Multi-Zone Leak Detector

Application and Panel Manual





TABLE OF CONTENTS

1.	Ove	erview	1
	1.1	Parts and Ordering Information	1
	1.2	Operation	2
	1.3	Panel	2
	1.4	Zone Terminal Blocks	3
	1.5	Additional I/O Terminals	5
	1.6	Power Connection Terminals	5
2.	Set	Up Instructions	6
	2.1	Configuring Modbus Settings	6
	2.2	Configuring BACnet Settings	6
	2.3	Configuring Each Leak Detector Zone	7
	2.4	Configuring Horn Silence Time	.10
	2.5	Configuring Relay Delays	.10
	2.6	Battery Backup Override	.11
	2.7	Configuring a Break Glass Safety Switch	.11
	2.8	Enabling and Disabling Zones	.12
3.	Vie	wing Zone Status Screens	.13
4.	Tab	ble of Parameters	.14
5.	Upl	loading the Multi-Zone Refrigerant Leak Detector Description File to E2	.18
	5.1	Licensing the Multi-Zone Leak Detector in the E2	.19
	5.2	Device Setup in the E2	.19
		5.2.1 E2 Serial Port Setup - Modbus	.19
		5.2.2 E2 Serial Port Set Up - BACnet MS/TP	.20
	5.3	Device Wiring	.21
	5.4	Connecting Communication Wires - Modbus	.22
		5.4.1 Connecting Communication Wires - BACnet MS/TP	.22
	5.5	Adding the Multi- Zone Refrigerant Leak Detector in E2	.22
	5.6	Commissioning Multi-Zone Refrigerant Leak Detector - Modbus	.22
	5.7	Commissioning Multi-Zone Refrigerant Leak Detector - BACnet MS/TP	.23
	5.8	Viewing E2 Status Screen	.24
	5.9	Resetting Spill Alarm	.25

1. Overview

The Multi-Zone Leak Detector Application and Panel (*P/N 851-4074*) has a total of six (6) zones. The Visograph display provides a parts per million (PPM) reading. One MRLDS Halo-carbon and CO2 sensor can be connected in each zone. The Multi-Zone Leak Detector application is fully integrated with the E2, has relay outputs for third party devices, or can operate fully independently as a stand-alone device. Leak detector versions 5.32F12 and higher are BACnet MS/TP capable and can be used with E2E 4.09F04 and higher. The BACnet leak detector Description File for E2 is *P/N 527-0600*.

Each zone is capable of operating an audible and visible alarm based on user defined alarm and spill setpoints. In addition, each zone has the ability to trigger a circuit shutdown in the event of a spill.

The Leak Detector Panel comes equipped with a local strobe and horn. Optional hardware includes remote horn and strobes, MRLDS Halo-carbon and CO2 sensors, and battery backup panel.

1.1 Parts and Ordering Information

The table *Replacement Parts* below lists the replacement part ordering information for leak detector and its components.

Table 1: Component Replacement Part Numbers

Component Replacement Part Numbers				
Description	Copeland Part #			
Programmed Leak Detector iPro-Genius with connectors				
*When ordering this part, specify the 525-10xx program found on the label affixed to the currently installed iPro (also found on the panel part number label on the top right corner of panel)	618-8003			
IPX206D Expansion Module for iPro	318-8004			
Visograph with the graphics loader, Display Interface for iPro	818-9205			
120VAC to 24VAC, 50VA, Class 2 Transformer (T1-T8)	640-0041			
120VAC to 24VAC, 10VA, Class 2 Transformer (T9-T14)	640-0039			
Leak Detector Panel Relay Board	638-1125			
"Zone MRLDS POWER" Green LED Indicator, 24VAC	150-4030			
"Panel Power ON" Green LED Indicator, 120VAC	150-4032			
"UPS CONNECTED" Blue LED Indicator, 102VAC	150-4034			
Horn and Strobe	118-5112			
Push Button Silence	851-4084			

Table 1: Component Replacement Part Numbers

Component Replacement Part Numbers				
Description	Copeland Part #			
Break Glass Safety Switch	118-4122			
6 Zone Leak Detector Panel, All AC powered components	851-4074			
6 Zone Leak Detector Panel, DC gas detector power, AC horn/strobe power	851-4550			
Leak Detector Panel Relay Board 24VDC Version (compatible with 851-4550 panel only) *	638-1126			
120VAC to 24VDC power supply (compatible with 851-4550 panel only)*	250-2541			

Table 2: Replacement Parts

Gas Detector Replacement Parts						
Description	Copeland Part #	Compatible Leak Panel PART#				
Copeland MRLDS 250 R22 Gas Specific	809-0031					
Copeland MRLDS 250 R404A Gas Specific	809-0034					
Copeland MRLDS 250 R407A Gas Specific	809-0035					
Copeland MRLDS 250 R407C Gas Specific	809-0036					
Copeland MRLDS 250 R407F Gas Specific	809-0037					
Copeland MRLDS 250 R410A Gas Specific	809-0038	851-4074 or				
Copeland MRLDS 250 R422A Gas Specific	809-0039	851-4550				
Copeland MRLDS 250 R422D Gas Specific	809-0040					
Copeland MRLDS 250 R448A Gas Specific	809-0041					
Copeland MRLDS 250 R449A Gas Specific	809-0042					
Copeland MRLDS 250 R513A Gas Specific	809-0043					
Copeland MRLDS 250 R513A Gas Specific	809-0044					
Copeland SC 404A Gas Specific	809-1201					
Copeland SC 407A Gas Specific	809-1202	851-4550 Only				
Copeland SC 448A Gas Specific	809-1203					
Copeland IR 0-5000ppm Carbon Dioxide	809-1215	851-4074 or				
Copeland IR 0-10000ppm Carbon Dioxide	809-1216	851-4550				

1.2 Operation

Each zone will operate a horn and strobe in the event of a leak. If the PPM reading that is sent to the panel has reached the user-configured parameter, the horn and strobe will be activated by a relay output.

If a leak is present and it is large enough to reach the spill parameter set by the user, the panel will trigger another set of relay outputs. Through the E2 software or third party system, a spill alarm can trigger a circuit shutdown. In the event that an alarm has been triggered, the user will be able to silence that alarm for a period of time that is user-configurable.

1.3 Panel

The user interface is located on the front panel. From here the user can view status, set parameters, and silence alarms from (in addition to alarm silence buttons located in each zone). Also located on the front panel are power indication lights for the system, each zone, and battery backup status (if an uninterruptible power supply UPS is required).



Front Lamps

1.4 Zone Terminal Blocks

Each zone has a dedicated control board to interface field wiring connections with factory wiring connections in the panel. The 538-1125 AC Zone Relay Board and Terminals (for 851-4074 panel only) illustration below shows an example of zone 1 board, terminal strip, and terminal descriptions.



538-1125 AC Zone Relay Board and Terminals (for 851-4074 panel only)

The 851-4550 Leak Detector Panel with DC powered gas detectors has a slightly different leak detector control board than the 851-4074 panel. The 851-4550 panel has a DC control board that is colored red for easy identification from its green AC counterpart in the 851-4074 panel. Additionally, the red 538-1126 DC control board is configured to provide DC power for installations using DC gas detectors. The red 538-1126 DC control board can only be used in the panel designed for it, P/N 851-4550.



538-1126 DC Zone Relay Board and Terminals (for 851-4550 panel only)

The full description of all terminals and connections is affixed to the inside of each panel door and is shown in the Zone Terminal Descriptions below.

