

Data Sheet

Programmable controller, 6 relays Type **CSTFR1**

Electronic controller suitable for all HVAC/R software application needs.



CSTFR1 is an electronic programmable controller especially dedicated to refrigeration market and that allows full multiplexed cabinet management. Thanks to the software customisation possibility, it can be used in several types of application. It's also available with optoinsulated Modbus RS485 serial communication interface.

Features:

- 5 analog and 4 digital inputs
- 1 analog and 5 digital outputs
- Insulated power supply 110 / 230 V AC, 50/60 Hz
- Remote access to data through CANbus connection for additional display (LCD available) and keyboard
- Modbus RS485 opto-insulated serial interface
- Available only without display
- Dimensions 8 DIN modules

Product specification

General features

Table 1: General features

Features	Description
Power supply	85 – 265 V AC, 50/60 Hz. Maximum power consumption: 6 V A Insulation between power supply and the extra-low voltage: reinforced
Plastic housing	DIN rail mounting complying with EN 60715 Self extinguishing V0 according to IEC 60695-11-10 and glowing / hot wire test at 960 °C according to IEC 60695-2-12
Ball test	125 °C according to IEC 60730-1. Leakage current: ≥ 250 V according to IEC 60112
Operating conditions	CE: -20T60 / UL: 0T55, 90% RH non-condensing
Storage conditions	-30T80, 90% RH non-condensing
Integration	In Class I and / or II appliances
Index of protection	IP40 only on the front cover
Period of electric stress across insulating parts	Long
Resistance to heat and fire	Category D
Immunity against voltage surges	Category II
Software class and structure	Class A

Input/Output

Table 2: Analog inputs

Type	Num	Specifications
NTC	4	AI1, AI2, AI3, AI5 NTC temperature probes, 10 k Ω at 25 °C
NTC 0 / 5 V 4 / 20 mA	1	AI4 Pressure transducer with 4 / 20 mA or 0 / 5 V output or NTC temperature probe, default 10 k Ω at 25 °C The input type is selectable via software 12 V+ power supply for 4 / 20 mA transducers: 12 V DC, 120 mA max 5 V+ power supply for 0 / 5 V transducers: 5 V DC, 100 mA max Accuracy of measure: 3% f.s. - resolution: ± 50 μ A

Table 3: Digital inputs

Type	Num	Specifications
Voltage free contacts	4	DI1, DI2, DI3, DI4 Current consumption: 5 mA

Table 4: Analog outputs

Type	Num	Specifications
PWM PPM	1	Analog outputs selectable via software between: - pulsing output, synchronous with the line, at modulation of impulse position (PPM) or modulation of impulse width (PWM) - pulsing output, at modulation of impulse width (PWM) with range 20 Hz – 1 KHz: - open circuit voltage: 5 V - minimum load: 1 kΩ

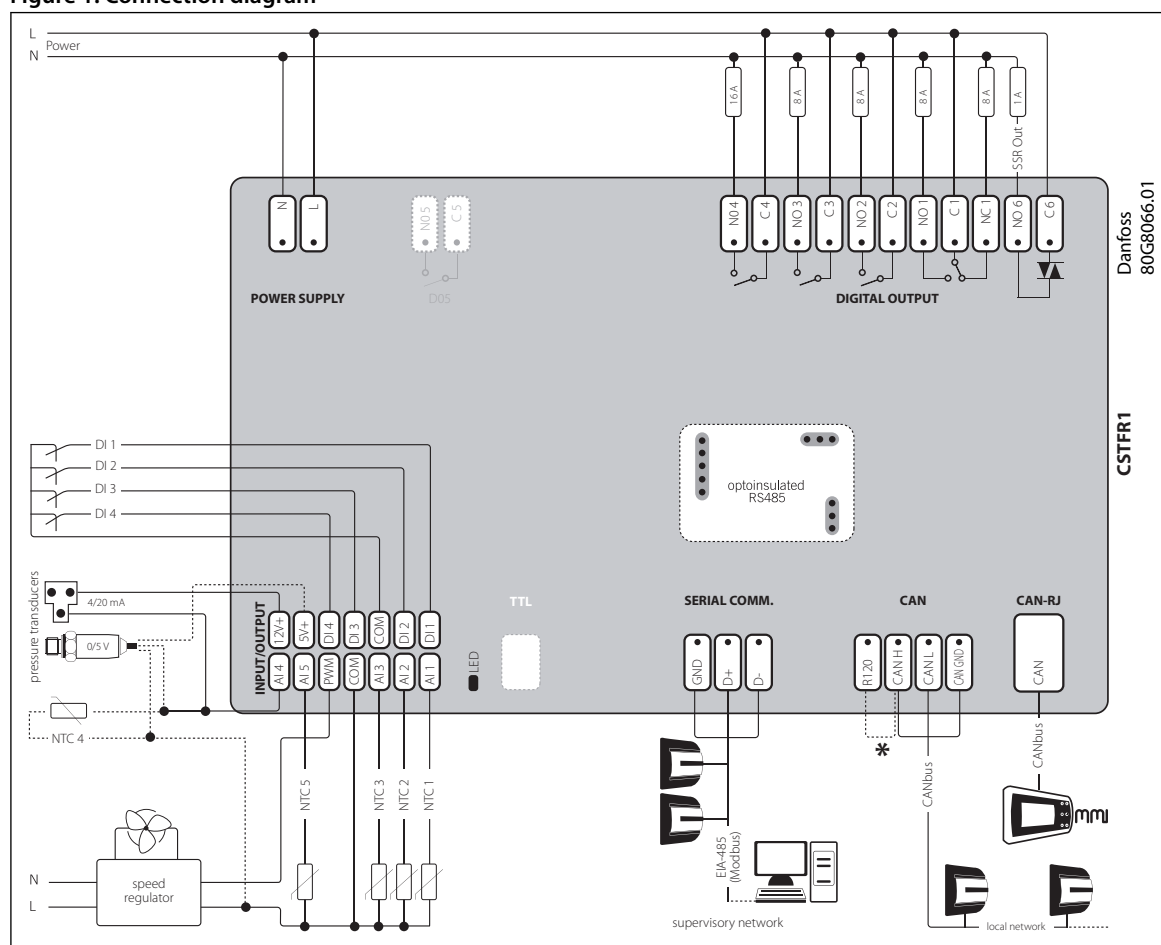
Programmable controller, 6 relays, type CSTFR1

