Technical Info

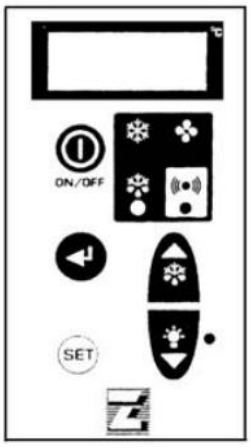
Technical Services Division – Daikin Europe NV

Parameter and Error list

Zanotti SB-Uniblock

Zanotti DBO-Biblock

Zanotti SPO-Split



SB

DB-O

SP-O

SUBJECT: Parameter and Error list Zanotti SB-Uniblock, DBO Bi-block & SPO Split

Attached, please find the Zanotti SB-Uniblock, DBO Bi-block & SPO Split Parameter and Error list. This document explains how to work with the units controller, gives an overview of all the parameter settings and gives an thoroughly explanation about the error codes.

Before performing design, construction, or maintenance, thoroughly read the "Installation Manual" that come with this product.

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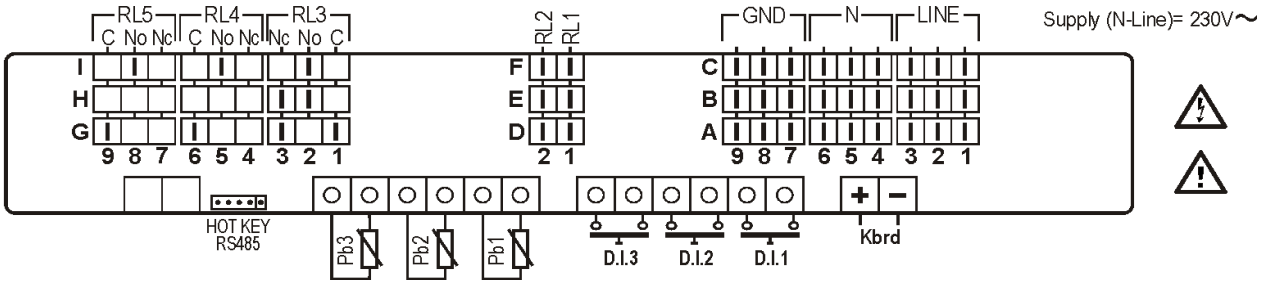
2. Version log

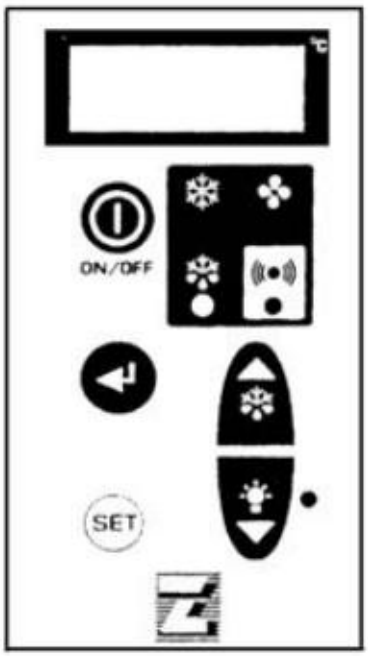
Month/Year	Revised contents
09/2017	-

3. PCB: Technical data

Power supply:	230Vac or. 110Vac ± 10%, 50 / 60Hz
Power consumption:	10 VA max
Inputs:	3 NTC probes.
Relay outputs:	Total current on loads MAX 20A
	Compressor: relay SPST 20 (8) A, 250Vac
	Light: relay relay 8 (3) A, 250Vac
	Fans: relay SPST 16 (3) A, 250Vac
	Defrost: relay SPST 16 (3) A, 250Vac
	Alarm: SPST relay 8 (3) A, 250Vac
Serial output:	TTL (standard), RS485 (Optional)
Communication protocol:	MODBUS-RTU
Data storage:	EEPROM
Operating temperature:	from 0 to 60 ° C (32 to 140 ° F)
Storage temperature:	-25 to 60 ° C (-13 to 140 ° F)
Relative Humidity:	20 to 85% (non-condensing)
measurement and control range:	NTC probe: -40 to 110 ° C (-58 to 230 ° F)
	PTC probe: -40 to 150 ° C (-58 to 302 ° F)
Resolution:	0.1 ° C or 1 ° F
Accuracy at 25 ° C:	± 0.5 ° C ± 1 digit



