



Every part matters

EN

# Instruction Manual RS Pro 35 x 77mm Defrost Thermostat, NTC, Two Outputs Stock Number: 124-1047, 124-1048



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.



- 35 x 77mm.
- On-Off control.
- Control output for cooling or heating.
- Additional Output for defrost or lighting.
- Range -60 to 150°C.
- Single NTC probe input.
- 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.
- Adjustable defrost duration and intervals.
- 6 selectable warning tones.
- 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
124-1047	230V ac	2x Relay
124-1048	24V ac/dc	2x Relay

RoHS Compliant

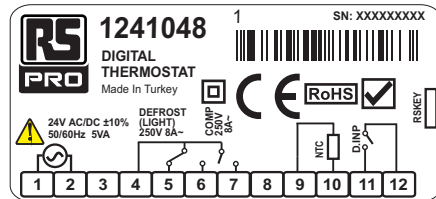
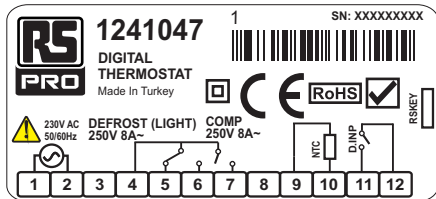


## CONNECTION DIAGRAM



1241047 & 1241048 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.

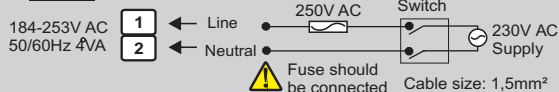


Equipment is protected throughout by DOUBLE INSULATION

Holding screw 0.4-0.5Nm.

### NOTE:

SUPPLY:

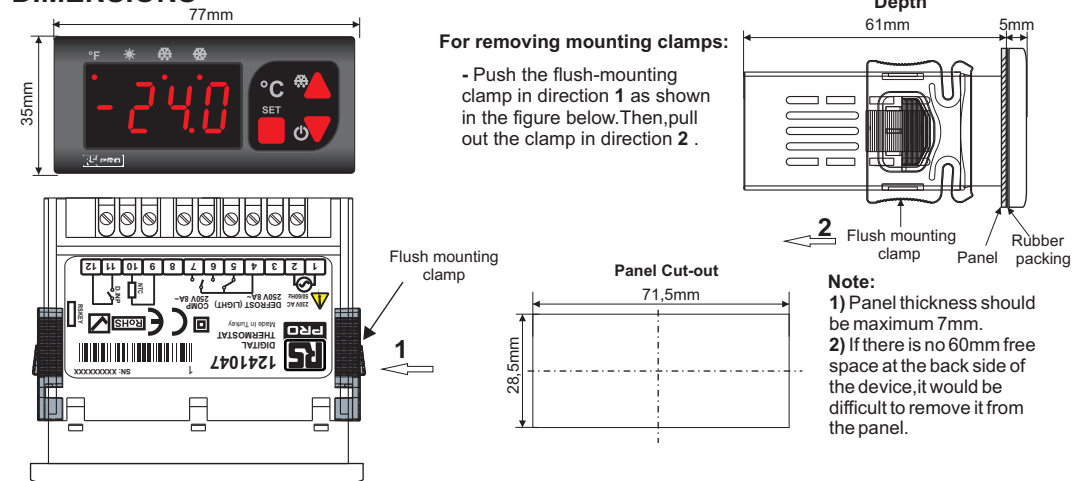


### Note:

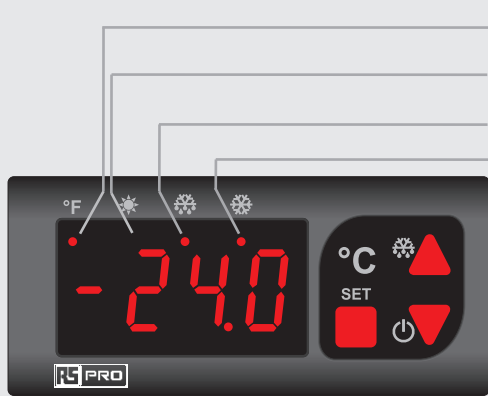
- 1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
- 2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

