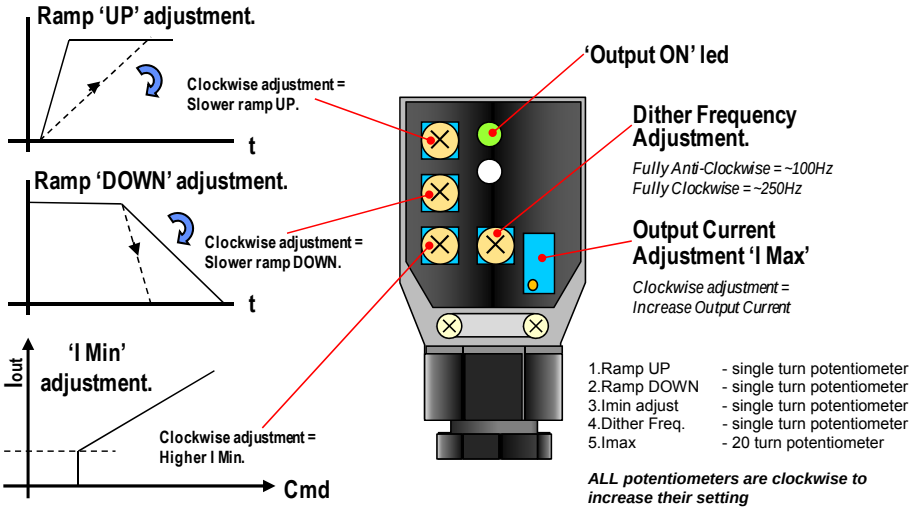
High Country Tek, Inc.

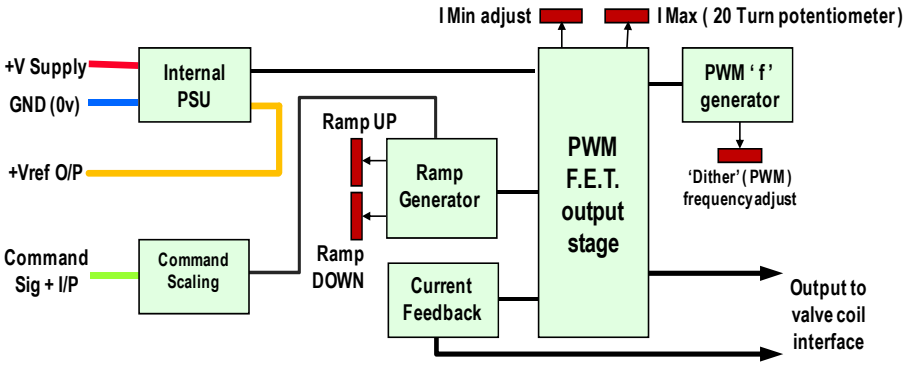
Plug Top Drivers - Quick Set-up

This Guide applies to: **PTD-12-V, PTD-24-V, PTD-12-C & PTD 24-C**

Electronic Control Solutions for the Global Fluid Power Industry



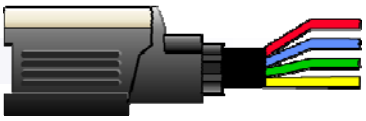
Voltage Command Block Diagram:



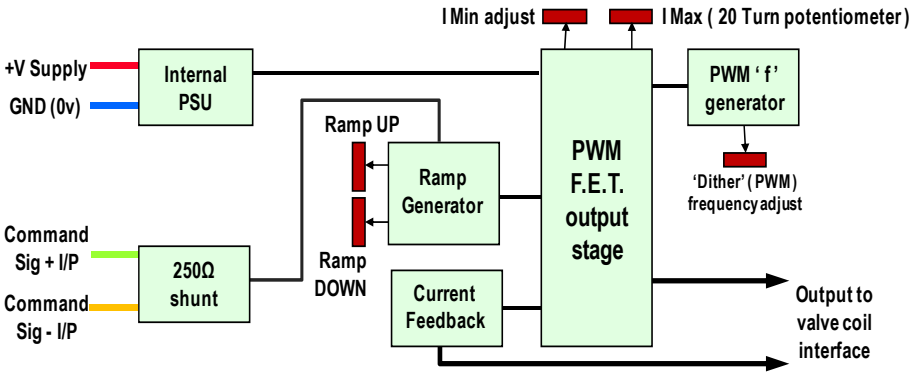
RED - +V Supply Input
BLUE - GND (0V) Supply Input
GREEN - Voltage Command I/P
YELLOW - +Vref output to user

IMPORTANT NOTE:

DO NOT short circuit the +Vref O/P to +V Supply or GND(0V) as internal damage to the PTD will occur!



