Installation & Operation Manual

ChromaMelt-2R/ChromaMelt-2RX

**Innovative Snow Sensor and Controller
for 2 x 24A loads outputs**

CHROMALOX

Advanced Thermal Technologies

Table of Contents

Safety Precautions

<div style="background:red">

IMPORTANT SAFEGUARDS

</div>

Safety precautions should always be followed to reduce the risk of fire, electrical shock, injury and even death to persons.

Please read all instructions before operating the Control Panel.

To avoid electrical shock or injury, always remove power before servicing a circuit. Personnel working with or near high voltages should be familiar with modern methods of resuscitation. Contact an area supervisor or safety personnel for more information.

⚠WARNING

HIGH VOLTAGE is used in the operation of this equipment; DEATH ON CONTACT may result if personnel fail to observe safety precautions.

Learn the areas containing high-voltage connections when installing or operating this equipment.

Be careful not to contact high-voltage connections when installing or operating this equipment.

Before working inside the equipment, turn power off and ground all points of high potential before touching them.

⚠WARNING

ELECTRIC SHOCK HAZARD. Any installation involving control equipment must be performed by a qualified person and must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.

Before Powering Up

Chromalox takes great pride in knowing that we have provided to you a product of premium quality and workman-ship. We have taken every precaution to ensure that your equipment arrives safe and secure.

However, vibration and temperature changes during shipping can cause some components to become loose. Additionally, throughout the life span of this product, other environmental and application conditions may have affected the mechanical and electrical continuity of several internal components. Therefore, for your safety and overall product performance, please take the time to familiarize yourself with the **MAINTENANCE, OPERATION, AND INSTALLATION INSTRUCTIONS** technical manual that was shipped with your panel.

Since it is not uncommon for electrical wiring and mechanical connections to become slightly loosened during shipment, we ask that you pay particular attention to the section titled Wiring and Connections:

WIRING AND CONNECTIONS

Check wiring and connections as follows:

a. Inspect wiring for wear, fraying, chipping, nicks, and evidence of overheating. Repair minor defects with a good grade of electrical tape, or replace if needed.

b. Inspect for loose electrical and mechanical connections. Tighten or replace defective crimp-style lugs. Re-solder loose solder connections. Tighten or replace all loose or missing hardware.

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

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

2. The ChromaMelt-2R, the ChromaMelt-2RX 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.

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

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

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

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

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

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

9. 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.

10. 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 CircuitInterrupter (GFCI)

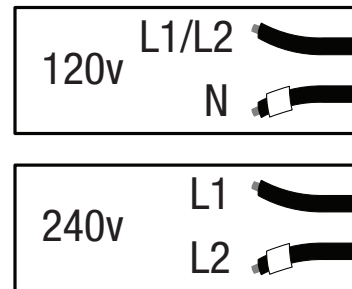The ChromaMelt-2R and the ChromaMelt-2RX DO NOT include an integral EGFPD (EquipmentGround Fault Protection Device).

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).

Introduction

The ChromaMelt-2R and the ChromaMelt-2RX 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 – CS-IR 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 follows:

- 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
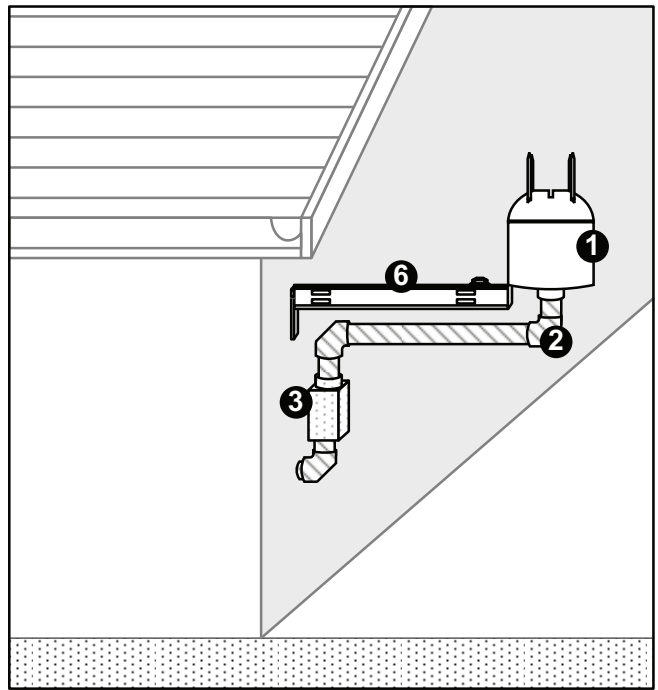- Commissioning mode for technicians