	85	1-4074 Multi-zone Leak Detector Panel Terminal Le	gend		85	51-4074 Multi-zone Leak Detector Panel Terminal Le	gend		85	1-4074 Multi-zone Leak Detector Panel Terminal Le	gend
Brd #1		Description	Voltage/Rating	Brd #3	Zone	Description	Voltage/Rating	Brd #5	Zone	Description	Voltage/Rating
1		MRLDS 1 +	1-5V IN	1		MRLDS 3 +	1-5V IN	1		MRLDS 5 +	1-5V IN
2		MRLDS 1 -	0V	2		MRLDS 3 -	0V	2		MRLDS 5 -	0V
3		MRLDS 1 Shield (Ground)	Ground	3		MRLDS 3 Shield (Ground)	Ground	3		MRLDS 5 Shield (Ground)	Ground
4		IPro Analog Out 1 -	24VAC 10 mA MAX	4		iPro Analog Out 3 -	24VAC 10 mA MAX	4		iPro Analog Out 5 -	24VAC 10 mA MAX
5		iPro Analog Out 1 +	24VAC 10 mA MAX	5		iPro Analog Out 3 +	24VAC 10 mA MAX	5		iPro Analog Out 5 +	24VAC 10 mA MAX
6		MRLDS 1 24VAC Power Out	24VAC 1/2A MAX	6		MRLDS 3 24VAC Power Out	24VAC 1/2A MAX	6		MRLDS 5 24VAC Power Out	24VAC 1/2A MAX
7		MRLDS 1 24VAC Power Out	24VAC 1/2A MAX	7		MRLDS 3 24VAC Power Out	24VAC 1/2A MAX	7		MRLDS 5 24VAC Power Out	24VAC 1/2A MAX
8	Zone 1	Remote Horn/Strobe 24VAC Neutral	24VAC 4A MAX	8	Zone 3	Remote Horn/Strobe 24VAC Neutral	24VAC 4A MAX	8		Remote Horn/Strobe 24VAC Neutral	24VAC 4A MAX
9		Remote Horn Out 24VAC Hot	24VAC 1A MAX	9		Remote Horn Out 24VAC Hot	24VAC 1A MAX	9	Zone 5	Remote Horn Out 24VAC Hot	24VAC 1A MAX
10		Remote Strobe Out 24VAC Hot	24VAC 1A MAX	10		Remote Strobe Out 24VAC Hot	24VAC 1A MAX	10		Remote Strobe Out 24VAC Hot	24VAC 1A MAX
11		Indicator on 851-4084 Alarm Silence 24VAC Hot	24VAC 1A MAX	11		Indicator on 851-4084 Alarm Silence 24VAC Hot	24VAC 1A MAX	11		Indicator on 851-4084 Alarm Silence 24VAC Hot	24VAC 1A MAX
12		Zone 1 Dry Out - Normally Open Contact	120VAC @ 10A MAX	12		Zone 3 Dry Out - Normally Open Contact	120VAC @ 10A MAX	12		Zone 5 Dry Out - Normally Open Contact	120VAC @ 10A MAX
13		Zone 1 Dry Out - Common	120VAC @ 10A MAX	13		Zone 3 Dry Out - Common	120VAC @ 10A MAX	13		Zone 5 Dry Out - Common	120VAC @ 10A MAX
14		Zone 1 Dry Out - Normally Closed Contact	120VAC @ 10A MAX	14		Zone 3 Dry Out - Normally Closed Contact	120VAC @ 10A MAX	14		Zone 5Dry Out - Normally Closed Contact	120VAC @ 10A MAX
Brd #2	Zone	Description	Voltage/Rating	Brd #4	Zone	Description	Voltage/Rating	15		Zone 5 Exhaust Fan Control Normally Open	120VAC @ 10A MAX
1		MRLDS 2 +	1-5V IN	1		MBLDS.4.+	1-5V IN	16		Zone 5 Exhaust Fan Control Normally Open	120VAC @ 10A MAX
2		MRLDS 2 -	OV	2		MRLDS 4 -	OV	Brd #6	Zone	Description	Voltage/Rating
3		MRLDS 2 Shield (Ground)	Ground	3		MRLDS 4 Shield (Ground)	Ground	1		MRLDS 6 +	1-5V IN
4		iPro Analog Out 2 -	24VAC 10 mA MAX	4		iPro Analog Out 4 -	24VAC 10 mA MAX	2		MRLDS 6 -	0V
5		iPro Analog Out 2 +	24VAC 10 mA MAX	5		iPro Analog Out 4 +	24VAC 10 mA MAX	3		MRLDS 6 Shield (Ground)	Ground
6		MRLDS 2 24VAC Power Out	24VAC 1/2A MAX	6		MRLDS 4 24VAC Power Out	24VAC 1/2A MAX	4		iPro Analog Out 6 -	24VAC 10 mA MAX
7		MRLDS 2 24VAC Power Out	24VAC 1/2A MAX	7		MRLDS 4 24VAC Power Out	24VAC 1/2A MAX	5		iPro Analog Out 6 +	24VAC 10 mA MAX
8	Zone 2	Remote Horn/Strobe 24VAC Neutral	24VAC 4A MAX	8	Zone 4	Remote Horn/Strobe 24VAC Neutral	24VAC 4A MAX	6		MRLDS 6 24VAC Power Out	24VAC 1/2A MAX
9		Remote Horn Out 24VAC Hot	24VAC 1A MAX	9		Remote Horn Out 24VAC Hot	24VAC 1A MAX	7		MRLDS 6 24VAC Power Out	24VAC 1/2A MAX
10		Remote Strobe Out 24VAC Hot	24VAC 1A MAX	10		Remote Strobe Out 24VAC Hot	24VAC 1A MAX	8		Remote Horn/Strobe 24VAC Neutral	24VAC 4A MAX
11		Indicator on 851-4084 Alarm Silence 24VAC Hot	24VAC 1A MAX	11		Indicator on 851-4084 Alarm Silence 24VAC Hot	24VAC 1A MAX	9	Zone 6	Remote Horn Out 24VAC Hot	24VAC 1A MAX
12		Zone 2 Dry Out - Normally Open Contact	120VAC @ 10A MAX	12		Zone 4 Dry Out - Normally Open Contact	120VAC @ 10A MAX	10		Remote Strobe Out 24VAC Hot	24VAC 1A MAX
13		Zone 2 Dry Out - Common	120VAC @ 10A MAX	13		Zone 4 Dry Out - Common	120VAC @ 10A MAX	11		Indicator on 851-4084 Alarm Silence 24VAC Hot	24VAC 1A MAX
14		Zone 2 Dry Out - Normally Closed Contact	120VAC @ 10A MAX	14		Zone 4 Dry Out - Normally Closed Contact	120VAC @ 10A MAX	12		Zone 6 Dry Out - Normally Open Contact	120VAC @ 10A MAX
								13		Zone 6 Dry Out - Common	120VAC @ 10A MAX
	l.e.					COMPONENT REPLACEMENT PART NUMBERS		14		Zone 6 Dry Out - Normally Closed Contact	120VAC @ 10A MAX
	In	put Field Connectio	ons			Description	Copeland PART #	15		Zone 6 Exhaust Fan Control Normally Open	120VAC @ 10A MAX
		R2 P	5	Program	med Leak D	etector iPro-Genius with connectors		16		Zone 6 Exhaust Fan Control Normally Open	120VAC @ 10A MAX
BAS Rem normally o Same inpu Remote 7	ote Zone Alarm Silence pen dry contact. it wired to 851–4084 one Silence canets			*When ordering this part, specify the 525-10XX program found on the		618-8003	89 All	General Alarm Out - Common - Dry Contact	120VAC @ 10A MAX		
-0-1	Zone 10-0	BAS Zone 1 Silence		label affi number	xed to the cu label on the	urrently installed iPro (also found on the panel part top right corner of panel)		90 Zones	Zones	General Alarm Out - Normally Open - Dry Contact	120VAC @ 10A MAX
+0-• +0-•	<u>∑</u> •0— ∑•0—	BAS Zone 2 Silence		IPX206D	Expansion	Module for iPro	318-8004				
⊷	~•••	BAS Zone 4 Silence		Visograp	oh with grap	hics loader, Display Interface for iPro	818-9205	91	UPS Panel Status	120VAC in from UPS Status Indicator Output	Connect UPS Status Indicator Output here, Controls Plus
BAS Zone 5 Stence			120VAC	to 24VAC, 5	0VA, Class 2 Transformer (T1-T8)	640-0041	92	Indica-	120VAC in from UPS Status Indicator Output	Indicator on this Panel Door	



COMPONENT REPLACEMENT FART NUMBERS				
Description	Copeland PART #			
Programmed Leak Detector iPro-Genius with connectors				
*When ordering this part, specify the 525-10XX program found on the label affixed to the currently installed iPro (also found on the panel part number label on the top right corner of panel)	618-8003			
IPX206D Expansion Module for IPro	318-8004			
Visograph with graphics loader, Display Interface for IPro	818-9205			
120VAC to 24VAC, 50VA, Class 2 Transformer (T1-T8)	640-0041			
120VAC to 24VAC, 10VA, Class 2 Transformer (T9-T14)	640.0039			
Leak Detector Panel Relay Board	638-1125			
"Zone MRLDS POWER" Green LED Indicator, 24VAC	150-4030			
"Panel Power ON" Green LED Indicator, 120VAC	150-4032			
"UPS CONNECTED" Blue LED Indicator, 120VAC	150-4034			

11		Indicator on 851-4084 Alarm Silence 24VAC Hot	24VAC 1A MAX
12		Zone 6 Dry Out - Normally Open Contact	120VAC @ 10A MAX
13		Zone 6 Dry Out - Common	120VAC @ 10A MAX
14		Zone 6 Dry Out - Normally Closed Contact	120VAC @ 10A MAX
15		Zone 6 Exhaust Fan Control Normally Open	120VAC @ 10A MAX
16		Zone 6 Exhaust Fan Control Normally Open	120VAC @ 10A MAX
89	All	General Alarm Out - Common - Dry Contact	120VAC @ 10A MAX
90	Zones	General Alarm Out - Normally Open - Dry Contact	120VAC @ 10A MAX
91	UPS	120VAC in from UPS Status Indicator Output	Connect UPS Status
91 92	UPS Panel Status Indica- tor	120VAC in from UPS Status Indicator Output 120VAC in from UPS Status Indicator Output	Connect UPS Status Indicator Output here. Controls Blue Indicator on this Panel Door.
91 92	UPS Panel Status Indica- tor	120VAC in from UPS Status Indicator Output	Connect UPS Status Indicator Output here. Controls Blue Indicator on this Panel Door.
91 92 GRD	UPS Panel Status Indica- tor	120VAC in from UPS Status Indicator Output 120VAC in from UPS Status Indicator Output Earth Ground	Connect UPS Status Indicator Output here. Controls Blue Indicator on this Panel Door. 120VAC, 60Hz, Single Phase 15A
91 92 GRD 120V NEUT	UPS Panel Status Indica- tor Panel Control Power	120VAC in from UPS Status Indicator Output 120VAC in from UPS Status Indicator Output Earth Ground 120VAC Neutral - IN (Line or Optional UPS Panel 851-4071)	Connect UPS Status Indicator Output here. Controls Blue Indicator on this Panel Door. 120VAC, 60Hz, Single Phase, 15A (Connect UPS Power Out here

Zone Terminal Descriptions

NOTE: Zones 5 and 6 have additional terminals for an optional break glass device and exhaust fan output.

1.5 Additional I/O Terminals



Inputs

1.6 Power Connection Terminals

The field connections for supply power to the panel are made on the 120 VAC HOT IN/UPS POWER IN terminal block below the zone board.



