EWDR 961 rel. 1/97 ing

freezer controls

WHAT IT IS

The EWDR 961 is a temperature controller specifically designed for refrigeration applications and provides time control for off-cycle defrost management.

HOW IT IS MADE

- **Housing: plastic 4-Din module 70x85 mm (2.75x3.34")**
- **Depth: 61 mm (2.40")**
- **Mounting: Din-rail (Omega 3) or surface mount**
- **Connections: screw terminal block (2.5 mm^2; one wire each terminal only, in compliance with VDE norms)**
- **Output: one (1) SPDT relay 8(3)A 250V AC**
- **Input: PTC probe**
- **Resolution: 1 °C (°F)**
- **Accuracy: better than 0.5% of full scale**
- **Power supply: 12 Vac/dc ±15% or 24, 110, 220 Vac ±10%, 50/60 Hz**

GENERAL DESCRIPTION

The EWDR 961 is a temperature controller specifically designed for refrigeration applications and provides time control for off-cycle defrost management.
It incorporates an output relay for compressor control and a PTC sensor input.
A number of parameters are displayed alphanumerically to set up the instrument for each specific application.
The EWDR 961 is supplied in the 70x85 mm (4 modules) housing for Din-rail (Omega 3) or surface mounting.

OPERATION

The EWDR 961 is designed to operate strictly as a cooling control, which means that the switching differential is positive: the compressor cuts off at setpoint and is started at a temperature of set plus differential. The on-board microprocessor provides several timing functions for the defrost; the defrost cycle as well the defrost cycle duration are user selectable.
At the start of each defrost cycle, the compressor is simply stopped, regardless of the temperature control circuit.
In addition, the EWDR 961 offers several system protection features, all easy to understand and easy to program.

FRONT KEYPAD

SET: push to display the setpoint temperature; the "SET" status light will blink. The setpoint can be changed within 5 seconds with the "UP" or "DOWN" button. The control will automatically switch back to normal operating mode within 5 seconds; the last entered setpoint will stay in memory.
UP: used to increase the setpoint value, as well as the parameter when in programming. When held down for a few seconds, the change rate accelerates.
DOWN: same functions, except to decrease a value.
DEFROST: push to initiate a manual defrost cycle (override of programmed defrost start; programmed time resets to zero).
Manual defrost can not be started while in setpoint or in parameter programming mode.
This button must be activated for 5 seconds to start a defrost; the "DEF" status light will come on and the compressor is stopped.
Led "COMP": status light of the compressor output.
Led "SET": blinks during setpoint display/change.
Led "DEF": when this Led is on the defrost is in progress.

PARAMETER PROGRAMMING

Programming is easily accessed by holding the "SET" button down for more than 4 seconds; the first parameter is displayed while the status light "SET" remains blinking during the programming period.
Other parameters are accessed with the "UP" and "DOWN" button. With the "SET" button, the actual setting of each parameter is displayed. To change a parameter setting, push the "SET" plus the "UP" (or "DOWN").
The system will automatically return to its normal operating mode a few seconds after the programming procedure is completed or interrupted.

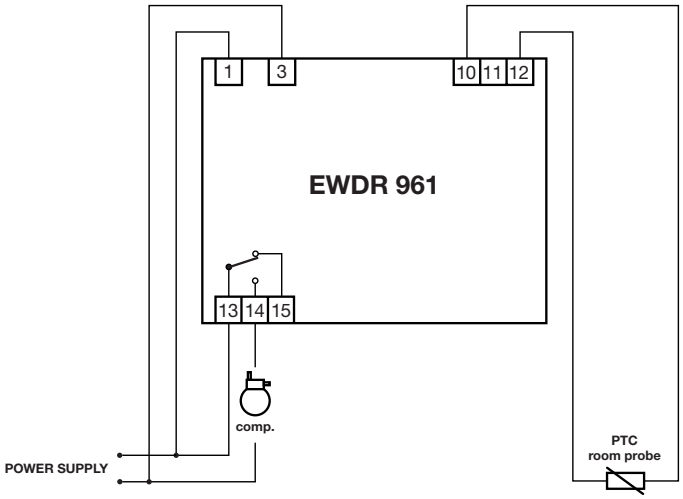
DESCRIPTION OF PARAMETERS

diF: diFferential.
Switching differential (histeresis); it will always be set with positive value.
LSE: Lower SEt.
This is the lower limit below which the user cannot change the setpoint.
HSE: Higher SEt.
Similar to "LSE", however setting an upper limit for the setpoint.
dit: defrost interval time.
Defrost initiation frequency in hours.
dct: defrost count type.
dF = digifrost® Feature; defrost starting time ("dit") is calculated based on accumulative compressor running time.
rt = real time; defrost initiation frequency is based on real time. Time between defrost starts is always the same.
SC = Stop Compressor; a defrost cycle is activated each time the compressor stops.
Fr = Free (not available).
doh: defrost offset.
Time delay of defrost start, expressed in minutes.
dEt: defrost Endurance time-out.
Defrost Endurance, in minutes.
dPo: defrost (at) Power on.
Selects whether the system should go through a defrost cycle at start-up (or after a power failure).
n = no; y = yes.
ddL: defrost display Lock.
Select whether or not to lock in the actual box temperature display during a defrost.
n = no; during defrost the actual box temperature is displayed.
y = yes; the temperature displayed at the start of a defrost is locked in and does not change during this cycle.

