Every part matters

EN

Instruction Manual
RS Pro 35 x 77mm Defrost Thermostat, NTC, Three Outputs
Stock Number: 124-1049, 124-1050

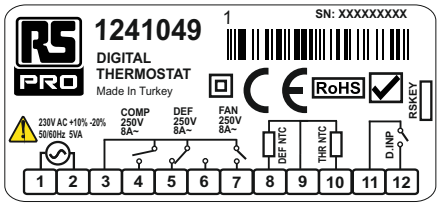
Please read this document carefully before using this product. The guarantee will be invalidated if the device is damaged by not following instructions detailed in the manual. The company shall not be responsible for any damage or losses however caused, which may be experienced as a result of the installation or use of this product.

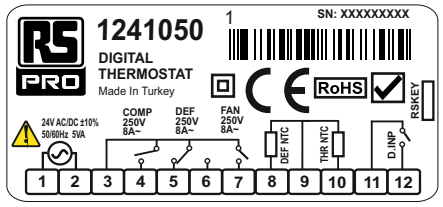
- 35x77mm size.
- On-Off control.
- Three relay outputs for cooling, defrost and fan control.
- Range -60 to 150°C.
- Two NTC probe inputs for cooling and defrost control.
- Compressor protection parameter.Probe failure setting, output status can be set to ON, OFF or pulse.
- Adjustable upper and lower setpoint value limits.
- Sensor input offset setting.
- Selectable smart defrost feature.
- Defrost initiated by evaporator temperature, time dependent or manual operation.
- Adjustable defrost duration and intervals.
- High and low alarm limits, absolute or deviation
- Temperature units °C or °F.
- Digital input ;
  - External alarm
  - Initiate defrost or lighting
- CE marked.

Part Code	Supply Voltage	Number Outputs
124-1049	230V ac	3
124-1050	24V ac/dc	3

RoHS Compliant

1241049 & 1241050 is intended for installation in control panels. Make sure that the device is used only for intended purpose. The electrical connections must be carried out by a qualified staff and must be according to the relevant locally applicable regulations. During an installation, all of the cables that are connected to the device must be free of electrical power.
Device must be protected against inadmissible humidity, vibrations, severe soiling and make sure that the operation temperature is not exceeded. The cables should not be close to the power cables or components.

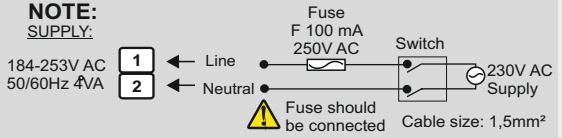




Equipment is protected throughout by **DOUBLE INSULATION**

Holding screw 0.4-0.5Nm.

NOTE:
SUPPLY:



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

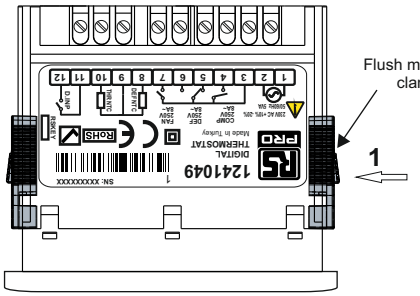
ENVIRONMENTAL CONDITIONS	
Ambient/storage temperature	0 ... +50°C/-25 ... 70°C (without icing)
Relative humidity	Relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.
Protection class	According to EN60529; Front panel : IP65 Rear Panel : IP20
Height	Max. 2000m

Do not use the device in locations subject to corrosive and flammable gasses.

ELECTRICAL CHARACTERISTICS	
Supply voltage	230V AC +%10 -%20, 50/60Hz or 24V AC/DC ±%10
Power consumption	Max. 5VA
Connection	2.5mm² screw-terminal connections
Scale	-60.0 ... +150.0°C (-76.0 ... +302.0°F)
Sensitivity	0.1°C (Can be selected as 0.1ºC or 1ºC.)
Accuracy	±1°C
Time accuracy	±1%
Display	4 digits, 12.5mm, 7 segment LED
EMC	EN 61326-1: 2013
Safety requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)
OUTPUTS	
Compressor relay output	Relay : NO 250V AC, 8A (for resistive load), 1/2hp, 0.37kW 240V AC (for inductive load)
Defrosting relay output	Relay : NO+NC 250V AC, 8A (for resistive load), 1/2hp, 0.37kW 240V AC (for inductive load)
Fan relay output	Relay : NO 250V AC, 8A (for resistive load), 1/2hp, 0.37kW 240V AC (for inductive load)
Life expectancy	Without load 30.000.000 switching; 250V AC, 8A (resistive load) 100.000 switching.
CONTROL	
Control type	Single set-point control
Control algorithm	On-Off control
Hysteresis	Adjustable between 1 ... 20.0°C.
HOUSING	
Housing type	Suitable for flush -panel mounting
Dimensions	H35xW77xD61mm
Weight	Approx. 190g (After packing)
Enclosure material	Self extinguishing plastics.

