EMKO

EPLC9600-PID QUADRO(96x96 1/4 DIN) 4 Channel PID Controller

CE EAC

EPLC9600-PID QUADRO 96 x 96 DIN 1/4 4 Channel PID Controller

- 128 x 64 Graphical LCD display
- 4 Thermocouple (J, K, L, R or S type) sensor inputs
- Configurable P, PI, PD and PID control forms
- Auto-Tuning and Self-Tuning (automatic calculations of PID parameters)
- Relay or (pnp "source") transistor outputs
- Sensor error detection
- Programmable heating and cooling for PID control outputs
- Soft-Start (Ramp action during power on) specification
- ECO and SLEEP mode selection
  (mode can be activating automatically according to mode control parameter which can be adjust for each day of week or via front panel buttons or via digital inputs.)
- Adjustable temperature offset for each channel
- 3 Different alarm types for each channel
  (High, Low and Band Alarms)
- User defined channel labels
- Operating with Real Time Clock (RTC)
- ModBus RTU communication protocol
  (RS-232, RS-485 and Ethernet communication)
- Data Logging to USB Flash Memory
- Adjustable data logging time interval
- Password protection for programming mode

ABOUT INSTRUCTION MANUAL

Instruction manual of EPLC9600-PID QUADRO consists of two main sections. Explanation of these sections are below. Also, there are other sections which include order information and technical specifications of the device. All titles and page numbers in instruction manual are in "**CONTENTS**" section. User can reach to any title with section number.

Installation:

In this section, physical dimensions of the device, panel mounting, electrical wiring, physical and electrical installation of the device to the system are explained.

Operation and Parameters:

In this section user interface of the device, accessing to the parameters, description of the parameters are explained.

Also in these sections, there are warnings to prevent serious injury while doing the physical and electrical mounting or using the device.

Explanation of the symbols which are used in these sections are given below.

This symbol is used for safety warnings. User must pay attention to these warnings.

This symbol is used to determine the dangerous situations as a result of an electric shock. User must pay attention to these warnings definitely.

This symbol is used to determine the important notes about functions and usage of the device.

CONTENTS

EU DECLARATION OF CONFORMITY

Manufacturer's Name : EMKO ELEKTRONIK A.S.
Manufacturer's Address : DOSAB, Karanfil Sk., No:6,
16369 Bursa, TURKEY

The manufacturer hereby declares that the product:

Product Name	**: PID QUADRO (4 Channel PID Controller)**
Type Number	**: EPLC9600**
Product Category	**: Electrical equipment for measurement, control and laboratory use**

Conforms to the following directives :

2006 / 95 / EC The Low Voltage Directive

2004 / 108 / EC The Electromagnetic Compatibility Directive

has been designed and manufactured to the following specifications:

EN 61000-6-4:2007 EMC Generic Emission Standard for Industrial Environments

EN 61000-6-2:2005 EMC Generic Immunity Standard for Industrial Environments

EN 61010-1:2001 Safety Requirements for electrical equipment for measurement, control and laboratory use

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When and Where Issued

04th August 2011

Bursa-TURKEY

Authorized Signature

Name : Serpil YAKIN

Position : Quality Manager

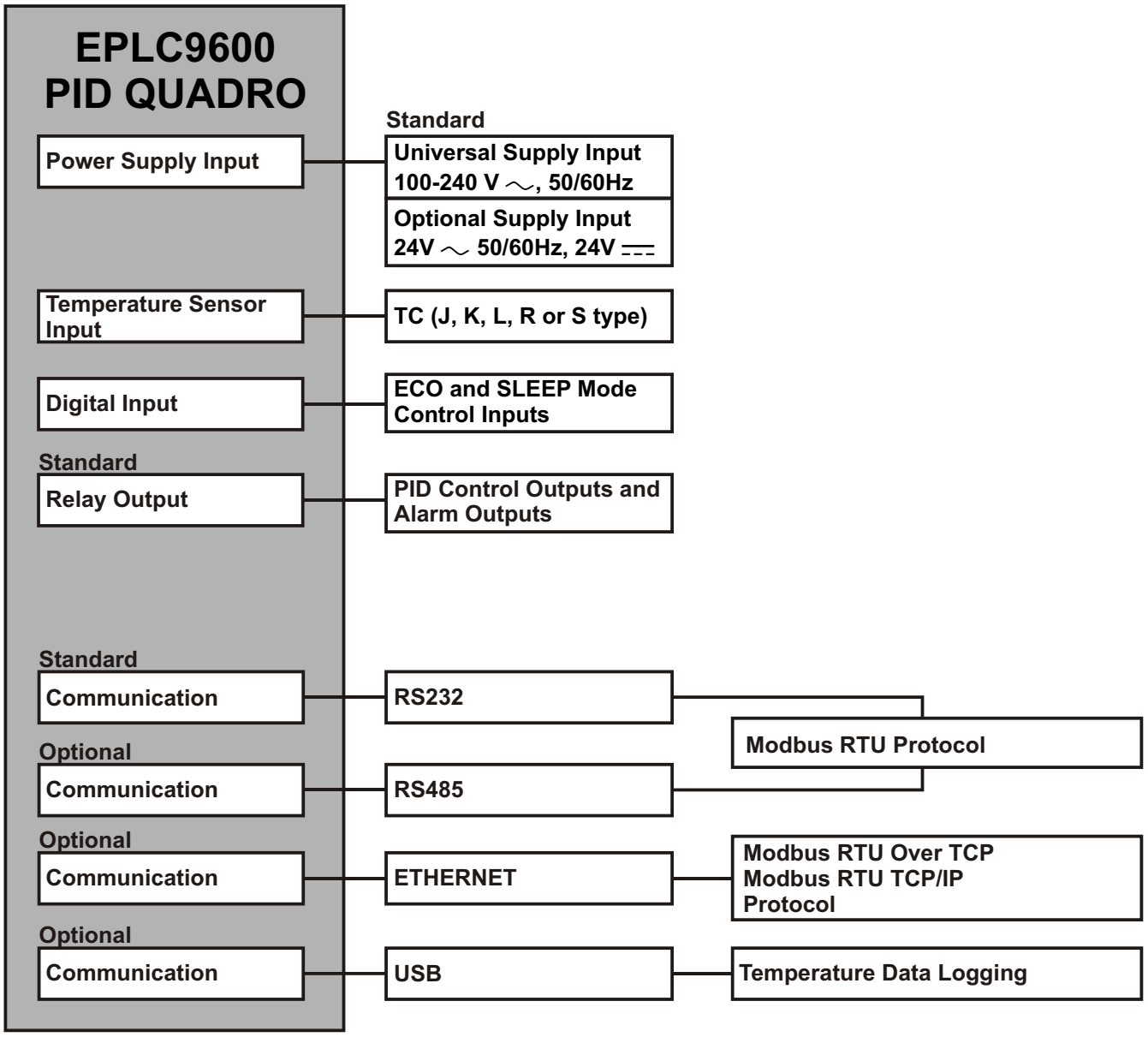
1.Preface

EPLC9600-PID QUADRO series 4 channel PID controller devices are designed for measuring, controlling and logging temperatures of 4 different area. They can be used in many applications with their TC process input, multifunction PID control outputs, alarm outputs, selectable alarm functions, RS-232 / RS-485 / Ethernet / USB communications.

Some application fields and applications which they are used are below:

Application Fields	**Applications**
Glass	Heating
Plastic	Baking Ovens
Petro-Chemistry	Incubators
Textile	Storages
Automative	Storages
Machine production industries	etc..
etc...	

1.1 General Specifications



1.2 Ordering Information

EPLC9600-PID QUADRO (96 x 96 1/4 DIN)	A	.	B	C	D	E
		·	R	2		

A	Supply Voltage
1	100...240V ⏦ (- %15;+%10) 50/60Hz
2	24V⏦(-%15;+%10) 50/60Hz 24V⎓(-%15;+%10)
9	Customer

B	Outputs
R	10 Relay outputs with 2 common for each NO contact 5A max. (5A@250V at resistive load) for each Common contact 15A max (15A@250V at resistive load)

C	Standard Serial Communication
2	RS-232 (up to 115200 baudrate, “No isolation”)

D	Optional Communication-1
0	None
4	RS-485 (up to 115200 baudrate, “500VAC isolation”)
E	ETHERNET (10Mbit/s, “1500VAC isolation”)

E	Optional Communication-2
0	None
U	USB (USB2.0 “for temperature data logging”)

All order information of EPLC9600-PID QUADRO are given on the table at left. User may form appropriate device configuration from information and codes that at the table and convert it to the ordering codes.

Firstly, supply voltage then other spesifications must be deteermined. Please fill the order code blanks according to your needs.

Please contact us, if your needs are out of the standards.

Table-1

Input Type(TC)	Scale(°C)
J, Fe CuNi IEC584.1(ITS90)	-100°C,900°C
K, NiCr Ni IEC584.1(ITS90)	-100°C,1300°C
L, Fe Const DIN43710	-100°C,850°C
R, Pt13%Rh Pt IEC584.1(ITS90)	0°C,1700°C
S, Pt10%Rh Pt IEC584.1(ITS90)	0°C,1700°C

1.3 Warranty

EMKO Elektronik warrants that the equipment delivered is free from defects in material and workmanship. This warranty is provided for a period of two years. The warranty period starts from the delivery date. This warranty is in force if duty and responsibilities which are determined in warranty document and instruction manual performs by the customer completely.

1.4 Maintenance

Repairs should only be performed by trained and specialized personnel. Cut power to the device before accessing internal parts.
Do not clean the case with hydrocarbon-based solvents (Petrol, Trichlorethylene etc.). Use of these solvents can reduce the mechanical reliability of the device. Use a cloth dampened in ethyl alcohol or water to clean the external plastic case.

2.Installation

Before beginning installation of this product, please read the instruction manual and warnings below carefully.

In package ,
- One piece unit
- Two pieces mounting clamps
- One piece instruction manual

A visual inspection of this product for possible damage occured during shipment is recommended before installation. It is your responsibility to ensure that qualified mechanical and electrical technicians install this product.

If there is danger of serious accident resulting from a failure or defect in this unit, power off the system and separate the electrical connection of the device from the system.

The unit is normally supplied without a power supply switch or a fuse. Use power switch and fuse as required.

Be sure to use the rated power supply voltage to protect the unit against damage and to prevent failure.

Keep the power off until all of the wiring is completed so that electric shock and trouble with the unit can be prevented.

Never attempt to disassemble, modify or repair this unit. Tampering with the unit may results in malfunction, electric shock or fire.

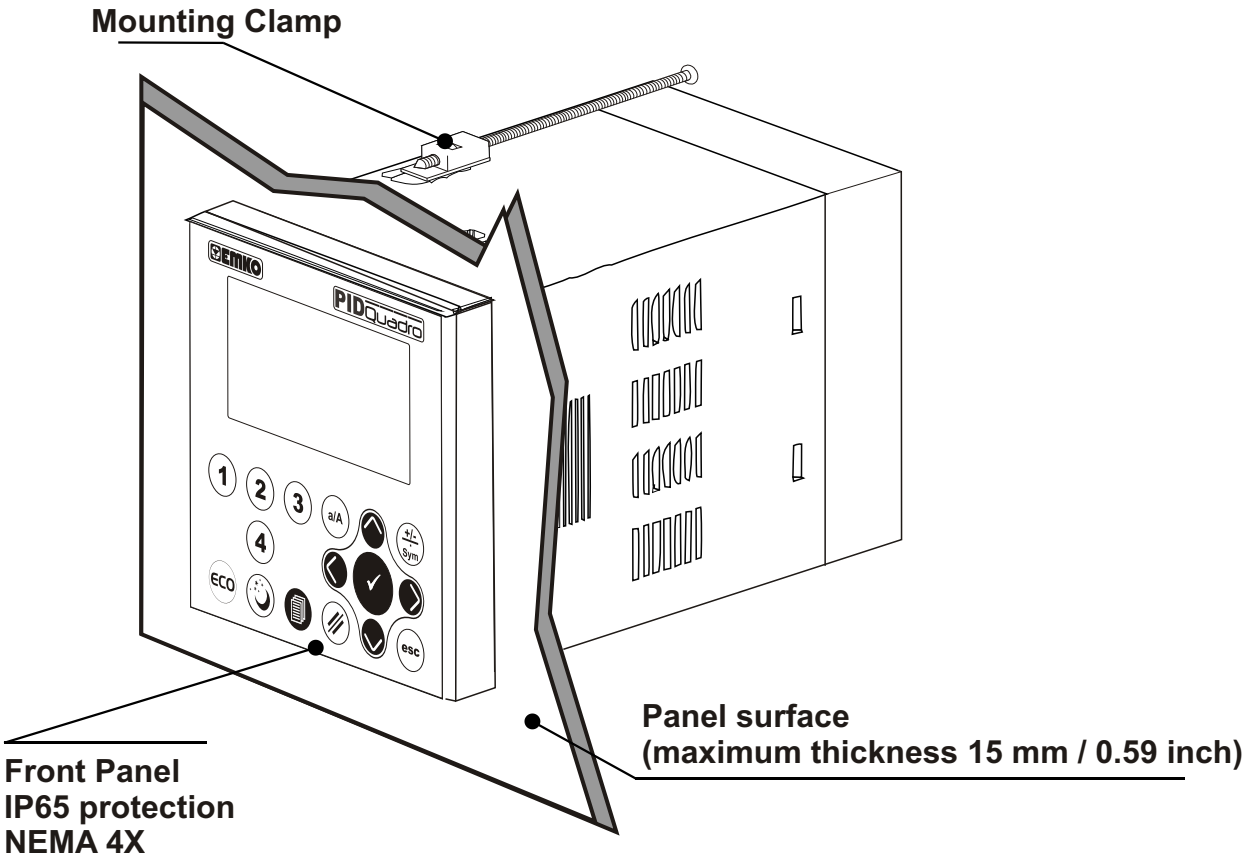
Do not use the unit in combustible or explosive gaseous atmospheres.

During the equipment is putted in hole on the metal panel while mechanical installation some metal burrs can cause injury on hands, you must be careful.

