

	SONARtrac™ Technical Bulletin	
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Purpose:

The purpose of this document is to formally release the SONARtrac™ Troubleshooting Guide.

The guide lists problems that may be encountered by personnel installing SONARtrac™ meters as well as actions to take to correct the problems. In the case where all troubleshooting techniques have been utilized, but the unit is still not working properly, please call CIDRA Technical Support at 203-626-3405 or after working hours call Pager # 203-766-4086.

The guide will be incorporated into the next manual release.

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Priority Code:			
1	Safety issue or system will not function	2	Intermittent problem causing system crash
3	Erratic data/readings	4	Added product feature
5	Product enhancement		

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System Faults:

Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
1	System does not come on or was working and stopped working	No power to system	Check input power with volt meter	Yes - there is power and power is within system specs of 100 - 240 volt AC and 16 – 36 volt DC	See Below
				No - power to system or power is below spec	Check external wiring / circuit breakers, etc. to ensure power and that power is within spec Connect to alternate power source
			Check status of fuse(s)	Fuse(s) bad	Replace fuse(s) and see if blown fuse fault recurs. If problem recurs contact CiDRA Technical Support.
				Fuse(s) good	See below
			Is the green LED lit	Yes	There is power to system but still does not come on Contact CiDRA Technical Support.
				No	There is no power to the LED Contact CiDRA Technical Support.
2	Screen is blank	Screen is not working	Verify if there is power to system	No	Troubleshoot per item 1
				Yes	See below
			Is the ambient temperature below or above the operating range of the screen (-20°C to +85)?	Yes	Screen is located in an area outside of the temperature specifications. Relocate transmitter.
				No	See below
			Are system signal outputs (4-20 mA, etc) in operation and functional	Yes – continue to use system with DCS output	Possible damaged or faulty screen. Contact CiDRA Technical Support.
				No	Contact CiDRA Technical Support.



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
3	The display has random lines or makes no sense	BOOT and / or MAIN software is corrupt	Display shows lines or random characters	---	Contact CiDRA Technical Support.
4	System keeps turning on and off	Low or dirty power to system	Verify power source for transmitter is stable and within operating range of system	Power fluctuates	Connect to stable power source
				Power is good and stable at between 100 – 240 volt AC or 18 – 36 volt DC	See below
		Poor connections at 'Power Input' terminal block in transmitter	Verify power connections to transmitter	Wire(s) not properly installed	Reconnect power cable
				Wires installed properly	Problem may be internal to transmitter. Contact CiDRA Technical Support.
5	The system keeps re-booting on its own	Poor power source for system	Verify power source for transmitter is stable and acceptable	Power fluctuates	Connect to stable power source
				Power is good and stable at between 100 – 240 volt AC or 18 – 36 volt DC	See below
		System memory error or problem	Run 'RAM TEST' and 'DPRAM TEST' in 'SELF TEST' in DIAGNOSTICS menu	Fail either or both RAM and DPRAM test	Faulty RAM/DPRAM. Contact CiDRA Technical Support.
				Pass both RAM and DPRAM tests	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
6	Screen is light or dark in color	Incorrect screen contrast setting	Check screen setting in 'DISPLAY / CONTRAST in CUSTOMIZE menu. Normal setting is 170	No – the contrast setting is not 170	Adjust contrast setting up or down as necessary. If problem persists contact CiDRA Technical Support.
				Yes – contrast is set to 170	Try adjusting contrast. If this does not work contact CiDRA Technical Support.
7	The 4–20mA input on plant data system does not work	Incorrect wiring	Verify 4-20mA is wired to proper connector terminals in the transmitter (internal or external power)	No – system is not connected to appropriate terminals	Reconnect wires; refer to section 8 of Transmitter Installation Manual
				yes	See below
			Verify 'POWER SEL' on '4 - 20mA CH1' (or 2) in OUTPUT CONFIG menu (internal or external) is set to correspond with the wiring option above	No – incorrect 'Power Sel' option.	Correct output option
		Yes		See below	
		Broken lead between transmitter and plant data system or faulty 4-20mA supply	Verify 4-20mA output on transmitter and at data system Select '4-20mA TEST' under the DIAGNOSTIC menu to output discrete 4 through 20 mA signals.	Yes, output from transmitter and input to plant system	Wiring is good
				No signal at plant data system	Suspect wiring problem
No signal from transmitter	Suspect faulty 4-20mA output. Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.				



