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

<div style="background:red;color:white;padding:4px;">**Product specification**</div>

Technical data

Table 1: PVC standard sensors

Double insulated	
Operating temperature range	-40 – 80 ℃
Thermistor	Encapsulated in plastic housing
Connecting cable	PVC double insulated
Climatic category (IEC 60068-1)	40/80/56
Rated resistance at 0 ℃	16330 Ω ±2% (±0.4 ℃)
Rated resistance at 25 ℃	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 ℃
Thermistor	Encapsulated in plastic housing
Connecting cable	Thermoplastic elastomer double insulated
Climatic category (IEC 60068-1)	40/80/56
Rated resistance at 0 ℃	16330 Ω ±1% (±0.2 ℃)
Rated resistance at 25 ℃	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 ℃
Thermistor	Encapsulated in stainless steel housing. AISI 305
Connecting cable	Silicone rubber cable
Degree of protection	IP67
Rated resistance at 0 ℃	346,9 kΩ (tolerance at 0 ℃ ±2.2%)
Rated resistance at 25 ℃	100,0 kΩ (tolerance at 25 ℃ ±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.

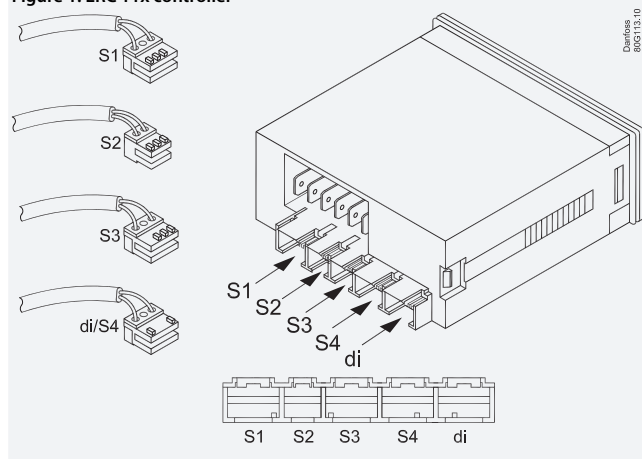**Table 4: Connection diagram**

Figure 1: ERC 11x controller

S1
S2
S3
di/S4

S1
S2
S3
S4
di

S1 S2 S3 S4 di

Figure 2: Sensor with blue stripes

Sensor colour
coding

Figure 3: Connection position

C1
C2
C3

ETC controller

Poka-yoke (mistake-proof)
cable connection to the controller
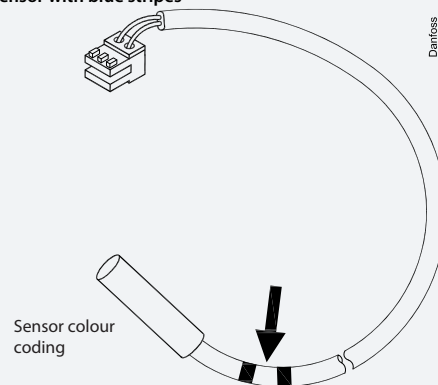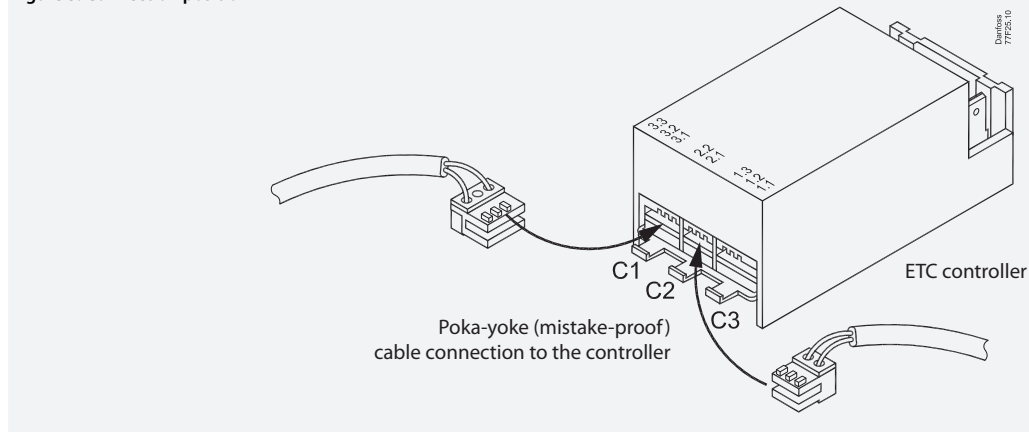
Dimensions and Weights (SI units)

Figure 4: PVC standard sensor

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30
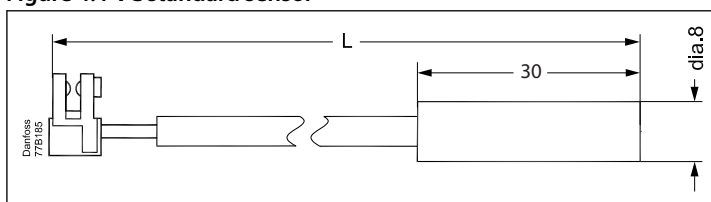
dia.8

Figure 5: TPE precision
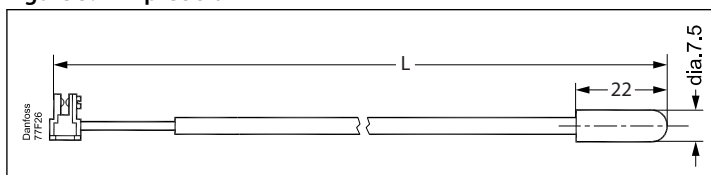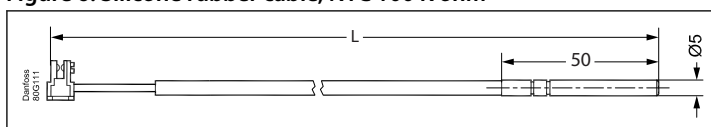
L

22

dia.7.5

Figure 6: Silicone rubber cable, NTC 100 K ohm

L

50

Ø5

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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