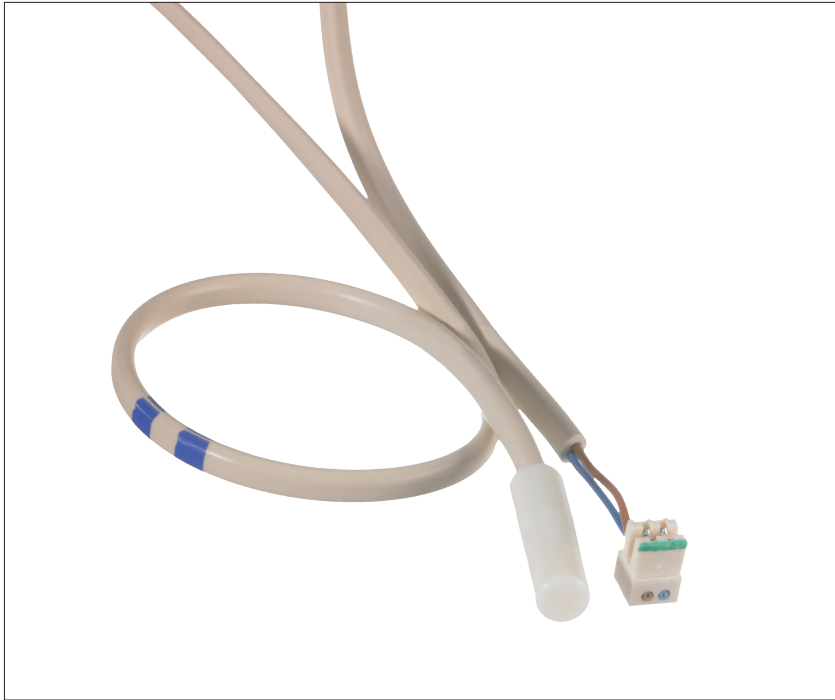**Data sheet**

NTC type temperature sensors
for ETC & ERC controllers

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.

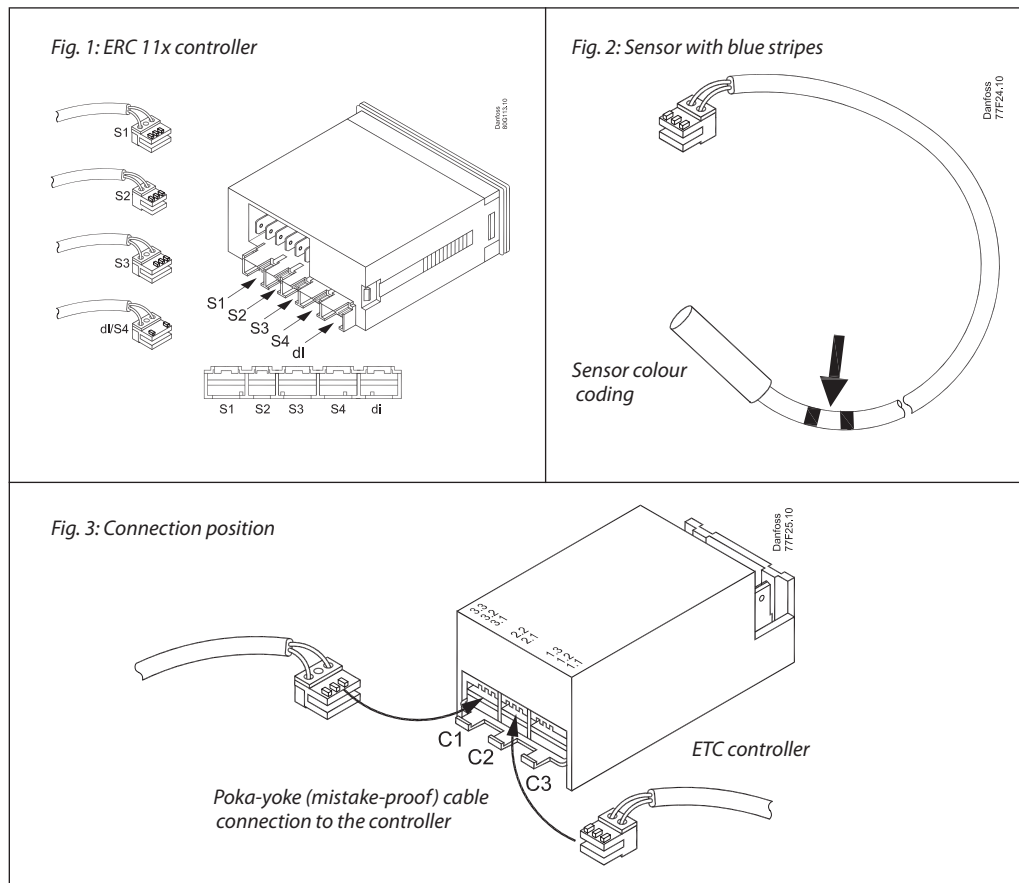| Features	
• High accuracy in temperature measurement and close tolerances ensure improved control	• Various cable lengths available
• Plastic/steel moulded sensor case	• Supplied with rast 2.5 connectors
• Insulated connecting cable	• Poka-yoke (mistake-proof) cable connection to the controller

