Data sheet

Refrigeration controller
EETc 11, 12, 21, 22 and EETa 2W, 3W

The EET Series is the next generation of Electronic Thermostats which is a direct replacement of the Mechanical Thermostat (and timer) and Danfoss ETC series. It comes in two variants: EETc (Enhanced Electronic Thermostat, compact) which has one and two output model options for controlling compressor and fan/defrost heater and EETa (Enhanced Electronic Thermostat, advanced) which has two and three output model options for controlling compressor, fan, defrost heater or light.

With the EETc and the EETa, we continue building on the electronification legacy by bringing a high number of new features and capabilities to increase performance and flexibility, while keeping the familiar form factor and installation method.

Features

- Moisture protected design for installability inside the cold space area
- Similar dimensions and installation method as ETC series and Mech Thermostat for easy transition (applicable for EETc)
- Wide Voltage Power Support (110 – 230 V) (applicable for EETa)
- Configurable auxiliary inputs and outputs to control fan, defrost heater and light
- Alarms, fan & light control, compressor management using door sensor
- Supports multiple sensor types: NTC 5K, NTC 10K, PTC 990
- Zero cross technology for longer relay life
- Mass programmable at production site with direct programming key access

- Compressor protection from voltage fluctuations, spikes and surges
- Advanced fan control
- Multiple defrost methods to choose from
- Condenser overheat protection
- Economy mode (Eco mode) to give more energy saving potential during night and long hours of no use. EETa also supports Holiday mode, which allows longer than a day period of auto temperature offset
- Dual defrost control (only EETa)
- Quick factory test mode to check if inputs/ outputs are functioning
- High and low temperature alarm indication
- Safety/Emergency mode in case of sensor and potentiometer failure

Applications	Applications supported by the EETc:	Applications supported by the EETa:
	• Glass door merchandisers	• Glass door merchandisers
	• Beverage coolers	• Commercial freezers and refrigerators
	• Commercial freezers and refrigerators	• Preparation tables
	• Preparation tables	• Dual compressor refrigerators
		• Anti-freeze applications requiring auto heat control
		• Applications requiring dual defrost control

Variants	EETc:	EETa:
	• EETc 11: 1 output, 120 V	• EETa 2W: 2 outputs, wide voltage (120 – 230 V)
	• EETc 12: 1 output, 230 V	• EETa 3W: 3 outputs, wide voltage (120 – 230 V)
	• EETc 21: 2 outputs, 120 V	
	• EETc 22: 2 outputs, 230 V	

Facts

Variant differences

HW differences between EETc and EETa:

Features	EETc	EETa
Sensor inputs	2	3
Wide voltage power module	No	Yes
Visible LED indication	Power	Power, Error
Temperature sensors supported	NTC 5K, NTC 10K	NTC 5K, NTC 10K, PTC
Output options	1 & 2 Relay	2 & 3 Relay

SW differences between EETc and EETa:

Features	EETc	EETa
Onsite Parameter Programming/ Production Programming capability	Koolkey with external power	Koolkey with powered controller
Onsite firmware update capability	No	Yes
Eco mode	Yes	Yes
Holiday mode	No	Yes
Light Control	No	Yes
Dual defrost	No	Yes
Dual compressor control	No	Yes
Anti-freeze function	No	Yes

Technical Specifications

Electronic temperature control, type EETc 11, 12, 21 and 22:

Product specification	EETc 11, EETc 21	EETc 12, EETc 22
Purpose of control	Operating temperature sensing control suitable for incorporation into commercial air-conditioning and refrigeration applications	
Construction of control	Incorporated control	
Voltage	120 V, 50/60 Hz	230 V, 50/60 Hz
Types/Models	EETc 11 (One relay 120 V) EETc 21 (Two relay 120 V)	EETc 12 (One relay 230 V) EETc 22 (Two relay 230 V)
Power supply	120 V AC +10%/-15%, 50/60 Hz	230 V AC +10%/-15%, 50/60 Hz
Relay ratings	DO1 (Compressor relay) 16 A (16 FLA / 72 LRA)	DO1 (Compressor relay) 16 A (10 FLA / 60 LRA)
	DO2 (Defrost heater / Evaporator fan) 5 A (2 FLA / 12 LRA)	DO2 (Defrost heater / Evaporator fan) 5 A (2 FLA / 12 LRA)
Product dimension	Length: 79 mm Width: 37.5 mm Height: 30.5 mm	
Temperature control	Potentiometer with Spindle	
Number of inputs	2 (1 Analogue + 1 Analogue / Digital)	
Supported sensor types	NTC 5K (Beta value 3980 @ 25/100 °C) NTC 10K (Beta Value 3980 @ 25/100 °C)	
Measuring accurancy	±1 K below -35 °C ±0.5 K between -35 – +25 °C ±1 K above 25 °C	
Measurement range	-40 – +80 °C	
Number of outputs	One relay version: Compressor relay Two relay version: Compressor relay + Aux relay (Defrost heater / Evaporator fan)	
Input connector type	Plug & Header type	
Output connector type	Tab connector	
Communication	TTL (MODBUS)	
Operating temperature range	-25 – +55 °C	
Humidity range	93% RH, Condensing	
Installation	Spindle mounted Cold Space Installability	
Relay switching	Zero cross technology (All relays)	
Overvoltage category	II - 230 V supply version - (ENEC, UL recognized) III - 115 V supply version - (UL recognized)	
Surge Protection	4 KV	
Approvals (In process)	R290/R600a end-use applications employing in accordance to EN/IEC 60335-2-24, annex CC and EN/IEC 60335-2-89, annex BB Glow wire according to EN/IEC 60335-1 IEC/EN 60730 UL60730 NSF CQC EAC Ukraine	

