Microprocessor-Controlled Electro-Pneumatic Regulator

ITV2000

EASY PROGRAMMING GUIDE

CONTENTS:

1. Layout Identification
2. Wiring
3. Input Signal
4. Key Lock Function
5. Set Point Programming
6. Adjusting Minimum & Maximum Pressures
7. Monitor Output
8. Error Messages
9. Specifications
LAYOUT IDENTIFICATION

WIRING

Please be careful when connecting the four cable wires. Improper wiring will damage the internal circuitry.

<table>
<thead>
<tr>
<th>PIN #</th>
<th>WIRE COLOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown</td>
<td>Supply Voltage</td>
</tr>
<tr>
<td>2</td>
<td>White</td>
<td>Input Signal</td>
</tr>
<tr>
<td>3</td>
<td>Blue</td>
<td>Ground</td>
</tr>
<tr>
<td>4</td>
<td>Black</td>
<td>Monitor Output</td>
</tr>
</tbody>
</table>

[Diagram of wiring connections]
INPUT SIGNAL

- **CURRENT SIGNAL TYPES** (ITV20 -0, ITV20 -1)

<table>
<thead>
<tr>
<th>Supply Voltage VS</th>
<th>Input Signal A</th>
</tr>
</thead>
<tbody>
<tr>
<td>24VDC (ITV20 0)</td>
<td>4~20mA (ITV20 -0)</td>
</tr>
<tr>
<td>12VDC (ITV20 1)</td>
<td>0~20mA (ITV20 -1)</td>
</tr>
</tbody>
</table>

- **VOLTAGE SIGNAL TYPES** (ITV20 -2, ITV20 -3)

<table>
<thead>
<tr>
<th>Supply Voltage VS</th>
<th>Input Signal VIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>24VDC (ITV20 0)</td>
<td>0~5VDC (ITV20 -2)</td>
</tr>
<tr>
<td>12VDC (ITV20 1)</td>
<td>0~10VDC (ITV20 -3)</td>
</tr>
</tbody>
</table>

KEYLOCK FEATURE

The ITV has a key lock feature, allowing the user to disable the setting keys. This is helpful in preventing unauthorized setting changes. By default, the keys are locked when power is turned on. The keys must be unlocked to modify the setting information. The display will show **Loc** if a key is pressed while the keys are locked.

**To Unlock:**
1. Press and hold the down key for 2 seconds or longer. The display will blink **Loc**.
2. Press the set key to unlock the keys, or
3. Press the up key to cancel.

**To Lock:**
1. Press and hold the up key for 2 seconds or longer. The display will blink **Unl**.
2. Press the set key to lock the keys, or
3. Press the down key to cancel.
PROGRAMMING THE SET-POINTS

✓ CAUTION: When setting the minimum pressure and maximum pressure values, the new values take effect as soon as the SET key is pressed. Use caution to avoid damage or injury.

1. **UNLOCK THE KEYPAD**
   - Press and hold the down key for 2 seconds or longer. The display will blink Loc.
   - Press the set key to unlock the keys.
   - Press the SET key to continue to the next step.

2. **SET THE MINIMUM PRESSURE (F_1)**
   - Press the UP and DOWN keys until the display shows the desired minimum pressure.
   - Press and release the SET key to continue to the next step.

3. **SET THE MAXIMUM PRESSURE (F_2)**
   - Press the UP and DOWN keys until the display shows the desired maximum pressure.
   - Press and release the SET key to continue to the next step.

4. **SET THE MONITOR PRESSURE (P_1)**
   - Press the UP and DOWN keys until the display shows the desired monitor pressure.
   - Press and release the SET key to continue to the next step.

5. **SET THE MONITOR PRESSURE (P_2)**
   - Press the UP and DOWN keys until the display shows the desired monitor pressure.
   - Press and release the SET key to finish the setup.
   - The display returns to the current pressure.
ADJUSTING THE MINIMUM AND MAXIMUM PRESSURES

The ITV allows the user to customize the minimum pressure (zero point) at 0% input signal and the maximum pressure (span) at 100% input signal. The minimum pressure can be set as low as 0% and as high as 50% of the full span. The maximum pressure can be set as low as 10% and as high as 100% of the full span.

For example, an ITV203 could be set to output 35 PSI at 0% input signal, and 43 PSI at 100% input signal (there must be at least 8 PSI separation). Similarly, the same ITV203 could be set to output 0 PSI at 0% input signal, and 8 PSI at 100% input signal.

![Pressure Adjustment Graphs](image)

minimum pressure (zero) adjust  maximum pressure (span) adjust

MONITOR OUTPUT

The ITV is available with one of three different monitor output signals:

- ANALOG (ITV20 - 1): Linear analog pressure monitor signal (1~5VDC). Input impedance: 100KΩ or greater
- NPN DIGITAL (ITV20 - 2): NPN open-collector output. Maximum load current: 30mA
- PNP DIGITAL (ITV20 - 3): PNP open-collector output. Maximum load current: 30mA

The NPN and PNP digital monitor outputs can be set to function in one of three different ways:

- **comparator mode**: when P1<P2
  - The output is on whenever the outlet pressure is greater than P1 but less than P2.

- **hysteresis mode**: when P1>=P2
  - The output comes on once the outlet pressure reaches P1. The output will remain on until the outlet pressure drops to P2.

- **self-diagnostic mode**: when P1=P2=0
  - The output is on whenever the outlet pressure equals the commanded pressure. The output is off whenever the input signal changes.

ERROR MESSAGES
**ERROR #** | **DESCRIPTION** | **LED DISPLAY**
---|---|---
1 | Input signal exceeds the input signal range | Er1
2 | EPROM read/write error | Er2
3 | Memory read/write error | Er3
4 | Internal solenoid valve malfunction | Er3
0 | Other | Er0

*Simultaneously press and hold the UP and DOWN keys for 3 seconds or longer to reset.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Pressure</td>
<td>[set pressure + 14.5psi] to 145psi¹</td>
</tr>
<tr>
<td>Output Pressure</td>
<td>0.725~14.5psi (ITV201)</td>
</tr>
<tr>
<td></td>
<td>0.725~72.5psi (ITV203)</td>
</tr>
<tr>
<td></td>
<td>0.725~130.5psi (ITV205)</td>
</tr>
<tr>
<td>Maximum Flow</td>
<td>52.5 SCFM</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>24VDC±10% (ITV20 0)</td>
</tr>
<tr>
<td></td>
<td>12VDC±10% (ITV20 1)</td>
</tr>
<tr>
<td>Input Signal</td>
<td>4~20mADC (ITV20 -0)</td>
</tr>
<tr>
<td></td>
<td>0~20mADC (ITV20 -1)</td>
</tr>
<tr>
<td></td>
<td>0~5VDC (ITV20 -2)</td>
</tr>
<tr>
<td></td>
<td>0~10VDC (ITV20 -3)</td>
</tr>
<tr>
<td>Input Impedance</td>
<td>250Ω or less (ITV20 -0 &amp; -1)</td>
</tr>
<tr>
<td></td>
<td>approx. 6.5KΩ (ITV20 -2 &amp; -3)</td>
</tr>
<tr>
<td>Linearity</td>
<td>±1% FS</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>0.5% FS</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.5% FS</td>
</tr>
<tr>
<td>Monitor Output</td>
<td>1~5VDC analog transistor (NPN, PNP), max. 30mA</td>
</tr>
</tbody>
</table>

¹Except ITV201, which is 29PSI.
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