2. Set Up Instructions

NOTE: When updating screen parameters on the Visograph, only one Visograph at a time may be connected to the Multi-Zone Leak Detector.

Press the corresponding button along the bottom labeled (T1-T8) to navigate to the desired item. Press SET once to enter edit mode, and use the up and down arrow keys to change values and press SET once to save the selected value.

4	Detector	Status	
System	Status	System	Status
Rack A:1	OK	Rack A:1	OK
Rack A : 1	OK	Rack A:1	OK
Rack A:1	ОК	Rack A:1	OK
Status AL1	AL2 AL3	AL4 AL5	AL6 OFF
	$) \bigcirc \bigcirc$		

Main Screen

The main screen shows the associated refrigerated rack system and circuit number of each detector zone, which is listed under the **System** column. The zone status is shown under the **Status** column. Active alarms will cause the bell icon to flash in the upper left corner. Press and hold **OFF** (**T8**) to silence the alarm located on the panel. The strobe will remain on until the condition no longer exists and the alarm is manually reset.

The zones in alarm condition are indicated by flashing **AL1** through **AL6**, respectively. Each zone can be silenced by pressing the corresponding **T2** through **T7**. The zone alarm can be reset by holding the corresponding button for three (3) seconds.

NOTE: Alarm silence and reset functions on the main screen: T2 = AL1, T3 = AL2, T4 = AL3, T5 = AL4, T6 = AL5, T7 = AL5, T8 = OFF

2.1 Configuring Modbus Settings



Controller Info Screen

If the communication to the E2 will be using Modbus protocol, the Modbus address and baud rate must be configured before successful communication will occur.

To set controller information from the **Detector Status** screen:

- 1. Press and hold **T4** and **T5** for three (3) seconds.
- 2. The Setup screen will appear.
- 3. Use the up and down arrow keys to highlight and select **Controller Info** and press **SET**.
- 4. The Controller Info screen will appear.
- 5. Use the up and down arrow keys to highlight and set the date, time, and Modbus address.
- 6. Press **SET** after each selection to save changes.
- 7. After all Modbus settings have been configured, a controller reboot must be performed. Use the down arrow key to select No next to Reboot Controller, press SET to edit and use the arrow keys to select Yes. Press SET again. The controller will reboot and boot back up with the new settings applied.

NOTE: Set the Modbus address to the next available address. Press SET after making each change to save your entries.

2.2 Configuring BACnet Settings

If the communication to the E2 will be using BACnet MS/TP protocol, the BACnet MS/TP settings must be configured before successful communication will occur.

To configure the BACnet Settings from the **Detector Status** screen:

- 1. Press and hold **T4** and **T5** for three (3) seconds.
- 2. The Setup screen will appear.



BACnet Setup Screen

3. Scroll to 3. BACnet Settings and press SET to enter.



BACnet Settings Screen

- 4. MS/TP MAC: This parameter specifies the MS/TP network MAC address of the Leak Detector. Each BACnet device on the bus must have a unique number here. Enter a unique number between 0-127 and press SET to save.
- 5. Baud Rate: This parameter specifies how fast data is sent over the serial line. Set to match the baud rate of the serial port of the E2 controller.
- 6. Max Master: This parameter defines the value of the highest allowable address for master nodes on the network. Determine the highest MS/TP MAC address used on the bus and set Max Master equal to this value. *Example: If there are 40 controllers on the bus and the highest address is 40, set the max master of all 40 controllers to 40.*
- 7. Device ID: Enter the BACnet device identifier here. Enter a unique number for the MS/TP network in the range of 0-4, 194, 303.
- When at least one (1) setting has been edited, a CANCEL option will appear above the T7 key and a SAVE option above the T8 key. Pressing Cancel will revert the system back to the previous settings and no change will be applied.



BACnet Save Settings

Pressing **SAVE** will apply the changes made and the system will reboot.



BACnet Reboot Screen

Once the Leak Detector is booted back up, it is ready for connection to E2.

2.3 Configuring Each Leak Detector Zone

To configure the parameters, from the **Detector Status** Screen:

- 1. Press and hold T4 and T5 for three (3) seconds.
- 2. The Setup screen will appear.



Leak Detector Setup Screen

3. Use the up and down arrow keys to highlight and select **Config Param**.

	Config Param	
1. Zone 1 Setup	6. Zone 6 Setup	
2. Zone 2 Setup	7. Zone Enables	
3. Zone 3 Setup	8. Relay/DI Polarity	
4. Zone 4 Setup	9. Relay Delays	
5. Zone 5 Setup	10. Misc.	
EXIT	📥 5ET 🔽	
\square		

Leak Detector Configuration Screen

 To configure each zone, select the corresponding Zone X Setup. This example will configure Zone 1 Setup, the steps are the same for Zones 1-6. Select Zone 1 and press SET.



Leak Detector Zone 1 Setup Parameters Screen 1

On the Zone 1 Setup screen, each parameter in the table below can be edited by using the T4/T6 keys to change values and the T5 SET key to save the selection. Scrolling between pages within the zone setup is done by using T7/T8 keys. To advance to next or previous zone setup menu, use T2 or T3 shortcut keys. Configure each parameter in the Zone 1 Parameters Page 1 table and see the instruction column of the table for required action.

Table 3: Zone 1 Parameters Page 1

Parameter Name	Description	Instruction
WI Name	Represents the walk in cooler/freezer box name for the associated leak detection zone.	Select a walk in box name from the list and press SET to save.
Rack ID	Selects the corresponding refrigeration rack system that this zones refrigeration is physically piped to.	Select a rack system name from the list and press SET to save.
Circuit #	Represents the corresponding refrigeration circuit number for this leak detection zone.	Enter a circuit number and press SET to save.
Refrigerant	Selects the refrigerant gas type used for this zone.	Choose the gas type for this zone from the list and press SET to save.
AID1	AID1 selects which analog input will be used for the leak sensor signal input for zone 1.	Preset from factory, no action.
		All Copeland MRLDS 250 Gas Specific Sensors, set 1-5V.
DT1	DT1 selects the voltage scale for the leak sensor signal input.	For Copeland SC Gas Specific Sensors, set 0-10V Nonlinear.*
		For Copeland IR R744 Sensors, set 0-10V.

Table 3: Zone 1 Parameters Page 1

Parameter Name	Description	Instruction			
DT1 Min/DT 1 Max	DT1 Min represents the PPM minimum value when the leak sensor is at minimum signal voltage. DT1 Max represents the PPM maximum value when the leak sensor is at maximum signal voltage.	Depending on sensors used, set Copeland part numbers to: 809-1001 = 1 PPM min 1000 PPM max. 809-1012 = 1 PPM min 3500 PPM max. 809-0035 = 1 PPM min 3500 PPM max. 809-1020 = 1 PPM min 5000 PPM max. 809-1201-1203 = Parameter not used, will be hidden on screen. Automatically calculated by equation. 809-1215 = 1 DT Min 5000 DT Max. 809-1216 = 1 DT Min 10000 DT Max.			
PPMn1 PPMa1 PPMs1	PPMn1 Represents the PPM level that must be reached by the leak sensor to trigger a notification. PPMa1 Represents the PPM level that must be reached by the leak sensor to trigger an alarm. PPMs1 Represents the PPM level that must be reached by the leak sensor to trigger a spill alarm.	Depending on sensors used, set Copeland part numbers to: For Walk-In Boxes using 809-1001, set 999 PPMn1, PPMa1, PPMs1. For Walk-In Boxes using 809-1012, 809-0031 to 0044, set 1000 PPMn1, PPMa1, PPMs1. For rack and/or machine rooms using 809-1012, 809-0031, to 0044 = 3000 PPMn1, PPMa1, PPMs1. For Walk In Boxes Using 809-1020, 809-1215, set 4999 PPMn1, PPMa1, PPMs1. For Walk In Boxes Using 809-1020, 809-1216, set 5000 PPMn1, PPMa1, PPMs1.			
Advance to the next page of setup parameters by pressing T8					



Leak Detector Zone 1 Setup Parameters Screen 2

Table 4: Zone 1 Parameters Page 2

Parameter Name	Description and Instruction	Instruction
AOD1	Selects the physical analog output number to be used for the zone analog output signal.	Preset from factory, no action.
AO1Min/ AO1Max	AO1Min is the minimum signal level that AOD1 will output at the minimum PPM level set by AOP1Min. AO1Max is the maximum signal level that AOD1 will output at the maximum PPM level set by AOP1Max.	AO1Min - Set to 1.0 volts and press SET to save. AO1Max - Set to 5.0 volts and press SET to save.
AOP1Min/ AOP1Max	AOP1Min is the minimum PPM level that corresponds to the output signal of AO1Min. AOP1Max is the maximum PPM level that corresponds to the output signal of AO1Max.	All sensor part numbers, AO1P1Min: AOP1Min-Set to 0 PPM and press SET to save. Set AOP1Max according to the PPM value listed next to the part number of the gas detector installed: 809-1001 AOP1Max-Set to 1000 PPM and press SET to save. 809-1012, 809-0031 to 0044 (all MRLDS 250 Models): AOP1Max-Set to 3500 PPM and press SET to save. 809-1201 to 1203: AOP1Max-Set to 4000 PPM and press SET to save. 809-1020, 809-1215: AOP1Max-Set to 5000 PPM and press SET to save. 809-1216: AOP1Max-Set to 10000 PPM and press SET to save
RDT1-R1	Relay 1 output assignment for detector 1.	Preset from factory, no action.
ATDT1-R1	Advisory type selection that would manage relay 1 for detector 1 (RDT1-R1.): Not Used, Notice, Alarm, Spill.	Preset from factory, no action.