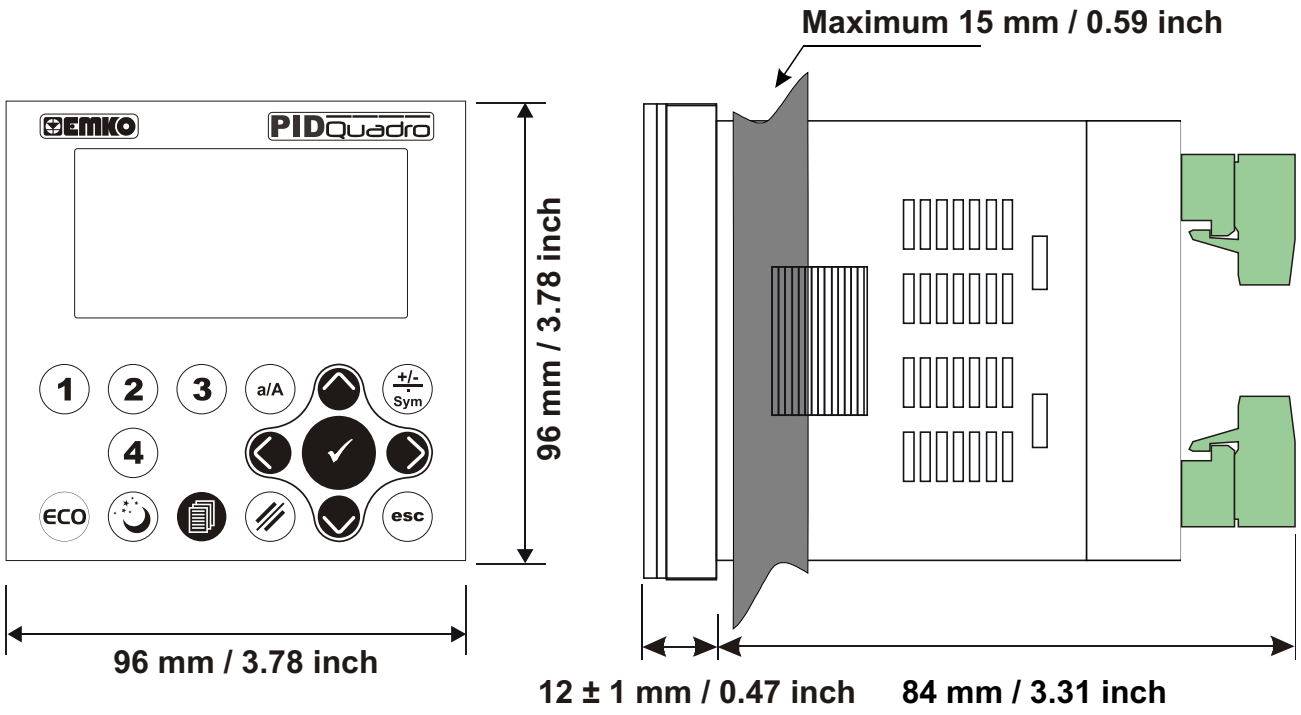
Montage of the product on a system must be done with it's fixing clamps. Do not do the montage of the device with inappropriate fixing clamp. Be sure that device will not fall while doing the montage.

It is your responsibility if this equipment is used in a manner not specified in this instruction manual.

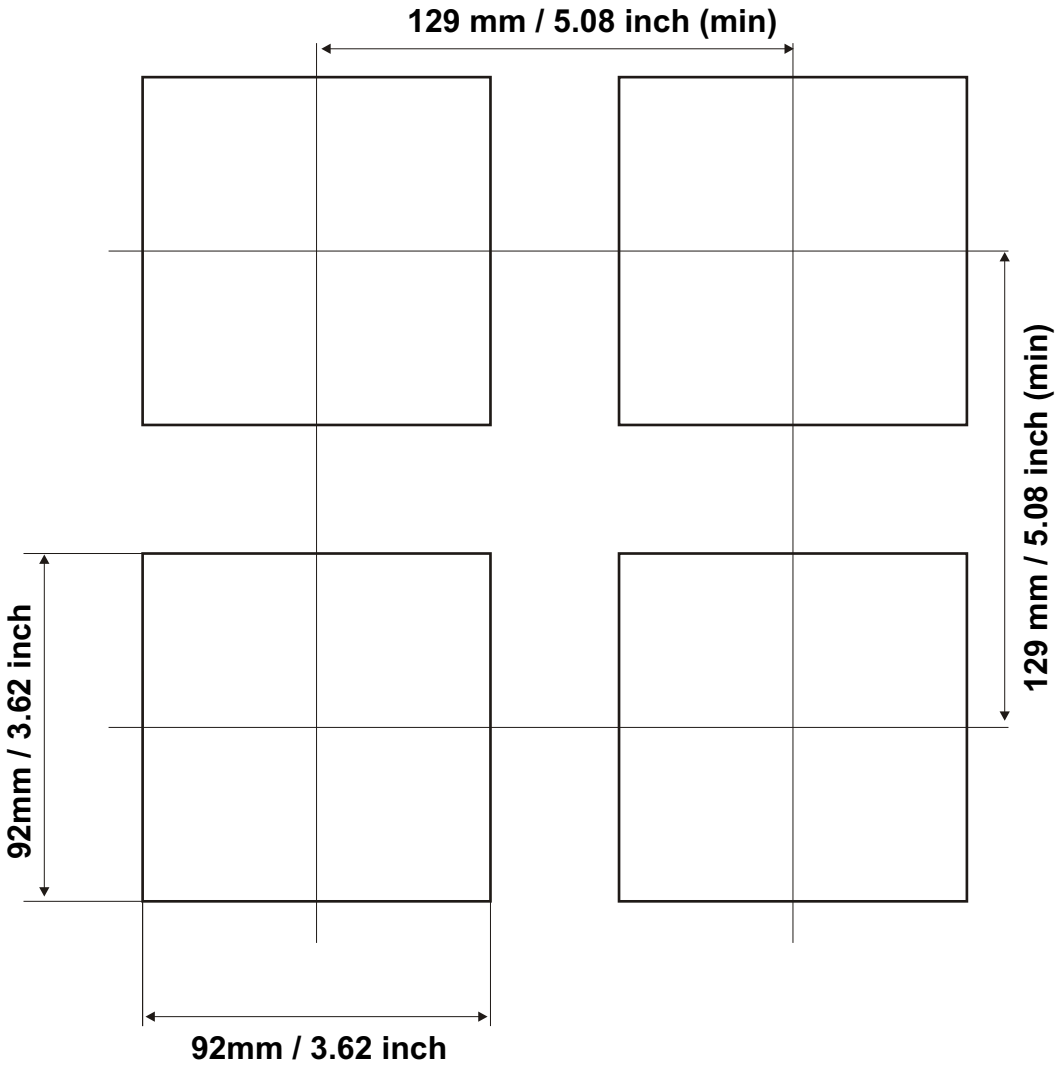
2.1 General Description



2.2 Front View and Dimensions of EPLC9600-PID QUADRO



2.3 Panel Cut-Out



2.4 Environmental Ratings

Operating Conditions

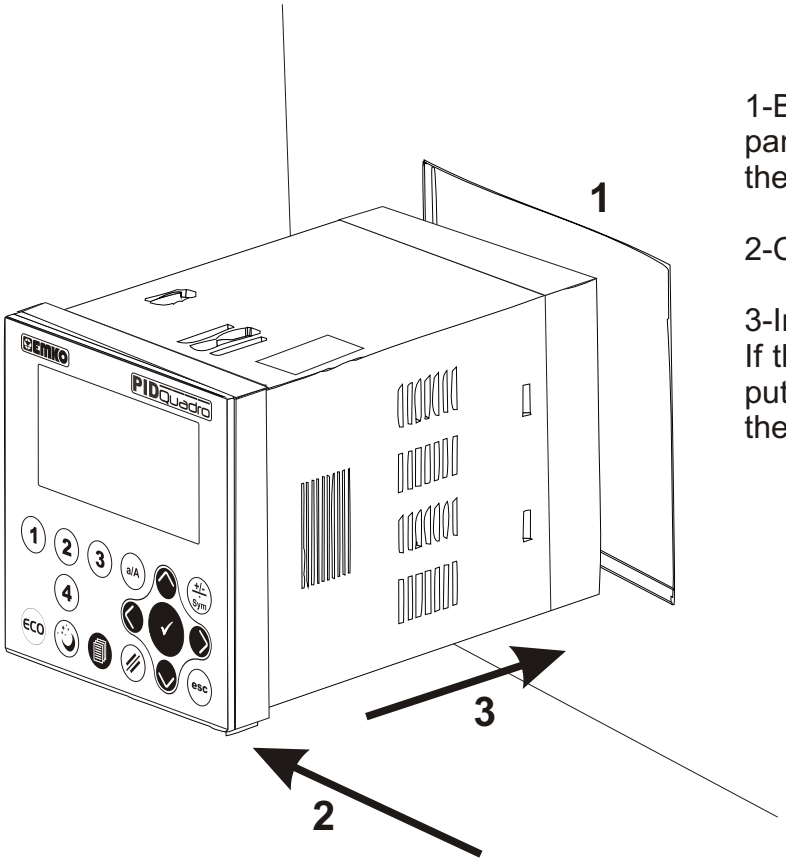
Operating Temperature : 0 to 50 °C

Max. Operating Humidity : 90% Rh (non-condensing)

Altitude : Up to 2000m.

Forbidden Conditions:
Corrosive atmosphere
Explosive atmosphere
Home applications (The unit is only for industrial applications)

2.5 Panel Mounting



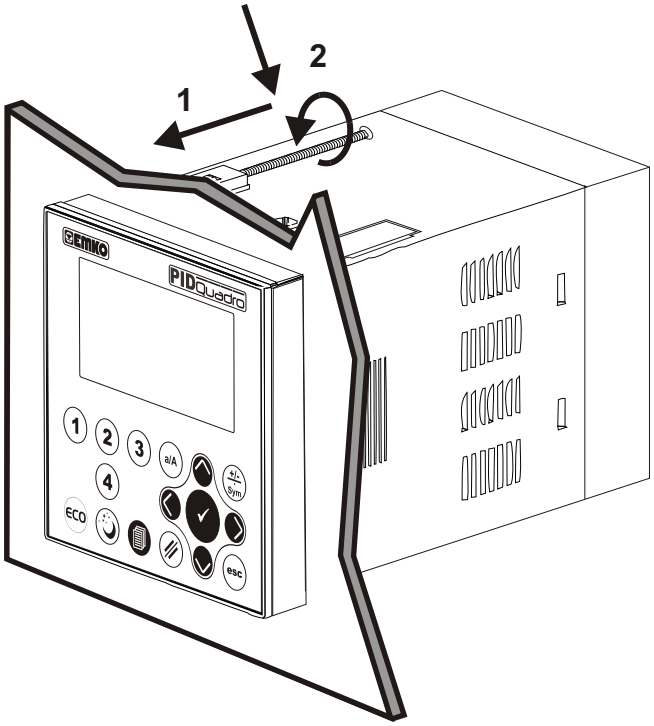
1-Before mounting the device in your panel, make sure that the cut-out is of the right size.

2-Check front panel gasket position

3-Insert the device through the cut-out. If the mounting clamps are on the unit, put out them before inserting the unit to the panel.

During installation into a metal panel, care should be taken to avoid injury from metal burrs which might be present. The equipment can loosen from vibration and become dislodged if installation parts are not properly tightened. These precautions for the safety of the person who does the panel mounting.

2.6 Installation Fixing Clamp



The unit is designed for panel mounting.

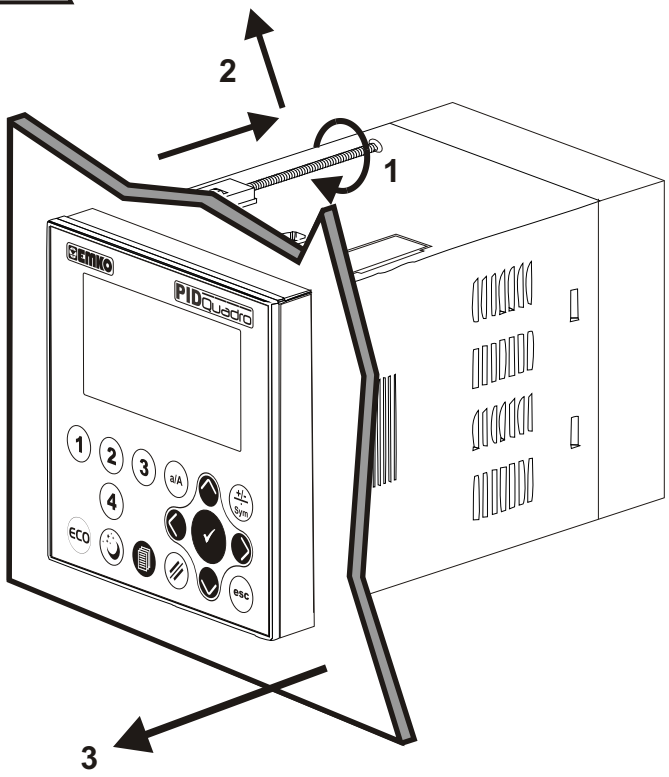
1-Insert the unit in the panel cut-out from the front side.

2- Insert the mounting clamps to the holes that located top and bottom sides of device and screw up the fixing screws until the unit completely immobile within the panel

Montage of the unit to a system must be done with it's own fixing clamps. Do not do the montage of the device with inappropriate fixing clamps. Be sure that device will not fall while doing the montage.

2.7 Removing from the Panel

Before starting to remove the unit from panel, power off the unit and the related system.



1-Loosen the screws.

2-Pull mounting clamps from top and bottom fixing sockets.

3-Pull the unit through the front side of the panel

3.Electrical Wirings

You must ensure that the device is correctly configured for your application. Incorrect configuration could result in damage to the process being controlled, and/or personal injury. It is your responsibility, as the installer, to ensure that the configuration is correct.
Device parameters has factory default values. These parameters must be set according to the system's needs.

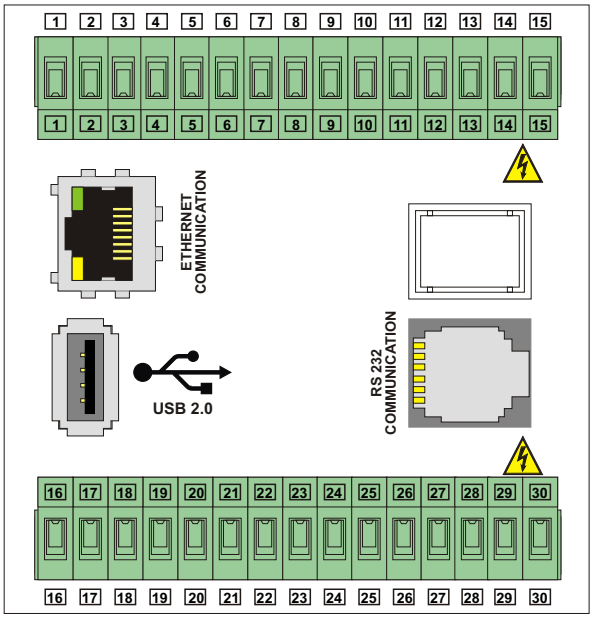
Only qualified personnel and technicians should work on this equipment. This equipment contains internal circuits with voltage dangerous to human life. There is severe danger for human life in the case of unauthorized intervention.