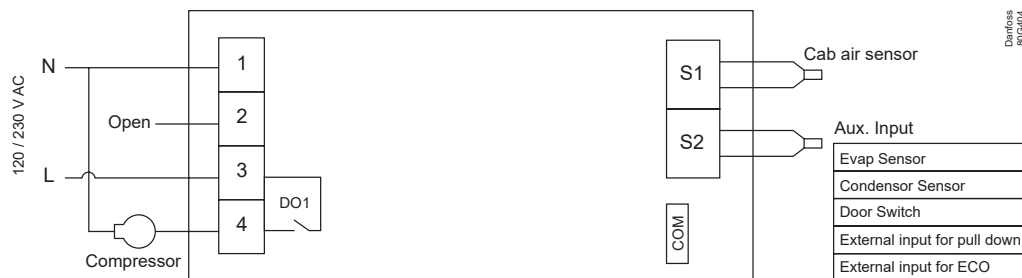Electronic temperature control, type EETa 2W and EETa 3W:

Product specification	EETa 2W	EETa 3W
Purpose of control	Operating temperature sensing control suitable for incorporation into commercial air-conditioning and refrigeration applications	
Construction of control	Incorporated control	
Power supply	100 – 240 V AC +/- 10%, 50/60 Hz, Non isolated	
Relay ratings	DO1: 16 A (16 FLA / 72LRA) DO2: 8A (2FLA /12LRA)	DO1: 16 A (16 FLA / 72LRA) DO2: 8 A (2FLA /12LRA) DO3: 5 A (2FLA /12 LRA)
Product dimension	Length: 83.5 mm Width: 43.5 mm Height: 30.5 mm	
Temperature control	Potentiometer with spindle	
Number of inputs	3 (1 Analogue, 2 Analogue / Digital)	
Supported sensor types	NTC 5K (Beta value 3980 @ 25/100 °C) NTC 10K (Beta value 3980 @25/100 °C) PTC 990 ohms @ 25 °C (EKS111)	
Measuring accurancy	±1 K below -35 °C ±0.5 K between -35 – +25 °C ±1 K above +25 °C	
Measurement range	NTC 5K: -40 – +80 °C NTC 10K: -40 – +80 °C PTC 990: -55 – +100 °C	
Output configuration	DO1: Compressor DO2: Def. Heater/Fan/Light/Second comp/Alarm	DO1: Compressor DO2 and DO3: Def. Heater/Fan/Light/ Second comp/Alarm
Input connector type	Plug and header type	
Output connector type	Tab Connector	
Communication	TTL (MODBUS)	
Operating temperature range	-25 – +50 °C	
Humidity range	93% RH, Condensing	
Installation	Spindle mounted Cold space installab**ility**	
Relay switching	Zero cross technology (all relays)	
Surge protection	4 KV	
Approvals (In process)	R290/R600a end-use applications employing in accordance to EN/IEC 60335-2-24, annex CC and EN/IEC 60335-2-89, annex BB Glow wire according to EN/IEC 60335-1 IEC/EN 60730 UL60730 NSF CQC EAC Ukraine	