Advance to the next page of setup parameters by pressing **T8**.



Leak Detector Zone 1 Setup Parameters Screen 3

Table 4: Zone 1 Parameters Page 2

Parameter Name	Description and Instruction	Instruction
RDT1-R2	Relay 2 output assignment for Detector 1.	Preset from factory, no action.
ATDT1-R2	Advisory type selection that would manage relay 2 for detector 1: Not Used, Notice, Alarm, Spill.	Preset from factory, no action.
RDT1-Horn	Relay output assignment for the horn associated with detector 1.	Preset from factory, no action.
DI1-S	Digital input of Detector 1 used for Horn Silence.	Preset from factory, no action.
DI1-R	Digital input of Detector 1 used for Alarm Reset.	Preset from factory, no action.
DI1-O	Digital input of Detector 1 used for Alarm On.	Preset from factory, no action.

After all parameters for Zone 1 setup have been reviewed and set, use the **T3** shortcut key to advance to the next zone, repeat the above setup steps for each installed Leak Detector zone.

2.4 Configuring Horn Silence Time

To configure the parameters from the **Detector Status** Screen:

- 1. Press and hold **T4** and **T5** for three (3) seconds.
- 2. The Setup screen will appear.



Horn Silence Time Setup Screen

3. Select Config Param.



Horn Silence Time Configuration Screen

4. Select **10**. **Misc** and press **SET**.



Horn Silence Time Miscellaneous Screen

5. Scroll to **DBTR** and adjust desired silence time.

2.5 Configuring Relay Delays

1. To configure relay delay parameters, navigate to the **Setup** menu.



Relay Delay Setup Screen

2. Select Config Param.



Relay Delay Configuration Screen

3. Select 9. Relay Delays and press SET.



Set Delays Screen

4. Set all delays in all pages to 0 min for no delay. Press **SET** to save each selection.

2.6 Battery Backup Override

The **OverBatCMD** represents the command to override battery backup. The **OverDIBat** represents the digital input to the battery backup.

1. To configure battery backup override, navigate to the **Setup** menu.



Battery Backup Override Setup Screen

2. Select Config Param.



Battery Backup Configuration Screen

3. Select 10. Misc. and press T8 to scroll over to page 2.



Battery Backup Override Miscellaneous Screen

4. Set OverBatCMD and OverDIBat to OFF and press SET to save.

2.7 Configuring a Break Glass Safety Switch

If the installation requires a Break Glass safety switch, the input will be connected to the alarm on digital inputs.

1. To configure a Break Glass safety switch, navigate to the **Setup** menu.



Break Glass Safety Switch Setup Screen

2. Select Config Param.



Break Glass Safety Switch Configuration Screen

3. Select **5.** Zone 6 Setup and press **T8** twice to scroll to screen 3.

	Zone	5 Setup	
RDT5-R2	NU	DI5-S	NU
ATDT5-R2	NU	DI5-R	NU
RDT5-Horn	NU	DI5-O	NU
EXIT ZONE	4 ZONE6	SET S	
\frown			

Break Glass Safety Switch Zone 5 Setup Screen

- 4. Scroll down to parameter **DI5-0** and press **SET** to edit, select **DI8** from the list and press **SET** to save.
- If a second Break Glass safety switch is required, press button T3 to advance directly to Zone 6 Setup. Once in Zone 6 Setup, press T8 twice to scroll to screen 3.

	Zone	6 Setup	
DT6-R2	NU	DI6-S	NU
ATDT6-R2	NU	DI6-R	NU
DT6-Horn	NU	DI6-O	NU

Break Glass Safety Switch Zone 6 Setup Screen

- 6. Scroll down to parameter **DI6-0** and press **SET** to edit, select **DI9** from the list, and press **SET** to save.
- 7. Press Exit. The Break Glass configuration is complete.

2.8 Enabling and Disabling Zones

Once zone setup has been completed for Zone 1 setup through Zone 6 setup, make sure each zone is enabled for operation. Zones that are not physically installed or in use should be set to **DISABLE**.

NOTE: Setting a zone to DISABLE will inhibit all leak detection and alarming capabilities permanently until the zone is set back to ENABLE.

To configure the **Zone Enables** from the **Detector Status** screen:

- 1. Press and hold **T4** and **T5** for three (3) seconds.
- 2. The **Setup** screen will appear.



Enabling and Disabling Zones Setup Screen

3. Select Config Param.



Enabling and Disabling Zones Configuration Screen

4. Select **7. Zone Enables** and press **SET**.



5. Scroll through each zone and set each zone that needs to be placed in operation to **ENABLE**.

3. Viewing Zone Status Screens

To view a quick status of current PPM levels within each zone, press **T1** Status from the main **Detector Status** screen:

4	Detector	Status	
system	Status	System	Status
ack A : 1	OK	Rack A:1	OK
ack A :1	OK	Rack A:1	OK
ack A :1	OK	Rack A:1	OK
tatus AL1	ALZ AL3	AL4 AL5	AL6

Zone Detector Status Screen

Pressing **T1** Status jumps to the PPM level status. The rack name and circuit number can be quickly viewed next to the associated PPM level of that zone.

			State	us	OnLi	neBAS
_	System	PPM	Level	System	PPI	M Level
1	.Rack A:1	0	PPM	4. Rack B:1	0	PPM
2	Rack A:1	0	PPM	5. Rack C:1	0	PPM
3	Rack A:1	0	PPM	6. Rack C:1	0	PPM
ł	TIX			SET		
ſ	$\neg \bigcirc$	\square	\square		\square	$) \square$

PPM Level Status Screen

To enter the detailed individual zone status, scroll to the desired zone and press **SET**. For convenience the zone enable can be edited from the detailed zone status.



Detailed Zone Status Screen

Pressing the gear icon with button **T3** is a shortcut to the **Zone Setup** menu.

4. Table of Parameters

Table 5: Parameters

Parameter Name	Description
WI Name Zone 1	Selects the walk-in box name for Zone 1
WI Name Zone 2	Selects the walk-in box name for Zone 2
WI Name Zone 3	Selects the walk-in box name for Zone 3
WI Name Zone 4	Selects the walk-in box name for Zone 4
WI Name Zone 5	Selects the walk-in box name for Zone 5
WI Name Zone 6	Selects the walk-in box name for Zone 6
Rack ID Zone 1	Selects the refrigeration system name to which this zone is physically piped
Rack ID Zone 2	Selects the refrigeration system name to which this zone is physically piped
Rack ID Zone 3	Selects the refrigeration system name to which this zone is physically piped
Rack ID Zone 4	Selects the refrigeration system name to which this zone is physically piped
Rack ID Zone 5	Selects the refrigeration system name to which this zone is physically piped
Rack ID Zone 6	Selects the refrigeration system name to which this zone is physically piped
Circuit # Zone 1	Selects the refrigeration circuit number for this zone
Circuit # Zone 2	Selects the refrigeration circuit number for this zone
Circuit # Zone 3	Selects the refrigeration circuit number for this zone
Circuit # Zone 4	Selects the refrigeration circuit number for this zone
Circuit # Zone 5	Selects the refrigeration circuit number for this zone
Circuit # Zone 6	Selects the refrigeration circuit number for this zone
Refrigerant Zone 1	Selects the refrigerant gas type for this zone
Refrigerant Zone 2	Selects the refrigerant gas type for this zone
Refrigerant Zone 3	Selects the refrigerant gas type for this zone
Refrigerant Zone 4	Selects the refrigerant gas type for this zone
Refrigerant Zone 5	Selects the refrigerant gas type for this zone
Refrigerant Zone 6	Selects the refrigerant gas type for this zone
ENDT1	Leak detector # 1 is enabled
ENDT2	Leak detector # 2 is enabled
ENDT3	Leak detector # 3 is enabled
ENDT4	Leak detector # 4 is enabled

Parameter Name	Description
ENDT5	Leak detector # 5 is enabled
ENDT6	Leak detector # 6 is enabled
DT1	Leak detector 1 type. 1-5V, 0-10V, and 4-20mA
DT2	Leak detector 2 type. 1-5V, 0-10V, and 4-20mA
DT3	Leak detector 3 type. 1-5V, 0-10V, and 4-20mA
DT4	Leak detector 4 type. 1-5V, 0-10V, and 4-20mA
DT5	Leak detector 5 type. 1-5V, 0-10V, and 4-20mA
DT6	Leak detector 6 type. 1-5V, 0-10V, and 4-20mA
DT1Min	Leak detector 1 minimum PPM value at 1 or 0 V, depending on the type
DT1Max	Leak detector 1 maximum PPM value at 1 or 0 V, depending on the type
DT2Min	Leak detector 2 minimum PPM value at 1 or 0 V, depending on the type
DT2Max	Leak detector 2 maximum PPM value at 1 or 0 V, depending on the type
DT3Min	Leak detector 3 minimum PPM value at 1 or 0 V, depending on the type
DT3Max	Leak detector 3 maximum PPM value at 1 or 0 V, depending on the type
DT4Min	Leak detector 4 minimum PPM value at 1 or 0 V, depending on the type
DT4Max	Leak detector 4 maximum PPM value at 1 or 0 V, depending on the type
DT5Min	Leak detector 5 minimum PPM value at 1 or 0 V, depending on the type
DT5Max	Leak detector 5 maximum PPM value at 1 or 0 V, depending on the type
DT6Min	Leak detector 6 minimum PPM value at 1 or 0 V, depending on the type
DT6Max	Leak detector 6 maximum PPM value at 1 or 0 V, depending on the type
PPMn1	Leak detector 1 Notice parameter
PPMa1	Detector 1 Alarm parameter
PPMs1	Detector 1 Spill parameter
PPMn2	Detector 2 Notice parameter
PPMa2	Detector 2 Alarm parameter
PPMs2	Detector 2 Spill parameter
PPMn3	Detector 3 Notice parameter

