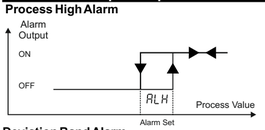
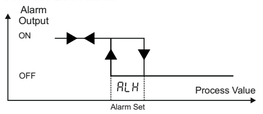
5.2 Alarm Output Graphics of ESM-3722HT

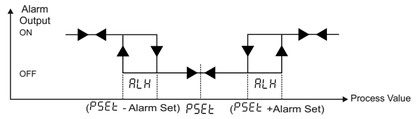
Process High Alarm



Process Low Alarm

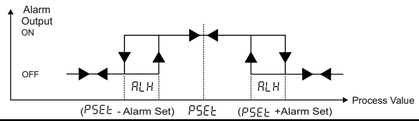


Deviation Band Alarm

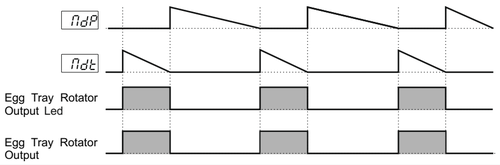


PSEt = Process Set Value (Temperature or Humidity)

Deviation Range Alarm



5.3 Egg Tray Rotator Operation Graphics of ESM-3722HT



5.4 Failure Messages in ESM 3722 Hatcher Controller

1-Sbr 1 Screen Blinking Temperature Sensor failure . Sensor connection is wrong or there is no sensor connection. While this message shown on this display,if buzzer function selection buF is 3, 5, 7 or 8 internal buzzer starts to operate.

2- Sbr2 Screen Blinking Humidity Sensor failure . Sensor connection is wrong or there is no sensor connection. While this message shown on this display,if buzzer function selection buF is 4, 6,7 or 8 internal buzzer starts to operate.

3- In main operating screen if the upper display is blinking, it means that temperature alarm exits and alarm output is active .if buzzer function selection buF is 1, 5 or 8 internal buzzer starts to operate.

4- In main operating screen if the lower display is blinking, it means that humidity alarm exits and alarm output is active .if buzzer function selection buF is 2, 6 or 8 internal buzzer starts to operate.

5- Self Tune temperature error. tErr Appears on the main screen.this fault occurs when the temperature read from the sensor is closer to the Process Set value than 5% of the scale(5 ° C for the ProNem Mini PMI-P sensor). Self tune operation is not allowed.

6. Manual Start of Egg Tray Rotator Operation with Engine Button

While button protection parameter value is PrL 0,1,2 or 4 in main operation screen if engine button is pressed, manual engine start will be active.When the button is released the engine start will be passive and engine stops.

7. Self Tune Metod

Self Tune method is used for determining PID parameters used by the device.

Starting Self Tune (Step Response Tuning) Operation by the user :

- Adjust temperature control on/off or PID parameter (P-o =1)
- Adjust self tune selection parameter (tUnE = YES)
- In the main screen **"Tune"** and Temperature value are should alternately.

If Self Tune operation is finished without any problem, the device saves the new PID coefficients to memory and continue to run.
tUnE Parameter is adjusted no automatically.

NOT: The temperature value read from the sensor must be less than 5% of the process set value in order to start the self tune operation (5 ° C for the ProNem Mini PMI-P sensor).

Cancelling Self Tune(Step Response Tuning) operation :

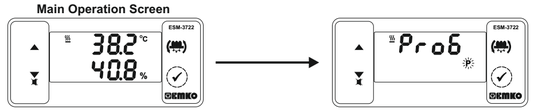
1 - If sensor breaks;
2 - If auto tune operation can not be completed in 8 hours ;
3 - If user adjusts tUnE parameter no ;
4- During self tune operation if the user changes the temperature control from pid to on/off;
5 - If process set value is changed while self tune operation is being performed;
Self tune is canceled. "Tune" is not displayed. Then, without doing any changes in PID parameters, device continues to run with previous PID parameters.

8. Specifications

Device Type	: Hatcher Controller
Housing&Mounting	: 76 mm x 34.5 mm x71 mm Plastic housing for panel Panel cut out is 71 x 29 mm.
Protection Against Mechanical Impacts	: 1Joule (IK06)
Protection Clas	: Ip65 at front, Ip20 at rear.
Weight	: Approximately 0.2 Kg
Enviromental Ratings	: Standart,indoor at an altitude of less than 2000 meters with none condensing humidity.
Storage / Operating Temperature	: -30 °C to +80 °C / -30 °C to +80 °C
Storage / Operating Humidity	: 90 % max. (None condensing)
Installation	: Fixed installation
Overvoltage Category	: II.
Pollution Degree	: II, office or workplace, none conductive pollution
Operating Conditions	: Continuous
Supply Voltage and Power	: 230V~ (±%15) 50/60Hz - 3.5VA : 115V~ (±%15) 50/60Hz - 3.5VA : 24V~ (±%15) 50/60Hz - 3.5VA : 24V⎓ (±%15) 50/60Hz - 3.5VA : 10 -30V⎓ - 3.5W
Temperature Sensor Input	: NTC, PTC, PT-100,0/2..10V⎓,0/4..20mA⎓ or

