PYROSELF Series

Innovative Snow Sensor and Controller

for 2 x 24A loads outputs

Installation and Operating manual

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PYROSELF Series
Owner's manual & Technician Settings

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Safety warnings

PLEASE READ THIS MANUAL AND THE SAFETY WARNINGS CAREFULLY BEFORE INSTALLING AND USING THE CONTROLLER AND SAVE IT FOR FUTURE USE

Installation notes

- Familiarize yourself with the markings, warnings, components and terminology.

- The PYROSELF, the PYROSELF-X and their accessories must be installed by a qualified electrician in accordance with local regulations and the requirements of the NEC (NFPA 72) and the CEC part 1.

- WARNING: Ensure the power is disconnect from all circuits before mounting the unit and making any connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

- **Installer must ensure the installation of approved disconnect means, for all power supply circuits feeding this unit.**

- The I.R receiver is suitable for indoor wall mount installation only.

- Ensure wiring according to the provided schematics using copper conductors only.

- Make sure the wire gauge (AWG) is suitable for the circuit amperage draw, as specified in the NEC/CEC table 1.

- Ensure that the main breakers (fuses) are suitable for the heating systems rating (80% load).

- Grounding means must comply with local regulations and CEC/NEC.

- Ensure that the heating system/de-icing system connected to this unit complies with the UL 499 or UL 515 & CSA 22.2 # 130.3 standard and is certified / listed by an NRTL.

- Ensure that all wiring is rated for the application at 60°C (140°F as per UL 515 CSA 22.2 #130 clause 12 table 12.1.

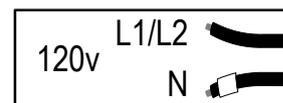### Ground fault circuit interrupter (GFCI)

The PYROSELF and the PYROSELF-X **DO NOT** include an integral EGFPD (Equipment Ground Fault Protection Device).

EGFPD needs to be provided in the end application.

Power supply

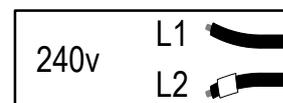For 120v systems, connect the supply wires as follows:

- Connect the Black wire to Power ("L1" or "L2")

- Connect the Black/White wire to Neutral ("N")

For 240v systems, both the Black wire and the Black\White wire should be connected to Power (without concern to the order).

120v	L1/L2
	N

240v	L1
	L2

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Introduction

The PYROSELF and the PYROSELF-X are the ultimate "All in One" Snow Sensors & controllers for Light commercial and residential use. "Plug and Play" controllers for frost protection, ice and snow melting applications.

When receiving a signal from the built-in snow sensor, they activate the contactors energizing the heating elements. Based on the configuration and settings, the two outputs to the two zones are activated together or in staggering mode.

The outdoor temperature set-point as well as the ambient lower limit temperature can be easily set by the remote control.

The Technician Settings mode allows installer or technician to adjust the parameters for customized installations using the remote control.

The adjustable Hold-On timer, keeps the outputs to the zones active to ensure complete snow melting. The Hold-On (Time delay) is adjustable in the range of 0 up to 48 hours.

Features:

- Energy Efficient algorithm
- User friendly programming and setting adjustment using large LCD display remote control
- Up to 2 zones activation (24A each 110-240VAC)
- Sequencing between zones – Allowing larger snow melting area with less available power on site
- Optional indoor panel – IRP-PYRO I.R. receiver
- Manual and Automatic modes. Selected by physical switch or using the remote control
- Technician testing / commissioning mode for easy and fast system test all year long (even during summer or at high temperatures)

The parameters that can be modified are as follow:

- Temperature set-point
- Lower ambient temperature limit
- Time delay (Hold-on) before deactivating the heaters in Automatic mode
- ON time for Manual mode
- Heaters cycle time / Splitting time between the 2 zones
- Number of zones and sequence of operation
- Snow sensor RH sensitivity
- Snow sensor threshold
- Commissioning mode for technicians

