



LE PB X

**Lynch**  
Fluid Controls

**Lynch**<sup>TM</sup>  
Electronics

A Division of Lynch Fluid Controls

# Digital Display Proportional Valve Driver

## LE PB X

Potted Enclosure

### Features and Benefits

- ▶ Microcontroller design.
- ▶ Independent adjustments (Incl. ramp up & ramp down).
- ▶ 4 digit extra bright seven segment LED display.
- ▶ Large, easy-to-use adjustments and readout.
- ▶ Display and adjust actual values (Current & Voltage).
- ▶ Wide range of supply voltage.
- ▶ User selectable input type through menu setup.
- ▶ Wide ramp time range (0 to 99.5 Sec).
- ▶ Rugged design offers vibration resistance.
- ▶ Direct mounting.
- ▶ Housed in fire retardant two part epoxy resin (UL94-V0).
- ▶ Simple control with analog input, locally supplied reference voltage.
- ▶ Energy efficient PWM circuit/no heat sink required.
- ▶ Electronic limiting circuit/short circuit proof.
- ▶ Reverse polarity, command Input protection.
- ▶ Load can be connected & disconnected live.
- ▶ Current sensing maintains output regardless of changes in supply voltage and coil resistance.
- ▶ Easy troubleshooting/cable length not an issue.



### LE PB X Standard Specifications

Operating voltage:	9 to 36 VDC
Maximum output current:	3.00Amps
Input signal:	5V, 10V, 4 to 20mA
Maximum ramp time:	99.5 Sec
PWM / Dither frequency:	40-450Hz
Linearity:	1%
Operating Temperature:	-40° to +80° Celsius

### Several Forms Available



Note: Customization of functionality and enclosure type are available on request.

### PART NUMBER SYSTEM Proportional Solenoid Driver, Single, Potted Enclosure. Example: LE PB X

TYPE		MODEL		FORM		PARAMETERS = X	
LE	Lynch Electronics			B	Single, Potted Enclosure, Screw Mounted	COMMAND INPUT	0 to 5V, 0 to 10V, 4 to 20mA,
						MAX CURRENT OUTPUT	0.20 to 3.00A
P	Proportional Solenoid Driver					RAMP TIME	0 to 99.5 Sec