5.5 Entering To The Programming Mode, Changing and Saving Parameter

Main Operation Screen



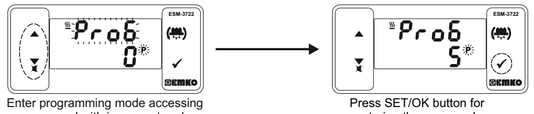
When SET button is pressed for 3 seconds, "P" led turn. If programming mode entering password is different from 0, programming mode entering screen PrG will be observed.

Note1: If programming mode accessing password is 0, Temperature Unit screen C-F is observed instead of programming screen PrG

Programming Mode Entering Screen

Press SET button for accessing to the password entering

Password Entering Screen



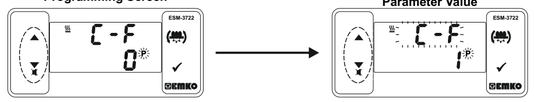
Enter programming mode accessing password with increment and decrement buttons.

Password Entering Screen

Press SET/OK button for entering the password.

Note2: If programming mode accessing password is 0, only three parameters are accessible, and the parameter values can be changed.

Programming Screen



Press SET button for accessing to the parameter value. Press increment button for accessing to the next parameter, press decrement button for accessing to the previous parameter.

Temperature Unit Selection Parameter Value

Change the value with increment and decrement buttons.

Temperature Unit Selection Parameter Value

Press set button for saving the parameter.

Decimal Separator Enabling Selection Screen

Press increment button for accessing to the next parameter, press decrement button for accessing to the previous parameter.

If no operation is performed in programming mode for 20 seconds, device turns to main operation screen automatically.

NTC input type	: NTC (10 kΩ @25 °C)
PTC input type	: PTC (1000 Ω @25 °C)
Termoresistance input type	: PT-100 IEC751 (ITS90)
Humidity input type	: 0/2..10V⎓,0/4..20mA⎓ or ProNem Mini PMI-P
Accuracy	: ± 1 % of full scale
Sensor Break Protection	: Upscale
Control Form	: PID or ON / OFF
Relay Outputs	: 5 A@250 V ~ at Resistive Load (Heating Output) : 3 A@250 V ~ at Resistive Load (Humidificating, Alarm and Egg tray rotator Output
Optional SSR Driver Output	: Maximum 30mA, Maximum 15V
Temperature Display	: 8 mm Red 4 digit LED Display
Humidity Display	: 8 mm Green 4 digit LED Display
LED Displays	: P (Green),%(Green),°C (Red), °F(Red), Alarm (Red), Humidifier Output (Red), Egg tray rotator Output (Red) Heating Output (Red),
Internal Buzzer	: ≥83dB
Upprovals	: CE EAC

10. Other Informations

ESM-3722 (77x35 DIN Size)

A	B	C	D	E	/	FG	HI	/	U	V	W	Z
			0		/			/				0

A	Power Supply Voltage
2	24V⎓ (±%15) 50/60Hz - 3.5VA
3	24V~ (±%15) 50/60Hz - 3.5VA
4	115V~ (±%15) 50/60Hz - 3.5VA
5	230V~ (±%15) 50/60Hz - 3.5VA
8	10 - 30 V ⎓ - 3.5W

B	Temperature Sensor Input	Scale(°C/°F)
1	PT 100, IEC751(ITS90)	0°C/32°F ;100°C/212°F
2	PTC (Not-1)	0°C/32°F ;100°C/212°F
3	NTC (Not-1)	0°C/32°F ;100°C/212°F
4	0/2..10Vdc Voltage Input	User defined
5	0/4..20mA Current Input	User defined
6	ProNem Mini PMI-P	-20°C/-4°F : 80°C/176°F

C	Humidity Sensor Input	Scale (%)
4	0/2..10Vdc Voltage Input	0% - 100%
5	0/4..20mA Current Input	0% - 100%
6	ProNem Mini PMI-P	0% - 100%

E	Heating Output
1	Relay Output (5 A@250 V ~,at Resistive Load 1NC ,1 NO)
2	SSR Drive Output (Maximum 30mA,Maximum 15V)

FG	Humidifier Output
01	Relay Output (3A@250 V ~,at Resistive Load ,1 NO)

Hİ	Egg Try Rotator Output
01	Relay Output (3A@250 V ~,at Resistive Load ,1 NO)

U	Alarm Output
1	Relay Output (3A@250 V ~,at Resistive Load ,1 NO)