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
<b>⚠ Do not use the device in locations subject to corrosive and flammable gasses.</b>	
ELECTRICAL CHARACTERISTICS	
Supply voltage	230V AC +%10 -%20, 50/60Hz or 24V AC/DC ±%10
Power consumption	Max. 5VA
Connection	2.5mm <sup>2</sup> screw-terminal connections
Scale	-60.0 ... +150.0°C (-76.0 ... +302.0°F)
Sensitivity	0.1°C (Can be selected as 0.1°C or 1°C.)
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+NC 250V AC,8A (resistive load), 1/2hp, 0.37kW 240V AC (inductive load)
Defrosting and lighting relay output	Relay : NO+NC 250V AC, 8A (for resistive load), 1/2hp, 0.37kW 240V AC (for inductive load)
Life expectancy for compressor relay output	Without load 30.000.000 switching; 250V AC, 8A (resistive load) 100.000 switching
Life expectancy for defrosting and lighting relay output	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.
<b>⚠ While cleaning the device, solvents (thinner, benzine, acid etc.) or corrosive materials must not be used.</b>	

## DIMENSIONS



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



- °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.
  - LIGHTING LED** : Heating is being checked; while the output is active, the LED lights.
  - DEFROST LED** : With the defrost lights up.
  - COMPRESSOR LED** : If compressor output is active, this LED lights up. While these compressor delays expected, this LED flashes.
- SET** (Red square icon)
- While in the operating mode set value, while in the programming mode shows selected parameter's value.
- ▲** (Red up arrow icon)
- While in programming mode, provides the transition to the next parameter. If parameter is being adjusted, it increases parameter's value. Constantly holding this key, the parameter value rapidly increases.
- ▼** (Red down arrow icon)
- While in programming mode, provides the transition to the previous parameter. If parameter is being adjusted, it decreases parameter's value. Constantly holding this key, the parameter value rapidly decreases.

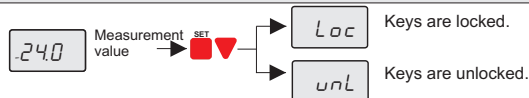
## FRONT PANEL COMMANDS

### 1. Viewing and Changing The Set Value



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

### 2. Locking and Unlocking Keys

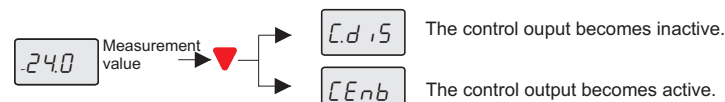


While in the operating mode, if **SET** **▼** keys are pressed together among 2 seconds the *Loc* message is displayed and the keys are locked. If the keys are locked **SET** **▲** keys are pressed for 2 seconds again *unL* message is displayed and key lock is opened and is returned to the normal way of working. While keys are locked, if **SET** key is pressed, the set value 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.

### 3. Manual Defrost Process

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

### 4. Activating / Inactivating The Control Outputs



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

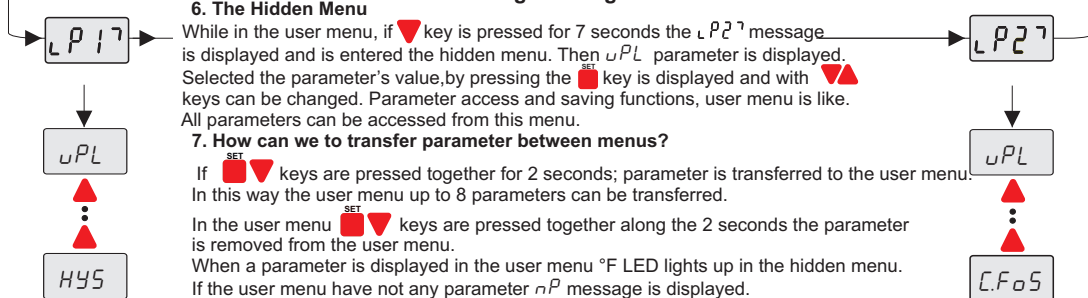
When in the running mode, if **▼** key is pressed for 2 seconds, *Cdis* message is displayed and control outputs becomes to the inactive position, the device works as the indicator. When the control outputs are disabled; if **▼** key is pressed for 2 seconds *CEnb* is disabled and the device continues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