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Installation options
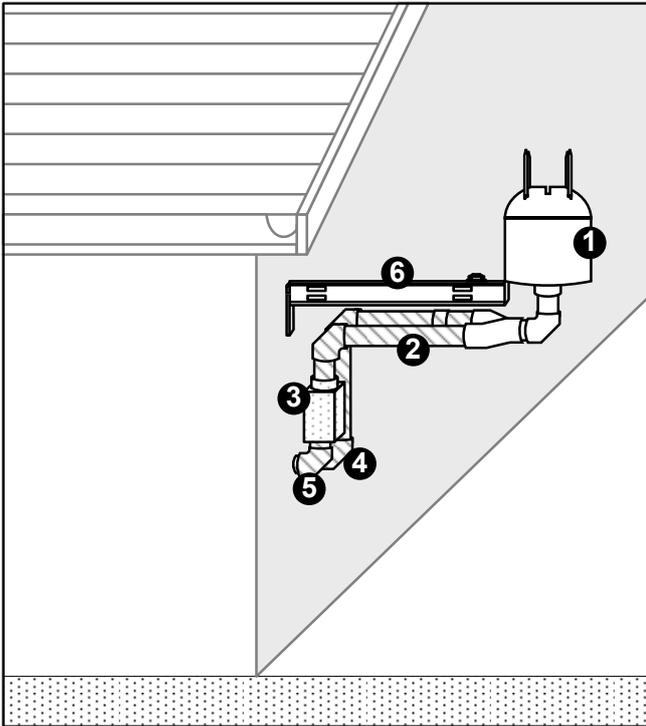
Wall mount installation (PYROSELF-X)
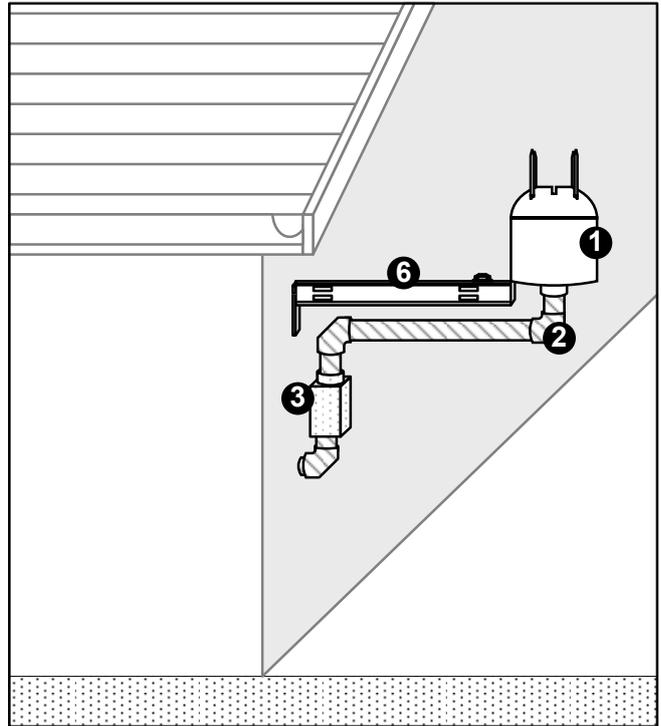
Wall mount installation (PYROSELF)
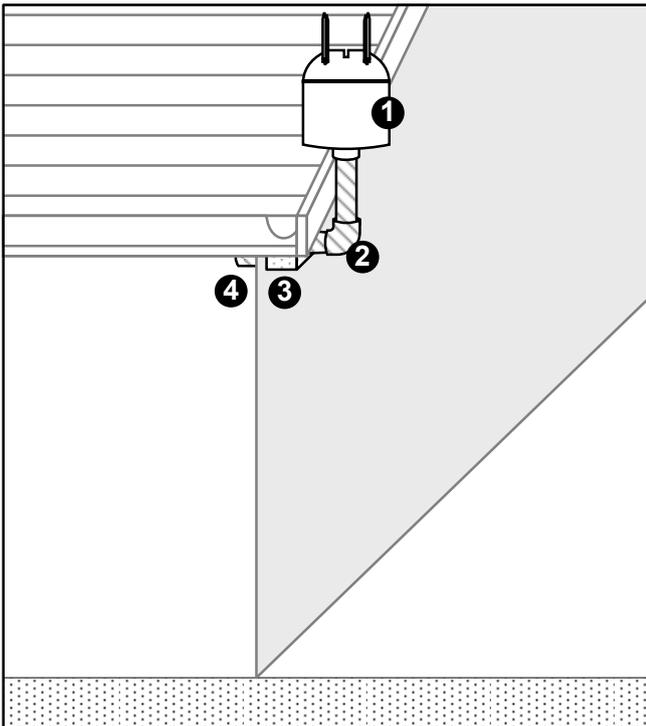
Roof side installation (PYROSELF)
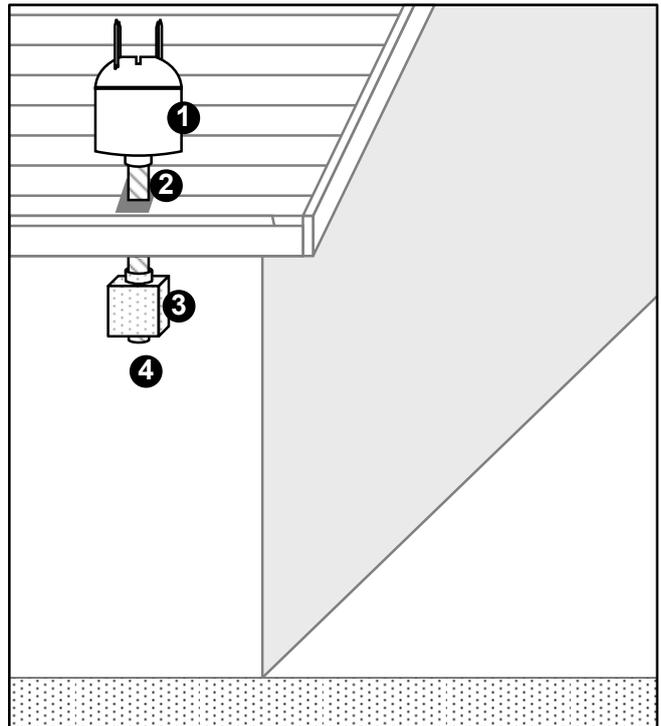
Roof installation (PYROSELF)

1 PYROSELF / PYROSELF-X

2 Waterproof conduit (Supplied by installer).
Use non-metalic, UL listed, flexible conduit 3/4".
Maximal length between the PYROSELF/PYROSELF-X
and the JBOX should not ocxeed 24".