V	Temp.Sensor which is given with ESM-3722
0	None
1	PTC-M6L40.K1.5 (PTC Air Probe 1.5 m silicon cable)
2	PTCS-M6L30.K1.5.1/8"(PTC Liquid Probe with 1.5 m silicon cable)
3	NTC-M5L20.K1.5 (NTC Probe thermoplastic moulded with 1.5m cable for cooling application)
4	NTC-M6L50.K1.5 (NTC Probe stainless steel housing with 1.5m cable for cooling application)
6	ProNem Mini PMI-P (2.5m cable for Temperature and Humidity application)
9	Customer

All order information of ESM-3722 Hatcher Controller are given on the table at above. 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 specifications must be determined. Please fill the order code blanks according to your needs. Please contact us, if your needs are out of the standards.

Note-1: If input type is selected PTC or NTC (B = 2, 3), Temperature sensor is given with the device.For this reason, if input type is selected as PTC,sensor type (V = 0,1 or 2) or if input type is selected as NTC, sensor type (V = 0, 3 or 4) must be declared in ordering information.

Before commissioning the device, parameters must be set in accordance with desired use. Incomplete or incorrect configuration can cause dangerous stiuations.

Because of limited mechanical life of relay output contact, SSR output is recommended which the device use PID control algoritm. The device with ON/OFF control algoritm, hysteresis parameter must be set a suitable value for your system, to avoid too much relay switching.

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EMKO

ESM-3722 77x35 DIN Size Hatcher Controller

ESM-3722 77 x 35 DIN Size Digital Hatcher Controller

- 4 Digits for Temperature Display
- 4 Digits for Humidity Display
- Temperature Sensor Input
  NTC, PTC, PT-100, 0/2..10V, 0/4..20mA or ProNem Mini PMI-P
  (Must be determined in order.)
- Humidity Sensor Input
  0/2..10V, 0/4..20mA or ProNem Mini PMI-P
  (Must be determined in order.)
- 4 Output
  Heating Control Output
  Egg tray rotator Output
  Humidification Control Output
  Alarm Control Output
- Relay or SSR Outputs (Must be determined in order.)
- Selectable Temparature Control (PID or ON / OFF)
- Auto-Tune PID
- Set value boundaries
- Manual Start of tray rotator from front panel
- Alarm parametreters
- Adjustable internal buzzer according to the alarm situations
- Password protection for programming mode,

Instruction Manual. ENG ESM-3722 01 V10 04/22

1.3 Installation

A visual inspection of this product for possible damage occurred 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 putting equipment 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.

1.4 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.

1.5 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.

1.6 Manufacturer Company

Manufacturer Information:
Emko Elektronik Sanayi ve Ticaret A.Ş.
Bursa Organize Sanayi Bölgesi, (Fethiye OSB Mah.) Ali Osman Sönmez Bulvarı,
2. Sokak, No:3 16215 BURSA/TÜRKİYE
Tel : +90 224 261 19 00
Fax : +90 224 261 19 12

Repair and maintenance service information:
Emko Elektronik Sanayi ve Ticaret A.Ş.
Bursa Organize Sanayi Bölgesi, (Fethiye OSB Mah.) Ali Osman Sönmez Bulvarı,
2. Sokak, No:3 16215 BURSA/TÜRKİYE
Tel : +90 224 261 19 00
Fax : +90 224 261 19 12

1.Preface

ESM 3722-HT series Hatcher controllers are designed for controlling hatcher process. Device can be used easily with PID or On-Off control form and manual start of egg tray rotator properties.

1.1 Environmental Ratings

Operating Temperature : -30 to 80 °C

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

Altitude : Up to 2000 m.

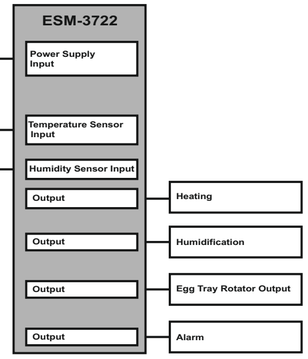
Forbidden Conditions:
Corrosive atmosphere
Explosive atmosphere
Home applications (The unit is only for industrial applications)

1.2. General Specifications

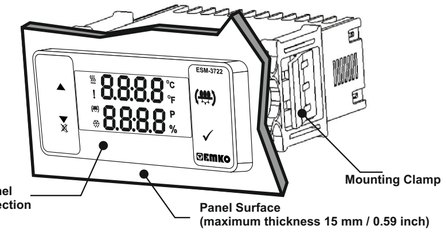
Standard
230V~ (±%15)50/60Hz
Optional Supply Voltage
115 V~ (±%15)50/60Hz
24 V~ (±%15)50/60Hz
24 V⎓ (±%15)50/60Hz
10 - 30 V ⎓