Contact Us For More Information

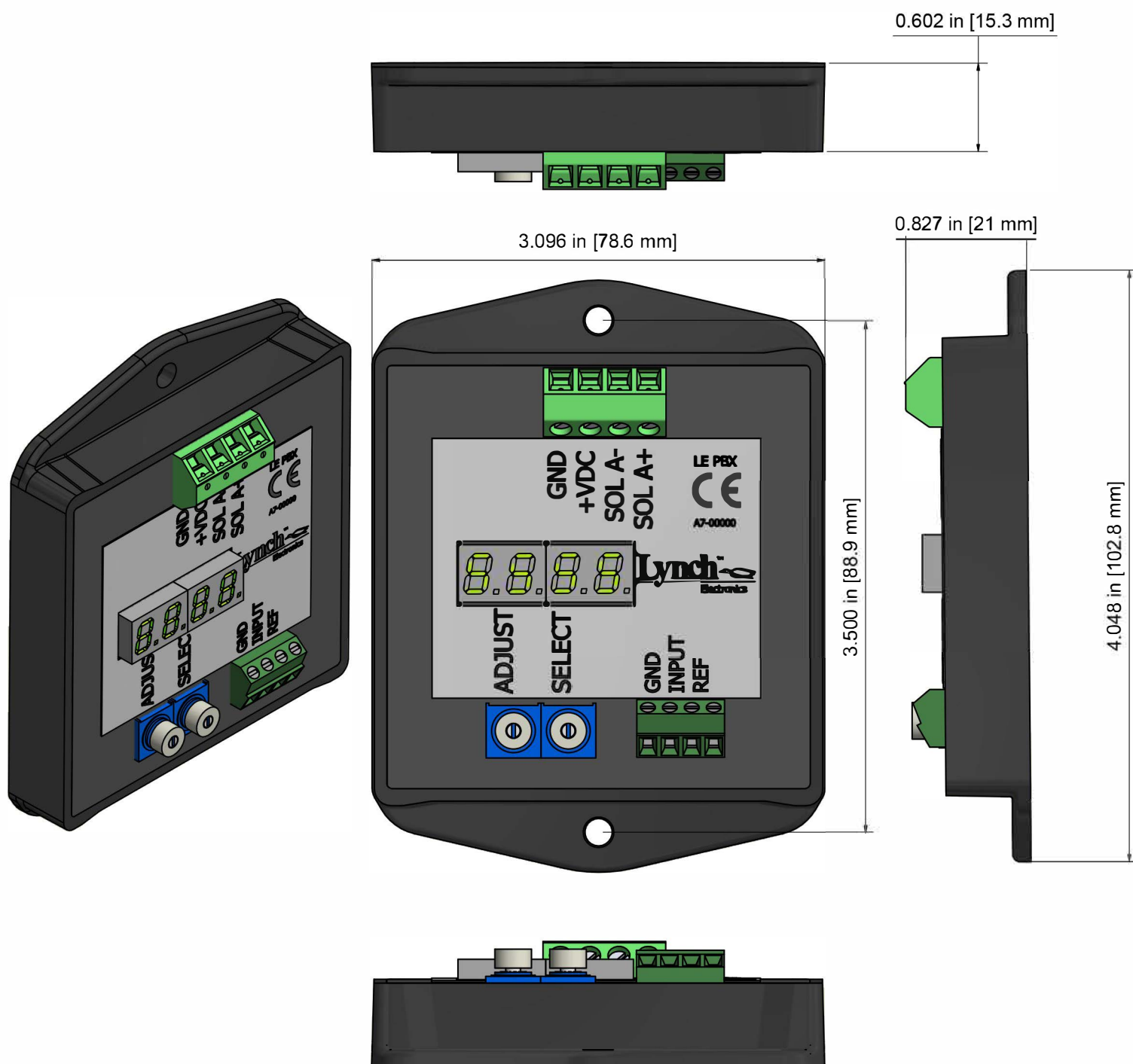
LE PB X-0218

<b>Toll Free</b> Tel: 1 (888) 626-4365 Fax: 1 (800) 263-5807	<b>Local &amp; International</b> Tel: +1 (905) 363-2400 Fax: +1 (905) 363-1191	<b>Canada</b> 1799 Argentia Road Mississauga, Ontario L5N 3A2	<b>USA</b> 3790 Commerce Court, Suite 500, North Tonawanda New York, 14120	<b>Online</b> <a href="http://www.Lynch.ca">www.Lynch.ca</a> <a href="mailto:sales@lynch.ca">sales@lynch.ca</a>
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WE RESERVE THE RIGHT TO DISCONTINUE MODELS, OR CHANGE SPECIFICATIONS WITHOUT NOTICE OR INCURRING OBLIGATION

# LE PB X

## DIMENSIONAL DRAWING



### Contact Us For More Information

LE PB X-1017

Toll Free	Local & International	Canada	USA	Online
Tel: 1 (888) 626-4365	Tel: +1 (905) 363-2400	1799 Argentia Road	3790 Commerce Court,	<a href="http://www.Lynch.ca">www.Lynch.ca</a>
Fax: 1 (800) 263-5807	Fax: +1 (905) 363-1191	Mississauga, Ontario L5N 3A2	Suite 500, North Tonawanda	<a href="mailto:sales@lynch.ca">sales@lynch.ca</a>
			New York, 14120	

