Space Age XL8 Tabular Annunciator Interface Modules



Graphic Interface Module (P/N 10-2663-1)



Lamp Driver Module (P/N 10-2665)



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0	All Sections	06/09	Initial Release
1	Sections 2.5 and 4.0	08/10	Changed dip-switch functionality and power requirement calculations

Fike ABOUT THIS MANUAL

This manual is intended to be a complete reference for the installation, operation, and service of the Graphic Interface Module and Lamp Driver Module. Used in tandem, these modules provide a control interface to the Space Age XL8 tabular annunciators. The information contained in this manual shall be used by factory trained service technicians who are authorized to work on this product. This manual also serves as the Operations Manual for the component.

The first-time installer and/or user should thoroughly read and understand the instructions contained within this manual before using this device. These instructions must be followed to avoid damage to the equipment itself or adverse operating conditions caused by improper installation and programming.

PRODUCT SUPORT

If you have a question or encounter a problem not covered in this manual, you should first try to contact the distributor who installed the Fike system. Fike has a worldwide distribution network. Each distributor sells, installs, and services Fike equipment. Look on the back of the cabinet door, there should be a sticker with an indication of the distributor who installed the system. If you can not locate the distributor, please call Fike Customer Service for locating your nearest distributor, or go to our web-site at www.fike.com. If you are unable to contact your installing distributor or you simply do not know who installed the system, you can contact Fike Technical Support at (888) 628-FIKE (3453) Option 2 for Fire Alarm or (800) 979-FIKE (3453) Option 2 1 for Commercial Products, Monday through Friday, 8:00 am to 4:30 pm CST.

SAFETY INFORMATION

Important safety admonishments are used throughout this manual to warn of possible hazards to persons or equipment.

I Caution

Cautions are used to indicate the presence of a hazard which will or may cause damage to the equipment if safety instructions are not followed or if the hazard is not avoided.

Note: Provides information on installation, operation, maintenance, performance or general tips that are important but not hazardous to anything or anyone.

TERMS USED IN THIS MANUAL

Acknowledge - To confirm that a message or signal has been received, such as by the pressing of a button or the selection of a software command.

Authority Having Jurisdiction - The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.

Configure - The control board is 'set-up' to properly recognize and supervise a device as the design requires.

Fire Alarm Control Unit (Panel) - A system component that receives inputs from automatic and manual fire alarm devices and might supply power to detection devices and to a transponder(s) or off-premises transmitter(s). The control unit might also operate releasing circuits or solenoids, provide transfer of power to the notification appliances, or transfer of condition to relays or devices connected to the control unit. The fire alarm control unit can be a local fire alarm control unit or a master control unit.

Fire Alarm Signal - A signal from a fire alarminitiating device such as a manual fire alarm box, automatic fire detector, waterflow switch, or other device in which activation is indicative of the presence of a fire or fire signature.

Fire Alarm System - Components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.

Power-Limited - The amount of current flowing through the circuit is limited vs. being unlimited, or non-power limited. A designation given for wiring purposes.

Reset - A control function that attempts to return a system or device to its normal, non-alarm state.

RS485 - A data communication standard produced by the Electronics Industry Association (EIA). This standard was developed to insure compatibility between units provided by different manufacturers.

Zone - A defined area within a protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent, an area in which a form of control can be executed, a particular area being protected. This term is used to create the relationship between activation inputs to notification outputs and peripherals.



1.0 PRODUCT OVERVIEW

The Graphic Annunciator Interface Modules, which consists of the Graphic Interface Module (P/N 10-2663-1) and the Lamp Driver Module (P/N 10-2665), are incorporated into Space Age's XL8 tabular annunciator to provide a means of remote annunciation and control for Fike's Cheetah Xi, Cheetah Xi 50, CyberCat 254, CyberCat 1016 and CyberCat 50 control panels.

