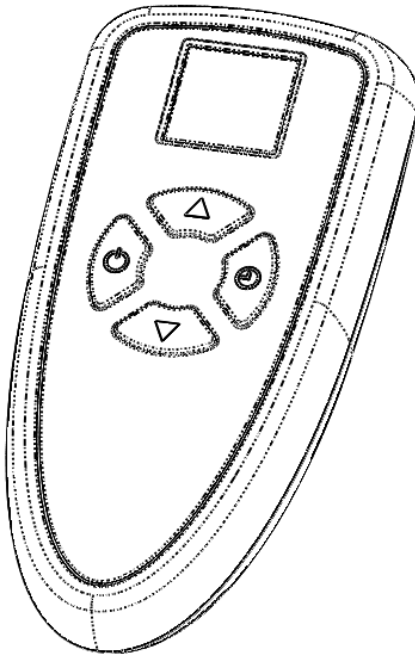


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Engineering Product Specification

ThermoSense Remote



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1 INTRODUCTION

1.1 Third Party Note:

The ThermoSense Remote control function and overall component characteristics are outlined in this document. The units / components physical, functional, and appearance are broken down by assembly, sub- assembly, component, and raw material where necessary. No internal or external changes are approved without the written authorization by Master Brands during the development and production of the product. This will include but not limited to raw material, component supplier, assembly method, safety device ratings, texture or finish, packaging methods etc. Once the final product is approved by the appropriate regulatory agencies, and units are distributed to Master Brands or their customers, an Engineering Change Notice must be supplied to and approved by Master Brands before any changes will be accepted.

2 PRODUCT IDENTIFICATION

Heater Smart remote named “*ThermoSense*” . This specification, along with the associated Engineering Procedures, Engineering Test Methods, Standard Operating Procedures, Bill of Materials, and Regulatory specifications defines the design and quality specifications for the Remote. This final product will be supplied as a completed assembly with a heater enclosed in an approved shipping carton fully tested and ready for retail sale. The product's function and overall component characteristics is outlined in this document. Assembly, sub- assembly, component, and raw material break down the units / components physical, functional, and appearance where necessary.

2.1 Matrix of Catalog Numbers and Product Models

- N/A. Remote included as part of selected heater SKUs

3 PRODUCT CHARACTERISTICS

3.1 Performance Characteristics

- Remote is an intelligent remote with a Thermister mounted on the underside to monitor the room's ambient temperature and relay this information to the heater for better room temperature control which results in better user comfort.

3.2 Product Specifications

Height: 95 mm

Width: 45 mm

Depth: 22 mm

Weight: 50g

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3.3 Safety

- Low Voltage control circuit. N/A

3.4 Energy Source

- 2x AAA 1.5V Alkaline batteries
- Battery cover must be fastened mechanically with a screw that is permanently retained onto the battery cover.

3.5 Toxicity and Bio-compatibility

- N/A

3.6 Molded Components

- All parts will have a part number molded in on the core side of the tool. The part number should not be smaller than 3mm or larger than 5mm. Foamed parts to have a minimum designation of 10mm to 15mm max.
- All parts are to have a cavity number on the core side of the tool. The cavity number should not be smaller than 3mm or larger than 5mm.
- A revision indication shall be placed on an ejector pin. Each time the mould has a revision to the part design the revision indication will be changed
- No moulded plastic parts will have visible flash greater than 0.2mm
- A plastic recycle symbol will be located on the core side of the tool, unless size inhibits use
- All gate locations must be cut or broken clean from the finished part
- A well must be provided when ejecting into standard wall stock
- All ejector pin marks must be flush to depress in to the surface 0.02 MM max
- All clear plastic parts must not show flow or ejector pin marks
- All surface treatments will listed in the notes on the component's drawing
- All material will have a UL V0 rating of all components unless otherwise specified on the component's drawing or Bill of Material

3.7 LCD and Components

- LCD interface and components shall be commercial grade that must meet or exceed 5500 hours of use.

3.8 Environmental

- Operates in -10°C to 60°C
- Storage -20°C to 60°C

3.9 Electromagnetic Compatibility

- N/A

3.10 Human Factors

- Remote must be comfortable to hold in one hand and operate control button with the thumb.

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3.11 User Interface

- buttons: power button, up select, down select, and mode button. Same as digital controls used on the Low Profile heater. LCD display for feedback to the user. Button force to be xx gram-force or lower.

