	EC1 **Electronic Temperature Controller** **Technical Data**	**Document Nr.:** A3.5 014/E 3 **Replaces doc.:** A3.5 014/E 2 **Date:** 05.06.2003

EC1 Electronic Temperature Controllers are suitable for numerous controls applications including Commercial Refrigeration and Air Conditioning. They are available in different versions featuring various input and output configurations and are pre-programmed for easy modification of different application requirements.

Features

- 2½ digit LED display with automatic decimal point
- Standard 33 x 75 mm dimensions
- Display in °C or °F
- 4 models for typical modes of operation:
  - Electronic Thermometer EC1-000
  - Thermostat for off cycle defrost (1 relays)
  - Thermostat for electric or hot-gas defrost (2 relays)
  - Thermostat for electric or hot-gas defrost and fan control (4 relays)
- Integrated timer and alarm functions
- All parameters and functions programmable on keypad or with infrared remote control
- Password protection to eliminate abuse
- Supports low cost highly accurate encapsulated NTC temperature sensors
- IP 65 protection class when mounted in front panel

EC1

Electronic Temperature Controller

Options

- ALCO EC1-IRC Infrared Remote Control for easy parameter setting and programming
- NTC temperature sensors
- Transformers for 110V or 230V AC mains

Introduction

Electromechanical thermostats have been commonly used in HVAC and Refrigeration applications for many years due to their reliability, low cost and ease of installation and adjustment.

With modern electronic technology many new and added features became feasible and led to the arrival of true parametric electronic temperature controllers.

The ALCO CONTROLS EC1 series are state-of-the-art Electronic Temperature Controllers which offer numerous added features like defrost, compressor and fan control, alarm management etc. Multiple inputs allow monitoring of several sensors and signals whereas multiple relay outputs allow simultanious control of multiple devices like compressors, fans, pumps, valves, heaters, lights etc. See selection table on next page for overview.

Pre-programmed operating modes enable the users to adapt the ALCO CONTROLS EC1 series controllers very quickly, comfortably and safely to their specific applications by simply selecting the operating mode and then programming the specific set points.

Up to four LEDs show operating condition of applied compressor, fan, defrost or multifunction relays. Blinking normally indicates an error condition.

Various safety functions may be utilized to prevent compressor damage: delay of compressor switch-on after control reset; minimum time between two startups; minimum compressor off time; minimum compressor run time. Safe operating modes in case of loss of sensor signals prevent damage of refrigerated or frozen goods.

All programming operations can be made through the keypad of the ALCO CONTROLS EC1 controllers without any external devices. However the use of the ALCO CONTROLS EC1-IRC Infrared Remote Control is highly recommended to make the task of parameter setting and programming easy, comfortable and quick. It greatly reduces the number of keystrokes required and allows for programming in a comfortable and relaxed position especially when the ALCO CONTROLS EC1 controllers are positioned high or low and out of reach.

Low cost NTC sensors are available with different cable lengths to meet specific customers' requirements for the optimal positioning of the sensors.

High reliability is achieved through automatic surface mounting technique and extensive electrical testing of all production units.

ALCO CONTROLS	**EC1** **Electronic Temperature Controller**	**Document Nr.:** A3.5 014/E 3 **Replaces doc.:** A3.5 014/E 2 **Date:** 05.06.2003

Selection Chart

Function	Outputs	Type	Order Nr.	Indicator LEDs	Housing Depth (mm)
Electronic Thermometer	-	EC1-000	804300	1	64
Thermostat for off cycle defrost	1 SPST	EC1-010	804301	2	64
Thermostat for electric or hot-gas defrost	2 SPST	EC1-020	804302	2	72
Thermostat for electric or hot-gas defrost and fan control	2 SPST 2 SPDT	EC1-040	804303	4	72

Brief Description of the Different Versions

EC1-000 Electronic Thermometer

- Temperature display for up to two NTC sensors
- Switch from display sensor 1 to sensor 2 by external contact
- Display of a virtual temperature calculated from the temperature at both sensors

EC1-010 Temperature Controller for off cycle defrost

- For display case or cold room temperatures **above 0°C**
- Thermostatic control of compressor or liquid line solenoid
- Integrated defrost timer functionality
- All temperature and timing parameters programmable

EC1-020 Temperature Controller for electric or hot-gas defrost

- Same than EC1-010, but for display case or cold room temperatures **below 0°C**
- Timer- or temperature controlled defrost functionality

EC1-040 Temperature Controller for electric or hot-gas defrost and fan control

- Same than EC1-020, for display case or cold room temperatures **below 0°C**
- Fan control programmable
- Two digital multifunction inputs
- Auxiliary multifunction relay can be programmed for various functions (light, alarm etc.)