3 JBOX – Junction box (Supplied by installer)

4 Line voltage (6 cables to load center)

5 Low voltage (6 cables to IRP_PYRO – Indoor control interface – PYROSELF-X only)

6 Mounting Bracket – PYROSB - optional

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Loads and Power supply connections

PYROSELF-X

Power supply

Black
Black\W
Blue
Blue
Red
Red

Communication cable to IRP_PYRO (option)
Remove cap to reveal the cable

PYROSELF

Power supply

Black
Black\W
Blue
Blue
Red
Red

Line voltage cables

Line voltage cables

Conduits, fittings, Jbox,
extension power cables etc.
(Supplied by installer)

Conduits, fittings, Jbox,
extension power cables etc.
(Supplied by installer)

To Black (1)
To Black/White (2)
To Blue (3)
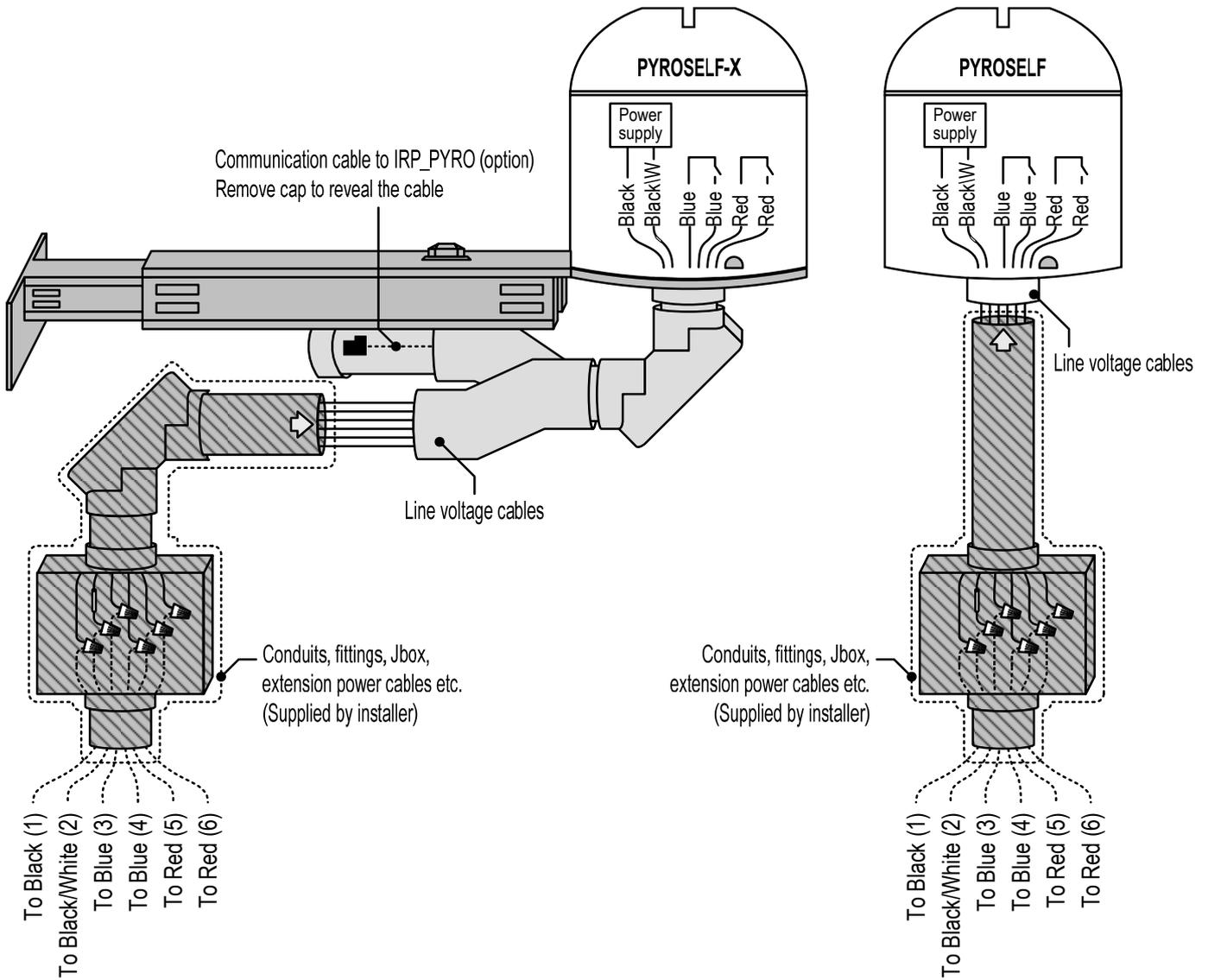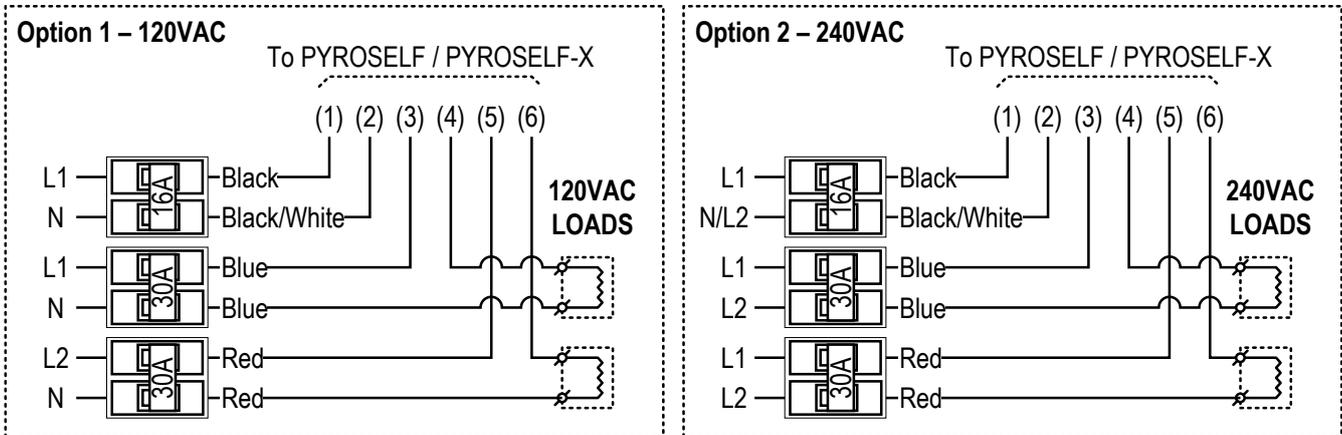To Blue (4)
To Red (5)
To Red (6)