Installation Options
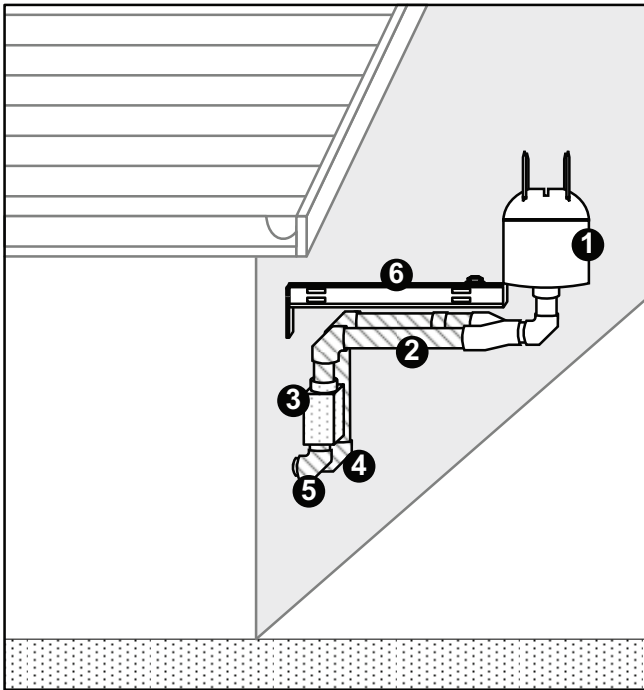
Wall Mount Installation (ChromaMelt-2RX)

Wall Mount Installation (ChromaMelt-2R)
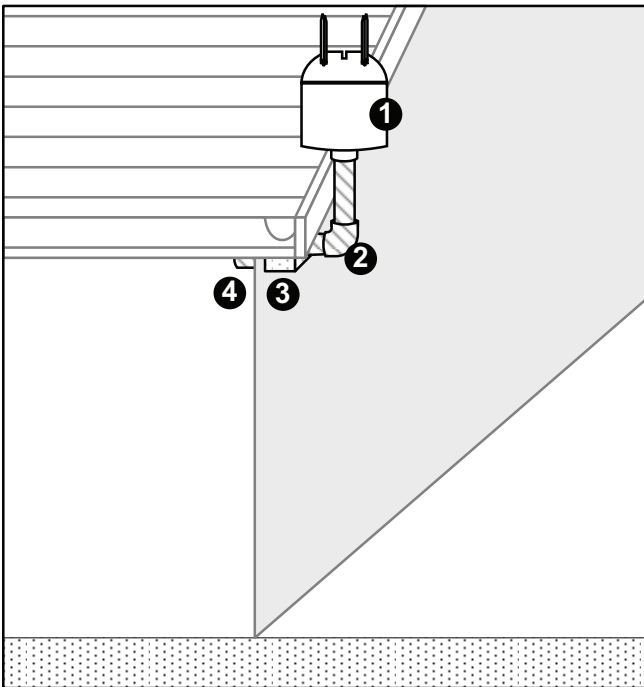
Roof Side (ChromaMelt-2R)
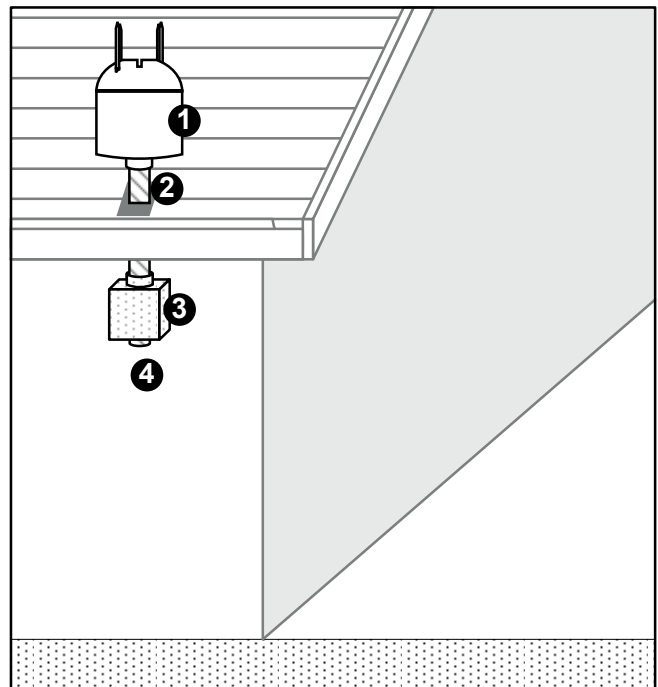
Roof Installation (ChromaMelt-2R)

