DUSTIN & PARTNERS
CIVIL SENSORS

Troubleshooting Guide

Dustin & Partners instruments, data loggers and gateways · DP-TS-001 Rev 1 · October 2026

Work through this guide before contacting Dustin & Partners about a fault. Record every check and its result on the Troubleshooting Record (Section 5) and send it to info@dap.ing. A Return Material Authorization (RMA) can be requested only after you have completed this guide and Dustin & Partners has given clearance by phone or email (Orders and Returns, DP-POL-OR-001).

Safety

- Disconnect power and remove batteries before opening an enclosure or handling terminals.
- Do not work on electrical equipment in rain or standing water.
- If you find burn marks, a burning smell, a swollen or leaking battery, or water inside an enclosure: stop, do not power the device again, photograph it and contact Dustin & Partners.
- Follow site safety rules for work at height, in excavations and near traffic.

Tools

Digital multimeter (DC volts, resistance, continuity) · screwdrivers · flashlight · camera or phone · laptop with USB cable and the set-up software · clean dry cloth.

1. General checks (all products)

Do these in order. Most faults are found in the first five checks.

#	Check	How	Pass / note
1	Power	Confirm the power source is on, charged and connected. Measure DC voltage at the device power terminals with the multimeter and record it. Compare with the supply range for the product (Section 2). Check fuses, breakers and the charge controller if solar powered.	
2	Batteries and power supplies	For battery-powered devices, open the battery compartment and verify that the batteries fitted are the type specified for the device (datasheet and product documentation). Verify that any external power supply is the approved Dustin & Partners supply or the type specified. Use of non-approved batteries or power supplies voids the warranty.	
3	Signal and communications	Check when the last reading arrived. In the set-up software, check radio or cellular signal strength. Check the antenna is fitted, tight and undamaged, and that nothing new blocks the line of sight to the gateway. Confirm the gateway is online.	
4	Connections	With power off, check every terminal is tight and wired to the correct terminal per the wiring diagram. Check connectors are fully seated and free of corrosion, and cable glands are tight. Check shield and drain wires are connected.	
5	Cables	Walk the cable run and look for cuts, crushing, abrasion and rodent damage. With the multimeter, check continuity of each conductor end to end, and check there is no short between conductors or from any conductor to the shield.	
6	Burn marks and heat damage	With power off, open the enclosure and inspect boards and terminals for burn marks, discolored or swollen components, melted insulation or a burning smell. If found, stop (see Safety).	
7	Water damage	Look for droplets, condensation, water lines, corrosion (white or green deposits) and wet or saturated desiccant. Check the lid gasket, screws and cable glands. If water is found inside, stop (see Safety).	

#	Check	How	Pass / note
8	Physical damage and mounting	Check for impact damage, loose mounting, moved anchors or brackets, and damage from nearby work.	
9	Restart and re-read	Restore power, restart the device and take a manual reading. Compare it with previous readings and with nearby sensors. Note any error codes.	

Photograph the device, wiring and any damage before and after each change.

2. Product checks

Vibrating wire sensors: DP4K,45 Crack Meter and DP44K Strain Gauge

#	Check	How	Pass / note
1	Coil resistance	Power off and disconnect the gauge. Measure resistance across the two vibrating wire conductors. Expected: about 180 Ω (crack meter 180 Ω ±10 Ω). Very high or open: cable break or coil fault. Near 0 Ω: short circuit.	
2	Thermistor	Measure resistance across the two thermistor conductors. Open or 0 Ω indicates a cable or thermistor fault. Compare with the calibration certificate.	
3	Reading in range	Take a manual reading. Expected frequency: crack meter 1400–3500 Hz; strain gauge 450–1250 Hz. A reading at or outside the limits may mean the gauge is over-ranged (crack meter range 50 mm) or damaged.	
4	Mounting	Check both anchors or mounting blocks are firm, the ball joints (crack meter) move freely, and nothing is pressing on the gauge.	
5	Swap test	Connect the gauge to a known-good logger channel, or a known-good gauge to the suspect channel, to find whether the fault follows the gauge or the logger.	

