

Quick Start Guide

ERC 213

Overview

The ERC 213 is designed to be an easy, universal replacement control. We encourage users to employ one of five predefined applications that meet the needs of most systems. If users need to modify specific parameters, it should be done after installing the predefined application that most closely meets system needs.

For more information, including detailed instructions, error codes, parameters, and more, visit www.danfoss.com/erc or download the Koolcode app from iTunes or Google Play.

For a video guide of the quick set-up, visit <http://bit.ly/ERC213> or use the QR code located to the right.



Quick Set-up

STEP	Action	Screen Display
STEP 1	Wire control, to include power and sensors	
	Power up control	
STEP 2	Energize control	Control turns on, goes through start up, then shows the current temperature reading
	Enter Quick Configuration Menu and Select app	
STEP 3	Press "<" for more than three seconds within one minute of power up to enter Quick Configuration Menu.	o61 appears on screen
	Press "set" while o61 is on screen	AP0 flashes on screen
	Select appropriate app using App Selection section below by pressing "Λ" or "V", then press "set".	o06 appears on screen
	Select Sensor	
STEP 4	Press "set" while o06 is on screen	n10 flashes on screen
	If using included sensor, leave default value "n10". If using another sensor, select using Sensor Resistance section on opposing page or cycle through steps 2 – 4 changing the sensor type until the temperature reading on the main screen is accurate. As above, cycle between options by pressing "Λ" or "V" and press "set" to save.	o06 appears on screen, then control resets
	Set Temperature	
STEP 5	From main screen, quickly press "set" (1 second).	Current temp. setting appears on screen
	Cycle to intended temperature by pressing "Λ" or "V" and press "set" to save.	Screen returns to main screen

App Selection

Select application based on application and wiring configuration (i.e., refrigeration vs. freezing, and number of temperature sensors). The Typical Wiring Configurations diagram on the reverse side of this document may be used to assist with selection. All parameters can be modified using the full menu. Some parameters have min and max set points which may need to be changed for less common configurations.

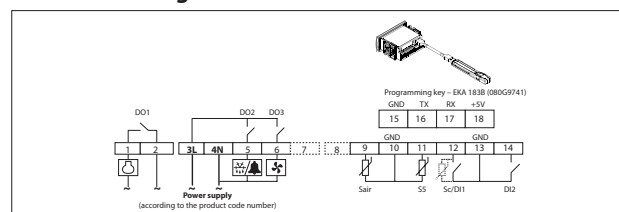
Control Application Code	Application	Defrost Type*	Defrost Termination	Sensors	Default Temp. [°F] [r00]	Temp. Range min./max. [°F] [r02/r03]	Default Dif. [°F] [r01]	Defrost Interval [hrs] [d03]	Max. Defrost Time [mins] [d04]	Defrost Termination Temp. [°F] [d02]
AP0 (Default)	No preset application - full menu			2	36	-31/22	4	6	30	43
AP1	Refrigeration	Natural	Time	1	39	36/43	4	4	30	–
AP2	Refrigeration	Electric	Time	1	36	32/39	4	6	15	–
AP3	Freezing	Electric	Time	1	-11	-15/-4	4	6	15	–
AP4	Refrigeration	Electric	Temp.	2	36	32/39	4	6	30	43
AP5	Freezing	Electric	Temp.	2	-11	-15/-4	4	6	30	43
AP6	No preset application - simplified menu			2	36	-31 – 122	4	6	30	43

* Hot gas defrost is an option available in full menu (d01).

Key Functions and Display Icons

Key Functions			
Λ	Press and hold at power up: FACTORY RESET ("FAC" is displayed)	Λ	Press for one second: UP
⏻		⏻	Press and hold: ON/OFF
⬆		⬆	Press for one second: DOWN
V		V	Press and hold: DEFROST
<	Press for one second: BACK	⚙	Press for one second: TEMP. SETPOINT/OK
❄	Press and hold: PULL-DOWN	SET	Press and hold: MENU
Display Icons			
🌙	Night mode (Energy saving)	🌀	Fan running
❄	Compressor running (Flashes in pull-down mode)	🔔	Active alarm
❄	Defrost	°C	Unit (°C or °F)

Connection Diagram



- **Sair** Control sensor
- **S5** Defrost (evaporator) sensor
- **SC** Condenser sensor
- **DI1** Digital input – configurable to the functions listed under menu code o02
- **DI2** Digital input – configurable to the functions listed under menu code o37

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Sensor Resistance: Using an ohmmeter, you can measure resistance of a sensor to identify sensor type or to troubleshoot a potentially faulty sensor.