### 5. Changing Parameter Values

**▲** **▼** keys are pressed together for 2 seconds *LP17* 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.

#### Programming Mode



#### 6. The Hidden Menu

While in the user menu, if **▼** key is pressed for 7 seconds the *LP27* 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.

#### 7. How can we to transfer parameter 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.

### ERROR MESSAGES

<i>PFR</i>	Means, thermostat probe is broken.	<i>PSC</i>	Means, thermostat probe is short circuit.
<i>---</i>	Temperature value is higher than the scale.	<i>---</i>	Temperature value is lower than the scale.

### ALARM SITUATION

- When the alarm situation occurred, the measured value flashes in the indicator and if "*sd*" 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.
- External alarm is activated but output's is not affected by this situation.
- Except that the alarm has been activated and external alarm output relay is active when the show shut down. (off situation).
- Buzzer voice warning is given; if any key is pressed the buzzer will be silenced.

### RETURNING TO FACTORY SETTINGS

**▼** Key is held down while the device is powered up the *dPFR* message will see and restore the factory parameters.

CONTROL PARAMETERS		MIN.	MAX.	UNIT	DEF. SET
<i>uPL</i>	The upper limit of the setpoint	-60.0	<i>uPL</i>	°C	150
<i>LoL</i>	The lower limit of the setpoint	<i>LoL</i>	150.0	°C	-60
<i>HY5</i>	Switch hysteresis for compressor (hysteresis)	0.1	20.0	°C	2
<i>oFF</i>	The offset value for the refrigeration	-20.0	20.0	°C	0
CONFIGURATION PARAMETERS					
<i>oLYP</i>	Defrost / Lighting relay, output type selection. ( <i>dEF</i> : Relay is used as defrost relay, <i>LGht</i> : Relay is used as lighting relay.	<i>Lo</i>	<i>HE</i>		<i>Lo</i>
		<i>dEF</i>	<i>LGht</i>		<i>dEF</i>
<i>Unit</i>	Temperature unit (Devices with part code suffix 'F' have deg F as the default 'Unit').	°C	°F		°C
<i>dPnt</i>	Decimal point ( <i>no</i> = decimal point isn't shown 22°C, <i>YES</i> =decimal point is shown 22.3°C.)	<i>no</i>	<i>YES</i>		<i>no</i>
<i>Sound</i>	Type of buzzer sound (6 different voice types can be selected. Alarm during <i>0</i> is chosen, the voice warning is canceled.) For Relay-8A is valid.	0	6		0
<i>dinp</i>	Digital input types. <i>nd</i> :Digital input unused. <i>EA</i> : External alarm. <i>EA</i> message flashes in the display. Output unchanged. <i>SA</i> : Important external alarm. <i>SA</i> message flashes in the display. Relay output is turned off. <i>HL</i> : Control type. <i>LYP</i> parameter is changed. (If <i>HE</i> = <i>Lo</i> , If <i>Lo</i> = <i>HE</i> ) <i>dF</i> : Defrost operation is started	<i>nd</i>	<i>dF</i>		<i>nd</i>
<i>ddi</i>	Digital input delay. The period of the digital inputs to be active.	0:00	99:00		0:00
<i>dPo</i>	Digital input polarity. <i>CL</i> = While a digital input contact is closed, it is activated. <i>oP</i> = While a digital input is opened, it is activated.	<i>CL</i>	<i>oP</i>		<i>CL</i>