4. Keyboard Technical Data



	Control LED (GREEN) ON : compressor is running, unit is refrigerating. Flashing : compressor is in start delay mode.
	Control LED (GREEN) ON : evaporator fan is running. Flashing : evaporator fan is in start delay mode. OFF : evaporator fan is off. Defrost is in course.
	Control LED (YELLOW) ON : Automatic or manual defrost is in course.
	Alarm LED (RED) ON : alarm has been activated because of a malfunctioning sensor, or pressure switch intervention, or cold room temperature exceeding allowed tolerances. OFF: Unit is operating normally.
°C	DISPLAY : on connection to the mains it shows OFF to indicate the condition of the unit. By pressing ON/OFF key for 3 seconds the unit is turned ON and the display shows the cold room temperature. In programming mode the parameters to be set are displayed; in alarm mode the alarm code is displayed.
SET	"SET" key : when pressed it lights up and allows room temperature to be set. During programming it is used to pass from a submenu to an upper one.
	"DOWN/ROOM LIGHT" key: in programming mode or when setting room temperature it is used to reduce the value displayed; otherwise it is used to switch on/off the cold room light.
	"SB.M./UP" key: in programming mode it is used to increase the values displayed. If pressed for more than 5 seconds it enables manual defrost to be carried out.
ON/OFF	"ON/OFF" key: when pressed for 3 seconds it turns the unit on or off.
	"Enter" key: it gives access to programming menu and submenus. Access to the programming mode requires the installator's assistance and should be effected only if necessary.

5. How to enter the parameter levels

- Level 1 parameters:

1. Press the ENTER key for 5 seconds.
2. The instrument will show the first parameter present in level 1.
3. Use the pushbuttons to scroll through the menu.
4. Press the SET key to access a folder.

- Level 2 parameters:

To access parameters in "Pr2" There are two possibilities:

Option 1:

1. Press the ENTER key for 5 seconds.
2. Use the pushbuttons to scroll through the menu.
3. Select the "Pr2" parameter and press SET.
4. You will see the "PAS" flashing followed by "0 - -" with a flashing 0.
5. Enter the password "321" using the keys.
6. Press SET to confirm.

Option 2:

1. Press the ENTER-key within 30 seconds after switching on the instrument.

Level 2 parameters should not be changed, they are unit related and critical for the unit operation.

6. Changing parameter values

1. Enter the Programming mode.
2. Select the desired parameter.
3. Press the SET key to display its value.

4. Change it with the keys.
5. Press "SET" to store the new value and move to the parameter code next.

6. To exit: Press SET-key + UPPER-key, or wait 15s without pressing no key.

NOTE: the new parameter value is stored even when you exit without pressing the SET-key.

7. Alarm signalling

ALARM	DISPLAY	CAUSE	REMEDY
High temperature	**HA**, alternating with cold room temperature.	Excessive door openings. Too high temperature of products stored. Malfunction of the unit.	
Low temperature	**LA**, alternating with cold room temperature.	Malfunction of electronic controller	Service intervention
Room sensor	**P1** (Steady)	Sensor not connected Broken thermostat probe	Replace sensor
Evaporator sensor	**P2**, alternating with cold room temperature	Sensor not connected Broken evaporator probe	Replace sensor
Condenser (extra) sensor	**P3**	Broken probe	Replace sensor
Open Door	**dA**, alternating with cold room temperature	Door opening time exceeds max opening by parameter	Automatic reset when the door is closed.
High pressure	**PrE**, alternating with room temperature; LED (4) lights up each time the high pressure switch is tripped. If more than 10 trips occur in one hour, then (PAL) alternating with cold room temperature is displayed and alarm relay is activated together with LED (4). In this situation all functions are interrupted.	Faulty operation of condenser fan. Dirty condenser.	Switch off the refrigerating unit, wait a few seconds and switch on again.

ALARM	DISPLAY	CAUSE	REMEDY
Voltage monitor	**bAL**, alternating with cold room temperature. The voltage monitor is an electronic device which checks the supply voltage of the unit when voltage variations exceed +/-12%. The unit stops for about 6 minutes and restarts automatically if voltage is within the prescribed limits. Warning: on first starting the monitor carries out a counting phase of 7 minutes, during which the unit should be left connected but in OFF condition.	Wrong supply voltage	
Abnormality in the memory	Flashing "**EE**" alarm in alternation with the temperature signals a data abnormality		Press whatever key during the alarm. Subsequently the message "**rSt**" will appear for about 3 seconds before restarting normal operation.