❶ ChromaMelt-2R / ChromaMelt-2RX

❷ Waterproof conduit (Supplied by installer). Use non-metalic, UL listed, flexible conduit 3/4". Maximum length between the ChromaMelt-2R/ChromaMelt- 2RX and the JBOX should not exceed 24".

❸ JBOX- Junction box (Supplied by installer)

❹ Line voltage (6 cables to load center)

❺ Low voltage (6 cables to CS-IR - Indoor control interface - ChromaMelt-2RX only)

❻ Mounting Bracket - CS-MB - optional

Loads and Power Supply Connections

Communication cable to CS-IR (option)
Remove cap to reveal the cable

ChromaMelt-2RX

Power supply

Black
Black\W
Blue
Blue
Red
Red

Line voltage cables

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)

ChromaMelt-2R

Power supply

Black
Black\W
Blue
Blue
Red
Red

Line voltage cables

Conduits, fittings, Jbox,
extension power cables etc.
(Supplied by installer)
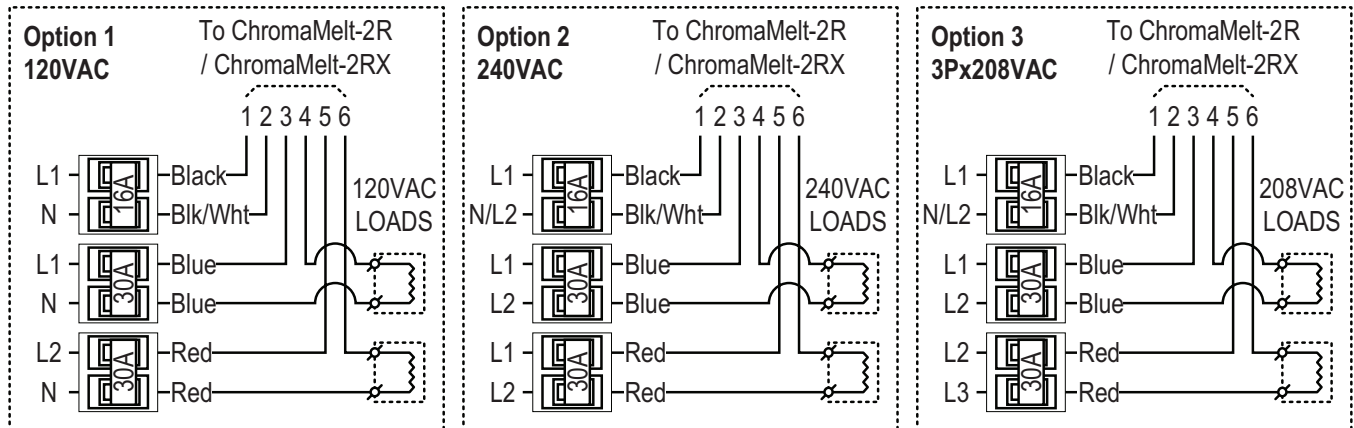
To Black (1)
To Black/White (2)
To Blue (3)
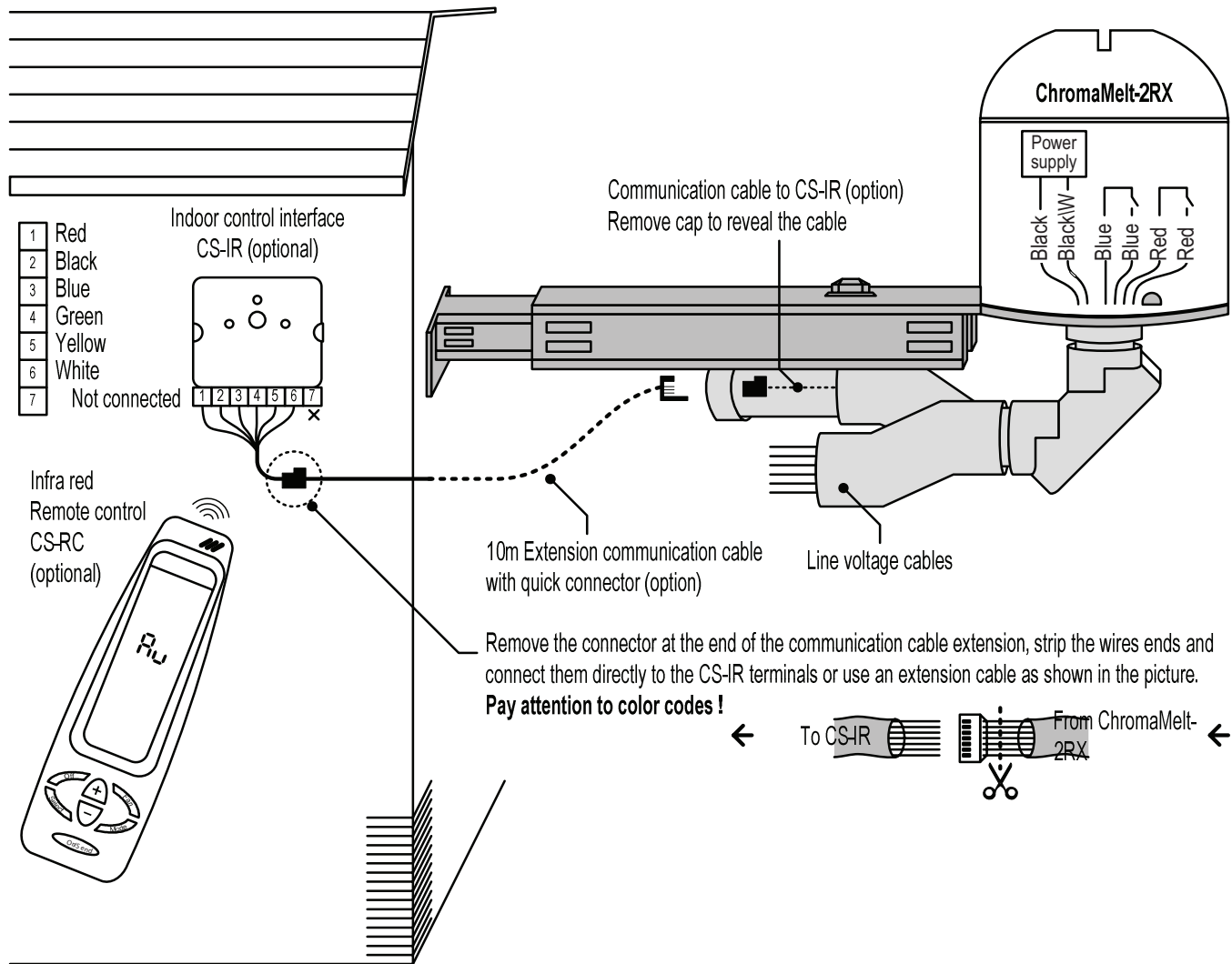To Blue (4)
To Red (5)
To Red (6)

Notes:

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

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

3. Both the ChromaMelt-2R and the ChromaMelt-2RX can be connected to either 120VAC, 240VAC, 3Px208VAC loads.

Option 1
120VAC
To ChromaMelt-2R / ChromaMelt-2RX