Be sure to use the rated power supply voltage to protect the unit against damage and to prevent failure.

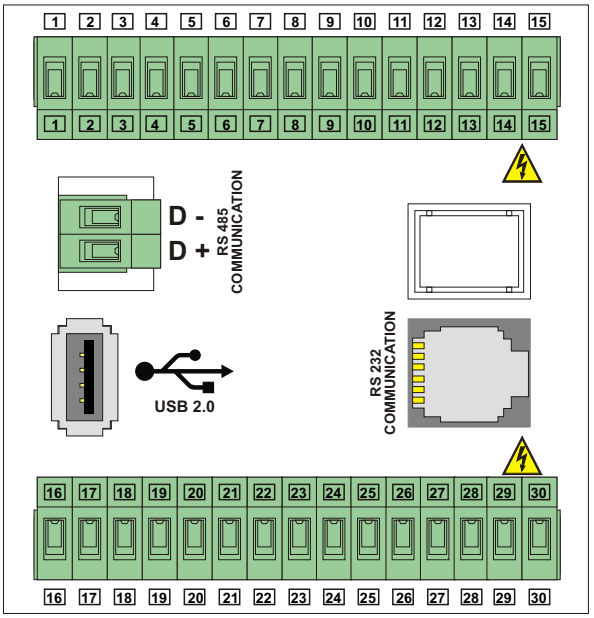
Keep the power off until all of the wiring is completed so that electric shock and trouble with the unit can be prevented.

3.1 Terminal Layout and Connection Instructions

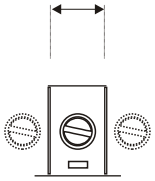
Terminal layout for ethernet communication



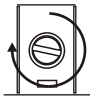
Terminal layout for RS485 communication



Max. 2.5mm / 0.098 inch
Wire Size:
18AWG/1mm²
Solid /Stranded



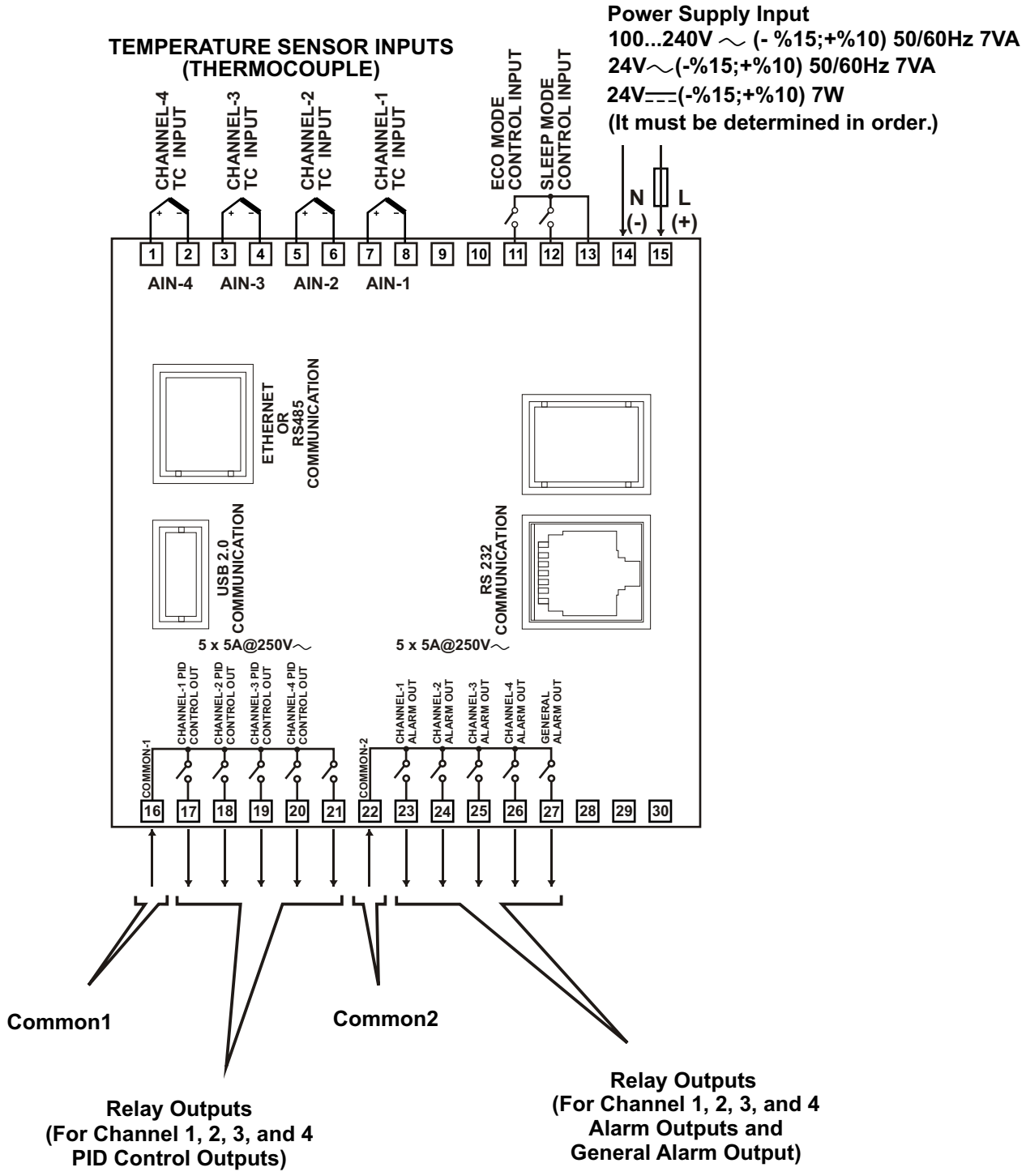
Torque
0,5Nm



Screw driver
0,8 x3mm

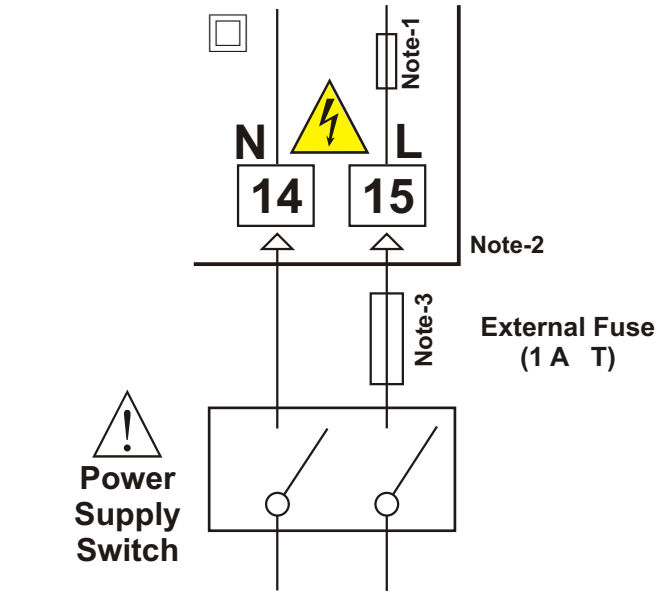
3.2 Electrical Wiring Diagram

Electrical wiring of the device must be the same as 'Electrical Wiring Diagram' below to prevent damage to the process being controlled and personnel injury.



RS485, Ethernet and USB communications are optional

3.3 Supply Voltage Input Connection of the Device



Power Supply
100-240V ~ (- %15;+%10) 50/60Hz 7VA or,
24V~(-%15;+%10) 50/60Hz 7VA or,
24V⎓(-%15;+%10) 7W

Note-1 : There is an internal 33R fusible flameproof resistor in 100-240 V ~ 50/60Hz
There is an internal 4R7 fusible flameproof resistor in 24V≂ 50/60Hz

Note-2: "L" is (+), "N" is (-) for 24V ⎓ Supply Voltage

Note-3: External Fuse is recommended

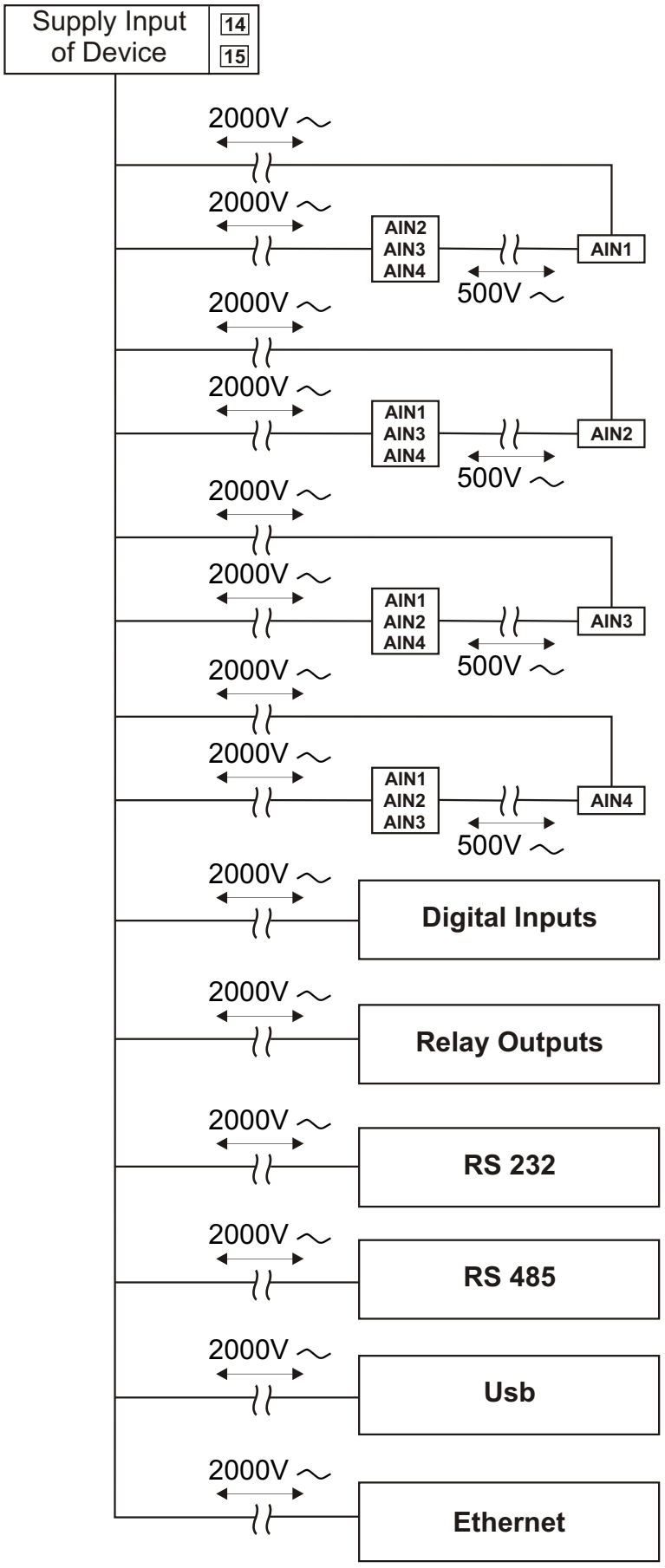
Make sure that the power supply voltage is same indicated on the instrument. Switch on the power supply only after that all the electrical connection have been completed.
Supply voltage range must be determined in order. While installing the unit, supply voltage range must be controlled and appropriate supply voltage must be applied to the unit. Controlling prevents damages in unit and system and possible accidents as a result of incorrect supply voltage.

There is no power supply switch or fuse on the device. So a power supply switch and a fuse must be added to the supply voltage input. Power supply switch and fuse must be put to a place where user can reach easily.
Power supply switch must be two poled for seperating phase and neutral. On/Off condition of power supply switch is very important in electrical connection. On/Off condition of power supply switch must be signed for preventing the wrong connection.

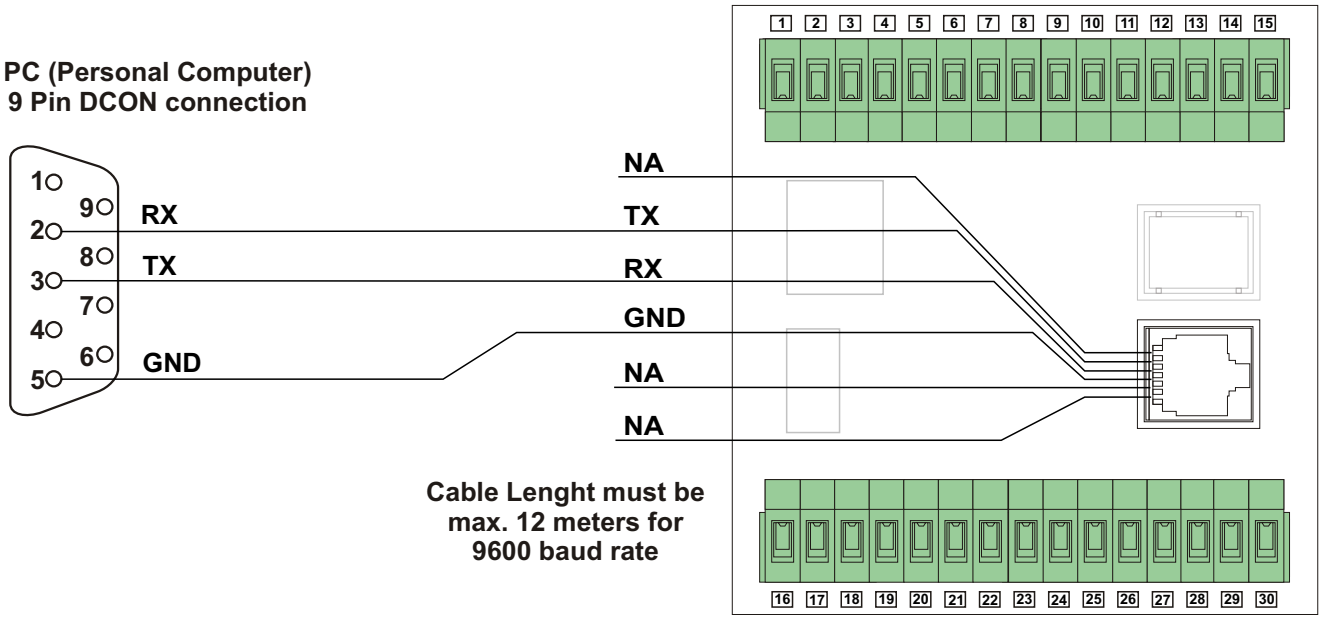
External fuse must be on phase connection in ~supply input.
External fuse must be on (+) line connection in ⎓supply input.

