



Every part matters

EN

# Instruction Manual RS Pro 35 x 77mm Defrost Thermostat, NTC, Single Output Stock Number: 124-1045, 124-1046



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.
- On-Off control.
- Control output for cooling or heating.
- Single NTC probe input.
- Range -60.0 to 150.0°C.
- Defrost function.
- Compressor protection settings.
- Probe failure setting, output status can be set to ON, OFF or pulse.
- Sensor input offset setting.
- "Smart Defrost" feature.
- 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
- CE marked



Part Code	Supply Voltage	Number Outputs
124-1045	230V ac	1x Relay
124-1046	24V ac/dc	1x Relay

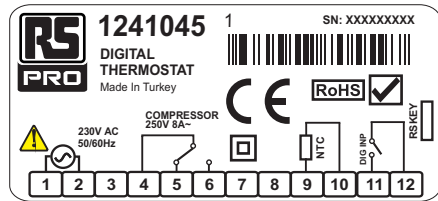
RoHS Compliant



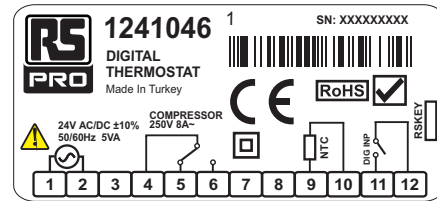
## CONNECTION DIAGRAM



1241045 & 1241046 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. The 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.

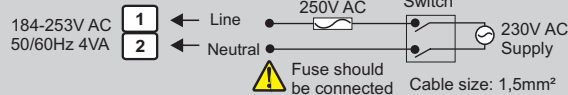


Equipment is protected throughout by DOUBLE INSULATION.



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/-40 ... 85°C (without icing)
Relative Humidity	Max. 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	2.5mm <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)

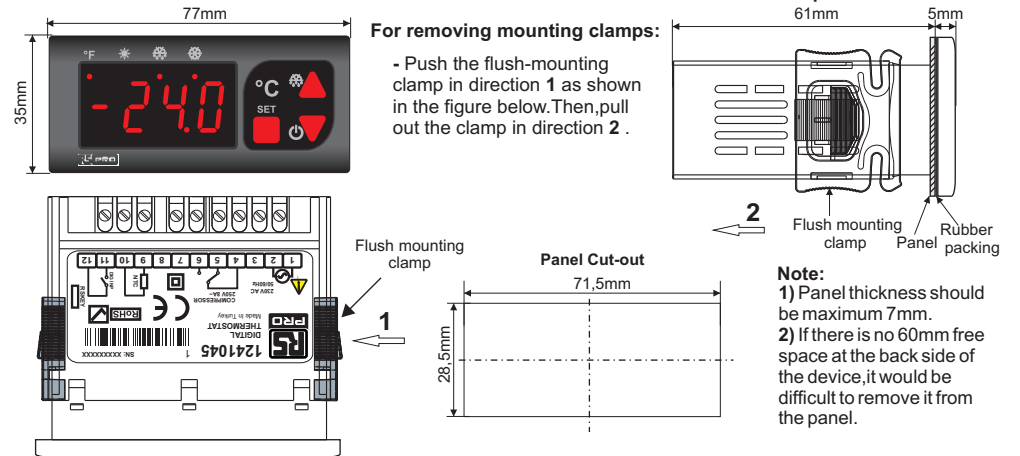
OUTPUTS	
Relay Output	Relay : NO+NC 250V AC,8A (resistive load), 1/2HP, 0.37KW 240V AC (inductive load)
Life Expectancy for Relay	Without load 30.000.000 mechanical; 250V AC, 8A resistive load 100.000 electrical operation.

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 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.

**HEATING 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** In "Running Mode", indicates the set value.  
In "Programming Mode", indicates the selected parameter value.

**▲** 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.

**▼** 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.

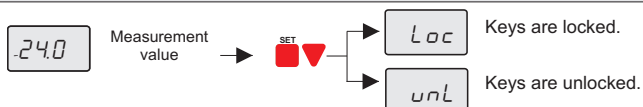
## FRONT PANEL COMMANDS

### 1. Viewing and Changing The Set Value



While in "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 "Running Mode", if **SET ▼** keys are pressed together for 2 seconds, *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 keys are unlocked. While keys are locked and if **SET** key is pressed, set value can be displayed but can not be changed. While the keys are locked and if any key is pressed ( **except SET key** ), *Loc* message appears.