1 2 3 4 5 6

L1 — 16A — Black
N — Blk/Wht
L1 — 30A — Blue
N — Blue
L2 — 30A — Red
N — Red

120VAC LOADS

Option 2
240VAC
To ChromaMelt-2R / ChromaMelt-2RX
1 2 3 4 5 6

L1 — 16A — Black
N/L2 — Blk/Wht
L1 — 30A — Blue
L2 — Blue
L1 — 30A — Red
L2 — Red

240VAC LOADS

Option 3
3Px208VAC
To ChromaMelt-2R / ChromaMelt-2RX
1 2 3 4 5 6

L1 — 16A — Black
N/L2 — Blk/Wht
L1 — 30A — Blue
L2 — Blue
L2 — 30A — Red
L3 — Red

208VAC LOADS

CS-IR Installation - Indoor Control Interface (option for ChromaMelt-2RX)

ChromaMelt-2RX

Power supply

Black
BlackIW
Blue
Blue
Red
Red

Communication cable to CS-IR (option)
Remove cap to reveal the cable

Indoor control interface CS-IR (optional)

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

1 2 3 4 5 6 7

Infra red
Remote control
CS-RC
(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 CS-IR terminals or use an extension cable as shown in the picture.
**Pay attention to color codes !**

To CS-IR

From ChromaMelt-2RX

Connecting the indoor control panel CS-IR (optional):

The wiring of line voltage cables must always be carried out in accordance with NEC-NFPA70. The CS-IR 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 CS-IR to the extension cable. Follow the attached color codes table.