Accessories

		Type	Order Nr.
NTC Sensors, single insulated (10 kΩ at 25°C)	1,5 m cable length	ECN-S15	804 304
	3 m cable length	ECN-S30	804 305
NTC Sensors, double insulated (10 kΩ at 25°C)	1,5 m cable length	ECN-D15	804 330
	3 m cable length	ECN-D30	804 331
Transformer 12V, 3VA	230 VAC Input	ECT-123	804 307
12/24V, 20VA	110/230 VAC Input	ECT-523	804 332
Infra Red Remote Control	English	EC1-IRE	804 308
Language:	German	EC1-IRD	804 309
	French	EC1-IRF	804 310
	Spanish	EC1-IRS	804 311
	Italiano	EC1-IRI	804 329

EC1-IR Remote Control

	EC1 **Electronic Temperature Controller**	**Document Nr.:** A3.5 014/E 3 **Replaces doc.:** A3.5 014/E 2 **Date:** 05.06.2003

Technical data

	Supply voltage	**Output contact rating**			
EC1-000 **EC1-010** **EC1-020** **EC1-040**	12 V AC ±10% 50/60 Hz	all relays:	I_{ind} =2 A, I_W =8 A,	P_{ind}= 230 W, 50 Hz, P_W= 1800 W,	230 V, cos φ = 0.5 230 V, cos φ = 1
		compressor	I_{ind} =12 A,	P_{ind}=1300 W, 50 Hz,	230 V, cos φ = 0.5
		defrost	I_W =8 A,	P_W= 1800 W,	230 V, cos φ = 1
Power consumption	3 VA (2 VA for EC1-000 only)	fan	I_{ind} =2 A,	P_{ind}= 230 W, 50 Hz,	230 V, cos φ = 0.5

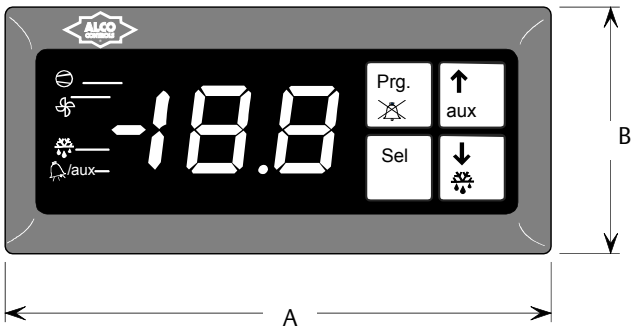
Inputs	Temperature sensors, defrost termination sensor
Sensor type	NTC 10KΩ @ 25°C Order codes see accessories
Display	2½ digits red LED
Alarm buzzer	
Weight	~ 120 g

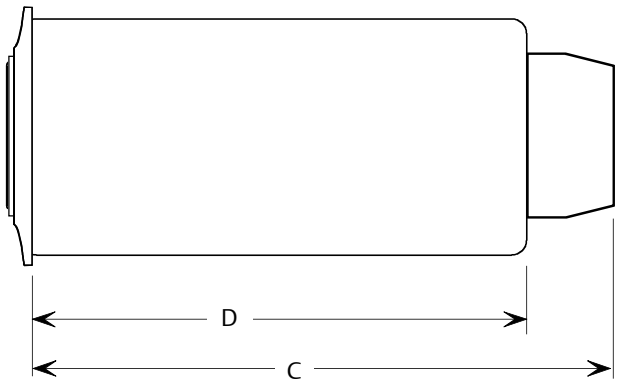
Temperature		
storage	-10	... +70°C
ambient	0	... +60°C
operation (NTC sensor)	-50	... +50°C
Indicators (LED) if applicable	Compressor, defrost, cont. cycle, fan, alarm, infrared control activated	
Protection	IP 65 (frontal protection with gasket)	

