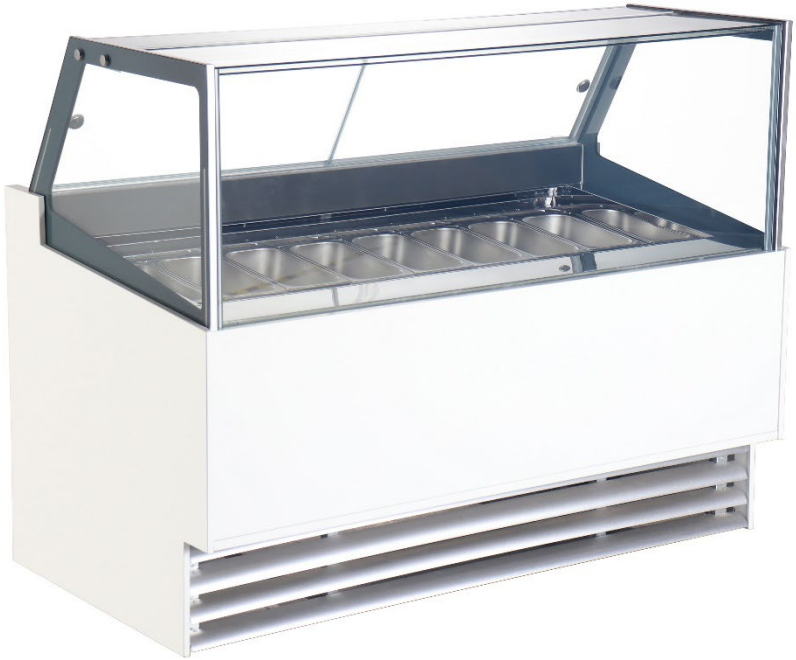
CombiSteel

# Ice Cream Display

## Controller Manual



## Models:

7487.0250 – 7487.0255 – 7487.0260

## 1. TECHNICAL SPECIFICATION

1.1 Power specification: AC100~240V 60/50HZ

1.2 Working environment temperature range: -10~60℃

1.3 Working humidity range: 5~90%RH (in no condensation state)

1.4 Temperature display range: -50~100℃

1.5 Temperature resolution: 0.5℃

1.6 Temperature display accuracy: ±1℃

1.7 Temperature setting range: -30~100℃

## 2. FUNCTION INTRODUCTION

2.1 Equipped with multiple models with optional functions: refrigeration, freezing, single heat

2.2 Equipped with automatic cleaning function for the condenser

2.3 Equipped with manual/automatic defrosting function, with optional defrosting modes (natural defrosting, electric heating defrosting, hot air defrosting)

2.4 Equipped with one-click reset for restoring of factory default settings

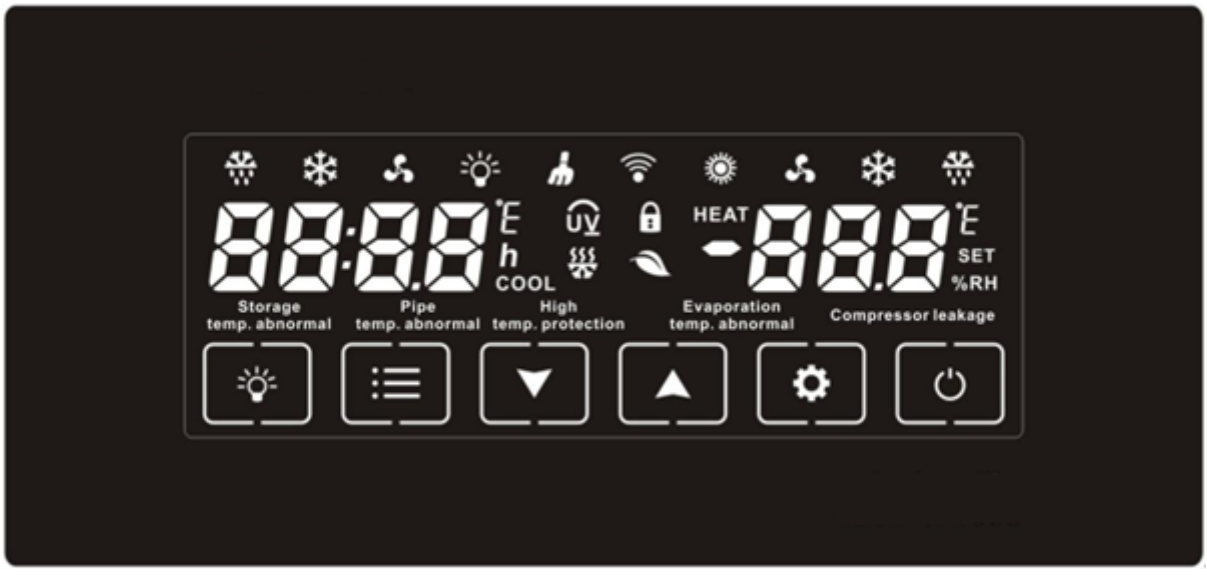
2.5 Equipped with serial port external display function