DEFAULT SETTINGS - STANDARD MODELS

Parameter	Description	Range	Default	Unit
diF	diFferential	1…15	2	°C / °F
LSE	Low SEt	–99…HSE	–55	°C / °F
HSE	High SEt	LSE…99	40	°C / °F
dit	defrost interval time	0…31	6	hours
dct	defrost count type	dF / rt / SC / Fr	dF	flag
doh	defrost offset	0…59	0	minutes
dEt	def. Endurance time-out	1…99	30	minutes
dPo	defrost (at) Power on	n / y	n	flag
ddL	defrost display Lock	n / y / Lb	y	flag
cPP	comp. Probe Protection	oF / on	oF	flag
ctP	comp. type Protection	nP / don / doF / dbi	doF	flag
cdP	comp. delay Protection	0…15	0	minutes
CAL	CALibration	–20…20	0	°C / °F
tAb	tAble of parameters	/	/	/

CONNECTIONS



Lb = Label; during the defrost the label "dEF" is displayed to indicate a defrost cycle is in progress.
NOTE: with the "y" and "Lb" selection, the display remains locked until the box temperature is pulled down again and reaches set value.

cPP: compressor Probe Protection.
Select compressor relay status in case of probe defect.
oF = comp. OFF in case of probe defect;
on = comp. ON in case of probe defect.

ctP: compressor type Protection.
Select the type of (short-cycle) protection best suited for the compressor; the actual delay time is programmed with the next parameter.
nP = no Protection.
don = delay on start; delay applies when relay is energized.
doF = delay at switching oFf. Minimum off-cycle time period.
dbi = delay between two successive starts. Limits the number of start-ups per hour.

cdP: compressor delay Protection.
The time delay, in minutes (see parameter "ctP").

CAL: CALibration.
Temperature read-out offset to allow for a fixed adjustment up or down due to probe location, if desired.

tAb: tAble of parameters.
This shows the configuration of the parameters as set in the factory; can not be modified (for factory identification and diagnostic purposes only).

INSTALLATION

The instrument is designed for surface mounting (pull out both plugs) or for Din-rail mounting (Omega 3).
The ambient temperature around the instrument should be kept between –5 and 65 °C (23…149 °F).
Select a location which will not be subject to high humidity or condensation.

ELECTRICAL WIRING

The instrument is equipped with an internal screw terminal block suitable for ≤ 2.5 mm^2 wiring (one wire each terminal only, in compliance with VDE norms). Make sure that the power supply corresponds with the rating shown on the instrument.
The 2-wire PTC type probe does not require polarity and can easily be extended by using common 2-lead wire. It is strongly recommended to run the probe cable separate from line voltage wiring. Also, it is good practice to install the tip of the probe in upright position, to avoid moist from entering into the stainless steel sensor housing.
The compressor relay contacts are voltage-free and are suitable for in-line switching of compressors up to 0.5 Hp at 220 Vac (or 0.25 Hp to 110 Vac). For larger loads, an external contactor must be used.

ERROR ANNOUNCIATION

The instrument causes the display to read "E1" in the event of a problem with the probe. This could mean: either an open or shorted sensor, sensor not connected, temperature "under range" (below –55 °C or –67 °F) or temperature "over range" (over 99 °C or 210 °F).
It is recommended to double-check the sensor wiring before diagnosing a probe as defective.

TECHNICAL DATA

Housing: plastic 4-Din module 70x85 mm (2.75x3.34").
Depth: 61 mm (2.40").
Mounting: Din-rail (Omega 3) or surface mount.
Connections: screw terminal block (2.5 mm^2; one wire each terminal only, in compliance with VDE norms).
Display: 12.5 mm LED (0.50").
Push buttons: located on front panel.
Data storage: non-volatile EEPROM memory.
Operating temperature: –5…65 °C (23…149 °F).
Storage temperature: –30…75 °C (–22…167 °F).
Output: one (1) SPDT relay 8(3)A 250V AC.
Input: PTC probe.
Resolution: 1 °C (°F).
Accuracy: better than 0.5% of full scale.
Power supply: 12 Vac/dc ±15% or 24, 110, 220 Vac ±10%, 50/60 Hz.

Eliwell S.p.A.
via dell'Artigianato, 65
Zona Industriale
32010 Pieve d'Alpago (BL)
Italy

Telephone +39 (0)437 986111
Facsimile +39 (0)437 989066

A Siebe Group Company