MeterCheck MEASUREMENT SERVICES
1-800-221-5565
www.metercheckms.com

Input Power	
Voltage	12 VDC
Power	1.3W
Circuit Protection	1/2 A, panel mounted circuit breaker
PP85C Channel Inputs	
Total	2
Output Power	11 VDC (unregulated)
Photopulse Input	
Input Frequency	20,000 Hz max
Signal Level	3 – 20 V square wave
Reed Switch Input	
Open Circuit Voltage	5 VDC
Short Circuit Current	500 µA
Accuracy	+/- 2% (barrels per hour) +/- 1 count (system check)
Prover Switch Inputs	
Total	2
Open Circuit Voltage	5 VDC
Short Circuit Current	5 mA
Temperature Input	
Transducer Type	4 – 20 mA, 0 – 200 ºF
Impedance	200 Ohm
Pressure Input	
Transducer Type	4 – 20 mA, 0 – 1000 psi
Impedance	200 Ohm
Display	LCD, 2 line x 16 character, transmissive, yellow green backlight
Indicators	2x blue LEDs, 1 per channel, GATE 1x white LED, POWER
User Input Control	Rotary Encoder with momentary push button 6x momentary push buttons, 3 per channel, RESET, SYSTEM CHECK, COUNT
Interconnects	
Type	pluggable
Pitch	3.81mm
Tightening Torque	31 – 35 in oz
Material	PA
Flammability Class	UL94, V0
Operating Temperature	-4 to +140 °F
Humidity	0 – 97% without condensation
Enclosure	CRS, painted dark gray
Dimensions	7.7” x 8.3” x 2.7”
Mounting	surface
Weight	2 lbs 7oz

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PRODUCT SPECIFICATIONS

MODEL 702
PROVER COUNTER

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DRAWING NO. 99E1149

DATE: 02-25-21 ENGINEER: JPM

INPUT POWER CONNECTOR (J8)

POSITION	DESCRIPTION
2	+12VDC
1	COMMON

PROVER CONNECTOR (J4 = Channel 1 and J6 = Channel 2)

POSITION	DESCRIPTION
2	N.O SWITCH
1	COMMON

PP85C CONNECTOR (J5 = Channel 1 and J7 = Channel 2)

POSITION	DESCRIPTION
5	COMMON
4	REED SWITCH
3	PHOTOPULSES
2	PP85C POWER +
1	COMMON

TEMPERATURE TRANSDUCER CONNECTOR (J2)

POSITION	DESCRIPTION
2	4 – 20 mA INPUT
1	COMMON

PRESSURE TRANSDUCER CONNECTOR (J3)

POSITION	DESCRIPTION
2	4 – 20 mA INPUT
1	COMMON

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DESCRIPTION

The Prover Counter is a single microcontroller design with two photopulse input channels. The power input is polarity protected and filtered. This filtered power is passed to the PP85C photopulsers. The LCD can be set to display rate of flow in barrels per hour (BPH) and elapsed time in seconds, or total pulses counted.

Each channel has three momentary push buttons for RESET, SYSTEM CHECK, and COUNT as well as a PROVER switch input and a connector for a PP85C photopulser. Counting can be initiated and stopped with either the COUNT switch or external PROVER switch.

The following are set by the user via the rotary encoder.

ITEM	OPTIONS
PULSES PER BARREL (PPB)	0 – 200 / 1000 / 8400 / 10000 (default)
MASTER MODE	ON / OFF (default)
OPERATION	SYSTEM TEST / NORMAL (default)

On power-up master mode and operation are set to OFF and NORMAL, respectively. Pulses per barrel (PPB) is stored in non-volatile memory and the value chosen will be restored on power-up. Both channels use the same PPB to compute flow rate.

On power-up the LCD will display the rate and elapsed time for each counter:

```
0 BPH    0.0s
0 BPH    0.0s
```

where line 1 is for counter 1 and line 2 is for counter 2.

Rotate the knob clockwise and the LCD will display pulses counted for each counter:

```
000000 PULSES
000000 PULSES
```

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SETUP

1) To change MASTER mode and / or operation rotate knob to the following screen:

```
MASTER OFF
NORMAL
```

Press and hold knob until cursor blinks on line 1. Rotate knob between OFF and ON for master mode. Press knob to select. The cursor will jump to line 2. Rotate knob between SYSTEM TEST and NORMAL. Press knob to select.