Current Command Block Diagram:

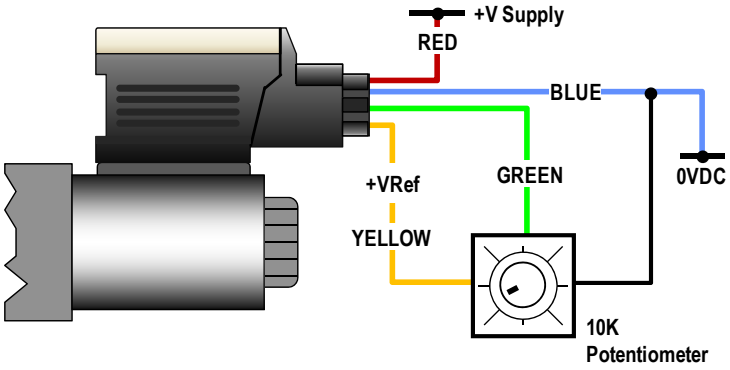


RED - +V Supply Input
BLUE - GND (0V) Supply Input
GREEN - +ImA Current Input
YELLOW - -ImA Current Input

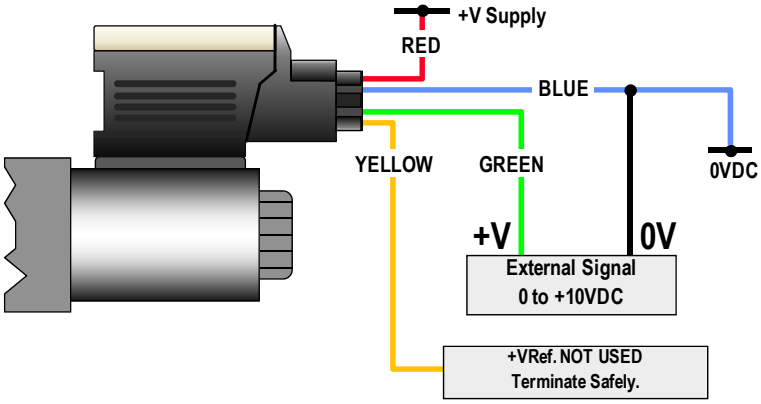
NOTE: 4-20mA Isolation

-ImA current input is INTERNALLY connected to GND (0v) supply input and is NOT isolated.

Voltage Command Connection Details:

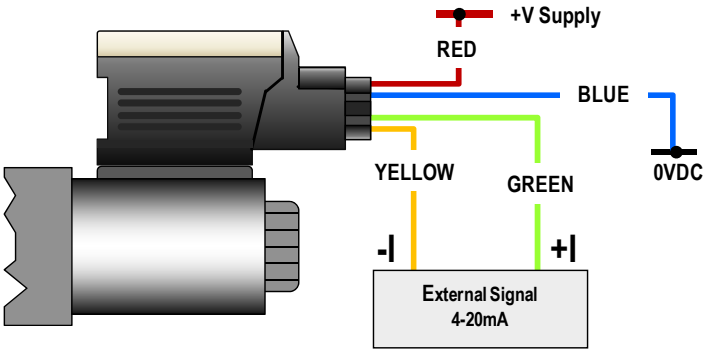


- PTD voltage input (GREEN wire) is internally pulled to 0V to prevent spurious operation with no command signal connected.
- Ramps DO NOT work if power is dis-connected.
- Use internal reference voltage +Vref for local control with potentiometer or joystick e.t.c.
- HCT recommends 10KΩ potentiometers / joysticks.
- +Vref is protected and current limited to ~5mA.
- 12VDC PTD's have +8VRef output.
- 24VDC PTD's have +15VRef output.
- Always use screened wires wherever possible.

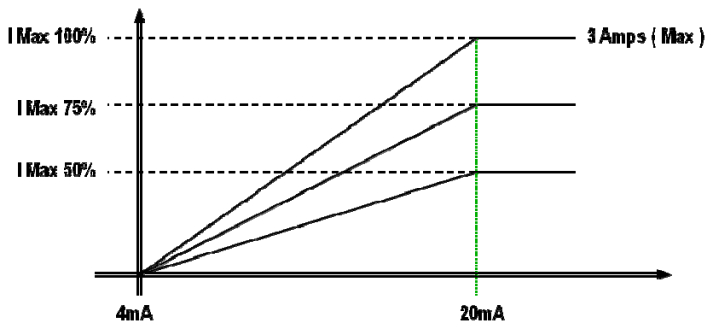


- PTD voltage input (GREEN wire) is internally pulled to 0V to prevent spurious operation with no command signal connected.
- Ramps DO NOT work if power is dis-connected.
- Use 0-10V maximum command signal input.
- Ensure external command signal source is connected to same GND (0V) as the PTD power supply for correct operation.
- Ensure +VRef is terminated safely to avoid shorts.
- Always use screened wires wherever possible.

Current Command Connection Details:



- PTD current input uses a 250Ω shunt resistor connected to GND (0V) internally
- Yellow wire (-ImA) is internally connected to GND (0v) supply
- 4-20mA command is connected between +I and –I
- Ramps DO NOT work if power is dis-connected.
- Use 4-20mA maximum command signal input.
- Always use screened wires wherever possible.

