

COPELAND SCROLL™ COMPRESSOR PROTECTION MODULE

INT69SC2 & INT69SCY2 COMPLIANT TO IEC/EN 60335

1 Introduction

IEC/EN60335 recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. This standard deals with the safety of electrical appliances for household and similar purposes, their rated voltage being not more than 250V for single-phase appliances and 480V for other appliances. It also covers situations that can be expected in practice such as appliances not intended for normal household use but which may be a source of danger to the public, such as appliances used by people in supermarkets, in light industry and on farms.

The INT69SC2 and INT69SCY2 hermetic motor protection modules comply with IEC/EN 60335. The modules features ensure that the AC / refrigeration system would be in a safe condition even if two faults were to occur. Backup is provided if the first fault protection should fail. An additional control contactor should be fitted to the system (see the wiring diagram below).

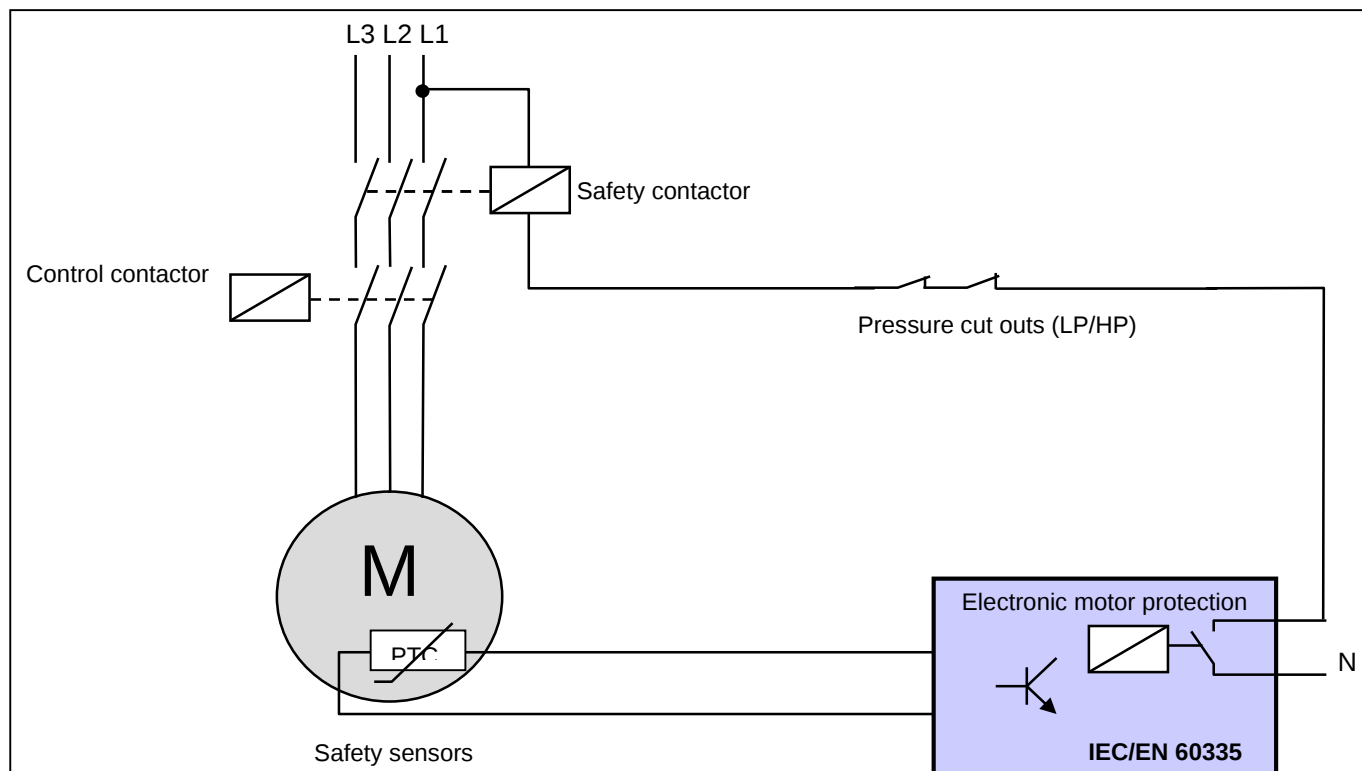


Figure 1: System wiring diagram supporting IEC/EN 60335

2 INT69SC2

2.1 Introduction

INT69SC2 motor protector has been specially developed for use with Copeland Scroll™ air conditioning and heat pump compressors and is approved by UL - UL File no. E75899 and IEC/EN 60335 (Registered number C400). This module has an expected mechanical service life of approximately 1 million switching cycles.