2.6 Equpped with optional door signal function

## 3. STRUCTURE DESCRIPTION

This structure is divided into display panel and main control board, and data communication is carried out with serial signal cables.

### 3.1 Panel description



## 3.2 Icon description

3.2.1 "  ": Defrosting icon, off-none, flashing-defrosting pre-cooling; constantly on-defrosting is in progress.

3.2.2 "  ": Compressor icon, off-the compressor has stopped, constantly on -the compressor is working.".

3.2.3 "  ": LED light indication.

3.2.4 "  ": Fan working status indication.

3.2.5 "  ": Heater working indication.

3.2.6 "  ": Flashing-cleaning is working.

3.2.7 "  ": Energy saving status indication.

3.2.8 "  ": Lock status indication.

## 3.3 Signal description

3.3.1 Compressor 1 output
3.3.2 Circulating fan 1 output
3.3.3 Defrosting output
3.3.4 Lighting output
3.3.5 Condenser cleaning output
3.3.6 Buzzer output
3.3.7 Warehouse temperature probe signal input
3.3.8 Evaporator probe signal input (optional)
3.3.9 High temperature probe signal input (optional)
3.3.10 Gate signal input (optional)
3.3.11 Uart serial port signal
3.3.12 WIFI wireless signal (optional)

## 3.4 Key description

3.4.1 "  " Key: Short press to adjust temperature value/long press to start or stop cleaning.

3.4.2 "  " Key: Short press to adjust temperature value/Long press to lock/unlock.

3.4.3 "  " Key: Short press to enter temperature setting adjustment.

3.4.4 "  " Key: Long press to enter internal parameter settings

3.4.5 “  ” Key: Short press to turn on/off LED lights/long press to manually defrost.

3.4.6 “  ” Key: Long press to turn on/off the device

## 4. OPERATING INSTRUCTIONS:

### 4.1 Power on/off operation

4.1.1 After system power on, long press the “  ” button, and the system will start up after 1 second; display of the current temperature, if the temperature meets the conditions for starting the compressor, the compressor will start with a delay according to the internal parameter "E4".

4.1.2 When turned on, long press the “  ” button for 1 second and the system shuts down; after shutting down, the “  ” key and “  ” icon flash every 1 second, indicating that they are valid buttons.

4.1.3 Every time the valid button is pressed, the buzzer will beep once, the same below.

### 4.2 Temperature setting adjustment

4.2.1 When turned on, press the “  ” button once to enter the temperature setting state. The "SET" icon and set value will flash. Press the “  ” or “  ” button once to increase or decrease the temperature setting value by 0.5 ℃.

4.2.2 If you long press the “  ” or “  ” key for 1 second, it will enter the button acceleration state, and the temperature setting value will increase or decrease by 0.5℃ every 0.1 seconds.

4.2.3 Temperature setting range: within the range of internal parameter E1~E2 values; factory default value: set according to the model.