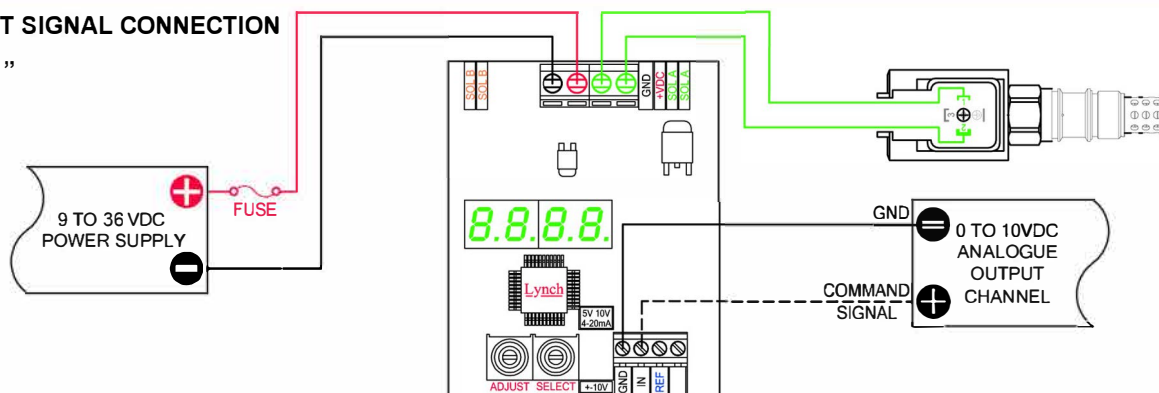
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# LE PB X

## SCHEMATICS

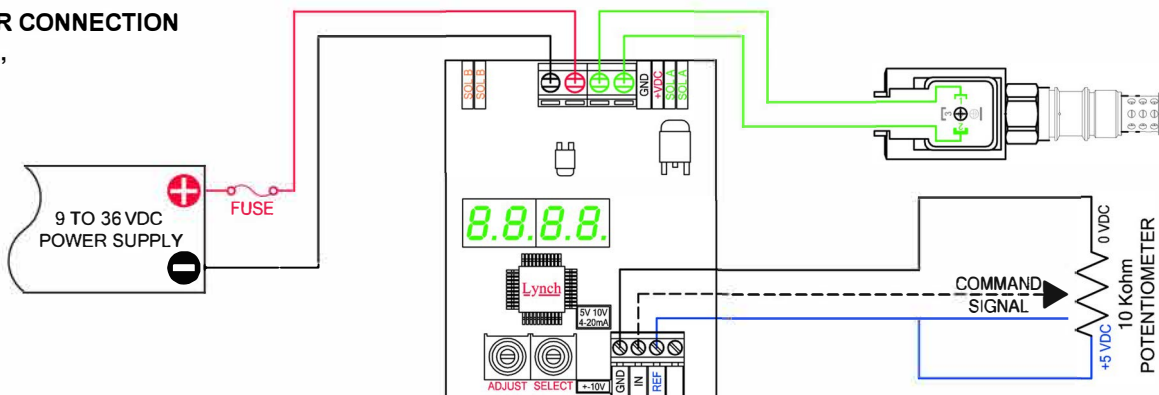
### EXTERNAL INPUT SIGNAL CONNECTION

"in" set to "10"



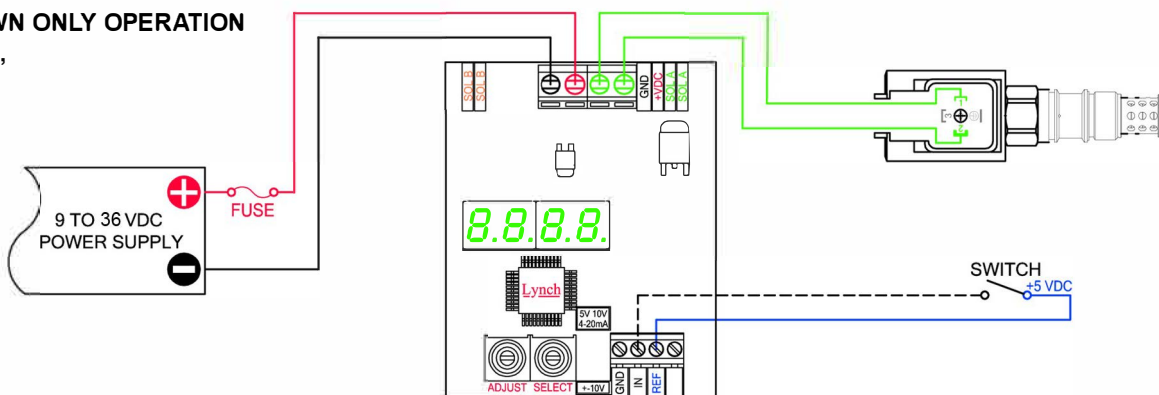
### POTENTIOMETER CONNECTION

"in" set to "5"



### RAMP UP & DOWN ONLY OPERATION

"in" set to "5"



**PLEASE NOTE:** For "0 to 5 VDC" & "0 to 10 VDC" command input drivers, it is recommended to use independent negative conductors for power supply and analogue output channel (PLC/PC) to maintain command signal accuracy due to voltage drop on long cable runs.

