MODEL:
MCL01: Cold Room / Freezer Room Controller

MCL01

MicroChill

Specifications

Power Supply

- Voltage: 240VAC ±10% @ 50/60Hz
- Power Consumption: 7VA max

Inputs

- Input 1, 2, 5 & 6 Digital Input (Voltage Free Contact)
- Input 3 & 4 Temperature Sensor (10k ohm Thermistor)

Outputs

Relay # 1:	Voltage free relay contacts:	
	Normally Closed	16A resistive
		6A inductive
Relay # 2, 3, 4:	Voltage free relay contacts:	
	Normally Open	10A resistive
		6A inductive
Relay # 5, 6:	Voltage free relay contacts:	
	Normally Open	2A resistive
		0.5A inductive

Connection Between Controller And Control Station

- 4 way connection via 3 core plus screen cable

Control Station Terminal Identification

+12V	Power from Controller
Comms	Comms from Controller
GND	Ground
INPUT 1	External Enable
INPUT 2	Door Switch
INPUT 3	Room Temperature
INPUT 4	Defrost Temperature
INPUT 5	Room Light Switch
INPUT 6	External Defrost/ Person Trapped

Controller Terminal Identification

240 Volt Power connection to Control Unit

E	Earth
N	Neutral supply
240V~	Mains 240VAC Supply

Output Relays

NO	Normally open contact
NC	Normally closed contact (Light Only)
COM	Common contact

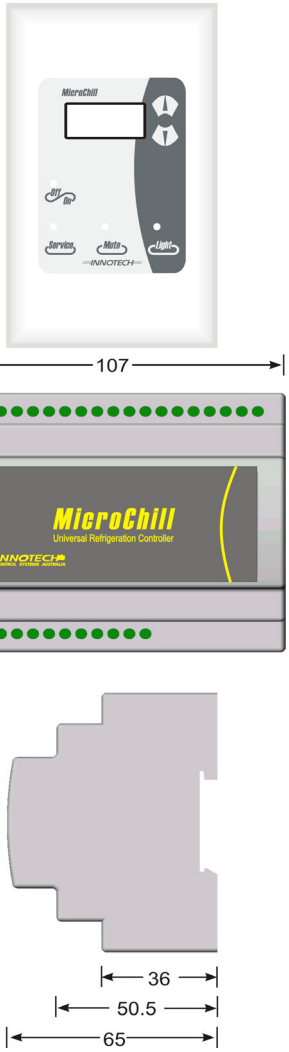
Temperature Ratings

- Storage: 0 to 50°C non-condensing
- Operating: 0 to 40°C non-condensing

Approvals

The Innotech MicroChill Series Controllers conforms to:

- Electromagnetic emission and immunity requirements according to standards EN55011 (CISPR11) and EN50082 for CE-Marking and C-Tick Labelling



Applications

The Innotech MicroChill Controller is designed to be used in applications requiring control of Cold and Freezer Rooms.

Features

- LED Display of Temperature and Program functions
- Control Station fits standard electrical wall plates
- Four core screened cable simplifies connection between the control station and controller
- Software selectable to operate as Cold Room or Freezer Room Controller
- Defrost heater control (time or temperature)
- Control of room lighting with input for interior light switch
- External defrost control from remote sources such as timeclock or BMS system
- High/low temperatures, alarms and power failures logged up to 48 hours
- Person Trapped alarm input
- Local or remote enable control
- Local or remote defrost control
- Alarm light and buzzer control
- Configurable Power On settings
- All adjustments from the control station

Installation and Wiring

1. The MicroChill should be mounted on a DIN rail in cabinets approved for switchgear or industrial control equipment. It should be mounted in a dry and clean environment that is free of excess vibration. Maximum terminal cable entry is 1.5mm^2 wire.
2. Wiring should be done in accordance with Innotech connection diagrams and local bylaws. Refer to your local distributor as required.
3. Connect the 240VAC supply to the correct terminals on the controller, observing the correct polarity of the connections. Connect the EARTH to the correct terminals on all units.
4. The maximum wire length between the control station and the controller should not exceed 50 metres. The wiring between these devices should not be run in parallel with conductors carrying high current.

