SC532 9-PIN PERIPHERAL TO RS232 INTERFACE
INSTRUCTION MANUAL

REVISION: 8/28/92

WARRANTY AND ASSISTANCE

The **SC532 9-Pin Peripheral to RS232 Interface** is warranted by CAMPBELL SCIENTIFIC, INC. to be free from defects in materials and workmanship under normal use and service for twelve (12) months from date of shipment unless specified otherwise. Batteries have no warranty. CAMPBELL SCIENTIFIC, INC.'s obligation under this warranty is limited to repairing or replacing (at CAMPBELL SCIENTIFIC, INC.'s option) defective products. The customer shall assume all costs of removing, reinstalling, and shipping defective products to CAMPBELL SCIENTIFIC, INC. CAMPBELL SCIENTIFIC, INC. will return such products by surface carrier prepaid. This warranty shall not apply to any CAMPBELL SCIENTIFIC, INC. products which have been subjected to modification, misuse, neglect, accidents of nature, or shipping damage. This warranty is in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose. CAMPBELL SCIENTIFIC, INC. is not liable for special, indirect, incidental, or consequential damages.

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CAMPBELL SCIENTIFIC, INC.
RMA#_____
815 West 1800 North
Logan, Utah 84321-1784

CAMPBELL SCIENTIFIC, INC. does not accept collect calls.

Non-warranty products returned for repair should be accompanied by a purchase order to cover the repair.

CAMPBELL SCIENTIFIC, INC.

815 W. 1800 N.	Campbell Scientific Canada Corp.	Campbell Scientific Ltd.
Logan, UT 84321-1784	11564 -149th Street	Campbell Park
USA	Edmonton, Alberta T5M 1W7	80 Hathern Road
Phone (435) 753-2342	CANADA	Shepshed, Leics. LE12 9RP
FAX (435) 750-9540	Phone (403) 454-2505	ENGLAND
www.campbellsci.com	FAX (403) 454-2655	Phone (44)-50960-1141
		FAX (44)-50960-1091

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SC532 9-PIN PERIPHERAL TO RS232 INTERFACE

1. FUNCTION

The SC532 Peripheral Interface connects an IBM PC/XT/AT or IBM PS2 compatible computer to certain Campbell Scientific datalogger peripherals. Peripherals include SM192/716 Storage Module, SM64 Storage Module, and MD9 Multidrop Interface.

The SC532 replaces the SM232A Storage Module - RS232 Interface whenever the PC208 Datalogger Support Software is used to read Storage Modules. It also provides a +5 VDC power supply to the peripheral. A supply voltage of 6 to 17 VDC is required.

2. PHYSICAL DESCRIPTION

The SC532 has a 9-pin connector for the peripheral and a 25-pin connector for the computer. An AC adaptor provides the input power (Figure 1).
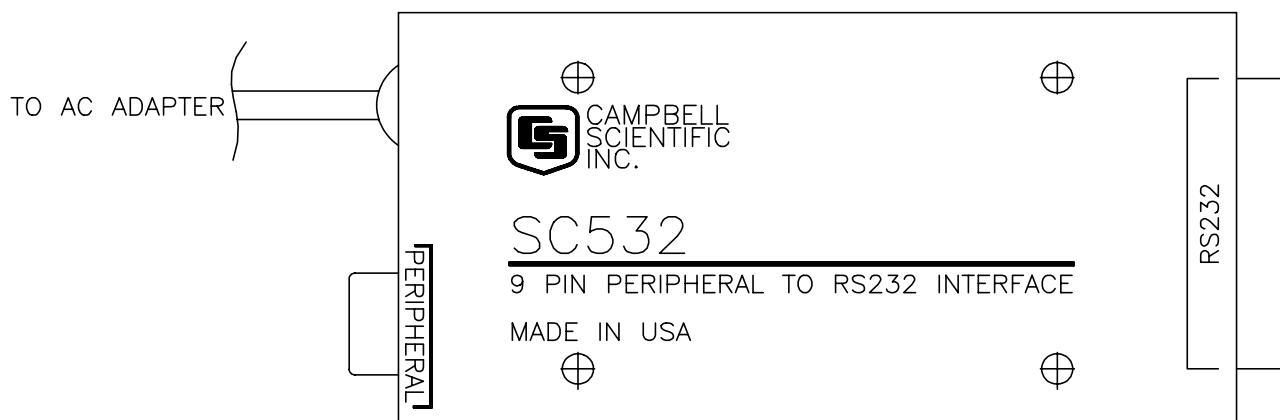

