

INSTALLATION PROCEDURE

FOR THE INNOVEC VP100WP

VALVE POSITIONER



VP100DIN VALVE POSITIONER CALIBRATION PROCEDURE

Step 1: Electrical Connection.

Before connecting electrical power **ALWAYS CHECK** the label for the correct supply voltage the instrument has been configured for.

Connect AC power to:

- (a) **Terminal 27 is 120 VAC or 220VAC supply**
- (b) **Terminal 29 and 30 are AC Neutral**

Connect the feedback potentiometer on the valve to:

- (a) Terminal 1 is feedback pot left side
- (b) Terminal 3 is feedback pot wiper
- (c) Terminal 5 is feedback pot right side

The feedback potentiometer can be any value between 100 Ohm to 10,000 Ohms

Connect the milliamp command signal to:

- (a) Terminal 7 milliamp loop positive (+)
- (b) Terminal 9 milliamp loop negative (-)

Connect the milliamp output signal to: (This is a non-isolated output)

- (a) Terminal 13 milliamp loop positive (+)
- (b) Terminal 15 milliamp loop negative (-)

Connect the Valve Motor to:

- (a) Terminal 16 Motor One (Forward)
- (b) Terminal 17 is the Motor Active Supply
- (c) Terminal 18 is the Motor Active Supply
[Please note: terminals 17 and 18 are internally linked together]

- (d) Terminal 19 Motor Two (Reverse)

Calibration of the instrument

Access to the adjustment potentiometers is available from the front of the instrument.

Step 1: Calibrating the feedback potentiometer

The feedback potentiometer is displayed on the two digit LED display at the front of the instrument as 00 to 99

(a) Drive the motor to its minimum position so that the feedback pot on the motor gives out its minimum resistance value. Adjust the **FEEDBACK ZERO (p2) pot until the display reads '00'** or the minimum required value.

(b) Drive the motor to its maximum position so that the feedback pot on the motor gives out its maximum resistance value. Adjust the **FEEDBACK SPAN (p6) pot until the display reads '99'** or the maximum required value. Repeat until the required reading has been reached.

Step 4: Calibrating the input current loop.

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The instrument can be set up to accept either a 4-20mA or 0-20mA input signal. All instruments are shipped for 4-20mA operation. If it is intended to use a 0-20mA input signal then remove the solder bridge **marked LK1** on the electronics board. (There are two main circuit boards, a power supply/relay board and an electronics board).

(a) Drive the motor to its minimum position and inject 4mA. Adjust potentiometer **COZ CONTROL OUTPUT ZERO (p4)** until the relay changes state.

(b) Drive the motor to its maximum position and inject 20mA. Adjust potentiometer **COS CONTROL OUTPUT SPAN (p5)** until relay changes state. Repeat steps 4(a) and (b) once for confirmation of the correct operation.

Step 5: Calibrating the Dead band

Dead band of the relay switching operation can be set between 1 to 30%. This is accomplished by adjusting the **DEADBAND POTENTIOMETER (P3)**

Step 6: Calibrating the output current loop [This function has not been included]

The instrument incorporates a galvanic isolated (power supply and signal) 4-20mA output which is taken from the potentiometer feedback circuit.

(a) Drive the motor to its minimum position so that the feedback pot on the motor gives out its minimum resistance value. Adjust the **RETRANSMISSION ZERO RTZ (p2) pot until the output gives 4mA.**

(b) Drive the motor to its maximum position so that the feedback pot on the motor gives out its maximum resistance value. Adjust the **RETRANSMISSION SPAN (RTS) (p6) pot until the gives 20mA.** Repeat until the required reading has been reached.

AUTO MANUAL SELECTION

The instrument also includes auto/manual control of the final element. The three push buttons that protrude through the front of the instrument are:

- (a) CENTRE BUTTON - Auto/manual selection
- (b) LEFT BUTTON - ramp down
- (c) RIGHT BUTTON - ramp up

The instrument is in AUTO when the centre button is extended and in MANUAL when the centre button is pushed in.

In AUTO the VP100 tracks the 4-20mA signal driving the motor to a position relative to the 4-20mA signal.

In MANUAL the VP100 ignores the 4-20mA signal and the motor can be manually driven by using the RAMP UP/RAMP DOWN push buttons which switch voltage directly onto the motor bypassing the internal electronics.