This product should only be installed by qualified personnel.

Select Cold Room Or Freezer Control

1. When Power is applied to the controller for the first time, the temperature will be displayed and the “Light” pushbutton will be the only button operable.
2. Press and hold the “On/Off” and “Service” pushbuttons for 5 seconds. Once the screen is blank, release the buttons. “COLD” will be displayed. Use the “Up” and “Down” arrows to select Cold room (COLD) or Freezer (FREZ) operation.
3. Press and hold the “On/Off” button again until the screen is blank. This will be how the controller operates. The controller will now function under the Default Parameters.

Selecting the control mode will only be required during initial power up. It can be changed again by repeating Step 2. If control mode is re-selected, the Parameters will revert to the Default settings.

Inputs

Input #1: External Enable (Voltage Free Contact). If using this input, enable it through Parameter 14. This disables the Off/On pushbutton on the control station.
Input #2: Door Switch (Voltage Free Contact). If using this input, enable it through Parameter 12.
Input #3: Room Temperature – Thermistor (Innotech).
Input #4: Defrost Temperature Termination For Freezers, enable it through Parameter 20. Thermistor (Innotech).
Input #5: Room Light Switch (Voltage Free Contact).
Input #6: External Defrost (Voltage Free Contact). OR Trapped Person Alarm (Voltage Free Contact).

Outputs

DO #1: Room Lights (16A Relay. Common and Normally Closed Contact). Under normal conditions, when the controller is powered and the lights are off, the Digital Output will be energised (Normally Closed Contacts will be Open Circuit). To switch the lights on, press the “LIGHT” pushbutton. The relay will de-energise, and the lights will be switched on (this is a failsafe operation).
DO #2: Fan (10A Relay, Common and Normally Open Contact).
DO #3: Cooling (10A Relay, Common and Normally Open Contact).
DO #4: Defrost Heater (10A Relay, Common and Normally Open Contact) (FREEZER OPERATION ONLY).
DO #5: Alarm Light (2A Relay, Common and Normally Open Contact).
DO #6: Buzzer (2A Relay, Common and Normally Open Contact).

Fault Representation

1. If the Control Station display reads HELP, this is due to a communications error between the Controller and the Control Station. Check the interconnecting 4 core screened cable for continuity or short circuits. The controller will shut down in the event of a failure.
2. If the Control Station reads SEN1 FAIL, this is due to an open circuit room temperature detector (must be the Innotech SENP3). To test the detector, disconnect it from the room and connect it directly to Input 3 and Common on the Control Station. In the event of a failure, the controller will initiate the ALARM and BUZZER outputs. Mute will terminate the BUZZER.

At this stage the controller will also initiate cooling for the run time set in the TEMPERATURE FAIL RUN TIME parameter, and then switch off for ½ of the set run time.

3. If the Control Station reads SEN2 FAIL, this is due to an out of range error with the Defrost Coil Temperature Detector. This can be caused by an open or closed circuit on the wiring to the detector, an incorrect temperature detector (must be the Innotech SENP3), or a failure with the detector. Test the detector by disconnecting it from the room, and connecting it directly to Input #4 and Common terminals at the Control Station. In the event of a failure, the controller will revert to the Defrost Duration. If Defrost Duration is not programmed it will be ignored. Note: This Failure is only when the controller is being used for Freezer Room Operation (Parameter 20 is on).

If the Defrost Temperature Detector is faulty, and another is not readily available, set Parameter 20 to OFF and use Parameter 2. This will allow a Timed Defrost until a replacement sensor becomes available.