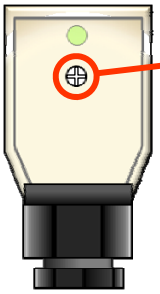


FUSES:

For clarity, no fuses are shown here.
HCT strongly recommends that the user installs a fuse holder that if fit for purpose in the application and uses a correctly rated fuse for each plug top driver to ensure that damage does not occur under short circuit or wiring circumstances.

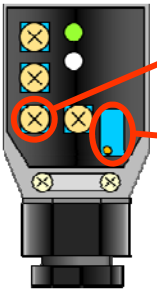
Adjustment Guide for all PTD series:

STEP 1



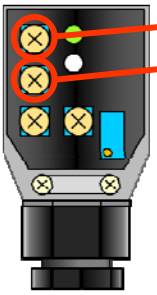
- Plug the PTD onto valve coil to be driven - DO NOT use mounting screw at this time.
- Remove securing screw and opaque lid to reveal internal adjustments.
- Ensure command signal (voltage or current) is set to zero.
- Ensure that all user made wire connections are correct and secure.
- Turn I Min potentiometer Anti-Clockwise to minimum - Single turn adjustment.
- Turn I Max potentiometer 20 turns Clockwise to maximum.
- Turn Ramp UP & DOWN potentiometers fully Anti-Clockwise to minimum.
- Apply correct supply voltage to the plug top driver.

STEP 2



- Slowly increase command voltage to approx 10% of maximum.
- Use the **I Min** adjustment to give minimum valve response (flow or pressure) required.
- Slowly Increase command signal to maximum setting.
- Adjust **I Max** until desired valve maximum response (flow or pressure) is achieved.

STEP 3



- Change command signal from zero to max and adjust **RAMP UP** setting to suit application.
- Change command signal from max to zero and adjust **RAMP DOWN** setting to suit application
- Confirm the 'Output ON' LED is changing brightness proportionally with command increase/decrease

NOTE:

If the 'Output ON' led is switches between OFF or ON bright, this indicates the PTD is not connected to the coil correctly OR the coil is open circuit - check PTD connections and coil Ohmic integrity.

If the connections and coil are correct, the PTD has suffered internal damage and needs to be replaced.

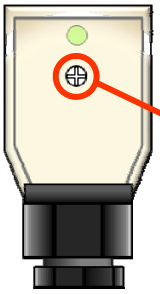
STEP 4

- Adjust Dither frequency to suit valve product being driven. .
- Fully Anti-clockwise = approx. 100Hz
- Fully Clockwise = Approx.... 250Hz.
- Set command to zero
- Turn OFF supply voltage to PTD

NOTE:

Different valve types (i.e. cartridge or spool) require different dither frequencies to optimize the performance, stability and repeatability. It is strongly reccomended that the OEM technical information is read to establish the correct frequency and ensure the best operation is achieved on the application.

STEP 5



- Replace PTD lid ensuring that it 'clicks' into place and the inner seal is maintained.
- Replace securing screw and tighten (do not over tighten or lid damage is seen)
- Unit is now ready for continuous application use

Troubleshooting Guide:

There is Not enough pressure or flow at maximum command input:

1) Increase the 'I Max' setting until the required levels are achieved.

There is very little control at the lower end of the command signal:

1) Increase the 'I Min' setting until the required levels are achieved.

Cannot achieve full flow or pressure at full command and full 'I Max' adjustment:

1) Check supply voltage is at nominal levels and is stable (not collapsing) under full load conditions.
2) Ensure that the coil fitted to the valve is correct for the supply voltage(I.e. 12V coil for 12V supply).
3) Check that the command signal used is achieving expected maximum level at the PTD input wire.
4) If using a potentiometer or joystick, ensure that the value is 10K to avoid loading the PTD +Vref.

NOTE: Remember, if the supply voltage is reduced, the output current to the coil will also be reduced resulting in the valve not being able to achieve full displacement.

The unit does not respond to an external command voltage:

1) Ensure that the external command source's GND (0V) is connected to the PTD's GND (0V) wire.
2) Check continuity of command cables between source and driver unit.

The output from the driver goes between zero and full on only with no proportionality:

1) Ensure that there is a coil connected to the PTD output.
2) Check that the coil is not open circuit.
3) Check the command voltage is proportional.

The unit is completely dead with the led not coming on at all:

1) Check that the supply voltage is present & correct
2) Check the supply input fuse for continuity and correct fitting.
3) Check that there is a command connected and correct to the PTD
4) The unit is damaged and needs to be replaced.

The unit is very slow to respond to command input signals:

1) Re-adjust the PTD's 'Ramp Generator' settings to get required response.

The valve appears to have large hysteresis and does not respond correctly:

1) Adjust the driver units 'Dither Frequency' settings to get required response.

For more information on application of these plug top drivers, visit our website or contact our customer service department

www.hctcontrols.com

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