Table 5: Parameters

Parameter Name	Description
PPMa3	Detector 3 Alarm parameter
PPMs3	Detector 3 Spill parameter
PPMn4	Detector 4 Notice parameter
PPMa4	Detector 4 Alarm parameter
PPMs4	Detector 4 Spill parameter
PPMn5	Detector 5 Notice parameter
PPMa5	Detector 5 Alarm parameter
PPMs5	Detector 5 Spill parameter
PPMn6	Detector 6 Notice parameter
PPMa6	Detector 6 Alarm parameter
PPMs6	Detector 6 Spill parameter
PPNAH	Alarm-Spill Hysteresis
RDT1-R1	Relay 1 output assignment for detector 1. Controlled by selection in ATDT1-R1
RDT2-R1	Relay 1 output assignment for detector 2. Controlled by selection in ATDT2-R1
RDT3-R1	Relay 1 output assignment for detector 3. Controlled by selection in ATDT3-R1
RDT4-R1	Relay 1 output assignment for detector 4. Controlled by selection in ATDT4-R1
RDT5-R1	Relay 1 output assignment for detector 5. Controlled by selection in ATDT5-R1
RDT6-R1	Relay 1 output assignment for detector 6. Controlled by selection in ATDT6-R1
RHOR	General horn relay assignment
ATDT1-R1	Advisory type selection that would manage relay 1 for Detector 1 (RDT1-R1)
ATDT2-R1	Advisory type selection that would manage relay 1 for Detector 2 (RDT2-R1)
ATDT3-R1	Advisory type selection that would manage relay 1 for Detector 3 (RDT3-R1)
ATDT4-R1	Advisory type selection that would manage relay 1 for Detector 4 (RDT4-R1)
ATDT5-R1	Advisory type selection that would manage relay 1 for Detector 5 (RDT5-R1)
ATDT6-R1	Advisory type selection that would manage relay 1 for Detector 6 (RDT6-R1)
LOR	General advisory light relay assignment
RDT1-R2	Relay 2 output assignment for detector 1. Controlled by selection in ATDT1-R2
RDT2-R2	Relay 2 output assignment for detector 2. Controlled by selection in ATDT2-R2
RDT3-R2	Relay 2 output assignment for detector 3. Controlled by selection in ATDT3-R2

Parameter Name	Description
RDT4-R2	Relay 2 output assignment for detector 4. Controlled by selection in ATDT4-R2
RDT5-R2	Relay 2 output assignment for detector 5. Controlled by selection in ATDT5-R2
RDT6-R2	Relay 2 output assignment for detector 6. Controlled by selection in ATDT6-R2
ATDT1-R2	Advisory type selection that would manage relay 2 for Detector 1 (RDT1-R2)
ATDT2-R2	Advisory type selection that would manage relay 2 for Detector 2 (RDT2-R2)
ATDT3-R2	Advisory type selection that would manage relay 2 for Detector 3 (RDT3-R2)
ATDT4-R2	Advisory type selection that would manage relay 2 for Detector 4 (RDT4-R2)
ATDT5-R2	Advisory type selection that would manage relay 2 for Detector 5 (RDT5-R2)
ATDT6-R2	Advisory type selection that would manage relay 2 for Detector 6 (RDT6-R2)
RBTA	Relay assignment for back up battery. Output managed by DIBT
RDT1-Horn	Relay output assignment for the horn associated with Detector 1
RDT2-Horn	Relay output assignment for the horn associated with Detector 2
RDT3-Horn	Relay output assignment for the horn associated with Detector 3
RDT4-Horn	Relay output assignment for the horn associated with Detector 4
RDT5-Horn	Relay output assignment for the horn associated with Detector 5
RDT6-Horn	Relay output assignment for the horn associated with Detector 6
DIHL	Digital input assignment to silence the general horn
DTBR	Horn delay time before activating
DI1-S	Digital input of Detector 1 used for Horn Silence
DI1-R	Digital input of Detector 1 used for Alarm Reset
DI1-O	Digital input of Detector 1 used for Alarm On
DI2-S	Digital input of Detector 2 used for Horn Silence
DI2-R	Digital input of Detector 2 used for Alarm Reset
DI2-O	Digital input of Detector 2 used for Alarm On
DI3-S	Digital input of Detector 3 used for Horn Silence

Table 5: Parameters

Parameter Name	Description
DI3-R	Digital input of Detector 3 used for Alarm Reset
DI3-O	Digital input of Detector 3 used for Alarm On
DI4-S	Digital input of Detector 4 used for Horn Silence
DI4-R	Digital input of Detector 4 used for Alarm Reset
DI4-O	Digital input of Detector 4 used for Alarm On
DI5-S	Digital input of Detector 5 used for Horn Silence
DI5-R	Digital input of Detector 5 used for Alarm Reset
DI5-O	Digital input of Detector 5 used for Alarm On
DI6-S	Digital input of Detector 6 used for Horn Silence
DI6-R	Digital input of Detector 6 used for Alarm Reset
DI6-O	Digital input of Detector 6 used for Alarm On
DIBT	Digital input as battery backup alarm
REHR	Reactive Horn Relay
REASR	Reactive Alarm/Spill Relay
ROD1	ON delay Relay 1
ROD2	ON delay Relay 2
ROD3	ON delay Relay 3
ROD4	ON delay Relay 4
ROD5	ON delay Relay 5
ROD6	ON delay Relay 6
ROD7	ON delay Relay 7
ROD8	ON delay Relay 8
RFD1	OFF delay Relay 1
RFD2	OFF delay Relay 2
RFD3	OFF delay Relay 3
RFD4	OFF delay Relay 4
RFD5	OFF delay Relay 5
RFD6	OFF delay Relay 6
RFD7	OFF delay Relay 7
RFD8	OFF delay Relay 8
ROD9	ON delay Relay 9

Parameter Name	Description
ROD10	ON delay Relay 10
ROD11	ON delay Relay 11
ROD12	ON delay Relay 12
ROD13	ON delay Relay 13
ROD14	ON delay Relay 14
ROD15	ON delay Relay 15
RFD9	OFF delay Relay 9
RFD10	OFF delay Relay 10
RFD11	OFF delay Relay 11
RFD12	OFF delay Relay 12
RFD13	OFF delay Relay 13
RFD14	OFF delay Relay 14
RFD15	OFF delay Relay 15
RLP1	Polarity of RL1
RLP2	Polarity of RL2
RLP3	Polarity of RL3
RLP4	Polarity of RL4
RLP5	Polarity of RL5
RLP6	Polarity of RL6
RLP7	Polarity of RL7
RLP8	Polarity of RL8
DIP1	Polarity of DI01
DIP2	Polarity of DI02
DIP3	Polarity of DI03
DIP4	Polarity of DI04
DIP5	Polarity of DI05
DIP6	Polarity of DI06
DIP7	Polarity of DI07
DIP8	Polarity of DI08
DIP9	Polarity of DI09
DIP10	Polarity of DI010
DIP11	Polarity of DI011
RLP9	Polarity of RL9
RLP10	Polarity of RL10
RLP11	Polarity of RL11

Table 5: Parameters

Parameter Name	Description
RLP12	Polarity of RL12
RLP13	Polarity of RL13
RLP14	Polarity of RL14
RLP15	Polarity of RL15
DIP12	Polarity of DI12
DIP13	Polarity of DI13
DIP14	Polarity of DI14
DIP15	Polarity of DI15
DIP16	Polarity of DI16
DIP17	Polarity of DI17
DIP18	Polarity of DI18
DIP19	Polarity of DI19
DIP20	Polarity of DI20
AID1	Analog input of Detector 1
AID2	Analog input of Detector 2
AID3	Analog input of Detector 3
AID4	Analog input of Detector 4
AID5	Analog input of Detector 5
AID6	Analog input of Detector 6
AOD1	Analog output of Detector 1
AOD2	Analog output of Detector 2
AOD3	Analog output of Detector 3
AOD4	Analog output of Detector 4
AOD5	Analog output of Detector 5
AOD6	Analog output of Detector 6
AO1Min	Min analog output of Detector 1
AO1Max	Max analog output of Detector 1
AO2Min	Min analog output of Detector 2
AO2Max	Max analog output of Detector 2
AO3Min	Min analog output of Detector 3
AO3Max	Max analog output of Detector 3
AO4Min	Min analog output of Detector 4
AO4Max	Max analog output of Detector 4
AO5Min	Min analog output of Detector 5

Parameter Name	Description
AO5Max	Max analog output of Detector 5
AO6Min	Min analog output of Detector 6
AO6Max	Max analog output of Detector 6
AOP1Min	Min PPM of analog output of Detector 1
AOP1Max	Max PPM of analog output of Detector 1
AOP2Min	Min PPM of analog output of Detector 2
AOP2Max	Max PPM of analog output of Detector 2
AOP3Min	Min PPM of analog output of Detector 3
AOP3Max	Max PPM of analog output of Detector 3
AOP4Min	Min PPM of analog output of Detector 4
AOP4Max	Max PPM of analog output of Detector 4
AOP5Min	Min PPM of analog output of Detector 5
AOP5Max	Max PPM of analog output of Detector 5
AOP6Min	Min PPM of analog output of Detector 6
AOP6Max	Max PPM of analog output of Detector 6
OVERT	Override time
RODR1	ON delay IPX106D Relay 1
RODR2	ON delay IPX106D Relay 2
RODR3	ON delay IPX106D Relay 3
RODR4	ON delay IPX106D Relay 4
RODR5	ON delay IPX106D Relay 5
RODR6	ON delay IPX106D Relay 6
RFDR1	OFF delay IPX106D Relay 1
RFDR2	OFF delay IPX106D Relay 2
RFDR3	OFF delay IPX106D Relay 3
RFDR4	OFF delay IPX106D Relay 4
RFDR5	OFF delay IPX106D Relay 5
RFDR6	OFF delay IPX106D Relay 6
RLPR1	Polarity of IPX106D Relay 1
RLPR2	Polarity of IPX106D Relay 2
RLPR3	Polarity of IPX106D Relay 3
RLPR4	Polarity of IPX106D Relay 4
RLPR5	Polarity of IPX106D Relay 5
RLPR6	Polarity of IPX106D Relay 6

5. Uploading the Multi-Zone Refrigerant Leak Detector Description File to E2

NOTE: UltraSite32 Software should be installed to perform uploading of Description Files.