To Black (1)
To Black/White (2)
To Blue (3)
To Blue (4)
To Red (5)
To Red (6)

Notes:

1. The wiring of line voltage cables must always be carried out in accordance with NEC -NFPA70.

2. The IRP_PYRO communication cable and the line voltage cables must not be placed in the same conduits.

3. Both the PYROSELF and the PYROSELF-X can be connected to either 120VAC or 240VAC loads.

Option 1 – 120VAC

To PYROSELF / PYROSELF-X

(1) (2) (3) (4) (5) (6)

L1 — 16A —Black		**120VAC**
N — —Black/White		**LOADS**
L1 — 30A —Blue		
N — —Blue		
L2 — 30A —Red		
N — —Red		

Option 2 – 240VAC

To PYROSELF / PYROSELF-X

(1) (2) (3) (4) (5) (6)

L1 — 16A —Black		**240VAC**
N/L2 — —Black/White		**LOADS**
L1 — 30A —Blue		
L2 — —Blue		
L1 — 30A —Red		
L2 — —Red		

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IRP_PYRO Installation - Indoor control interface
(option for PYROSELF-X)

PYROSELF-X

Power supply

Black
Black\W
Blue
Blue
Red
Red

Communication cable to IRP_PYRO (option)
Remove cap to reveal the cable

1	Red
2	Black
3	Blue
4	Green
5	Yellow
6	White
7	Not connected

Indoor control interface
IRP_PYRO (optional)

1 2 3 4 5 6 7

Infra red
Remote control
RT_PYRO
(optional)

10m Extension communication cable
with quick connector (option)

Line voltage cables

Remove the connector at the end of the communication cable extension, strip the wires ends and
connect them directly to the IRP-PYRO terminals or use an extension cable as shown in the picture.
Pay attention to color codes !