2) To change pulses per barrel rotate knob to the following screen:

```
10000
PULSES/BARREL
```

Press and hold knob until cursor blinks. Rotate knob to choose between 0 to 200 ppb, or 1000, 8400, or 10000 ppb. Press knob to select.

3) To enable/disable temperature or pressure monitoring rotate the knob to the following screen:

```
Temperature OFF
Pressure OFF
```

Press and hold knob until cursor blinks for Temperature selection. Rotate knob to choose between OFF or ON and press knob to select. The cusor will now blink for Pressure selection. Rotate knob to choose between OFF or ON and press knob to select.

a) If temperature monitoring is enabled rotate the knob to the following screen:

```
Temp  4mA=   0
Temp 20mA= 200
```

To make changes to the default range of 0 – 200 press and hold knob until the cursor blinks for the 4mA selection. Rotate knob to the desired number from 0 to 200 and press knob to select. The cursor will now blink for the 20mA selection. Again rotate knob to the desired number from 0 to 200 and press knob to select.

b) If pressure monitoring is enabled rotate the knob to the following screen:

```
Press  4mA=    0
Press 20mA= 1000
```

To make changes to the default range of 0 – 1000 press and hold knob until the cursor blinks for the 4mA selection. Rotate knob to the desired number from 0 to 1000 and press knob to select. The cursor will now blink for the 20mA selection. Again rotate knob to the desired number from 0 to 1000 and press knob to select.

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TEMPERATURE CALIBRATION

1) Rotate knob to the following screen:

```
Temperature Cal?
BAD CAL=ERRATIC
```

2) Press and hold until the screen changes to the following:

```
Temp Cal 4mA
  ADC (00163)
```

The ADC number shown could be different.

3) To calibrate at 4mA continue to the following step, otherwise skip to step 5.

4) Apply 4mA to the temperature input. Press and hold knob.

If the ADC number is in the acceptable range of 0 – 409 the message “NEW OFFSET” will appear for a moment and the new ADC number will be accpeted.

Otherwise the message “OUT OF RANGE” will appear for a moment and the ADC number will remain unchanged.

5) Rotate knob to the following screen:

```
Temp Cal 20mA
   ADC (00819)
```

The ADC number shown could be different.

6) To calibrate at 20mA continue to the following step, otherwise rotate knob to exit calibration.

7) Apply 20mA to the temperature input. Press and hold knob.

If the ADC number is in the acceptable range of 623 – 1023 the message “NEW OFFSET” will appear for a moment and the new ADC number will be accpeted.

Otherwise the message “OUT OF RANGE” will appear for a moment and the ADC number will remain unchanged.

8) Rotate knob to exit calibration.

PRESSURE CALIBRATION

1) Rotate knob to the following screen:

```
Pressure Cal?
BAD CAL=ERRATIC
```

2) Press and hold until the screen changes to the following:

```
Pressure Cal 4mA
  ADC  (00163)
```

The ADC number shown could be different.

3) To calibrate at 4mA continue to the following step, otherwise skip to step 5.

4) Apply 4mA to the temperature input. Press and hold knob.

If the ADC number is in the acceptable range of 0 – 409 the message “NEW OFFSET” will appear for a moment and the new ADC number will be accpeted.

Otherwise the message “OUT OF RANGE” will appear for a moment and the ADC number will remain unchanged.

5) Rotate knob to the following screen:

```
Pressure Cal 20m
  ADC  (00819)
```

The ADC number shown could be different.

6) To calibrate at 20mA continue to the following step, otherwise rotate knob to exit calibration.

7) Apply 20mA to the temperature input. Press and hold knob.

If the ADC number is in the acceptable range of 623 – 1023 the message “NEW OFFSET” will appear for a moment and the new ADC number will be accpeted.

Otherwise the message “OUT OF RANGE” will appear for a moment and the ADC number will remain unchanged.

8) Rotate knob to exit calibration.