System events that can be annunciated include:

- Individual device activation (Alarm, Trouble, Pre-alarm)
- **Zone activation** (Process, Trouble, Supervisory, Abort, Disable, Pre-Alarm, Alarm, Predischarge, Release)
- **Panel events** (Silence, Drill, Walktest, Communication OK, Power OK, Buzzer Active)
- Network device activation (Any device, Trouble, Pre-Alarm)
- LED activation (Any LED or All LED)

1.1 AGENCY STANDARDS AND COMPLIANCE

This Fire Alarm product complies with the following standards:

- NFPA 70 NEC, Article 300 Wiring Methods
- NFPA 70 NEC, Article 760 Fire Protective Signaling Systems
- NFPA 72 National Fire Alarm Code
- NFPA 92A Smoke-Control Systems
- NFPA 92B Smoke Management Systems
- UL 864 Control Units and Accessories for Fire Alarm Systems (UUKL Ninth Edition Smoke Control)

1.2 RELATED STANDARDS

NFPA 1 – Fire Prevention Code NFPA 77 – Static Electricity NFPA 101 – Life Safety Code

Applicable Local and State Building Codes

Requirements of the Local Authority Having Jurisdiction

1.3 ORDERING INFORMATION

The XL8 tabular annunciator is manufactured by Space Age Electronics, Inc. utilizing standard Space Age annunciator components. Fike's graphic annunciator interface modules are installed into the tabular annunciator by Space Age and are wired to suit your specific project requirements. Each annunciator is shipped with a drawing showing all internal wiring for reference purposes.

The actual number of modules and incandescent lamps that can be incorporated into the Space Age XL8 tabular annunciator enclosure depends upon the size of the panel and the grid size selected for your project. Contact Space Age for complete annunciator ordering details.

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Note: Each GIM and LDM combination is capable of controlling up to 24 lamps. If more than 24 lamps are required, additional modules must be ordered and installed.

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1.4 GRAPHIC INTERFACE MODULE

The GIM (Exhibit 1) provides the interface between the Fike control panel and the Space Age Tabular Annunciator. The GIM connects to the control panel's RS485 peripheral bus circuit, which allows the annunciator to be located up to 4,000 ft. (1,219 m) from the panel. A maximum of 31 modules may be connected to the peripheral bus circuit, provided that other devices are not connected.

Power for the GIM module must be supplied by the host FACP or from a battery backed 24 VDC regulated, power-limited power supply listed for Fire Protective Signaling Use.

Note: If power is supplied from a source other than the control panel, a ground fault condition could occur.

The GIM provides control and distributes power to the Lamp Driver Module via two 34-pin ribbon cables (P/N 10-1903) supplied with each module. The GIM is equipped with a local piezo that sounds upon receiving a system event. Programming of the GIM is accomplished using Fike's C-Linx configuration software.



Exhibit 1: GIM Terminal Designations

Module Specifications:

Operating Environment:			
Temperature:	0°-49°C (32°-120° F)		
Humidity:	93% RH		
Dimensions: 6.75" (1	7.15 cm) x 3.75" (9.47cm)		
Terminal Blocks Accept	: 14 – 26 AWG		

Terminal	Name	Description/Specifications
P1-1, -2	Power Input +24V, 0V	Regulated, 24VDC, continuous power input. Supplied from host control panel, previous device, or battery backed, regulated, power-limited, power supply listed for fire protective signaling line use.
		Supervised and power limited Operating Voltage: 19.8 – 30 VDC Current consumption: 58 mA (all lamps off), 112 mA (all lamps on)
		(DNote: Powering module from any source other than the host panel could result in a ground fault.
P1-3, -4	Power Output +24V, 0V	24VDC pass-through power output to next device
P1-5, -6	Peripheral Bus +, -	Peripheral bus connection from host control panel or previous device.
		Supervised and power limited Peripheral devices per circuit: 31 devices Selectable Baud rate: 9600 bps or 38400 bps Wire type: Belden 9841 or equal Maximum peripheral bus circuit length: 4,000 ft. (1,219 m) Voltage: varies between 0 – 5 VDC at 1 mA. Should never be a constant voltage or 0 VDC.
P1-7	Peripheral Bus SHLD	Connection point for RS485 drain wire.
P1-8, -9	Peripheral Bus +, -	Peripheral bus connection out to next device or 100 Ω termination if last device on peripheral bus circuit.
P16, P17	N/A	Connection point for 34-pin ribbon cables (P/N 10-1903) required to provide communication and power between Graphic Interface Module (P/N 10-2663-1) and Lamp Driver Module (P/N 10-2665).
P23	N/A	Fike Use Only
SW1	1 – 6	Dip switch block used to set the Graphic Interface Module's binary address (2 – 32) on the host fire alarm control panels RS485 peripheral bus and the communication baud rate