PTC, NTC, PT-100
0/2..10V,0/4..20mA or
ProNem Mini PMI-P

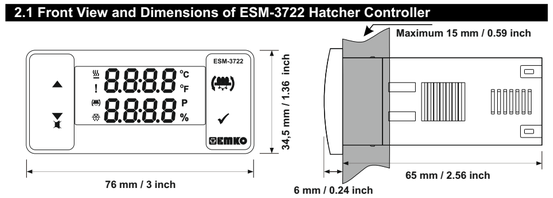
0/2..10V, 0/4..20mA or
ProNem Mini PMI-P



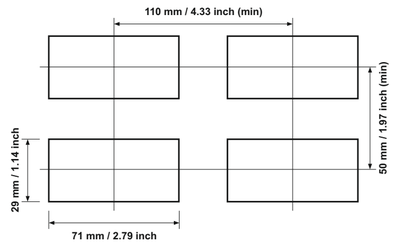
2. General Description



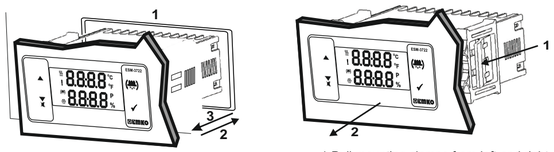
2.1 Front View and Dimensions of ESM-3722 Hatcher Controller



2.2 Panel Cut- Out



2.3 Panel Mounting and Removing

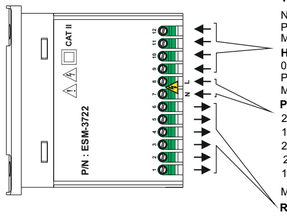


1-Before mounting the device in your panel, make sure that the cut-out is of the right size.
2-Insert the device through the cut-out. If the mounting clamps are on the unit, put out them before inserting the unit to the panel.
3- Insert the mounting clamps to the fixing sockets that located left and right sides of device and make the unit completely immobile within the panel

1-Pull mounting clamps from left and right fixing sockets.
2-Pull the unit through the front side of the panel

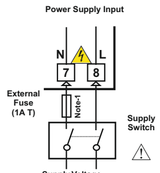
Before starting to remove the unit from panel, power off the unit and the related system.

3. Electrical Wiring Diagram



Temperature Sensor Input
NTC, PTC, PT-100 or
ProNem Mini PMI-P
Must be determined in order.
Humidity Sensor Input
0/2..10V, 0/4..20mA or
ProNem Mini PMI-P
Must be determined in order.
Power Supply Voltage
230V~ (±%15) 50/60Hz ,
115V~ (±%15) 50/60Hz,
24V~ (±%15) 50/60Hz ,
24V⎓ (±%15) 50/60Hz ,
10...30 V⎓
Must be determined in order.
Relay Outputs

3.1 Supply Voltage Input Connection of the Device



Supply Voltage
230V~ (±%15) 50/60Hz ,
115V~ (±%15) 50/60Hz ,
24V~ (±%15) 50/60Hz ,
24V⎓ (±%15) 50/60Hz ,
10...30 V⎓
Must be determined in order.

Make sure that the power supply voltage is the same indicated on the instrument.
Switch on the power supply only after that all the electrical connections 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.

There is no power supply switch on the device. So a power supply switch must be added to the supply voltage input.
Power switch must be two poled for seperating phase and neutral, On/Off condition of power supply switch is very important in electrical connection.

External fuse that on ~ power supply inputs must be on phase connection.

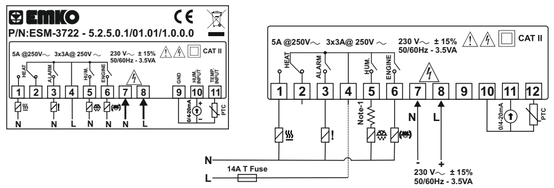
External fuse that on ⎓ power supply inputs must be on (+) connection.

Note-1 : External fuse is recommended.
Note-2 : Stranded cable cross section: 1,5mm², Solid cable cross-section: 2,5mm²
The stripping length is 7 to 9 mm.
Note-3 : Supply cables must comply with the requirements of IEC 60277 or IEC 60245.

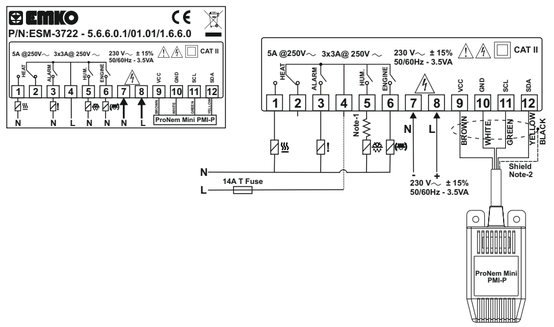
3.2 Device Label and Connection Diagram

230V~ CONNECTION DIAGRAM

PTC Temperature and 0/4..20mA Humidity Sensor Input connection



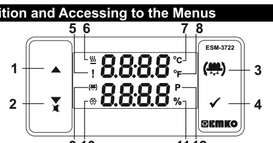
ProNem Mini PMI-P Temperature and Humidity Sensor Input



Note-1 : User must be connected the resistor which is inside the box serially as shown in connection diagram when use the ultrasonic humidifier(30W...50W power supply) to protect the relay output contact problem.

