OPERATION MANUAL

CMCP575-XXX-XXX
Speed Transmitter

REV. A 5-26-2009

Model Description:

The **CMCP575** is a Frequency to DC Transmitter. The transmitter accepts a periodic waveform and computes ABSOLUTE FREQUENCY. The **CMCP575** is factory set to provide a 4-20mA output proportional to this level within a specified range such as 0-5,000 RPM. The 4-20 mA output is suitable for direct connection to a Programmable Logic Controller (PLC) or Distributed Control System (DCS). Additionally, the **CMCP575** mounts on standard DIN rail.

The **CMCP575** can easily be calibrated in the field with the use of a frequency generator. Additional outputs are provided to supply your control system with a wide variety of outputs such as 0-20mA, 0-10mA, 0-1mA, 1-5VDC, 0-5VDC, or 0-10VDC.

Power:

The **CMCP575** requires externally supplied DC power. The chosen power supply should have a nominal output of +24Vdc and be capable of supplying a minimum of 30mA for each **CMCP575** in the system. A linear-regulated power-supply dedicated to the transmitter is recommended. It is also recommended that connections between the power supply and the transmitter be made with twisted-shielded instrument cable. The cable shield should float at the transmitter and connect to common at the power-supply, system common end only.

Transducer:

The **CMCP575** is factory configured for use with the sensor requested. The specific type is identified under the “Input Type” on the side label. The most common type of sensors are the Eddy Probe and Hall Effect Sensor. Sensor requirements can be found on the specifications page of this manual. The wire used to connect the sensor to the transmitter should be an overall shielded cable. The shield must be grounded at the input negative of the **CMCP575** and left floating at the sensor.

Transducer Cable:

It is strongly recommended that the transmitter be mounted as close as practical to the associated transducer. This will prevent signal distortion associated with current drive limitations, and will minimize interference from external electro-magnetic noise sources (EMI). A well shielded, properly installed transducer cable is absolutely necessary to obtain reliable operation. Twisted-shielded cables designed and pre-fitted with the proper transducer connector, and sold for this specific purpose are highly recommended. The cable shield should be open at the transducer end, and connected to the input negative on the transmitter only. The cable should be routed as far away from other electrical circuits as possible, and run in metal conduit where possible

Full Scale Range:

The **CMCP575** is supplied factory calibrated for the full-scale range specified at the time of order. Other ranges may be implemented by changing the calibration as needed. See the "Test and Calibration" section of this manual for more information. The factory calibrated range is listed on the side label as a dash number.

4-20 mA Output:

The primary output of the transmitter is the 4-20 mA current output which is proportional to the full scale range of the unit. IE: If the range is 0 – 5,000 RPM, then 4 mA indicates a reading of 0 RPM and 20 mA indicates a reading of 5,000 RPM. This output is intended to drive a maximum resistive load of 950 Ohms with respect to system common at the PLC/DCS input.

Setup:

The **CMCP575** units are factory calibrated per order. Usually, a complete re-calibration is not required unless you want to change the input type, output type, or the range of the unit. A calibration sticker located on the side of the unit identifies the model, calibration and options present.

Test/Calibration Instruments:

The test equipment listed below is required to perform Zero and span calibrations:
(1) +24 Vdc linear regulated power supply
(1) 4.5 digit DC/True RMS reading digital volt/current meter. Fluke 87 or better
(1) Sine wave signal generator with floating output.

Configuration:

Note: For re-calibration of the existing range proceed to the "Calibration" section of this manual.

1. Open the case to gain access to the pc boards. The larger board is the input pcb and the smaller board is the output / power pcb.
2. The **CMCP575** is capable of both zero based and 20% elevated (i.e. 4-20mA or 1-5VDC) output zero values. Follow the input configuration jumper settings under "Tables" page of this manual.
3. Set switch 3, position 1 to the on position and adjust the output ZERO potentiometer for the proper output.
4. Set switch 3, position 1 to the off position and position 2 to on. Adjust the output SPAN potentiometer for full scale output. Repeat steps C and D until you reach the desired accuracy. Note: You can check the mid-scale value by setting both 3 positions 1 and 2 to the on position simultaneously.
5. Return both switch 3 positions 1 and 2 to the off position; reassemble the case, and proceed to the calibration section below to finish the configuration.

Calibration:

1. Adjust the hysteresis control for stable operation at the minimum input amplitude. If the hysteresis is set too high, the unit will stop responding.
2. Apply the FULL SCALE input value at the input terminals of the unit. Depress and hold the SPAN input calibration push button until the SPAN status led flashes. The FULL SCALE value is now set and should correspond to the selected output setting. The transmitter is now set for ABSOLUTE FREQUENCY and ZERO frequency is assumed to be the transmitter ZERO output. Proceed to Step 4. If you are calibrating for FREQUENCY DEVIATION, proceed to Step 3 below.
3. Apply the lower frequency of your FREQUENCY DEVIATION span to the transmitter input. Depress and hold the ZERO input calibration button switch until the ZERO status LED flashes. The FREQUENCY DEVIATION is now set, the output should be at your zero value after a short delay.
4. Calibration is complete. Check the calibration with various input values and verify the corresponding output values.