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 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. This is known as Poka-Yoke design.

Fig. 1: ERC 11x controller

Fig. 2: Sensor with blue stripes

Sensor colour coding

Fig. 3: Connection position

ETC controller

Poka-yoke (mistake-proof) cable connection to the controller

Technical data

PVC Standard sensors

<table>
<tr><td rowspan="11">Double insulated</td><td></td><td></td></tr>
<tr><td>Operating temperature range</td><td>-40 – 80°C</td></tr>
<tr><td>Thermistor</td><td>Encapsulated in plastic housing</td></tr>
<tr><td>Connecting cable</td><td>PVC double insulated</td></tr>
<tr><td>Climatic category (IEC 60068-1)</td><td>40/80/56</td></tr>
<tr><td>Rated resistance at 0°C</td><td>16330 Ω ±2% (±0.4°C)</td></tr>
<tr><td>Rated resistance at 25°C</td><td>5000 Ω</td></tr>
<tr><td>Insulation resistance</td><td>>1000 MΩ</td></tr>
<tr><td>Voltage proof</td><td>3750 V</td></tr>
<tr><td>Thermal time constant</td><td>Approx. 35 sec.</td></tr>
<tr><td>Typical applications</td><td>Air sensing, evaporator sensing, condenser sensing</td></tr>
</table>

TPE precision sensors

<table>
<tr><td rowspan="11">Double insulated</td><td></td><td></td></tr>
<tr><td>Operating temperature range</td><td>-20 – 100°C</td></tr>
<tr><td>Thermistor</td><td>Encapsulated in plastic housing</td></tr>
<tr><td>Connecting cable</td><td>Thermoplastic elastomer double insulated</td></tr>
<tr><td>Climatic category (IEC 60068-1)</td><td>40/80/56</td></tr>
<tr><td>Rated resistance at 0°C</td><td>16330 Ω ±1% (±0.2°C)</td></tr>
<tr><td>Rated resistance at 25°C</td><td>5000 Ω</td></tr>
<tr><td>Insulation resistance</td><td>>100 MΩ</td></tr>
<tr><td>Voltage proof</td><td>3750 V</td></tr>
<tr><td>Thermal time constant</td><td>Approx. 8 sec.</td></tr>
<tr><td>Typical application</td><td>Ice bank</td></tr>
</table>