Note-2 : Shield (Black) pin must be connected to number 10 (GND) of the terminal block.

4.Front Panel Definition and Accessing to the Menus



BUTTON DEFINITIONS

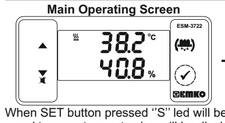
1. Increment Button : ** In main operation screen, press this button to change display temperature and humidity sensor value.
** It is used to increase the value in the Temperature and Humidity Set screens and Programming mode.
2. Decrement, Silencing Buzzer Button : ** It is used to decrease the value in the Set screen and Programming mode.
** It is used to silence the buzzer.
3. Manual Start of Egg Tray Rotator Operation Button: **In the main operation screen, if this button pressed engine starts.When the button is released the engine start will be passive and engine stops.
4. Set Button: ** In the main operation screen; if this button pressed for the first time, Temperature set value will be displayed. Value can be changed using increment and decrement buttons. When Set button is pressed again, value is saved and Humidty set value will be displayed next. Value can be changed using increment and decrement buttons. When Set button pressed again, value is saved and returns back to main operating screen.
** To access the programming screen; in the main operation screen, press and hold this button for 5 seconds.
** It is used to save value in the Set screens (Temperature or Humidity) and programming screen.

LED DEFINITIONS

5.Alarm led : ** It is active when alarm statuses.
6. Heating Output Led : ** This led indicates that heating output is active.
7.Celcius led : ** Indicates that device is in °C mode.
8.Fahrenheit led : ** Indicates that device is in °F mode.
9.Egg Tray Rotator Output Led : ** This led indicates that Egg Tray Rotator Output is active.
10.Humidificating Output Led : ** This led indicates that Humidity output is active.
11.Precent Sign ledi : ** Indicates that device is in Humidity Set screen.
12.Program led : ** Indicates that device is in programming mode .

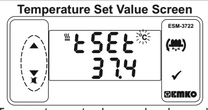
5. Changing and Saving Temperature and Humidity Set Value

Main Operating Screen



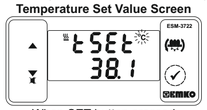
When SET button pressed ''S'' led will be active and temperature set value will be displayed.

Temperature Set Value Screen



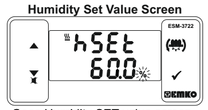
Temperature set value can be changed with increment and decrement buttons.

Temperature Set Value Screen



When SET button pressed temperature set value can be saved.

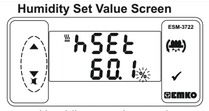
Humidity Set Value Screen



Goes Humidity SET value screen.

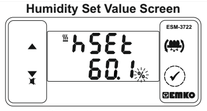
5. Changing and Saving Temperature and Humidity Set Value

Humidity Set Value Screen



Humidity set value can be changed with increment and decrement buttons.

Humidity Set Value Screen



When SET button pressed Humidity set value can be saved.Goes back to main operation screen.

Temperature set value parameter (Default =37.7 °C)
Temperature set value, can be programmed between minimum temperature set value tSUL and maximum temperature set value tSUH.

Humidity set value parameter (Default = 60%)
Humidity set value, can be programmed between minimum Humidity set value hSUL and maximum temperature set value hSUH .

If no operation is performed in Humidity set value changing mode and temperature set value changing mode for 20 seconds, device turns to main operation screen automatically.

5.1 Programming Mode Parameter List

C-F **Temperature Unit Selection Parameter (Default = 0)**
- 0 °C selected.
- 1 °F selected.

Pnt **Decimal Seperator Enabling Parameter (Default = 0)**
- 0 None.
- 1 Only Temperature parameters with decimal seperator.
- 2 Only Humidity parameters with decimal seperator.
- 3 Only Temperature and Humidity parameters with decimal seperator.

Note : When value of C-F or Pnt parameters are changed , the values of tSEt, thSt, tSUL, tSUH, toFt, tASt, tALh, tAUL, tAUH, hSEt, hhSt, hSUL, hSUH, hoFt, hASt, hALh, hAUL, hAUH parameters should be changed accordingly.