The instrument is protected with an internal fuse (Please refer to Note-1 for information). In case of failure it is suggested to return the instrument to the manufacturer for repair.

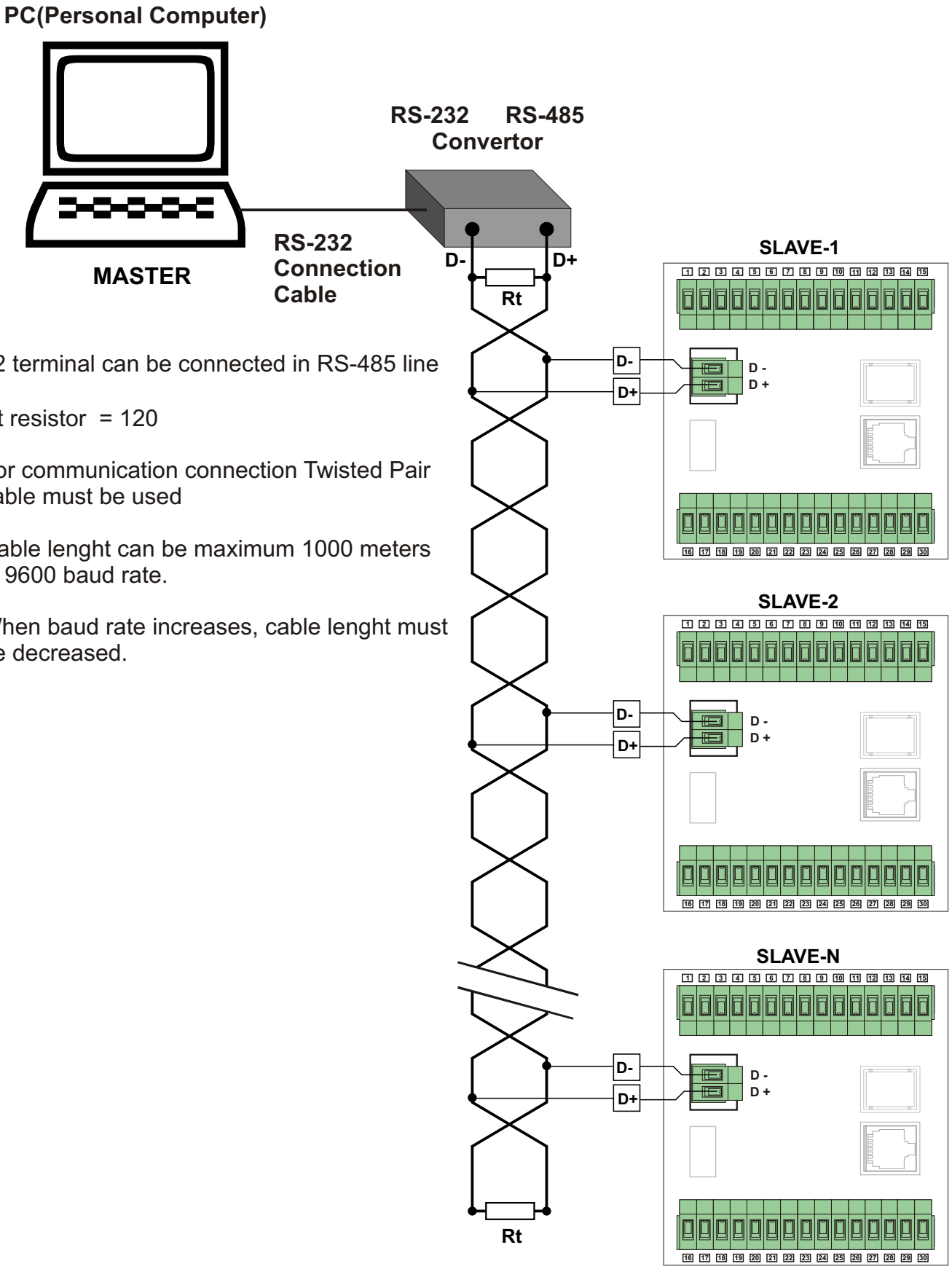
3.4 Galvanic Isolation Test Values of EPLC9600-PID QUADRO



4. Cable Connection Between RS-232 Terminal of the Device and PC



5. Connection for RS-485 Serial Communication



32 terminal can be connected in RS-485 line

Rt resistor = 120

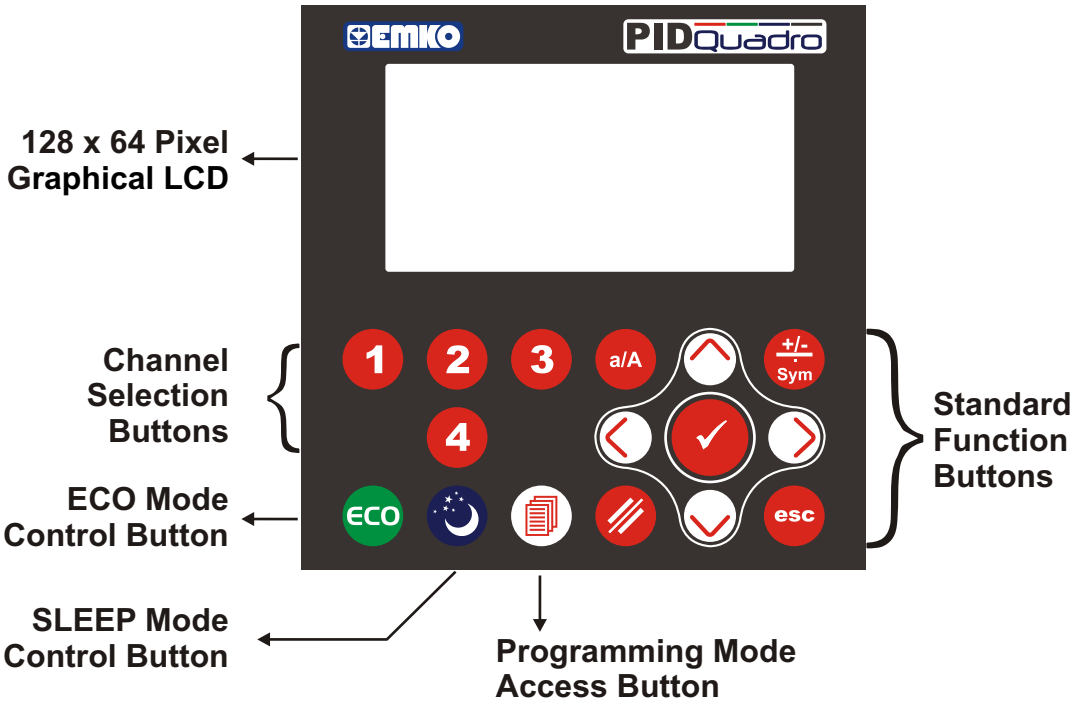
For communication connection Twisted Pair cable must be used

Cable lenght can be maximum 1000 meters in 9600 baud rate.

When baud rate increases, cable lenght must be decreased.

6. Definetion of the Front Panel and Accessing to the Parameters

6.1. Definition of Front Panel



ENTER BUTTON
This button is used to confirm the variable value in variable value changing screen.

ESCAPE BUTTON
This button is used to exit from variable value changing screen to preceding visualization screen without saving variable value, and return to main operation screen.

DELETE BUTTON
This button is used to delete the last digit of the value in variable value changing screen.

CHANGE CASE BUTTON
This button is used to changing the character between uppercase and lowercase, which cursor is show for string variable in variable value changing screen.

SIGN & SYMBOL BUTTON
This button is used to changing the sign value for sign type variables, entering the dot for real type and entering the symbol character for string type variables in variable value changing screen.

DOWN BUTTON
This button is used to decrement the digit, which cursor is show of variable in variable value changing screen and used to accessing next programming page in programming mode.

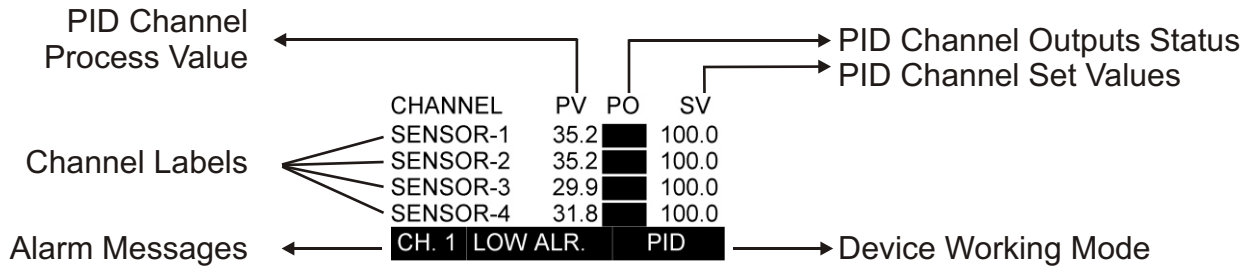
UP BUTTON
This button is used to increment the digit, which cursor is show of variable in variable value changing screen and used to accessing previous programming page in programming mode.

RIGHT BUTTON
This button is used to move cursor to the right side for one digit in variable value changing screen and selecting the variable for changing in programming mode.

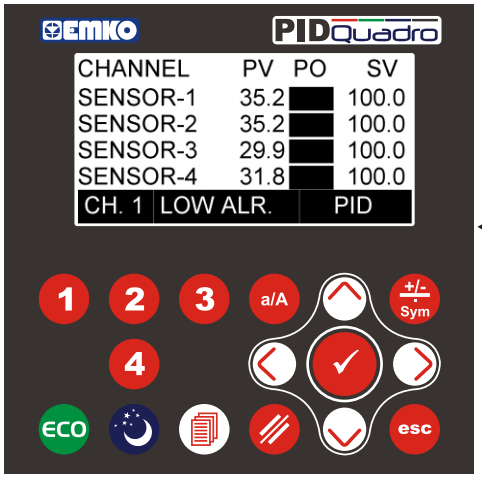
LEFT BUTTON
This button is used to move cursor to the left side for one digit in variable value changing screen and selecting the variable for changing in programming mode.

PROGRAMMING MODE ACCESSING BUTTON
This button is used to accessing to programming mode parameters pages.

6.2. Main Operation Screens Definition

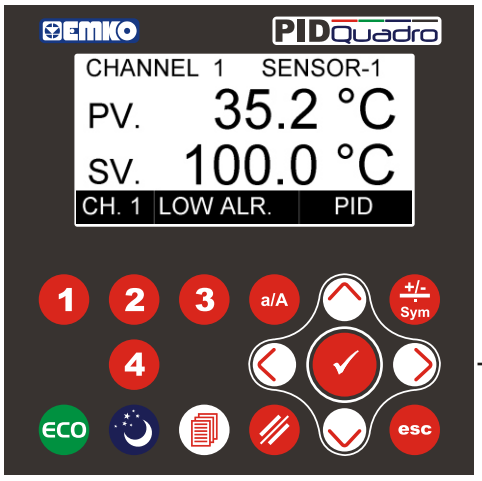


MAIN OPERATION SCREEN-1



Press number (1,2,3 or 4) buttons for accessing the relevant channel screen.

MAIN OPERATION SCREEN-2



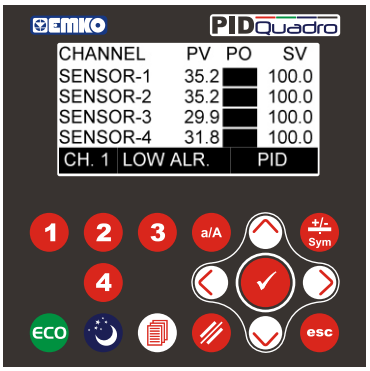
esc

Press escape button for returning main operation screen-1.

If more than one alarm messages is present, each alarm message is showing on LCD screen during 1 second.

6.3. Accessing to the Operator Parameter Pages

MAIN OPERATION SCREEN



When programming mode access button is pressed and released before 5 seconds is expire, If operator password is different from 0, operator parameter section password screen will be observed, If operator password is 0 then operator parameter screen will be observed.

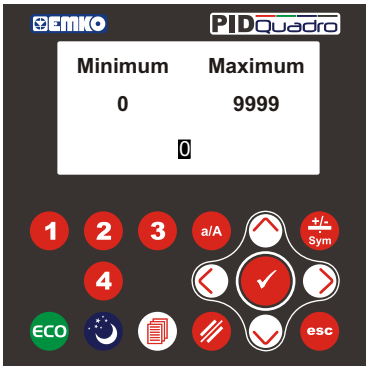
OPERATOR PARAMETERS SECTION PASSWORD SCREEN

Press right or left button for selecting the password parameter.

OPERATOR PARAMETERS SECTION PASSWORD SCREEN

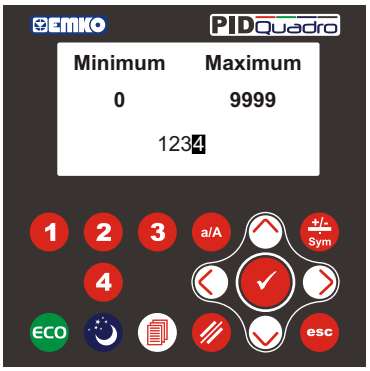
Press enter button for accessing to password entering screen.

OPERATOR PARAMETERS SECTION PASSWORD ENTERING SCREEN



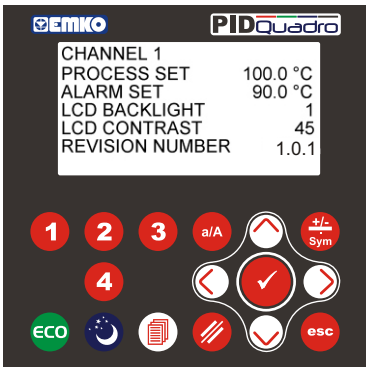
Enter the operator parameter section password with cursor (lef, right, up and down) buttons.