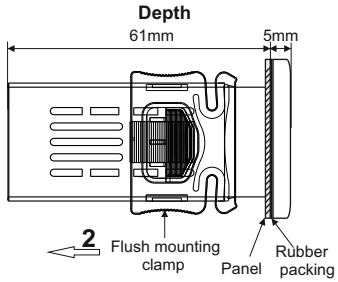
While cleaning the device, solvents (thinner, gasoline, acid etc.) or corrosive materials must not be used.

DIMENSIONS

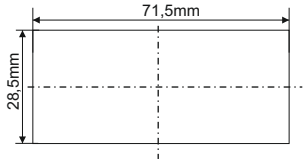


For removing mounting clamps:

- Push the flush-mounting clamp in direction **1** as shown in the figure below.Then,pull out the clamp in direction **2** .



Panel Cut-out



Note:
1) Panel thickness should be maximum 7mm.
2) If there is no 60mm free space at the back side of the device,it would be difficult to remove it from the panel.

FOR MORE INFORMATION VISIT THIS SITE
http://www.rs-components.com/index.html

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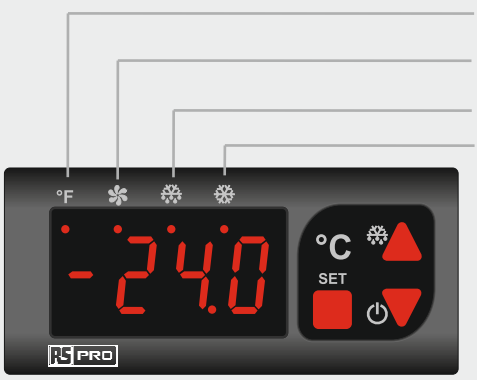

°F **FAHRENHEIT LED :** In parameter value or the measured temperature value **"°F"** unit while this LED lights up. In the hidden menu at the same time the user menu parameter is shown the LED lights up.

FAN LED : While FAN control is in progress, FAN LED lights up if output is active. While waiting for FAN time delay, FAN LED flashes.

DEFROST LED : Lights up during DEFROST.

COMPRESSOR LED : If compressor output is active, COMPRESSOR LED lights up. While waiting for COMPRESSOR time delay, COMPRESSOR LED flashes.

SET Indicates set point in "Running Mode" and indicates selected set point of parameter in "Programming Mode"

Provides a transition to the next parameter while in "Programming Mode". Used to increase the value of a parameter. If this key is pressed continuously, parameter value increases rapidly.

Provides a transition to the previous parameter while in "Programming Mode". Used to decreases the value of a parameter. If this key is pressed continuously, parameter value decreases rapidly.

FRONT PANEL COMMANDS

1.Viewing and Changing The set point

-24.0 Measurement value → SET → -30.0 → ▼ → -29.9 → ▲ → -30.0

While in the running mode, if SET key is pressed set point is displayed for 3 seconds. While in this case,the set point is changed with ▼▲ keys.

2.Viewing Defrost Measurement Value

-24.0 Measurement value → SET ▲ → -9.0 While in the running mode; if SET ▲ keys are pressed,defrost probe measurement value is displayed for 3 seconds

3.Locking and Unlocking Keys

-24.0 Measurement value → SET ▼ → Loc Keys are locked. / unL Keys are unlocked.

While in the operating mode, if SET ▼ keys are pressed together among 2 seconds the Loc message is displayed and the keys are locked. If the keys are locked, SET ▼

if SET key is pressed, the set point can be displayed but the value can not be changed. While the keys are locked, SET key outside if a key is pressed the Loc message is seen.

