

The linear Position indicator LPI

General:

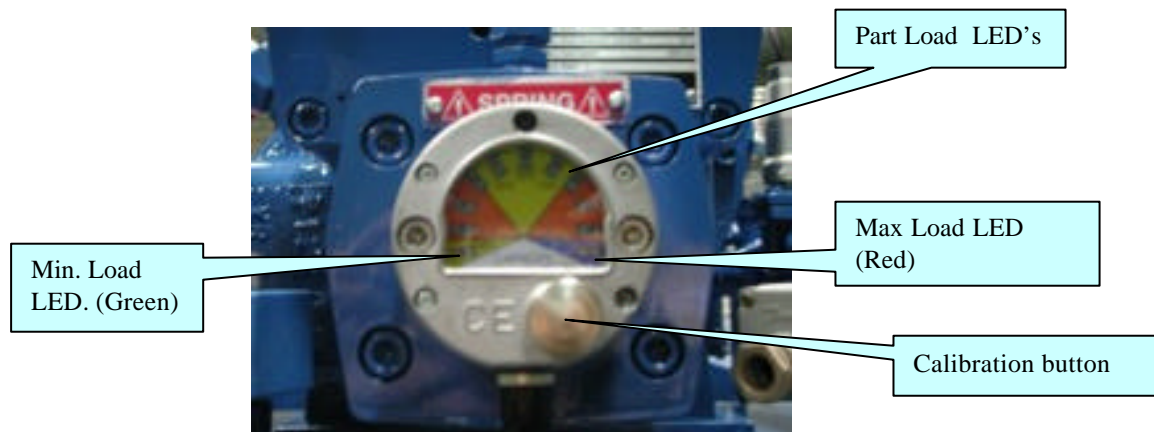
An electronic device called a linear potentiometer gives indication of the position of the slide valve, which can be used by the compressor control system.

The Position Indicator (LPI) is an electronic contact-less displacement sensor build in a sensor-well.

The LPI has several optional features built into one device:

The slide valve position can be indicated in three different ways:

- ❑ Visual – Light emitting diodes (LED).
- ❑ Visual and by an analogue output 4-20mA
- ❑ Visual and by a digital 24 V DC signal output on minimum and maximum slide valve Position. (only in combination of pulse - relays)



Visual:

It is always possible to see the position of the slidevalve.
 At minimum load a green LED is illuminated.
 At maximum load the red LED is illuminated.
 The intermediate LED's indicate the part load position of the slide valve.

Remark: The compressor can only be allowed to start with the slide valve in the minimum load position. Therefore a signal from the minimum load electronic position switch is always required or if the 4-20mA signal is being used then a 4mA signal is required.

Visual and by an analogue output 4-20mA:

The minimum load position is given by the 4 mA out put. The maximum load position is given by the 20 mA output. An 4 mA output (minimum load position) is required to permit a start. (**White**).

Part load positions are indicated by intermediate values between 4 mA and 20mA. The LED's on the indicator also give a visual indication of part load operation. It should be noted that part load slide valve position is not a direct indication of the part-load capacity.

Use of the 4-20 mA signals is common for many control systems and may be used alone, if required, for all of the control functions for single and multiple compressor installations subject to a suitable control system.

Connections:

Wiring Plug Connections	Function
1= Brown	Supply Voltage + 24V DC
2- White	Output Signal 4-20 mA
3=Blue	Common – 0 VDC

Visual and by a digital output on minimum and maximum load:

An alternative indication for the slide valve at minimum and maximum positions may be taken from the electronic switches, which are also incorporated in the LPI unit. These may be used in the same way or in place of traditional mechanical micro-switches. These electronic switches provide a 24 V DC signal.

A digital output is given at the minimum and maximum slide valve positions. An interposing relay is incorporated into the control panel in the place of each mechanical micro-switch. Activated by the digital signal the relay completes the control circuit in the same way as a mechanical micro-switch would do. This interposing relay must have contacts with suitable ratings. The LED's give visual indication of the slide valve position.

If the slide valve is the minimum position and the LED for minimum load is illuminated, there will be a digital output on the **green/yellow wire**.

If the slide valve is in the maximum position and the LED of maximum load is illuminated, there will be a digital output on the **black wire**.



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Existing installations using compressors equipped with mechanical micro-switches can easily use this option.

Connections:

Wiring Plug Connections	Function
1= Brown	Supply Voltage + 24V DC
3=Blue	Common – 0 VDC
4=Black	Digital Output Max. Load
5=Green/Yellow	Digital Output Min. Load

Installation instructions:

Choose the way best fitting way of given our start signal. Connect the wires according the table.

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Calibration

When the Slide is in the unloading position the LPI should indicate 10% (LED-Minimum).

To verify the setting of the full load 100% switch (LED maximum):

Move the slide to 100% by using the oil pump or if the system is shut down, by using a manual oil pump or air to move the slide valve piston. The full load-100% LED should then be illuminated.

If this isn't the case please do the calibration again.

1. Move the piston to the minimum load position.
2. Adjust The Vi screw to set the Vi to suit the operating conditions **Note; adjust only with the slide valve in the minimum load- 10% position and the compressor stopped.**
3. Remove the calibration button cover, Switch power on and disconnect the plug under the LPI.
4. **Wait for 2 min.** Connect the plug. The capacity array will light and the red calibration LED will light for 2/3 seconds and then go out. After approximately 20 seconds, the green calibration LED light will start flashing (the min. capacity array may come on).
5. Allow **5 minutes** to elapse before starting calibration.
6. To start calibration, press the calibration button once. The green calibration LED, by the calibration button go off, and the red calibration LED by the calibration button will come on, steady for approximately 15 seconds and then start flashing.
7. Now move the slide valve to the maximum load position. During this movement the cylinder capacity array LED's will start to illuminate. When the slide valve is in the maximum load position, push the calibration button once. The red calibration LED by the calibration button will stay on for approximately 15 seconds and then go off. The green calibration LED will come on, possibly flashing.
8. The calibration is now complete. Refit the calibration button cover.

Note; If during operation the Vi is adjusted (with the compressor stopped and the slide valve at minimum load position), the LPI will have to be re-calibrated as from point 4 above.

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