Additional Specifications

The specifications for the VP100 module were for an instrument that would have automatic and manual selection. In auto mode:

- ✱ Drive a positioning motor from independent up and down relays
- ✱ Follow a 4-20mA input command signal
- ✱ Take a valve position feedback signal from a potentiometer in the range of 100 to 10,000 Ohms
- ✱ Give out a non-isolated 4-20mA retransmission signal as a valve position indication
- ✱ The manual up and down buttons would switch AC voltage directly on to the motor completely bypassing the module electronics.

In manual mode or in the event of electronic module failure and assuming we still have AC voltage supplied to the motor the user is able to drive the motor to a known position. This is because the up and buttons completely bypass the internal electronics and act directly on the motor.

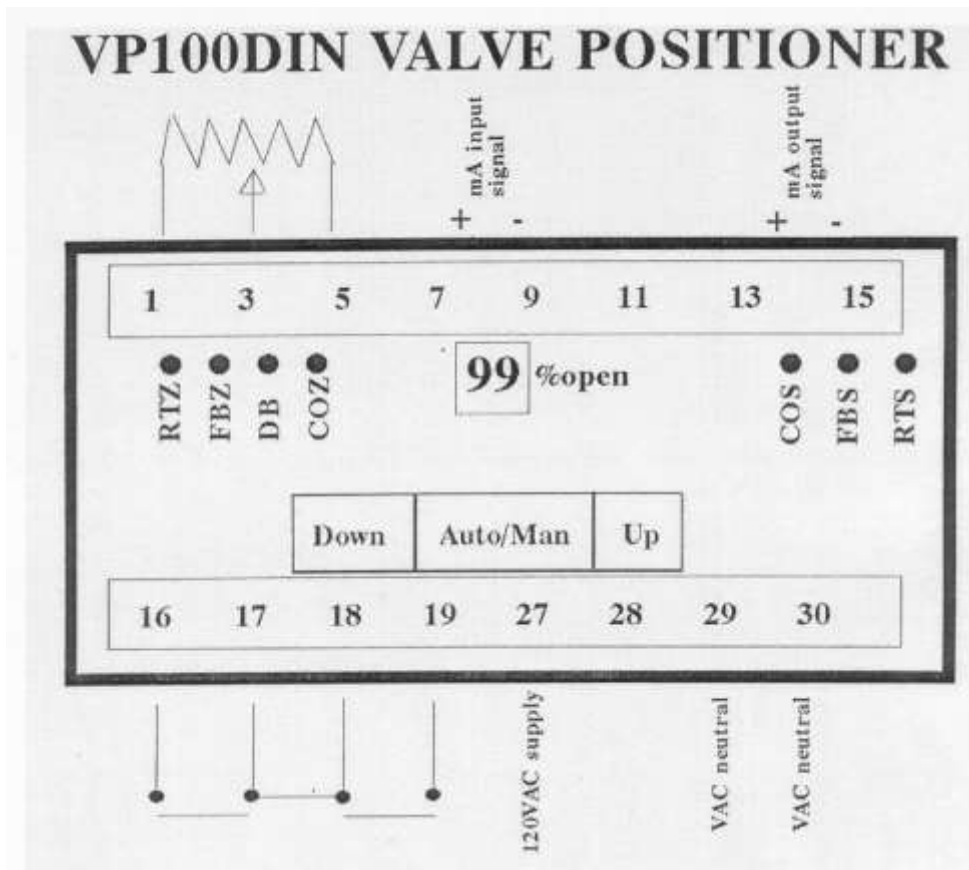
The push buttons are rated at 250VAC at 6 amps continuous with an in rush current of 36A according to VDE 0860 resp to IEC 65.

The relays are rated at 6 amps continuous with a fast energise and de-energise period of 10 msecs accompanied by an RC filter across the contacts to reduce arcing and give longer operating life.