Logging and Monitoring

The Micro-Chill controller has the capacity to record the Highest Temperature, Lowest Temperature, whether a defrost has occurred, and if there has been an alarm for every hour, up to 48 hours when the Microchill is “ON”. The alarm logging is for Hi-Temp, Low- Temp, or a Power Failure.
These may be viewed by following the steps below:

1. Press and Hold the “On/Off” pushbutton for 5 seconds. “L 01” will be displayed. This is the logging for the previous hour. By pressing the “Up” and “Down” arrows, you can select to view from the previous hour up to the last 48 hours. If no logs are available the display will read “none”.
2. To view the Temperatures and alarm states for that hour, press the “On/Off” pushbutton. The Highest Temperature is displayed. Press the “Up” arrow to view the Lowest Temperature. Press the “Up” arrow again and the alarm for that hour will be displayed as follows: “Hi”-High Temp Alarm, “Lo”-Low Temp Alarm, “PO”-Power Failure or “DEF" if a Defrost has occurred.
3. To exit the logging, press and hold the “On/Off’ pushbutton for 5 seconds.

Adjusting the Setpoint

To adjust the Setpoint temperature, simply press and hold the “UP” or “Down” arrow for 5 seconds. Release the button when the display is blank.
Adjust the setpoint temperature to the desired setting, then press and hold the “On/Off” pushbutton for 5 seconds to save the setpoint.

Default Set Point: Cold room = 3°C, Freezer = -20°C.

Control Station Description

The Control Station has the following functions:

1. On/Off Pushbutton - If pressed, the fan and the temperature control are enabled (except if Parameter 14 is set to On – External Enable Input).
2. Service Pushbutton - If pressed, the fan and the temperature controls are disabled for a timed period (Parameter 4). If pressed again, the system will restart. The “Service” LED will flash in this mode (set Parameter 4 to 0 to disable this button).

In “Service” mode the temperature alarm settings are still operable. Therefore if the temperatures reach unacceptable levels, the Alarm Light will illuminate and stay on, but the buzzer will not sound.

If a Defrost is required during “SERVICE” mode, the system will ignore the “SERVICE” function and initiate the defrost.

3. Light Pushbutton - This switches the Cold room lights on and off (this pushbutton operates as a 2-way switch with the Light Switch located inside the Cold room (using Input 5).
4. Mute Pushbutton with LED indication - A temperature alarm initiates the buzzer relay, and pulses the alarm light relay.

If the “Mute” button is pressed, the buzzer will stop, and the alarm light will stay on (Not Flash) (Parameter 9 and 10). If the temperature reaches acceptable limits, the “MUTE” light will flash to show that it has had an alarm. Press the “MUTE” pushbutton to acknowledge the alarm.

If after the preset timeout (Parameter 5), the fault has not been rectified, the buzzer will re-initiate, and the alarm light will flash once again. The “Mute" pushbutton will not operate when the Person Trapped Alarm is initiated.

Forcing a Defrost

To force a defrost, press and hold the “Service” button for 5 seconds (DEF will be displayed). To terminate the forced defrost, press and hold the “Service” button for another 5 seconds. If you do not press the “Service” button to cancel the defrost, it will continue to operate until the defrost terminates from the time in Parameter 2 (P 02), or Temperature Termination in Parameter 20 (P 20).

Programming Your Controller

1. To ENTER programming mode, press and hold the “On/Off” button and then the “UP” arrow for 5 seconds. Release the buttons when the screen is blank.
2. When you have entered programming mode, “P 00” will be displayed (P=Parameter, 00=Parameter 0).
3. In programming mode, the “Up” and “Down” buttons select which Parameter is to be edited (from Parameter 00 to 16 for Cold room, 0-21 for Freezers). Not all Parameters are required to be used.
4. When you have selected the correct Parameter, press the “On/Off” button. The value of that Parameter may then be altered by pressing the “Up” or “Down” buttons. When you have adjusted the Parameter to the desired setting, press the “On/Off” button to confirm the changes.
5. After Step 4, you will be back at the Parameter selection stage once again. Repeat steps 3 and 4 until all required Parameters have been adjusted.
6. To EXIT programming mode and SAVE your new settings, press and hold the “On/Off” button for 5 seconds. Release the buttons when the screen is blank.