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
8	The 4–20mA display in control room does not match the flow rate on the meter	Wrong Range settings at transmitter or DCS	Verify the range setting are the same	Yes - Ranges of transmitter and DCS are the same	See below if problem persists
				No – range setting are different	Re-range the DCS or the transmitter
		The transmitter output trim needs to be adjusted	Scroll to '4mA TRIM' in the 4-20 mA CH 1(2) submenu under the OUTPUT CONFIG menu in order to access trim function. Press ENTER and follow instructions	Yes – the output is correct	See below
				No – the output needs to be adjusted	Input values per transmitter screen values. If problem persists see below
		Signal is being affected by PLC card	Disconnect input signal lines from PLC card. Connect current meter to leads. Output discrete mA signals using '4-20mA TEST' under the DIAGNOSTIC menu.	Yes – the current meter readings match the transmitter output values	A 4-20mA signal isolator may be required. Contact CiDRA Technical Support.
				No – the current readings do not match the transmitter values	See below
		The 4-20mA values generated by the transmitter in '4-20mA Test' do not match the signals seen at the end of the signal cable	Connect current meter at the 4-20mA terminals in the transmitter and output discrete signals using '4-20mA Test'	Yes - The signals output from the transmitter match the current meter readings	Plant wiring may have a problem. Verify integrity of signal wires.
				No – the output from the meter dos not match the current meter readings	Contact CiDRA Technical Support.



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
9	The Display is Frozen (reads same value all the time)	Transmitter left in Idle Mode	Is Heart Beat Indicator Turning in Lower Right Corner	Yes – Heart Beat Indicator is Turning	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
				No- Heart Beat Indicator is not turning	Cycle power to transmitter
		Transmitter is hung up	Cycle power to transmitter. Does the display update?	Yes – Display updates	Meter is properly functioning
				No – Display is still frozen	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
10	The Display Reads Preamp Failure and there is no flow reading	Possible faulty Preamp or bad connection	Verify wiring and connectors are properly connected	No – wiring / connector fault found	Correct fault
				Yes – all wiring and connectors is correct	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
11	The display reads "Invalid Mode"	Improper Op Mode selected or Display Settings selected	Under Basic Menu, Verify Op Mode is set to FLOW for Flow Meter or GVF/SOS for Entrained Air Meter or FLOW/GVF/SOS for combined meter operation	No – Op Mode is not set to VF for Flow Meter or GVF for Entrained Air Meter	Reset to proper operating mode
				Yes – proper operating mode is selected	See below
			Under Customize Menu verify Display Line 1 set to Flow Rate for Flow Meter or GVF for Entrained Air Meter, etc	No – Display Line 1 is not set to Flow Rate for Flow Meter or GVF for Entrained Air Meter,.	Change Display line 1 to appropriate mode
				Yes – display is set correctly	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
12	The signal output from the SONARtrac™ meter is noisy	Need to use Damping or Noise Reduction Filter	See Filter Section of manual for more information on filtering	Yes – with filtering enabled, the signal is less noisy	Employ filtering at the transmitter or at the DCS
				No – with filtering enabled, the signal is still noisy	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
13	The signal output from the meter has spikes when the Flow starts or stops	Need to use Spike Filter	See Filter section of Manual in order to turn on filtering	Yes – With filtering Enabled, signal is less noisy	Use this as new transmitter configuration
				No – With filtering enabled, signal is still noisy	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
14	Flow does not seem correct	Improper pipe size entered	Verify pipe size input in transmitter 'PIPE SIZE' in BASIC CONFIG menu	Yes – correct size entered	See below
				No – incorrect pipe size entered	Re-enter correct pipe size
		Improper calibration coefficients entered	Verify coefficients in transmitter 'CALIBRATION' in BASIC CONFIG menu 'match sensor band coefficients (on label in transmitter or on sensor band cable)	Yes – correct values entered	See below
				No – incorrect values entered	Re-enter correct coefficients
		All sensors are not turned on	Verify sensors are turned on in 'SENSOR SETUP / ENABLE' in CUSTOMIZE menu	Yes – all sensors are on	See below
				No – some or all are turned 'Off'	Turn on all sensors in Customize menu unless some were purposely turned off. If problem persists, Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
14	Flow does not seem correct	Sensor to transmitter wiring may be faulty	Run 'SENSOR CHECK' in DIAGNOSTICS menu	Yes – passes all tests	See below
				No – fails one or more tests	Verify and correct fault indicated on screen. If problem persists, Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
		One or more sensors may be faulty	Run 'SENSOR MAX/MIN' in INFO menu	Yes – all sensors are within 30% of each other (process must be flowing at nominal flow rate)	See below
				No – one or more sensors vary from the others by >30%	Potential sensor failure. Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
		Incorrect viscosity or density settings	Verify correct settings in BASIC CONFIG menu	Yes – the proper settings are input	See below
				No - the settings are not correct	Correct inputs in BASIC CONFIG menu
		System is in 'Initialize Mode'	Is the system 'Heartbeat' (indicated by a spinning '\ /') on bottom right of screen active	Yes	System is operational and communicating with DSP.
				No	The system is designed to reset automatically after 30 minutes. If reset does not occur, cycle power to system. If this recurs, contact CiDRA Technical Support.