ChromaMelt-2R / ChromaMelt-2RX Outdoor Snow and Temperature Sensors
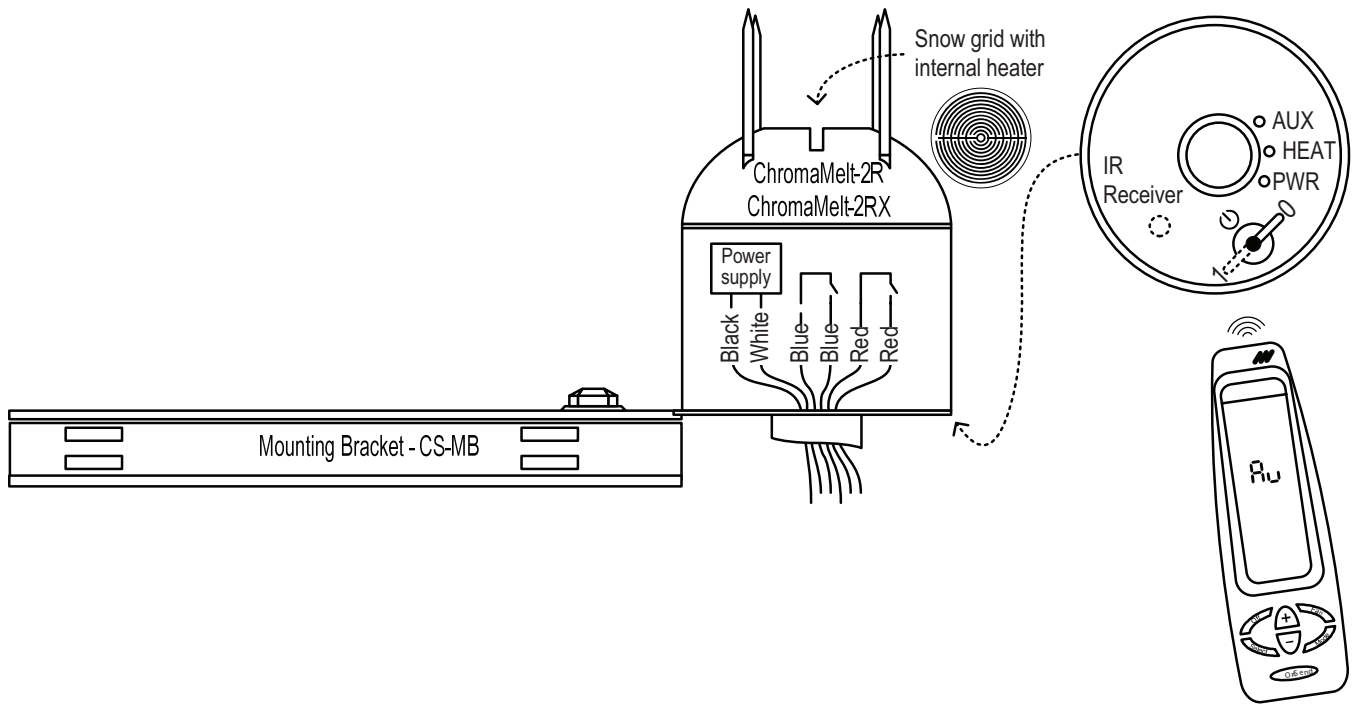
ON/OFF switch