FIGURE 1. SC532 Case Top

3. SPECIFICATIONS

Supply voltage in	+6 VDC to 17VDC; Factory installed AC to 7.5 VDC adaptor
Output voltage	5 VDC ± 0.2 VDC
Current available to peripheral on 5V output	100 mA maximum at 25 deg. C; derate 4 mA/V for each volt above 9VDC on the supply voltage at 25 deg. C
RS232 output levels	+10VDC ± 1 VDC -10VDC ± 1 VDC Maximum output impedance = 1100 ohms
RS232 input levels	± 30V maximum Low threshold ≤ 0.8V High threshold ≥ 3.5V Input impedance at least 3000 ohms

|	
9-pin inputs	Low ≤ 1V; High ≥ 3.5V
9-pin outputs	Low ≤ 0.5V; High ≥ 3.5V
Current drain	5 mA typical quiescent
	10 mA maximum quiescent
Port Configuration	25-pin D-Subminiature Female configured as DCE.
	9-pin D-Subminiature Female connects to
	peripheral through the SC12 Two Peripheral
	Connector Cable supplied with the SC532.
Dimensions	5 x 3 x 1 inches
Weight	1 pound with transformer
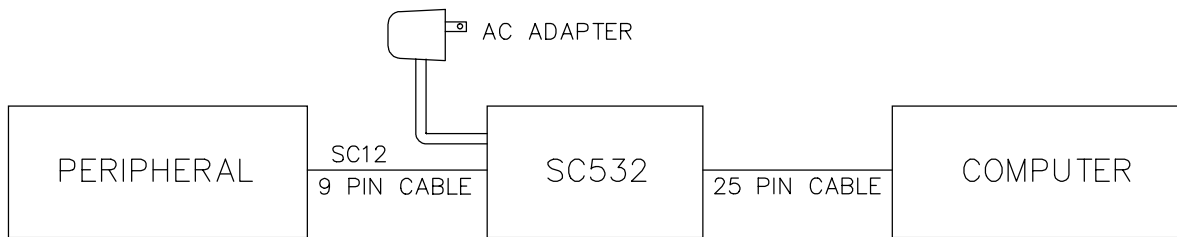
FIGURE 2. Connection Block Diagram

4. HARDWARE CONNECTIONS

The block diagram in Figure 2 shows the connection from a Campbell Scientific Inc. peripheral to a 25-pin RS232 Asynchronous Communication Adapter via the SC532 and a SC12 9-pin cable.

If you have an AT computer with a 9-pin serial port, you will need a 9-pin to 25-pin cable in order to hook to the SC532 Interface.

5. OPERATION

A Campbell Scientific Inc. peripheral's CMOS logic levels (0V logic low, 5V logic high) are converted to RS232 levels (-10V and +10V respectively) by the SC532 Interface.

The SC532 also supplies +5VDC power to the peripheral. The factory-installed AC adapter must be plugged into a 110 VAC wall receptacle.

You will need to write your own software if you are not using the PC208 Dataloggers Support Software. Read the specific peripheral manual for the necessary control sequence.

Appendix A discusses the SC532 and the DTE computer pin descriptions.

6. PORTABLE BATTERY POWER APPLICATION

If the SC532 is being used in a portable application with battery power such as collecting data on-site from a Storage Module, the AC adapter wire can be cut and split. The wires can be spliced to connectors. The user can then use the SC532 with a battery or with the AC adapter.

See Table 1 to hook the SC532 to a battery. The battery voltage can be +6 to 17 VDC. See Table 2 for the current required for selected Campbell Scientific Inc. peripherals.

TABLE 1. Campbell Scientific Inc. SC532 to External Battery Connections

Transformer Brand	Connections	
	Wire	Battery Terminal
Archer	Black w/ White Strip	+Positive
	Solid Black	-Negative
Tamura	Black w/ White Strip	-Negative
	Solid Black	+Positive

TABLE 2. CSI Peripherals and Their Maximum Current Requirements

Peripheral	Maximum Current
MD9 Multidrop Interface	<90 mA
SM192/716 Storage Module	<20 mA
SM64 Storage Module	<30 mA

APPENDIX A. PIN DESCRIPTION

The SC532 25-pin female port is configured as Data Communications Equipment (DCE) for direct cable connection to Data Terminal Equipment (DTE) such as an IBM-PC serial port.

The pin descriptions of the SC532 25-pin female connector and 9-pin female connector are listed in the following table.