Exhibit 2: GIM Terminal Specifications

1.5 LAMP DRIVER MODULE

The LDM (Exhibit 3) is used in tandem with the GIM drive the tabular annunciators to incandescent lamps or LED's. Communication and 24 VDC power is received from the GIM via two 34-pin ribbon cable connections. The LDM provides twenty-four (24) configurable lamp/LED outputs that interface to the Space Age lamp driver boards. In addition, there are three (3) optional lamp/LED outputs and four (4) continuously powered connection points for optional legend lamps/LEDs. The LDM has two (2) configurable control switch inputs and an optional access key switch input that when installed, prevents usage of configurable control switch functions unless the access key is used.

Module Specifications:

Operating Environment:	
Temperature:	0°-49°C (32°-120° F)
Humidity:	93% RH
Terminal Blocks Accept:	14 – 26 AWG
Module Dimensions:	7" x 3.5"
	(17.8cm x 8.9cm)

All connections are power-limited and supervised



(e

Exhibit 3: LDM Terminal Designations

()Note: All connections to LDM are made by Space Age at the factory.

Exhibit 4: LDM Terminal Specifications

Terminal	Name	Description/Specifications			
P1, P3, P5, P7, P9, P11	On / Off / Auto	Not Used.			
P2, P4, P6, P8, P10, P12	On / Off / Auto / Fault	Terminals provide four programmable lamp outputs for connection to Space Age lamp/LED driver boards.			
P13	CFG 1, CFG 2	Terminal provides a connection point for two user programmable switch inputs. Each can be programmed to perform any of the following system functions:			
		Reset – performs a system wide reset to restore system to normal operation.			
		<u>Silence</u> – will deactivate any notification appliance circuit that is programmed as silenceable and deactivates all internal panel audibles (piezo) system wide.			
		<u>Acknowledge</u> – will deactivate all internal panel audibles (piezo) system wide, while leaving all notification appliance circuits active system wide.			
		<u>Drill</u> – will activate all outputs assigned to respond to the drill function. Drill function is deactivated by pressing RESET.			
		LED Test – will temporarily turn on all lamps system wide.			
P13	Access Key	Provides a connection point for the panel access control switch.			
P14	CFG 1	Terminal provides a connection point for user programmable lamps. Each lamp can be			
		programmed to indicate the following system functions:			
	0103	<u>Panel Silence</u> – Lamp will illuminate when the SILENCE command has been issued from any system panel or peripheral device.			
		Panel Drill – Lamp will illuminate when the DRILL command has been issued from any system panel or peripheral device.			
		Panel Walktest – Lamp will illuminate when the WALKTEST command has been issued from any system panel or peripheral device.			
		Panel Comm OK – Lamp will illuminate steady during normal operation to indicate proper communication with the associated control panel via the RS-485 communication bus. Lamp will turn off to indicate loss of RS-485 communication.			
		Panel Power OK – Lamp will illuminate steady during normal operation to indicate presence of 24 VDC power. Lamp will turn off to indicate loss of power.			
	PWRLED	Provides a connection point for a power OK lamp that will illuminate steady during normal			
		operation to indicate presence of 24 VDC power. Lamp will turn off to indicate loss of power.			
P15	LEGEND LEDs	Provides four continuously powered lamp connection points, which can be used to indicate device function in a legend if required.			
P16, P17		Connection point for 34-pin ribbon cables (P/N 10-1903) required to provide communication between GIM and LDM.			