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 ChromaMelt-2R or the ChromaMelt-2RX 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.
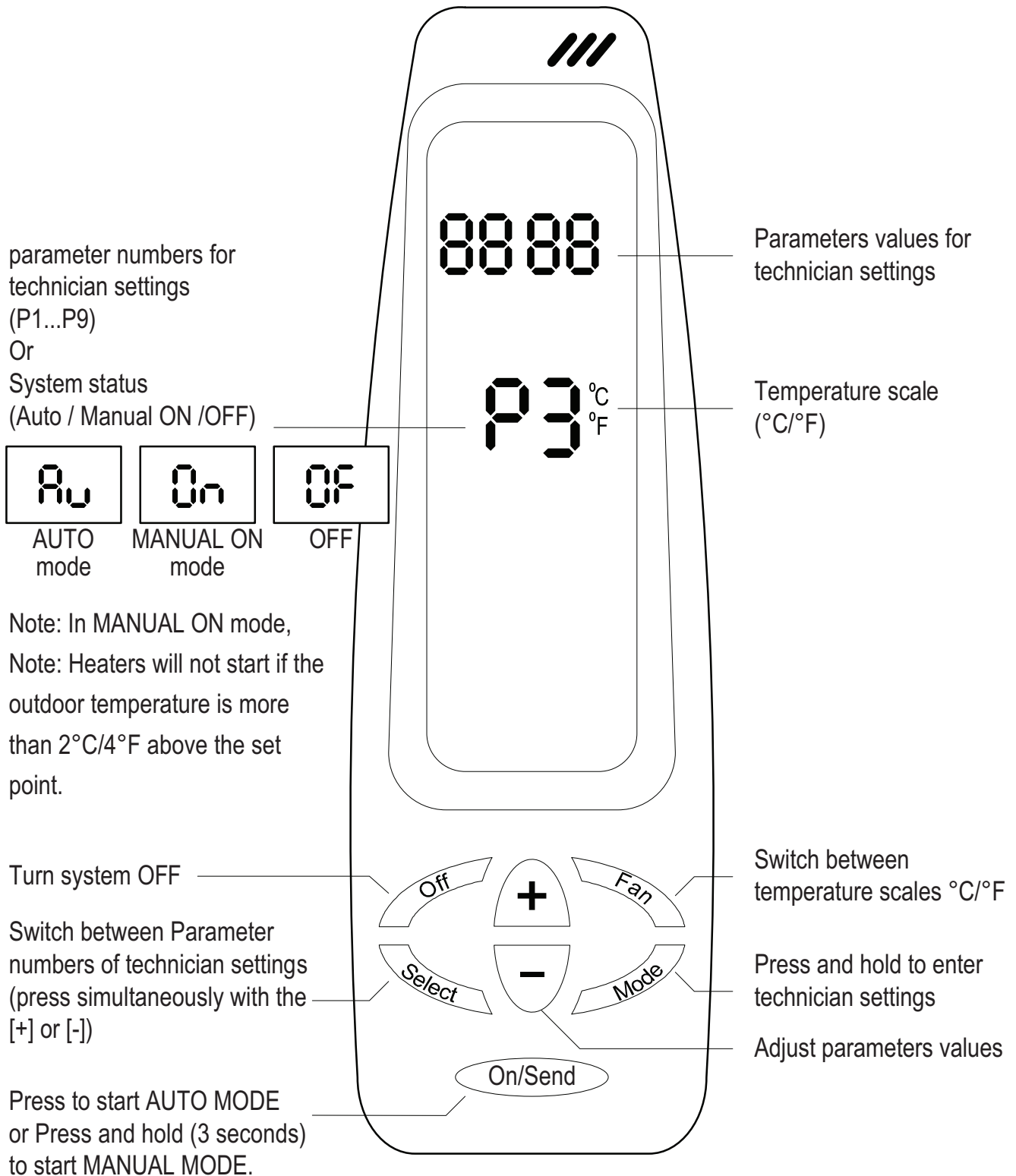- Blinking repeatedly (once every 5 seconds) System is in AUTO mode.

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 CS-RC remote control).
- Blinking repeatedly – Commissioning mode active.

CS-RC Infra Red Remote Control Unit (optional)

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

Parameters values for technician settings

Temperature scale (°C/°F)

Au — AUTO mode

On — MANUAL ON mode

OF — 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

Technician Settings

P1	Temperature set point		P5(b)	Snow detection threshold
P2	Lower ambient temp. limit to stop heaters		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
P5(a)	Snow sensor sensitivity		P9	Restore defaults

Enter Technician, Select and Modify Parameters

1. Press and hold the [Mode] button for 3 seconds to enter technician settings mode – the display will show "P1".

2. Press the [SELECT] and [+] buttons simultaneously to move forward to the next technician parameter.

3. Press the [SELECT] and [-] buttons simultaneously to return to the previous technician parameter.

4. Use the [+] and [-] buttons to modify values of selected parameter.

5. Important! When finished updating values on the remote control, point the remote control to the CSIR IR panel or to the ChromaMelt-2R 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 ChromaMelt-2R will turn ON upon receiving a positive snow signal from the snow detector.

