



ACL

Manufacturing

A Division of ClearRushCo.

ACL IGN400-PM Ignition Module Installation Manual

WARNING

This manual must be read in its entirety before installation of this burner. Installation must be performed by a qualified technician and must adhere to the standards set by the local regulatory authorities.

ACL is not responsible for the misuse or incorrect application of this product.

v0.7

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ACL IGN400-PM Ignition Module

The ACL IGN400-PM Ignition Module is designed to light and monitor a (pilot) gas burner using flame ionization. It will react fast to a flame out and re-light the burner using direct spark ignition. It uses a single flame rod for both ignition and flame sensing and displays the flame signal strength on the four character LED display and via discrete LED indication. The Ignition Module can optionally monitor a main burner flame using a second Ignitor Rod as well. The Ignition Module is normally powered by an ACL BMS controller.



Features

- CSA certified
C22.2 No. 60730-2-5-2014
ANSI Z21.20-2014
- Displays flame signal strength
- LED Indication of Pilot, Main, and Flame Fail
- 100% Fail safe design
- Flame-out response time of < 1 second
- 12VDC Power and Alarm and Valve output signals
- One or Three Try versions available
- Optional Main flame sense

Operation

The ACL-IGN400-PM ignition module is designed to operate with the ACL Combustion Safety Controllers CSC200, CSC400, ACL5500, ACL5100 for heaters, treaters, re-boilers, incinerators, and combustors. It will also operate with the ACL3200 controller for flare stacks and combustors.

DO NOT POWER ON MODULE WITH IGNITION CABLE DISCONNECTED to prevent damage to module

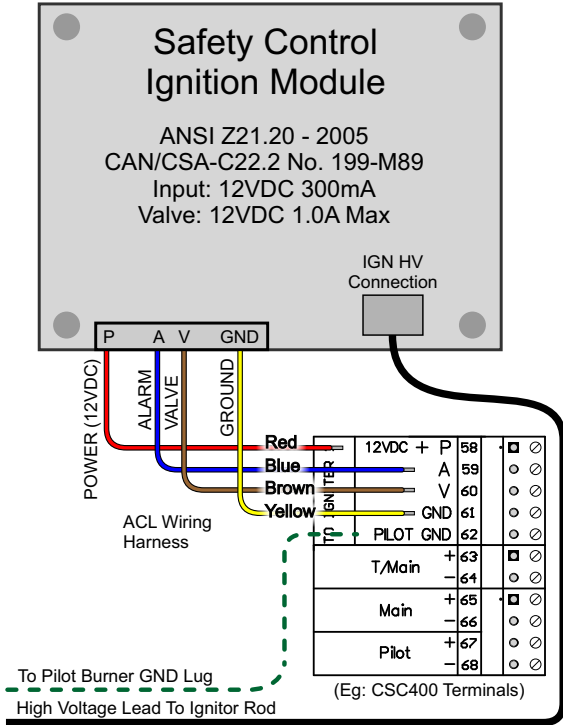
Flame Fail / Fault

Flame strength is shown on the built-in LED display as either a uA signal, percentage, or a rating of “Good”, “Fair”, “Poor”, or “None”. a flame signal over 2.5uA is 100%. A flame signal below 0.7uA is 0% and will result in a Flame Fail / Fault. Servicing of the pilot burner should be performed on the Ignition rod and pilot nozzle if a flame strength below 30-50% is reached. “FF” will be displayed upon a Flame Fail. A power reset is needed to clear a Flame Fail.

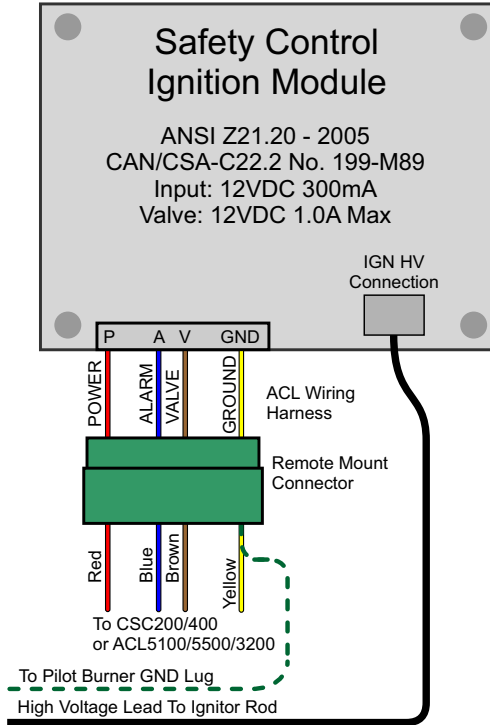
ACL IGN400-PM Ignition Module Wiring Diagram Changes