← To IRP_PYRO   From PYROSELF-X ←
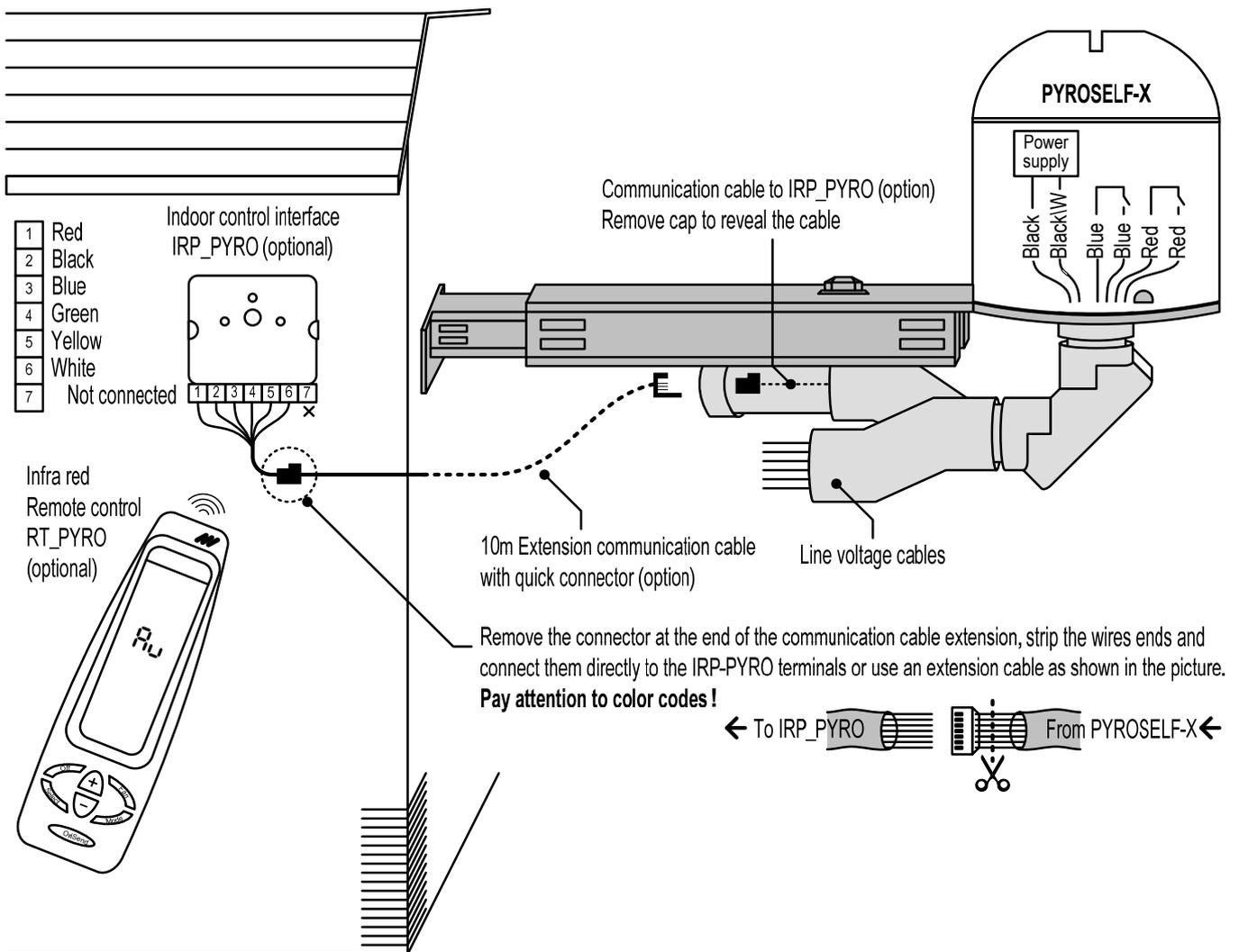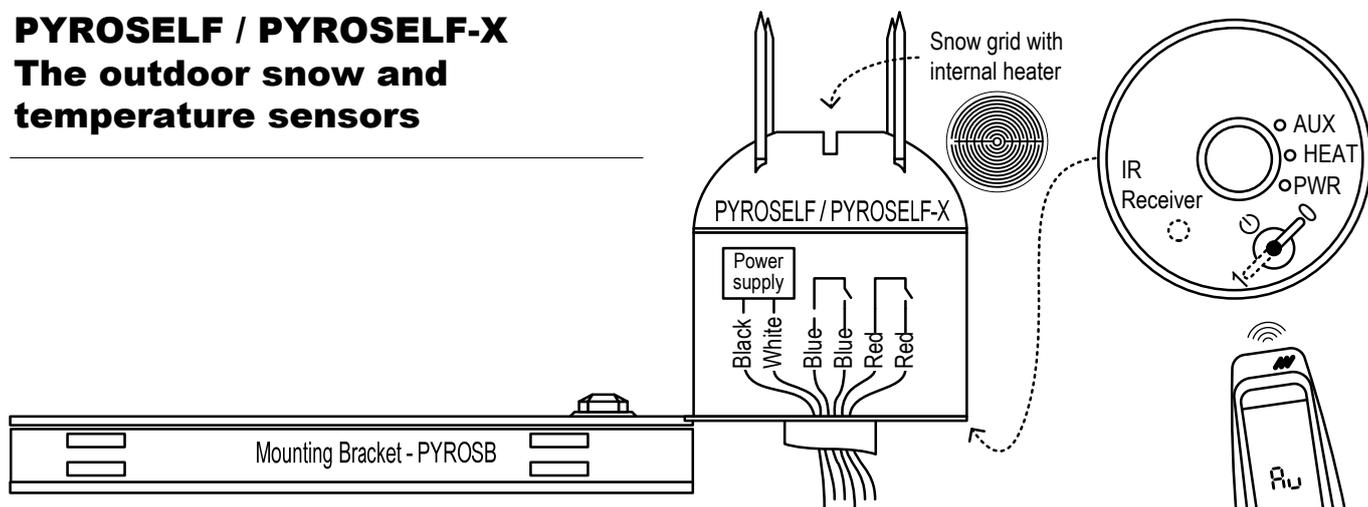
Connecting the indoor control panel IRP_PYRO (optional):