- 1. Connect to E2 using UltraSite32 (refer to UltraSite32 TCP/IP Connection Manual (*P/N 026-1002*).
- 2. Launch the UltraSite program and Login. Type **USER** in the Username and **PASS** in the Password fields.
- 3. Double click to open the Directory Level to view the Site Level. Refer to *Description File Upload graphic* below.
- 4. Right click on Site Level and click Connect.
- 5. Double click on **Site Level** and locate the E2 Unit where the Multi-Zone Refrigerant Leak Detector will be installed.
- 6. Right click on the unit and select **Upload Description File**.



Description File Upload

7. Click the Browse button.

E2 Description File Upload	X
To delete a file, first select from the list	
FILE - Click Browse to select the file to uploa	d Browse
Upload Remove	Close

E2 Description File Upload

8. Browse the computer and select the appropriate description (*.dsc) file for the Multi-Zone Refrigerant Leak Detector.

NOTE: Select the appropriate Description File for the communication type with E2. Leak Detector 5.32F12 and later supports BACnet MS/TP. The BACnet MS/TP file P/N is 527-0600 and the Modbus file P/N is 527-0389. To use BACnet MS/TP with Leak Detector and E2, the E2 must be 4.09F04 or later and Leak Detector 5.32F12 or later.

	E2 Description File	Upload			íl –		
	To delete a file, firs	select from the list					
Gopen						Į	٤
00-	퉬 « iProLeakDetec.	. • iPro Leak 01092013	• 49	Search	iPro Leak 010	092013	
Organize	 New folder 				8== •	· 🔳	(
×^	Name	A	Date modifie	d	Туре		Si
	IPGLDRev2.dsc		1/10/2013 4:1	4 PM	DSC File		
	[

E2 Description File Upload

- 9. Click OPEN.
- 10. Click **UPLOAD**. A window will appear with a message that the Description File was imported, click **OK**.

	E2 D	escription File Upload	<u>ן</u>
	To	delete a file, first select from the list	
Ultra	Site32		23
d	1	Description data for iProLeakDet version 0.0 was imported from IPGLDRev2.dsc as English language.	
		ОК	
		C:\Users\Philip.Baldomar\Desktop\TASK - BT&PB\Task - iPRO Lea	
		Upload Remove Close	

E2 Description File Upload

11. The description (*dsc) file will appear inside the box.

2 Description File Upload	23
To delete a file, first select from the list	
IPGLDRev2.dsc	
FILE - Click Browse to select the file to upload	Browse
FILE - Click Browse to select the file to upload	Browse
FILE - Click Browse to select the file to upload	Browse
FILE - Click Browse to select the file to upload C:\Users\Philip.Baldomar\Desktop\TASK - BT&PE Upload Remove	Browse I\Task - iPRO Lea Close

E2 Description File Upload

- 12. Once completed, disconnect from the E2 unit.
- 13. Reboot the E2 controller.

5.1 Licensing the Multi-Zone Leak Detector in the E2

If the BACnet description file (P/N 527-0600) will be used for leak detector communication, no license key is required, there will be 10 instances of Leak Detector available by default.

- 1. Log on to the E2 controller and Press 🌆 🐐
- 2. Press **F1** to add the license for the Description File.
- 3. Enter the 16-digit number provided from Technical Support.
- 4. Press 🖘



Adding License

5.2 Device Setup in the E2

5.2.1 E2 Serial Port Setup - Modbus

- 1. Log into to E2 by pressing the ^{Log Intout} button.
- 2. Type **USER** in the Username and **PASS** in the Password fields.
- 3. Press 🐨 🗍 🗓 to enter General Controller Info setup.
- 4. Press F2 twice move to C3: Serial Tab.



Serial Port Set Up

- 5. Highlight COM6 Connection value:
 - Press F4 for the Look Up menu and select MODBUS-1 (if MODBUS-1 is being used, select MODBUS-2 or MODBUS-3).
 - Press the End to set configuration.
 - Set the MODBUS Connection as follows: (Press
 F4 to select options and set the configuration.)
 - » COM2 Baud: 9600
 - » COM2 Data Size: 8
 - » COM2 Parity: None
 - » COM2 Stop Bits: 1
- 6. Press 🖘 to save changes.
- 7. Press 🛈 to go back to the Home screen.

5.2.2 E2 Serial Port Set Up - BACnet MS/TP

- 1. Login to E2 with Username: user; Password: pass
- Press + M on the E2 keyboard to access the serial tab of the general controller setup screen. This screen will have a connection field for all available COM ports on the E2. Highlight the COM port connection you will be using for BACnet MS/TP and press + (LOOKUP) and select BACnet MS/TP -1, -2, or -3 from the list of network types.

02-1	1-19 🔶	60	п				RX-3	00 Un	it 6			Â			14:31:15
Use	Ctrl-X	to S	Select	CX	Tabs			SETUP							
C1:	Genera	al	C2:	Eng	Units	C3: Ser	ial	C4:	TCP/	IP	C5:	Peer	Netwrk	ADVISORY	SUMMARY
C6:			C7:	Syst	en	C8: BAC	inet	C9:	Sys	Alarms	CØ:	MORE		Fails	S
					Genera	1 Setup:	GENERAL	SERV						Alarms	9
													1	Notices	1
	Seria	1			Value										
	COM1	Conne	ction		Not Us	ed									
	CUM2	Conne	ection		IUNET-	1								NETWORK	DUERVIEW
	00112	Bauu			2000 D	auu									
	COMB	Conne	ction		R0Cnot	MCTD_1									
	COMA	DeuId	I CLION		10	71311									
	COMA	MSTP	MAC			0									
	COM4	Baud			19.2 K	baud									
	COM6	Conne	ction		Not Us	ed									
	COM6	FiFo	Size		14										
	COM4	Avail			Yes										
	COM6	Avail			Yes										
														E2 Unit0	6
														Rev 4.09	F 63
														Constant of	
														EngilSII-	5
Scr	oll us	ing N	lext/P	rev l	keys	Connect	ion Type	for	COM4						
	F1: PR	EV TA	В ,	F	2: NEX	TAB	F	3: ED	IT		F4:	LOOK	UP	F5: 0	CANCEL

BACnet MS/TP Serial Port Set Up

- 3. Three fields will become visible underneath the COM4 Connection that pertain to the way the device communicates:
 - a. **COM4 Devid** This is the E2 BACnet Device ID; set this to a unique number from all other BACnet nodes on the network in the range of 0-4194303.
 - b. COM4 MSTP MAC This is the E2 BACnet MSTP MAC address; set this to a unique number for E2 in the range of 1-127. Each BACnet device on the network must have its own unique MS/TP MAC for successful communication.

- c. COM4 Baud Default setting is 9600; this must be changed to 19.2k or 38.4k. (All devices connected to the same COM port should be set to the same baud rate).
- Now the BACnet MS/TP specific settings must be configured. From the Home screen on E2 press + on the keypad to navigate to this screen:

82-11-19 🔹 🧭 💷	RX-3	00 Unit 6	a			14:38:11
Use Ctrl-X to Select CX labs		SETUP				
C1: General C2: Eng Units	C3: Serial	C4: TCP/IP	C5: Peer	Netwrk	ADVISORY	SUMMARY
C6: C7: System	C8: BACnet	C9: Sys Alarms	CO: MORE		Fails	6
Genera	L Setup: GENERAL	SERV			Alarms	9
ł.				-	Notices	1
TCP/IP Value				<u>.</u>		
DHCP Enabled : No				Т		
FTP Enabled : No					NETWORK (IVERVIEW
FTP Allow Anon : No						
IP Address : 192.16	8.0.251					
Subnet Mask : 255.25	5.255.0					
DNS Server 1 :						
DNS Server 2 :						
DNS Server 3 :						
DNS Server 4 :						
Default Gateway : 192.16	8.0.251					
Secondry Gateway : 0.0.0.	5					
SHTP Server :						
Host Nane : CPCE24	5059b6e					
Domain Name :					E2 Unit@	5
MAC Address : 00-01-	45-05-9B-6E					
Rem Client Port : 10	25			L	Rev 4.09	63
Monitoring Port : 30	51			i i		
				1		
					English-	12
Enter State: Y=Yes: N=N0 D	HCP Enabled					
F1: PREU TAB F2: NEX	TAB F:	B: EDIT			F5: 0	ANCEL

BACnet TCP/IP Tab

5. Press at the same time to reach the **BACnet** tab:



BACnet General Setup Screen

- 6. These settings must be configured in the **BACnet** tab:
 - a. Max Master The default setting is 127, edit and change the value to be equal to the highest BACnet MAC address that E2 will communicate with on any of its three (3) COM ports. Determine what BACnet MS/TP devices are connected to E2's COM ports, then determine the highest MS/ TP MAC address of all the devices. Set the E2 Max Master equal to the highest MS/TP MAC address determined.
 - b. Max Info Frames This is the max number of BACnet frames E2 can transmit per token. Set to 36.

