

Eclipse BoostPak

Leak Detection Option

Version 3

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Document Conventions

There are several special symbols in this document. You must know their meaning and importance.

The explanation of these symbols follows below. Please read it thoroughly.

How To Get Help

If you need help, contact your local Eclipse representative. You can also contact Eclipse at:

1665 Elmwood Rd.
Rockford, Illinois 61103 U.S.A.
Phone: 815-877-3031
Fax: 815-877-3336
<http://www.eclipsenet.com>

Please have the information on the product label available when contacting the factory so we may better serve you.

 ECLIPSE <small>Innovative Thermal Solutions</small>	www.eclipsenet.com
Product Name	
Item #	
S/N	
DD MMM YYYY	



This is the safety alert symbol. It is used to alert you to potential personal injunt hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Is used to address practices not related to personal injury.

NOTE

Indicates an important part of text. Read thoroughly.

Safety

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Important notices for safe operation of the BoostPak system will be found in this section. To avoid personal injury, damage to property or the facility, the following warnings must be observed. Read this entire manual before attempting to start the system. If any part of the information in this manual is not understood, contact Eclipse before continuing.

Safety Warnings



- **The BoostPak packaged gas booster systems, covered by this guide are designed to increase gas pressure to a gas utilization appliance. All fuel handling devices are capable of producing fires and explosions if improperly applied, installed, adjusted, controlled or maintained.**
- **Do not bypass any safety feature; fire or explosion could result.**
- **Never try to operate a BoostPak if it shows signs of damage or malfunction.**

NOTICE

- **This manual provides information in the use of the BoostPak for its specific design purpose. Do not deviate from any instructions or application limits described herein without written advice from Eclipse.**

Capabilities

Only qualified personnel, with good mechanical aptitude and experience with combustion equipment, should adjust, maintain or troubleshoot any mechanical or electrical part of this system.

Operator Training

The best safety precaution is an alert and trained operator. Train new operators thoroughly and have them demonstrate an adequate understanding of the equipment and its operation. A regular retraining schedule should be administered to ensure operators maintain a high degree of proficiency.

Replacement Parts

Order replacement parts from Eclipse only. Any customer supplied valves or switches should carry UL, FM, CSA, CGA and/or CE approvals where applicable.

Installation

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Intent

This installation guide describes additional features and requirements of this option only. It is intended to be used along with the Installation Guide of numbering series 630 for your specific BoostPak.

Description

The leak detection option provides a sensor to monitor the presence of combustible gases, an automatic safety shut off valve to stop the gas supply, and an annunciation control panel to alert personnel about the safety of the equipment room.

The sensor is mounted within the equipment room and has two adjustable alarm settings. The first is factory set to 25%LEL (lower explosive limit) and the second is set to 50%LEL. The second alarm will cause the safety shut off valve to close. Outputs for both alarms are provided for customer use as needed to operate remote alarms, wired to shut down the BoostPak, or to turn on a ventilation fan.

The safety shut off valve is piped into the gas inlet inside the building and upstream of the BoostPak system.

The annunciation control panel is mounted near the door of the equipment room containing the BoostPak system. Lights and switches on this panel allow an operator to control the safety shut off valve and observe if the room is safe to enter.

Safety Shut-Off Valve Installation

Install automatic safety shut off valve in gas utility line outside of the equipment room. Refer to the instruction manual shipped with the valve for further details. Sizes up through 3" pipe use Eclipse AutoTite Automatic Gas Shutoff Valves, Instruction Manual 756. Sizes for 4" and 6" pipe use H137 valves, Instruction Sheet H137-1.