1. The wiring of line voltage cables must always be carried out in accordance with NEC -NFPA70.

2. The IRP_PYRO communication cable and the line voltage cables must not be placed in the same conduits.

1. Remove the cap from the end of the Y split conduit to reveal the communication cable and the quick connector.

2. Connect the 10 m extension cable using the quick connectors.

3. Make sure to use separate conduits for the communication cable and the power cables.

4. Connect the indoor control panel IRP_PYRO to the extension cable. Follow the attached color codes table.

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PYROSELF / PYROSELF-X
The outdoor snow and
temperature sensors

Snow grid with internal heater

PYROSELF / PYROSELF-X

Power supply

Black White Blue Blue Red Red

IR Receiver

○ AUX
○ HEAT
○ PWR

Mounting Bracket - PYROSB

ON/OFF switch

Use the [ON/OFF] switch select:

- 0 (OFF)   The System will remain OFF even if it snows (should be used mainly for summer times).

- 1 (MANUAL ON)   The System will start heating for predefined time period set by parameter P4 in the technician settings. The switch will automatically return to AUTO position. Note: Heaters will start only when the set point temperature is at least 2°C/4°F higher than the outdoor temperature.

- ⏻ (AUTO)   The heating system will start depending on the outdoor temperature and humidity sensed by the PYROSELF or the PYROSELF-X and will stop after the signal in gone for a predefined time period set by parameter P3 in the technician settings.

LEDs indication

- GREEN LED (PWR) – SYSTEM ON

Lighting constantly – System is ON.

Blinking repeatedly (once every 5 seconds) – System is in AUTO mode.

- RED LED (HEAT) – HEATERS ON

Lighting constantly – Heaters are turned ON.

Blinking repeatedly (2 seconds ON and 1 second OFF) – System is in OFF DELAY period.

Blinking repeatedly (1 second ON and 3 seconds OFF) – SYSTEM ERROR indication.

- YELLOW LED (AUX)

Lighting constantly – Internal snow sensor heater is ON (melting snow on the snow grid).

Blinking once – Data receipt indication (from RT_PYRO remote control).

Blinking repeatedly – Commissioning mode active.

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parameter numbers for
technician settings
(P1...P9)
Or
System status
(Auto / Manual ON /OFF)

Parameters values for
technician settings

Temperature scale
(°C/°F)
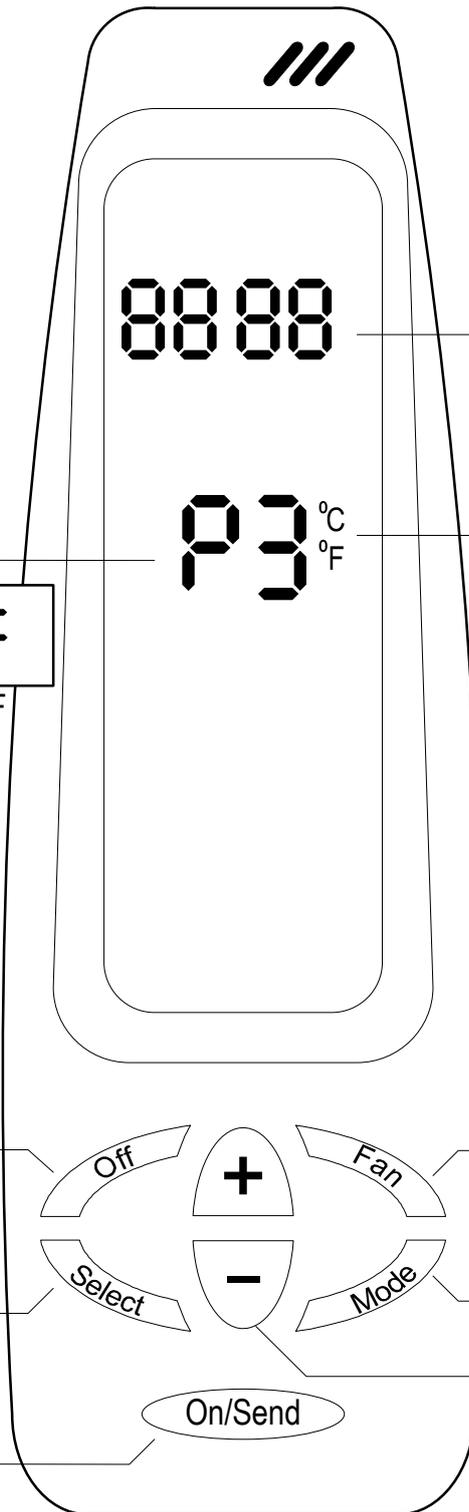
AUTO
mode

MANUAL ON
mode

OFF

Note: In MANUAL ON mode,
Note: Heaters will not start if the
outdoor temperature is more
than 2°C/4°F above the set
point.