Connections

⚠ **Warnings:**

1. Do not fit power supply wiring and signal wiring (probes/sensors and digital inputs) in the same raceways or ducts.

2. Separate as much as possible the probe and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance.

3. Suitably fasten the output connection cables to avoid any unintentional contact.

4. The electrical connections must only be completed by a qualified electrician.

5. The customer must only use the product in the manner described in the documentation relating to the installation and product application.
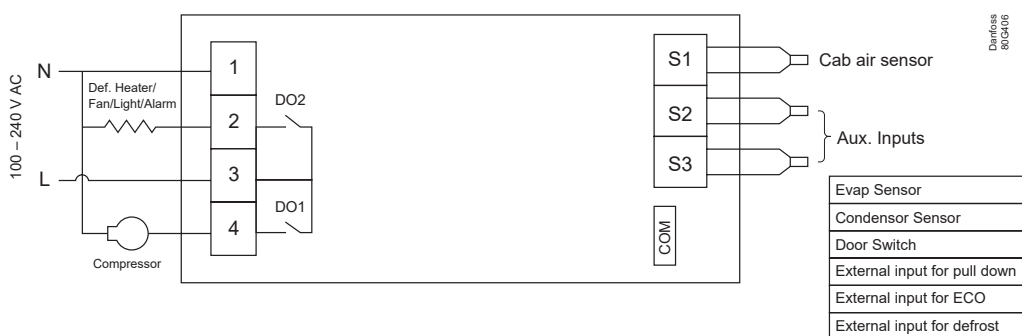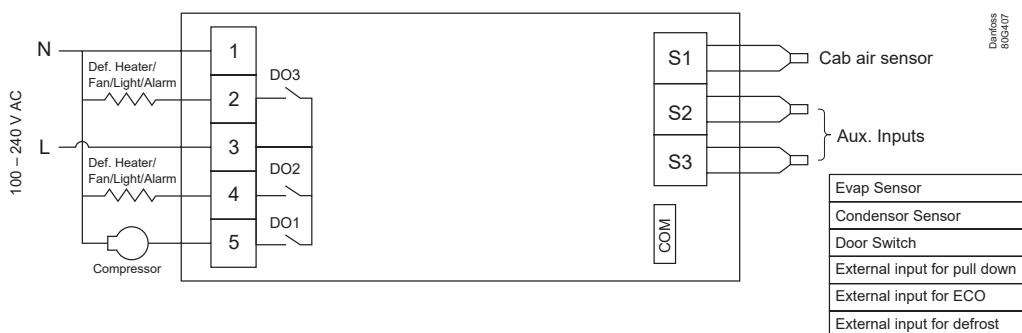
EETc11, EETc12

Danfoss
80G404

120 / 230 V AC
N
Open — 2
L
1
3
4 — DO1
Compressor

S1 — Cab air sensor
S2 — Aux. Input
COM

| Evap Sensor |
| Condensor Sensor |
| Door Switch |
| External input for pull down |
| External input for ECO |

EETc21, EETc22

Danfoss
80G405

120 / 230 V AC
N
Def. Heater/Fan — 2 — DO2
L
1
3
4 — DO1
Compressor

S1 — Cab air sensor
S2 — Aux. Input
COM

| Evap Sensor |
| Condensor Sensor |
| Door Switch |
| External input for pull down |
| External input for ECO |

EETa 2W

Danfoss
80G406

100 – 240 V AC
N
Def. Heater/Fan/Light/Alarm — 2 — DO2
L
1
3
4 — DO1
Compressor

S1 — Cab air sensor
S2
S3 — Aux. Inputs
COM

| Evap Sensor |
| Condensor Sensor |
| Door Switch |
| External input for pull down |
| External input for ECO |
| External input for defrost |

EETa 3W

Danfoss
80G407

100 – 240 V AC
N
Def. Heater/Fan/Light/Alarm — 2 — DO3
L
Def. Heater/Fan/Light/Alarm — 4 — DO2
1
3
5 — DO1
Compressor

S1 — Cab air sensor
S2
S3 — Aux. Inputs
COM

| Evap Sensor |
| Condensor Sensor |
| Door Switch |
| External input for pull down |
| External input for ECO |
| External input for defrost |

Ordering

Type	I-Pack	
	Qty.	Code no.
EETc 12 - EET Compact, 1 relay, 230 V, 50/60 Hz	150	080N0010
EETc 22 - EET Compact, 2 relay, 230 V, 50/60 Hz	150	080N0011
EETc 11 - EET Compact, 1 relay, 120 V, 50/60 Hz	150	080N0012
EETc 21 - EET Compact, 2 relay, 120 V, 50/60 Hz	150	080N0013
EETa 2W - EET Advanced, 2 relays, wide voltage (120 – 230 V), 50/60 Hz	150	080N0014
EETa 3W - EET Advanced, 3 relays, wide voltage (120 – 230 V), 50/60 Hz	150	080N0015
Temperature sensors		
-40 – +80 °C, PVC Standard, NTC 10K, Cabinet Sensor		
S1, 1000 mm	150	080N0300
S1, 1500 mm	150	080N0301
S1, 2000 mm	150	080N0302
S1, 3000 mm	150	080N0303
-40 – +80 °C, PVC Standard NTC 10K, Defrost Sensor		
S2, 1500 mm, 2 Blue Stripes	150	080N0304
S2, 2000 mm, 2 Blue Stripes	150	080N0305
S2, 3000 mm, 2 Blue Stripes	150	080N0306
-40 – +80 °C, PVC Standard, NTC 10K, Condenser Sensor		
S3, 1000 mm, 1 Blue Stripe	150	080N0307
S3, 3000 mm, 1 Blue Stripe	150	080N0308
Magnetic door sensor		
2000 mm	150	080N0311
3000 mm	150	080N0312
Cable door sensor		
2000 mm	150	080N0313
4000 mm	150	080N0314
Hand knob		
Black	480	077F8562
Washer		
Black with white print 0-9	480	077F8577
Power plug*		
4-pole with screw	50	080N0310
6-pole with screw	54	080G3357
Programming		
Please contact your nearest sales representative for more information.		

* The connectors are rated for 28 Amps max.