

## CONTROLLER INSTRUCTIONS

## QUIET CONDENSING UNITS

### CONTROLLER FUNCTIONS

XC35CX controller regulates and manages condensing unit functions:

- Drive ON/OFF (fixed capacity) compressors
- Drive ON/OFF (fixed speed) condenser fans
- Drive Variable speed condenser fans (0-10V control)
- Generates alarm codes for running conditions outside of specified range
- Provide programming options for condensing unit lock-out (Repetitive Alarm codes conditions)
- Provide display options for running parameters and alarm codes
- Provide means for communicating operating parameters and alarming conditions for remote monitoring systems

XC35CX replaces the following components:

- Low Pressure control
- Discharge Thermostat
- Compressor Time Delay
- Pressure/Temperature switch for staggering Fixed Speed Condenser Fans
- System 450 or P352 controllers for variable speed condenser fans

### CONTROLLER & COMPONENTS

- XC35CX Controller
- Pressure Transducers (Ratiometric 0-5VDC)
- Temperature Sensors (NTC86k, NTC10k, PT1000)
- Monitoring Adapter Tool (RS485 output converter)



### CONTROLLER INPUTS, PRESSURE AND TEMPERATURE SENSORS

**Pb1** Suction pressure transducer (ratiometric transducer 0-5V), Terminals #13, #14 and #16

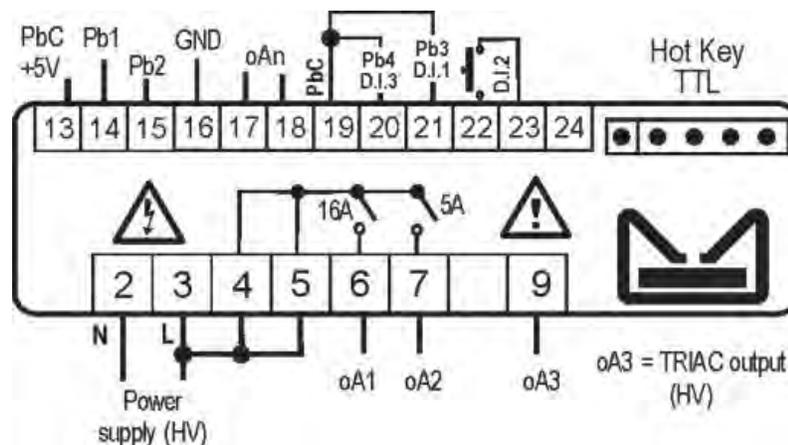
**Pb2** Condensing pressure transducer (ratiometric transducer 0-5V), Terminals #13, #15 and #16

**Pb3** Discharge temperature sensor, Terminals #19 and #21

### CONTROLLER OUTPUTS

**oA1** Relay Output (16A), Terminal #3 and #6

**oAn** Analogue Output, Terminals #17 & #18



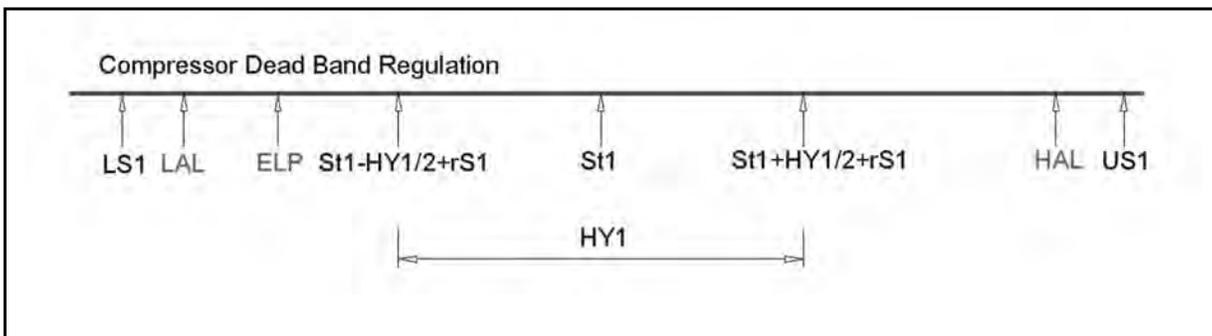
## FIXED COMPRESSOR REGULATION (Controlling parameters: Configuration Setpoint and alarms)