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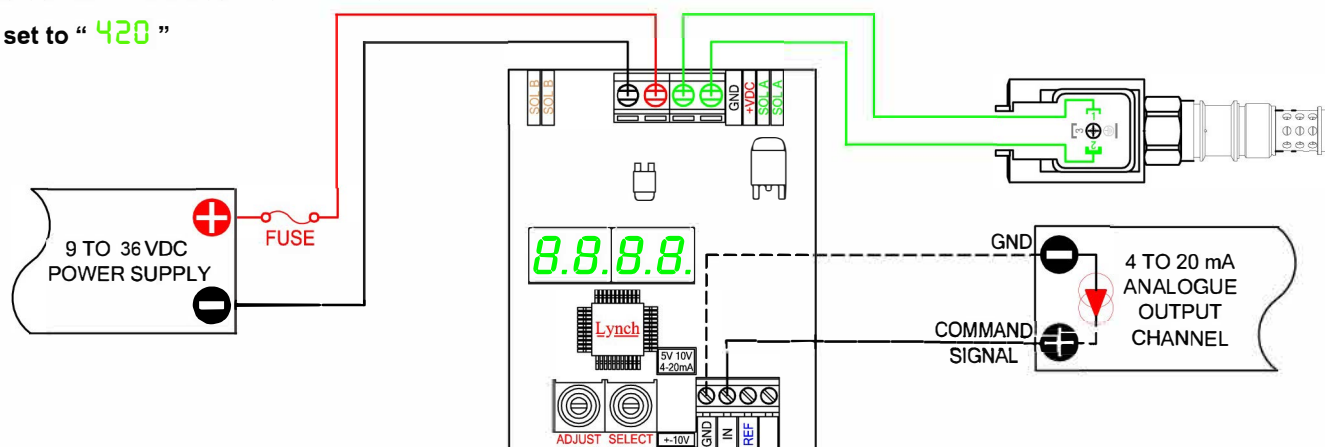
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# LE PB X