The signal remains on the display until the alarm situation is called off. All the alarm messages flash in alternation with the probe temperature except "**P1**" which is always flashing.

8. Parameters

Label	Name	Medium electric	Low electric	Medium hot gas	Low hot gas	MDB electric	BDB electric	Unit	Range	Level	Description
HY	Differential	2	2	2	2	2	2	°C	0,1…25,5	1	Intervention differential for setpoint. Compressor Cut IN is Setpoint + differential (Hy). Compressor Cut OUT is when the temperature reaches the setpoint.
LS	Minimum set point	-5	-25	-5	-25	-5	-25	°C	-50,0°C…SET	1	Sets the minimum value for the setpoint.
US	Maximum set point	10	-15	10	-15	10	-15	°C	SET…150,0°C	1	Sets the maximum value for the setpoint.
OdS	Outputs activation delay at start up	0	0	0	0	0	0	min	0…255	1	This function is enabled at the initial start-up of the controller and inhibits any output activation for the period of time set in the parameter.
AC	Anti-short cycle delay	2	2	2	2	2	2	min	0…30	1	Minimum interval between the compressor stop and the following restart
Con	Compressor ON time with faulty probe	15	15	15	15	15	15	min	0…255	1	Time during which the compressor is active in case of faulty thermostat probe. With Con = 0, compressor is always OFF.

Label	Name	Medium electric	Low electric	Medium hot gas	Low hot gas	MDB electric	BDB electric	Unit	Range	Level	Description
CoF	Compressor OFF time with faulty probe	30	30	30	30	30	30	min	0…255	1	Time during which the compressor is OFF in case of faulty thermostat probe. With CoF = 0, compressor is always active.
CF	Temperature measurement unit	°C	°C	°C	°C	°C	°C	°C/°F	0/1	1	Selection of °C or °F to display the temperature read by the probe. 0=°C 1=°F CAUTION! When the measurement unit is changed, the setpoint and the values off the parameters Hy, LS, US, ot, ALU, and ALL have to be checked and modified if necessary
rES	Resolution (integer/decimal point)	dE	dE	dE	dE	dE	dE		0/1	1	0=in=integer (1°C) 1=dE=decimal point (0,1°C)
Lod	Local display	P1	P1	P1	P1	P1	P1		0/1/2	1	Selects which probe is displayed by the controller: 0=P1:Probe 1, Ambient Temperature 1=P2: Probe 2, End defrost Temperature 2=P3 = Probe 3, Condensing temperature (only for model with this option enabled)
tdF	Defrost type	rE	rE	rE	rE	rE	rE		0/1	1	0= rE: Electric defrost 1= Sd: Hot gas defrost

Label	Name	Medium electric	Low electric	Medium hot gas	Low hot gas	MDB electric	BDB electric	Unit	Range	Level	Description
EdF	Defrost mode	in	in	in	in	in	in		0/1	1	0=in: Interval mode: The defrost starts when the time Idf is expired
											1=Sd: Smart Defrost: the interval between 2 defrosts is calculated with compressor ON
SdF	Set point for SMART DEFROST	0	0	0	0	0	0	°C	-30…30	1	Temperature to activate the counter of interval defrost if sd is selected
dtE	Defrost termination temperature	8	8	15	15	8	8	°C	_50…150	1	Sets the temperature measured by the evaporator probe, which causes the end of defrost
IdF	Interval between defrost cycles	4	4	4	4	6	6	hours	1…120	1	Determines the time interval between the beginning of two defrost cycles.
MdF	(Maximum) length for 1° defrost	30	30	20	20	25	35	min	0…255	1	When P2P=n, it sets the defrost duration.
											When P2P=y, it sets the maximum duration for defrost.
dFd	Displaying during defrost	it	it	it	it	it	it		0/1/2/3/4	1	0=rt: Real temperature
											1=it: Temperature at defrost start
											2=Set: Setpoint
											3=dEF: dEF label
											4=dEG: dEG label
dAd	MAX display delay after defrost	15	15	15	15	15	15	min	0…255	1	Sets the maximum time between the end of defrost and the restarting of the real room temperature display.
dSd	Defrost delay after calling	0	0	0	0	0	0	min	0…99	1	This is useful when different defrost start times are necessary to avoid overloading the plant.

