

Electronically controlled PTC Starting Device

ePTC - Product Description



Introduction

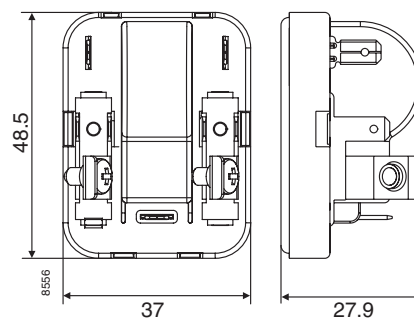
The asynchronous motor of a single phase AC powered compressor has two windings, a main and an auxiliary winding. The auxiliary winding is powered high at start by means of a starting device, then powered down, often still utilized continuously by means of a run capacitor. The starting device of our standard PTC-starters is a "Positive Temperature Coefficient" resistor, PTC. When heated up during the start phase, the PTC almost cuts off the current to the auxiliary winding, leaving only enough current to keep itself heated to this closing level. The heat loss for this amount to approximately 2.5 W. With the ePTC this loss can be reduced down to approximately 0.4 W by an extra electronic circuit.

Features

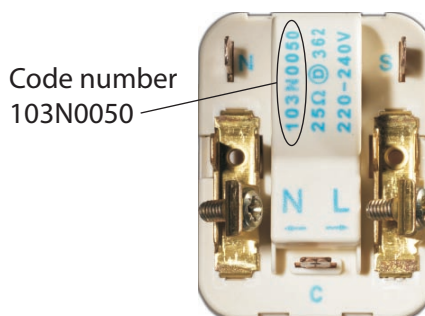
The electronic design of the starting device offers some strong features such as:

- Restart of compressor possible after a few seconds. Only very short cooling time necessary, due to the electronic design.
- Operational wattage loss reduced by 2 Watt.

Dimensions



Identification

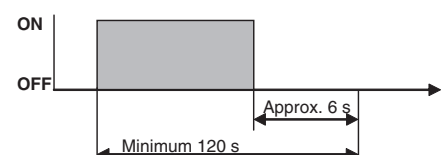


Functional Description

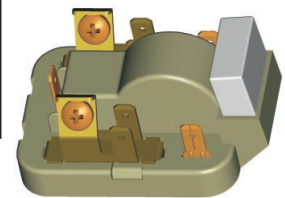
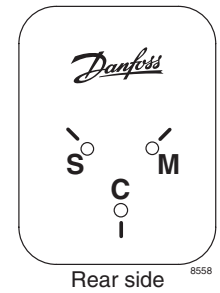
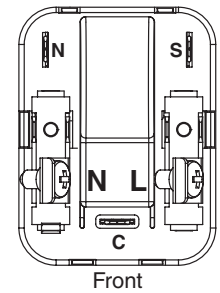
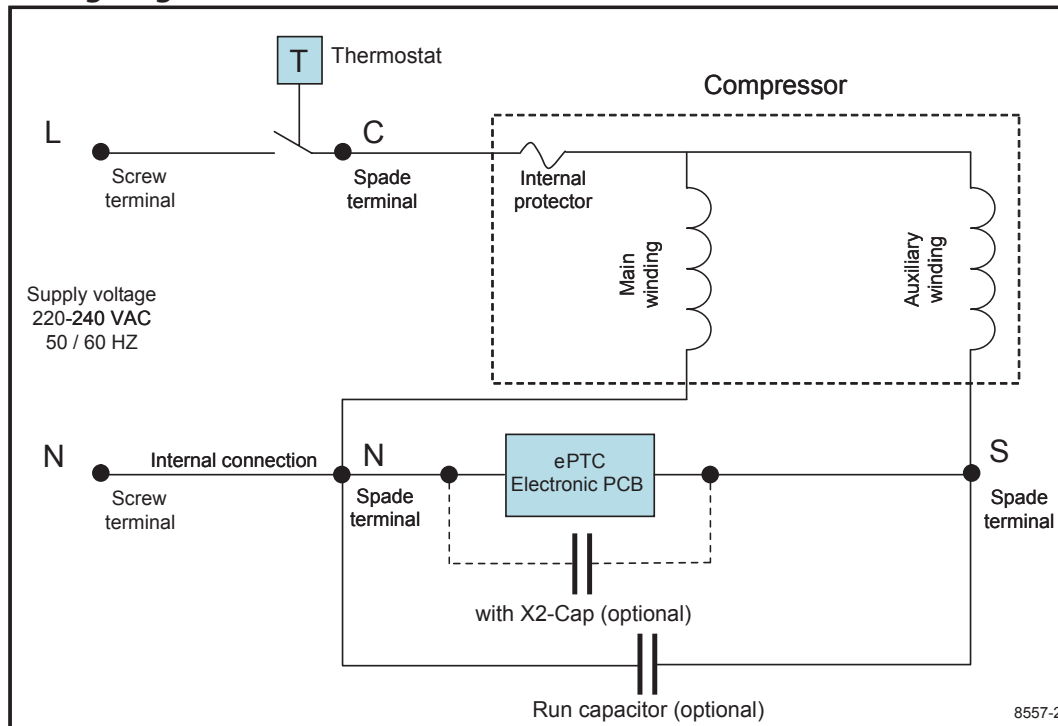
The main component of the ePTC is the same PTC pill like in other 220-240V 103N.... Danfoss PTC starters. Thus the start of the compressor motor is performed in the same way. In standard PTC starters the >2 W energy loss to keep the PTC heated during compressor operation are not avoidable. In the ePTC a small electronic circuit cuts off the current through the PTC short time after start and thus reduces the energy loss down to approx 0.4 W. The switch used is a Triac, an electronic AC switch, controlled by a timer circuit.

As the timer circuit has a short reset time and the main PTC cools down during compressor operation already, the full start torque will be available after approx 6 s compressor off time. However, it is still a LST starting device, needing full pressure equalization before start.

Min. On/Off time of compressor



Wiring diagram



Connections & Terminals

The wiring diagram shows how to make the connections. The two screw terminals marked **N** and **L** are for supply voltage. The spade on the **L** terminal and the spade marked **C** are for the thermostat. The spade marked **S** at the top right position is internally connected to the **Start** (or auxiliary) fuse terminal. This spade together with **N** is used for a run capacitor. The spade marked **N** at the top left position is internally connected to the **Neutral** screw terminal. The spade marked **C** at the bottom position is internally connected to the **Common** fuse terminal. On the rear side of the ePTC starter there are three holes. The hole in the bottom is for the **Common** fuse terminal on the compressor. The top left hole is for the **Start** fuse terminal and the top right hole is for the **Main** fuse terminal. The ePTC starter is mounted with the **C** spade downwards.

ePTC with X2-Cap for special Applications

For applications using a mechanical thermostat it can be necessary to use the ePTC with integrated filter, type X2-Cap.

Technical data

Code number	Standard: 103N0050
	with X2-Cap: 103N0060
Nominal supply voltage	220 - 240 V 50/60 Hz
Min. supply voltage	187 V
Max. supply voltage	254 V
Power consumption	approx. 0.4 W (after 2 s)
Spade connectors	4.8 mm
Cables	Temperature resistant up to min. +60°C
Run Capacitor	Optional
Thermostats	Mechanical or electronic
Ambient temperatures	During operation from 0°C to 50°C
	During transport from -20°C to 70°C
Enclosure	IP 00
PTC protection screen	Not needed (surface temp. < 82°C)
Approvals	EN 60730-1, DEMKO
Radiation	EN 55014-1/EN 61000-3-2/EN 61000-3-3
Immunity	EN 50014-2
Declarations	CE

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