OPERATOR PARAMETERS SECTION PASSWORD ENTERING SCREEN



Press enter button for accessing to the operator section parameters.

OPERATOR PARAMETER SCREEN (CHANNEL-1 PARAMETERS)



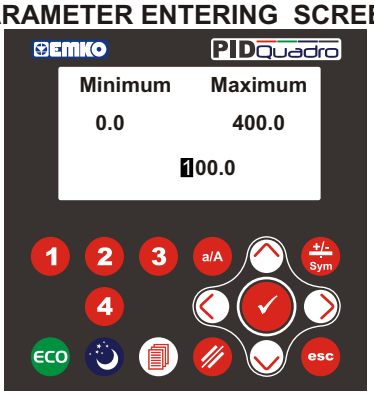
Press right or left button for selecting the parameter.

If no operation is performed for 20 seconds in operator parameters section, device turns to main operation screen automatically.

OPERATOR PARAMETER SCREEN (CHANNEL-1 PARAMETERS)

Press enter button for accessing to parameter entering screen.

PARAMETER ENTERING SCREEN

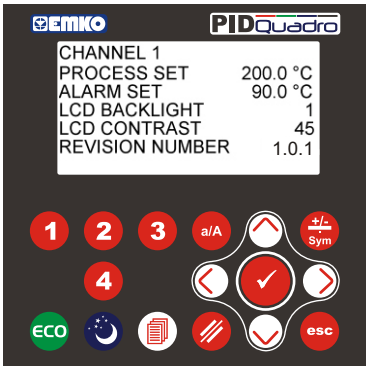


Change the parameter value with cursor (lef, right, up and down) buttons.

PARAMETER ENTERING SCREEN

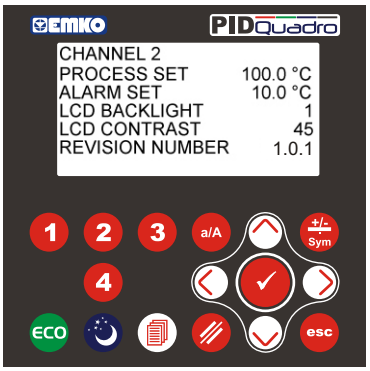
Press enter button for return parameter screen with saving parameter value, press escape button for return parameter screen without saving parameter value.

OPERATOR PARAMETER SCREEN (CHANNEL-1 PARAMETERS)



Press number (1,2,3 or 4) buttons for accessing the relevant channel's parameter screen.

OPERATOR PARAMETER SCREEN (CHANNEL-2 PARAMETERS)

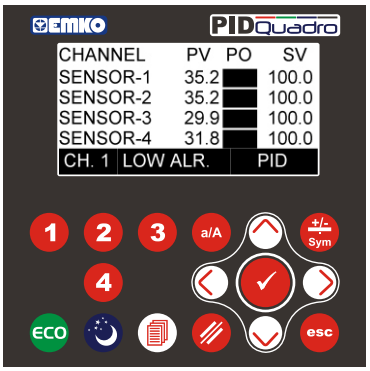


Other operator section parameters can be accessed with same method explained above, press escape button for return to main operation screen.

If no operation is performed for 20 seconds in operator parameters section, device turns to main operation screen automatically.

6.4. Accessing to the Technician Parameter Pages

MAIN OPERATION SCREEN



When programming mode access button is pressed for 5 seconds, If technician password is different from 0, technician parameter section password screen will be observed, If technician password is 0 then technician parameter screen will be observed.

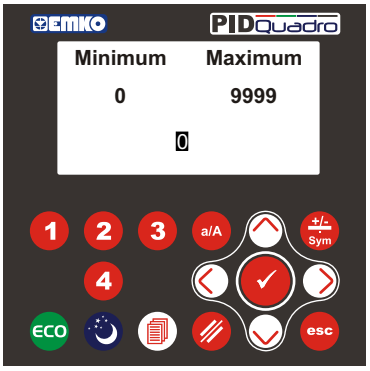
TECHNICIAN PARAMETERS SECTION PASSWORD SCREEN

Press right or left button for selecting the password parameter.

TECHNICIAN PARAMETERS SECTION PASSWORD SCREEN

Press enter button for accessing to password entering screen.

TECHNICIAN PARAMETERS SECTION PASSWORD ENTERING SCREEN

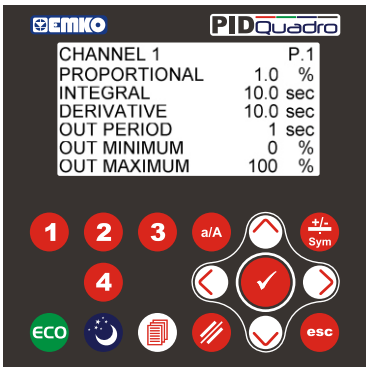


Enter the technician parameter section password with cursor (lef, right, up and down) buttons.

TECHNICIAN PARAMETERS SECTION PASSWORD ENTERING SCREEN

Press enter button for accessing to the technician section parameters.

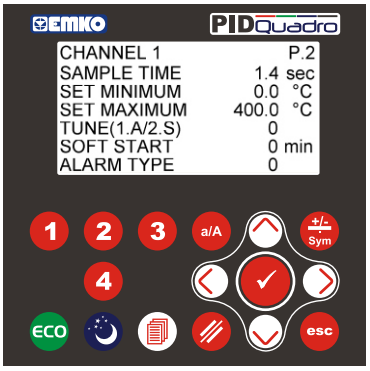
TECHNICIAN PARAMETER SCREEN (PAGE - 1 "CHANNEL-1 PARAMETERS")



Press number (1,2,3 or 4) buttons for accessing the relevant channel's parameter screen.Press down button for accessing to next parameter page.

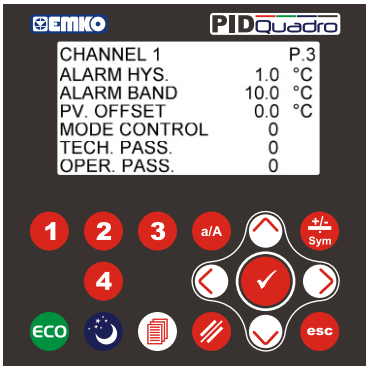
If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

TECHNICIAN PARAMETER SCREEN (PAGE - 2 “CHANNEL-1 PARAMETERS”)



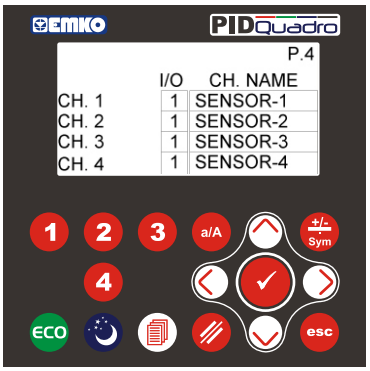
Press number (1,2,3 or 4) buttons for accessing the relevant channel’s parameter screen. Press down button for accessing to next parameter page, press up button for accessing previous parameter page.

TECHNICIAN PARAMETER SCREEN (PAGE - 3 “CHANNEL-1 PARAMETERS”)



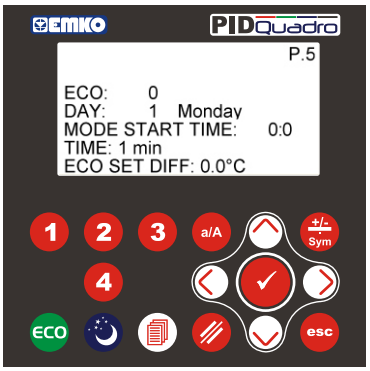
Press number (1,2,3 or 4) buttons for accessing the relevant channel’s parameter screen. Press down button for accessing to next parameter page, press up button for accessing previous parameter page.

TECHNICIAN PARAMETER SCREEN (PAGE - 4)



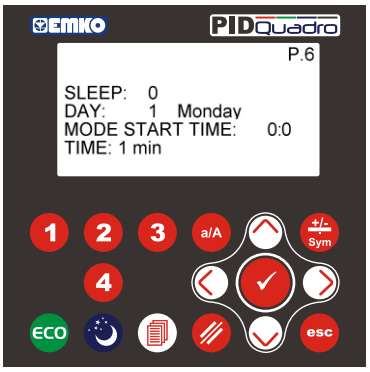
Press down button for accessing next parameter page, press up button for accessing previous parameter page.

TECHNICIAN PARAMETER SCREEN (PAGE - 5 “ECO MODE PAGE”)



Press down button for accessing next parameter page, press up button for accessing previous parameter page.

TECHNICIAN PARAMETER SCREEN (PAGE - 6 “SLEEP MODE PAGE”)



Press down button for accessing next parameter page, press up button for accessing previous parameter page.

TECHNICIAN PARAMETER SCREEN (PAGE - 7 “RS232 PAGE”)

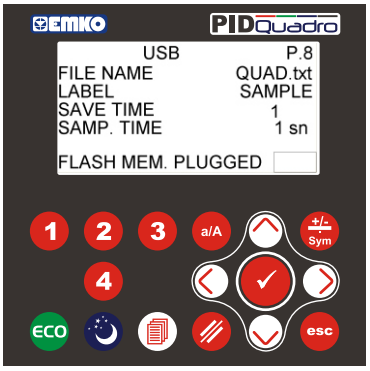
Press down button for accessing next parameter page, press up button for accessing previous parameter page.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

TECHNICIAN PARAMETER SCREEN (PAGE - 8 “RS485 PAGE”)

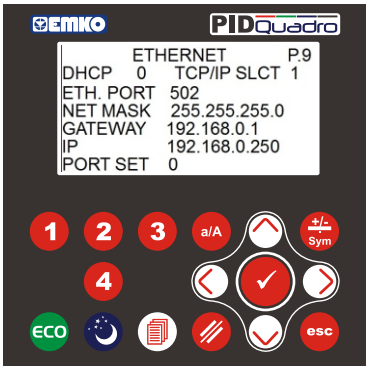
Press down button for accessing next parameter page, press up button for accessing previous parameter page.

TECHNICIAN PARAMETER SCREEN (PAGE - 9 “USB PAGE”)



Press down button for accessing next parameter page, press up button for accessing previous parameter page.

TECHNICIAN PARAMETER SCREEN (PAGE - 10 “ETHERNET PAGE”)



Press down button for accessing next parameter page, press up button for accessing previous parameter page.

TECHNICIAN PARAMETER SCREEN (PAGE - 11 “RTC PAGE”)

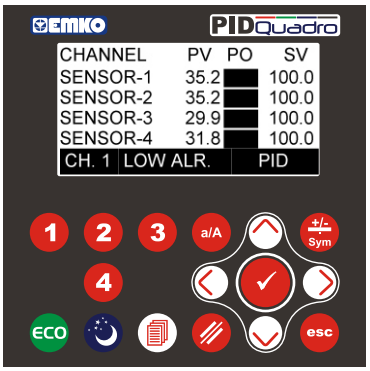
Press up button for accessing previous parameter page, press escape button for return to main operation screen.

If the device has a optional RS485 communication then RS 485 page is observed,
If the device has a optional USB communication then USB page is observed,
If the device has a optional ETHERNET communication then ETHERNET page is observed.
Otherwise these pages are not observed.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.5. Accessing to the Calibration Parameter Pages

MAIN OPERATION SCREEN



When programming mode access button is pressed for 5 seconds, calibration parameter section password screen will be observed

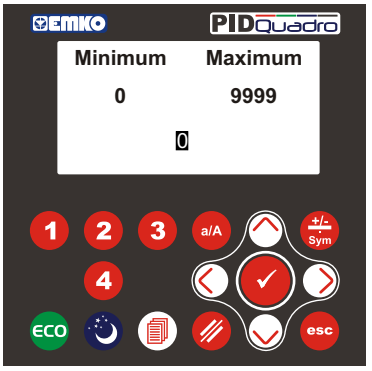
CALIBRATION PARAMETERS SECTION PASSWORD SCREEN

Press right or left button for selecting the password parameter.

CALIBRATION PARAMETERS SECTION PASSWORD SCREEN

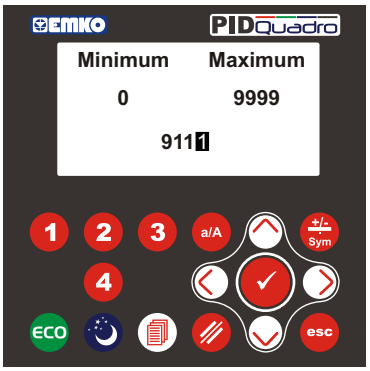
Press enter button for accessing to password entering screen.

CALIBRATION PARAMETERS SECTION PASSWORD ENTERING SCREEN



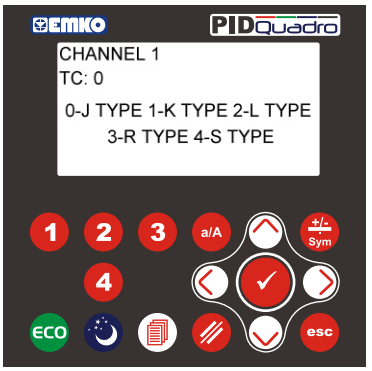
Enter the calibration parameter section password as a 9111 with cursor (lef, right, up and down) buttons.

CALIBRATION PARAMETERS SECTION PASSWORD ENTERING SCREEN



Press enter button for accessing to the calibration section parameters.

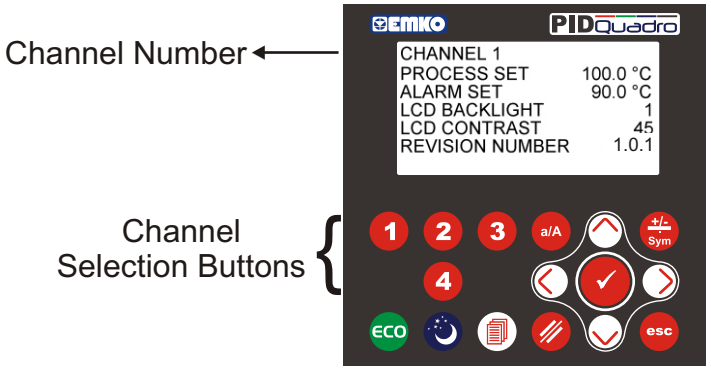
CALIBRATION PARAMETER SCREEN ("CHANNEL-1 SENSOR TYPE SELECTION")



Press number (1,2,3 or 4) buttons for accessing the relevant channel's parameter screen. Press escape button for return to main operation screen.