TABLE A-1. SC532 Pin Description

PIN = Pin number
I = Signal Into the SC532
0 = Signal Out of the SC532

25-PIN FEMALE CONNECTOR

PIN#	I/O	DESCRIPTION
1,7		GROUND
2	I	TX
3	O	RX
4	I	RTS
20	I	DTR
22	O	RING

9-PIN FEMALE CONNECTOR

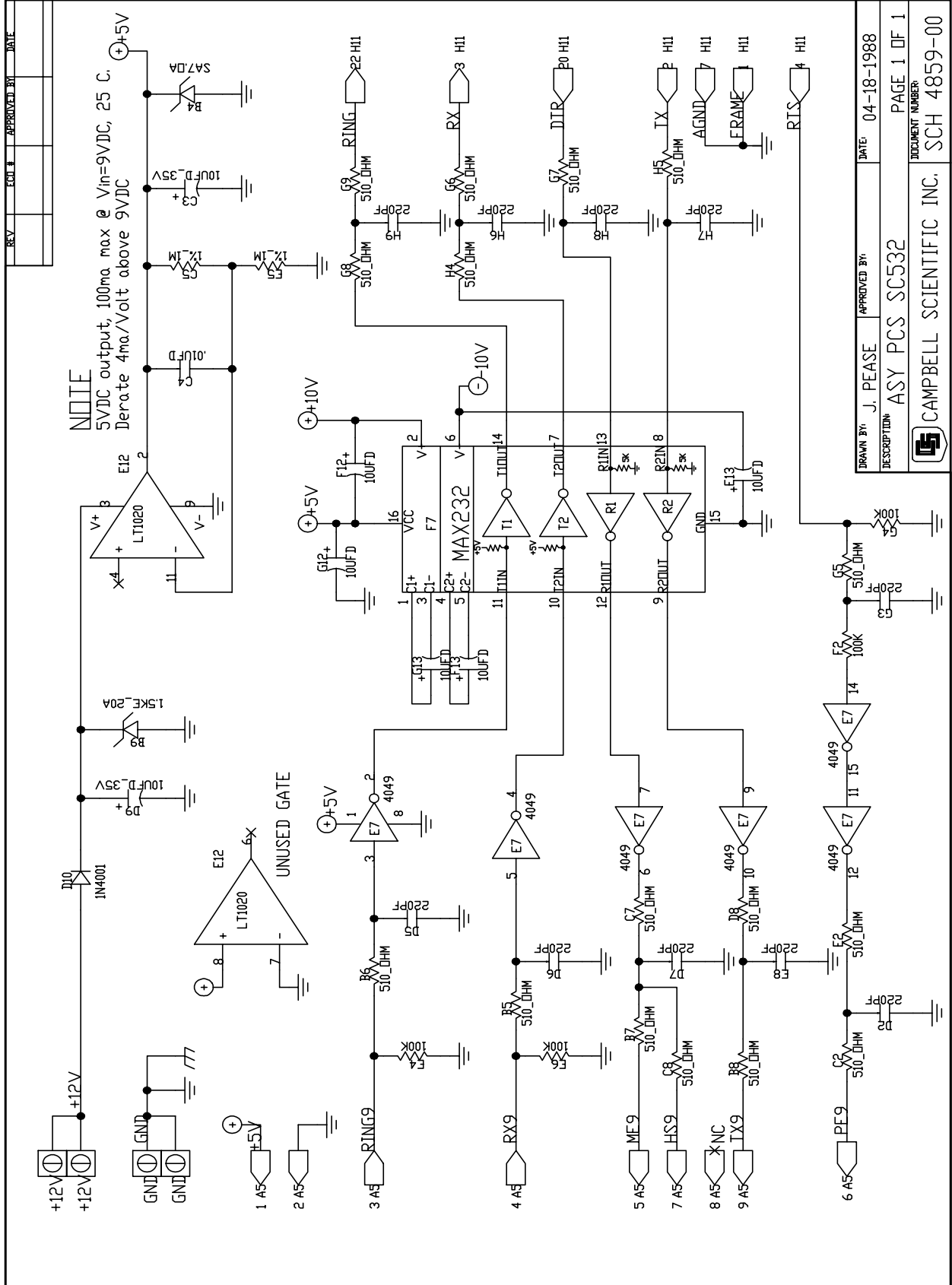| PIN#	I/O	DESCRIPTION
1	O	+5V SUPPLY
2		GROUND
3	I	RING
4	I	RX
5	O	ME
6	O	PE
7	O	CLK/HS
9	O	TX

APPENDIX A. PIN DESCRIPTION

A computer configured as DTE, such as an IBM-PC, will adhere to the description in Table A-2.