3.12 Compatibility w/Accessories and/or Auxiliary Device

- Works in conjunction with selected MasterBrands Heaters

3.13 Physical Characteristics

TBD.

3.14 Labelling Product/Package

TBD marketing sub-branded artwork

3.15 Shelf Life

- Shelf life determined by Alkaline battery life.

3.16 Storage Life

- Storage life determined by Alkaline battery life.

3.17 Reliability

- Remote must withstand 5500 switch actuations
10 actuations per day, 7 days per week, 26 weeks per year, 3 years.

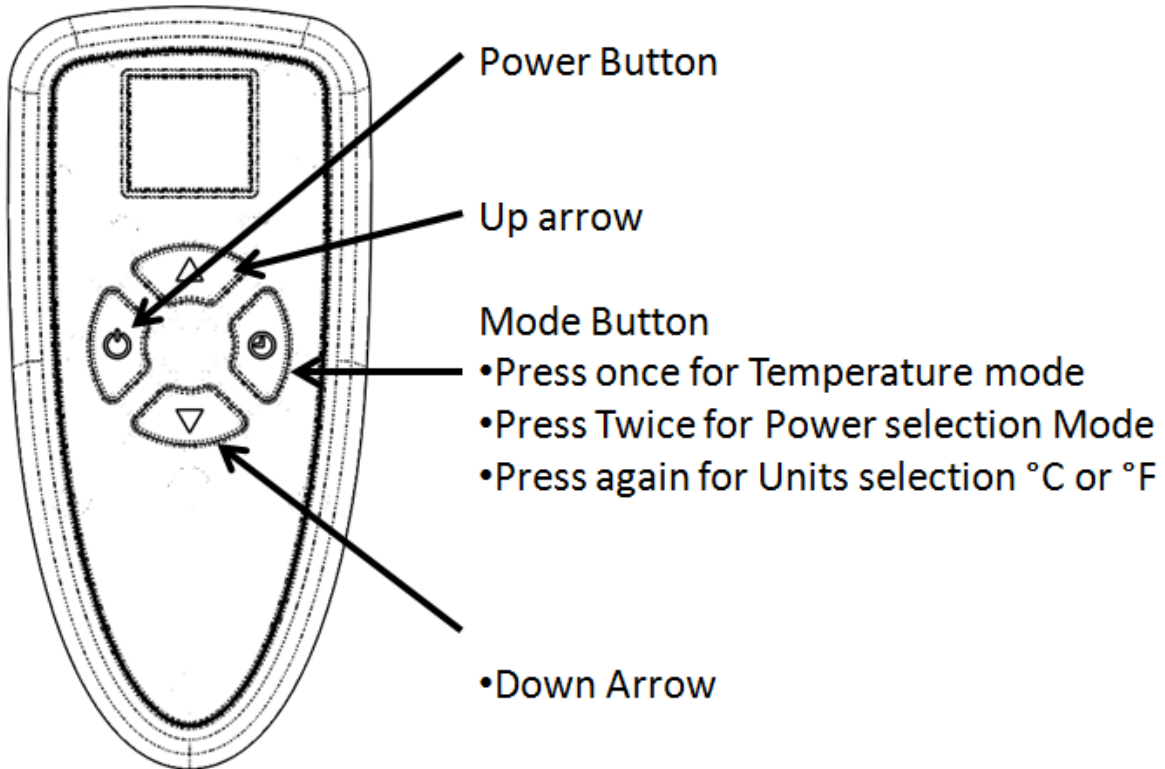
3.18 Software

Logic and software revision to be controlled by document # _____

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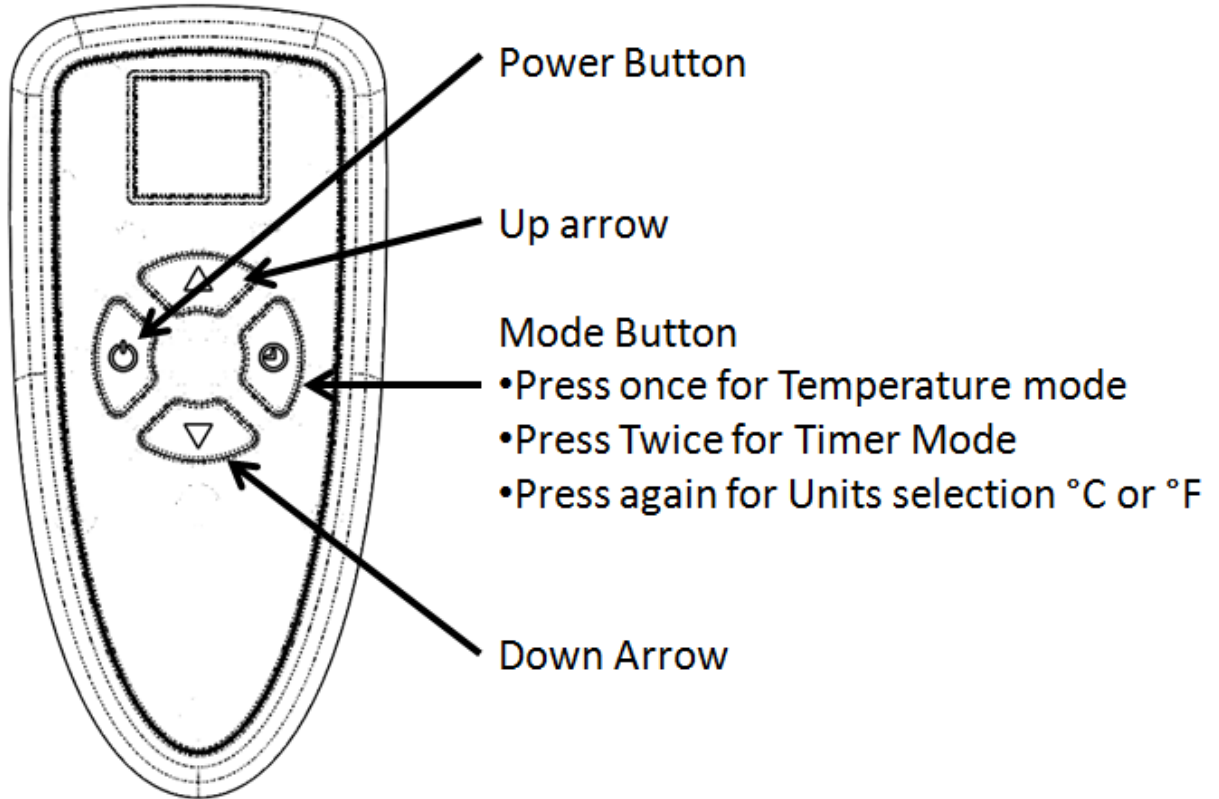
3.19 Function

- 360D Heater



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- Low Profile Booster Heater



4 REGULATORY & INDUSTRY REQUIREMENTS AND STANDARDS

4.1 UL 1278

4.2 CSA 22.2 no.46

4.3 ASTM Standards

- D1151-90 Adhesive bonds
- D5264 Abrasion Resistance of Printed Material

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4.4 Internal Engineering Test Methods

- ETM-0023 Battery Operated Products
- ETM-0029 Enclosure Impact
- ETM-0036 Sharp Edge Detection
