

# CPS-460 Doppler Troubleshooting Guide

Symptom	Cause	Check or Try
<p>#1 No display and/or backlighting  No Power Light</p>	<p>No Power  Defective Display</p>	<p>-Check power circuit breaker and wiring -Check ON/OFF switch on main circuit board -Ribbon cable not secure -0.5 amp fuse on main circuit board</p>
<p>#2 Keypad Does Not Respond</p>	<p>Ribbon Cable  Lightning or Power surge</p>	<p>-Check ribbon cable -Turn Power OFF for 10 seconds. then back ON -RESET meter</p>
<p>#3 4-20 mA. Output Not Functioning and/or Indicates Max All The Time  Output Not Same As Display</p>	<p>Defective Wiring  Defective Output and/or Lightning Damage  Not Scaled Correctly</p>	<p>-Check wiring and polarity -Disconnect output wires and check 4-20 with current meter. If OK, receiver or wiring is problem. -Replace Q1 and/or Q2 (2N3904 transistor) and U1 (LM324 IC) on main circuit board. -Go to programming, 'SET 4-20mA OUTPUTS' and 'TEST /SCALE 4-20mA OUTPUT'</p>
<p>#4 Display Does Not Change or Update</p>	<p>Processor Crash Lightning or Power Surge</p>	<p>-Turn Power OFF for 10 seconds. then back ON -RESET meter</p>
<p>#5 Flowmeter keeps trying to restart</p>	<p>Processor Crash Lightning or Power Surge</p>	<p>RESET meter</p>
<p>#6 Pass Code Lockout</p>	<p>Wrong Code Code Corrupted</p>	<p>Call Factory for alternate code Provide product SN#..... Call (610) 942-3190</p>
<p>#7 No Flow Signal When There Is Flow In The Pipe  LED Flow Indicator Does Not Come ON With Flow - (located on Doppler input circuit board)</p>	<p>Sensor Not Aligned Correctly  Couplant Paste Missing or Aging (drying - shrinking)  Accoustic Signal Path Obstructed  Sensor Wiring Incorrect  THRESHOLD Adjustment Set Too High  Defective Sensor or Doppler Input Card  Poor Application</p>	<p>-Check Sensor mounting. Make sure mounting strap is not too tight. -Replace couplant (silicone grease) between sensor and pipe wall if shrinking or drying out. -Check for signal path obstruction - i.e. Concrete or other pipe lining that may be too thick or is pulling away from inside pipe wall - Use spool section if needed. -Check wire connections to terminal barrier for correct polarity. -THRESHOLD setting on Doppler input circuit board may be set too high. CW increases - do not adjust more than 1/2 to 3/4 of its turn from the full CCW position. This could cause loss of flow signal. -Test sensor response by moving sensor faces back and forth closely toward each other (dual-head) - LED flow indicator should blink or light. -Try small adjustments to CABLE ADJ and/or L3 receivers tuning coil on Doppler Card. -Verify your application is suitability for Doppler Flowmeters.</p>

# CPS-460 Doppler Troubleshooting Guide

Symptom	Cause	Check or Try
#8 No Flow Indication But LED Flow Indicator Light Comes ON	Programming Error	<ul style="list-style-type: none"> <li>-Check programming of LOW FLOW SHUT OFF setting. If setting is higher than flow rate velocity, meter will indicate ZERO flow.</li> <li>-Check ZERO IF SIG STRENGTH IS LESS THAN setting. - typically set for 10 to 20%. Too high may ZERO meter.</li> </ul>
#9 Readings Fluctuate More Than 0.40 FPS (this is not necessarily a problem)	<p>Too Many Air Bubbles</p> <p>Suspended Solids Are Too High (&gt;20%) or Too Low (&lt;50ppm) or intermittent</p> <p>Poor Sensor Mounting or Old Couplant Paste</p> <p>Low Flow Velocity (&lt;1.5 FPS)</p>	<ul style="list-style-type: none"> <li>-Reduce Source of too many air bubbles or high solids content.</li> <li>-Check sensor mounting and couplant paste.</li> <li>-Increase programmed DAMP FACTOR - best setting is 5, increase if necessary.</li> <li>-Increase AVERAGE READINGS in program</li> <li>-Check if flow is fluctuating (i.e. check valve is bouncing due to low flow)</li> <li>-Change 'MEASURE FLOW TYPE' to NON-SYM</li> <li>-Increase flow velocity (recommend &gt;1.50 FPS)</li> </ul>
#10 Readings Are Fixed or MAX All The Time  Readings Go To MAX Intermittently	<p>Poor Sensor Mounting or Old Couplant Paste</p> <p>Electrical Noise Interference</p> <p>Interference from close proximity of other Doppler flowmeters</p> <p>Variable Speed Drive (VFD) Interference</p>	<ul style="list-style-type: none"> <li>-Check Sensor mounting and couplant paste.</li> <li>-Increase THRESHOLD setting on Doppler input card - CW increases (do not adjust more than 1/2 to 3/4 of its turn from the full CCW position)</li> <li>-Decrease (CCW) Blue GAIN potentiometer</li> <li>-Increase LOW PASS FILTER adjustment on Doppler input card - CW increases.</li> <li>-Increase 'SIGNAL FILTERING %' in program. (caution: too high % may cause loss of flow signal)</li> <li>-Relocate flow meter to distance itself from electrical wiring, other Doppler flowmeters and variable speed drives.</li> </ul>
#11 Flow Readings Not Correct	<p>Programming Incorrect</p> <p>Your Flow Data Source Incorrect</p> <p>Valve(s) not opened</p> <p>Sensor Location Poor</p> <p>Noise Interference</p>	<ul style="list-style-type: none"> <li>-Check programming, particularly the pipe ID setting</li> <li>-Verify pump flow rates, valves partially closed etc.</li> <li>-Check sensor is located 10 pipe diameters downstream from elbows, tees etc.... 20 diameters from reducers, valves etc. (note: partly closed valve seriously distorts the flow profile)</li> <li>-Variable Speed Drive noise - see symptom #10</li> <li>-If readings are repeatable, program a 'SITE CAL FACTOR' for in-field calibration correction.</li> </ul>
#12 Flow Readings ZERO At Lower Flows	<p>LOW FLOW SHUT OFF Programmed Too High</p> <p>Flow Velocity Is Too Low</p> <p>Low Signal Strength</p>	<ul style="list-style-type: none"> <li>-Check LOW FLOW SHUT OFF program setting</li> <li>-Flow Velocities of less than 1.5 FPS may be difficult to monitor. Increase velocity or reduce pipe size at sensor location.</li> <li>-Check ZERO IF SIG STRENGTH IS LESS THAN setting. Too high may ZERO flow, especially at low flows which typically have low signal strength.</li> </ul>
#13 Flow Readings When There Is No Flow	<p>Noise Interference</p> <p>Poor Sensor Mounting or Old Couplant Paste</p>	<ul style="list-style-type: none"> <li>-Try small adjustments to L3 coil on Doppler Card</li> <li>-Increase LOW FLOW SHUT OFF and/or 'ZERO IF SIGNAL STRENGTH IS LESS THAN' in program</li> <li>-See symptom #10</li> </ul>