TABLE A-2. DTE Pin Configuration

PIN = 25-pin pin number
ABR = Abbreviation for the function name
I = Signal Into the computer
O = Signal Out of the computer

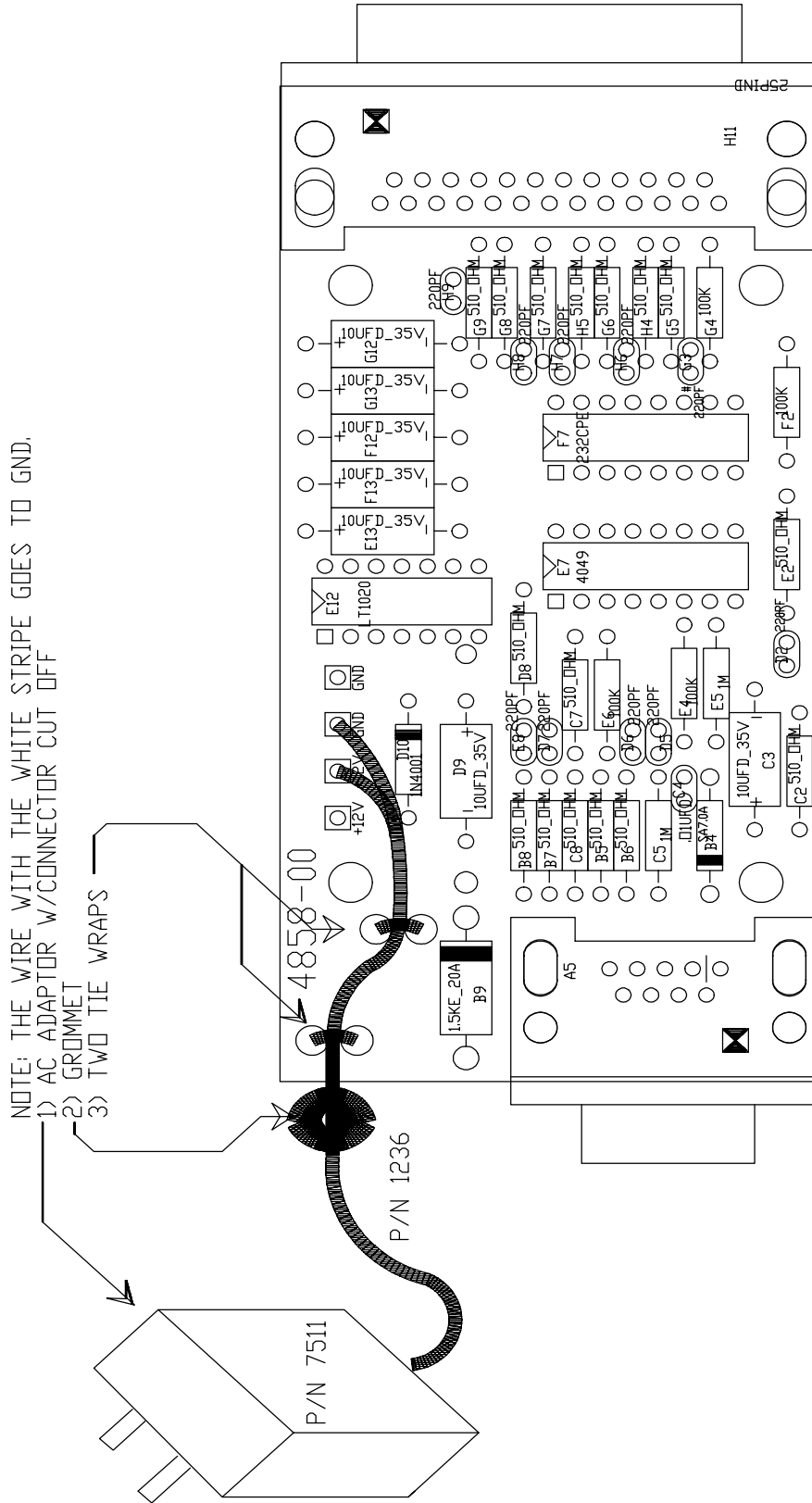| PIN	ABR	I/O	Function
1			Frame Ground.
2	TX	O	Transmit Data: Characters are transmitted from the computer on this line.
3	RX	I	Receive Data: Characters transmitted by a peripheral are received on this line.
4	RTS	O	Request To Send: The computer uses this line to control the peripheral's PE lines.
20	DTR	O	Data Terminal Ready: The computer uses this line to control the peripheral's ME and CLK/HS line.
22	RING	I	Ring Indicator: Raised to get the attention of the computer.
7	SG		Signal Ground: Voltages are measured relative to this point.

APPENDIX B. SCHEMATIC

APPENDIX C. COMPONENT LOCATION