4.2.4 If there is no key pressed for more than 5 seconds or the “  ” key is pressed again within 5 seconds during setting, the temperature setting state will exit and return to normal display. The set value will be saved in the battery free memory.

### 4.3 Light operation

4.3.1 When powered on, short press the “  ” button to turn on/off the LED light, and the screen icon “  ” will turn on and off accordingly.

4.3.2 The LED light status will be saved in the battery free memory.

## 4.4 Lock/Unlock operation

4.4.1 When the system is turned on and in an unlocked state, long press the "▼" button, after 5 seconds, the "🔒" icon will light up, indicating that the system has entered a locked state. Except for the "☼" and "⏻" keys, all other buttons are invalid.

4.4.2 In the locked state, long press the "▼" key, it unlocks after 5 seconds and the "🔒" icon will turn off.

4.4.3 The lock/unlock status will be saved in the battery free memory.

## 4.5 Child lock/unlock operation

4.5.1 In normal startup mode, long press the "⚙" button, and after 5 seconds, the child lock will be locked. The "🔒" icon will remain on. After locking, except for long press the "⚙" button, all other keys will be invalid.

4.5.2 In the locked state of the child lock, long press the "⚙" button, and after 5 seconds, the child lock will be unlocked. The "🔒" icon will turn off, and the button will resume normal operation.

4.5.3 The child lock status will be saved in the battery free memory.

## 4.6 Cleaning/defogging operation of condenser

4.6.1 If C7 ≠ 2 and C8=0, in the cooling state and equipped with cleaning function.

4.6.2 Long press the "▲" button for 5 seconds to start the condenser cleaning. Long press the "▲" button again in the cleaning state for 5 seconds to stop the cleaning work.

4.6.3 Cleaning work time: Internal item C2=0 and there is origin contact signal. The cleaning work is completed after the motor cleans up and down for 3 rounds; if the internal item C2 ≠ 0 or C2=0 but there is no origin contact signal, the longest working time for cleaning work is 60 seconds, and the cleaning work will end after 60 seconds.

4.6.4 When cleaning starts, the cleaning icon "🧹" flashes, indicating that the cleaning work is in progress.

4.6.5 Cleaning interval frequency: Set the time according to the internal item C3, if C3=0, then there is no cleaning function.

4.6.6 If C7 ≠ 2 and C8=1, when in cooling mode and equipped with defogging function, long press the "▲" button for 5 seconds to activate or deactivate the defogging function, and save it in the battery free memory.

## 4.7 Manual defrosting operation

4.7.1 Under normal working conditions, long press the "☼" button for 5 seconds, and it enters manual defrosting mode; the "❄" icon lights up.

4.7.2 In defrosting mode, long press the "☼" key to exit the defrosting state

## 4.8 One-click reset operation

4.8.1 Under normal working condition, long press the "▲" and "▼" keys simultaneously. After 6 seconds, the buzzer will beep, indicating that all parameters have returned to their factory default values. The display will flash for 3 seconds to display the current temperature, and after 3 seconds, it will return to normal display status.

## 4.9 Internal parameter adjustment

4.9.1 In normal startup mode, long press the "☰" key for 3 seconds to enter the internal first layer setting item. Short press the "▲" or "▼" key to browse various character code parameters. Press the "☰" key once to enter parameter adjustment and the parameter value will flash. Press the "▲" or "▼" key again to adjust the parameter value. After the parameter adjustment is completed, short press the "☰" key again to confirm the parameter modification.

4.9.2 In the parameter setting state, if no key is pressed within 30 seconds or long press the "☰" key, it will exit the internal setting state, and the parameter setting value will be saved in the battery free memory.