Table 5: Digital outputs

Type	Num	Specifications
Relay	4	Insulation between relays: functional Insulation between relays and the extra-low voltage parts: reinforced C2-NO2, C3-NO3 Normally open contact relays 8 A Characteristics of each relay: • 6 A 250 V AC for resistive load - 100.000 cycles • 4 A 250 V AC for inductive loads - 100.000 cycles with $\cos(\phi) = 0.6$ C1-NO1-NC1 Changeover contacts relay 8 A Characteristics of each relay: • 6 A 250 V AC for resistive load - 100.000 cycles • 4 A 250 V AC for inductive loads - 100.000 cycles with $\cos(\phi) = 0.6$ C4-NO4 High inrush current normally open contact relays 16 A Characteristics of each relay: • 1000 W incandescent lamp, 250 V AC, NO contact: 80.000 cycles • 10 A, 240 V AC, NO contact, 85 °C, VDE/UL508: 50.000 cycles • 21 / 3.5 A, 230 V AC, compressor, $\cos(\phi) = 0.5$, NO contact: 230.000
Solid state relay	1	Insulation between SSR and relays: functional Insulation between SSR and the extra-low voltage parts: reinforced Type of SSR action: 1C (micro-interruption) C6-NO6 SSR, with output AC Zero-crossing: • load current: 1 A • load voltage: 75 – 250 V AC

Connection diagram

Figure 1: Connection diagram



NOTE:

*Connection has to be made on the first and last local network units, make the connection as close as possible to the connector.

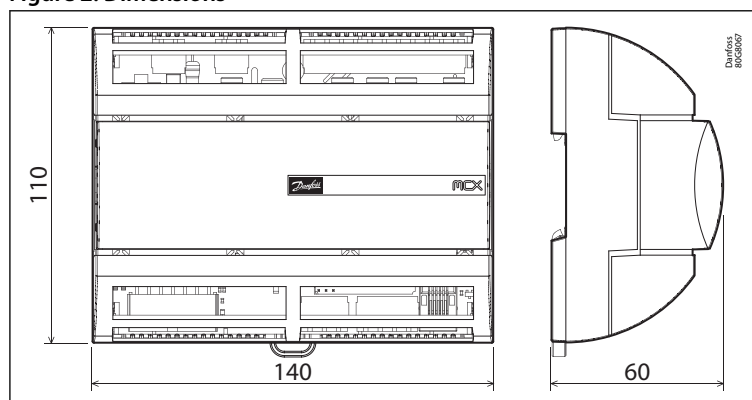
Connection

Table 6: Connection

Connectors	Type	Dimensions
Power supply connector	2 way screw plug-in connector type	- pitch 5 mm - section cable 0.2 – 2.5 mm²
Digital output connector	11 way screw plug-in connector type	- pitch 5 mm - section cable 0.2 – 2.5 mm²
Input/output connector	Molex® Mini-Fit JrTM type or compatible	
Female connector	14 way, Molex® code: 39012140 Molex® cod of contact For the crimping to use the appropriate instrument, Molex® code 690080724	39000077 for cable with section: AWG16, (1.30 mm²) 39000038 for cable with section: AWG18, 20, 22, 24 (0.82...0.20 mm²) 39000046 for cable with section: AWG22, 24, 26, 28 (0.32...0.08 mm²)
Serial com connector	3 way screw plug-in connector type	- pitch 5 mm - section cable 0.2 – 2.5 mm²
CAN connector	4 way screw plug-in connector type	- pitch 5 mm - section cable 0.2 – 2.5 mm²
CAN-RJ connector	6 / 6 way telephone RJ12 plug type	

Dimensions

Figure 2: Dimensions



Ordering

Product part numbers

Table 7: Product part numbers

Description	Code No.
CSTFR1, 230 V, RS485, Industrial Pack (24 pieces)	080G0156

NOTE:

Connectors kit is included in the Industrial Pack.

Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Table 8: Certificates, declarations, and approvals

File name	Document type	Document topic	Approval authority
080R2096.01	EU Declaration of conformity	EMC directive 2014/30/EU: EN61000-6-4: 2007 +A1: 2011 EN61000-6-2: 2005 LVD directive 2014/35/EU: EN60730-1: 2011 EN60730-2-9: 2010 RoHS directive 2011/65/EU and 2015/863/EU: EN 50581: 2012	Danfoss

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