- ETM-0039 Chemical Resistance of Molded Plastic & Painted Surfaces to Household Reagents
- ETM-0043 Graphics Abrasion Wear
- ETM-0053 Acceptability Test for PCB Conductor Patterns & Terminals
- ETM-0054 Package Testing
- ETM-0056 Environment Prolonged Exposure
- ETM-0057 Appearance
- ETM-0061 Light Visibility
- ETM-0065 Cold Impact

4.5 French Language Charter

4.6 Canadian Consumer Packaging & Labelling Act & Regulations.

4.7 Internal Standard Operating Procedures.

- SOP-05200000 Product Date Code
- SOP-05190000 Plastic Bag Warning
- SOP-05210000 Mechanical Soldering & Tinned Terminations

4.8 PCB Standards

- J-STD-001
- J-STD-002
- J-STD-003
- IPC-A-610
- IPC-6011
- IPC-7351
- IPC-2221

5 DOCUMENT INFORMATION AND APPROVAL

5.1 Revision History

Old Rev	New Rev	Date	Originator/ Author	Change Description
-	0	2/21/12	Bill Henderson	Initial Release
0	1	3/30/12	Bill Henderson	Updated Content

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5.2 Approval

5.3 Effective date: 2/21/12

5.4 Approval signatures are filed at Document Control

Function	Name	Signature	Date
Chief Technical Officer	Walt Birdsell		
VP Engineering	Bill Henderson		
SR Engineering Manager	Sunny Leong		

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.