Chapter 4

OPERATION

The Fullmotion CF10C Inverter have support for Serial, Frequency and Drop-In communication modes.
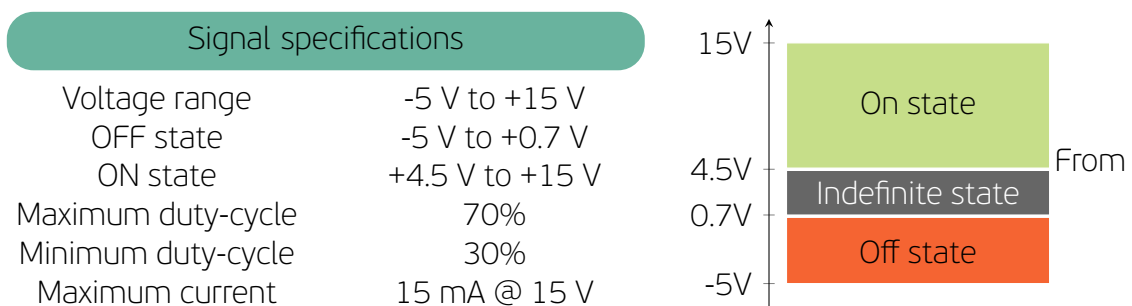
> ⚠ **CAUTION**
>
> • The inverter is assembled with all communication modes and the control mode is chosen automatically by the inverter.

4.1 Frequency control mode

In this operation mode the compressor speed is controled through a frequency signal sent to the inverter. Usually this signal is provided by an electronic thermostat. The frequency signal is a digital square wave and its characteristics are described on Signal specification table and Figure below.

Signal specifications	
Voltage range	-5 V to +15 V
OFF state	-5 V to +0.7 V
ON state	+4.5 V to +15 V
Maximum duty-cycle	70%
Minimum duty-cycle	30%
Maximum current	15 mA @ 15 V

15V

On state

4.5V
From
0.7V Indefinite state

Off state

-5V

0.7 V to 4.5 V the inverter behaviour is indefinite, therefore, it is not recommended to use signals within this range. The following figure presents a graphic example of an input frequency signal of 125 Hz sent to the inverter. The digital signal duty-cycle can vary in the range from 30% to 70%.

Signal control shape
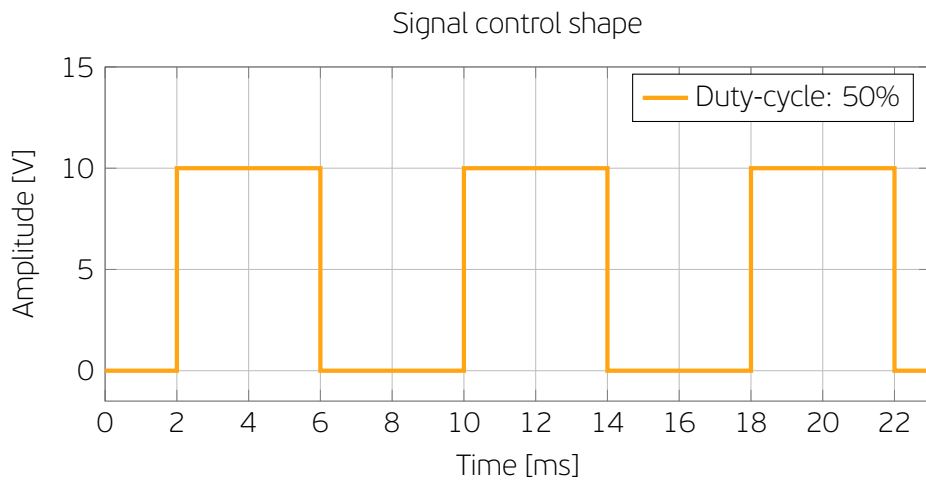
The compressor will follow frequency signal sent to the inverter according to the relation described on the following table and illustrated on the graph below.

Input Frequency Signal [Hz]	VNE compressor speed [RPM]	VEG and FMF compressor speed [RPM]
0 to 50	0	0
50 to 60	2000	1800
60 to 66	2000	30 x Hz
66 to 150	30 x Hz	30 x Hz
>150	4500	4500