4.Manual Defrost Process

While in the operating mode, if ▲ key is pressed for 2 seconds the defrost process is started as manual. If d.dur = 0 ,the manual defrost will also be disabled.

5.Activating / Inactivating The Control Outputs

-24.0 Measurement value → ▼ → C.dis The control ouput becomes inactive. / C.Enb The control output becomes active.

* When in the running mode, if the control outputs are inactive, oFF message displays periodically.

When in the running mode, if ▼ key is pressed for 2 seconds, C.dis message is displayed and control outputs becomes to the inactive position, the device works as the indicator. When the control outputs are disabled; if ▼ key is pressed for 2 seconds C.Enb is disabled and the device continues to do control function.

6. Changing Parameter Values

▲▼ Keys are pressed together for 2 seconds LP1 is displayed and the user menu is entered,afterwards first parameter's name is displayed in the user menu.

While a parameter was selected, by pressing to SET key parameter's value is displayed, the displayed this parameter can be changed with ▼▲ keys. When the parameter name is shown, no action is done after 3 seconds or to the SET key is pressing again to return to the parameter's name. When the parameter name is shown, ▼▲ keys are pressed together immediately without waiting to get out of this process.

Program mode

LP1 → uPL … HYS

7. The Hidden Menu

While in the user menu, if ▼ key is pressed for 7 seconds the P2 message is displayed and is entered the hidden menu. Then uPL parameter is displayed. Selected the parameter's value, by pressing the SET key is displayed and with ▼▲ keys can be changed. Parameter access and saving functions ,user menu is like. All parameters can be accessed from this menu.

8. Transferring Parameters Between Menus

If SET ▼ keys are pressed together for 2 seconds; parameter is transferred to the user menu. In this way the user menu up to 8 parameters can be transferred.

In the user menu SET ▼ keys are pressed together along the 2 seconds the parameter is removed from the user menu.

When a parameter is displayed in the user menu °F LED lights up in the hidden menu.

If the user menu have not any parameter nP message is displayed.

LP2 → uPL … C.Fos

ERROR MESSAGES

PFA	Means, thermostat probe is broken.	P5C	Means, thermostat probe is short circuit.	PFA2	Means, thermostat probe is broken.
----	Temperature value is higher than the scale.	----	Temperature value is lower than the scale.	P5C2	Means, thermostat probe is short circuit.

ALARM SITUATION

-24.0 1.When the alarm situation occured, the measured value flashes in the indicator and if "Snd" parameter is not "0" is given audible alarm by the device. While there are a audible warning ; ▲ key is pressed, the audible warning will be disabled.

EA 2.External alarm is activated but output's is not affected by this situation.

SA 3.Except that the alarm has been activated and external alarm output relay is active when the show shut down. (off situation).

FACTORY DEFAULTS

If ▼ key is held down while the device is powered up, d.PAr message will displayed and factory parameters are restored.