ACL IGN400-PM Ignition Module

ACL Ignition Module
CAN/CSA-C22.2 No. 199-M89
Local Mounting and Wiring

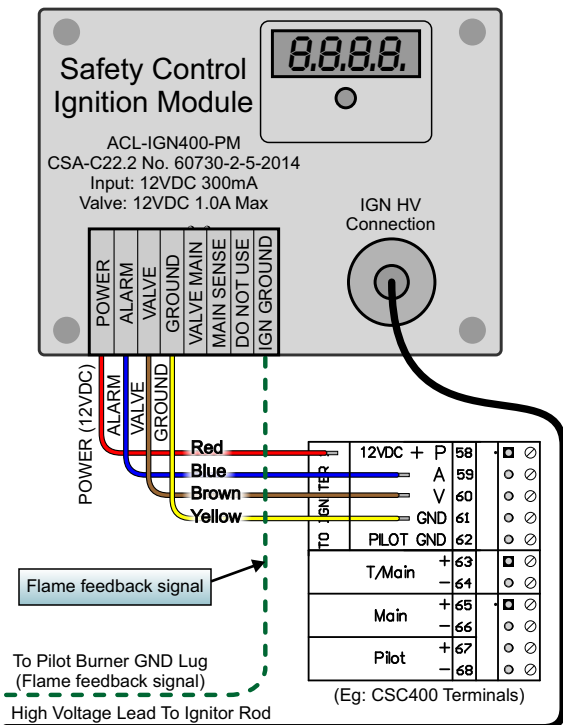


ACL Ignition Module
CAN/CSA-C22.2 No. 199-M89
Remote Mounting and Wiring

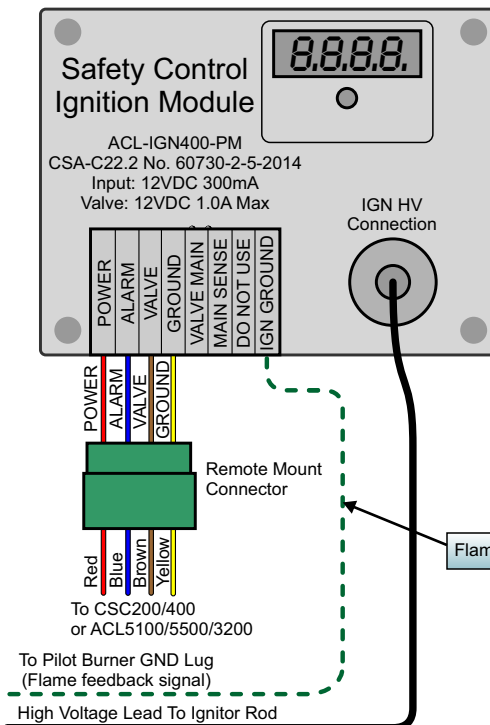


35-530913-001
Ignition Module
Wiring

ACL IGN400-PM Ignition Module
CSA-C22.2 No. 60730-2-5-2014
Local Mounting and Wiring