### 3. Manual Defrost Process

While in the "Running Mode", if **▲** key is pressed for 2 seconds, defrost process starts manually. If *ddur* parameter is 0, manual defrost will be inactive.

### 4. Activating / Inactivating The Control Outputs



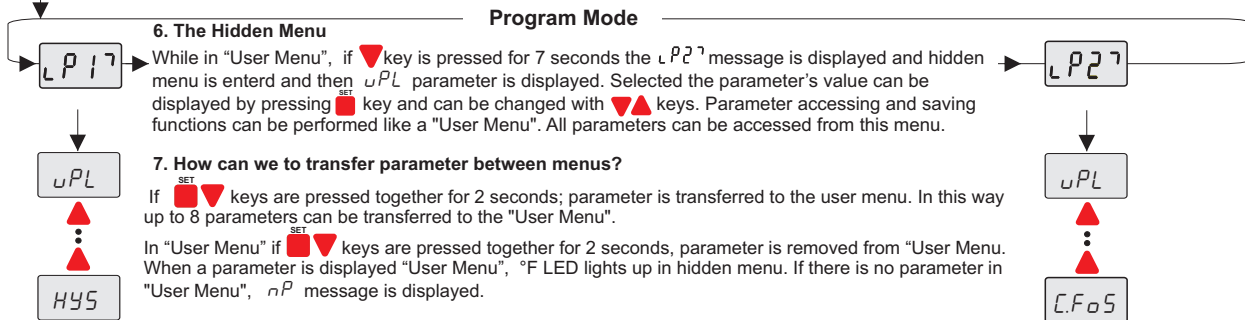
\* When in the "Running Mode", if the control outputs are inactive, *oFF* message appears periodically.

When in the "Running mode", if **▼** key is pressed for 2 seconds, *C.iS* 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 control function.

### 5. Changing Parameter Values

If **▲▼** keys are pressed together for 2 seconds *LP17* is displayed and "User Menu" is entered, then first parameter's name is displayed in the user menu.

While a parameter is selected, by pressing **SET** key, parameter value can be displayed. This parameter can be changed with **▼▲** keys. If no operation performed for 3 seconds or during this time, **SET** key is pressed while parameter value displayed, parameter name will be displayed again. While parameter name displayed, if by pressing together **▼▲** keys, "Running Mode" is entered.



**6. The Hidden Menu** While in "User Menu", if **▼** key is pressed for 7 seconds the *LP27* message is displayed and hidden menu is entered and then *uPL* parameter is displayed. Selected the parameter's value can be displayed by pressing **SET** key and can be changed with **▼▲** keys. Parameter accessing and saving functions can be performed like a "User Menu". 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 up to 8 parameters can be transferred to the "User Menu".

In "User Menu" if **SET ▼** keys are pressed together for 2 seconds, parameter is removed from "User Menu". When a parameter is displayed "User Menu", "F LED lights up in hidden menu. If there is no parameter in "User Menu", *nP* message is displayed.

## ERROR MESSAGES

**PFA** Means, thermostat probe is broken.

**PSC** Means, thermostat probe is short circuit.

**---** Temperature value is higher than the scale.

**---** Temperature value is lower than the scale.

## ALARM SITUATION

**WW** 1. Measurements shown flashes when the alarm condition occurs and if *Snd* parameter is not 0, audible warning is heard. While warning, by pressing **▲** key, audible warning can be temporarily disabled.

**EA** 2. External alarm is active but the outputs are unaffected.

**SA** 3. External alarm is active and in this state, specifies that the relay outputs are turned off (off state). While warning, by pressing any key, audible warning can be temporarily disabled.

## FACTORY SETTINGS

If **▼** key is held down while the device is powered up, *dPAr* message appears and factory parameters restored.