Label	Name	Medium electric	Low electric	Medium hot gas	Low hot gas	MDB electric	BDB electric	Unit	Range	Level	Description
Fdt	Draining time	2	2	2	2	2	2	min	0…60	1	Time interval between reaching defrost termination temperature and the restoring of the controller's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.
Dpo	First defrost after start up n(0	n	n	n	n	n	n		0/1	1	0=n=after the IdF time, 1=Y=immediate
FnC	Fans operating mode	C-n	C-n	C-n	C-n	C-n	C-n		0/1/2/3	1	0=C_n: Evaporator fan on when compressor ON - Stop in defrost.
											1=C_Y: Evaporator fan on when compressor ON - ON in defrost.
											2=O_n: Evaporator fan on continuously - Stop in defrost.
											3= O_Y: Evaporator fan on continuously - Stop in defrost.
Fnd	Fans delay after defrost	3	3	3	3	3	3	min	0…255	1	Fan delay after defrost - The fan must be stop during drain time ad 1 min after compressor start.
FSt	Fans stop temperature	40	40	40	40	40	40	°C	-50…150	1	Fan stop temperature - used if you prefer to have fan ON only if evaporating temp. Is lower that FSt.

Label	Name	Medium electric	Low electric	Medium hot gas	Low hot gas	MDB electric	BDB electric	Unit	Range	Level	Description
ALC	Temperature alarms configuration	rE	rE	rE	rE	rE	rE		0/1	1	1=Ab = Absolute temperature: alarm temperature is given by the ALL or ALU values 0=rE0= Temperature alarms are referred to the setpoint Temperature alarm is enabled when the temperature exceeds the SEt + ALU or SEt- ALL values.
ALU	MAXIMUM temperature alarm	5	5	5	5	5	5		re[0.0 - 50.0]; Ab[-50.0 - 150.0]	1	When this temperature is reached, the alarm is enabled after the ALd delay time.
ALL	minimum temperature alarm	5	5	5	5	5	5		re[0.0 - 50.0];Ab[-50.0 - 150.0]	1	When this temperature is reached, the alarm is enabled after the ALd delay time.
AFH	Temperature alarm and fan differential	2	2	2	2	2	2	°C	0,1…25,5	1	Intervention differential for recovery of temperature alarm
Ald	Temperature alarm delay	0	0	0	0	0	0	min	0…255	1	Time interval between the detection of an alarm condition and alarm signaling.
dAo	Delay of temperature alarm at start up	3	4	3	4	3	4		0…23H5(143)	1	Time interval between the detection of the temperature alarm condition after controller power ON and alarm signaling.
EdA	Alarm delay at the end of defrost	60	60	60	60	60	60	min	0…255	1	After defrost temperature alarm is delayed of 60 min
dot	Delay of temperature alarm after closing the door	60	60	60	60	60	60	min	0…255	1	After door open, temperature alarm is delayed of 60 min
doA	Open door alarm delay	60	60	60	60	60	60	min	0…254	1	If the door remain open for 60 min, the alarm of door open appear.

Label	Name	Medium electric	Low electric	Medium hot gas	Low hot gas	MDB electric	BDB electric	Unit	Range	Level	Description
tbA	Alarm relay silencing	Y	Y	Y	Y	Y	Y		0/1	1	0=n: the alarm relay remains ON until the alarm condition recovers. 1=y: the relay is silenced by pressing any key.
nPS	Pressure switch activation number	10	10	10	10	10	10		0…15	1	Number of activation of the pressure switch, during the nPn interval, before signaling the alarm event (i2F= PAL). If the nPS activation in the nPn time is reached, switch OFF and ON the controller to restart normal regulation.
nPn	Pressure switch interval	60	60	60	60	60	60	min	0…60	1	Establishes the range in which you must check nPS pressure switch for generating the alarm.
AU2	High temperature alarm of Probe 3	55	55	55	55	55	55	°C	-50… 150	1	When this temperature is reached the AH2 alarm is signaled, possibly after the Ad2 delay.
AH2	Differential temperature alarm for probe 3	2	2	2	2	2	2	°C	0,1…25,5	1	Differential temperature alarm for probe 3.
Ad2	Temperature alarm delay for probe 3	0	0	0	0	0	0	min	0…255	1	Temperature alarm delay for probe 3.
AC2	Lock of regulation with P3 probe temperature alarm	N	N	N	N	N	N		0/1	1	0=N= no: compressor keeps on working. 1=Y= yes: compressor is switched OFF till the alarm is present, in any case regulation restarts after Ac time at minimum.