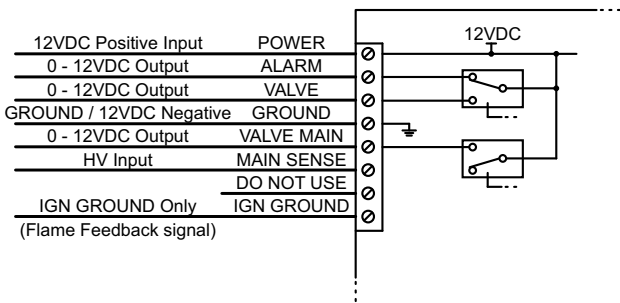
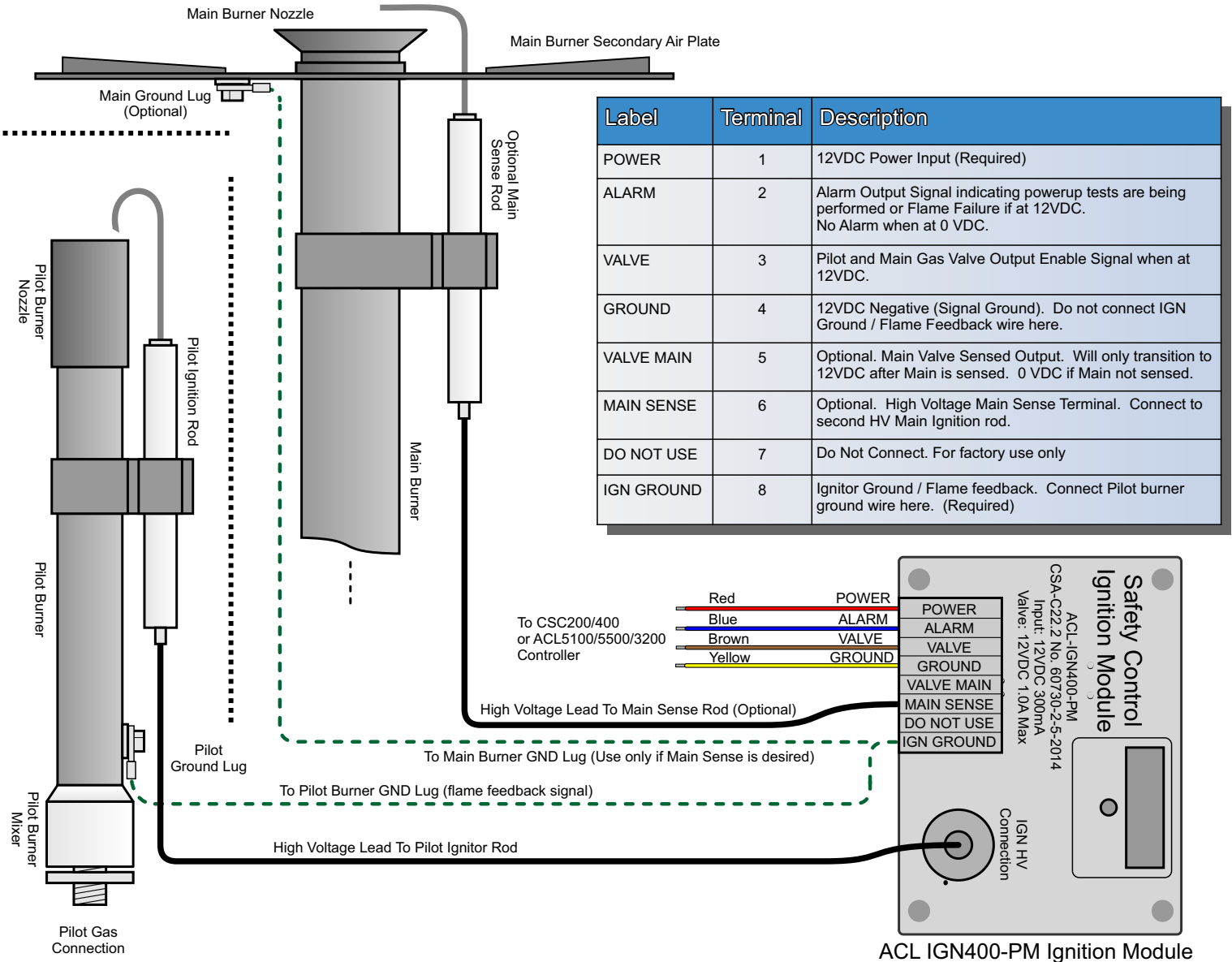


ACL IGN400-PM Ignition Module
CSA-C22.2 No. 60730-2-5-2014
Remote Mounting and Wiring



New
ACL-IGN400-PM
Ignition Module
Wiring

ACL IGN400-PM Ignition Module Burner Wiring and Operations



IGN Module Operational Notes:

- **ALARM / VALVE:**
 - Either ALARM or VALVE will be 12VDC after powerup. The other will be 0V due to being switched via a relay.
 - VALVE will be 12VDC when IGN Module is sparking or when pilot flame is sensed. The VALVE signal at 12VDC allows solenoid valves to be turned on by ACL controllers.
 - ALARM will be 12VDC during powerup and during pilot Flame Fail.
- VALVE MAIN will only be 12VDC after main flame is sensed on the MAIN SENSE HV Input. Otherwise it will be 0 VDC.
- IGN GROUND / Flame Feedback signal is for connection to pilot burner ground and/or main burner ground only. **DO NOT CONNECT** to the 12VDC negative (signal ground) wire.

Specifications

SPECIFICATION	DESCRIPTION, VALUE
Input Voltage	12VDC nominal (9.5VDC to 14.5VDC)
Input Current Required	300mA max @12VDC, 143mA typical
Valve Output Relay	1.0A max @ 12VDC
Main Valve Output Relay	1.0A max @ 12VDC (combined with Valve Output Relay)
Flame Detection minimum	0.7uA (0%)
Flame fail / fault response time	< 1s
Powerup self-test time	< 5s before trial for ignition starts
Trial for ignition time	5s
Number of Ignition tries	One (three try version is also available)
Number of sparks per second	30 (15 also available)
Auto-relight attempt	Done upon flame sense lost. Flame must be good for 2 seconds after sparking for a relight to occur instead of a flame fail.
Number of Tries for Ignition	1 or 3 tries (determined upon order placement)
Pre-purge / Post-purge Timings	Determined by ACL BMS Controller (CSC400/200, etc.)
Enclosure Dimensions	4.57" x 3.57" x 1.27" (116.1 x 90.7 x 32.3mm)
Mounting Hole Dimensions	3.75" x 2.75" (95.25 x 69.85mm)
High Voltage Connection	1/4" male blade
Moisture Resistance	Conformal coated circuit board. 95% relative humidity, non-condensing. Enclosure is not sealed. Do not submerge or expose to direct contact with water.
Operating Temperature	-40°F to + 140°F (-40°C to + 60°C) ambient
Storage Temperature	-40°F to + 185°F (-40°C to + 85°C)
Agency Approvals	CSA certified C22.2 No. 60730-2-5-2014, ANSI Z21.20-2014 CSA B149.3 - 20 compliant, meets NFPA standards

Troubleshooting

ISSUE	POSSIBLE REASON(S)	CORRECTIVE ACTION
No sparking	Wiring is incorrect or wires are damaged	Double check wiring connectors and connections. Refer to wiring diagrams.
	Ignition rod touching burner pin or is too far away	Adjust ignition rod to a 1/8" - 1/4" gap
	Ignition rod ceramic is cracked	Ignition rod needs replacing
	A different shutdown or alarm may be present on the ACL controller	Check display and/or Alarm contacts of ACL BMS controller (CSC400/200, ACL3200, 5500/5100) to verify that they're in a permissive state.
Intermittent spark	Soot on Ignition rod or tip of rod is dull	Remove burner and clean ignition rod and pilot burner nozzle to expose bare metal. Ensure tip of rod has a sharp end.
Ignition Module display does not turn on	No power going to Ignition Module	Use a voltmeter/multimeter to verify that 12VDC is incoming to "Power" Terminal
Pilot lights but goes out after 5s trial for ignition	Ignition rod may be too far away from pilot burner nozzle or tip of rod is not immersed in the flame	Adjust ignition rod to a 1/8" - 1/4" gap with the tip in front of nozzle, not on the outside of the nozzle.
	Gas pressure may be too high, too low, or not enough air is getting into the pilot burner	Verify gas pressure is between 5 and 9 psi. Adjust air mixer shutters to allow just enough air to create a blue pilot flame.
	Ground wire may be connected incorrectly	Connect pilot ground wire to "IGN Ground" terminal on ignition module directly, not to any other ground connection.