4.9.3 In a locked state, internal parameters can only be browsed and cannot be modified.

## INTERNAL PARAMETER TABLE 4-83

| No. | Character | Menu | Item | Range | Factory value |
|---|---|---|---|---|---|
| 1 | E1 | Pr1 | Minimum adjustable temperature (refrigerated) | -30℃~set1.T<br>-22℉~set1.T | 0℃/32℉ |
| | | | Minimum adjustable temperature (frozen) | | -30℃/-22℉ |
| 2 | E2 | Pr1 | Maximum adjustable temperature (refrigerated) | Set1.T~100℃<br>Set1.T~212℉ | 10℃/50℉ |
| | | | Maximum adjustable temperature (frozen) | | 0℃/32℉ |
| 3 | E3 | Pr1 | Temperature control return value | 1℃/1℉~10℃/18℉ | 3℃/5℉ |
| 4 | E4 | Pr1 | Delayed start time of compressor | 0~10MIN | 3MIN |
| 5 | E5 | Pr1 | Calibration of storage temperature probe | -10℃/-18℉~10℃/18℉ | 0℃/0℉ |
| 6 | F0 | Pr1 | Defrosting type | 00- Natural Frost<br>01- Electric defrosting<br>02- Hot air defrosting | 00 (refrigerated) |
| | | | | | 02 (frozen) |
| 7 | F1 | Pr1 | Defrosting time | 1~60MIN | 20MIN |
| 8 | F2 | Pr1 | Defrosting cycle | 0~24H | 4H |
| 9 | F3 | Pr1 | Defrosting termination temperature | 0℃/32℉~20℃/68℉ | 15℃/59℉ |
| 10 | F4 | Pr1 | Temperature display mode during defrosting | 00-Normal display of warehouse temperature<br>01-Temperature at the beginning of defrosting | 01 |
| 11 | F8 | Pr1 | Probe options | 00-No configuration<br>01-With S4 (frosting), with S3 (high temperature)<br>02-With S4 (defrosting), without S3 (high temperature)<br>03-Without S4 (frosting), with S3 (high temperature) | 01 |
| 12 | C1 | Pr1 | Temperature unit display | 00-℃ 01-℉ | 00 |
| 13 | C2 | Pr1 | Door signal | 00- Cleaning of origin signal<br>01- Door signal | 00 |
| 14 | C3 | Pr1 | Condenser cleaning interval | 0-15 days | 0 days |
| 15 | C4 | Pr1 | Delayed start time of defrosting end cycle fan | 0~5 min (unavailable when set to 0 or F0=00) | 2min |
| 16 | C5 | Pr1 | Maximum forced cooling time before defrosting | 0~120min (not available when set to 0) | 0min |
| 17 | C6 | Pr1 | Forced cooling temperature drop before defrosting | 0℃/0℉~5℃/10℉ | 00℃/00℉ |
| 18 | C7 | Pr1 | Model selection | 00- Refrigeration<br>01- Freezing<br>02- Heating | 00 |

| | | | | | |
|---|---|---|---|---|---|
| 19 | C8 | Pr1 | Fan 2 configuration | C7 configured for effective refrigeration/freezing<br>0-FAN2 configured for cleaning function<br>1-FAN2 configured for defogging function | 0 |
| 20 | C9 | Pr1 | Drip time | 0~30min | 0min |
| 21 | P1 | Pr1 | First power on, delayed start time of evaporative circulation fan | 0~20min | 0min |
| 22 | P2 | Pr1 | Starting temperature of circulating fan | -30℃/-22℉~30℃/86℉ | 0℃ |
| 23 | Adr | Pr1 | RS485 serial address | | 0-127 |
| 24 | dp1 | Pr1 | (Read only) Display of evaporator probe reading | | |
| 25 | dp2 | Pr1 | (Read only) Display of high temperature probe reading | | |

## 5. FAULT CODE DESCRIPTION

| Fault code | Reason description |
|---|---|
| EE1 | Open or short circuit of the temperature probe in the warehouse |
| EE2 | Defrosting probe open circuit or short circuit |
| EE3 | High temperature probe open circuit or short circuit |
| EE4 | High temperature probe temperature above 60℃ |
| EE7 | Communication not connected |

## 6. SYSTEM WIRING DIAGRAM