## SCHEMATICS

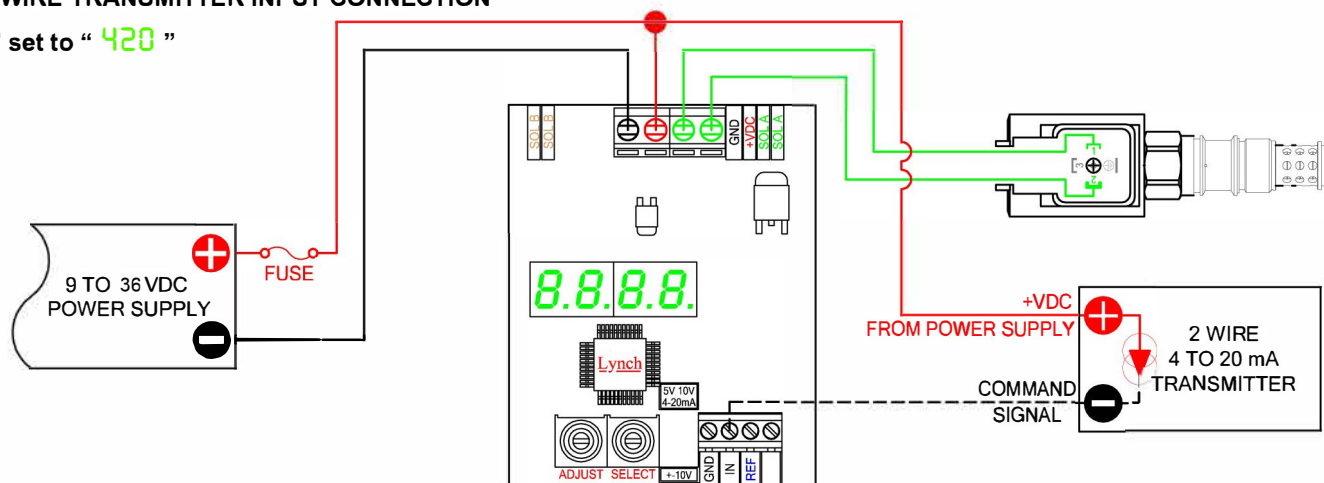
### EXTERNAL INPUT SIGNAL CONNECTION

"in" set to "420"



### TWO WIRE TRANSMITTER INPUT CONNECTION

"in" set to "420"



**PLEASE NOTE:** For "0 to 5 VDC" & "0 to 10 VDC" command input drivers, it is recommended to use independent negative conductors for power supply and analogue output channel (PLC/PC) to maintain command signal accuracy due to voltage drop on long cable runs.



This product has been designed and tested to meet specific standards outlined in the European Electromagnetic Compatibility Directive (EMC) 2004/108/EC  
Emission: EN 61000-6-4: 2007, EN 55011:2009  
Immunity: EN 61000-6-2: 2005, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-6, EN 61000-4-8:2001  
RoHS: EN 50581:2012

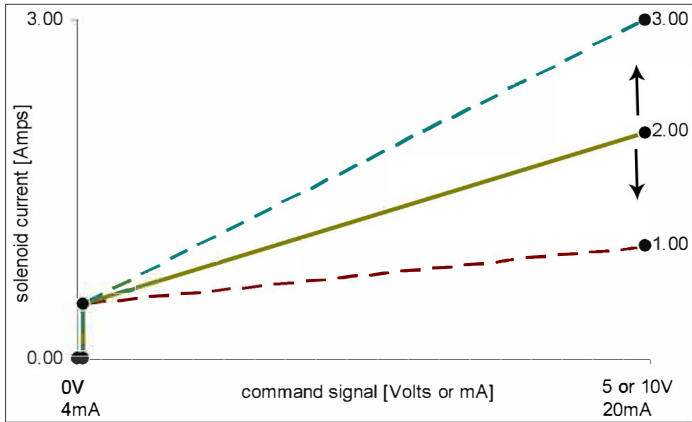
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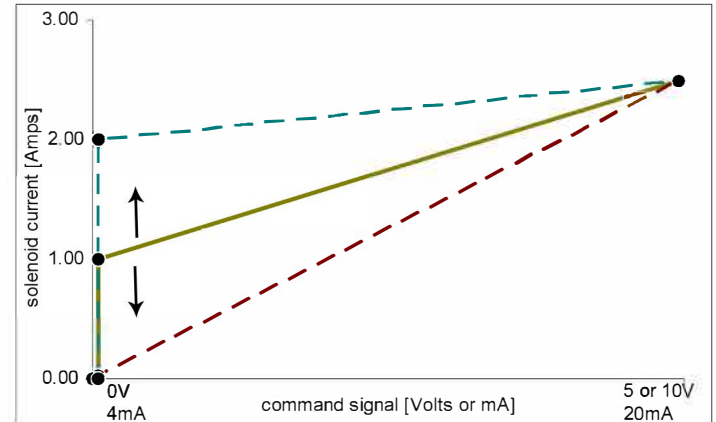
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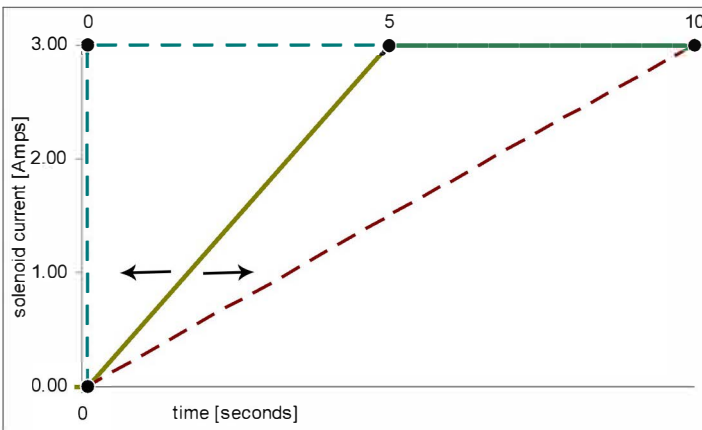
**H:** HIGH,  
Maximum Current output, 0.20 to 3.00 [Amps]