Note : tSSL, tuPL and tLoL parameters are shown, if the Temperature sensor analogue input type (0/2..10V or 0/4..20mA) is selected.

tSSL **Temperature Sensor Scale Selection Parameter (Default = 0)**
Analogue (Temperature) input range is determined with this parameter.
- 0 0..10V (1) veya 0..20mA (2)
- 1 2..10V (1) veya 4..20mA (2)

tLoL **Temperature Sensor Scale Low Limit Parameter : (Default = 0)**
It can be adjusted from -1999 to (tuPL -1). At this value analogue input becomes;
If tSSL =0, according to the device type 0V (1) or 0mA (2)
If tSSL =1, according to the device type 2V (1) or 4mA (2)

tuPL **Temperature Sensor Scale High Limit Parameter : (Default = 100)**
It can be adjusted from (tLoL +1) to 9999. At this value analogue input becomes;
According to the device type 10V (1) or 20mA (2)

Note : tLoL, tuPL parameters are shown, if the Temperature sensor analogue input type is selected .

5.1 Programming Mode Parameter List

P-o **Temperature Control Selection Parameter On/Off or PID (Default = 0)**
- 0 On - Off selected.
- 1 PID selected.

Note: If this parameter is select 0, PID parameters (tUnE, P, I, d, t) will be not observed.
If this parameter select 1, thSt parameter will be not observed.

tUnE **Self Tune (Step Response Tuning) Selection Parameter (Default = no)**
- no Device does not do(Step Response Tuning) operation.
- YES Device does operation.

P **PID - Proportional Control Parameter (Default =1.0)**
This parameter value can be adjusted form 0.0 to 100.0.

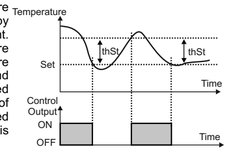
I **PID - Integral Parameter(Default = 300)**
This parameter value can be adjusted form 0 to 3600.

d **PID - Derivative Parameter (Default = 60.0)**
This parameter value can be adjusted form 0 to 999.9.

t **PID -Period Time Parameter (Default = 1)**
This parameter value can be adjusted form 1 to 150 second.

tSP **PID -Temperature Protection Parameter (Default = oFF)**
When PID operation is performed, the heating output is switched off if the temperature value goes above the value defined by tSP. When the value is 0 or 0.0, if the value decrease button is pressed, oFF appears and this function is disabled.
From 1 to 10°C for NTC,PTC, PT-100 (0°C, 100°C) ,From 1 to 18°F for NTC,PTC ,PT-100 (32°F, 212°F),From 0.1 to 10.0°C for NTC, PTC, PT-100 (0.0°C,100.0°C), From 0.1 to 18.0°F for NTC, PTC, PT-100 (32.0°F,212.0°F) ,From 1 to 10°C for ProNem Mini PMI-P (-20°C, 80°C) ,From 1 to 18°F for ProNem Mini PMI-P (-4°F,176°F), From 0.1 to 10.0°C for ProNem Mini PMI-P (-20.0°C,80.0°C), From 0.1 to 18.0°F for ProNem Mini PMI-P (-4.0°F,176.0°F).

tHSt **Hysteresis Parameter for Temperature (Default = 0.1 °C)**
From 1 to 10°C for NTC,PTC, PT-100 (0°C, 100°C) ,From 1 to 18°F for NTC,PTC ,PT-100 (32°F, 212°F),From 0.1 to 10.0°C for NTC, PTC, PT-100 (0.0°C,100.0°C), From 0.1 to 18.0°F for NTC, PTC, PT-100 (32.0°F,212.0°F) ,From 1 to 10°C for ProNem Mini PMI-P (-20°C, 80°C) ,From 1 to 18°F for ProNem Mini PMI-P (-4°F,176°F), From 0.1 to 10.0°C for ProNem Mini PMI-P (-20.0°C,80.0°C), From 0.1 to 18.0°F for ProNem Mini PMI-P (-4.0°F,176.0°F).
In ON/OFF control algorithm, temperature value is tried to keep equal to set value by opening or closing the last control element. ON/OFF controlled system, temperature value oscillates continuously. Temperature value's oscillation period or amplitude around set value changes according to controlled system. For reducing oscillation period of temperature value, a threshold zone is formed below or around set value and this zone is named hysteresis.



tSUL **Minimum Temperature Set Value Parameter (Default = 10.0°C)**
Temperature set value can not be lower than this value. This parameter value can be adjusted from minimum value of device scale to maximum temperature set value parameter tSUH.

