



S2A

LVDT Signal Conditioner



For use in:

Steam Valve Position Feedback
Governor and Throttle Valves
Interceptor and Stop Valves
Boiler Feedwater Pumps
Turbine Control Systems

Advanced Smart Power Gen AC-LVDT Signal Conditioner

Alliance Sensors Group's model S2A DIN-rail-mounting LVDT signal conditioner is designed specifically for the power generation industry. It offers comprehensive diagnostics for sensor and wiring failure, real-time recalibration of the Full Scale and Zero outputs, enhanced ground loop noise rejection, and backward compatibility to legacy S1A signal conditioners. Utilizing front panel push buttons for easy calibration, the S2A is engineered to work with the widest range of LVDT, RVDT, and inductive half-bridge LVRT sensors by providing four excitation frequencies that will operate most AC-LVDTs over a 50 to 5,000 mVrms range of sensor output. S2A modules offer a choice of 8 analog outputs and half-duplex RS-485 digital communications to facilitate remote setup and for saving a module's setup parameters to hot swap them with another module.

Additional information can be found at: www.alliancesensors.com.

Functional Features:

- Cybersecurity lock to prevent tampering
- Smart calibration by front panel push buttons
- Color-coded screw terminal plugs
- Auto-mastering
- Hot swapability
- Differential input for superior noise immunity
- Real-time recalibration

Diagnostic Features:

- Shorted, disconnected, or open primary
- Shorted, grounded, disconnected, or open secondaries
- Output voltage shorts or current loop opens
- Errors during installation and setup

Specifications:

Operating Power:	+15 to +30 V DC (+24 V nominal), 80 mA max. at 24 V DC; +15 V DC and -15 V DC needed for ±10 V DC bipolar output
Analog DC Outputs:	0 - 5 V, 1 - 5 V, 0.5 - 4.5 V, 0.5 - 9.5 V, 0 -10 V, -10 to +10 V, 0 - 20 mA sourcing (3-wire), 4 - 20 mA sourcing (3-wire) 850
Loop Resistance:	Ohms maximum with 24 V DC supply
-3 dB Response:	10% (min.) of excitation frequency (normal setting); 10 Hz (default) user adjustable (low noise setting)
Noise and Ripple:	≤1 mVrms (voltage output); ≤ 2 μArms (current loop output)



Specifications (Cont):

Output Non-Linearity:	≤±0.025% of Full Span Output (FSO)
Operating Temperature:	-20 to 75C
Temperature coefficient:	±0.002% of FSO/°C (combined zero and span shift)
Excitation Frequencies:	1 kHz, 3 kHz, 5 kHz, 10 kHz (nominal)
LVDT Output Range:	50 to 5000 mVrms at LVDT's full scale position
Excitation Voltage:	3.0 Vrms (nominal) push-pull drive (factory default) 4.5 Vrms (nominal) push-pull drive (via jumper change) 1.5 Vrms (nominal) single ended drive (for low impedance primary)
Auto-Master Syncing:	Master output controls up to fifteen slave units
Fault Detection:	Open LVDT windings, shorted or grounded LVDT connections, cable disconnected, voltage output shorted or current loop open
Failure Indications:	Front panel LED's; output out of range; NO/NC open-collector switch
Null Detection:	Front panel LEDs; ±3 V DC null output signal
Zero Set:	Front panel push button or RS-485 command
Full Scale Set:	Front panel push button or RS-485 command
Digital Interface:	RS-485 2-wire multi-drop network, 16 addresses
Cybersecurity Lock:	User enabled

J1 1 2 3 4	J1-1 Black	LVDT Primary High <i>or</i> Half-bridge High End
	J1-2 Black	LVDT Primary Low <i>or</i> Half-bridge Low End
	J1-3 Black	LVDT Secondary Low (<i>Ground if J201 is ON for S1A mode</i>)
	J1-4 Black	LVDT Secondary High <i>or</i> Half-bridge Mid-tap
J2 1 2 3 4	J2-1 Blue	LVDT Secondaries Junction Point (<i>Shield Ground if J9 is ON</i>)
	J2-2 Blue	Failure Warning Output (<i>Open Collector Switch, 50 mA max.</i>)
	J2-3 Blue	-15 V DC input for ±10 V DC output (<i>Shield Ground if J8 is ON</i>)
	J2-4 Blue	Sync Input / Output (<i>Master / Slave Bus</i>)
J3 1 2 3 4	J3-1 Green	RS-485 Data Line (<i>D +</i>)
	J3-2 Green	RS-485 Data Line (<i>D -</i>)
	J3-3 Green	Analog Output Ground (Common Ground)
	J3-4 Green	Analog Output (+) (<i>Voltage or Current, as selected with DS1</i>)
J4 1 2 3 4	J4-1 Red	Null Indicator Differential DC Output (<i>floating</i>)
	J4-2 Red	Null Indicator Differential DC Output (<i>floating</i>)
	J4-3 Red	Power Ground (Common Ground)
	J4-4 Red	Power Input (+) (<i>15 to 30 V DC</i>)

S2A LVDT Signal Conditioner Module I/O Connections