The instrument is available as:

- ✱ A din rail module with model no. VP100WP1/4-20mA/0-99/VAC/420RT
- ✱ In a IP65 rated weatherproof enclosure model no. VP100WP1/4-20mA/0-99/VAC/420RT/WP
- ✱ In an IP65 rated weatherproof enclosure with separate contactors for 3 phase operation model no. VP100WP1/4-20mA/0-99/VAC/420RT/WP

VP100WP Valve positioner top view



- Terminal 1 : Feedback pot left
- Terminal 3 : Feedback pot wiper
- Terminal 5 : Feedback pot right
- Terminal 7 : mA input positive (+)
- Terminal 9 : mA input negative (-)
- Terminal 13 : Non Isolated mA output (+)
- Terminal 15 : Non Isolated mA output (-)
- Terminal 16 : Motor one (forward) relay contact
- Terminal 17 : Motor one common
- Terminal 18 : Motor one common
- Terminal 19 : Motor two (reverse) relay contact
- Terminal 27 : Active AC supply
- Terminal 29 : Neutral AC supply
- Terminal 30 : Neutral AC supply
- RTZ : Retransmission zero adjust
- FBZ : Feedback zero adjust
- DB : Dead band zero adjust
- COZ : Control output zero adjust
- COS : Control output span adjust
- FBS : Feedback span adjust
- RTS : Retransmission Span