Snow detector

Ambient temperature sensor

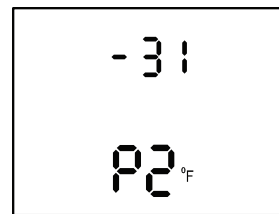Temperature set point (°F)

Temperature set point (°C)
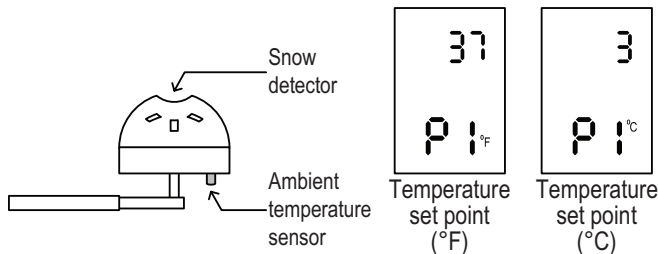
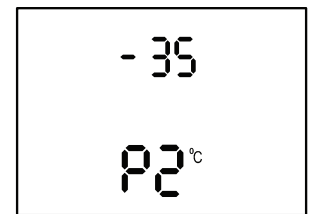## P2 - Lower Limit Temperature for Heating

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

Lower limit temperature for heating (°F)

Lower limit temperature for heating (°C)

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.

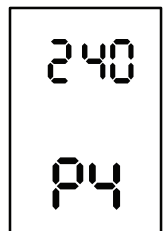Note 2. The staggering sequence will continue during the time delay period.

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.

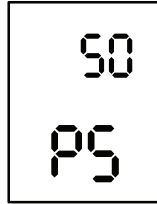Range: 10...2880 minutes Default: 240 minutes

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

5(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.

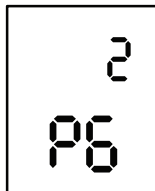This process is used to eliminate false detection by the sensor.

```
  5
 TIMER

 P5
```

Snow detection threshold

P6 – Number of Heating Outputs Working Together

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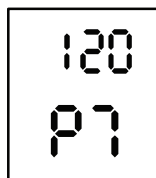"2" - Two outputs (default)
"3" - Two outputs in staggering mode

```
  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.**
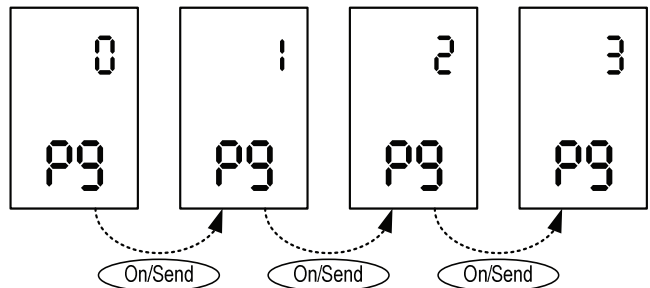
```
 On              OF

 P8℃            P8℃
```
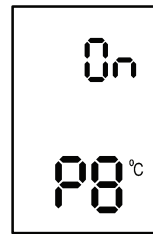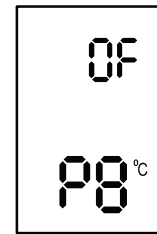
Normal   Comissioning
operation   mode

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        1        2        3

 P9       P9       P9       P9
```

On/Send   On/Send   On/Send

CS-IR - The Indoor Control Interface (optional)

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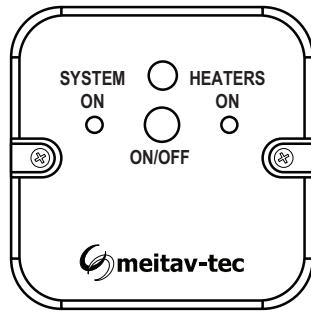
ON/OFF button

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 ChromaMelt-2R 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 ChromaMelt-2R, only when the manual ON/OFF switch on the bottom of the ChromaMelt-2R 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.

Notes

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