Troubleshooting Guide:

Note: The **CMCP575** is made of small components. Troubleshooting beyond the below steps may be difficult. We do not recommend attempting to repair the unit in the field, thus will void the warranty. STI offers a very responsive repair policy. Please contact us for more information on repair.

Symptom	**Corrective Action**
No Output	1. Check the input and output connections carefully. 2. Check that the power supply polarity is correct and that the output loop power is present on the indicated terminals. 3. Check that the input source is correct and that it changes magnitude between zero and full scale values when adjusted. 4. Make sure the output loop is complete and that the correct meter range is selected. 5. Make sure the hysteresis potentiometer is not too high. The unit will stop responding to the input signal if its amplitude is less than the hysteresis setting. 6. All external checks are complete, problems seem to be internal. Contact STI.

Tables:

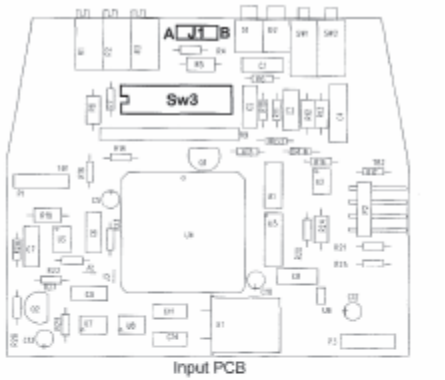
Output Configuration Jumpers

Output	Output PCB (Small Board)		Input PCB (Large Board)
	J1	J2	J1
4-20mA	A	A	B
0-20mA	A	A	A
0-10mA	A	B	A
0-1mA	A	C	A
1-5VDC	B	A	B
0-5VDC	B	A	A
0-10VDC	C	A	A

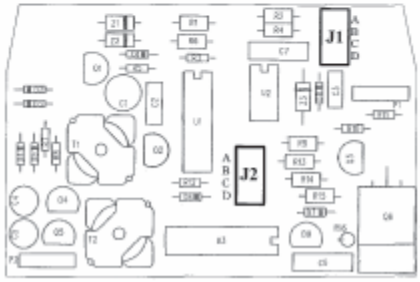
Configuration Switch 3

Switch Position	Function	
1	Off	Normal Operation
	On	Output the Zero Value
2	Off	Normal Operation
	On	Output the Span Value
1 and 2	Off	Normal Operation
	On	Output the MID Scale Value
3,4,5,6,7,8	Not Used	

PCB Layout:

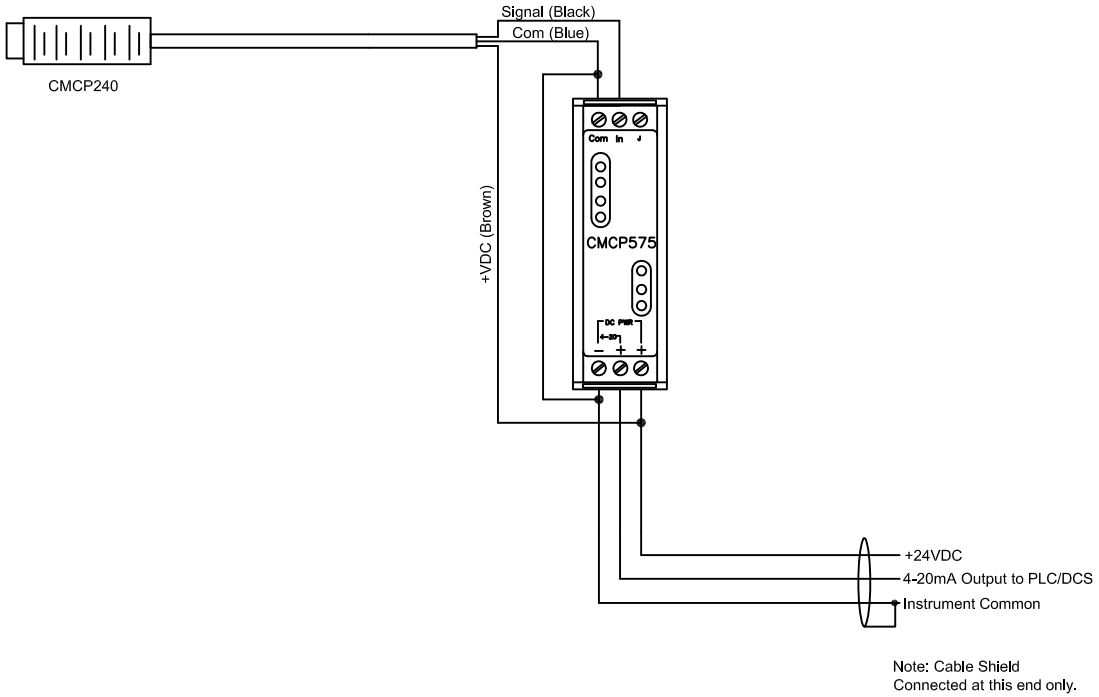


Input PCB



Output PCB

CMCP575 has differential input. Input Common must be strapped to power Common.