If no operation is performed for 20 seconds in calibration parameters section, device turns to main operation screen automatically.

6.6. Operator Pages Parameters Definetions



Parameter	Explanation	Unit	Min.	Max.	Default	Address
PROCESS SET	PID Set Value For Channel-X	°C	SET MIN	SET MAX	100.0	-
ALARM SET	Alarm Set Value For Channel-X	°C	-100.0	1700.0	90.0	-
LCD BACKLIGHT	LCD Display Backlight Mode	-	0	2	1	42182
LCD CONTRAST	LCD Display Contrast Value	-	30	60	45	42183

PROCESS SET
PID set value for selected channel is can be adjusted according to this parameter.

ALARM SET
Alarm set value for selected channel is can be adjusted according to this parameter.

LCD BACKLIGHT
Display backlight is can be controlled by this parameter value. If parameter value;

0 = LCD backlight is continuously OFF
1 = LCD backlight is continuously ON
2 = "power safe mode" If any button is not pressed during 30 secs. LCD backlight is automatically changed OFF mode, when any button is pressed LCD backlight is changed ON mode again.

LCD CONTRAST
Display contrast value is can be controlled by this parameter value.

REVISION NUMBER "Software Revision Number"
Device software revision number is can be seen by this parameter.
This parameter is can not be changed, it's only observed.

Process Set Parameters Modbus Addresses

Parameter	Address
CHANNEL-1 PROCESS SET (*)	42030
CHANNEL-2 PROCESS SET (*)	42042
CHANNEL-3 PROCESS SET (*)	42054
CHANNEL-4 PROCESS SET (*)	42066

Alarm Set Parameters Modbus Addresseses

Parameter	Address
CHANNEL-1 ALARM SET (*)	42078
CHANNEL-2 ALARM SET (*)	42082
CHANNEL-3 ALARM SET (*)	42086
CHANNEL-4 ALARM SET (*)	42090

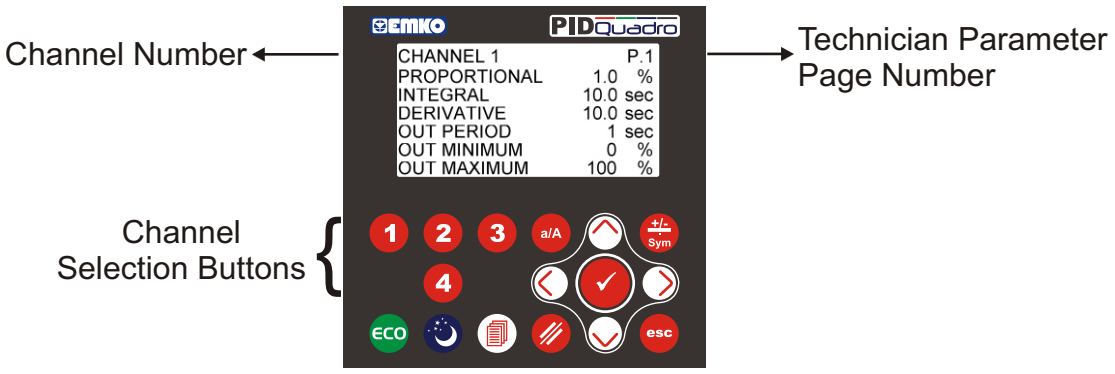
(*) These parameters are displayed on LCD screen with point, so that the parameters values are 10 times than the real values for modbus function.

Channel number is can be seen upper left side of the display and can be selected by pressing the channel selection buttons (1, 2, 3 or 4).

If no operation is performed for 20 seconds in operator parameters section, device turns to main operation screen automatically.

6.7. Technician Pages Parameters Definetions

6.7.1. Page-1 Parameters



Parameter	Explanation	Unit	Min.	Max.	Default
PROPORTIONAL	PID Proportional Parameter For Channel-X	%	1	100.0	1.0
INTEGRAL	PID Integral Parameter For Channel-X	sec.	0	3200.0	10.0
DERIVATIVE	PID Derivative Parameter For Channel-X	sec.	0	999.9	10.0
OUT PERIOD	PID Ouput Period	sec.	1	150	1
OUT MINIMUM	PID Minimum Control Output	%	0	100	0
OUT MAXIMUM	PID Maximum Control Output	%	0	100	100

PROPORTIONAL
PID proportional value for selected channel is can be adjusted according to this parameter.
This parameter's unit is percentage of analogue input scale. If analogue input is seleced as a J type TC, then analogue input scale is being between -100.0°C to 900.0°C, and if PROPORTIONAL parameter value is selected as a %10.0 then PID Proportional band is calculated like below.

Proportional Band =((900.0°C - (-100.0°C)) * 10.0) / 100 = 100°C

INTEGRAL
PID integral value for selected channel is can be adjusted according to this parameter.
It can be changed by the user. When tune operation stops, it can be changed by the device. If it is 0, integral control part does not run. When tune operation stops if this parameter is 0, this parameter can not be changed because of integral control part does not run.

DERIVATIVE
PID derivative value for selected channel is can be adjusted according to this parameter.
It can be changed by the user. When tune operation stops, it can be changed by the device. If it is 0, derivative control part does not run. When tune operation stops if this parameter is 0, this parameter can not be changed because of derivative control part does not run.

OUT PERIOD
PID output period value for selected channel is can be adjusted according to this parameter.

OUT MINIMUM
PID minimum output value for selected channel is can be adjusted according to this parameter.
Even as a result of the PID calculation device calculates the % output value less than this parameter, PID output is active minimum for this parameter.

OUT MAXIMUM
PID maximum output value for selected channel is can be adjusted according to this parameter.
Even as a result of the PID calculation device calculates the % output value greater than this parameter, PID output is active maximum for this parameter.

Channel number is can be seen upper left side of the display and can be selected by pressing the channel selection buttons (1, 2, 3 or 4).

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

PID Proportional Parameters
Modbus Addresses

Parameter	Address
CHANNEL-1 PROPORTIONAL (*)	42031
CHANNEL-2 PROPORTIONAL (*)	42043
CHANNEL-3 PROPORTIONAL (*)	42055
CHANNEL-4 PROPORTIONAL (*)	42067

PID Out Period Parameters
Modbus Addresses

Parameter	Address
CHANNEL-1 OUT PERIOD	42040
CHANNEL-2 OUT PERIOD	42052
CHANNEL-3 OUT PERIOD	42064
CHANNEL-4 OUT PERIOD	42076

PID Integral Parameters
Modbus Addresses

Parameter	Address
CHANNEL-1 INTEGRAL (*)	42032
CHANNEL-2 INTEGRAL (*)	42044
CHANNEL-3 INTEGRAL (*)	42056
CHANNEL-4 INTEGRAL (*)	42068

PID Out Minimum Parameters
Modbus Addresses

Parameter	Address
CHANNEL-1 OUT MINIMUM	42037
CHANNEL-2 OUT MINIMUM	42049
CHANNEL-3 OUT MINIMUM	42061
CHANNEL-4 OUT MINIMUM	42073

PID Derivative Parameters
Modbus Addresses

Parameter	Address
CHANNEL-1 DERIVATIVE (*)	42033
CHANNEL-2 DERIVATIVE (*)	42045
CHANNEL-3 DERIVATIVE (*)	42057
CHANNEL-4 DERIVATIVE (*)	42069

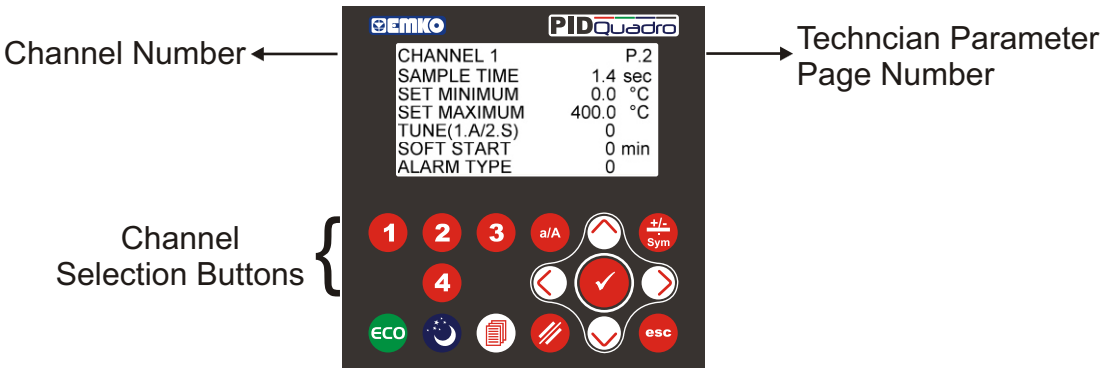
PID Out Maximum Parameters
Modbus Addresses

Parameter	Address
CHANNEL-1 OUT MAXIMUM	42038
CHANNEL-2 OUT MAXIMUM	42050
CHANNEL-3 OUT MAXIMUM	42062
CHANNEL-4 OUT MAXIMUM	42074

(*) These parameters are displayed on LCD screen with point, so that the parameters values are 10 times than the real values for modbus function.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.2. Page-2 Parameters



Parameter	Explanation	Unit	Min.	Max.	Default
SAMPLE TIME	PID Sample Time For Channel-X	sec.	1.4	60.0	1.4
SET MINIMUM	PID Minimum Set Value For Channel-X	°C	-100.0	1700.0	0.0
SET MAXIMUM	PID Maximum Set Value For Channel-X	°C	-100.0	1700.0	400.0
TUNE (1.A/2.S)	PID Tune Selection For Channel-X	-	0	2	0
SOFT START	PID Ouput Power On Ramp Time For Channel-X	min.	0	600	0
ALARM TYPE	Alarm Type Selection	-	0	3	0

SAMPLE TIME
PID output calculation period for selected channel is can be adjusted according to this parameter.

SET MINIMUM
PID minimum set value for selected channel is can be adjusted according to this parameter.

SET MAXIMUM
PID maximum Set value for selected channel is can be adjusted according to this parameter.

TUNE (1.A / 2.S)
Tune selection for selected channel is can be adjusted according to this parameter.
After tune operation is finished without any problem, device saves new PID parameters to memory and the tune parameter value is being changed to 0 automatically. If parameter value,

0 = Tune off
1 = Auto tune (Limit Cycle Tuning) operation
2 = Self tune (Step Response Tuning) operation

SOFT START
PID output for selected channel is reaches to the %output value that is measured when power first applied to the device at the end of the this parameter time. If parameter value is adjusted to 0 value or If there is a sensor break failure, then Soft-Start operation is canceled.

ALARM TYPE
Alarm type for selected channel is can be adjusted according to this parameter. If parameter value,

0 = Alarm Off,
1 = Low Alarm,
2 = High Alarm,
3 = Band Alarm is selected.

Channel number is can be seen upper left side of the display and can be selected by pressing the channel selection buttons (1, 2, 3 or 4).

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

PID Sample Time Parameters
Modbus Addresses

Parameter	Address
CHANNEL-1 SAMPLE TIME (*)	42034
CHANNEL-2 SAMPLE TIME (*)	42046
CHANNEL-3 SAMPLE TIME (*)	42058
CHANNEL-4 SAMPLE TIME (*)	42070

PID Tune Selection Parameters
Modbus Addresses

Parametre	Address
CHANNEL-1 TUNE (1.A/2.S)	42041
CHANNEL-2 TUNE (1.A/2.S)	42053
CHANNEL-3 TUNE (1.A/2.S)	42065
CHANNEL-4 TUNE (1.A/2.S)	42077

PID Minimum Set Value Parameters
Modbus Addresses

Parameter	Address
CHANNEL-1 SET MINIMUM (*)	42035
CHANNEL-2 SET MINIMUM (*)	42047
CHANNEL-3 SET MINIMUM (*)	42059
CHANNEL-4 SET MINIMUM (*)	42071

PID Soft Start Parameters
Modbus Addresses

Parametre	Address
CHANNEL-1 SOFT START	42039
CHANNEL-2 SOFT START	42051
CHANNEL-3 SOFT START	42063
CHANNEL-4 SOFT START	42075

PID Maximum Set Value Parameters
Modbus Addresses

Parameter	Address
CHANNEL-1 SET MAXIMUM (*)	42036
CHANNEL-2 SET MAXIMUM (*)	42048
CHANNEL-3 SET MAXIMUM (*)	42060
CHANNEL-4 SET MAXIMUM (*)	42072

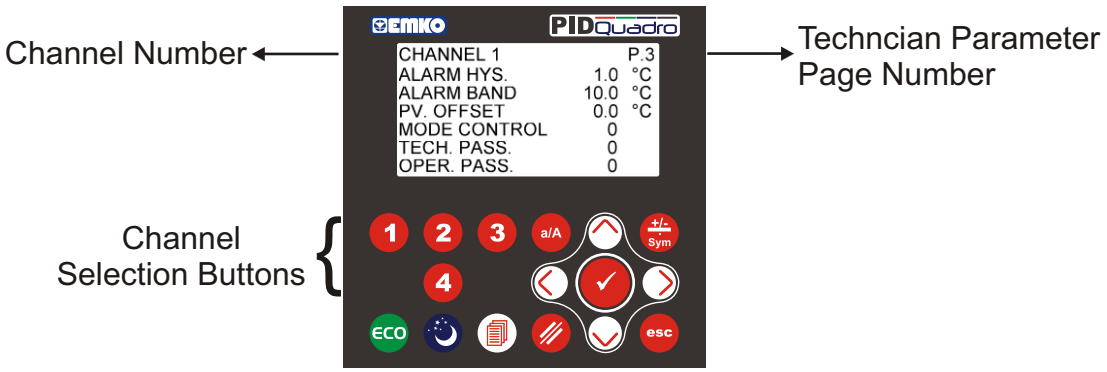
Alarm Type Selection Parameters
Modbus Addresses

Parametre	Address
CHANNEL-1 ALARM TYPE	42079
CHANNEL-2 ALARM TYPE	42083
CHANNEL-3 ALARM TYPE	42087
CHANNEL-4 ALARM TYPE	42091

(*) These parameters are displayed on LCD screen with point, so that the parameters values are 10 times than the real values for modbus function.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.3. Page-3 Parameters



Parameter	Explanation	Unit	Min.	Max.	Default	Address
ALARM HYS.	Alarm Hysteresis Value For Channel-X	°C	-200.0	200.0	1.0	-
ALARM BAND	Alarm Bandwith For Channel-X	°C	0.0	50.0	10.0	-
PV. OFFSET	Process Offset Value For Channel-X	°C	-50.0	50.0	0.0	-
MODE CONTROL	Device Operating Mode Control Selection	-	0	3	0	42116
TECH. PASS.	Technician Section Password	-	0	9000	0	42114
OPER. PASS.	Operation Section Password	-	0	9000	0	42115

ALARM HYS.
Alarm hysteresis value for selected channel is can be adjusted according to this parameter.

