



ORDERING INSTRUCTIONS
2X SERIES UNIVERSAL DIRECT SPARK IGNITION CONTROL

Application

The 2X series Universal Direct Spark Ignition Control is a microprocessor based ignition control. The microprocessor provides reliable software control of all timings and drives a diagnostic led. It is designed for direct burner supervision and can be used with all gases. It provides ignition sequence, flame monitoring, and safety shutout for heating appliances using direct spark ignition. The control replaces many existing direct spark ignition controls with flame rectification made by various manufacturers.

Three hardware configurations are available to match the application. Retry time (none, 5 min, 60min) and trials (1, 3 or continuous), inter-purge time (none to 4 minutes), pre-purge time (none to 4 minutes) and trial time (4 to 120 seconds) are factory programmed. The standard values can be matched to almost any existing control.

Specifications

Electrical ratings:	Voltage	24VAC 50/60 Hz
	Main valve	2A maximum
	Operating current	0.2A
	Wiring connections	1/4" male spade

Environmental: 40 to +170 degrees F (-40 to +77 C)

Humidity: to 90% non-condensing

Flame failure response time: 1 second maximum

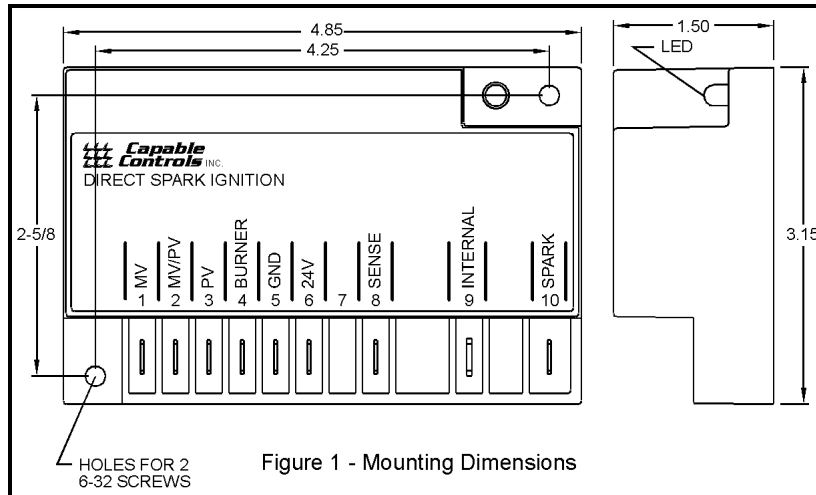
Minimum flame current required: 0.15 microamperes

Type of gas: Natural, LP, or manufactured

Recommended Spark Gap: 0.2 inches maximum, use noise suppression wire only

Mounting and wiring

The 2X series control is not position sensitive. It may be mounted in any position with #6 sheet metal or machine screws. Mounting holes are on 4 - 1/4 by 2 - 5/8 centers. See figure 1 below.



Power must be provided from a properly sized 24 volt class 2 transformer. All wiring must be done in accordance with both local and national electrical code. All wiring and initial operation must be performed by a qualified service technician.

The high voltage spark cable should be of the noise suppression type rated for at least 15kV and must not be in continuous contact with a metal surface. If separate flame sense probe is used, the sense wire must be separated from the high voltage wire by a minimum of 1/4".

Selecting Model Number

The model number consists of 2 followed by 5 option digits in a 2abcde format. Note that some digits use hexadecimal coding 0 – 9, A B C D E F to allow more selections.

The first option digit (a) selects one of three hardware configurations available. Models differ in number of terminals provided but function identically. Universal sense units are supplied with a jumper for internal flame sense.

27bcd = internal sense (1 rod)

28bcd = external sense (2 rod)

29bcd = universal sense (1 or 2 rod jumper selected)

Model	27xxxx	28xxxx	29xxxx
Sense terminal	No	Yes	Yes
Internal terminal	No	No	Yes

The second option digit (b) selects the factory set retry time if flame fails to light and number of trials

- 2x**0**xxx = none lockout after one trial time
- 2x**1**xxx = 5 minutes continuous retry – no lockout
- 2x**2**xxx = 60 minutes continuous retry – no lockout
- 2x**3**xxx = 5 minutes 3 tries then lockout
- 2x**4**xxx = 60 minutes 3 tries then lockout

The third option digit (c) selects the factory set inter-purge (recycle time) on loss of flame. Controls (0 – B) use recycle on flame loss the valve turns off for the inter-purge time then a new trial for ignition starts. Option F is re-ignition on flame loss the valve does not turn off and spark and new trial time start immediately.

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|--|---|
| 2xx 0 xx = none approx. 0.7 seconds | 2xx 6 xx = 30 second inter-purge |
| 2xx 1 xx = 5 second inter-purge | 2xx 7 xx = 35 second inter-purge |
| 2xx 2 xx = 10 second inter-purge | 2xx 8 xx = 40 second inter-purge |
| 2xx 3 xx = 15 second inter-purge | 2xx 9 xx = 45 second inter-purge |
| 2xx 4 xx = 20 second inter-purge | 2xx A xx = 60 second inter-purge |
| 2xx 5 xx = 25 second inter-purge | 2xx B xx = 4 minute inter-purge |
| | 2xx F xx = re-ignition |

The fourth option digit (d) selects the factory set pre-purge time.

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|--|---------------------------------------|
| 2xxx 0 x = no pre-purge (1 second max. startup delay) | |
| 2xxx 1 x = 10 second pre-purge | 2xxx 4 x = 45 second pre-purge |
| 2xxx 2 x = 15 second pre-purge | 2xxx 5 x = 60 second pre-purge |
| 2xxx 3 x = 30 second pre-purge | 2xxx 6 x = 4 second pre-purge |
| | 2xxx 7 x = 8 second pre-purge |
| | 2xxx 8 x = 4 minute pre-purge |

The last option digit (e) selects the factory set trial time.

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|---------------------------------------|---|
| 2xxxx 1 = 5 second trial time | 2xxxx 8 = 90 second trial time |
| 2xxxx 2 = 10 second trial time | 2xxxx 9 = infinite trial time no lockout |
| 2xxxx 3 = 15 second trial time | 2xxxx A = 4 second trial time |
| 2xxxx 4 = 20 second trial time | 2xxxx B = 8 second trial time |
| 2xxxx 5 = 25 second trial time | 2xxxx C = 50 second trial time |
| 2xxxx 6 = 30 second trial time | 2xxxx D = 85 second trial time |
| 2xxxx 7 = 60 second trial time | 2xxxx E = 120 second trial time |

Some Examples

- Model 270008 = internal sense, no retry, 1 sec pre-purge, 90 sec trial time
- Model 280034 = external sense, no retry, 30 sec pre-purge, 20 sec trial time
- Model 291017 = universal sense, 5 min retry, 10 sec pre-purge, 60 sec trial time