Label	Name	Medium electric	Low electric	Medium hot gas	Low hot gas	MDB electric	BDB electric	Unit	Range	Level	Description
ot	Thermostat probe calibration	0	0	0	0	0	0		-12…12	1	Allows to adjust possible offset of the thermostat probe.
oE	Evaporator probe calibration	0	0	0	0	0	0		-12…12	1	Allows to adjust possible offset of the evaporator probe.
o3	Auxiliary probe calibration	0	0	0	0	0	0		-12…12	1	Allows to adjust possible offset of the third probe.
P2P	Evaporator probe presence	Y	Y	Y	Y	N	N		N/Y	1	n = not present: the defrost stops by time. y = present: the defrost stops by temperature.
P3P	Auxiliary probe presence	N	N	N	N	N	N		N/Y	1	N= not present Y= present
HES	Temperature increase during the Energy Saving cycle	0	0	0	0	0	0	°C	-30…30	1	Sets the increasing value of the setpoint during the Energy Saving cycle.
odC	Open door control	F-C	F-C	F-C	F-C	F-C	F-C		0/1/2/3	1	0=no= normal 1=Fan= normal 2=CPr= Compressor OFF 3=F-C= Compressor OFF
rrd	Regulation restart with door open alarm (doA)	Y	Y	Y	Y	Y	Y		N/Y	1	No = outputs not affected by the doA alarm Yes = outputs restart with the doA alarm
i1P	Digital input 1 polarity	OP	OP	OP	OP	OP	OP		0/1	1	0=CL: CL: the input is activated by closing the contact 1=OP: the input is activated by opening the contact.
i2P	Digital input 2 polarity	cL	cL	cL	cL	cL	cL		0/1	1	0=CL: CL: the input is activated by closing the contact 1=OP: the input is activated by opening the contact.

Label	Name	Medium electric	Low electric	Medium hot gas	Low hot gas	MDB electric	BDB electric	Unit	Range	Level	Description
i3P	Digital input 3 polarity	OP	OP	OP	OP	OP	OP		0/1	1	0=CL: CL: the input is activated by closing the contact
											1=OP: the input is activated by opening the contact.
i2F	Digital input 2 function	BAL	BAL	BAL	BAL	BAL	BAL		0/1/2/3/4/5	1	0=EAL: External alarm, EAL message is displayed
											1=BAL: external alarm (block), BAL message is displayed
											2=dFr: Defrost cycle start
											3=dor: Door switch function
											4=ES: Energy saving
											5=OnF: To switch the controller OFF from remote
i3F	Digital input 3 function	DOR	DOR	DOR	DOR	DOR	DOR		0/1/2/3/4/5	1	0=EAL: External alarm, EAL message is displayed
											1=BAL: Exterrnal alarm (block), BAL message is displayed
											2=dFr: Defrost cycle srtart
											3=dor: Door switch function
											4=ES: Energy saving
											5=OnF: To switch the controller OFF from remote
did	Digital input alarm delay	0	0	0	0	0	0	min	0-255	1	i2F = EAL or i2F = bAL: Delay between the detection of the external alarm condition and its signaling.
											i2F = PAL: Time interval to calculate the number of the pressure switch activation

Label	Name	Medium electric	Low electric	Medium hot gas	Low hot gas	MDB electric	BDB electric	Unit	Range	Level	Description
AoP	Alarm relay polarity	cL	cL	cL	cL	cL	cL		0/1	1	0=CL: CL: the input is activated by closing the contact 1=OP: the input is activated by opening the contact.
Pbc	Kind of probe selection	NTC	NTC	NTC	NTC	NTC	NTC		0/1	1	0=PTC 1=NTC
Adr	Serial address	1	1	1	1	1	1		1 - 247	1	
dP1	Probe 1 display								read only	1	Thermostat probe display.
dP2	Probe 2 display								read only	1	Evaporator probe display.
dP3	Probe 3 display								read only	1	Third probe display (optional).
rEL	Software release								read only	1	For internal use only.
Ptb	Map code								read only	1	
Pr2	Access parameter list									1	