Turn system OFF

Switch between Parameter
numbers of technician settings
(press simultaneously with the
[+] or [-])

Press to start AUTO MODE
or Press and hold (3 seconds)
to start MANUAL MODE.

Switch between
temperature scales °C/°F

Press and hold to enter
technician settings

Adjust parameters values

Off
+
Fan
Select
−
Mode
On/Send

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Technician settings

Use the technician settings mode to view and adjust the following parameters:

|			
P1	Temperature set point	P5(a)	Snow sensor sensitivity
P2	Lower ambient temperature limit to stop heaters	P5(b)	Snow detection threshold
		P6	Number of outputs working together
P3	Time delay before stopping the heaters	P7	Length of staggering sequence
P4	ON time for manual mode	P8	Commissioning / Test mode
		P9	Restore defaults

Enter technician, select and modify parameters

- **Press and hold the [Mode] button for 3 seconds to enter technician settings mode – the display will show "P1".**
- Press the [SELECT] and [+] buttons simultaneously to move forward to the next technician parameter.
- Press the [SELECT] and [-] buttons simultaneously to return to the previous technician parameter.
- Use the [+] and [-] buttons to modify values of selected parameter.
- **Important!** When finished updating values on the remote control, point the remote control to the IRP_PYRO IR panel or to the PYROSELF and press the [On/Send] to save the updated values (of all the parameters except P8 which should be sent while "P8" appears on display) and send them to the system – a beep will sound and the yellow LED will blink to indicate that the new settings are updated.

P1 - Temperature set point

Range: 14…59°F / -10…+15°C, Default: 37°F / 3°C

As long as the ambient temperature is lower than the temperature set point P1, the PYROSELF will turn ON upon receiving a positive snow signal from the snow detector.

Snow detector

Ambient temperature sensor

```
37
P1 °F
```
Temperature set point (°F)

```
3
P1 ℃
```
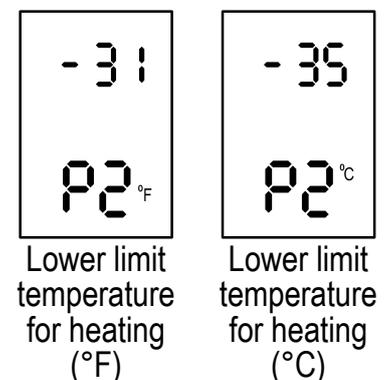Temperature set point (°C)
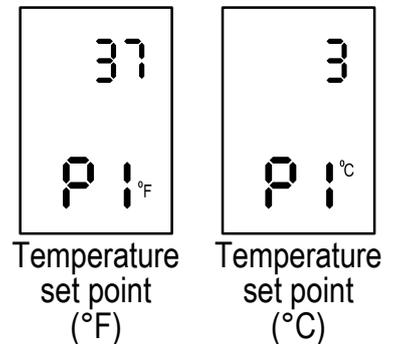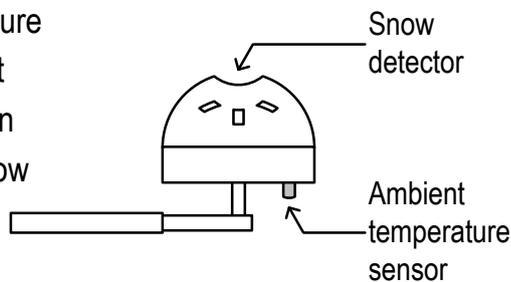
P2 - Lower limit temperature for heating

When the outdoor temperature drops below the low temperature limit, the heating system will stop.
The lower limit is used to avoid energy wasting, as the heater will not have enough power to melt the snow.

Range: -40…+32°F / -40…-0°C   Default: -31°F / -35°C

```
-31
P2 °F
```
Lower limit temperature for heating (°F)

```
-35
P2 ℃
```
Lower limit temperature for heating (°C)

↳ Cont'

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Technician settings

P3 -Time delay before stopping the heaters in AUTO mode (hold ON)

Range: 0...300 minutes   Default: 90 minutes

Note 1. The time delay countdown will start when the snow detection signal
from snow sensor will switch from positive to negative.
Note 2. The staggering sequence will continue during the time delay period.
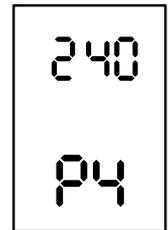
```
 90

 P3
```
Time delay to
stop heaters

P4 - Manual mode ON time

The delay time parameter defines a time frame in which the heaters
remain ON after receiving an "Manual ON" command.
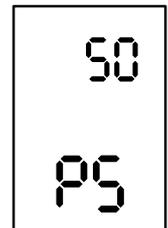Range: 10...2880 minutes   Default: 240 minutes

```
240

 P4
```
Manual mode
ON time