Note: Cable Shield
Connected at this end only.

REV.	DATE	DESCRIPTION

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE INCHES.

TOLERANCES:

FRACTIONS	DECIMALS	ANGLES
± 1/64	.XX ± 0.01 .XXX ± 0.005 .XXXX ± 0.0005	± 1.0

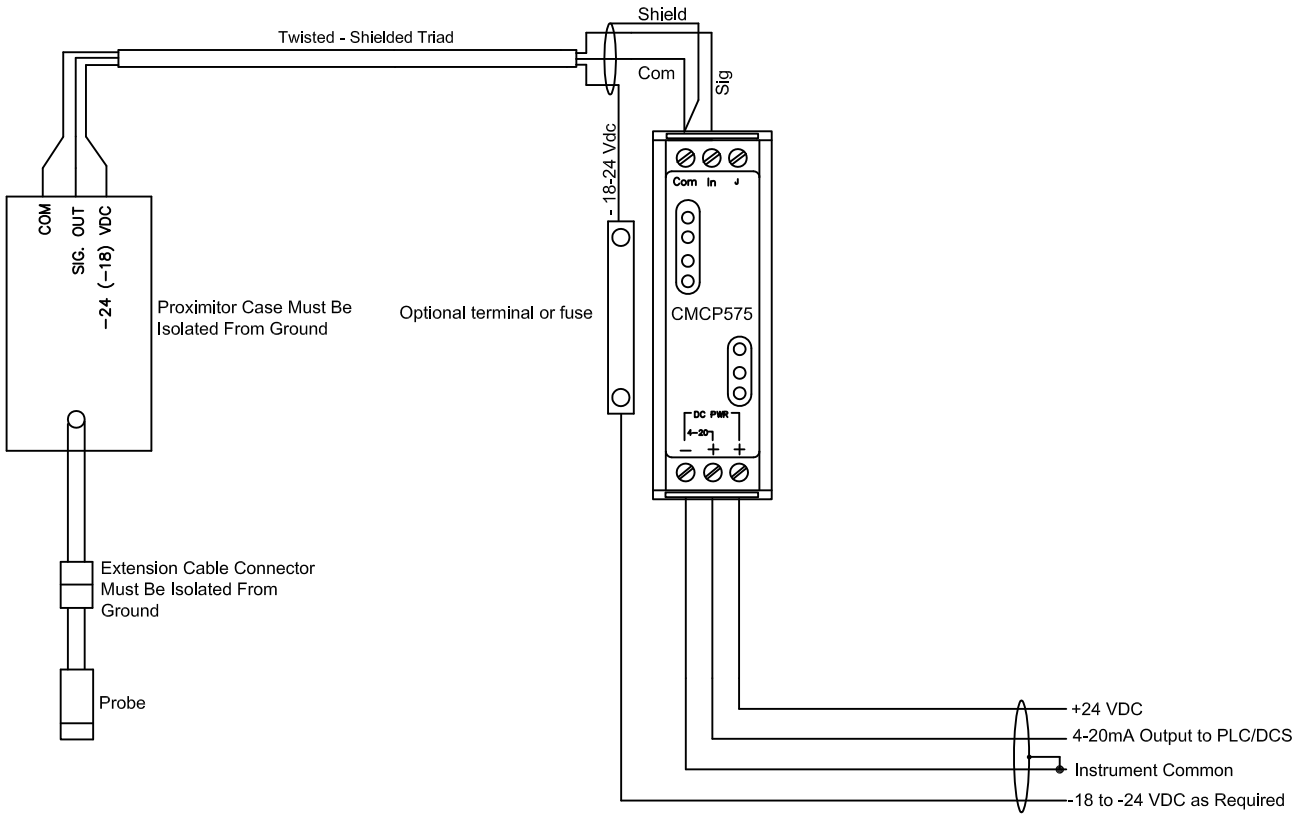
DRAWN	MDH	DATE 5/18/09
CHECK		
ENG.		
MFG.		
APPR.		

Sales Technology Inc.
League City, Texas

CMCP575 w/ CMCP240

SIZE	DWG. NO.	REV.

SCALE NONE | SHEET 1 OF 1



Cable Type: Two twisted pairs with overall shield.

Note: Cabel shield connected at this end only.

REV.	DATE	DESCRIPTION

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE INCHES.

TOLERANCES:
FRACTIONS ± 1/64
DECIMALS .XX ± 0.01, .XXX ± 0.005, .XXXX ± 0.0005
ANGLES ± 1.0

DRAWN	MDH	DATE 5/18/09
CHECK		
ENG.		
MFG.		
APPR.		

Sales Technology Inc.
League City, Texas

CMCP575 w/ EP

SIZE | DWG. NO. | REV.

SCALE NONE | SHEET 1 OF 1