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
14	Flow does not seem correct	A cable connection between the sensor and transmitter is cut or disconnected	Run 'SENSOR CHECK' under DIAGNOSTIC menu	Pass	This indicates all sensors are good and functional.
				Fail	<ol style="list-style-type: none"> 1. Verify wire connections in transmitter are all good. 2. Verify cable is not cut or damaged. 3. Verify cable connector on sensor head is connected. 4. Remove sensor head access panel per Installation Manual and ensure sensor to pre-amplifier connector is properly connected. 5. If system does not function, acquire Snapshot, upload to secure Website, and contact CiDRA Technical Support.
15	The flow rate displayed is a series of dashes (-----)	System 'Quality Metric' is below set point	The default value of VQ (if displayed on the transmitter front panel) is 0.2.	Value is equal to or greater than 0.2 consistently	Indicates system is above minimum threshold for making a reading
				Value is less than 0.2	Indicates system is below minimum threshold to make a reading. Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
		Sensors are saturating	Go to 'EVENT LOG' in INFO menu and press ENTER	Yes - A message of 'Sensor Over' will be present if a sensor has been saturated	<ol style="list-style-type: none"> 1. Go to 'GAIN' on DIAGNOSTICS menu. 2. Press ENTER and scroll to AUTOSSET GAIN and press ENTER 3. GAIN will be adjusted to proper level
				No message for 'Sensor Over'	See below



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
15	The flow rate displayed is a series of dashes (-----)	Undefined	Take s 'SNAPSHOT' using StBasic or SONARstick	Post on secure Web site in Technical Support area	Contact CiDRA Technical Support.
		Process operating flow is less than the system programmed minimum flow setting	Is the process flow rate < 3 ft/sec	Yes	System normal specification is a low flow cutoff of 3 ft/sec
				No	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
16	The flow rate displayed is '> max flow'	Process operating flow is greater than the system programmed maximum flow setting	Is the process flow rate > 30 ft/sec	Yes	System normal specification is a maximum flow cutoff of 30 ft/sec
				No	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
17	The Flow Reading is erratic	Sensors are saturating	Select and run 'AUTOSET GAIN' found in GAIN submenu of DIAGNOSTICS menu	Yes -The reading is less erratic.	Use this as new transmitter configuration
				No – The reading is still erratic	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.
		The flow is at or below min flow rate of the system	Select 'LOW END' under FLOW CUTOFF RANGE submenu of CUSTOMIZE menu and determine if that value is zero	Yes – the value is set to zero	The operation may be outside the measurement capability of the meter. Contact CiDRA Technical Support.
				No – the value is not set to zero	Lower the low end cutoff.



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Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
18	The Flow Reading is erratic	The meter is mounted too close to an elbow or obstruction	If possible move meter to a straight run of process pipe.	Yes – The reading is less erratic	
				No – The reading is still erratic.	Acquire Snapshot, Upload to secure Website, and contact CiDRA Technical Support.



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GVF Meter Faults:

Item No	PROBLEM	POSSIBLE CAUSE	DIAGNOSTIC METHOD	DIAGNOSTIC RESULT	COMMENTS
19	The GVF Meter Displays dashes "-----"	The acoustics at the measurement location are too low	Contact CiDRA Technical Support.		
20	The GVF Reading is erratic	Signals may be saturated	Select and run 'AUTOSET GAIN' found in GAIN submenu of DIAGNOSTICS menu	Yes – this corrected the problem	Take Snapshot and send to CiDRA Technical Support.
				No – the problem persists	Take Snapshot and send to CiDRA Technical Support.
21	The GVF Meter always reads 50% GVF or some other value that is not correct	Transmitter setup parameters are incorrect	Verify setup parameters to ensure they are correct	Yes – the setup parameters are correct	The actual GVF of the fluid is >50% or what is indicated on the transmitter
				Yes – the setup parameters are correct but the GVF is definitely incorrect	Take Snapshot and send to CiDRA Technical Support.
				No – the setup parameters are not correct	Correct transmitter input parameters in BASIC CONFIG menu



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11/20/06	01	R. Markoja	E06-0104	Initial Release

Priority Code:			
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