

Data Sheet

Temperature sensor Type **ETN**

NTC temperature sensors for ETC & ERC controllers
For commercial refrigeration applications



Danfoss has selected a programme of temperature sensors to be used with the ETC and ERC range of controllers.

NTC (Negative Temperature Coefficient) temperature sensors change resistance with temperature in a manner compatible with the controller software.

They are fully compliant with the tolerance requirements according to IEC 60060-1.

Features:

- High accuracy in temperature measurement and close tolerances ensure improved control
- Plastic/steel moulded sensor case
- Insulated connecting cable
- Various cable lengths available
- Supplied with rast 2.5 connectors
- Poka-yoke (mistake-proof) cable connection to the controller

Product specification

Technical data

Table 1: PVC standard sensors

Double insulated	
Operating temperature range	-40 – 80 °C
Thermistor	Encapsulated in plastic housing
Connecting cable	PVC double insulated
Climatic category (IEC 60068-1)	40/80/56
Rated resistance at 0 °C	16330 Ω ±2% (±0.4 °C)
Rated resistance at 25 °C	5000 Ω
Insulation resistance	>1000 MΩ
Voltage proof	3750 V
Thermal time constant	Approx. 35 sec.
Typical applications	Air sensing, evaporator sensing, condenser sensing

Table 2: TPE precision sensors

Double insulated	
Operating temperature range	-20 – 100 °C
Thermistor	Encapsulated in plastic housing
Connecting cable	Thermoplastic elastomer double insulated
Climatic category (IEC 60068-1)	40/80/56
Rated resistance at 0 °C	16330 Ω ±1% (±0.2 °C)
Rated resistance at 25 °C	5000 Ω
Insulation resistance	>100 MΩ
Voltage proof	3750 V
Thermal time constant	Approx. 8 sec.
Typical applications	Ice bank

Table 3: NTC sensor for heating application

FEP insulation	
Operating temperature range	-40 – 200 °C
Thermistor	Encapsulated in stainless steel housing. AISI 305
Connecting cable	Silicone rubber cable
Degree of protection	IP67
Rated resistance at 0 °C	346,9 kΩ (tolerance at 0 °C ±2.2%)
Rated resistance at 25 °C	100,0 kΩ (tolerance at 25 °C ±1.0%)
Insulation resistance	>100 MΩ
Voltage proof	3750 V
Thermal time constant	Approx. 8 sec.
Typical applications	Heating application

Connection diagram

Danfoss NTC temperature sensors are clearly marked for easy identification during the assembly process.

Colour coding on the cable close to the sensor element is used to differentiate between cabinet, evaporator (defrost) and condenser sensors even if the plug part of the cable is not visible.

For example, a sensor marked with two blue stripes as shown in [Figure 2: Sensor with blue stripes](#) is the evaporator or defrost sensor.

There are also different connector types or codes at the plug end of the cable. Using a combination of rib cuts on the connectors ensures correct connection position to the controller as shown in [Figure 3: Connection position](#). This is known as Poka-Yoke design.