Figure 2: INT69SC2 motor protection module

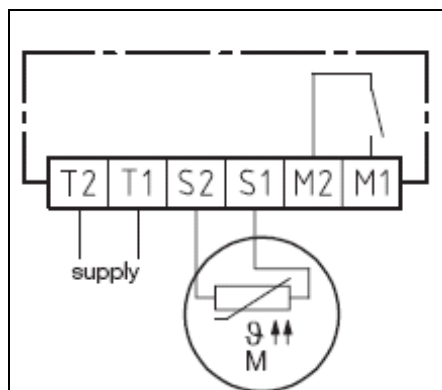


Figure 3: Wiring diagram

2.2 Safety information

Electrical connections must be made by qualified electrical personnel. The upper supply voltage limit for this module must not be exceeded. All valid standards for connecting electrical and refrigeration equipment must be observed.

2.3 Function

At the measuring circuit input of the INT69SC2 module it is possible to connect up to nine DIN 44081/082 conforming PTC sensors, including those with differing nominal response temperatures.

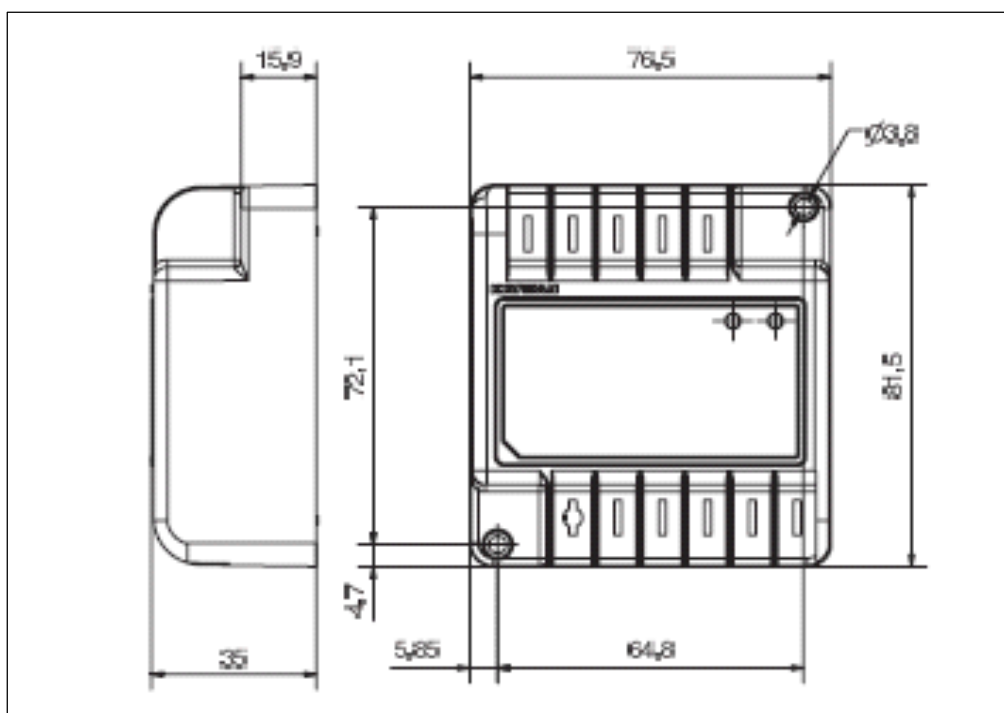
If the temperature in one of the monitored parts exceeds the nominal response temperature of the respective PTC sensor, the sensor becomes highly resistive and the relay opens. The relay will close after either a time delay of 30 or 60 minutes or if the mains supply has been disrupted for 5 seconds. For the relay to close the PTC resistance value must be below the reset point. If not, there will be a further delay until the monitored temperature reaches the reset point.

The sensor, relay and supply circuit (AC) are isolated from each other. This device has a short circuit detector for the PTC sensor.