- c. PDU Timeout This is the amount of time in seconds between re-transmissions of an APDU requiring acknowledgment for which no acknowledgment has been received. Enter a value of **30** in this field.
- **d. APDU Retries** This is the maximum amount of times that an APDU shall be retransmitted. Enter a value of **3** in this field.
- e. TimeSync Period This is the number of minutes between time synchronization broadcasts. Enter a value of 1440 here.
- f. UTC TimeSync This toggles the time sync broadcast to use coordinated universal time mode. Toggle this field to NO.

5.3 Device Wiring



Device Wiring

5.4 Connecting Communication Wires - Modbus

If the communication protocol between Leak Detector and E2 is using Modbus, connect the RS485 wiring to the RS485 slave terminal on the iPro controller, terminals 97, 98, 99. The polarity of the + and - wires is reversed between the E2 serial port and the leak detector serial port.



Multi-Zone Leak Detector Wiring

NOTE: The polarity of the MODBUS connection between E2 and the Multi-Zone Refrigerant Leak Detector is reversed.

5.4.1 Connecting Communication Wires -BACnet MS/TP

The BACnet MS/TP connection should be wired in a daisy chain topology, no star or T configurations are allowed. Connect the BACnet network cable to the three terminal connector on the E2 COM port you wish to assign as BACnet MS/TP. Connect the network cable to the leak detector on the RS485 master port terminals 94, 95, 96.

Reverse the polarity of +/- on the RS485 cable between the E2 serial port and the leak detector serial port. Copeland specs General Cable 92454A (*Copeland P/N 135-0600*) shielded twisted pair cables for use as BACnet MS/TP wiring.

5.5 Adding the Multi- Zone Refrigerant Leak Detector in E2

- 1. Press T I I to open the **Connected I/O Boards** and **Controllers** setup.
- 2. Press F2 twice to move to C4: Third Party tab. Highlight the Multi-Zone Refrigerant Leak Detector application and enter the number of devices under Quantity.

01-12-13 • (7) Use Ctrl-X to S		F	RX-400 Unit 4 SETUP	NAMES FULL	9:39:53
C1: This Unit C6:	C2: IO Network	C3: ECT C8:	C4: Third Part C9:	0 C5: Echelon C0:	ADVISORY SUMMARY Fails 33
	Third Party Boa	rd Type	Quantity Ma	x	Notices 147
					NETWORK OVERVIEW IONet • NODBUS-1 •
					MODBUS-2 •
					THIS CONTROLLER
					Unit: 4 IP: 10.161.200.155 F/W Rev: 4.02F02
Enter 0 to 1	Enter desired n	umber of thes	se boards		
F1: PREU TA	B F2: NEX	TAB	E3: EDIT		ES: CANCEL

Third Party Tab

- 3. Press 🖘 to save changes.
- 4. Press 🛈 to go back to the Home screen.

5.6 Commissioning Multi-Zone Refrigerant Leak Detector - Modbus

- 1. Press P 2 2 to enter the **Network Summary** screen.
- 2. Highlight the Multi-Zone Refrigerant Leak Detector to be commissioned and press F4.



Network Summary Screen

3. If a box with **Select Network** appears on the screen, select the MODBUS number where the device was configured.

4. Select address for the device and press 🖭.

01-12-13 🔷	6 🗉	RX-400 Network	Unit 4 Summary	NAMES FULL	10:02:29
Name IPPOLeakDE RACK 1A RACK 2A RACK 1C RACK 1C RACK 1C RACK 1C RACK 1C RACK 1C CRF I-AC1A BX-13 CRF I-AC2A CRF I-AC2B CRF I-AC2B CRF I-AC2A CRF I-AC3C CRF I-AC4 CRF I-AC5C	Tune Mo H00BUS-2 Devices 1. 1. [ProleakDet001 2. (Unused) 3. (Unused) 4. (Unused) 5. (Unused) 6. (Unused) 7. (Unused) 8. (Unused) 10. (Unused) 11. (Unused) 12. (Unused) 13. (Unused)	RX-400 Network Lundt Addence	Unit 4 Sunmary Bou	MMES FULL	10:02:20 ADUISORV SUHWARY Fails 30 Alarns 0 Notices 107 HETWORK OUERUIEU HODBUS-1 0 HODBUS-2 0
	14. (Unused) 15. (Unused) 16. (Unused) 17. (Unused) 18. (Unused)			T	THIS CONTROLLER Model: RX-400 00 Unit: 4 IP: 10.161.200.155 F/W Rev: 4.02F02
Press menu	number or scroll to sele	ction			
	<u></u>	_\	\		F5: CANCEL

Network Summary Screen

5. This screen will appear. Press 💷 to continue.



Network Summary Screen

- 6. Press \cdots to save the assigned address.
- Press button to return to the Home screen. Press
 Press to enter the Network Summary screen.
- 8. The Multi-Zone Refrigerant Leak Detector should appear **ONLINE** after a few seconds.

		Network	Unit 4 Summaru	NAMES FILL	10:07:19
Name	Туре	Network Address	Rev	Status	ADUISORY SUMMARY Fails 33
iProLeakDet001	iProLeakDet	MODBUS-2:	1 0.00	Online	Notices 147
RACK 1H RACK 2A RACK 1B RACK 1C RACK 2C CRFT-AC1A BX-13 CRFT-AC1B CRFT-AC2A CRFT-AC2A CRFT-AC2A CRFT-AC2A CRFT-AC3	nx400-mefrig RX400-Refrig RX400-Refrig RX400-Refrig RX400-Conternation RX400-Conternation RX400-Conternation RX400-Conternation CX400 Conternation CX400 Conternation	Ethernet: Ethernet: Ethernet: Ethernet: Ethernet: Ethernet: Ethernet: Ethernet: Ethernet: Ethernet:	1 4.02F0 2 4.02F0 3 4.03F0 5 4.02F0 6 4.02F0 12 4.02F0 14 4.02F0 14 4.02F0 15 4.02F0 16 4.02F0 16 4.02F0 17 4.02F0 18 4.02F0	2 OFFline 2 Offline	NETWORK OVERVIEV IONet 9 Hodbus-1 9 Hodbus-2 0
CRFT-AC58 CRFT-AC5C	CX400 C-Store CX400 C-Store CX400 C-Store	Ethernet: Ethernet:	19 4.82F8 28 4.82F8	2 Offline 2 Offline EA: FORMISSION	THIS CONTROLLER Hodel: RX-400 00 Unit: 4 IP: 10.161.200.155 F/W Rev: 4.02F02

Network Summary Screen

5.7 Commissioning Multi-Zone Refrigerant Leak Detector -BACnet MS/TP

1. Login to the E2 and press + to reach the **Network Summary** screen.

32-11-19 🔹 🥳		RX-300 U Network S	Init 6 Summary	â	14:52:39
Nane	Туре	Network Address	Rev	Status	ADVISORY SUMMARY Fails Ø
E2 Unit06 IoModule001	RX300-Refrig IoModule	Ethernet: BACnet MSTP-1:	6 4.09F03 - 0.00	This Controller Unknown	Notices <mark>3</mark>
					NETWORK DUERUIEW BACnet MSTP-1
					52 Unit 86
					Rev 4.09F03
					English-US
F1: DELETE F	RCRD F2: S1	TATUS		F4: COMMISSION	F5: SETUP

BACnet MS/TP Network Summary Screen

 Press F5 (Setup) to enter device setup in the General tab. Set Do Initial Sync to Yes, Initial Action to Send Device Cfg to E2, and Cfg Sync Action to Send Device Cfg to E2. Press to save and exit back to Network Summary screen.

04-23-19 🔍 🤭 💷 Use Ctrl-X to Select CX	RX-300 U Tabs SETU	nit 6 💼	11:14:03
C1: General C2: Inpu C6: In3 Setup C7: In4	ts C3: Outputs C4 Setup C8: In5 Setup C9 iProLeakDet: iProLeakDet00	: In1 Setup C5: In2 : In6 Setup C0: MORE 1	Setup ADVISORY SUMMARY Fails 1 Alarms 1
General Hame : Long Name : Device Id : Desc File Rev : Static Binding : BSTP MMC : Distilation : Chili Action : Chili Action : FV UPDI PCT : COMM STATUS : COMM STATUS : ANF Err MSG : FWUPDI Status :	Value iProLeakDet001 1000 BROMEN HSTP-1 2.25 No Send Device Cfg to E2 Send Device Cfg to E2 Disabled : : : NO Error Inactive		Notices 12 NETWORK OVERVIEW BRÖNET HSTP-1 0 E2 UnitM6
Enter 0 to 254 MSTP M	AC 2: Next Tab F3: E	DIT F4: STAT	US F5: CANCEL

BACnet MS/TP General Screen

3. Highlight the device and press **F4** commission for a list of networks. Select the BACnet MS/TP route assigned to the COM port.