Physical dimensions, drawings

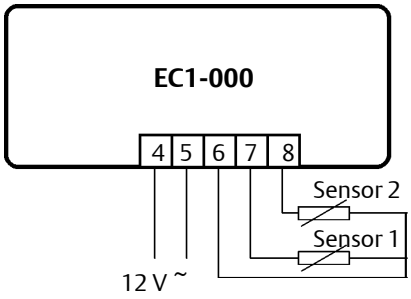
Cutout dimensions
71 x 29 mm

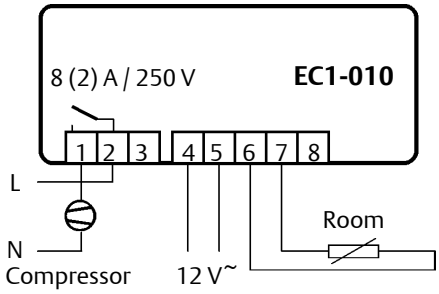
	EC1-000, EC1-010 EC1-020	**EC1-040**
A	75	75
B	33	33
C		72
D	64	64

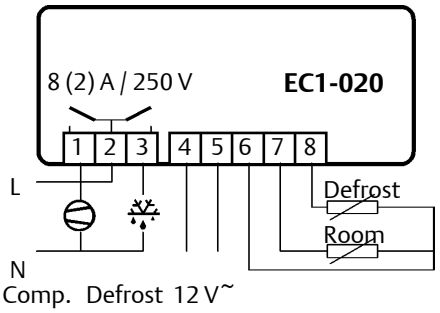


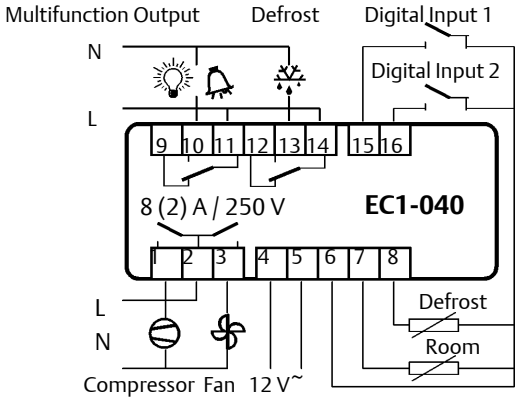


Output Diagrams









ALCO CONTROLS is not to be held responsible for erroneous literature regarding capacities, dimensions, applications, etc. stated herein. Products, specifications and data in this literature are subject to change without notice. The information given herein is based on technical data and tests which ALCO CONTROLS believes to be reliable and which are in compliance with technical knowledge of today. It is intended only for use by persons having the appropriate technical knowledge and skills, at their own discretion and risk. Since conditions of use are outside of ALCO'S control we can not assume any liability for results obtained or damages occurred due to improper application.

ALCO CONTROLS
Emerson Electric GmbH & Co OHG
Postfach 1251
Heerstraße 111
D-71332 Waiblingen
Germany
Phone ...49-7151-509-0
Fax ...49-7151-509-200
www.alco-controls.com

	Phone:	Fax:
Benelux	+31 (0)492 472 416	+31 (0)492 472 621
Denmark & Finland	+44 (0) 1635 876 161	+44 (0) 1635 877 111
Eastern Europe	+32 (0)87 305 061	+32 (0)87 305 506
France	+33 (0)4 78 66 85 70	+33 (0)4 78 66 85 71
Germany	+49 (0)6109 6059 -0	+49 (0)6109 6059 40
Italy	+39 02 961 781	+39 02 961 788 888
Middle East & Africa	+32 (0)87 305 550	+32 (0)87 305 506
Poland	+48 225 485 205	+48 225 485 255
Russia & Cis	+7 095 232 94 72	+7 095 232 03 56
Spain & Portugal	+34 93 41 23 752	+34 93 41 24 215
Sweden & Norway UK & Ireland	+44 (0) 1635 876 161	+44 (0) 1635 877 111