Compressor speed versus Frequency signal
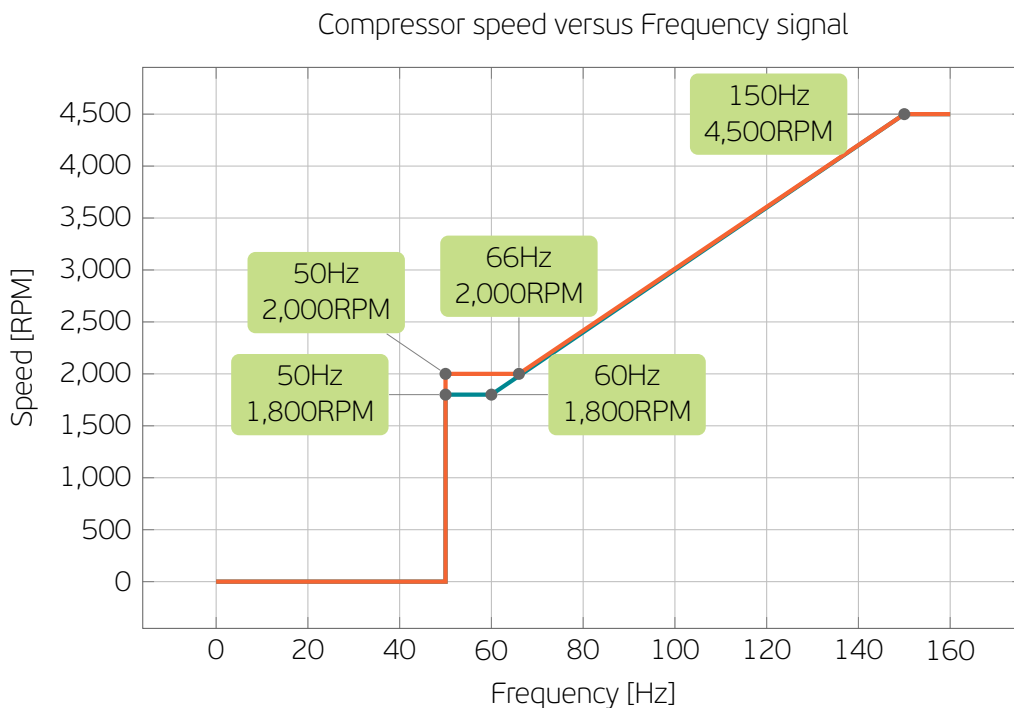
The Figure 4.1 shows the electrical connections to perform frequency conmmunication between an electronic thermostat and Fullmotion CF10C Inverter Control connector. For Frequency Control Mode, the input resistance is 1.2 kΩ.
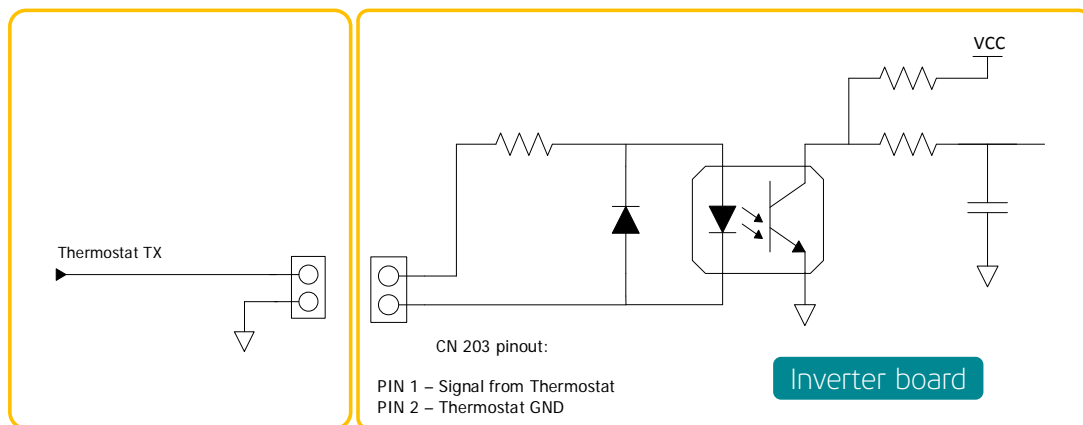
Figure 4.1: Electrical schematic of frequency communication

The following figure shows the right way to perform the Frequency Control Mode connection according to the connectors described in Figure 2.2.
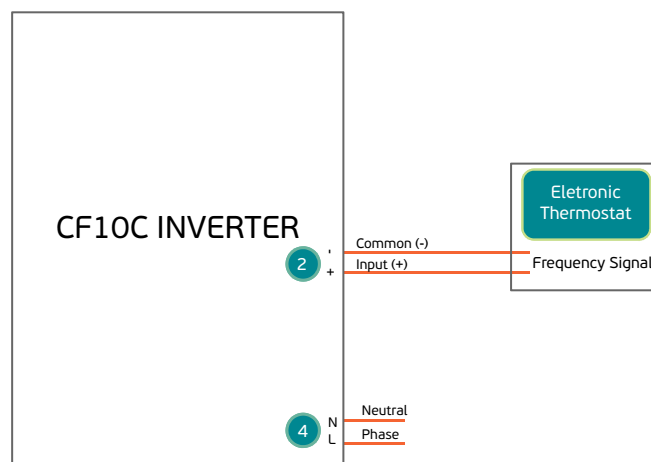

Figure 4.2: Frequency control mode connection

4.2   Drop-In control mode

The Drop-In mode is a Fullmotion CF10C Inverter control mode, where single thermostat contact is used to set the compressor running conditions. Drop-In mode allows the application to any refrigeration system with a simple ON/OFF thermostat, without needing a control signal coming from an electronic thermostat. The compressor speed will be adjusted automatically by the Inverter, in accordance to the thermal load variation.