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2.0 INSTALLATION

The tabular annunciator is shipped from Space Age Electronics Inc. in two separate boxes. The first box contains the finished door assembly and enclosure back plate with all electronic components installed and pre-wired except for required field connections. The second box contains the annunciator back box. Unpack the annunciator components and check for signs of shipping damage to the product. If there any signs of damage contact:

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I Caution

- 1. The annunciator and associated equipment contains static sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from the unit.
- Never remove or install boards, internal cables or components with power applied. Failure to adhere to these guidelines can result in irreparable damage to the system components. This damage may adversely affect the operation of the electronic equipment but its effect may not be readily apparent.

2.1 SELECT MOUNTING LOCATION

The mounting location for the tabular annunciator enclosure is very important. Fike recommends installing the enclosure in an area that is readily accessible with sufficient room to allow easy installation and maintenance and is capable of maintaining the temperature and humidity ratings specified in Sections 1.5 and 1.6. Additional items to consider when selecting a mounting location includes: vibration, dust, moisture, electromagnetic interference, and radio interference. These items could adversely effect the successful operation and useful life of the electronic components and should be avoided if possible.

a stop

Annunciator back box is not fire rated. Do not install in fire rated wall.

2.2 INSTALL ANNUNCIATOR BACK BOX

The back box can be surface or flush mounted as required to suit the project requirements.



Exhibit 5: Annunciator Mounting Options

The back box is NOT equipped with electrical knockouts. Installer must create electrical knockouts for connection of conduit in the field. Knockouts should be created using a knockout punch on the sides, top or bottom of the enclosure only.

Caution

Do not install conduit from the back of the enclosure.

STOP! Prior to installing the back box, verify the correct back box orientation with respect to the door hinge orientation and install the box as directed below:

Surface Mounting:

 Secure the back box to the wall utilizing the four (4) mounting key holes supplied in the back of the enclosure and suitable anchors.

Semi-Flush Mounting (Exhibit 5):

1. Prepare wall cut-out based on back box dimensions.

Size C	ode	Back Box Dimensions
A		23.5" x 13.0" (59.7 cm x 33 cm)
В		23.5" x 16.5" (59.7 cm x 41.9 cm)
С		23.5" x 20.0" (59.7 cm x 50.8 cm)
D		23.5" x 23.5" (59.7 cm x 59.7 cm)
F		23.5" x 30.5" (59.7 cm x 77.5 cm)
H		23.5" x 37.5" (59.7 cm x 95.3 cm)
J		23.5" x 44.5" (59.7 cm x 113 cm)



- 3. Secure back box to wall with suitable anchors.
- 4. Install flange and secure to back box with screws and corner clips provided to all wall sides except hinge side (hinge supplied with annunciator door). Verify that exposed wall surface does not extend above/beyond flange seat.
- **Note:** The back box and optional flush mount trim-ring can be shipped prior to completion of the annunciator door assembly. This allows the back box to be roughed in during the initial wall construction.



Exhibit 6: Detail of Semi-flush Mount w/ Flange

2.3 PULL FIELD WIRING

Unless otherwise detailed in this manual or in other documents relating to the components covered in this manual, the designer and installation/service technician shall utilize published standards and references such as: NFPA 70 National Electrical Code; NFPA 72 National Fire Alarm Code; and other standards which may be relevant to the Local Authority Having Jurisdiction (AHJ) for field wiring installation requirements.

I Caution

If connecting the annunciator to an existing system, disconnect AC power, batteries, and RS485 circuit from the control panel and wait 60 seconds prior to connecting annunciator installation. Failure to do so can damage circuits. Pull field wiring (RS485 and 24VDC) into annunciator enclosure using created knockouts. Leave sufficient wire to make connections at module terminals without straining board components.

RS485 Wiring Specifications:

- The RS485 circuit can not be T-Tapped; it must be wired in a continuous fashion.
- The maximum wire distance from the control panel to the last module is 4,000 feet (1,219 m) of Belden 9841 shielded, twisted, low capacitance cable.
- For plenum applications, use Belden 82841, 82842, or 89841.
- Do not run the RS485 cable adjacent to, or in the same conduit as 120 volts AC service, noisy electrical circuits that are powering mechanical bells or horns, audio circuits above 25 volts RMS, or motor control circuits.

