CAMPBELL SCIENTIFIC®

WHEN MEASUREMENTS MATTER

SDM-CAN
Datalogger to CANbus Interface

Samples CANbus Data Directly

Enhances your Campbell Scientific automotive data acquisition system

Overview

The SDM-CAN interface is designed to allow a Campbell Scientific datalogger to sample data directly from a CANbus communications network. This allows CANbus data to be stored (and synchronised) with other data values measured directly by the datalogger.

The SDM-CAN can act as a passive listen-only device with its transmitter disabled in hardware or it can be configured to send / respond to Remote Frame Requests, allowing it to poll remote devices for data. Data packets can be constructed to allow it to send data out onto the CANbus so it then acts as a sensor itself.

Data is transferred between the SDM-CAN interface and the datalogger using Campbell Scientific's high speed SDM communications protocol. This protocol allows the SDM-CAN to be used in parallel with other SDM devices, including other SDM-CAN interfaces, which might, for instance, be on other segments of the same CANbus network.

Data Handling

Baud rates up to 1Mbaud are supported (1M, 800k, 500k, 250k, 125k, 50k, 20k and lower). Non-standard baud rates may be possible.

CAN data frames can also be built and sent.

Benefits and Features

❯ Uses Campbell Scientific's SDM communication protocol

❯ Supports CR10X, CR23X, CR7, CR5000 and CR9000X dataloggers*

❯ Up to 15 units can be used per datalogger using the unit's rotary address switch

❯ CAN 2.0A and 2.0B active and passive modes supported

❯ Up to 1Mbaud data rate

❯ Configuration specified within datalogger program

❯ 9-pin DCE RS232 port for diagnostic and software downloads

❯ Standard (tested) operating temperature range -25°C to +50°C

❯ Uses latest Philips SJA1000 CAN controller clocked at 16MHz

*Please note that the SDM-CAN is not compatible with our CR200(X)-series, CR500 and CR510 dataloggers.

SDM-CAN Specifications

Valid for a temperature range of -25°C to +50°C, unless otherwise specified.

Electrical Specifications

› DC, power supply range from 7-26V DC

› Optional (switch selectable) galvanic isolation between the datalogger and the CANbus. The minimum isolation breakdown is 50V – this barrier is for signal isolation only, i.e. it is not a safety barrier.

› Uses the latest Philips SJA1000 CAN controller clocked at 16 MHz

› CANbus physical interface using Philips PCA82C251 driver for 1Mbaud capability, for use in 12V / 24V powered systems.

› EU Declaration of Conformity document available at: www.campbellsci.eu/sdm-can

› CANbus physical connection conforms to CIA draft standard 102 version 2, 9 pin D connector. (The interface will differ from this standard only with respect to pin 9, which outputs 5V DC instead of 7-13V DC.)

› A 3-way, unpluggable screw terminal block for CAN High, Low and G also provided.

› Transmit and acknowledge to CANbus can be disabled by a hardware jumper for safety reasons, e.g. for in-vehicle, listen only monitoring.

› 9-pin DCE RS232 port for diagnostic and software downloads. Requires a null modem cable for connection to a PC (available as an option from Campbell Scientific).

Physical Specifications

› Maximum dimensions: width 175 mm, height 100 mm, depth 23 mm

› Weight 300 g

› The device can be vertically mounted with all the connectors on the top surface.

› Fittings are available to allow vertical mounting in the CR9000X or on enclosure chassis plates.

Power Consumption

Typical active current in self-powered, isolated mode:

› 70 mA with the CANbus in the recessive state

› 120 mA with the CANbus in the dominant state

Typical active current, non-isolated:

› 30 mA with the CANbus in the recessive state

› 70 mA with the CANbus in the dominant state

Typical Standby Current with or without isolation is less than 1 mA. Current consumption increases to typically 50 mA during periods of communication to the datalogger or when the RS232 port is active.

Other SDM Modules

Other SDM modules are available from Campbell Scientific as shown below. These modules are fully described in separate leaflets:

SDM-AO4 Analogue Output Module

SDM-CVO4 Current/Voltage Output Module

SDM-SW8A Switch Closure Input Module

SDM-CD16AC 16-Channel AC/DC Controller

SDM-CD16D 16-Channel Digital Control Port Expansion Module

SDM-IO16 16-Channel Input/Output Expansion Module

SDM-SIO4 4-Channel Serial I/O Module

SDM-INT8 8-Channel Interval Timer

SDM-CAN Helper

SDM-CAN Helper is an add-on program for our RTDAQ Real-Time Data Acquisition Software. This add-on program walks users through the process of configuring their SDM-CAN, connecting the SDM-CAN to the datalogger, sending an appropriate program to the datalogger, and setting up their datalogger to collect specific values from the CANbus network.

SDM-CAN Helper is available, at no charge, from www.campbellsci.com/downloads. Users must have a valid installation of RTDAQ on their computer to install the SDM-CAN Helper program.

Datalogger connection

The CABLE5CBL is recommended for connecting the module to the datalogger*. A 30 cm cable length should be sufficient when both datalogger and SDM-CAN are housed within an ENC12/14 enclosure; a 60 cm length may be required if the datalogger and SDM-CAN are housed at opposite ends of an ENC16/18 enclosure.

*The SDM-CAN has special cabling requirements when used with the CR9000X, contact Campbell Scientific for more details.

CRBasic dataloggers should use the SDMSpeed instruction if the cable length is longer than 7 m. The maximum recommended lead length for the CR7 is 200 m. For other Edlog dataloggers, the maximum recommended cable length is 7 m.