NTC sensor for heating application

<table>
<tr><td rowspan="10">FEP insulation</td><td></td><td></td></tr>
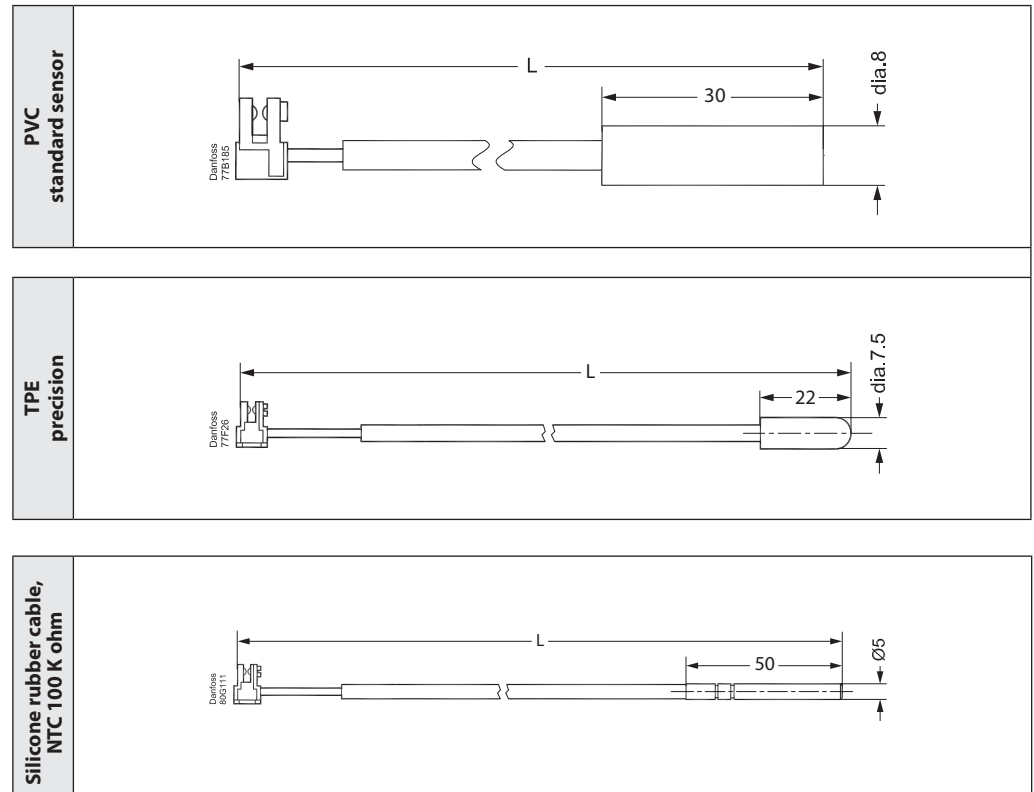<tr><td>Operating temperature range</td><td>-40 – 200°C</td></tr>
<tr><td>Thermistor</td><td>Encapsulated in stainless steel housing. AISI 305</td></tr>
<tr><td>Connecting cable</td><td>Silicone rubber cable</td></tr>
<tr><td>Degree of protection</td><td>IP67</td></tr>
<tr><td>Rated resistance at 0°C</td><td>346,9 kΩ (tolerance at 0°C ±2.2%)</td></tr>
<tr><td>Rated resistance at 25°C</td><td>100,0 kΩ (tolerance at 25°C ±1.0%)</td></tr>
<tr><td>Insulation resistance</td><td>>100 MΩ</td></tr>
<tr><td>Voltage proof</td><td>3750 V</td></tr>
<tr><td>Thermal time constant</td><td>Approx. 8 sec.</td></tr>
<tr><td>Typical application</td><td>Heating application</td></tr>
</table>

Ordering

Product type	Sensor type	Length in mm	Connector	Colour marking	Code number
NTC Temperature Sensor	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

Product type	Sensor type	Length in mm	Connector	Colour marking	Code number
NTC Temperature Sensor	TPE precision (±0.2°C) NTC 5K	1500	C1/S1		077F8726

Product type	Sensor type	Length in mm	Connector	Colour marking	Code number
NTC Temperature Sensor	Silicone rubber cable, NTC 100 K ohm	1000	S1/S3		080G2041
		2000	S1/S3		080G2043
		3000	S1/S3		080G2045

Dimensions and weights

SI units