COMPRESSOR PROTECTION PARAMETERS					
<i>CPon</i>	Delay time for the compressor after power is on.	0:00	99:00	min:sec	1:00
<i>CFoS</i>	Delay time required for the compressor to restart following a stop.	0:00	99:00	min:sec	1:00
<i>CPPh</i>	On time for the compressor output in the case of probe failure.	0:00	99:00	min:sec	0:00
<i>CPPF</i>	Off time for the compressor output in the case of probe failure	0:00	99:00	min:sec	1:00
DEFROST CONTROL PARAMETERS					
<i>dSnt</i>	Smart Defrost selection ( <i>no</i> : Defrost counter (between 2 defrost duration) decrease irrespective of <i>dint</i> status of the compressor. <i>YES</i> : Defrost counter decreases as long as compressor work).	<i>no</i>	<i>YES</i>		<i>no</i>
<i>dLYP</i>	Defrost type selection ( <i>ELC</i> : electric defrost (compressor is switched off), <i>GRS</i> : hot gas (compressor is on))		<i>GRS</i>	<i>ELC</i>	
<i>ddur</i>	Defrost duration (If <i>ddur</i> =0 , automatic and manual defrost are disabled.)	0:00	99:00	min:sec	1:00
<i>dint</i>	The time between 2 consecutive defrosts.	1:00	99:00	hr:min	1:00
<i>ddSP</i>	During defrost, display configuration ( <i>rE</i> = Real temperature is displayed during defrost. ( <i>Lc</i> = The temperature which is measured before defrost is displayed during defrost.	<i>Lc</i>	<i>rE</i>		<i>Lc</i>
<i>ddrE</i>	Delay time for display real temperature after defrost is over.	0:00	99:00	min:sec	1:00
<i>dPon</i>	Defrosting process begins with energy ( <i>no</i> =Defrost process doesn't start when the energy comes. <i>YES</i> =Defrost process starts when the energy comes.)	<i>no</i>	<i>YES</i>		<i>no</i>
<i>ddPo</i>	Delay time for defrosting after power is on.	0:00	99:00	min:sec	1:00
<i>ddrt</i>	Dripping (discharge) time	0:00	99:00	min:sec	2:00
ALARM CONTROL PARAMETERS					
<i>RuPL</i>	Limit for upper alarm level. When <i>ALYP</i> is changed, <i>RuPL</i> should be readjusted.	<i>ALoL</i>	150.0	°C	150
<i>RLoL</i>	Limit for lower alarm level. When <i>ALYP</i> is changed, <i>RLoL</i> should be readjusted.	-60.0	<i>RuPL</i>	°C	-60
<i>RHY5</i>	Hysteresis alarm	0.1	20.0	°C	2
<i>ALYP</i>	Alarm configuration. ( <i>AbS</i> = Independent alarm. Alarm values are <i>RLoL</i> and <i>RuPL</i> .) ( <i>rEF</i> = Relative alarm. Alarm values are <i>SEt-RLoL</i> and <i>SEt+RuPL</i> .) NOTE: Upper and Lower alarm level variables are determined according to the " <i>ALYP</i> " parameter. If <i>ALYP</i> = <i>AbS</i> , <i>RLoL</i> and <i>RuPL</i> . If <i>ALYP</i> = <i>rEF</i> , <i>LoL</i> = <i>SEt-RLoL</i> and <i>RuPL</i> .	<i>AbS</i>	<i>rEF</i>		<i>AbS</i>
<i>RdFL</i>	Time delay to display alarm message after alarm is on.	0:00	99:00	min:sec	0:00
<i>RdPo</i>	Time delay to display alarm message after power is on.	0:00	99:00	hr:min	0:10
MODBUS COMMUNICATION PARAMETERS					
<i>RdS</i>	Modbus slave device address for device	1	247		1
<i>bRud</i>	Modbus communication speed ( Baud rate, 0 : <i>oFF</i> , 1 : 1200, 2 : 2400, 3 : 4800, 4 : 9600, 5 : 1920 )	<i>oFF</i>	1920	bps	9600