Temperature sensor, type ETN

Table 4: Connection diagram

Figure 1: ERC 11x controller

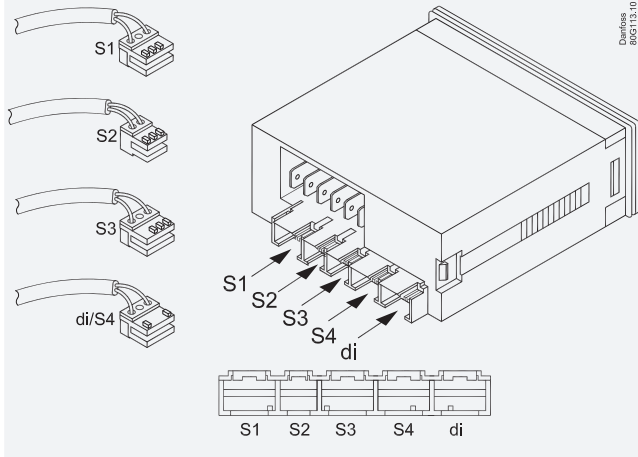


Figure 2: Sensor with blue stripes

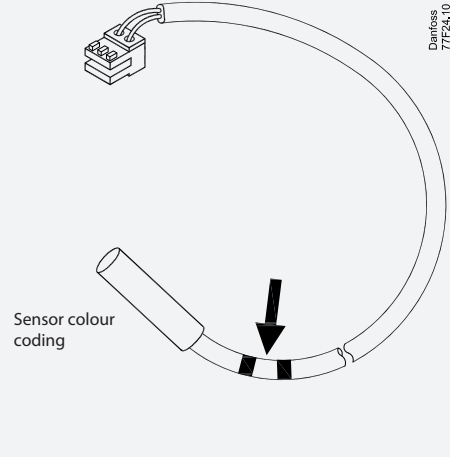
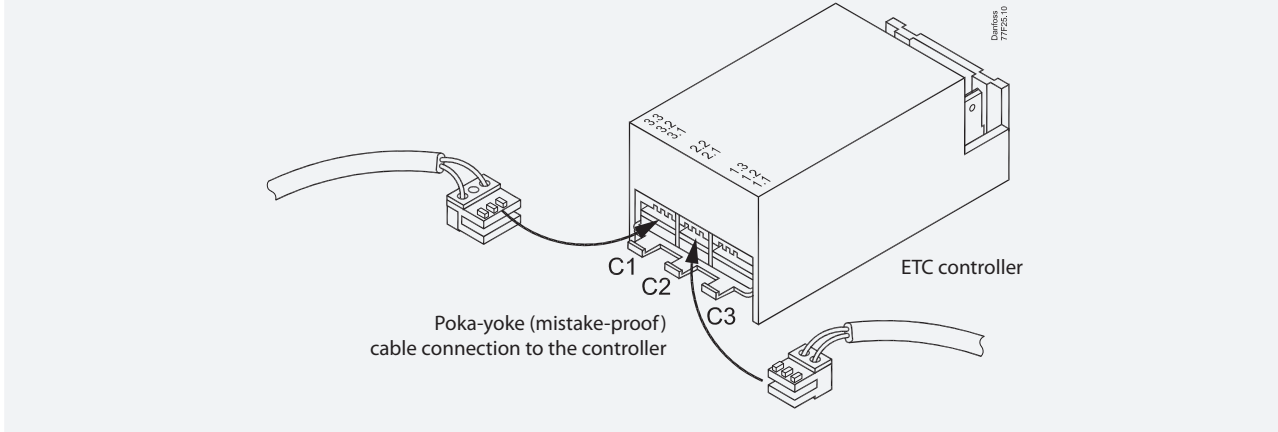


Figure 3: Connection position



Dimensions and Weights (SI units)

Figure 4: PVC standard sensor

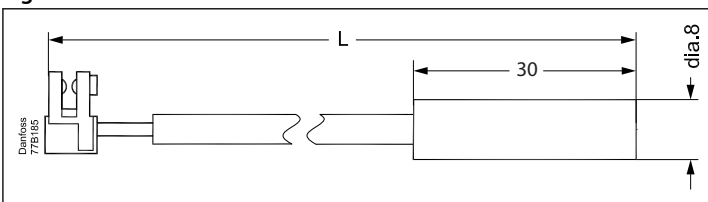


Figure 5: TPE precision

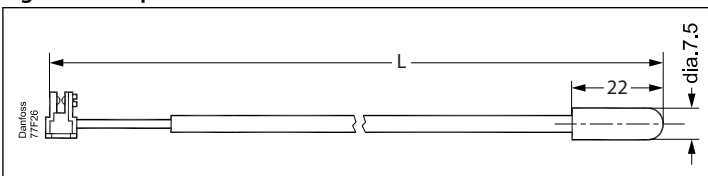
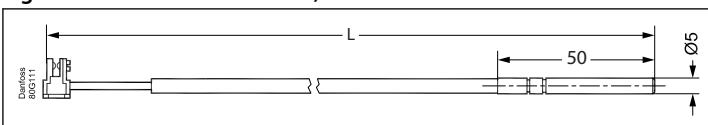


Figure 6: Silicone rubber cable, NTC 100 K ohm



Ordering

Table 5: Ordering for NTC temperature sensor

Sensor type	Length in mm	Connector	Colour marking	Code number	
PVC standard (± 0.4 °C) NTC 5 K	470	C1/S1		077F8751	
	1000	C1/S1		077F8757	
	1500	C1/S1		077F8761	
	2000	C1/S1		077F8765	
	2200	C1/S1		077F8767	
	3000	C1/S1		077F8769	
	3500	C1/S1		077F8723	
	6000	C1/S1		080G2019	
	1000	C2/S2		077F8786	
	1500	C2/S2		077F8790	
	2000	C2/S2		077F8794	
	3000	C2/S2		077F8798	
	6000	C2/S2		080G2029	
	1000	C3/S3		077F8756	
	1500	C3/S3		077F8760	
	3000	C3/S3		077F8768	
	TPE precision (± 0.2 °C) NTC 5 K	1500	C1/S1		077F8726
	Silicone rubber cable, NTC 100 K ohm	1000	S1/S3		080G2041
2000		S1/S3		080G2043	
3000		S1/S3		080G2045	

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