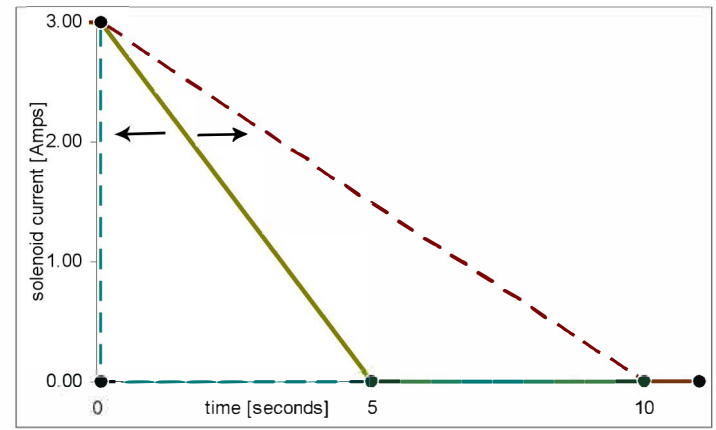
**L:** LOW,  
Minimum Current Output, 0.00 to 2.99 [Amps]



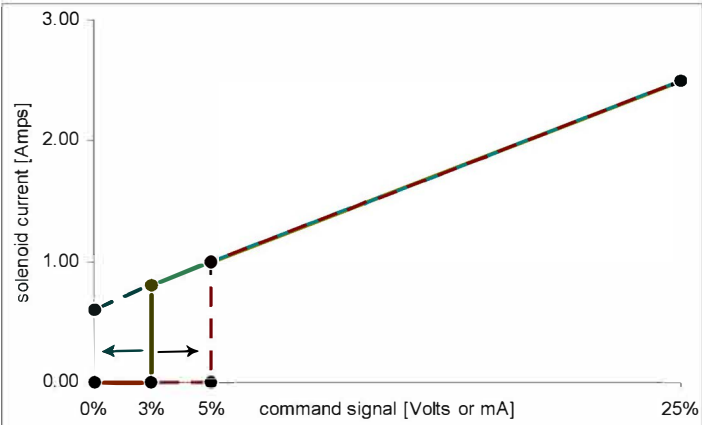
**rUP:** RAMP UP,  
Time for Output to Increase from min to max, 0.0 to 99.5 [SEC]



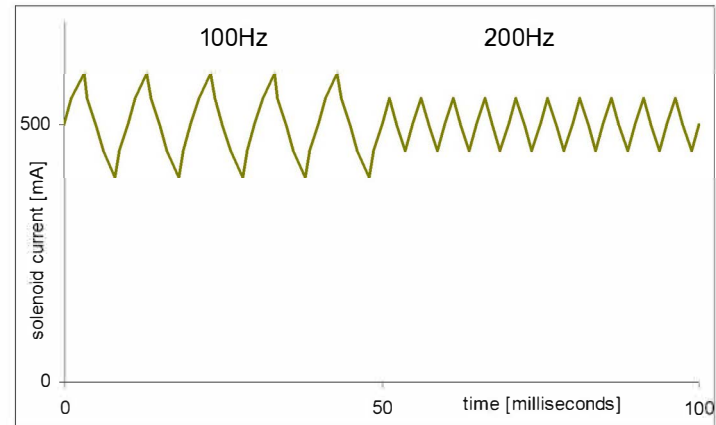
**rDn:** RAMP DOWN,  
Time for Output to Decrease from max to min, 0.0 to 99.5 [SEC]