Annunciation Control Panel Installation

Mount the control panel near the entrance to the equipment room at eye level. The panel must be secured to the wall and conduits to it must be separately supported. The panel will need 3 conduit entrances:

- 120VAC power supply from building circuit breaker, 3 wires, sized to handle 10 amps plus additional loads connected to the alarm terminals
- 120VAC power and switch signal to gas valve, 3 wires, not smaller than 18 gauge, as determined by local codes

- 120VAC power to the gas detector, 5 wires, not smaller than 18 gauge, as determined by local codes

Leak Detector Installation

The leak detector consists of two parts, the detector module and the remote sensor. For natural gas, which is lighter than air, the sensor should be installed near the BoostPak and one foot from the ceiling. The sensor will protect an area within a radius of 20 feet and not greater than 1257 square feet. If the equipment room is larger, more sensors may be required for adequate protection.

The detector module can mount using 2 fasteners through the base at 4-3/8" horizontal centers onto a wall surface. Alternately it can be mounted to a standard electrical box with 3-1/4" vertical centers. When mounted on a wall, there are four 1/2" conduit knock-outs available, two on top and two on bottom of the housing. The remote sensor mounts in a standard electrical switch box with 3-1/4" centers. Refer to the detailed instructions shipped with the leak detector

- Refer to Eclipse Data 630-LD and the original manufacturer's instructions for environmental specifications.
- Make sure to locate the monitor and sensing assembly in an area easily accessible to a technician.
- Avoid any location where the monitor could be subject to vibrations.
- Avoid any location close to sources of electromagnetic interference, such as variable frequency motor drives, load switching devices and high current carrying conductors.
- Avoid any location where temperature variations occur rapidly.
- Make sure the location and installation conform to local codes.

Electrical Installation

Refer to the system drawing 10025035 shipped with the control panel.

- Incoming power supply connects to 1022 (hot), 1023 (neutral) and GND (ground).
- Power to operate the gas valve comes from the control panel terminals 1083 (hot), 1023 (neutral) and GND (ground).
- Position switches from the valve wire to control panel terminals 1021 (hot), 1041 (closed position), and 1051 (open position).
- The remote sensor requires low voltage 2-pair, 4-conductor shielded cable, Belden #1325A. Keep the wiring length less than 100 feet.

Terminals are provided for optional customer interface. The total of all loads must not exceed 7.5 amps. A jumper wire between panel terminals 1021 and 1171 provides powered outputs. If dry (voltage free) contacts are required, remove this jumper and use 1171 as the common. The functions are Entry OK (1172), Leak Detected (1181), Leak Cleared (1191) and Pre- Warning (1201).

The Leak Detect option can operate independently of the BoostPak control system. A leakage condition will shut down the BoostPak without a direct wiring connection if the low gas inlet switch is downstream of the gas valve.

If a direct connection is needed, it can be wired in series with the run interlocks or in series with the low inlet gas switch. When connected to the run interlocks, a leak detect will provide a normal shutdown of the BoostPak (refer to the appropriate installation guide). When connected to the low inlet gas, a leak detect will result in an alarm condition shutdown.

Checklist After Installation

To use a direct connection, remove the leak detect annunciation panel (LDAP) jumper from 1021 to 1171 and connect the Entry OK contact into the BoostPak panel (BPCP), in accordance with one of the two following methods.

1. For normal shutdown on leak detection, remove the jumper* from BPCP 2161 to 2162. Connect LDAP 1171 to BPCP 2161 and LDAP 1172 to BPCP 2162.

* Note, if the BoostPak system uses a High Inlet Gas switch, the jumper is not present and the connection will need to be in series with the wire from that switch.
2. For alarm condition shutdown, remove the Low Inlet Gas switch wire from BPCP 2121 and connect it to LDAP 1171. Then connect LDAP 1172 to BPCP 2121.

Ensure the system was properly installed and verify:

- The control panel terminals are tight; shipping may have caused loosening.
- The gas flow through the shut off valve has the proper direction.
- The detector module and remote sensor are installed in appropriate locations and at appropriate heights.

Commissioning

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Preliminary

This section supplements the commissioning section in your Installation Guide 630.



