



Electronic Refrigeration Controllers, type ERC

Innovative refrigeration controllers Save energy at reduced cost

The ERC is a multipurpose refrigeration controller that includes temperature and defrost management. Cutting overall total cost level, it meets the requirements of today's advanced commercial applications. The ERC is perfect for refrigerated restaurant equipment, bottle coolers, stainless steel refrigerators and freezers, beer coolers, light supermarket applications and many other uses.

The family of ERC controllers consists of:

- ERC 101: 1 relay output with integrated display for refrigerator applications
- ERC 102: 3 or 4 relay outputs with integrated display for refrigerator or freezer applications
- ERC 103: up to 5 outputs - split control with remote spindle or display for refrigerator or freezer applications

Save energy and reduce your carbon footprint

This new cutting-edge product design allows a multitude of cost savings:

Flexible routines and algorithms Working with input from multiple sensors, the ERC delivers both energy saving routines and highly economical compressor, light, defrost and fan control for increasingly cost sensitive customers.

Easy configuration The ERC can be configured directly on the assembly line in less than 10 seconds using Danfoss' configuration docking station.

Quick mounting The front secured mounting technology (patent pending) reduces assembly time on the production line to only five seconds – a significant efficiency improvement.

Service call reduction The intuitive display and menu structure along with 3 password levels reduce the need for onsite service thus reducing total service costs.

Quality The ERC quality controller ensures optimum performance under all conditions – from cold to tropical conditions – setting new standards in IP protection and operational stability.

Reduced life cycle cost Applying zero voltage compressor switching technology gives the ERC the best electrical lifetime in the industry - more than 175,000 cycles at full load - directly benefiting and reducing life cycle cost for your customer.

Inventory reduction The wide application fit and modular design of the ERC family allows OEM manufacturers to reduce inventory costs by at least 30% – with just one Danfoss code number.

Global availability The ERC family comes with a unique array of global approvals - UL, NSF, IEC/EN, CQC, GOST - and can be shipped to anywhere in the world at short notice. The average lead-time is cut dramatically.

50%

total potential cost savings

Achieve unrivalled savings by optimizing your appliance with the powerful ERC multipurpose controller.



Greater efficiency and flexibility with over 100 parameters and a powerful processor that consumes 70% less power.

Store opening hour detection

An OEM dedicated ambient light sensor reliably detects shop opening hours and features automatic ERC display dimming. An optional movement detection sensor switches the cabinet light on/off based on customer activity.

Sleep/night mode detection

Where light and movement detection sensors are not applicable, a door opening frequency monitor hibernates the cooler.

Display panel efficiency

The ERC display is 20% larger than industry standard – using less energy but increasing visibility at the same time. Choose from multiple colors.

Reliable compressor protection

More than 15 years of market experience with voltage and compressor protection systems help you save money by extending compressor lifetime in areas with unstable power supplies.

Smart fan control

Cabinet fans account for about 30% of a system's energy consumption. With the ERC, a user-specific fan cycling parameter ensures powerful cooling, defrost and energy savings.

High accuracy temperature control, individual display offset

Highly accurate temperature control within $\pm 0.5^\circ\text{F}$. Easy temperature adjustment with the possibility to limit the adjustment range.



Condenser cleaning alarm

A high-temperature condenser alarm alerts commercial refrigerator and freezer users prior to any refrigeration system damage caused by a dirty condenser.

Reliable defrost system

Intelligent defrost strategies ensure de-iced evaporators under all conditions. Adaptive defrost patterns help save energy at the same time.

Multi-sensor controller maximizes system efficiency

To maximize efficiency, ERC controllers feature up to 3 analog and 1 digital inputs (ERC 103 with RDI07 display can accept 6 inputs and 5 outputs). Its matrix IO design delivers a whole new range of possibilities and is easy to configure.