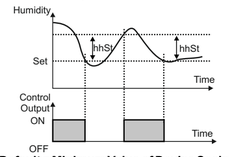
tSUH **Maximum Temperature Set Value Parameter (Default = 40.0 °C)**
Temperature set value can not be greater than this value.
This parameter value can be adjusted from minimum temperature set value parameter tSUL to maximum value of the device scale.

toFt **Temperature Sensor Offset Parameter (Default = 0)**
From -10 to 10°C , NTC,PTC , PT-100 (0°C, 100°C)
From -18 to 18°F, NTC,PTC , PT-100 (32°F, 212°F)
From -10.0 to 10.0°C , NTC ,PTC , PT-100 (0.0°C,100.0°C)
From -18.0 to18.0°F NTC, PTC , PT-100 (32.0°F,212.0°F)
From -10 to 10°C ,ProNem Mini PMI-P (-20°C, 80°C)
From -18 to 18°F,ProNem Mini PMI-P (-4°F, 176°F)
From -10.0 to 10.0°C, ProNem Mini PMI-P (-20.0°C, 80.0°C)
From -18.0 to18.0°F, ProNem Mini PMI-P (-4.0°F,176.0°F)

hSSL **Humidity Sensor Scale Selection Parameter (Default = 0)**
Analogue input range is determined with this parameter.
- 0 0..10V (1) or 0..20mA (2)
- 1 2..10V (1) or 4..20mA (2)

Note : hSSL parameter ProNem Mini PMI-P type device are not observed.

hhSt **Hysteresis Parameter for Humidity (Default = 1)**
From 1 to 10 for Humidity Sensor (0%RH, 100%RH)
From 0.1 to 10.0 for Humidity Sensor (0.0%RH,100.0%RH)
In ON/OFF control algorithm, Humidity value is tried to keep equal to set value by opening or closing the last control element. ON/OFF controlled system, temperature value oscillates continuously. Temperature value's oscillation period or amplitude around set value changes according to controlled system. For reducing oscillation period of temperature value, a threshold zone is formed below or around set value and this zone is named hysteresis.



hSUL **Minimum Humidity Set Value Parameter (Default = Minimum Value of Device Scale)**
Humidity set value can not be lower than this value. This parameter value can be adjusted from minimum value of device scale to maximum Humidity set value parameter hSUH.

hSUH **Maximum Humidity Set Value Parameter (Default = Maximum Value of Device Scale)**
Humidity set value can not be greater than this value. This parameter value can be adjusted from minimum humidity set value parameter hSUL to maximum value of the device scale.

hoFt **Humidity Sensor Offset Parameter (Default = 0)**
From -10 to 10 for Humidity Sensor (0%RH, 100%RH)
From -10.0 to 10.0 for Humidity Sensor (0.0%RH,100.0%RH)

Hdd **Humidity Decrease Amount Parameter for Door Opened Control (Default = oFF)**
To detect that the door is opened, the humidity must be reduced in the amount defined by the Hdd parameter in the time defined by the HdCt parameter.
From -5 to 20 for Humidity Sensor (0%RH, 100%RH)
From 5.0 to 20.0 for Humidity Sensor (0.0%RH,100.0%RH)
If the value decrease button is pressed while the parameter value is 5 or 5.0, oFF is displayed and this function is disabled and the parameters HdCt and Hddt are not observed.

HdCt **Humidity Decrease Amount Control Time Parameter for Door Opened Control (Default = 20)**
To detect that the door is opened, the humidity must be reduced in the amount defined by the Hdd parameter in the time defined by the HdCt parameter.

Hddt **Off Time of Humidity Output Parameter for Door Opened Control (Default = 60)**
When it is detected that the door is opened, the humidity output is switched off for the time defined by the Hddt parameter.
This parameter can be between 10 seconds and 999 seconds.

(1) It is valid, if the device type 0/2...10V ⎓ Humidity Sensor Input.
(2) It is valid, if the device type 0/4...20mA ⎓ Humidity Sensor Input .

tAt **Time of Automatic Egg Tray Rotator (Default = 00:00)**
This parameter value can be adjusted form 00:00 to 99:59 minute/second.

tAP **Repeat cycle of Automatic Egg Tray Rotator (Default = 00:00)**
This parameter value can be adjusted form 00:00 to 24:00 hour/minute.

tAt **Alarm Output Function Selection Parameter (Default = 0)**
- 0 Alarm is inactive.
- 1 Alarm-Temperature sensor failures.
- 2 Alarm-Humidity sensor failures.
- 3 Alarm-Temperature or Temperature sensor failures.
- 4 Alarm-Humidity or Humidity sensor failures.
- 5 Alarm-Temperature sensor failures or Humidity sensor failures.
- 6 Alarm-Temperature or Humidity or Temperature sensor failures or Humidity sensor failures.

