METER
ENVIRONMENT

SDI-12: EVERYTHING YOU NEED TO KNOW TO BE SUCCESSFUL

Contributors

THE RESEARCHER'S COMPLETE GUIDE

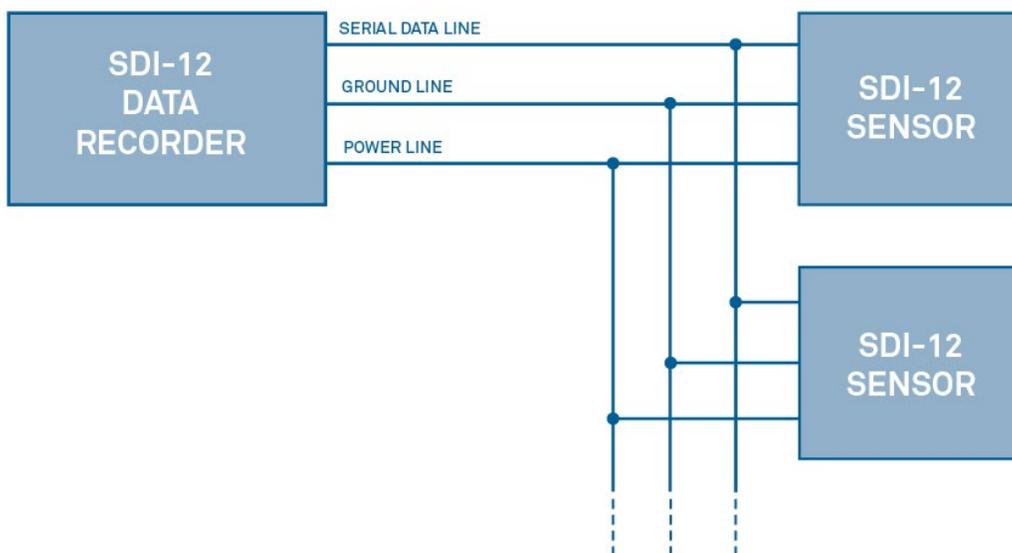SDI-12 is a communications protocol that comes with a myriad of possibilities for research.

Figure 1. SDI-12 system

BEST PRACTICES

In this webinar, Chris Chambers, METER customer support expert, teaches the best practices for setting up SDI-12 sensor networks. He discusses what a network does, the pros and cons, how to design and build your own network and sensor bus, and how to troubleshoot problems.

WHAT IS SDI-12?

SDI-12 stands for serial data interface at 1200 baud. It is a standard communications protocol, which means that it allows a microprocessor-based sensor designed for environmental data acquisition (EDA) to transfer measurement data to a battery-powered data logger. The sensor typically takes a measurement, makes computations based on the raw sensor reading, and outputs the measured data in units we can understand. For example, a pressure sensor would take a series of pressure measurements, average them, and then output pressure in psi, inches of mercury, bars, millibars, or torrs. The sensor's microprocessor makes the computations, converts sensor readings into the appropriate units, and uses the SDI-12 protocol to transfer the measurements to the data logger.

WHAT FEATURES MAKE IT PARTICULARLY USEFUL?

The following features could make SDI-12 useful in research applications:

- Battery-powered operation with minimal current drain

- Deployment of many more sensors with a single data logger, as multiple sensors can be wired into the same port (Useful for extremely large scale studies)

- Used with microprocessor-based sensors that perform complex calibration algorithms or make internal computations

CAN MORE THAN ONE SENSOR BE CONNECTED TO A SINGLE DATA LOGGER PORT?

Yes. SDI-12 is a multi-drop interface that can communicate with multi-parameter sensors. Multi-drop means that more than one sensor can be connected to a data recorder. The maximum number of sensors that can be connected to a single data logger port is 62, although connecting that many sensors to a single port is not advisable for reasons that are explained [here](#).

CAN A SENSOR TAKE MORE THAN ONE MEASUREMENT?

Multi-parameter means that a single sensor may return more than one measurement. For example, the METER TEROS 12 sensor is a sensor that reports soil volumetric water content, electrical conductivity, and temperature.

The METER TEROS 12 is an SDI-12 compatible soil moisture sensor that measures three parameters

SDI-12 HOW-TO

Explore the links below to understand the basics of setting up a system, pros and cons, and how to fix common problems.

Pros and cons

Personnel needs

System setup

Sensors and integration guides

The ProCheck: your SDI-12 sidekick

Best practices

Addressing sensors

Example programs

Troubleshooting

Troubleshooting tools

BEYOND SDI-12: GET THE COMPLETE PICTURE

Everything you need to know about measuring soil moisture—all in one place.

Download the researcher's complete guide to soil moisture

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