Sensor Type	Code	Resistance [ohm] at Temperature [°F]			
		0	20	32	75
PTC	Ptc	690	761	807	980
PTC 1000	Pt1	931	974	1000	1093
NTC 10000 *	n10	70317	40411	29481	10459
NTC 5000	n5	42664	23110	16325	5251

* Included in kit

Common Functions

Adjust Temperature Set Point

From main screen, quickly press “set” (one second). The current temperature setting will appear on screen. Cycle to intended temperature by pressing “^” or “v” and press “set” to save. The display will return to the main screen.

Adjust Differential

From main screen, press “set” for more than three seconds. Cycle to “r--” submenu by pressing “^” or “v” and press “set.” Cycle to “r01” and press “set.” Cycle to preferred differential setting, and press “set” to save. “r01” will appear on screen. Press “<” twice to return to main screen.

Manual Defrost

From main screen, press defrost for more than three seconds to initiate defrost. The DEFROST icon is shown during defrost. Press defrost key for at least three seconds to stop manual defrost.

Factory Reset

Press and hold “^” and “v” simultaneously at power up.

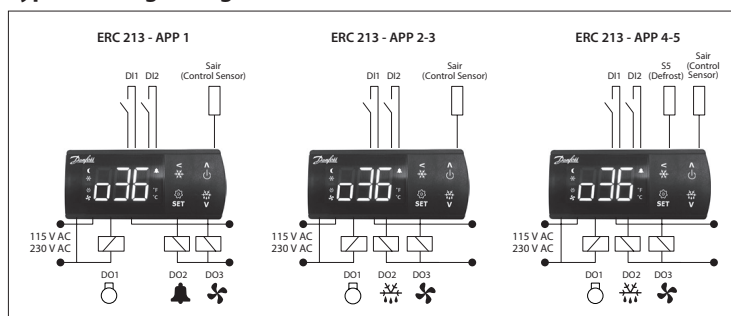
Unlock Keypad

After 5 minutes of no activity, the keypad will lock if P76 = yes (by default it is set to no). When the keypad is locked any key press shows “LoC” in the display. Press “^” and “v” simultaneously for three seconds to unlock the keyboard. “unl” is displayed for three seconds.

Technical Specifications

Power Supply	080G3411 115V AC 50/60 HZ; 080G3412 230V AC 50/60 Hz
Inputs	4 total; 2 analog, 1 analog/digital, 1 digital
Sensor Included in Kit	NTC 10000
Output	D01 Compressor Relay
	115 V (080G3268): 16 FLA/72 LRA 230 V (080G3269): 10 FLA/60 LRA
	D02 Defrost Relay and/D03 Fan Relay
	8A, 2 FLA, 12 LRA
Operating Conditions	14 – 131 °F
Storage Conditions	-40 – 158 °F
Approvals	UL Recognized/NSF

Typical Wiring Configurations



Troubleshooting

Power Supply	Code	Description	Remedy (applicable parameter code in parenthesis)
Common Alarm/ Error Codes	A01	High temperature alarm	Bring down temperature or increase high limit alarm limit (A13)
	A02	Low temperature alarm	Increase temperature or low temperature alarm limit (A14)
	E27	Defrost sensor error	Verify that defrost sensor is wired into terminals 10 and 11 Verify that correct sensor type is selected (o06)
	E29	Air temperature sensor error	Verify that control sensor is wired into terminals 9 and 10 – 8 is not used Verify that correct sensor type is selected
Common Problems/ Resolution	Problem	Likely Cause	Remedy (applicable parameter number in parenthesis)
	Compressor does not start	Waiting for compressor delay timer	Check compressor minimum off time (CO2)
		Defrost in progress	Check defrost interval (d03) Check defrost on demand (temp. initiated defrost) (d19)
	Defrost does not start	Controller in pull down mode	Check pull-down duration (r96)
	Wrong temperature is displayed	Wrong type of sensor selected	Verify that correct sensor type is selected (o06)
		Sensor installed into incorrect terminals	Verify that control sensor is wired into terminals 9 and 10 – 8 is not used
	Evaporator icing	Defrost interval too long	Reduce defrost interval (d03)
		Defrost time too short	Increase max. defrost time (d04)

Need additional help with programming, parameters, or error codes? Download Danfoss' Koolcode app.

