Only |
| | I51 | 0051d (0033h) | Word | Current temperature setpoint value for S2 output. | Read Only |
| | I52 | 0052d (0034h) | Word | Output power percent for S2 output. | Read Only |
| | I53 | 0053d (0035h) | Word | Error codes for T2 input (See T1 for error codes). | Read Only |
| | I54 | 0054d (0036h) | Word | Selftune status codes for S2 (See S1 for codes). | Read Only |
| CH3 Input Register | I100 | 0100d (0064h) | Word | Measured temperature value for T3 input (decimal point, if the C106 parameter is set to 1). | Read Only |
| | I101 | 0101d (0065h) | Word | Current temperature setpoint value for S3 output. | Read Only |
| | I102 | 0102d (0066h) | Word | Output power percent for S3 output. | Read Only |
| | I103 | 0103d (0067h) | Word | Error codes for T3 input (See T1 for error codes). | Read Only |
| | I104 | 0104d (0068h) | Word | Selftune status codes for S3 (See S1 for codes). | Read Only |
| CH4 Input Register | I150 | 0150d (0096h) | Word | Measured temperature value for T4 input (decimal point, if the C156 parameter is set to 1). | Read Only |
| | I151 | 0151d (0097h) | Word | Current temperature setpoint value for S4 output. | Read Only |
| | I152 | 0152d (0098h) | Word | Output power percent for S4 output. | Read Only |
| | I153 | 0153d (0099h) | Word | Error codes for T4 input (See T1 for error codes). | Read Only |
| | I154 | 0154d (009Ah) | Word | Selftune status codes for S4 (See S1 for codes). | Read Only |
| | I200 | 0200d (00C8h) | Word | Modbus address for ET1124A (with active DIP switch address query) | Read Only |

1.6 DIP Switch Settings

Default settings and Baud Rate Settings.

| DIPSW Value | Description |
|-------------|---|
| 0 | Default Set Settings. Default settings is performed when all the DIP Switch positions are set to 0 (OFF). |
| 248 | Baud rate 2400Bps |
| 249 | Baud rate 4800Bps |
| 250 | Baud rate 9600Bps |
| 251 | Baud rate 19200Bps |
| 252 | Baud rate 38400Bps |
| 253 | Baud rate 57600Bps |
| 254 | Baud rate 115200Bps |

When required to return to the factory values or to adjust the modbus communication speed, at first, the DIP switch value should be adjusted according to the numerical value corresponding to the operation in the adjacent table (Please See Note1). DIP switch value is set to required modbus address value and DIP switch is left in this setting position (Please see Note2).



NOTE1 :
While adjusting the Modbus communication speed setting, at first, switch 8 must be set to OFF in order to store the setting correctly, then the switch values from 1 to 7 of the baudrate switch value to be adjusted must be set and finally the 8th switch must be turned ON.



NOTE2 :
When setting the device address at first, the 8th switch should be turned off and then the switch values from 1 to 7 of the address to be adjusted should be set. If the 8th switch should be ON at the selected address, the 8th switch should be set to ON at the end of the procedure finally.

DIP Switch Default and Baud rate Samples

| | | |
|--|---|---|
| <p>Default settings performing.</p> <p>0</p> | <p>Baud rate adjusting to 19200bps.</p> <p>251 = 128+64+32+16+8+2+1</p> | <p>Baud rate adjusting to 57600bps.</p> <p>253 = 128+64+32+16+8+4+1</p> |
|--|---|---|

Device Addressing Samples

| | | | |
|---|---|---|---|
| <p>Device address adjusting to 1</p> <p>1 = 1</p> | <p>Device address adjusting to 13</p> <p>13 = 8+4+1</p> | <p>Device address adjusting to 15</p> <p>15 = 8+4+2+1</p> | <p>Device address adjusting to 55</p> <p>55 = 32+16+4+2+1</p> |
|---|---|---|---|

2. Modbus Error Messages

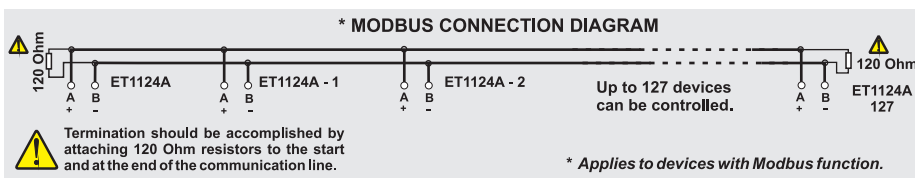
Modbus protocol has two types error, communication error and operating error. Reason of the communication error is data corruption in transmission. Parity and CRC control should be done to prevent communication error. Receiver side checks parity and CRC of the data. If they are wrong, the message will be ignored. If format of the data is true but function doesn't perform for any reason, operating error occurs. ET1124A realizes error and sends error message. Most significant bit of function is changed '1' to indicate error in error message by ET1124A. Error code is sent in data section. ET1124A realizes error type via this message.

Modbus Error Codes

| Error Code | Name | Meaning |
|------------|----------------------|--|
| {01} | ILLEGAL FUNCTION | The function code received in the query is not an allowable action for the ET1124A. If a Poll Program Complete command was issued, this code indicates that no program function preceded it. |
| {02} | ILLEGAL DATA ADDRESS | The data address received in the query is not an allowable address for ET1124A. |
| {03} | ILLEGAL DATA VALUE | A value contained in the query data field is not an allowable value for the ET1124A. |

Structure of command message (Byte Format)

| | |
|-----------------------------|-----------|
| Device Address | (0A)h |
| Function Code | (01)h |
| Beginning address of coils. | MSB (04)h |
| | LSB (A1)h |
| Number of coils (N) | MSB (00)h |
| | LSB (01)h |
| CRC DATA | LSB (AC)h |
| | MSB (63)h |



As you see in command message, coil information of (4A1)h = 1185 is required but there isn't any coil with 1185 address. Therefore error code with number (02) (Illegal Data Address) sends.

Message sample ; Structure of response message (Byte Format)

| | |
|----------------|-----------|
| Device Address | (0A)h |
| Function Code | (81)h |
| Error Code | (02)h |
| CRC DATA | LSB (B0)h |
| | MSB (53)h |