24 VDC Wiring Specificatons:

- Power for the Graphic Interface Module (GIM) shall be provided via a separate power loop from the host control panel or battery backed 24 VDC, regulated, power-limited, power supply listed for Fire Protective Signaling Use.
- **Note:** Each module must be accounted for in the control panels power and battery calculations as shown in Section 4.0.
- **()** Note: If the control panel is configured to supervise the graphic interface module(s), a loss of power will register as a peripheral missing trouble at the control panel.
- **()**Note: If module power is supplied from a source other than the control panel, a ground fault condition could occur.

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2.4 INSTALL BACK PLATE AND DOOR ASSEMBLY

The door assembly and back plate are shipped together and are installed only after the back box installation is complete and all dust and debris has been removed from the enclosure.

Back plate installation:

- 1. Disconnect the ribbon cable(s) and power wire(s) connections from the back plate.
- 2. Install the back plate onto the mounting studs provided in the back box and secure in place with the provided mounting hardware.

Door assembly installation:

- 1. Remove hinge from annunciator door (2 screws).
- 2. Center hinge on back box and align round hinge holes to mounting groove on box as shown in Exhibits 7 and 8. Secure hinge to box with screws provided.
- 3. Align annunciator door to hinge, as shown in Exhibit 9, and secure hinge to door with 2 screws, one at each end.
- Check door alignment by closing and opening the door. DO NOT FORCE COVER. If cover does not close properly, loosen and adjust the two screws as needed for a proper fit and alignment.
- 5. After verifying alignment, install all screws in cover and tighten.
- 6. Reconnect ribbon cable(s) and power wire(s) removed during back plate installation.
- 7. For weatherproof applications, apply weather strip over screw and hinge on the cover side after the cover is installed.
- **Note:** Due to the size and weight of the door assemblies, larger graphic panels may require two individuals to install the door assembly.

Note: Minor adjustments may be needed on door lock tab to achieve proper cover to box seal.



Exhibit 7: Detail of Hinge Mounting to Back Box



Exhibit 8: Detail of Box Hinge Mounting Groove



Exhibit 9: Detail of Hinge Mounting to Door Assembly



2.5 DIP SWITCH SETTINGS

Each Graphic Interface Module (GIM) requires a unique address for identification on the RS485 communication bus. DIP switch SW1 as shown in Exhibit 10 is used to set the address for the device. A maximum number of 31 devices can be connected to the RS485 communication bus. The device addresses do not need to be sequential and can be set to any number between 02 and 32. Note that 00 is not a valid address and 01 is reserved for the control panel. Exhibit 11 shows how to set the DIP switch for each binary address (ID number).

The functionality of DIP-switch 7 varies depending upon the module's firmware version as described below:

Firmware version 1.17

In the 'ON' position, all lamps connected to the GIM will cycle ON and OFF until the switch is turned off.

Firmware version 1.20

Sets the peripheral bus communication speed that will be used by the GIM to communicate with the host control panel. In the 'OFF' position, the module will communicate at 9600 bps (standard). In the 'ON' position, the card will communicate at 38400 bps (fast). The selected communication speed set on the module must match the host control panel settings. In addition, all devices connected to the same peripheral bus must use the same communication speed setting.

L Caution

Turning dip-switch 8 on will clear the GIM board configuration. Use C-Linx to resend the configuration to the module.

2.6 CONNECT FIELD WIRING AND POWER-UP PANEL

Prior to connecting field wiring, perform the following checks on the wiring:

- 1. Check for stray voltage.
- 2. Check for ground faults.
- 3. Check for short circuit faults.

If no faults or stray voltages are present, land field wiring to the appropriate terminals on the GIM as shown in Exhibit 12.

Apply power to the Graphic Interface Module (GIM) and verify voltages. If voltages measure outside of the values stated in Section 1.4,

immediately power down and determine cause of



Exhibit 10: Graphic Interface Module Address Switch

fault.