ALARM BAND
For selected channel alarm bandwith value for band alarm is can be adjusted according to this parameter.

PV. OFFSET
Process offset value for selected channel is can be adjusted according to this parameter.

MODE CONTROL
Device's operating mode is can be controlled according to this parameter value. If parameter value;

0 = Mode selection is disable
1 = Mode selection can be made via front panel buttons (ECO or SLEEP buttons)
2 = Mode selection can be made via digital inputs (ECO or SLEEP mode control inputs)
3 = Mode selection can be made automatically according to the ECO and SLEEP mode pages parameters, which each mode can be activating any time of section for each day of week.

TECH.PASS.
Password for entering to the technician section is defined with this parameter.
If it is 0, technician section accessed without entering password.

OPER. PASS.
Password for entering to the operator section is defined with this parameter.
If it is 0, operator section accessed without entering password.

Channel number is can be seen upper left side of the display and can be selected by pressing the channel selection buttons (1, 2, 3 or 4).

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

Alarm Hysteresis Parameters
Modbus Addresses

Parameter		Address
CHANNEL-1 ALARM HYS.	(*)	42080
CHANNEL-2 ALARM HYS.	(*)	42084
CHANNEL-3 ALARM HYS.	(*)	42088
CHANNEL-4 ALARM HYS.	(*)	42092

Alarm Bandwith Parameters
Modbus Addresses

Parameter		Address
CHANNEL-1 ALARM BAND	(*)	42081
CHANNEL-2 ALARM BAND	(*)	42085
CHANNEL-3 ALARM BAND	(*)	42089
CHANNEL-4 ALARM BAND	(*)	42093

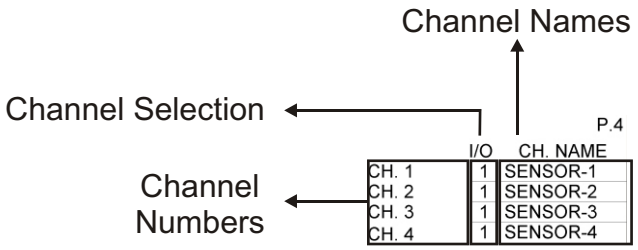
Proses Offset Value Parameters
Modbus Addresses

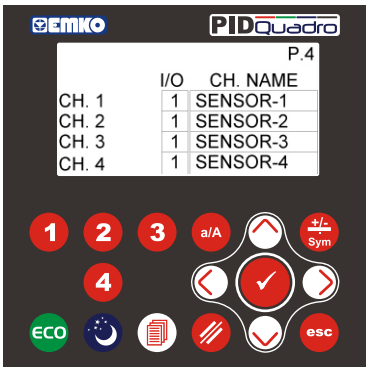
Parameter		Address
CHANNEL-1 PV. OFFSET	(*)	42098
CHANNEL-2 PV. OFFSET	(*)	42099
CHANNEL-3 PV. OFFSET	(*)	42100
CHANNEL-4 PV. OFFSET	(*)	42101

(*) These parameters are displayed on LCD screen with point, so that the parameters values are 10 times than the real values for modbus function.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.4. Page-4 Parameters





Parameter	Explanation	Unit	Min.	Max.	Default	Address
CHANNEL-1 CH. NAME	Channel-1 Label	String	-	-	SENSOR-1	42000 - 42004
CHANNEL-2 CH. NAME	Channel-2 Label	String	-	-	SENSOR-2	42005 - 42009
CHANNEL-3 CH. NAME	Channel-3 Label	String	-	-	SENSOR-3	42010 - 42014
CHANNEL-4 CH. NAME	Channel-4 Label	String	-	-	SENSOR-4	42015 - 42019
CHANNEL-1 I/O	Channel-1 Selection	-	0	2	1	42102
CHANNEL-2 I/O	Channel-2 Selection	-	0	2	1	42103
CHANNEL-3 I/O	Channel-3 Selection	-	0	2	1	42104
CHANNEL-4 I/O	Channel-4 Selection	-	0	2	1	42105

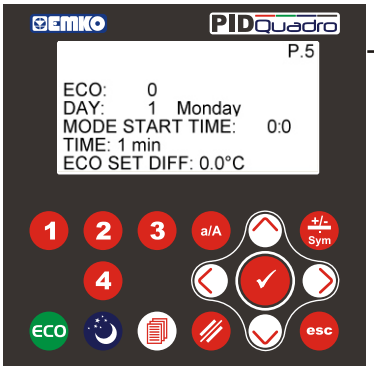
CH. NAME "Channels label definition "
All channels have their own label, is displayed in main operation screen. channel labels is can be adjusted by this parameter. Channel labels are can be adjusted maximum 10 characters.

I/O "PID Operation Type Selection Parameter"
PID operation type is selected by this parameter. If parameter value is selected as a 0 (PID disabled) then, PID is not operate, alarm output is not controlled and analogue value for this channel is not recording on USB file. If parameter value,

0 = PID function is disabled
1 = Heating PID function is selected
2 = Cooling PID function is selected

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.5. Page-5 “ECO MODE” Parameters



Technician Parameter Page Number

Parameter	Explanation	Unit	Min.	Max.	Default	Address
ECO	Auto ECO MODE ENA/DIS	-	0	1	0	-
MODE START HOUR	Auto ECO MODE Starting Hour	hour	0	23	0	-
MODE START MINUTE	Auto ECO MODE Starting Minute	minute	0	59	0	-
TIME	Auto ECO MODE Time	minute	1	1440	1	-
ECO SET DIFF.	ECO MODE Set Difference	°C	0	500.0	0	-

ECO
If MODE CONTROL parameter value selected as 3 (auto mode control is active) then for selected day of week auto eco mode is enable or disable by this parameter. If parameter value;
0 = auto ECO MODE is disable for selected day of week
1 = auto ECO MODE is enable for selected day of week

MODE START HOUR
If MODE CONTROL parameter value selected as 3 (auto mode control is active) and auto eco mode is active for selected day of week, then auto eco mode starting hour is determined by this parameter.

MODE START MINUTE
If MODE CONTROL parameter value selected as 3 (auto mode control is active) and auto eco mode is active for selected day of week, then auto eco mode starting minute is determined by this parameter.

TIME
If MODE CONTROL parameter value selected as 3 (auto mode control is active) and auto eco mode is active for selected day of week, then ECO MODE activating time value is determined by this parameter.

ECO SET DIFF.
Temperature changing of PID Process set value during time while ECO mode is active is determined by this parameter.

While the device works as long as the ECO MODE, **“ECO”** expression is observed in device working mode section of main operation screens and PID process set value is lowered to ECO SET DIFF parameter’s value.
ECO mode PID process set value is calculated like below.
If PID is selected as a heating, **ECO MODE PROCESS SET = PROCESS SET - ECO SET DIFF.**
If PID is selected as a cooling, **ECO MODE PROCESS SET = PROCESS SET + ECO SET DIFF.**

While the device works as long as the SLEEP MODE, ECO MODE can not be activated.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

Auto ECO Mode Parameters for MONDAY	Address
(MONDAY) ECO	42117
(MONDAY) ECO MODE STARTING HOUR	42118
(MONDAY) ECO MODE STARTING MINUTE	42119
(MONDAY) ECO MODE TIME	42120
(MONDAY) ECO MODE SET DIFF. (*)	42121

Auto ECO Mode Parameters for TUESDAY	Address
(TUESDAY) ECO	42126
(TUESDAY) ECO MODE STARTING HOUR	42127
(TUESDAY) ECO MODE STARTING MINUTE	42128
(TUESDAY) ECO MODE TIME	42129
(TUESDAY) ECO MODE SET DIFF. (*)	42130

Auto ECO Mode Parameters for WEDNESDAY	Address
(WEDNESDAY) ECO	42135
(WEDNESDAY) ECO MODE STARTING HOUR	42136
(WEDNESDAY) ECO MODE STARTING MINUTE	42137
(WEDNESDAY) ECO MODE TIME	42138
(WEDNESDAY) ECO MODE SET DIFF. (*)	42139

Auto ECO Mode Parameters for THURSDAY	Address
(THURSDAY) ECO	42144
(THURSDAY) ECO MODE STARTING HOUR	42145
(THURSDAY) ECO MODE STARTING MINUTE	42146
(THURSDAY) ECO MODE TIME	42147
(THURSDAY) ECO MODE SET DIFF. (*)	42148

Auto ECO Mode Parameters for FRIDAY	Address
(FRIDAY) ECO	42153
(FRIDAY) ECO MODE STARTING HOUR	42154
(FRIDAY) ECO MODE STARTING MINUTE	42155
(FRIDAY) ECO MODE TIME	42156
(FRIDAY) ECO MODE SET DIFF. (*)	42157

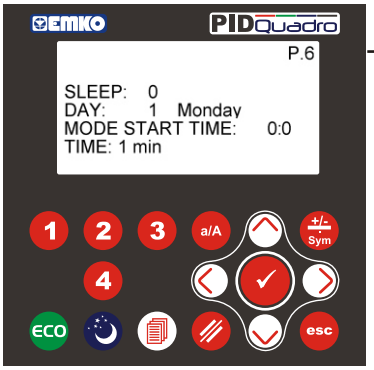
Auto ECO Mode Parameters for SATURDAY	Address
(SATURDAY) ECO	42162
(SATURDAY) ECO MODE STARTING HOUR	42163
(SATURDAY) ECO MODE STARTING MINUTE	42164
(SATURDAY) ECO MODE TIME	42165
(SATURDAY) ECO MODE SET DIFF. (*)	42166

Auto ECO Mode Parameters for SUNDAY	Address
(SUNDAY) ECO	42171
(SUNDAY) ECO MODE STARTING HOUR	42172
(SUNDAY) ECO MODE STARTING MINUTE	42173
(SUNDAY) ECO MODE TIME	42174
(SUNDAY) ECO MODE SET DIFF. (*)	42175

(*) These parameters are displayed on LCD screen with point, so that the parameters values are 10 times than the real values for modbus function.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.6. Page-6 “SLEEP MODE” Parameters



Technician Parameter Page Number

Parameter	Explanation	Unit	Min.	Max.	Default	Address
SLEEP	Auto SLEEP MODE ENA/DIS	-	0	1	0	-
MODE START HOUR	Auto SLEEP MODE Starting Hour	hour	0	23	0	-
MODE START MINUTE	Auto SLEEP MODE Starting Minute	minute	0	59	0	-
TIME	Auto SLEEP MODE Time	minute	1	1440	1	-

SLEEP
If MODE CONTROL parameter value selected as 3 (auto mode control is active) then for selected day of week auto sleep mode is enable or disable by this parameter. If parameter value;

0 = auto SLEEP MODE is disable for selected day of week
1 = auto SLEEP MODE is enable for selected day of week

MODE START HOUR
If MODE CONTROL parameter value selected as 3 (auto mode control is active) and auto sleep mode is active for selected day of week, then auto sleep mode starting hour is determined by this parameter.

MODE START MINUTE
If MODE CONTROL parameter value selected as 3 (auto mode control is active) and auto sleep mode is active for selected day of week, then auto sleep mode starting minute is determined by this parameter.

TIME
If MODE CONTROL parameter value selected as 3 (auto mode control is active) and auto sleep mode is active for selected day of week, then SLEEP MODE activating time value is determined by this parameter.

While the device works as long as the SLEEP MODE, **“SLEEP”** expression is observed in device working mode section of main operation screens and PID Outputs are closed.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

Auto SLEEP Mode Parameters for MONDAY	Address
(MONDAY) SLEEP	42122
(MONDAY) SLEEP MODE STARTING HOUR	42123
(MONDAY) SLEEP MODE STARTING MINUTE	42124
(MONDAY) SLEEP MODE TIME	42125

Auto SLEEP Mode Parameters for TUESDAY	Address
(TUESDAY) SLEEP	42131
(TUESDAY) SLEEP MODE STARTING HOUR	42132
(TUESDAY) SLEEP MODE STARTING MINUTE	42133
(TUESDAY) SLEEP MODE TIME	42134

Auto SLEEP Mode Parameters for WEDNESDAY	Address
(WEDNESDAY) SLEEP	42140
(WEDNESDAY) SLEEP MODE STARTING HOUR	42141
(WEDNESDAY) SLEEP MODE STARTING MINUTE	42142
(WEDNESDAY) SLEEP MODE TIME	42143

Auto SLEEP Mode Parameters for THURSDAY	Address
(THURSDAY) SLEEP	42149
(THURSDAY) SLEEP MODE STARTING HOUR	42150
(THURSDAY) SLEEP MODE STARTING MINUTE	42151
(THURSDAY) SLEEP MODE TIME	42152

Auto SLEEP Mode Parameters for FRIDAY	Address
(FRIDAY) SLEEP	42158
(FRIDAY) SLEEP MODE STARTING HOUR	42159
(FRIDAY) SLEEP MODE STARTING MINUTE	42160
(FRIDAY) SLEEP MODE TIME	42161

Auto SLEEP Mode Parameters for SATURDAY	Address
(SATURDAY) SLEEP	42167
(SATURDAY) SLEEP MODE STARTING HOUR	42168
(SATURDAY) SLEEP MODE STARTING MINUTE	42169
(SATURDAY) SLEEP MODE TIME	42170

Auto SLEEP Mode Parameters for SUNDAY	Address
(SUNDAY) SLEEP	42176
(SUNDAY) SLEEP MODE STARTING HOUR	42177
(SUNDAY) SLEEP MODE STARTING MINUTE	42178
(SUNDAY) SLEEP MODE TIME	42179

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.7. Page-7 “RS232” Parameters

Parameter	Explanation	Unit	Min.	Max.	Default	Address
BAUDRATE	Baudrate For RS232 Communication	-	1	6	6	42106
PARITY	Parity For RS232 Communication	-	0	2	0	42107
STOP BIT	Stop Bit For RS232 Communication	-	1	2	1	42108
ID	ID For RS232 Communication	-	1	247	1	42109

BAUDRATE
Modbus communication baudrate for RS232 is can be adjusted by this parameter. If parameter value,
1 = 4800
2 = 9600
3 = 19200
4 = 38400
5 = 57600
6 = 115200

PARITY
Modbus communication parity bit for RS232 is can be adjusted by this parameter. If parameter value,
0 = No Parity
1 = ODD Parity
2 = EVEN Parity

STOP BIT
Modbus communication stop bit for RS232 is can be adjusted by this parameter. If parameter value,
1 = 1 Stop bit
2 = 2 Stop bits

ID
Modbus communication device ID for RS232 is can be adjusted by this parameter.
This parameter value is can be adjusted from 1 to 247 (except 85 and 170).