2.4 INT69SC2 Technical data

Supply voltage: Dual voltage	115 – 230V AC 50 Hz , –15%...+10%, 3VA
Supply voltage: Dual voltage	120 – 240V AC 60 Hz, –15%...+10%, 3VA
Supply voltage	24V AC 50/60 Hz, –15%...+10%, 3VA
Supply voltage	24V DC $\pm$ 20%, 2W
Ambient temperature range	-30 +70°C
R _{25, total}	< 1.8k Ω
Reset time delay type 1 / type 2	30 min $\pm$ 5 min / 60 min $\pm$ 5 min
Reset of running time	Power interruption / mains failure for approx. 5 sec
Short circuit monitoring system	Typically < 30 Ω
Protection class according to EN60529	IP00
Weight	Approximately 200g
Mounting	Screw in or snap in
Housing material	PA66 GF25 FR

2.5 Dimensions



3 INT69SCY2

3.1 Introduction

The INT69SCY2 motor protector has been specially developed for use with Copeland Scroll™ refrigeration compressors and is approved by UL - UL File no. E75899 and IEC/EN 60335 (Registered number C400). It monitors the motor winding temperature, discharge temperature, phase sequence and phase failure. This module has an expected mechanical service life of approximately 1 million switching cycles.



Figure 4: INT69SCY2 Motor protection module

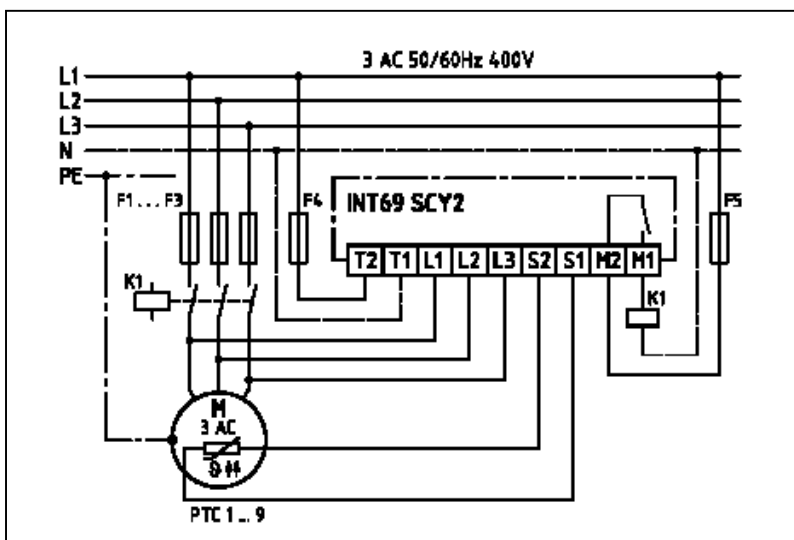


Figure 5: Wiring diagram

3.2 Function

Connection to the supply voltage is followed by a 3-second initialisation period. The relay closes once all of the PTC thermistors are below the nominal response temperature. It is possible to connect up to nine PTC sensors with differing nominal response temperatures in series to the PTC input. If the temperature in one of the monitored parts exceeds the nominal response temperature of the respective PTC sensor, the sensor becomes highly resistive and the relay opens. The relay will close once the delay time of approximately 30 minutes has expired. The monitoring of the 3-phase motor voltage becomes active 1 second after the motor has started for a duration of 5 seconds.

- If there is a wrong phase sequence the relay opens.
- If one phase is missing the relay opens and closes after a 5 minute delay (approximately).
- After 10 shut offs within 24 hours due to phase failure the relay will stay locked open.

Reset the module by disconnecting the power supply for 5 seconds.

The relay output is designed potential free and opens if there is a fault or if the supply voltage fails. The sensor and supply circuits on AC units are isolated from each other. The INT69SCY2 is not suitable for use with frequency inverters.

3.3 Safety information

Electrical connections must be made by qualified electrical personnel. The upper supply voltage limits for this module must not be exceeded. All valid standards for connecting electrical and refrigeration equipment must be observed.

3.4 INT69SCY2 Technical data

Supply voltage: Dual voltage	115 – 230V AC 50 Hz , –15%...+10%, 3VA
Supply voltage: Dual voltage	120 – 240V AC 60 Hz, –15%...+10%, 3VA
Supply voltage	24V AC 50/60 Hz, –15%...+10%, 3VA
Supply voltage	24V DC $\pm$ 20%, 2W
Ambient temperature range	-30...+70°C
Type sensors	PTC as per DIN 44081/082
Number of sensors	1 to 9 in series
R _{25, total}	< 1.8k Ω
R _{activate}	4.50k Ω $\pm$ 20%
R _{reset}	2.75k Ω $\pm$ 20%
Maximum length	<30m
Reset time delay	30 min $\pm$ 5 min
Reset of running time	Power interruption / mains failure for approx. 5 sec
Short circuit monitoring system	Typically < 30 Ω
Protection class according to EN60529	IP00
Weight	Approximately 200g
Mounting	Screw in or snap in
Housing material	PA66 GF25 FR

3.5 Dimensions