CONTROL PARAMETERS		Min.	Max.	UNIT	DEFAULT VALUE
$\omega PL$	Upper limit for setpoint	-60.0	$\omega PL$ °C	150	
$L\omega L$	Lower limit for setpoint	$L\omega L$	150.0	°C	-60
$HYS$	Differential cooling (hysteresis)	0.1	20.0	°C	2
$\omega FF$	Offset value for cooling	-20.0	20.0	°C	0
CONFIGURATION PARAMETERS					
$CtYP$	Control type selection ( $HE = (*)$ heating control is selected, $L\omega =$ Cooling control is selected.) $CtYP$ parameter as $HE$ is selected, the defrost function of the device is disabled.	$L\omega$	$HE$		$L\omega$
$Un\omega t$	Temperature unit	$\omega C$	$\omega F$		$\omega C$
$dPn\omega t$	Decimal point ( $n\omega =$ decimal point isn't shown 22°C, $Y\omega S =$ decimal point is shown 22.3°C.)	$n\omega$	$Y\omega S$		$n\omega$
$Snd$	Type of buzzer sound (6 different voice types can be selected. Alarm during $\emptyset$ is chosen, the voice warning is canceled.) For Relay-8A is valid.	$\delta \emptyset$	$\emptyset$		
$d.inP$	Digital input types. $n\omega$ : Digital input unused. $ER$ : External alarm. $ER$ message flashes in the display. Output unchanged. $SA$ : Important external alarm. $SA$ message flashes in the display. Relay output is turned off. $HL$ :	$n\omega$	$LGHt$		$n\omega$
$dd\omega$	Control type. $CtYP$ parameter is changed. ( If $HE = L\omega$ , If $L\omega = HE$ ) $dF$ : Defrost operation is started .	0:00	99:00		0:00
$dPo$	Digital input delay. The period of the digital inputs to be active. Digital input polarity. $cL =$ While a digital input contact is closed, it is activated. $\omega P =$ While a digital input is opened, it is activated.	$L$	$\omega P$		$L$
COMPRESSOR PROTECTION PARAMETERS					
$C.P\omega n$	Delay time for the compressor after power is on.	0:00	99:00	min:sec	1:00
$C.F\omega S$	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					
$d.Sn\omega t$	Smart Defrost selection ( $n\omega$ : Defrost counter (between 2 defrost duration) decrease irrespective of $d.in\omega t$ status of the compressor. $Y\omega S$ : Defrost counter decreases as long as compressor work).	$n\omega$	$Y\omega S$		$n\omega$
$d.dur$	Defrost duration ( If $d.dur = \emptyset$ selected, automatic and manual defrost is disabled ).	0:00	99:00	min:sec	1:00
$d.in\omega t$	Time between 2 consecutive defrosts.	0:00	99:00	hr:min	1:00
$d.d\omega P$	Display configuration in defrosting process ( $rE$ : Real temperature is displayed during defrost. $Lc$ : During a defrosting process, last measured temperature value is displayed before the defrosting process. This value remains constant until the end of defrosting.	$Lc$	$rE$		$Lc$
$d.drE$	Delay time for display real temperature after defrost is over.	0:00	99:00	min:sec	1:00
$d.P\omega n$	Defrost process with power. ( $n\omega =$ Defrost process is not started when power-up. $Y\omega S =$ Defrost process starts when power-up ).	$n\omega$	$Y\omega S$		$n\omega$
$d.dPo$	Delay time for defrosting after power-up.	0:00	99:00	min:sec	1:00
ALARM CONTROL PARAMETERS					
$R.uPL$	Limit for upper alarm level. When $RtYP$ is changed, $R.uPL$ should be readjusted.	$R.L\omega L$	150.0	°C	150
$R.L\omega L$	Limit for lower alarm level. When $RtYP$ is changed, $R.L\omega L$ should be readjusted.	-60.0	$R.uPL$	°C	-60
$R.HYS$	Hysteresis alarm	0.1	20.0	°C	2
$RtYP$	Alarm configuration. ( $RbS =$ Independent alarm. Alarm values are $R.L\omega L$ and $R.uPL$ .) ( $rEF =$ Relative alarm. Alarm values are $S\omega t - R.L\omega L$ and $S\omega t + R.uPL$ .) NOTE: Upper and Lower alarm level variables are determined according to the " $RtYP$ " parameter. If $RtYP = RbS$ , $R.L\omega L$ and $R.uPL$ . If $RtYP = rEF$ , $L\omega L = S\omega t - R.L\omega L$ and $R.uPL$ .	$RbS$	$rEF$		$RbS$
$R.dFL$	Time delay to display alarm message after alarm is on.	0:00	99:00	min:sec	0:00
$R.dPo$	Time delay to display alarm message after power is on.	0:00	99:00	hr:min	0:10
MODBUS COMMUNICATION PARAMETERS					
$R.drS$	Modbus slave device address for device	1	247		1
$bRud$	Modbus communication speed ( Baud rate, 0 : $\omega FF$ , 1 : 1200, 2 : 2400, 3 : 4800, 4 : 9600, 5 : 19200 )	$\omega FF$	1920	bps	9600