

Copeland ZX*Y outdoor refrigeration units for A2L & A1 applications

Quick installation guide

1. Install the refrigeration unit according to Application Guidelines AGL_Unit_ZX_A2L_A1_EN "Copeland ZX*Y outdoor refrigeration units for A2L & A1 applications".
2. Prefill the unit with refrigerant and set all valves into operating position.
3. Set up the unit controller (XCM25D) for the required application.

NOTE: If a room thermostat is used to control the solenoid valve, only parameters C01 and C02 (cut-in/cut-out pressures) must be adjusted to perform a pumpdown. The value of parameter D29 must be lower than C02 to avoid a low-pressure alarm.

The XCM25D controller provides 2 programming levels:

- **Pr1** with direct access
- **Pr2** protected with a password (intended for experts)

Explanation of LED functionalities

LED	Mode	Function	LED	Mode	Function
	On	Compressor 1 enabled		On	When browsing the alarm menu
	Flashing	Anti-short cycle delay enabled		Flashing	A new alarm occurred
	On	Condensing fans enabled		On	An alarm is occurring
	On	Bar display		On	Digital unloader solenoid On
	Flashing	Programming mode			
	On	PSI display		On	In defrost
	Flashing	Programming mode			
	On	When browsing the service menu		On	Evaporator fans - Liquid line solenoid valve On
	Flashing	In fast access menu			

How to program the "Pr1" parameters:

Access pre-program level		Press simultaneously for about 3 seconds to access the pre-programming level. The message rtC (real time clock) is displayed.
Access program level	 or 	Press the Up or Down key until the message Par is displayed.
Access Pr1		Press the SET button to enter the program level. First parameter C01 is displayed.
Select item	 or 	Select the parameter or submenu using the arrows.
Show value		Press the SET button.
Modify	 or 	Use the arrows to modify the value.
Confirm and store		Press the SET button: the value will blink for 3 seconds, then the display will show the next parameter.
EXIT		Press simultaneously to exit the programming mode or wait for 30 seconds without pressing any key.

When entering the programming level for the first time the display will show the **rtC** (real time clock) label.

- Press  to access parameters N01/02/03/04/05 and adjust time & date. For further details see the refrigeration unit application guidelines, section 2.13 "Parameters level 1 – Required settings".
- Press  or  to move from the **rtC** label to the **Par** label, in order to access programming level 1.
- Press : the parameters in programming level 1 can be changed.

The following "Pr1" parameters must be verified before commissioning:

Parameter	Description	Unit	Factory settings	Comments
C01	Compressor cut-in pressure setpoint	bar*	4.0	Not used for digital ZXDY
C02	Compressor cut-out pressure setpoint	bar*	2.0	Not used for digital ZXDY
C07	Refrigerant selection for regulation	-	R454C	R454A, R454C, R455A, R1234yf, R513A, R134a, R448A, R449A, R404A, R450A, R507A, R407A, R407C, R407F
C16	Digital compressor setpoint	bar*	3.3	Not used for ZXMY & ZXLY
C17	Proportional band for compressor regulation	bar*	2.0	Not used for ZXMY & ZXLY
C21	Cycle time for digital compressor	sec	10	Not used for ZXMY & ZXLY
C24	Minimum capacity for digital compressor	%	20	Not used for ZXMY & ZXLY
C25	Maximum capacity for digital compressor	%	100	Not used for ZXMY & ZXLY
D29	Low-pressure alarm value	bar*	0.5	
E39	Condenser setpoint	°C	27.0	
E46	Regulation band of variable fan	°C	10.0	
N01	Current minute	-	-	
N02	Current hour	-	-	
N03	Day of the month	-	-	
N04	Month	-	-	
N05	Year	-	-	
T18	Access to Pr2 level	-	-	Password: 3 2 1

* Pressures are always relative

Adjustable discharge pressure limitation: The controller has dedicated parameters to provide the possibility of adjustable discharge pressure cut-out.