MEMS sensors: DP6x16K1 Tilt Meter and DP-89K Inclinometer

#	Check	How	Pass / note
1	Supply voltage	Measure DC voltage at the sensor terminals. Expected: 12 V DC nominal.	
2	RS-485 wiring	Check the two RS-485 data conductors are not reversed and are continuous along the string. Check the string end is terminated per the wiring diagram.	
3	Address	Confirm each sensor on the string has a unique address matching the logger configuration.	
4	Isolate the string	One faulty sensor or connection can stop the whole string. Disconnect downstream sensors one at a time until readings return, to find the faulty unit or joint.	
5	Reading in range	Readings must be within ±15°. A constant or frozen value suggests a communication fault.	

DP-LG3-VW8 Vibrating Wire Data Logger 8 Channel and DP-LG2-S Data Logger RS 485 Serial

#	Check	How	Pass / note
1	Battery and external power	Confirm the internal battery is the specified 4 V sealed lead-acid pack and measure it. If externally powered, confirm the supply is approved and measure it: 5–24 V DC. Check solar panel and charge controller where fitted.	
2	Radio	Check the antenna, signal strength in the set-up software and the reporting interval (10 minutes to 1 day). Readings are stored in the logger if the radio link is lost and sent when it returns.	

#	Check	How	Pass / note
3	Channels and configuration (DP-LG3-VW8)	Check each sensor is on the configured channel and the channel is enabled. Use the swap test above.	
4	String size and power (DP-LG2-S)	Maximum 64 sensors per logger, or 90 with the string powered from an external 12 V supply. Check RS-485 wiring and addresses as for MEMS sensors.	
5	Local download	Connect by USB and download stored readings to confirm the logger is recording.	

DP-GW1-LORA Static Cellular Gateway

#	Check	How	Pass / note
1	Power	Confirm the internal battery is the specified 4 V sealed lead-acid pack and any external supply is approved; measure both (external 5–24 V DC).	
2	Cellular service	Check cellular signal strength, that the SIM is fitted and the data plan is active. The gateway works on LTE and LTE-M networks.	
3	Loggers in range	Confirm loggers are within radio range and reporting. The gateway has no sensor inputs; sensor faults are found at the logger.	

DEPA-3 Triaxial Accelerometer and DP-GG1-A Dynamic Cellular Gateway

#	Check	How	Pass / note
1	Power and battery	Confirm the batteries are the type specified for the device, then check the battery or power supply and the device status in the set-up software.	
2	Repeater and signal	Every accelerometer installation needs at least one DP-GG1-A. Check the gateway is powered and online, its antennas are fitted, and accelerometers are within range.	
3	Mounting	Check the accelerometer is firmly mounted; the mounting torque is 2 N·m, marked on the label.	

DP-PWR-ST Solar Power Station

#	Check	How	Pass / note
1	Panel	Clean the panel; check orientation, tilt and shading.	
2	Charge controller and battery	Check controller indicators and measure battery voltage in the morning before charging starts and at midday.	

3. When to stop and contact us

- Burn marks, a burning smell, or a swollen or leaking battery.
- Water inside an enclosure.
- The fault remains after all checks in Sections 1 and 2.

Send the completed Troubleshooting Record and photos to info@dap.ing. We review it, may ask for further checks or a remote diagnosis, and confirm whether an RMA is warranted.

4. What not to do

- Do not open sealed sensor bodies or attempt board-level repairs. This voids the warranty.
- Do not fit non-approved batteries or connect non-approved power supplies. This voids the warranty.
- Do not ship any item to us without an RMA number.

5. Troubleshooting Record

Field	Entry
Company and contact	
Project and location	
DP part number and serial number	
Position ID	
Date and time of checks	
Checks carried out by (name, DP certificate no.)	
Fault observed and when it started	

Section / check no.	Result and readings (volts, ohms, frequency, signal)	Photo ref.

Dustin & Partners use	
Reviewed by	
Further checks requested	
Clearance to request RMA (yes / no), date and method	