### Basic Setup Parameters and Settings "P1" programming level System Modes

Parameter	Description	Low	Med	Prog. Level
St1	SETPOINT 1 for compressor regulation (suction line)	7	27	Pr1
HY1	Regulation band for SETPOINT 1	14	20	Pr1
2on	Minimum delay between two compressor start-ups (min)	0		Pr1
2oF	Delay between compressor switch-off and start-up (min)	2		Pr1

### Advanced Setup Parameters and Settings "P2" programming level

Parameter	Description	Low	Med	Prog. Level
oA1	Digital output AUX1 configuration (Relay 16A)	CP1		Pr2
CPb	Compressor regulation probe (suction pressure transducer)	P1		Pr2
rtY	Type of regulation: dead band	db		Pr2
rS1	Offset for HY1, used to move the regulation band above and below the setpoint St1	0		Pr2
LS1	Minimum value for SETPOINT 1	-13		Pr2
US1	Maximum value for SETPOINT 1	135		Pr2
Con	Compressor ON in case of probe error (min)	5		Pr2
CoF	Compressor OFF in case of probe error (min)	5		Pr2
dnF	Minimum time for any compressor activation (min)	0.5		Pr2
dLP	DLT probe selection	P3		Pr2
dLt	Discharge line temperature for compressor (°F)	230		Pr2
dth	Differential for compressor restart after a dLt alarm (°F)	50		Pr2
dLd	DLT alarm activation delay (sec)	0		Pr2
dCt	Cooling time for compressor after DLT alarm (min)	3		Pr2
dLn	Number of DLT alarms in dLi hours before lock out	4		Pr2
dLi	Time interval (in hours) in which to check dLn number of DLT alarms	1		Pr2
LAL	Lower limit for pressure alarm on suction line (psi)	-13	8	Pr2
HAL	Higher limit for pressure alarm on suction line (psi)	130	130	Pr2
ELP	Electronic pressure control threshold (Low pressure alarm on suction line) (psi)	-2	10	Pr2
PEn	Max number of pressure control activations (ELP) before signaling an alarm	5	5	Pr2
PEi	Interval of time to count the actuations of the pressure control (ELP) before lock out	10	10	Pr2



- Compressor is activated when Suction pressure (Pb1) is higher than  $St1 + HY1/2 + rS1$
- Compressor is inactivated when Suction pressure (Pb1) is lower than  $St1 - HY1/2 + rS1$
- If Suction pressure is lower than **LAL** then **LA** alarm code generated (auto reset)
- If Suction pressure is higher than **HAL** then **HA** alarm code generated (auto reset)
- If Suction pressure is lower than **ELP** then **ELP** alarm code generated (auto reset)
- If **ELP** occurs **PEn** times within **PEi** then **ELL** alarm code generated (manual reset required)
- If Discharge Temperature (Pb3) is higher than **dLt** then **dLt** alarm code generated (auto reset)
- If **dLt** occurs **dLn** times within **dLi** then alarm code generated (manual reset required)

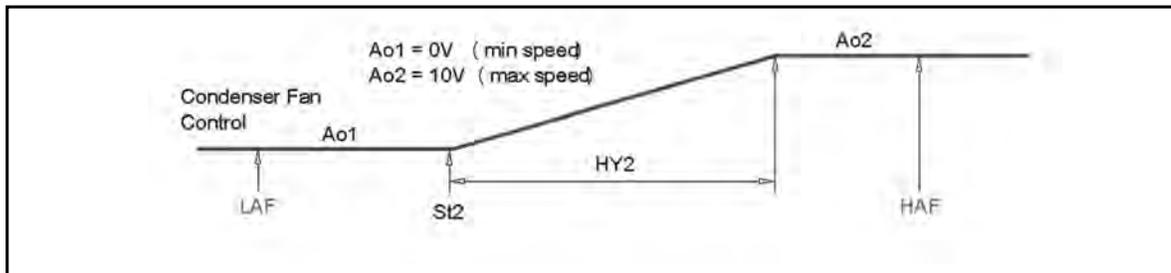
## CONDENSER FAN REGULATION (Controlling parameters: configuration setpoint and alarms)

### Basic Setup Parameters and settings "P1" programming level

Parameter	Description	Setting	Prog. Level
St2	Set point 2 (for CONDENSER FAN)	175	Pr1
HY2	Hysteresis for set point 2	15	Pr1