Parameter	Description	Factory settings	Recommended settings
E58	Condenser temperature / Pressure threshold for high alarm	27 bar	Required value
E61	Condenser temperature / Pressure threshold for alarm recovery	23 bar	Required value

Alarm menu

Code	Description	Cause	Action	Reset
E01	AI1 error (Probe 1 / Suction pressure transducer failure alarm)	Probe failure or out of range	Only in digital units – Compressor activated according to C23; compressor on & off times set according to D02 & D03	Automatically as soon as the probe restarts working.
E02	AI2 error (Probe 2 / Discharge pressure transducer failure alarm)	Probe failure or out of range	The fan speed control is disabled	Automatically as soon as the probe restarts working.
E03	AI3 error (Probe 3 / Discharge line temperature sensor failure alarm)	Probe failure or out of range	The discharge temperature control is disabled	Automatically as soon as the probe restarts working.
E04	AI4 error (Probe 4 / Temperature sensor failure alarm)	Probe failure or out of range		Automatically as soon as the probe restarts working.
E05	AI5 error (Probe 5 / Temperature sensor failure alarm)	Probe failure or out of range		Automatically as soon as the probe restarts working.
E06	AI6 error (Probe 6 / Ambient temperature sensor failure alarm)	Probe failure or out of range	The functions related to probe 6 (ambient temperature sensor) are disabled	Automatically as soon as the probe restarts working.
E07	AI7 error	Probe failure or out of range		
E08	Battery error			
E09	Current sensor 1 error	Probe out of range	The functions related to the current sensor are disabled	Automatically as soon as the probe restarts working.

Code	Description	Cause	Action	Reset
E10	Current sensor 2 error	Probe out of range	The functions related to the current sensor are disabled	Automatically as soon as the probe restarts working.
E11	Voltage sensor 1 error	Probe out of range	The functions related to the voltage sensor are disabled	Automatically as soon as the probe restarts working.
E12	Voltage sensor 2 error	Probe out of range	The functions related to the voltage sensor are disabled	Automatically as soon as the probe restarts working.
E13	Voltage sensor 3 error	Probe out of range	The functions related to the voltage sensor are disabled	Automatically as soon as the probe restarts working.
E20	Lost phase error	Power supply phase loss (3-phase units)	The compressor will trip	Automatically: lost phase recovered and H08 delay elapsed. If all three phases are present but the controller still shows the error message, set parameters H06 and H25 to "No".
L20	Lost phase lockout	Power supply phase loss happened H12 times within one hour (3-phase units)	The compressor will lock out	Hold "start" button for 5 sec or manual power off and on. If all three phases are present but the controller still shows the error message, set parameters H06 and H25 to "No".
L21	Phase sequence lockout	Incorrect phase sequence (3-phase units)	The compressor will lock out, rotation field has to be changed	Manual power off, invert 2 phases and power on. If the phase sequence is correct but the controller still shows the error message, set parameter H25 to "No".
E22	Phase imbalance	One phase voltage lower than H18 % of 3 phases average voltage (3-phase units)	The compressor is activated according to H19	Automatically: voltage recovered and H16 delay elapsed. If all three phases are present but the controller still shows the error message, set parameter H06 to "No".
E23	Overcurrent	Electrical current larger than H09 setting	The compressor will trip	Automatically: H08 delay elapsed. If the current is within the limits but the controller still shows the error message, set parameter H06 to "No".
L23	Overcurrent lockout	Overcurrent happened H11 times within one hour	The compressor will lock out (if H11 = 0, no compressor lockout)	Hold "start" button for 5 sec or manual power off and on (if H11 = 0, compressor automatically starts after H08 delay elapsed). If the current is within the limits but the controller still shows the error message, set parameter H06 to "No".
E26	Undervoltage alarm	Voltage lower than H13 setting for H15 seconds	The compressor will trip	Automatically: voltage is back within acceptable range and H16 delay elapsed. If the voltage corresponds to the required voltage but the controller still shows the error message, set parameter H06 to "No".
L26	Undervoltage lockout	Undervoltage happened H17 times within one hour	The compressor will lock out (if H17 = 0, no compressor lockout)	Hold "start" button for 5 sec or manual power off and on (if H17 = 0, compressor automatically starts when voltage is back within acceptable range and H16 delay elapsed). If the voltage corresponds to the required voltage but the controller still shows the error message, set parameter H06 to "No".
E27	Overvoltage alarm	Voltage higher than H14 setting for H15 seconds	The compressor will trip	Automatically: voltage is back within acceptable range and H16 delay elapsed. If the voltage corresponds to the required voltage but the controller still shows the error message, set parameter H06 to "No".
L27	Overvoltage lockout	Overvoltage happened H17 times within one hour	The compressor will lock out (if H17 = 0, no compressor lockout)	Hold "start" button for 5 sec or manual power off and on (if H17 = 0, compressor automatically starts when voltage is back within acceptable range and H16 delay elapsed). If the voltage corresponds to the required voltage but the controller still shows the error message, set parameter H06 to "No".
E28	Compressor built-in thermal protector trip	High motor temperature	Warning signal only	Automatically: as soon as electrical current is detected. Check the voltage coming to the compressor.
E30	Main power lost	Controller power supply lost		
E40	High-pressure switch alarm	High-pressure switch open	The compressor will trip	Automatically: high-pressure switch closed and D14 delay elapsed. If the high pressure is below the limit but the alarm is still on, check fuse F3.