P5(a) - Snow sensor sensitivity

Range: 20...80 % (20% - Less sensitive, 80% - more sensitive)
Default: 50 %

```
 50

 P5
```
Snow sensor
sensitivity

P5(b) - Snow detection threshold

Range: 00...60 minutes   Default: 5 minutes
When the snow sensor readings are changed, the system will
recheck the sensors readings repeatedly for the time period
defined by the "snow detection threshold" parameter, before
changing heaters status.
This process is used to eliminate false detection by the sensor.

```
  5
TIMER

 P5
```
Snow detection
threshold

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Technician settings (Cont')

P6 – Number of heating outputs working together

- "1" - One output
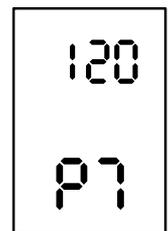- "2" - Two outputs (default)
- "3" - Two outputs in staggering mode

2

P6
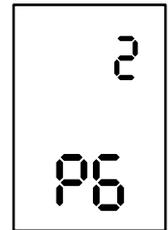
No. of heating outputs working together

P7 – Length of staggering sequence

Range: 1...600 minutes   Default: 120 minutes

120

P7

Length of staggering sequence

## P8 - Test conditions mode / Technician commissioning mode

Turn ON test conditions to check the functionality of the system regardless of sensor parameters (i.e. during the summer).

In test conditions, the Ambient temperature is always -5°C/23°F.

Note: In order to trigger the system and activate the heaters, use some water to wet the circuit on top of the snow sensor.

Note: If the technician did not manually exit test/commissioning mode, the unit will automatically return to normal mode after 30 minutes.

Important! If changed, the new P8 value (ON or OFF) should be sent to the system using the [On/Send] button **while P8 appears on display**.
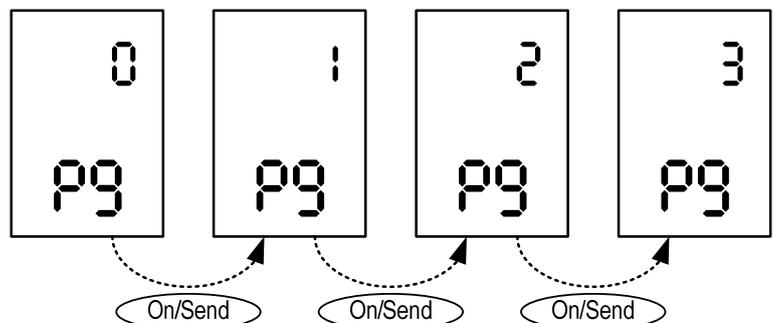
On
P8 ℃
Normal operation
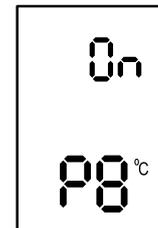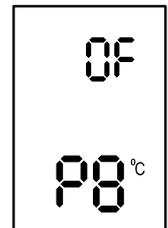
OF
P8 ℃
Comissioning mode

P9 – Restore defaults

In order to restore the system to its default configuration, point the remote control to the IR panel and press the [On/Send] button 3 times.

0
P9

1
P9

2
P9

3
P9

On/Send   On/Send   On/Send

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IRP-PYRO - The indoor control interface (optional)

The IRP_PYRO can be operated using its [ON/OFF] button
or using the RT_PYRO I.R. Remote control – please refer to the
RT_PYRO operating instructions in this manual.
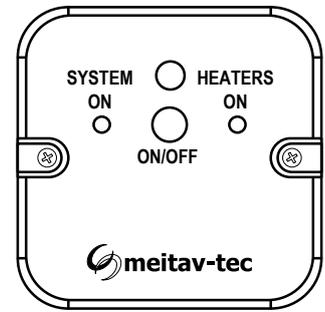
ON/OFF button

Press the [ON/OFF] button to switch between:
- **OFF**   The System will remain OFF even if it snows (should be used mainly for summer times).
- **AUTO** The heating system will start depending on the outdoor temperature and humidity sensed
           by the PYROSELF and will stop after the signal in gone for a predefined time period set
           by parameter P3 in the technician settings.

Press and hold the [ON/OFF] button for 3 seconds to start **MANUAL ON** mode.
The System will start heating for predefined time period set by parameter P4 in the technician
settings and return to AUTO MODE when this time ends.
Note: Heaters will not start if the outdoor temperature is more than 2°C/4°F above the set point.

Note: Both AUTO and MANUAL ON commands can be submitted to the PYROSELF, only when
the manual ON/OFF switch on the bottom of the PYROSELF is in OM position (⏻)

LEDs indication

- GREEN LED (PWR) – SYSTEM ON

Lighting constantly – System is ON.

Blinking repeatedly (once every 5 seconds) – System is in AUTO mode.

- RED LED (HEAT) – HEATERS ON

Lighting constantly – Heaters are turned ON.

Blinking repeatedly (2 seconds ON and 1 second OFF) – System is in OFF DELAY period.

Blinking repeatedly (1 second ON and 3 seconds OFF) – SYSTEM ERROR indication.

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