PUSH BUTTONS

RESET
Resets counter. Rate = 0 BPH, Elapsed Time = 0 s, and Total Pulses = 0.

SYSTEM CHECK
Press and hold will allow testing the 1000 pulses per revolution of the PP85C.

COUNT
Press once to start counting and once again to stop counting.

Note if MASTER mode is ON.
1) Each RESET button will reset both counters.
2) If either the COUNT switch or PROVER switch of channel 1 is used to initiate counting, then counting will only stop with either the COUNT or PROVER switches of channel 1. Likewise for channel 2.

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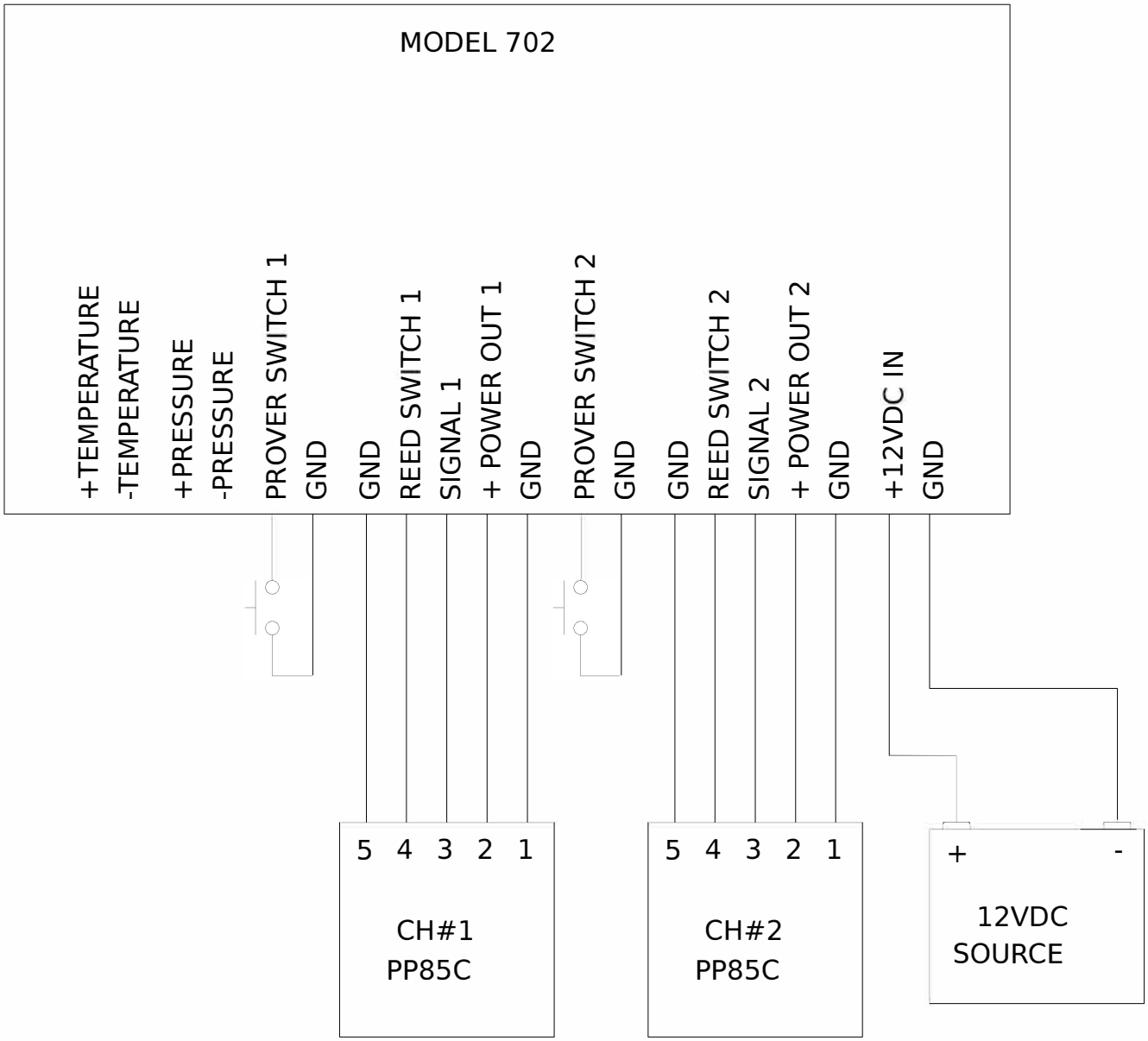