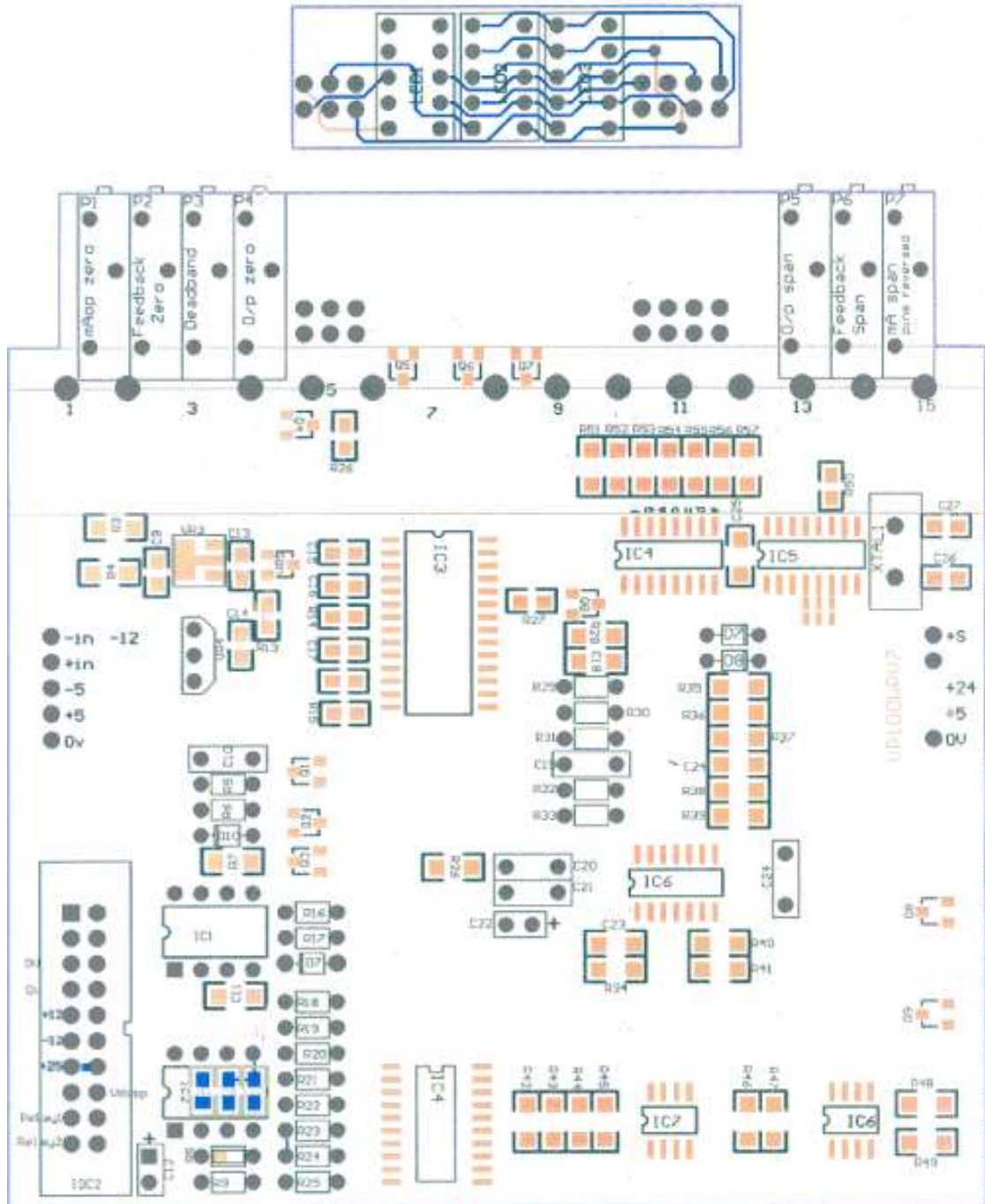


Fig.1 VP100WP7 Control board component overlay

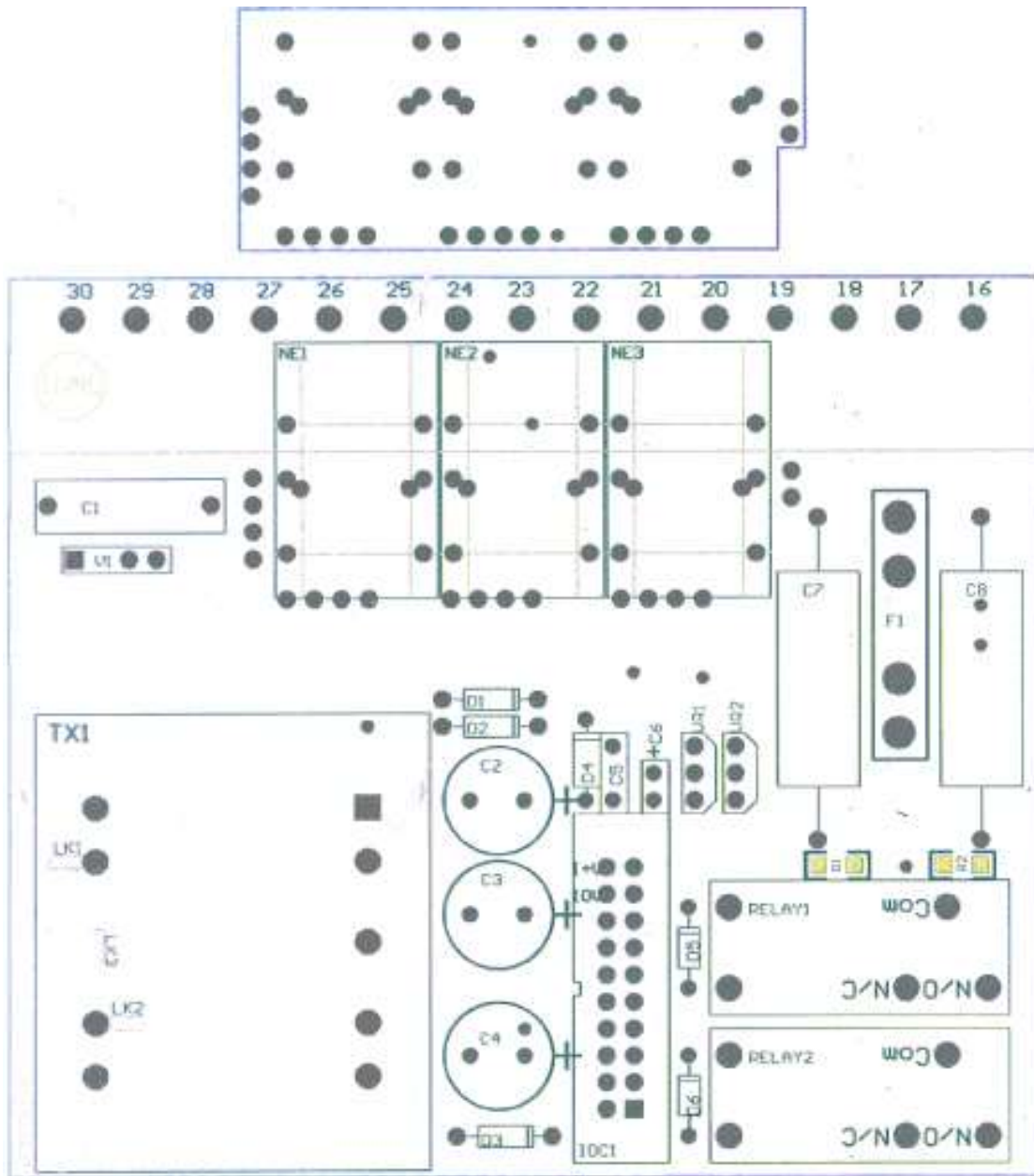


Fig.2 VP100Din Power board component overlay