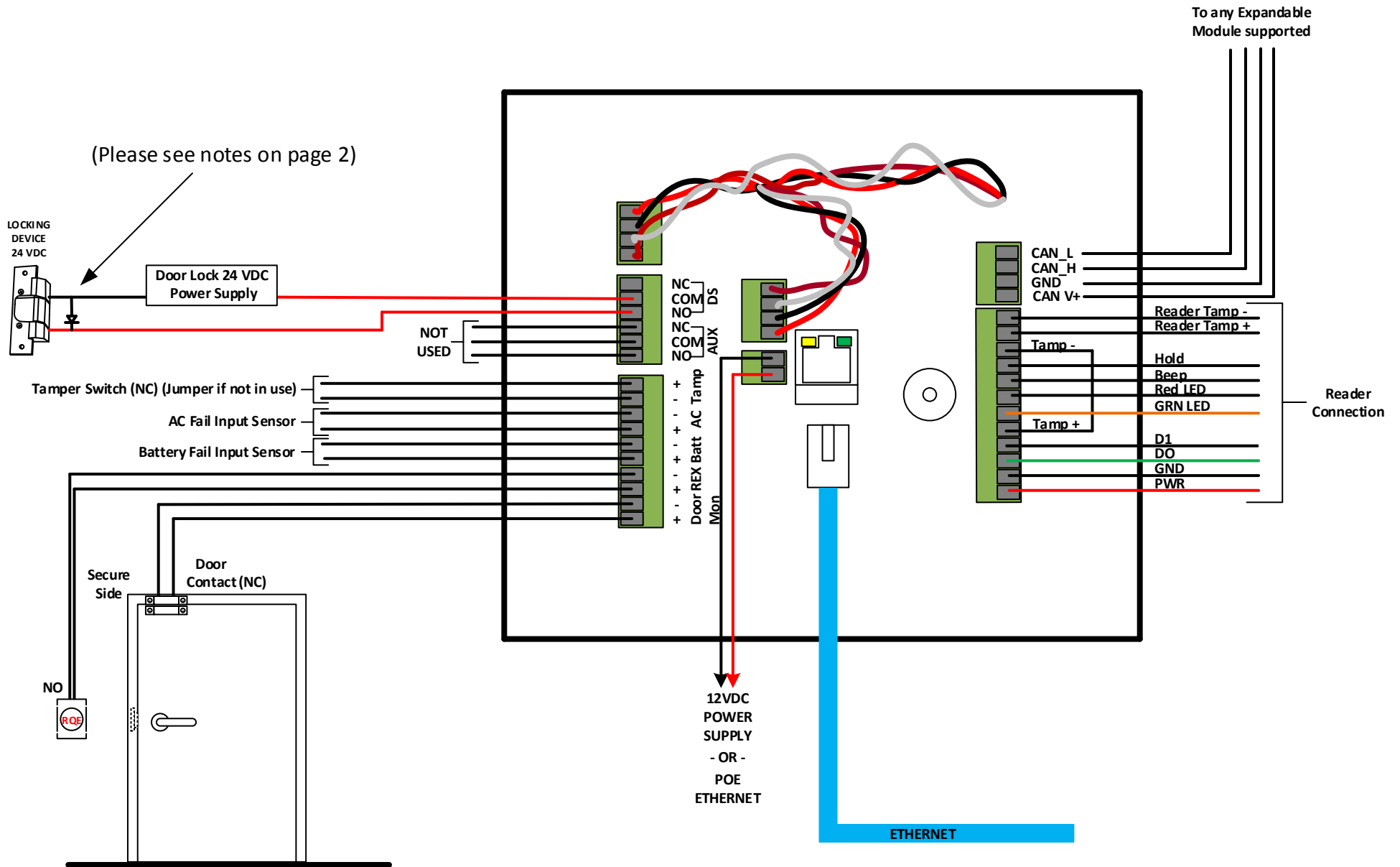


# ICPAM EM-100 Connections

Utrust Verge Controller's dry contacts controlling a 24 VDC lock via a 24 VDC power supply



Caution: Some magnetic locks exhibit both high inrush current when activated and a high instantaneous break voltage when de-energized due to magnetic field collapse. It is recommended that you use a diode (1N4001 or 1N5400) across the lock (see lock hook-up) and snubber circuit across the controlling relay terminals to protect the controlling relay contacts.

Described below is the method to wire a locking device which has a high in-rush current or back electromotive force. A high in-rush current in any current value which exceeds the 2A rating on the EM-100 DS relay. A high back electromotive force in any voltage value which exceeds the 30VDC rating on the EM-100 DS relay.

While many devices do not appear to exceed these ratings, in actuality, due to their electronic component nature, they may exceed these ratings. Wire these devices per the following recommendation or risk pre-mature relay failure.

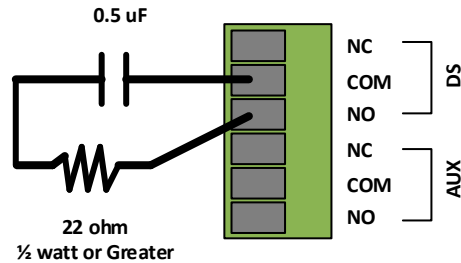
#### Physical Installation

Protect relays from various issues when using high in-rush current or back electromotive force devices by using a snubber circuit and a fly-back diode.

A snubber circuit is a series capacitor and resistor wired across the lock relay. Wire the snubber to the common and the normally closed points if using a constant draw locking device (such as a Mag Loc). Wire the snubber to common and normally Open points if using a current draw to Unlock a locking device such as an electric strike.

RC values can be determine by using a formula. This is due to wiring and component locations, which vary by installation. Using the following examples:

0.5 uF Capacitor in series with a 22 ohm ½ watt resistor works for locking devices operating at 24 VDC and current of 0.25 to 1.0 amps. ½ Watt resistor works if the relay is triggered less than three times per minute. Increase the resistor wattage when the number of the trigger per minutes increases.



A Fly-back diode allows the inductor, when the relay switch is open, to draw the current from itself in a continuous loop until the energy dissipates.

Some Maglocks already have this protection included, please read the device's installation guide.

Here is an example using a diode on a strike. For the fly-back diode, you can use a 1N4001 or a 1N5400.

Caution: Cover the snubber leads with insulating sleeves or electrical tape.