Important Notes for Programming

1. If the changes are not saved by holding the "On/Off" and "UP" arrow for 5 seconds, the controller will revert to the default settings.
2. If you are in the process of adjusting a Parameter (using the “Up” and “Down” buttons), and do not press any buttons for 30 seconds, the controller will revert back to the Parameter selection screen (e.g.. P 00).
3. If the Parameter selection screen (e.g. P 00) is left unaltered for 60 seconds, the controller will revert to the last saved setting, and exit programming mode. The temperature will be displayed.

Parameters for Cold Room Selection

0	Differential (0.0°C to 10.0°C), Default 1.0°C.
1	Number of Defrosts (0-24) per Day, Default 4.
2	Defrost Duration (0-120) Minutes, Default 30 Minutes.
3	Cooling Restart (0-120) Minutes, Default 3 Minutes.
4	Service Time Out (0-120) Minutes, Default 10 Minutes.
5	Mute Time Out (0-120) Minutes, Default 10 Minutes.
6	Temperature Fail Run Time (0-100) Minutes, Default 20 Minutes.
7	Hi Temp Alarm Time Delay (0-120) Minutes, Default 10.
8	Lo Temp Alarm Time Delay (0-120) Minutes, Default 10.
9	Hi Temp Alarm Setpoint (-30.0°C to +30°C), Default Off.
10	Lo Temp Alarm Setpoint (-30.0°C to +30°C), Default Off.
11	Calibration in °C (Actual Temperature, -10 to +10°C).
12	Door Switch Control (Off or On), Default Off.
13	Door Switch Time Delay (0-500) Seconds, Default 30 seconds (Only when Parameter 12 is On).
14	External Enable Input (Off or On), Default Off.
15	External Defrost or Person Trapped Alarm (DEF or PERS), Default PERS
16	Automatic Defrost After Power Failure (Off or On), Default Off

Parameters for Freezer Room Selection

In Freezer operation additional parameters are available:

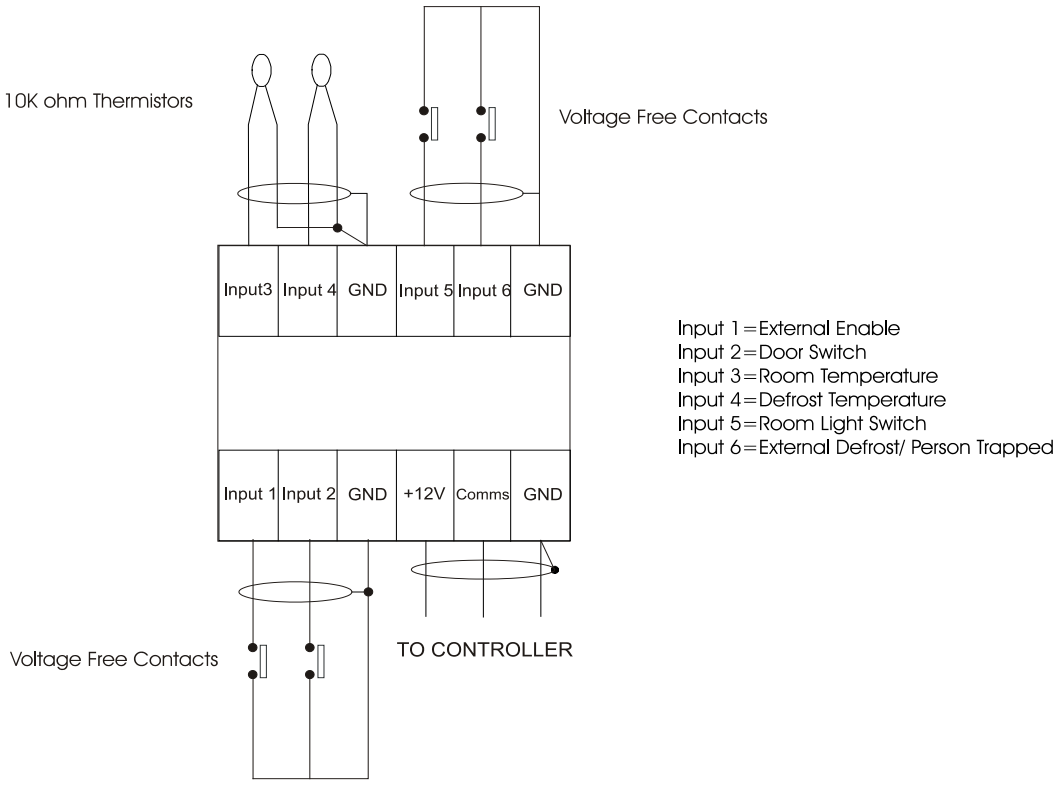
17	Cooling Delay-Drain Time (0-500) Seconds, Default 120 Secs
18	Fan Delay Time (0-500) Seconds, Default 60 Secs.
19	Fan Delay Temp (-30 to 30°C), Default Off.
20	Defrost Temperature Terminate (-30.0°C to +30°C), Default Off (Optional Sensor).
21	Defrost Coil Temperature Offset (-10 to +10°C, Actual Coil Temp), Default 0°C (Only when Parameter 19 is on).