Binary Value	1	2	4	8	16	32
Dip Switch #	1	2	3	4	5	6
Address						
0			NOT	VALID		
1	ON	PAN	EL ONLY	,		
2		ON				
3	ON	ON				
4			ON			
5	ON		ON			
6		ON	ON			
7	ON	ON	ON			
8				ON		
9	ON			ON		
10		ON		ON		
11	ON	ON		ON		
12			ON	ON		
13	ON		ON	ON		
14		ON	ON	ON		
15	ON	ON	ON	ON		
16					ON	
17	ON				ON	
18		ON			ON	
19	ON	ON			ON	
20			ON		ON	
21	ON		ON		ON	
22		ON	ON		ON	
23	ON	ON	ON		ON	
24				ON	ON	
25	ON			ON	ON	
26		ON		ON	ON	
27	ON	ON		ON	ON	
28			ON	ON	ON	
29	ON		ON	ON	ON	
30		ON	ON	ON	ON	
31	ON	ON	ON	ON	ON	
32						ON

Exhibit 11: Binary Addressing Table

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Exhibit 12: Field Wiring Connections to GIM

3.0 PROGRAM GIM MODULE(S)

Each Graphic Interface Module (GIM) must be programmed through the associated control panel using a lap top computer and Fike's C-Linx software. Refer to Fike document 06-448, "C-Linx Software Manual" for programming instructions.

Exhibit 13 shows a list of the available programming features of the GIM and the possible settings that can be used.

4.0 POWER CALCULATIONS

Both the GIM and LDM draw their power from the host Fire Alarm Control Panel or a field power supply and must be included when calculating primary and secondary power requirements for the system. The current draw values shown below must be added to the power requirements for the entire system.

GIM + LDM (Standby) = 58 mA

GIM + LDM (Alarm) = 112 mA

Current draw values for the Space Age components shall be obtained from Space Age and must be added to the values shown above.

Refer to the installation manual for the device supplying power for calculation of system power requirements.

Programming	Possible Settings			
Frogramming	(Defaults shown hold)			
Fedlule Smoke Crown Config				
Smoke Group Coning				
Smoke Gloup	I = 0			
Switch Configuration C	$\frac{1}{2} \frac{1}{2} \frac{1}$			
Switch inputs	(Do NOT upon upond for emotion			
	(DO NOT use - used for smoke			
LED Configuration Ont	control applications only)			
LED Configuration Opt	$\frac{1000}{1000}$ (P2, P4, P6, P8, P10, P12)			
LED Outputs	ON/OFF/AUTO/FAULT			
LED FUNCTIONS	All Network Device / Auto LED			
	All Network Device / Auto LED			
	On Dovice Activation / On			
	Device Trouble / On – Device			
	Active or Trouble / On – Device			
	Prealarm / On – Device Active			
	or Prealarm / On – Zone			
	Process / On – Zone Trouble /			
	On – Zone Supervisory / On –			
	Zone Abort / On – Zone Disable			
	/ On – Zone Prealarm / On –			
	Zone Alarm / On – Zone			
	Predischarge / On – Zone			
	Release / On – Zone Test			
	Alarm / On – Zone Action / On			
	– Panel Silence / On – Panel			
	Drill / On – Panel Walktest / On			
	- Panel Comm OK / On -			
	Panel Power OK / On – Panel			
	Buzzer Active / On – Any			
	Network Device / On – Any			
	Apy Network Device Prealarm /			
	$\Omega = \Lambda n v I ED \Lambda ctive / \Omega = \Lambda II$			
	L = D = A = 1			
	Active / Off – Any Network			
	Device / Off – All Network			
	Device			
Timer	Not Used			
Device Assignments	Panel: 1 - 128			
(max. 50)	Loop: 1 – 4			
	Address: 1 – 254			
Miscellaneous				
Peripheral Address	2 -32			
Local Buzzer	Enabled/Disabled			
Graphic Switch Configu	uration (P13)			
CFG 1 & 2	No function assigned / Reset			
	/ Silence / Acknowledge / Dfill /			
Graphic LED Configure	LED Test			
	No function assigned / Danol			
0-01-3	Silance / Panel Drill / Panel			
	Walktest / Panel Comm OK /			
	Panel Power OK			

Exhibit 13: Programming Options



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