

REFRIGERATION / COOLING APPLICATIONS WITH ESM-3711CN SERIES



ESM-3711CN and ESM-3712CN series are designed and manufactured for cooling and refrigeration control industry. They can be used in many applications with ON/OFF control form, defrost feature, simple and easy programming, and user friendly display. The RS-485 communication module provides 7/24 monitoring and remote control option. They can be easily programmed with Prokey modules.

The application fields consists of refrigerations, freezing, cold storage, air conditioning. ESM-3711CN and ESM-3712CN series cooling controllers offer ideal cooling solutions for food manufacturers, supermarkets, restaurants.

Application Example: Refrigeration control with Off cycle defrost and adjusting defrost time.

- Basic cooling control with ESM-3711CN
- Input Sensor NTC (-50°C..100°C)
- 1 Relay Output for compressor
- Changing defrost time
- Using prokey for fast programming

1. Programming Mode Parameter List

dt 1

Defrost Time Parameter (Default =1 0) MODBUS ADDRESS:40009

It can be adjusted from 0 to 999 minutes. If it is selected 0 automatic or manual defrost is not performed.

dt1= 180 (minutes). For Off Cycle defrost (condensing unit off permitting natural defrost)

Defrost process lasts longer for natural defrost method since melting the frost depends on surrounding air temperature. This method is used with refrigerators that storage vegetables at 3°C to 6°C (38 °F to 42°F).Approximate defrost time of 3 hours every other day can is required for this type of refrigerators with this defrost method.

dr C

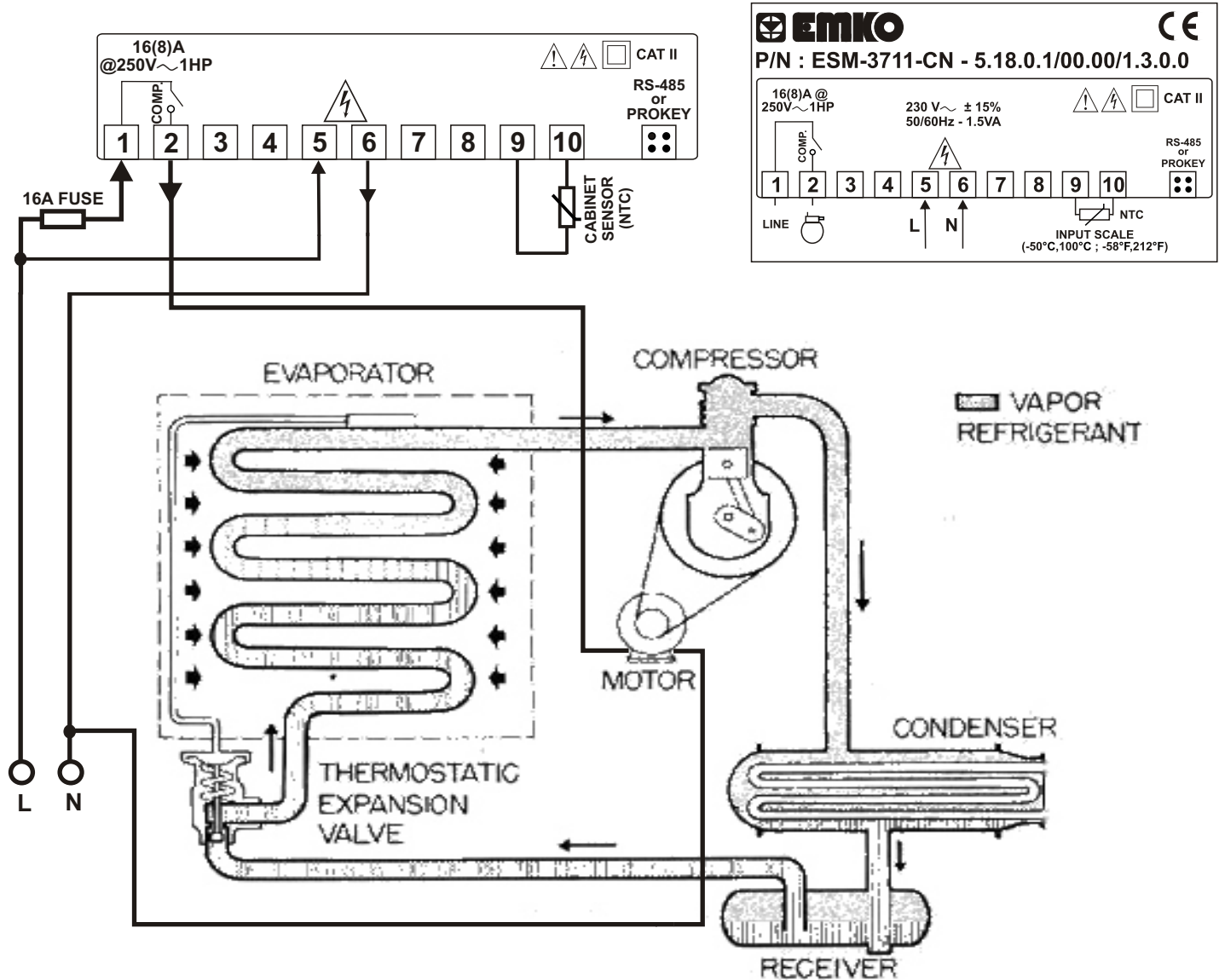
Defrost Repeat Cycle Parameter (Default = 1) MODBUS ADDRESS:40010

It can be adjusted from 1 to 99 hours.

drC is set to 48 (hours).

Off Cycle defrost needs to be repeated approximately every other day with systems operating at 3°C to 6°C (38 °F to 42°F).

2. Electrical Connections



3. Using Prokey for Quick Programming

To use prokey, value of the prc parameter must be '0'.

If prc=1 and ▼ button is pressed `[Err]` message will be observed. After 10s the device turns back to the main operation screen or you can press set button to turn back to main operation screen.

PROKEY Programming Module



Uploading from device to Prokey:

- Power on the device then put in PROKEY and press ▼ button. `[uPL]` message will be seen on the display. `[End]` Message will appear on the display upon completing the upload.
- Press any button to turn back to main operation screen.
- Remove the Prokey.

Downloading from Prokey to device:

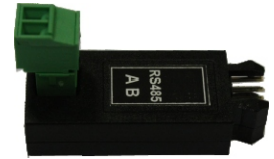
- Turn off the device.
- Put in the prokey then energize the device.
- When the device is on, the parameter values in the Prokey begins downloading to the device automatically. Initially, `[dDL]` message will appear on the display, when downloading finishes `[End]` message will be observed.

4. Remote Monitoring and Data Logging with RS-485 Communication Module

Remote monitoring and data logging is required or requested by customers to ensure food safety at all time. In some countries it is required by law to ensure that the stored food never exceeds the defined lower and upper limits.

We can monitor and log data 7/24 through RS-485 communication module and with our free data logging software Protakal (downloadable from www.emkoelektronik.com.tr).

RS-485 Module



RS-485 Communication Interface

We can also use the RS-485 communication module to control the device remotely (changing cabinet temperatures, alarm set values, manual defrost etc..)

PrC Communication Mode Selection Parameter(Default = 0) MODBUS ADRESS:40042

RS485 communication is selected.

A sample of data log recording cabinet temperature is given below.

5. A snapshot from Protakal