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.8. Page-8 “RS485” Parameters

Parameter	Explanation	Unit	Min.	Max.	Default	Address
BAUDRATE	Baudrate For RS485 Communication	-	1	6	2	42110
PARITY	Parity For RS485 Communication	-	0	2	0	42111
STOP BIT	Stop Bit For RS485 Communication	-	1	2	1	42112
ID	ID For RS485 Communication	-	1	247	1	42113

BAUDRATE
Modbus communication baudrate for RS485 is can be adjusted by this parameter. If parameter value,
1 = 4800
2 = 9600
3 = 19200
4 = 38400
5 = 57600
6 = 115200

PARITY
Modbus communication parity bit for RS485 is can be adjusted by this parameter. If parameter value,
0 = No Parity
1 = ODD Parity
2 = EVEN Parity

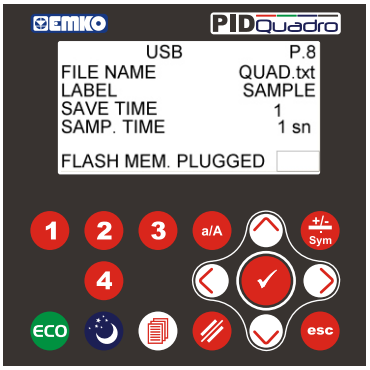
STOP BIT
Modbus communication stop bit for RS485 is can be adjusted by this parameter. If parameter value,
1 = 1 Stop bit
2 = 2 Stop bits

ID
Modbus communication device ID for RS485 is can be adjusted by this parameter.

If the device has a optional RS485 communication then RS 485 page is observed, Otherwise these page is not observed.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.9. Page-9 “USB” Parameters



Parameter	Explanation	Unit	Min	Max	Default	Address
FILE NAME	USB File Name	String	-	-	QUAD.txt	42020 - 42024
LABEL	USB Label	String	-	-	SAMPLE	42025 - 42029
SAVE TIME	USB Time Record ENA/DIS	-	0	1	1	42180
SAMP. TIME	USB Record Time Interval	Sec.	0	3600	1	42181

FILE NAME
USB file name for recording analogue values is can be adjusted by this parameter. File name can be adjusted maximum 10 characters. Recording file on usb is “csv” format and all data is separated each other with tab. Example file format is explained below.

LABEL
When the analogue values are recorded on USB file, user can be defined label for this recording. Label can be adjusted maximum 10 characters. Label are recorded at the end of every lines of file.

SAVE TIME
When the analogue values are recorded on USB file, user can be save the recording time on the file. Recording time is recorded at the beginning of every lines of file.

0 = Real time is not recorded on USB file
1 = Real time is recorded on USB file for every sample

SAMPLE TIME
Record time interval is can be adjusted by this parameter. Analogue values are recorded on USB file with this time interval. If this parameter value is 0 usb recording is disabled.

FLASH MEM. PLUGGED “USB Flash Memory Stick Detected Test”
When the usb flash memory stick is plugged to the device FLASH MEM.PLUGGED led is light on. This parameter is can not be changed, it’s used to inform the user whether USB is plugged.

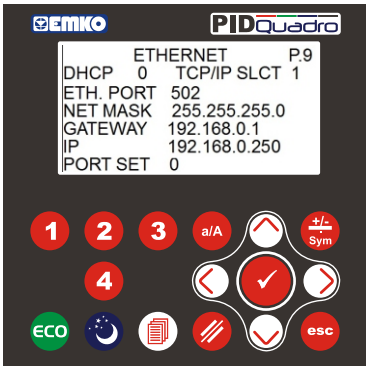
USB Recording File Example

2011-08-03-17:26:09	35.2	35.2	29.7	31.8	SAMPLE
2011-08-03-17:26:10	35.2	35.2	29.7	31.8	SAMPLE
2011-08-03-17:26:12	35.2	35.2	29.7	31.8	SAMPLE
2011-08-03-17:26:13	35.2	35.2	29.7	31.8	SAMPLE
Recording Time	CHANNEL-1 Value	CHANNEL-2 Value	CHANNEL-3 Value	CHANNEL-4 Value	Label

If the device has a optional USB communication then USB page is observed. Otherwise these page is not observed.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.10. Page-10 “ETHERNET” Parameters



Parameter	Explanation	Unit	Min.	Max.	Default	Address
DHCP	DHCP Enable /Disable (**)	ENA/DIS	0	1	0	42209
ETH. PORT	ETHERNET Port No (**)	-	1	65535	502	42210
ETH. IP NO	Ethernet IP No (**)	-	-	-	192.168.0.250	42211 - 42212
ETH. NETMASK	Ethernet Netmask (**)	-	-	-	255.255.255.0	42213 - 42214
ETH. GATEWAY	Ethernet Gateway (**)	-	-	-	192.168.0.1	42215 - 42216
ETH. TCP/IP SLCT	TCP/IP Select (**)	-	0	1	0	-
DEVICE MAC ADR.	Device MAC Address (**)	-	-	-	-	42217 - 42219

DHCP
DHCP is an automatic configuration protocol used on IP networks, If DHCP is enable, device is adjust our ethernet communication configuration parameters (IP, Netmask,Gateway) dynamicaly for your network system. If DHCP is disable, you must adjust ethernet configuration parameters (IP, Netmask,Gateway) for your network system. If parameter value,

0 = DHCP DISABLE
1 = DHCP ENABLE

ETH.PORT
Ethernet port number is can be adjusted by this parameter.

NET MASK
Subnet mask for ethernet communication is can be adjusted by this parameter. If DHCP is selected as a enable there is no need to adjust to this parameter, if DHCP is selected as a disable then user must adjust this parameter according to the their own network system.

GATEWAY
Gateway for ethernet communication is can be adjusted by this parameter. If DHCP is selected as a enable there is no need to adjust to this parameter, if DHCP is selected as a disable then user must adjust this parameter according to the their own network system.

IP
IP address for ethernet communication is can be adjusted by this parameter. If DHCP is selected as a enable there is no need to adjust to this parameter, if DHCP is selected as a disable then user must adjust this parameter.

PORT SET
Ethernet port configuration is setting by this parameter, After the all parameter adjusted according to system needs, this parameter value is must be adjusted to 1 for ethernet port setting, after ethernet port setting is completed this parameter value is turn to zero automatically.

TCP/IP SLCT
TCP/IP protocol is selected by this parameter. **0 = Modbus RTU Over TCP/IP 1 = Modbus RTU TCP/IP**

(**) These parameters are only read for modbus function.

If the device has a optional ETHERNET communication then ETHERNET pages is observed. Otherwise these pages are not observed.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

6.7.11. Page-11 “REAL TIME (RTC)” Parameters

Press and hold on 3 seconds Enter button for setting the RTC time value.

Parameter	Explanation	Unit	Min	Max	Default
YEAR	Year Value For RTC Time	-	2010	3000	-
MONTH	Month Value For RTC Time	-	1	12	-
DAY	Day Value For RTC Time	-	1	31	-
HOUR	Hour Value For RTC Time	-	0	23	-
MINUTE	Minute Value For RTC Time	-	0	59	-
SECOND	Second Value For RTC Time	-	0	59	-

YEAR
Year value for RTC time is adjusted by this parameter.

MONTH
Month value for RTC time is adjusted by this parameter.

DAY
Day value for RTC time is adjusted by this parameter.

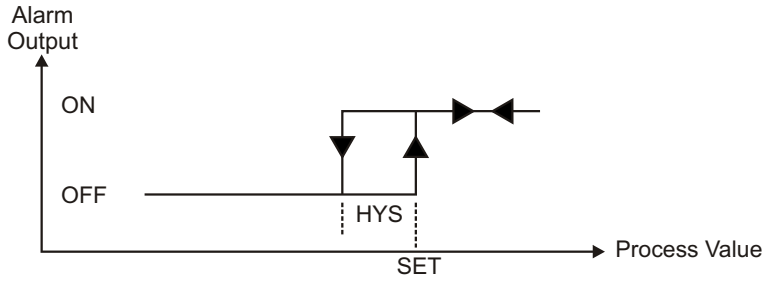
HOUR
Hour value for RTC time is adjusted by this parameter.

MINUTE
Minute value for RTC time is adjusted by this parameter.

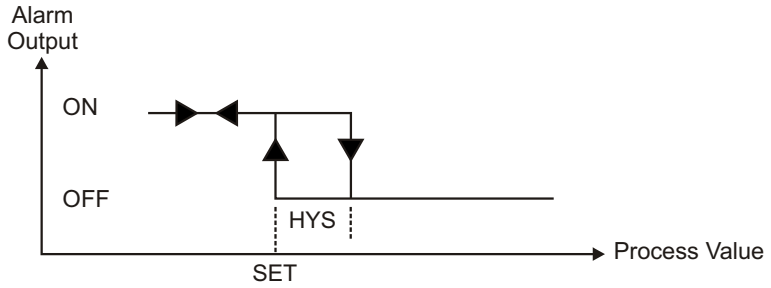
SECOND
Second value for RTC time is adjusted by this parameter.

If no operation is performed for 20 seconds in technician parameters section, device turns to main operation screen automatically.

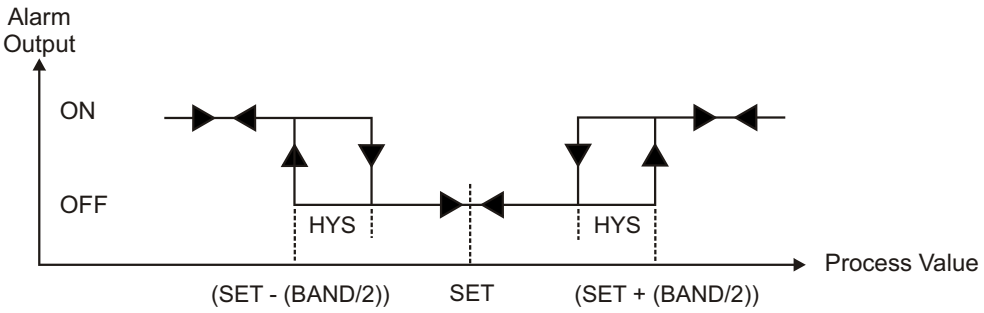
High Alarm



Low Alarm



Band Alarm



SET = Alarm Set value
HYS = Hysteresis value for Alarm output
BAND= Bandwidth for Band Alarm

8. Modbus Addresses

8.1. PID Control and Alarm Output Modbus Addresses

OUTPUTS		Unit	Address
CHANNEL-1 PID CONTROL OUT	Channel-1 PID Control Output Status	-	00001
CHANNEL-2 PID CONTROL OUT	Channel-2 PID Control Output Status	-	00002
CHANNEL-3 PID CONTROL OUT	Channel-3 PID Control Output Status	-	00003
CHANNEL-4 PID CONTROL OUT	Channel-4 PID Control Output Status	-	00004
-	-	-	00005
CHANNEL-1 ALARM OUT	Channel-1 Alarm Output Status	-	00006
CHANNEL-2 ALARM OUT	Channel-2 Alarm Output Status	-	00007
CHANNEL-3 ALARM OUT	Channel-3 Alarm Output Status	-	00008
CHANNEL-4 ALARM OUT	Channel-4 Alarm Output Status	-	00009
GENERAL ALARM OUT	General Alarm Output Status	-	00010

Note-1: Outputs status are can be readed with modbus function-1 (read coils).
Device's response for modbus function-1 is always 2 byte data although the modbus function request less than 9 outputs port.

8.2. Process Input Values Modbus Addresses

PROCESS INPUTS		Unit	Address
CHANNEL-1 PROCESS VALUE	Channel-1 Process Value	^{o}C	30001
CHANNEL-2 PROCESS VALUE	Channel-2 Process Value	^{o}C	30002
CHANNEL-3 PROCESS VALUE	Channel-3 Process Value	^{o}C	30003
CHANNEL-4 PROCESS VALUE	Channel-4 Process Value	^{o}C	30004

Note-2: Process Input values can be readed with modbus function-4 (read input register). Because of the process values are displayed on LCD screen with point, the reading values from modbus will be 10 times more than the real values.

9. Specifications

Device Type	: 4 Channel PID Controller
Housing & Mounting	: 96mm x 96mm x 87.5mm 1/4 DIN 43700 plastic housing for panel mounting. Panel cut-out is 92 x 92mm.
Protection Class	: NEMA 4X (IP65 at front, IP20 at rear)
Weight	: Approximately 0.4Kg.
Environmental Ratings	: Standard, indoor at an altitude of less than 2000 meters
with none	condensing humidity
Storage / Operating Temperature	: -20 ˚C to +70 ˚C / 0 ˚C to +50 ˚C
Storage / Operating Humudity	: 90 % max. (None condensing)
Installation	: Fixed installation
Overvoltage Category	: II
Pollution Degree	: II. office or workplace, none conductive pollution
Operating Conditions	: Continuous
Device Supply Voltage and Power	: 100 - 240 V ~ (-%15 / +%10) 50/60 Hz. 7VA 24 V ~ (-%15 / +%10) 50/60 Hz. 7VA 24 V ⎓ (-%15 / +%10) 7W
Analogue Inputs	: Thermocouple J,K,R,S (IEC584.1)(ITS90), L (DIN43710)
Accuracy	: ± 0,25% of full scale
Line Compensation	: Maximum 10
Sensor Break Protection	: Upscale
Sampling Time	: 1400msecs.
Input Ressistance	: > 10M
Control Forms	: Programmable P, PI, PD or PID.
Relay Output	: Resistive Load 5A@250V~ (Electrical Life : 100.000 operation (Full Load)
Standard Communication	: RS-232 Communication (For Modbus RTU)
Optional Communication	: RS-485 (For Modbus RTU) “500V~ isolated” 10Mbits/s Ethernet (For Modbus RTU Over TCP - Modbus RTU TCP/IP selectable) “1500V~ isolated” USB 2.0 (Data logging over Flash Stick Memory)
Display	: 128 x 64 pixel graphical LCD
Approvals	: GOST-R, CE

10. Other Informations

Manufacturer Information:
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