### Advanced Setup Parameters and settings "P2" programming level

Parameter	Description	Setting	Prog. Level
oAn	Analogue output configuration (PWM or 0-10V)	EFn	Pr2
FPb	Fan probe	P2	Pr2
LS2	Minimum value for SETPOINT 2	125	Pr2
US2	Maximum value for SETPOINT 2	205	Pr2
LAF	Lower limit for pressure alarm on discharge line (psi)	100	Pr2
HAF	Higher limit pressure alarm on discharge line (psi)	350	Pr2
HFC	Compressor stop in case of alarm HAF	no	Pr2
dHF	Delay before stopping the compressor in case of an alarm due to high pressure	30	Pr2
PnF	Max number HAF alarms before lock out	5	Pr2
PiF	Interval of time to count the actuations HAF alarms before lock out (min)	60	Pr2



- Fan activated when Condensing pressure (Pb2) is higher than St2
- Fan runs at maximum speed when Condensing pressure (Pb2) is higher than St2 +HY2
- Fan runs at reduced speed proportional to Condensing pressure (Pb2) between St2 and St2 + HY2
- If Condensing pressure is lower than **LAF** then **L2** alarm code is generated (auto reset)
- If Condensing pressure is higher than **HAF** then **H2** alarm code is generated (auto reset)
- If **HAF** occurs **PnF** times within **PiF** then **HLL** alarm code is generated (manual reset required)

## PROBE CONFIGURATIONS

Parameter	Description	Setting	Prog. Level
<b>Suction Probe (Pb1), Suction Pressure Transducer</b>			
P1P	Suction pressure probe P1 presence	Y	Pr2
P1C	Suction pressure transducer configuration	0-5	Pr2
P1i	Start of scaling for Suction pressure transducer (psi)	-15	Pr2
P1E	End of scaling for Suction pressure transducer (psi)	135	Pr2
P1F	Suction pressure transducer calibration (psi)	0	Pr2
P1d	Suction pressure transducer reading error delayed (min)	15	Pr2
<b>Condensing Probe (Pb2), Condensing Pressure Transducer</b>			
P2P	Condensing pressure probe P2 presence	Y	Pr2
P2C	Condensing pressure transducer configuration	0-5	Pr2
P2i	Start of scaling for Condensing pressure transducer (psi)	0	Pr2
P2E	End of scaling for Condensing pressure transducer (psi)	507	Pr2
P2F	Condensing pressure transducer calibration (psi)	0	Pr2
P2d	Probe P2 reading error delayed (if P2C=0-5) (min)	0	Pr2
<b>Discharge Temperature Probe (Pb3), Discharge Temperature Sensor</b>			
P3P	Discharge temperature P3 sensor presence	n *	Pr2
P3C	Probe P3 configuration	n86	Pr2
P3F	Probe P3 calibration (°F)	0	Pr2
dEr	Delay before activating probe error (sec)	0	Pr2
PnF	Max number HAF alarms before lock out	5	Pr2
PiF	Interval of time to count the actuations HAF alarms before lock out	60	Pr2

\* n - when probe is not active Y - when probe is active (low temp models only)

USER INTERFACE: Display, Icon description



LED	STATUS	MEANING
°C	ON	Unit of measurement for temperature is Celsius degrees
°F	ON	Unit of measurement for temperature is Fahrenheit degrees
bar	ON	Unit of measurement for pressure is Bar
PSI	ON	Unit of measurement for pressure is PSI
1	ON	Relay output oA1 enabled
	BLINKING	Delay in relay output oA1 activation
2	ON	Relay output oA2 enabled
	BLINKING	Delay in relay output oA2 activation
3	ON	Relay output oA3 enabled
	BLINKING	Delay in relay output oA3 activation
GA	ON	Analogue output active
Wrench	ON	(SER) Service menu
	BLINKING	(SER) Outputs in service mode
ALARM	ON	(ALR) Alarm active
MEM	ON	(MEM) At least an alarm present into memory
	BLINKING	(MEM) A new alarm is occurred and need to be checked

USER INTERFACE: Keyboard, Navigation modes

SET	<b>Standard visualization:</b> Used to see and modify the SETPOINT values. In programming mode, it is used to modify a parameter or confirm an operation <b>ALARM menu:</b> Keep it pressed for 3 sec in order to reset an alarm
▲	<b>(UP) Programming mode:</b> Used to browse the parameter list <b>With inserted HOT-KEY:</b> start the parameter UPLOAD function (from HOT-KEY to internal memory) <b>INFO menu:</b> Used to browse the INFO menu
▼	<b>(DOWN) Programming mode:</b> Used to browse the parameter list <b>With inserted HOT-KEY:</b> start the parameter DOWNLOAD function (from internal memory to the HOT-KEY) <b>INFO menu:</b> Used to browse the INFO menu
Start	<b>Manual load restart:</b> If parameter r1F=rSt, press this button to restart the loads and previously stopped due to safety alarm <b>ON-OFF:</b> If parameter r2F=onF, keep this button pressed for 3 sec to switch ON and OFF the instrument
Wrench	<b>SERVICE:</b> to enter SERVICE menu
MEM	<b>STORED ALARMS:</b> Gives access to the stored alarms