Parameters 9, 10 & 19 have an “OFF” state to disable the functionality of each Parameter. Each of the Parameters has a range of –30.0 to +30.0. The Off state can be reached by pressing the “UP“ key after the display has reached +30. The display will then read “OFF”.

Parameter 6 has an “OFF” state and an “ON” state to enable the system to not function at all, or to run continuously if the Room Temperature Detector Fails. The “OFF” state is at 0, and the “ON” state is at 100 (if Parameter 6 was set to 20, this would enable the system to run for 20 minutes and then stay off for 10 minutes). The “OFF” time is always ½ of the “ON” time.

STANDARD CONNECTION

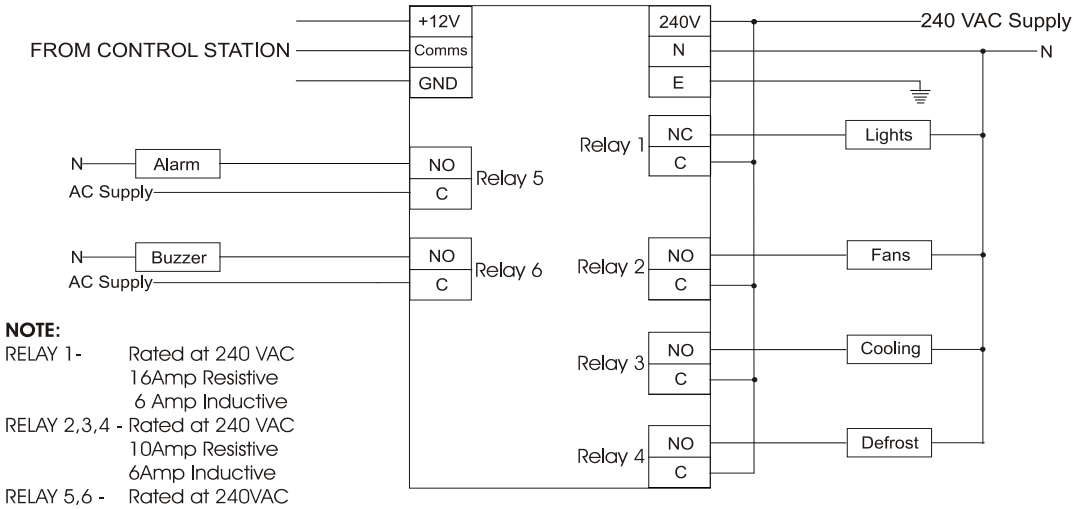
CONTROL STATION



Input 1=External Enable
Input 2=Door Switch
Input 3=Room Temperature
Input 4=Defrost Temperature
Input 5=Room Light Switch
Input 6=External Defrost/ Person Trapped

STANDARD CONNECTION

CONTROLLER



NOTE:
RELAY 1- Rated at 240 VAC
16Amp Resistive
6 Amp Inductive
RELAY 2,3,4 - Rated at 240 VAC
10Amp Resistive
6Amp Inductive
RELAY 5,6 - Rated at 240VAC
2Amp Resistive
0.5Amp Inductive

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