

Digital regulators for refrigeration

- Regulators with LED display, 3 digits, 7 segments and decimal point with relay intervention and operating mode signalling LED
- Display range: -99 ÷ +999 °C
- Display resolution: 0.1 °C (-9.9 ÷ +99.9 °C) and 1 °C (< -9.9 °C and > +99.9 °C)
- Precision: ± 0.5% of the full scale value ± 1 digit
- Parameter setting with digital mode:
 - Set-point
 - Differential
 - Output triggering timing
 - Digital input delay time and function
 - Alarm delay time / Buzzer enabling
 - Probe gauging OFFSET
 - Resolution displayed
 - Temperature unit of measurement
 - Measurement display filter (updating speed)
 - Probe input type
 - Password
 - Interval between defrostings
 - Defrosting duration
 - Continuous cycle duration
 - Duty cycle setting
 - Defrosting parameters

FR NTC-1 / FR NTC-2 / FR NTC-4

- 1 SET-POINT
- Control action of the Direct ON/OFF type
- Operating modes: Defrost, Duty cycle, Continuous cycle and Digital input
- 2 probe inputs to measure the temperature: the first probe may be used for the regulation and the second to display the temperature of preservation of the product (1 or 2 relays models) or to manage the activation of the evaporator (4 relays model)
- Temperature probes: NTC (10 kΩ at 25 °C)
- Output: 1, 2 or 4 relays with change-over contact 8 A / 250 V AC1
- In the model with 2 relays the second output is dedicated to managing the minimum/maximum alarms
- Digital input: 1 with configurable function
 - External alarm
 - Probe selection
 - ON/OFF Regulation
 - Defrost management
 - Night time operation
 (with the contact closed the SET is modified by an OFFSET in degrees)
- Visual and acoustic alarm signalling for: external alarm (from digital input), probe alarm (fault), minimum or maximum alarm

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FR NTC-1 / FR NTC-2 / FR NTC-4

FR NTC-1 / FR NTC-2



FR NTC-4



TECHNICAL INFORMATION

GENERAL CHARACTERISTICS

Model		FR NTC - P3A	FR NTC - P3D	FR NTC - DA
Dimensions		Rear-panel 33x75 mm	Rear-panel 33x75 mm	4 DIN Modular
Power supply voltage in AC	A 50/60 Hz V	230	12 ÷ 24	24 / 230
Power supply voltage in DC	V	-	12 ÷ 24	-
Power supply voltage tolerance	%	± 15	± 10	± 10
Absorption	VA	3	3	4.5
Relay outputs				
capacity with change-over contact	at 250 V AC1 A	8	8	8
maximum breakaway starting current	A	10	10	10
maximum switchable power in AC	VA	2000	2000	2000
maximum switchable resistive load	at 230 V W	1760	1760	1760
single-phase motor capacity	HP	1/4	1/4	1/4
maximum switchable voltage	V	250	250	250
Precision	at ambient temperature = 23 °C	± 0.5% of the full scale value ± 1 digit	± 0.5% of the full scale value ± 1 digit	± 0.5% of the full scale value ± 1 digit
Display range	°C	-40 ÷ +110 °C	-40 ÷ +110 °C	-40 ÷ +110 °C
Display resolution		0.1 °C (-9.9 ÷ +99.9 °C) 1 °C (< -9.9 °C and > +99.9 °C)	0.1 °C (-9.9 ÷ +99.9 °C) 1 °C (< -9.9 °C and > +99.9 °C)	0.1 °C (-9.9 ÷ +99.9 °C) 1 °C (< -9.9 °C and > +99.9 °C)

TECHNICAL INFORMATION

GENERAL CHARACTERISTICS

Model		FR NTC - P3A	FR NTC - P3D	FR NTC - DA
Sampling time	s	0.5	0.5	0.5
Front protection degree		IP54	IP54	IP40
Terminal protection degree		IP20	IP20	IP20
Display		3 digits LED 7 segments and dec. point	3 digits LED 7 segments and dec. point	3 digits LED 7 segments and dec. point
Probes alarm signalling buzzer		■	■	■
Infrared receiver for remote control unit				
Digital input		■	■	■
Operating temperature	°C	0 ÷ +50	0 ÷ +50	0 ÷ +50
Operating humidity	RH	< 80%	< 80%	< 80%
Storage temperature	°C	-10 ÷ +70	-10 ÷ +70	-10 ÷ +70
Storage humidity	RH	< 80%	< 80%	< 80%

REFERENCE STANDARDS

Compliance with Community Directives: 73/23/EEC mod. from 93/68/EEC (Low Voltage) 89/336/EEC mod. from 92/31/EEC and 93/68/EEC (E.M.C.) is declared with reference to the following standards: • For safety: EN 60730-2-9 • For E.M. compatibility: EN 55014-1 / EN 55014-2 / EN 61000-6-2 / EN 61000-6-4

HEAT REGULATION

Digital regulators for refrigeration

Digital regulators for the management of STATIC refrigerating units (i.e. without fans on the evaporator) operating at a temperature exceeding 0 °C.



FR NTC-1 / FR NTC-2

- The regulator performs the functions of a thermometer, by displaying the temperature of an electronic thermostat, by activating a compressor and a solenoid valve to maintain the temperature requested. In addition it provides automatic Defrost by forced deactivation of the compressor. The defrosting frequency and duration can be set.

! To complement the product the suitable probes must be ordered separately.



DIGITAL REGULATORS FOR REFRIGERATION

Code	Model	Version	Power supply	no. of relays
VM650900	FR NTC-1P3D	Rear-panel 33x75	12 ÷ 24 V AC/DC	1
VM651700	FR NTC-1P3A	Rear-panel 33x75	230 V AC	1
VM659000	FR NTC-1DA	4 DIN Modular	24/230 V AC	1
VM660800	FR NTC-2DA	4 DIN Modular	24/230 V AC	2

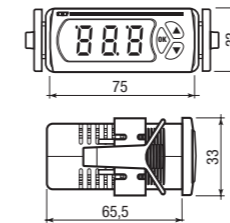
Digital regulators for refrigeration

FR NTC-1 / FR NTC-2

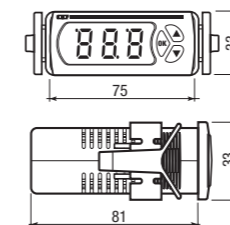
DIMENSIONS (mm)

Front view / Side view

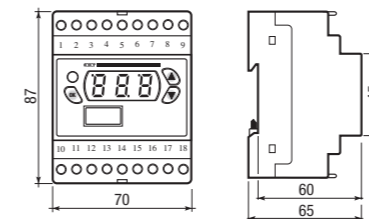
FR NTC-1P3D



FR NTC-1P3A



FR NTC-1DA FR NTC-2DA



CONNECTION DIAGRAM

Diagram

