CAPM-2 Carrier Frequency Pickup Module
Installation and Technical Data Guide

Installation:

•Ensure that the flowmeter sensor cavity is free of debris prior to installing.
•Screw the CAPM-2 into the flowmeter by hand until the sensor nose contacts the bottom of the cavity. Do not screw in harder than hand tight, as a thin metal section is under the sensor nose.

Please heed the following warning

CAUTION: DO NOT EXCEED 7 NEWTON-METERS FORCE TO SEAT THE SENSOR, THIS IS EQUIVALENT TO HAND TIGHT. EXCESS FORCE MAY CRUSH THE SENSOR NOSE OR DAMAGE THE FLOWMETER BY FORCING THE METAL SECTION UNDER THE SENSOR INTO THE MEASURING CHAMBER.

Wiring should be installed by a qualified instrumentation technician. Some basic installation guidelines are reviewed overleaf.

Description:

The **CAPM-2** is a Carrier Frequency sensor which means there is no permanent magnet in the pickup, and any magnetic drag on the flowmeter is avoided. The **CAPM-2** requires a supply voltage between 10 VDC to 30 VDC. A diode in the supply input prevents damage to the module in case the polarity of the supply voltage is wrong. The output signal is a square wave, voltage pulse of approximate amplitude (supply - 1.5 V). The frequency is proportional to the flow rate.

The output is a sourcing open collector transistor(PNP Type).

An NPN, sinking type is available and is designated as CAPM-2N.

Technical Data

Supply Voltage ..: 10 to 30 Volt DC
Supply Current ..: 9 mA @ 15 Volt, Max 18mA
Minimum Signal ..: 0.5 Hz
Signal Output ...: Square wave, $V_{High} \cong V_{cc}$ - 1.5V
$V_{low} \cong$ 0V
Duty Cycle .....: 50%
Frequency Output : Flow dependent, up to 2000 Hz
Load .....: > 500Ω
Driving Capacity : 10 mA Max
Temperature Range: -60°F to 185°F (-50°C to 85°C)

Connections:
A - +10 to 30 Volt DC supply voltage
B - Ground for supply and signals
C - Frequency signal output

Note: If signal does not go to ground, connect external resistor, 5 K-10 Kohm, between input and ground of monitoring equipment.

AW Company wire color code:

Supply Voltage:	Red
Ground:	Black
Signal:	White

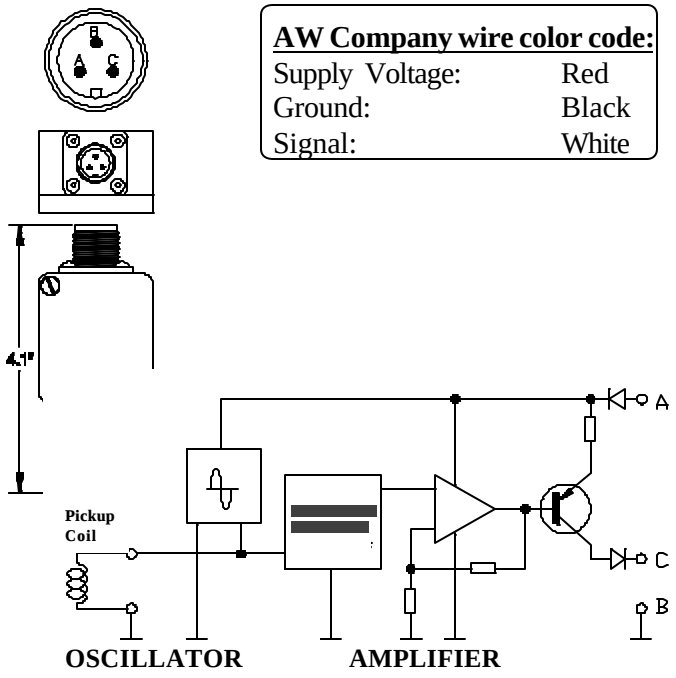

Figure 1

Electrical Installation Tips For Sensors and Flowmeters

Wiring should be installed by a qualified electrician or instrumentation technician. When dealing with low voltage/power signals from pickups and transmitters, it is important to use a shielded cable between the transmitter and the signal processing unit. A shielded cable will keep most of the electromagnetic interference (EMI) from entering the signal cable and disrupting the signal before it can be processed. A 20-22 gauge 3 or 4 conductor cable with shield is acceptable. Recommended cable: Belden #88723 2 pair stranded, 22 awg teflon coated cable**.** This cable is available from AW Company**.**

When hooking up to instrumentation connect the shield together with the wire for the signal ground, to the **Instrument Ground** terminal.

NEVER CONNECT THE SHIELD TO GROUND AT BOTH ENDS

When hooking up to AW Company instrumentation refer to the following drawing:

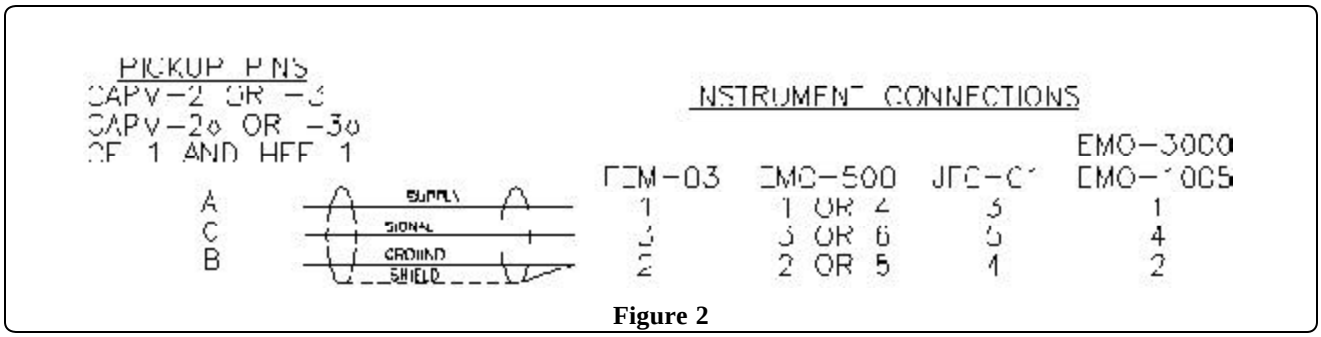

Figure 2

1. To prevent extraneous signal noise, ensure that a clean, central ground is established for both the flowmeter and sensor.

2. Where possible, keep the signal cable at least 1 foot from any cable handling 110 Volt AC. If several signal cables are used, consider using metal conduit tubing for the signal cables for extra protection and shield from external noise and EMI. If possible, ground the conduit at one end. Ground to a water pipe or another good ground connection.

3. Place the pickup well away from motors, starters and relays. If used in a location where there are starters and other controls using relays, be sure there are diodes mounted across the coils for DC relays, and an R-C network for AC relays. This will dampen EMI from the relays when they operate.

4. Supply clean, regulated DC power with a ripple under 3% of supply.

If the sensor appears faulty - review the following steps.

1. Detach the wiring connector from the sensor. Using a short wire, repeatedly touch pin A to C inside the wiring connector. These simulated pulses should register at the instrument. If this doesn't occur, verify that the wiring connections are set up as shown in the Figure 2 above and check the instrument. If using a non AW Company instrument, check the specifications for signal compatibility.

2. If the pulses do register, reattach the wiring connector and rapidly move a screwdriver back and forth 1/16" in front of the sensor nose. If pulses register, the sensor is okay. If not, contact the factory for a return tracking number.

   Note: If the sensor transmits a frequency irrespective of flow or by touch, the cable shielding and/or grounding is faulty and the equipment is behaving as an antenna.