- **120 VAC power to annunciation panel must be turned off and locked out prior to servicing panel.**

Operational Tests

Test the operation of the BoostPak and verify:

- Leak detector responds to test gas
- Automatic SSOV closes when second alarm (factory preset at 50%LEL) is activated.
- Optional customer wired equipment operates as intended at first and second alarm points

Commissioning Record

Nameplate Information

Leak Detect Module Serial Number _____

Annunciation Control Panel Serial Number _____

Mechanical Installation

Ambient Temperature _____

Panel Mounting Secure, Rigid, Level _____

Conduit Properly Supported _____

Proper and Adequate Detector Location _____

Leak Detector Performance

Alarm A Test Gas Response _____

Alarm B Test Gas Response _____

Customer Interface Test Response _____

I certify this equipment is installed per the requirements of the manufacturer and that it is performing to its specifications.

By: _____

Date: _____



Operation

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Preliminary

This section supplements the operation section in your Installation Guide 630.

Leak Detector Operation

When power is applied, the methane sensor will go to a warmup mode for about 5 minutes.

The green LED indicates normal operation. The yellow LED indicates a system failure. If this situation occurs, you should contact the leak detector manufacturer for further assistance. The detector has 2 sensors. A CO sensor located in the module has no control panel function. The remote sensor for methane operates relays in the control panel. The four red LEDs indicate the gas concentration reaches alarm level A and B for both sensors.

When the methane concentration reaches the first alarm level (Alarm A), panel relay CR127 changes state. If the gas concentration reaches the second alarm level (Alarm B), panel relay CR128 changes state and the audible alarm comes on.

Annunciation Control Panel Operation

On initial application of power from the building circuit breaker panel, the yellow light on the Close Gas Valve push button will come on. When the detector module determines a safe condition, the green Safe to Enter light comes on. Then the Open Gas Valve push button can be pressed to allow gas supply to the equipment room. The button must be held until its green light comes on.

If the gas concentration gets to the second alarm level, then the gas valve will shut and the red Leak Detected light and Alarm.

Maintenance & Troubleshooting

Monthly Checklist

This section supplements your Installation Guide 630 Maintenance and Troubleshooting section. Please refer to it for further troubleshooting and maintenance instructions.

- Clean the exterior (module & sensor) with a soft, damp cloth. Do not use solvents, soaps or polishes.
- Verify leak detector responds to test gas

Annual Checklist

- Verify operation of safety shut off valve when second alarm level on leak detection unit is activated.

- Verify operation of all optional customer wired equipment (ventilation fans, auxiliary alarms, BoostPak control).

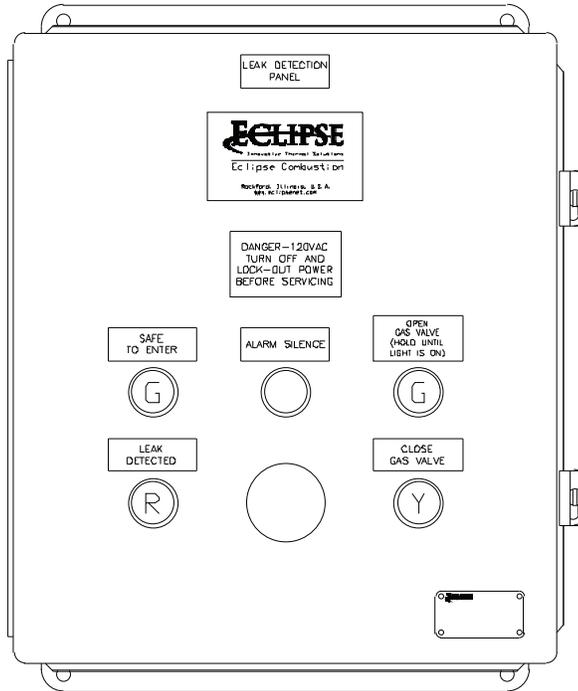
Gas Detector Calibration

The detector comes as plug and play out of the box. All adjustments are factory set. If the unit does not seem to respond properly, return to the manufacturer for repair. If field adjustments are required the optional display is needed. Flow a span gas at the recommended rate and observe the action of the LEDs and outputs. Span gas can be purchased through your local industrial gas supplier.