**Cdb:** COMMAND DEADBAND,  
Output disabled if command signal less than deadband, 0 to 5 [%]



**dFr:** DITHER FREQUENCY,  
40 (40Hz) to 450 (450Hz)



Contact Us For More Information

LE PB X-0718

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## SET-UP PROCEDURE

(NOTE: Prior to setting up parameters, you must select proper Input Signal setting for your system)

Available Input Signal options

**in:** **10** (0 to 10V) <=Default

**in:** **5** (0 to 5V)

**in:** **420** (4 to 20mA)

\*\*\*Applying improper Input Signal to wrong setting on the Driver may be damaging to Driver Unit and may cause driver to fault to Error Status mode\*\*\*

### SET-UP

1. At power up, the display will show either the output current signal or the input signal (Default display setting shows the output signal). The decimal point will be flashing.
2. Rotate SELECT to enter the set-up mode.
3. When you reach the setting you want to modify, rotate ADJUST up or down to the desired value.
4. To modify another setting, rotate SELECT again and repeat.
5. The Driver is fully functional during the set-up procedure with any adjustments effective immediately.
6. In order to write the new settings in the memory and return to normal mode of operation, rotate SELECT until the display shows **SR** and then rotate ADJUST or wait for 100 seconds.
7. If you do not want to save the new settings you have just modified, you must disconnect the Driver from the power supply before the end of the 100 seconds to restore the previous settings.
8. After saving parameters to memory, the decimal point will be flashing and the Driver display will be back showing either the output current signal or input signal depending on your **di** selection.
9. To start over completely, you can restore the factory settings by rotating SELECT to **rFP** and then rotate ADJUST up past 10 for the display to reset. (NOTE for Step 9: You may have to adjust your Input Signal Setting again if you reset to factory settings).

## SETTINGS & RANGE

**Hi:** HIGH, Maximum Current Output, **0.20** to **3.00** [Amps]

**Lo:** LOW, Minimum Current Output, **0.00** to **2.99** [Amps] (See: NOTE 1)

**rUP:** RAMP UP, Time for Output to Increase from min to max, **0.0** to **99.5** [SEC]

**rDn:** RAMP DOWN, Time for Output to decrease from max to min, **0.0** to **99.5** [SEC]

**Cdb:** COMMAND DEADBAND, Output disabled if command signal less than deadband, **0** to **5** [%]

**dFr:** DITHER FREQUENCY, **40** (40Hz) to **450** (450Hz)

**in:** INPUT SIGNAL SELECTION, **5** (0 to 5V) or **10** (0 to 10V) or **420** (4 to 20mA)

**di:** DISPLAYED SIGNAL FOR TROUBLESHOOTING, **0** (command signal in [Volts] or [milliAmps]) or **1** (solenoid current in [Amps])

\*\*Flashing decimal point is an indicator for present display mode\*\*

-Fast Flashing decimal point, several flashes per second indicates **di = 0**

-Slow Flashing decimal point, 1 per second indicates **di = 1**

-No Flashing decimal point or No decimal point indicates display in SETTING/ADJUST mode

**SR:** SAVE SETTINGS

**rFP:** RESET FACTORY PARAMETERS (See: NOTE 2)

**Err:** ERROR DETECTION STATE, Short Circuit, Reverse polarity protection and detection

Error 0 - No Errors

Error 1 - Overcurrent in driver likely due to short circuit in Solenoid

Error 2 - Current exceeding 20mA in "4 to 20mA" input mode

**CLr:** CLEAR ERROR, Clears Driver of Error State (See: NOTE 2)

**NOTE 1:** When adjusting the HI and LO parameters, note the HI parameter value cannot be adjusted below the LO parameter value as well the LO parameter value cannot exceed the HI parameter value.

**NOTE 2:** Adjust Parameter Value up past 9 to operate this command setting

## OPTIONAL FEATURES (Please contact us for more information)

**Pcd:** PASSWORD, Adjust code for Password Protection settings for Lock or Unlock

**Loc:** LOCK, Locks driver to LOCKED state with Password set in **Pcd**

**UnL:** UNLOCK, Unlocks driver with correct Password set in **Pcd**

\*\*Only available in LOCKED state mode\*\*