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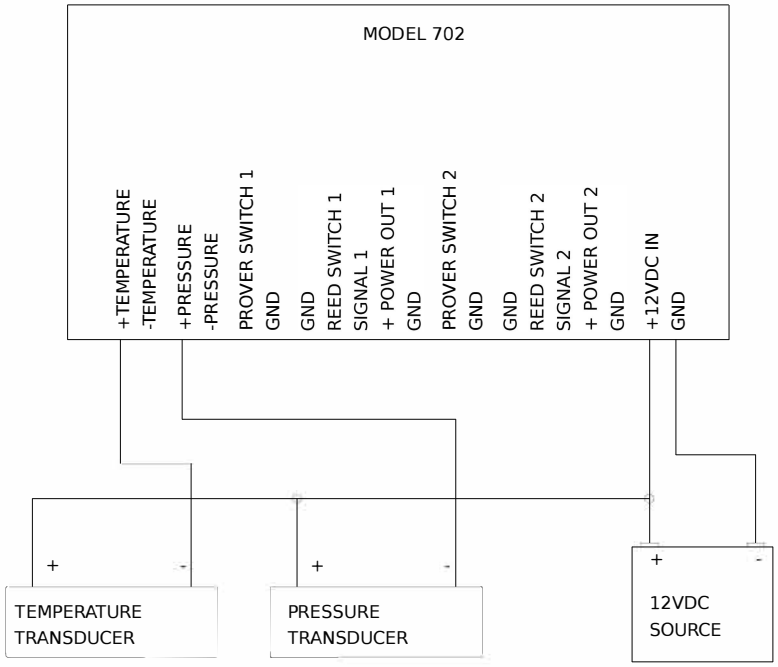

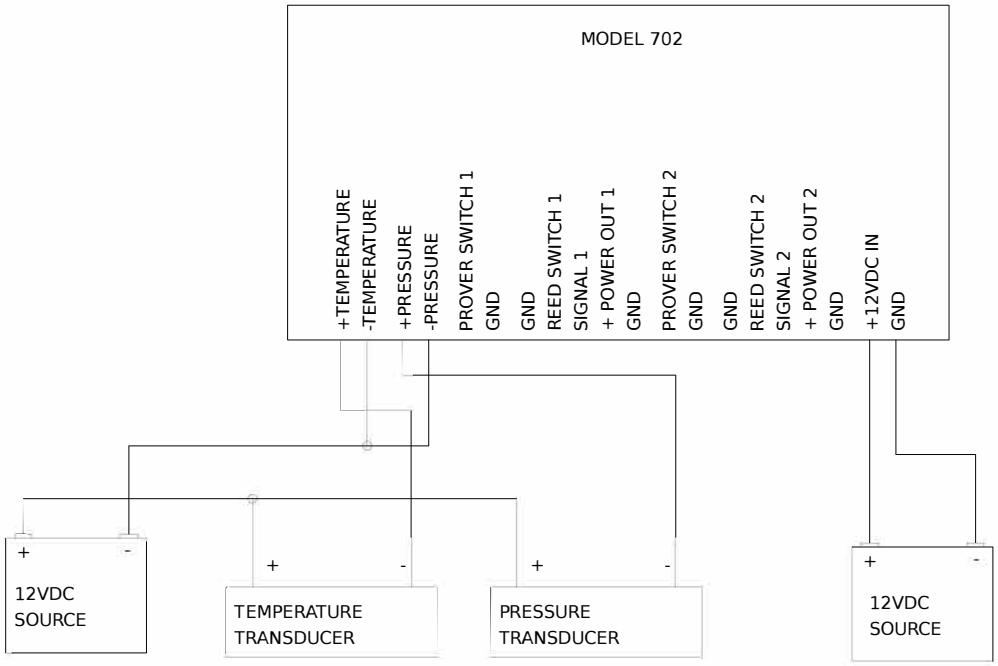

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