▲ + ▼	To lock and unlock the keyboard
SET + ▼	To enter the programming parameter menu
SET + ▲	To exit from INFO and ALARM menu and from programming parameter menu

## SET POINTS VISUALIZATION, MODIFICATION

### Visualization:

1. Press and release the SET button
2. SUCTION: the display will show the label St1 (Suction Pressure)
3. Press the SET button again to show the value of St1
4. CONDENSING: press the SET button once again
5. The display shows label St2 (Condensing Pressure)
6. Press the SET button again to show the value of St2

EXIT: Press both SET + UP or wait for 30 sec

### Modification:

1. Press the SET button for 3 sec
2. The display will show St1
3. Press the SET button again to show the value of St1 (Suction Pressure)
4. Change the value of St1 by pressing the UP or DOWN
5. Press the SET button to save the set value in memory and move to St2
6. The display will show St2 (Condensing Pressure)
7. Press the SET button again to show the value of St2
8. Change the value of St2 by pressing the UP or DOWN

EXIT: Press both SET + UP or wait for 30 sec

### Parameter Programming: Accessing Programing menu level, Parameter modification:

1. Keep both SET+DOWN buttons pressed for 3 sec
2. The display will show the name of the first parameter in the Pr1 level menu
3. Keep both SET+DOWN buttons pressed for 7 sec (if required to enter Pr2 level)
4. The display will show the label Pr2
5. Select the parameter to modify by using UP or DOWN buttons
6. Press the SET key to access to the stored value
7. Change the value of the parameter using the UP and DOWN buttons
8. Press the SET button to store the new value and move to the next parameter

EXIT: Press both SET + UP or wait for 30 sec

### Programming controller with HOT-KEY

1. Turn off the device
2. Insert HOT-KEY into the 5-pin port paying attention to the polarity and then turn the device on again
3. The list of parameters present in the HOT-KEY memory will be automatically downloaded into the device memory. The word "doL" will appear during this operation. At the end of this operation the display will blink the "End" label
4. After 10 sec the device will restart automatically
5. Remove the HOT-KEY

NOTE: the "Err" message on the display indicates that the operation is not successful (transfer error). In this case, turn off and then on again the device in order to restart the operation or remove the HOT-KEY to abort the operation.

## ALARM MENU: Alarm Codes, Alarm Logs, Alarm Reset

### Alarm Codes

Code	Description
HA	High pressure alarm on the suction line
LA	Low pressure alarm on the suction line
H2	High pressure alarm on the discharge line
HLL	High pressure lockout alarm
L2	Low pressure alarm on the discharge line
dLt	High Discharge temperature alarm
dLL	Lockout due to DLT alarm
ELP	Electronic pressure switch (warning)
ELL	Electronic pressure switch (lockout)
HP	High pressure alarm from external sensor (warning)
LP	Low pressure alarm from external sensor (warning)
HPL	High pressure alarm from external sensor (lockout)

### Alarm Visualization

1. Press the alarm archive (MEM) button
2. Scroll with UP or DOWN button up to label AL0 (first alarm event memorized)
3. Press SET button to enter the event submenu
4. The encoding label relative to the logged event (Alarm Code) will be displayed
5. Press SET button again to display the duration of the alarm event recorded
6. Press the SET button to move to the next alarm event

### Alarm Reset

1. Enter the ALARM menu
2. To reset the alarm list, keep the SET button pressed for 5 sec until the message "CLr" blinks on the display
3. To reset the only event displayed, keep the ALR button pressed for 3 sec until the message "rSA" blinks on the display

NOTE: the current alarms will not reset

## MORE INFORMATION AND FUNCTIONALITIES

For more controller functions and information please refer to controller instruction manual, available at <https://climate.emerson.com/documents/xc15cx-xc35cx-en-gb-3723474.pdf> or scan this QR code:



**CONTROLLER  
INSTRUCTION  
MANUAL**