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Parameter sheet

Parameter Name	Menu Code	Unit	Min. Value	Max. Value	Default Value	Value
Predefined applications	o61	–	–	–	App0	App0
Sensor type	o06	–	–	–	n10	n10
Temperature Setpoint	r00	°C	-100	200	2	2
Differential	r01	K	0.1	20	2	2.7
Min. set point limit	r02	°C	-100	200	-35	-35
Max. set point limit	r03	°C	-100	200	50	50
Display offset	r04	K	-10	10	0	0
Display Unit	r05	–	–	–	°C	°F
Calibration of Sair	r09	K	-20	20	0	0
Night Set back	r13	K	-50	50	0	0
Offset reference displacement	r40	°C	-50	20	0	0
Pull down duration	r96	min..	0	960	0	0
Pull down temp limit	r97	°C	-100	200	0	0
Alarm delay - Normal conditions	A03	min.	0	240	30	30
Alarm delay - pulldown / startup / def	A12	min.	0	240	60	60
High temp alarm	A13	°C	-100	200	8	8
Low temp alarm	A14	°C	-100	200	-30	-30
DI1 delay	A27	min.	0	240	30	30
DI2 delay	A28	min.	0	240	30	30
Condenser High temp alarm	A37	°C	0	200	80	80
Condenser High block limit	A54	°C	0	200	85	85
Voltage protection	A72	–	–	–	No	No
Min. cut-in voltage	A73	V	0	270	0	0
Min. cut-out voltage	A74	V	0	270	0	0
Max. voltage	A75	V	0	270	270	270
Defrost Method	d01	–	–	–	Electric	Electric
Defrost stop temperature	d02	°C	0	50	6	6.5
Defrost Interval	d03	hour	0	240	8	6
Max. defrost Time	d04	min.	0	480	30	30
Defrost delay at power up	d05	min.	0	240	0	0
Drip delay	d06	min.	0	60	0	0
Fan delay after defrost	d07	min.	0	60	0	0
Fan start temp after defrost	d08	°C	-50	0	-5	-5
Fan ON during defrost	d09	–	–	–	On	On
Defrost stop sensor	d10	–	–	–	None	None
Comp accumulated runtime	d18	hour	0	96	0	0
Defrost on demand	d19	K	0	20	20	20
Defrost delay after pulldown	d30	min.	0	960	0	0
Fan at compressor cutout	F01	–	–	–	FFC	FAo
Fan stop evaporator temp	F04	°C	-50	50	50	50
Fan ON time	F07	min.	0	15	2	2
Fan OFF time	F08	min.	0	15	2	2

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Parameter Name	Menu Code	Unit	Min. Value	Max. Value	Default Value	Value
Compressor min. ON time	C01	min.	0	30	0	0
Compressor min. OFF time	C02	min.	0	30	2	2
Comp OFF delay at open door	C04	min.	0	15	0	0
Zero crossing	C70	–	–	–	yes	yes
Delay of outputs at startup	o01	sec	0	600	5	5
DI1 configuration	o02	–	–	–	Off	Off
Serial address	o03	–	0	247	0	0
Password	o05	–	0	999	0	0
Display Resolution	o15	–	–	–	0.1	1
Relay 1 counter	o23	–	–	–	–	0
Relay 2 counter	o24	–	–	–	–	0
Relay 3 counter	o25	–	–	–	–	0
DI2 configuration	o37	–	–	–	Off	Off
Display during defrost	o91	–	–	–	-d-	-d-
DO2 Config	o71	–	–	–	def	def
DI1 polarity	P73	–	–	–	no	no
DI2 polarity	P74	–	–	–	no	no
Invert alarm relay	P75	–	–	–	Normal	Normal
Keyboard lock	P76	–	–	–	No	No
Main switch	r12	–	–	–	Off	On
Controller status	u00	–	–	–	S25	S20
Air temperature (Sair)	u01	°C	–	–	–	321
Present regulation reference	u02		–	–	–	0
Evaporator temperature (S5)	u09	°C	–	–	–	0
DI1 status	u10	–	–	–	Off	Off
Night mode	u13	–	–	–	Off	Off
DI2 status	u37	–	–	–	Off	Off
Condenser temperature (Sc)	U09	–	–	–	–	0
Compressor relay status	u58	–	–	–	Off	Off
Fan relay status	u59	–	–	–	Off	On
Defrost relay status	u60	–	–	–	Off	Off
Firmware version	u80	–	–	–	–	4.16
Database version	–	–	–	–	–	4.02
Order No Low	–	–	–	–	–	3502
Air temperature sensor(Sair) error	E29	–	–	–	Off	On
Defrost sensor (S5) error	E27	–	–	–	Off	Off
Condensor sensor(Sc) error	E30	–	–	–	Off	Off
High temperature alarm	A01	–	–	–	Off	Off
Low temperature alarm	A02	–	–	–	Off	Off
High voltage alarm	A99	–	–	–	Off	Off
Low voltage alarm	AA1	–	–	–	Off	Off
High condenser temperature alarm	A61	0	–	–	Off	Off
Door alarm	A04	0	–	–	Off	Off
DI external alarm	A15	0	–	–	Off	Off