Note : if tAt parameter value is 3 or 6 tAtS, tASt, tALh, tAUL, tAUh, tAdL or tAPd parameters are observed.
Note : if tAt parameter value is 4 or 6 hAtS, hASt, hALh, hAUL, hAUh, hAdL or hAPd parameters are observed.

tAtS **Temperature Alarm Function Selection Parameter (Default = 1)**
- 0 Process High alarm selected.
- 1 Process Low alarm selected.
- 2 Deviation Band alarm selected.
- 3 Deviation Range alarm selected.

tASt **Temperature Alarm Set Parameter (Default = 50.0 °C)**
This parameter value can be programmed between temperature minimum alarm set tAUL parameter and temperature alarm set maximum tAUh parameter.

tALh **Temperature Alarm Hysteresis Parameter (Default = 0)**
This parameter value can be adjusted form 0 to %50 of the device scale.

tAUL **Alarm Set Minimum Parameter (Default = Minimum Value of Device Scale)**
if temperature alarm is active, this parameter value can be adjusted from minimum value of device scale to temperature alarm set maximum parameter value. tAUh

tAUh **Alarm Set Maximum Parameter (Default = Maximum Value of Device Scale)**
if temperature alarm is active, this parameter value can be adjusted from temperature alarm set value parameter tAUL to maximum value of the device scale.

tAdL **Temperature Alarm On Delay Time Parameter (Default = 0)**
Temperature Alarm On Delay Time can be defined with this parameter. It can be adjusted from 0 to 99 minutes.

tAPd **Temperature Alarm Delay After Power On Parameter (Default = 0)**
When power is first applied to the device, this time delay must be expired for activation of temperature alarm. It can be adjusted from 0 to 99 minutes.

hAtS **Humidity Alarm Function Selection Parameter (Default = 0)**
- 0 Process High alarm selected.
- 1 Process Low alarm selected.
- 2 Deviation Band alarm selected.
- 3 Deviation Range alarm selected.

hASt **Humidity Alarm Set Parameter (Default = 50)**
This parameter value can be programmed between humidity minimum alarm set hAUL parameter and humidity alarm set maximum hAUh parameter.

hALh **Humidity Alarm Hysteresis Parameter (Default = 0)**
This parameter value can be adjusted form 0 to %50 of the device scale.

hAUL **Humidity Alarm Set Minimum Parameter(Default =Minimum Value of Device Scale)**
if humidity alarm is active, this parameter value can be adjusted from minimum value of device scale to humidty alarm set maximum parameter value. hAUh

hAUh **Humidity Alarm Set Maximum Parameter(Default =Maximum Value of Device Scale)**
if humidity alarm is active, this parameter value can be adjusted from humidity alarm set minimum parameter hAUL to maximum value of the device scale.

hAdL **Humidity Alarm On Delay Time Parameter(Default = 0)**
Humidity Alarm On Delay Time can be defined with this parameter. It can be adjusted from 0 to 99 minutes.

hAPd **Humidity Alarm Delay After Power On Parameter(Default = 0)**
When power is first applied to the device, this time delay must be expired for activation of Humidity alarm. It can be adjusted from 0 to 99 minutes.

hSdL **Humidity Out Stop-Start and Start-Stop Delay Parameter(Default = 2)**
This time must pass before the humidity out is turned on again after it is turned off, or turned off again after it is turned on. It can be adjusted from 0 to 20 minutes.

buF **Buzzer Function Selection Parameter(Default = 0)**
- 0 Buzzer is inactive.
- 1 Buzzer is active during temperature alarm
- 2 Buzzer is active during humidity alarm
- 3 Buzzer is active during Temperature sensor failures.
- 4 Buzzer is active during Humidity sensor failures.
- 5 Buzzer is active during Temperature sensor failures or temperature alarm.
- 6 Buzzer is active during Humidity sensor failures or Humidity alarm.
- 7 Buzzer is active during Temperature sensor failures or Humidity sensor failures
- 8 Buzzer is active during Temperature sensor failures or Humidity sensor failures or temperature alarm or humidity alarm.

bon **Buzzer Active Time (Default = ----)**
If buzzer function selection parameter value buF = 0, this parameter is not observed. Buzzer active time can be define with this parameter. It can be adjusted from 1 to 99 minutes. When this parameter is 1, if decrement button is pressed, ---- is observed. In this condition buzzer is active till buzzer silence button is pressed.

Prt **Button Protection Parameter (Default = 0)**
- 0 There is no protection.
- 1 Temperature set value can not be changed.
- 2 Humidity set value can not be changed.
- 3 Manual engine start is not available.
- 4 Humidity set value and Temperature set value can not be changed
- 5 Humidity set value can not be change and Manual engine start is not available.
- 6 Temperature set value can not be change and Manual engine start is not available.
- 7 Temperature set value and Humidity set value can not be changed. Also Manual engine start is not available.

PAS **Programming Mode Accessing Password (Default = 0)**
It is used for accessing to programming mode. It can be adjusted from 0 to 9999. If it is 0, password is not entered for accessing to the parameters. When the password screen is not set as ''12'' , If the user enters '12' in password screen thSt and hhSt parameters are accessed and they can changed.