CONTROL PARAMETERS		MIN.	MAX.	UNIT	DEF. SET
uPL	The upper limit of the set point	-60.0	uPL	°C	150
LoL	The lower limit of the set point	LoL	150.0	°C	-60
HYS	Switch hysteresis for compressor (hysteresis)	0.1	20.0	°C	2
oFF	The offset point for the refrigeration	-20.0	20.0	°C	0
CONFIGURATION PARAMETERS					
Unit	Temperature unit (Devices with part code suffix 'F' have deg F as the default 'Unit').	°C	°F		°C
dPnt	Decimal point (no= decimal point isn't shown 22°C, YES=decimal point is shown 22.3°C.)	no	YES		no
d.inP	Digital input types. nd:Digital input unused. EA: External alarm. EA message flashes in the display. Output unchanged. SA: Important external alarm. SA message flashes in the display. Relay output is turned off. HC: Control type. CtYP parameter is changed.(If HE = Co, If Co = HE) dF: Defrost operation is started .	nd	dF		nd
dd1	Digital input delay. The period of the digital inputs to be active.	0:00	99:00		0:00
dPo	Digital input polarity. cL = While a digital input contact is closed,it is activated. oP= While a digital input is opened, it is activated.	CL	oP		CL
COMPRESSOR PROTECTION PARAMETERS					
C.Pon	Delay time for the compressor after power is on.	0:00	99:00	min:sec	1:00
C.FoS	Delay time required for the compressor to restart following a stop.	0:00	99:00	min:sec	1:00
C.PPn	On time for the compressor output in the case of probe failure.	0:00	99:00	min:sec	0:00
C.PPF	Off time for the compressor output in the case of probe failure	0:00	99:00	min:sec	1:00
DEFROST CONTROL PARAMETERS					
d.SAt	Smart Defrost selection (no : Defrost counter (between 2 defrost duration) decrease irrespective of d.int status of the compressor. YES : Defrost counter decreases as long as compressor work).	no	YES		no
dtYP	Defros type selection (ELC : electric defrost (compressor is switched off), GAS : hot gas (compressor is ON))	ELC	GAS	ELC	
dStP	Defrost stop temperature (If evaporator temperature is greater than this value, defrost will not work)	-600	150.0	°C	20
d.dur	Defrost duration (If d.dur=0 , automatic and manual defrost are disabled.)	0:00	99:00	min:sec	1:00
d.int	The time between 2 consecutive defrosts.	1:00	99:00	hr:min	1:00
ddSP	During defrost,display configuration (rE= Real temperature is displayed during defrost. (Lc= The temperature which is measured before defrost is displayed during defrost.	Lc.	rE		Lc.
d.drE	Delay time for display real temperature after defrost is over.	0:00	99:00	min:sec	1:00
dPon	Defrosting process begins with energy (no=Defrost process doesn't start when,the energy comes. YES=Defrost process starts when the energy comes.)	no	YES	no	
d.dPo	Delay time for defrosting after power is on.	0:00	99:00	min:sec	1:00
d.drt	Dripping (discharge) time	0:00	99:00	min:sec	2:00
ALARM CONTROL PARAMETERS					
A.uPL	Limit for upper alarm level. When A.tYP is changed, A.uPL should be readjusted.	A.LoL	150.0	°C	150
A.LoL	Limit for lower alarm level. When A.tYP is changed, A.LoL should be readjusted.	-60.0	A.uPL	°C	-60
A.HYS	Hysteresis alarm	0.1	20.0	°C	2
A.tYP	Alarm configuration. (Abs = Independent alarm. Alarm values are A.LoL and A.uPL .) (rEF = Relative alarm. Alarm values are SEt-A.LoL and SEt+A.uPL .) NOTE: Upper and Lower alarm level variables are determined according to the " A.tYP " parameter. If A.tYP = A.bS , A.LoL and A.uPL . If A.tYP = rEF, LoL = SEt-A.LoL and A.uPL .	Abs	rEF		Abs
A.dFL	Time delay to display alarm message after alarm is on.	0:00	99:00	min:sec	0:00
A.dPo	Time delay to display alarm message after power is on.	0:00	99:00	hr:min	0:10
FAN CONTROL PARAMETERS					
F.Con	Fan operates with thermostat .(no=Fan runs independently from thermostat.,YES=Fan operated with thermostat.	no	YES		YES
F.StP	Fan stop temperature.	-60.0	150.0	°C/°F	1
F.HYS	Fan differential.	0.1	20.0	°C/°F	2
F.cSt	Fan operations when compressor stop. (no= Fan holds its status, YES= Fan stops with compressor.)	no	YES		YES
F.dSt	Fan operation during defrost process.(no=Fan holds its status, YES= Fan stops during defrost process.)	no	YES		YES
F.Pon	Required delay time for fan to be powered up.	00:00	99:00	min:sec	1:00
F.Std	Required delay time for fan to be powered up after defrost.	00:00	99:00	min:sec	3:00
F.ctr	Fan control depending on room temperature. (no=If evaporator temperature over FStP value, fan does not run. YES=If difference between room temperature and the temperature of the evaporator temperature is below from F.StP value, fan stops. If the room temperature and evaporator temperature differences greater than FStP + F.HYS , fan runs again.	no	YES		no
MODBUS COMMUNICATION PARAMETERS					
Adr5	Modbus slave device address for device	1	247		1
bAud	Modbus communication speed (Baud rate, 0 : oFF, 1 : 1200, 2 : 2400, 3 : 4800, 4 : 9600, 5 : 19.20)	oFF	19.20	bps	9600