Safety Error Codes

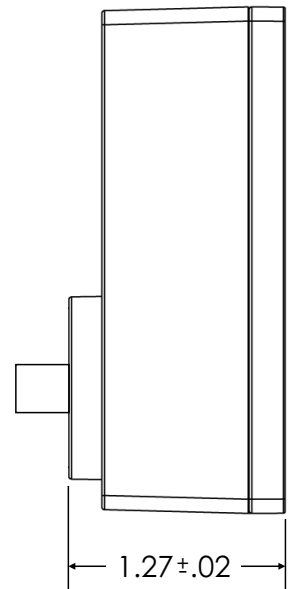
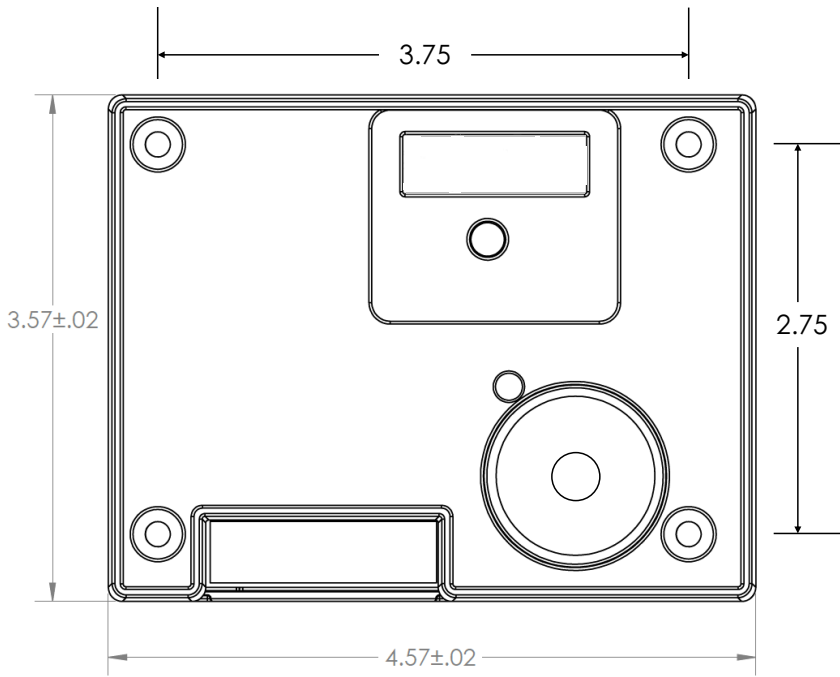
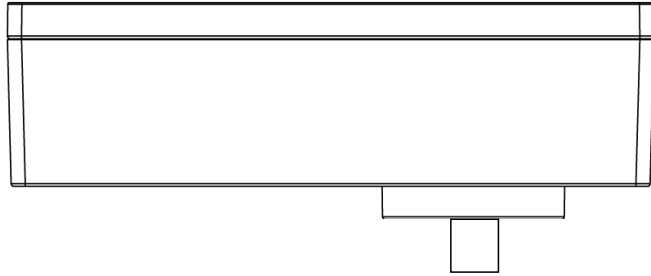
The following error codes are shown on the display when an error has been detected. If the error has been detected by microprocessor 1, the prefix "Er" is shown. If the error has been detected by microprocessor 2, the prefix "Hr" is shown.

To remedy some error codes, power the ignition module off (press Stop on the connected ACL BMS controller), then power it on again (press Start on the connected ACL BMS controller).

Error Code String	Description	Troubleshooting
Err1 - Err4, ErrA, Errb	Startup IO Tests	Check wiring connections, then cycle power to module.
Err5 - Er27	IO Tests, during sparking and flame sense	Power off then on again. If problem persists, IGN module may need replacing.
Er40 - Er46	Memory Tests	
Er50 - Er64	Startup CPU Tests	
Er65 - Er79	Periodic Internal Tests	

Mechanical Drawing

Dimensions are shown in inches.





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Limited Warranty

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any product which is found to be defective in such workmanship or material will be repaired or replaced by Seller for a period of one year from purchase date. Warranty of such items do not include shipping, installation or set-up.

Liability Statement

ACL Manufacturing Inc. Shall not be liable for any special, indirect, consequential or other damages of a like general nature, including, without limitation, loss of profits or production, or loss of expenses of any nature incurred by the buyer or any third party.

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