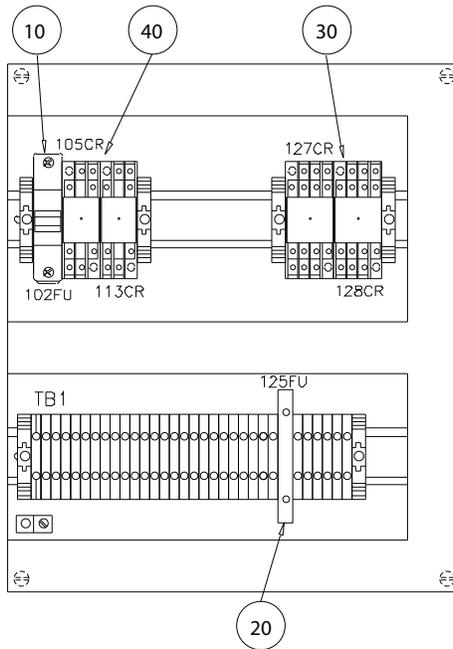
Troubleshooting Guide

Problem	Possible Cause	Solution
No lights at annunciation panel	Power supply to panel disconnected / not powered	Check incoming power supply.
	Main fuse blown	Check for wiring or device fault, replace fuse.
Safety shut-off valve closed	“Open Gas Valve” push button not pushed, green light not illuminated	Push green light / push button to open valve and turn on light.
	Leak detected	Ventilate room, perform leak test on piping, reset.
	Detector module fuse blown	Check for wiring or device fault, replace fuse.
	Leak detector sensor bad	Replace sensor.
	Wired incorrectly or wiring damaged	Check and repair wiring from annunciation panel to gas valve and detector module. Check and repair wiring from detector module to sensor.

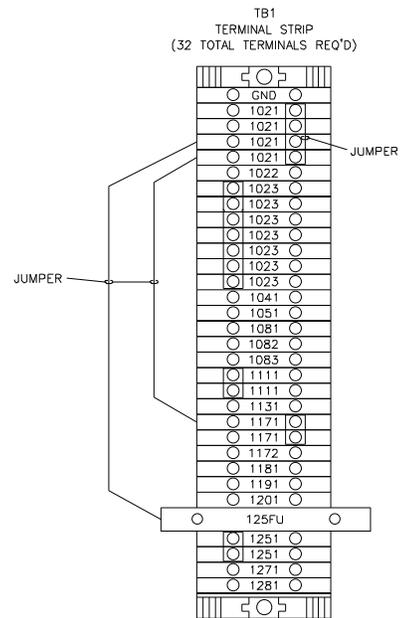
Panel Layout, Enclosure and Terminal Strip