ERC Product Matrix	Controller Models		
			
Description	ERC101A	ERC102C/D	ERC103A/B/C/D
Number of Analog or Digital Inputs	2	3	3 (5)*
Number of Dedicated Digital Inputs	1	1	1
Number of Output Relays	1	3 or 4	up to 4 (5)*
Glass Door Merchandiser (GDM) Front - Optional	No	Yes	Yes, RDI07*
Comm. Refrigerator & Freezer (CFF) Front - Optional	No	Yes	Yes, RDI07*
Cabinet Temperature Control	Yes	Yes	Yes
Evaporator Temperature - Optional	Yes	Yes	Yes
Condenser Temperature/Alarm Function - Optional	Yes	Yes	Yes
Light Sensor - Night Set Back Feature - Optional	No	Yes	Yes
Door Switch Control Feature - Optional	No	Yes	Yes
"Super Cool" - Pull Down Feature	Yes	Yes	Yes
Smart Fan Control Feature	No	Yes	Yes
Defrost Heater Control - Optional	No	Yes	Yes
Temperature Alarm Output - Optional	No	Yes	Yes
Auxiliary Heater Control - Optional	No	Yes	Yes
Cabinet Light Control - Optional	No	Yes	Yes
Compressor Zero Cross Switching Feature	Yes	Yes	Yes
Compressor Protection - Voltage & Short Cycling	Yes	Yes	Yes
Flexible Input Assignments	Yes	Yes	Yes
Flexible Output Assignments	No	Yes	Yes
Flexible Button Assignments	Yes	Yes	Yes
Flexible Password Level Assignments	Yes	Yes	Yes
Optional Buzzer	Yes	Yes	Yes, RDI07*
Remote Spindle Control RSP01 - Optional	No	No	Yes
Remote Display RDI07 Control - Optional	No	No	Yes
PC Configuration w/ KoolProg Software	Yes	Yes	Yes
R&D Testing & Data Logging w/ KoolProg Software	Yes	Yes	Yes
Configuration with Production Docking Station	Yes	Yes	Yes
Nomenclature:			
ERC: Family Name			
101, 102 or 103: Model Designation			
A, B, C or D: Number of Output Relays - A = 1; B = 2; C = 3 and D = 4			
Notes:			
* With optional display RDI07			
Standard display colors: blue or red			

TECHNICAL SPECIFICATIONS



Power Supply & Consumption	100VAC - 240VAC, switching mode power supply (SMPS), 0.7W
Input	ERC 101: Three inputs: 2 Analog (A) or Digital (D), 1 digital; ERC102 &103: 4 Inputs: 3 Analog or Digital, 1 Digital; ERC103 with RDI07 display: 6 A/D inputs - maximum 4 can be digital. 2 inputs are located on the RDI07 • Air / Evaporator / Condenser temperature, user specific assignment • Door sensor: All switch types (digital), user specific • Light sensor: Danfoss ECO light sensor • DI used for remote communication
Output Relay Ratings	Compressor relay: UL60730/EN60730: 10A resistive @240VAC ; motor load 1HP, 16FLA / 72LRA. Relay 2 (Heater relay): UL60730/EN60730: 8A resistive @240VAC ; motor load 2FLA/ 12LRA.; TV-1 120VAC. Relay 3 (Fan relay): UL60730/EN60730: 2A resistive @240VAC ; motor load 2FLA/ 12LRA; TV-1 120VAC. Relay 4 (Light/alarm relay): UL60730/EN60730: 2A resistive @240VAC ; motor load 2FLA/ 12LRA; TV-1 120VAC.
Probes	Danfoss NTC temperature sensors and Danfoss ECO accessories
Connectors	Modular connector system: Input connector type: RAST 2.5 Edge connectors; Output connector type: RAST 5 Standard – ¼" spade terminals, with optional output screw terminal adapter
Configuration	Configuration with Danfoss ERC docking station, integrated system
Assembly	3 types for all controls: Front secured mounting (patents pending); rear secured mounting w/ clips; fully integrated solution (requires OEM specific design of mounting hole(s))
Display	LED display, 3 digit, decimal point and multi functionality icons; °F/C scale
Keypad	4 buttons (integrated IP65 design), 2 left, 2 right; user definable
Operating Conditions	32 °F to 131 °F (0 °C to 55 °C), 93% RH
Storage Conditions	-40 °F to 185 °F (-40 °C to 85 °C), 93% RH
Range of Measurement	-40 °F to 185 °F (-40 °C to 85 °C)
Protection	Front: IP65 (~NEMA4X) / Rear: water and dust protection corresponds to IP31 (~NEMA2 +), accessibility of connectors limit rear part rating to IP00
Environmental & EMC category	Pollution degree II, non-condensing; EMC category 1
Resistance to heat & fire	Category D (UL94-V0)
Operating Cycles	Compressor relay: more than 175,000 at full load (16FLA/96LRA)
Approvals	UL60730 IEC/EN 60730 NSF CQC GOST R 60730 R290/R600a : EN/IEC 60079-15:2005 Glow wire according to EN/IEC 60335-1

Technical highlights

- More than 100 parameters, all individually configurable
- Easily configurable to operate as a heating control – or heat/cool cabinet
- Compact design
- 16A power relay – up to 2.5 HP compressors
- Automatically controlled brightness of large-size LED display
- Intuitive menu system
- 3-level password protection
- Fully compatible with flammable refrigerants (R290)
- Triple moisture protection (housing, coating and connector plug)
- Advanced defrost strategies



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