Code	Description	Cause	Action	Reset
L40	High-pressure switch lockout	High-pressure switch open error happened D15 times within one hour	The compressor will lock out (if D15 = 0, no compressor lockout)	Hold "start" button for 5 sec or manual power off and on (if D15 = 0, compressor automatically starts when high-pressure switch is closed and D14 delay elapsed). If the high pressure is below the limit but the alarm is still on, check fuse F3.
E41	Low-pressure switch alarm	Low-pressure switch open	The compressor will trip	Automatically: low-pressure switch closed and D28 delay elapsed.
E43	Low pressure alarm	The pressure is below D29	Warning signal only	To deactivate the alarm function set parameter D13 to "No".
E44	Discharge line temperature alarm	Discharge line temperature higher than D22 for D24 seconds	The compressor will trip	Automatically: discharge line temperature lower than D23 setting and D25 delay elapsed.
L44	Discharge line temperature lockout	Discharge line temperature overheat happened D26 times within one hour	The compressor will lock out (if D26 = 0, no compressor lockout)	Hold "start" button for 5 sec or manual power off and on (if D26 = 0, compressor automatically starts when discharge line temperature is lower than D23 setting and D25 delay elapsed).
E46	High condenser temperature alarm	Condenser temperature higher than E58 for E59 minutes	The compressor is activated according to E60	Automatically: as soon as condenser temperature is lower than E61.
E66	Open door alarm	If the door is open longer than G53	Warning signal only if G09 = "no"; Alarm and compressor trip if G09 = "yes".	Manual or automatic – see Action.
E80	rtC warning, date error	HW problem in the board	Replace the controller	
E81	rtC warning, communication error	HW problem in the board	Replace the controller	
E82	Probe configuration error			
E83	DI configuration error			
E84	Compressor configuration error			
E85	Injection probe configuration error	Injection EXV output mode is selected, but no relevant sensors	Injection EXV will not work	Automatically: as soon as the injection EXV is properly configured.
E86	EEPROM R/W error (manual)	HW problem in the board	Replace the controller	

NOTE: This guide is designed for quick installation purposes. For detailed instructions, please download the Application Guidelines AGL_Unit_ZX_A2L_EN "Copeland ZX*Y outdoor refrigeration units for A2L & A1 applications" at www.copeland.com/en-gb.

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