Smart Refrigeration Controller Datasheet

ZigBee-enabled I Multi-output I Energy Monitoring

🔷 Product Overview

Smart Refrigeration Controller designed for commercial cooling systems, supporting multi-output control, energy monitoring, and IoT connectivity via ZigBee.
It enables remote monitoring, efficient temperature control, and system reliability optimization.

🔷 Key Features

- Real-time remote monitoring via ZigBee + IoT platform
- Supports up to 5 relay outputs and 3 input detections
- Built-in energy consumption monitoring
- Customizable LCD display interface
- Configurable defrost scheduling
- Multi-mode control (Cooling / Heating / Auto)
- Alarm system for temperature deviation and device faults
- Mesh networking for stable communication

🔷 Technical Specifications

Control & Temperature

Item	Specification	Description
Control Mode	Cooling / Heating / Auto	Supports compressor and heater control
Control Type	Relay (On/Off)	Digital switching control
Temperature Control Range	-50°C ~ 99°C	Suitable for refrigeration & heating
Measurement Range	-50°C ~ 110°C	Compatible with various NTC sensors
Resolution	0.1°C	High precision measurement
Accuracy	±1°C	Stable and reliable
Hysteresis	0.5°C ~ 5°C (Adjustable)	Prevents frequent compressor cycling

Input & Output

Item	Specification	Description
Sensor Type	NTC (10K, B=3950)	Standard temperature probe
Input Channels	Up to 3	Door sensor / fault detection
Output Channels	Up to 5 relay outputs	Multi-device control
Output Capacity	16A / 220VAC	Industrial-grade relay

Protection & Functions

Item	Specification	Description
Compressor Protection	0–10 min delay (adjustable)	Extends equipment lifespan
Defrost Function	Timer-based	Configurable cycle & duration
Alarm Functions	High / Low Temp / Sensor Fault	Buzzer & system alerts
Energy Monitoring	Supported	Real-time power consumption

Communication & Network

Item	Specification	Description
Communication Protocol	ZigBee 3.0	Low-power wireless
Network Type	Mesh Network	Self-organizing with relay
Platform Integration	ZedIoT Platform	Remote monitoring & control

Display & Interface

Item	Specification	Description
Display Type	LCD	Clear visual interface
UI Customization	Supported	Flexible layout
Display Data	Temp / Power / Time / Energy	Multi-parameter display

Electrical & Environment

Item	Specification	Description
Power Supply	AC 220V	Standard input
Operating Temperature	-20°C ~ 60°C	Industrial environment
Humidity	10% ~ 90% RH	Non-condensing

Installation & Mechanical

Item	Specification	Description
Installation Method	DIN Rail / Embedded	Flexible deployment
OEM Support	Supported	Branding & customization
Warranty	1 Year	Standard coverage

🔷 Keypad Functions

Button	Function	Operation
SET	Enter settings	Short press
SET	Power ON/OFF	Long press (3s)
SET + ▼	Factory reset	Hold 3s
▲	Increase value	Adjust temperature
▲ + ▼	Pairing mode	Hold 3s
▼	Decrease value	Adjust / switch sensor
DEF	Manual defrost	Long press (3s)
DEF	Save & Exit	Exit settings

🔷 LCD Display Information

Display Values

Item	Example	Unit
Power	1234	W
Energy	123.45	kWh
Time	12:30	HH:MM
Current Temp	-18.5	°C / °F
Set Temp	-20.0	°C / °F

Status Indicators

Indicator	Meaning	Behavior	Priority
Cooling	Compressor active	Solid	High
Heating	Heater active	Solid	High
Defrost	Defrost active	Solid	High
Fan Speed	Low / Medium / High	Solid	Medium
Light	Light ON	Solid	Medium
Door	Door open	Solid	Medium
Alarm	Any alarm triggered	Flashing	Highest
Network Connected	Online	Solid	Low
Network Error	Offline	Slow Flash	Low

🔷 Applications

- Commercial refrigeration (freezers, cold rooms, display cabinets)
- Cold chain monitoring (food & medical storage)
- Agriculture (greenhouses, incubation systems)
- Heating & temperature-controlled environments

🔷 Company Info

ZedIoT is an AIoT-driven company specializing in smart hardware and cloud-integrated solutions.
We provide end-to-end systems from device sensing to cloud intelligence and AI-based decision-making.