02-11-19 🍨 🧑 📟	RX-300 U	nit 6	<u>ه</u>	14:54:57
	Network S	unnary		
Name Type C	Notwork Addrocc	Rev	Status	ADVISORY SUMMARY Fails 0
E2 Unit06 RX300-Refri ToHodule001 ToHodule	Select Network 1. <u>BACnet HSTP-1</u> 2. BACnet IP	6 4.09F03 - N.A	This Controller No Port	Alarms 0 Notices 3 NETWORK OVERVIEW BACnet MSTP-1
				E2 Unit06 Rev 4.09F03 English-US
Press menu number or scroll	to selection			
		Ţ		F5: CANCEL

BACnet MS/TP Select Network

4. E2 will scan for available BACnet MS/TP devices.



BACnet MS/TP Device Commission

5. E2 will display a list of the MS/TP devices discovered during the scan. The number in parenthesis is the BACnet MAC address and the 6-digit number adjacent to it is the BACnet Device ID. Select the device you want to commission and press end the E2 keypad.



BACnet MS/TP Devices

6. Press again on E2 keypad and then E2 will display BACnet Device ID is set:



BACnet MS/TP Device ID is Set

7. Press to save and exit back to the **Network Summary** screen:

82-11-19 🔹 🧒		RX-300 Network	Unit 6 Summaru		15:01:21
Name	Туре	Network Address	Rev	Status	ADVISORY SUMMARY Fails Ø
E2 Unit06 IoNodule001	RX300-Refrig IoNodule	Ethernet: BACnet MSTP-1:	6 4.09F0 5000 N.A	3 This Controller Online	Alarms 0 Notices <mark>3</mark>
					NETWORK OVERVIE₩ BACnet MSTP-1 ♦
					E2 Unit06
					Rev 4.09F03
					English-US
F1: DELETE	RCRD F2: ST	TATUS		F4: COMMISSION	F5: SETUP



8. The device status should now change to **Online** in green. Allow approximately five (5) minutes for initial communication startup and synchronization to complete before editing parameters.

5.8 Viewing E2 Status Screen

Press + to reach the Network Summary page. Highlight the Multi-Zone Refrigerant Leak Detector and press.

84-38-19 🔹 🤗 💷	RX-300 iProl	Unit ó eakDet	Ŕ		13:17:51
iProLeakDet001	BACnet MS/TP MAC: Device ID: ZONE 2	3 6000	——Firmware Updat FwUp%: Status:Inactive	te	ADVISORY SUHMARY Fails Ø Alarms Ø Notices <mark>5</mark>
Rack A- 1.00 Bakery CLR R-407A Sensor 1: NONE PPM Analog Out 1: 5.00 v Status : Disable	Rack A- 1.00 Bakery R-407A Sensor 2: NONE Analog Out 2: 5.00 Status : Disable	CLR PPM V	RELAY STATU ZN 1 Strobe: ZN 1 Horn: ZN 1 Horn: ZN 1 DO to BAS: ZN 2 Strobe:	OFF OFF OFF OFF	NETWORK OVERVIEW BACnet MSTP-1 •
ZONE 3 Rack A- 1.00 Bakery CLR R-407A Sensor 3: NONE PPM	ZONE 4 Rack A- 1.00 Bakery R-407A Sensor 4: NONE	CLR PPM	ZN 2 Horn: ZN 2 DO to BAS: ZN 3 Strobe: ZN 3 Horn: ZN 3 DO to BAS:	OFF OFF OFF OFF OFF	
Analog Out 3: 5.00 v Status : Disable ZONE 5	Analog Out 4: 5.00 Status : Disable ZONE 6 Rack A= 1.00 Bakeru	V	ZN 4 Strobe: ZN 4 Horn: ZN 4 DO to BAS: ZN 5 Strobe: ZN 5 Horn:	OFF OFF OFF OFF	F2 Unit86
R-407A Sensor 5: NONE PPM Analog Out 5: 5.00 v Status : Disable	R-407A Sensor 6: NONE Analog Out 6: 5.00 Status : Disable	PPM V	ZN 5 DO to BAS: ZN 6 Strobe: ZN 6 Horn: ZN 6 DO to BAS:	OFF OFF OFF OFF	Rev 4.09F03
Press enter for a list of a F1: SUCTION F2: (ctions. CONDENSER F3: C	IRCUITS	F4: SENSO	RS	F5: SETUP

Viewing Status

5.9 Resetting Spill Alarm

When the Leak Detector version 5.32F12 or later is communicating with E2, the zone spill alarms can be reset from E2. Once the zone PPM has fallen back below the spill setpoint (PPMs), the alarm can be reset.

Perform the following steps at E2 to reset a zone spill alarm:

1. Login to the E2 controller and press ▲ + ▲ keys at the same time to reach the Network Summary page:

64-36-19 🔹 🧒	•	RX-300 Network	Unit 6 Summary	園	13:27:40
Nane	Туре	Network Address	Rev	Status	ADVISORY SUMMARY Fails 0
E2 Unit06 iProleakDet0	RX300-Refrig 01 iProLeakDet	Ethernet: BACnet MSTP-1:	6 4.09F03 6000 0.00	This Controller Online	Alarms U Notices 5 NETWORK OVERVIEW BACnet MSTP-1 •
					E2 Unit06 Rev 4.09F03
					English-US
	F2: ST	ATUS F3: NET	STATUS		

Resetting Spill Alarm Network Summary Screen

 Scroll down and highlight the Leak Detector and press F2 STATUS to reach the status screen.

84-38-19 🐞 🥐 📖	RX-300 Unit iProLeakDet	6	13:28:35
iProLeakDet001	BACnet NS/TP MAC: 3 Device ID: 6000	Firnware Update FwUp%: Status:Inactive	ADUISORY SUMMARY Fails 0 Alarms 0
-20NE 1 Rack A-1.00 Bakery CLR R-070 1: NONE PPH Analog Out 1: 5.00 v Status : Disable Rack A-20NE 2 Rack A-070 Sakery CLR R-070 3: NONE PPH	20NE 2 Rack A -1.00 Bakery CLR R-M07A Sensor 2: NONE PPH Analog Out 2: 5.00 v Status : Disable 20NE 4. Rack A - 1.00 Bakery CLR R-M07A Sensor 4: NONE PPH	RELAY STATUS ZN 1 Strobe: OFF ZN 1 Horn: OFF ZN 1 DO to BAS: OFF ZN 2 Horn: OFF ZN 2 Horn: OFF ZN 2 Horn: OFF ZN 3 Strobe: OFF ZN 3 Strobe: OFF ZN 3 Horn: OFF	- Notices 5 Network oueruiew BACnet MSTP-1 ●
Status : Disable ZONE 5 Rack A- 1.00 Bakeru CLR	ZONE 6 Rack A- 1.00 Bakery CLR	ZN 4 Horn: OFF ZN 4 Horn: OFF ZN 4 D0 to BAS: OFF ZN 5 Strobe: OFF ZN 5 Horn: OFF	E2 Unit06
R-407A Sensor 5: NONE PPN Analog Out 5: 5.00 v Status : Disable	R-407A Sensor 6: NONE PPM Analog Out 6: 5.00 v Status : Disable	ZN 5 DO to BAS: OFF ZN 6 Strobe: OFF ZN 6 Horn: OFF ZN 6 Horn: OFF ZN 6 DO to BAS: OFF	Rev 4.09F03
Press enter for a list of a	ctions. CONDENSER F3: CIRCUIT:	5 F4: SENSORS	F5: SETUP

Resetting Spill Alarm Status Screen

- 3. With the Leak Detector controller name highlighted, press on the E2 keyboard.
- 4. A pop-up window will appear, select **9. Application Commands**.

84-38-19 🔹 🥐 🎟	RX-300 Unit d iProLeakDet	i È		13:30:11
IProLeakDetC 20NE	APPOLCANDE APPLICATION Application Commands Send E2 Grg to Device 2. Send Device Grg to E2 3. Send DOU subscription 4. Fu Updt Cancel Transfer 5. Fu Updt Cancel Transfer 6. Fu Updt Apply Pkg 7. Fu Updt Apply Pkg 8. Reboot JPro	Firmware Update Fulp&: Status:Inactive RELAY STATUS- 2N 1 Strobe: 2N 1 Dto BAS: 2N 2 Strobe: 2N 2 Strobe: 2N 2 Strobe: 2N 3 Strobe: 2N 3 Strobe: 2N 3 Strobe: 2N 3 Strobe: 2N 3 Oto BAS:	e OFF OFF OFF OFF OFF OFF OFF	ADUISDRY SUMMARY Fails 0 Alarms 0 Notices 5 NetWORK OVERVIEW BAEnet NSTP-1
Analog Out 3: 5.00 Status : Disable ZONE 5 Rack A- 1.00 Bakery R-407A Sensor 5: NONE Analog Out 5: 5.00 Status : Disable	10. opport 1 Airm Reset 11. Zonez Airm Reset 12. Zonez Airm Reset 12. Zonez Airm Reset 13. Zonek Airm Reset 14. Zones Airm Reset 15. Zoneć Airm Reset Status : Disable	2H 4 Strobe: 2H 4 Horn: 2H 4 Horn: 2H 5 Strobe: 2H 5 Horn: 2H 5 Horn: 2H 6 Strobe: 2H 6 Horn: 2H 6 Horn: 2H 6 Horn:	OFF OFF OFF OFF OFF OFF OFF	E2 Unit06 Rev 4.09F03 English-US
Select a command to ser	nd to this application.			F5: CANCEL

Resetting Spill Alarm Application Commands Screen

- 5. The zone alarm resets are performed by using the Zone1 Alarm Reset-Zone6 Alarm Reset application command. After selecting the desired application command, the window will automatically close and E2 will perform the application command.
- 6. After a zone alarm resets the status, the zone box should go back to OK and the horn, strobe and E2 relays should return to off in the Relay Status box.

NOTE: In order to reset a zone spill alarm, the zone PPM level must be below the PPM level set by parameter PPMs in the Leak Detector.

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