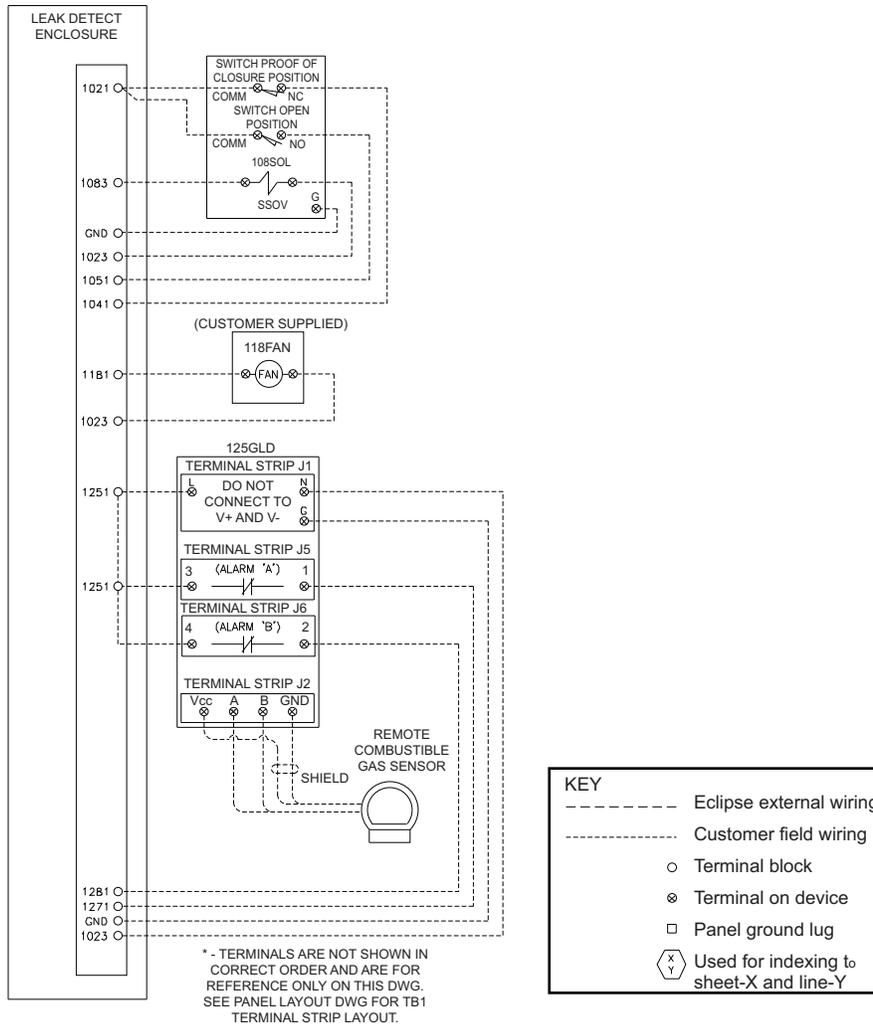
Enclosure 14"H x 12"W x 6"D



Panel 12.75"H x 10.88"W



BoostPak Leak Detection Kit Wiring



Spare Parts List

Item Number	Eclipse Part Number	Description
10	10022887	Fuse, 10 amp
20	10013754	Fuse, 2 amp
30	22783	Relay, 4PDT
40	22793-1	Relay, DPDT



Appendix

Conversion Factors

Metric to English

From	To	Multiply By
actual cubic meter/h (am ³ /h)	actual cubic foot/h (acfh)	35.31
normal cubic meter/h (Nm ³ /h)	standard cubic foot /h (scfh)	38.04
degrees Celsius (°C)	degrees Fahrenheit (°F)	(°C x 9/5) + 32
kilogram (kg)	pound (lb)	2.205
kilowatt (kW)	Btu/h	3415
meter (m)	foot (ft)	3.281
millibar (mbar)	inches water column ("w.c.)	0.402
millibar (mbar)	pounds/sq in (psi)	14.5 x 10 ⁻³
millimeter (mm)	inch (in)	3.94 x 10 ⁻²
MJ/Nm ³	Btu/ft ³ (standard)	26.86

Metric to Metric

From	To	Multiply By
kiloPascals (kPa)	millibar (mbar)	10
meter (m)	millimeter (mm)	1000
millibar (mbar)	kiloPascals (kPa)	0.1
millimeter (mm)	meter (m)	0.001

English to Metric

From	To	Multiply By
actual cubic foot/h (acfh)	actual cubic meter/h (am ³ /h)	2.832 x 10 ⁻²
standard cubic foot /h (scfh)	normal cubic meter/h (Nm ³ /h)	2.629 x 10 ⁻²
degrees Fahrenheit (°F)	degrees Celsius (°C)	(°F - 32) x 5/9
pound (lb)	kilogram (kg)	0.454
Btu/h	kilowatt (kW)	0.293 x 10 ⁻³
foot (ft)	meter (m)	0.3048
inches water column ("w.c.)	millibar (mbar)	2.489
pounds/sq in (psi)	millibar (mbar)	68.95
inch (in)	millimeter (mm)	25.4
Btu/ft ³ (standard)	MJ/Nm ³	37.2 x 10 ⁻³

