

# CAMPBELL SCIENTIFIC'S SHORT CUT: CREATE CR10(X), 21X, CR500, AND METDATA1 PROGRAMS IN MINUTES

Welcome to Campbell Scientific's Short Cut program builder for CR10(X), 21X, and CR500 dataloggers and MetData1 weather stations. Using Short Cut you can select sensors, choose output data, create wiring diagrams and prepare reports. Short Cut supports Campbell Scientific's SM192, SM716, and CSM1 storage modules.

## Important

Short Cut requires a minimum of 550 Kbytes of unused conventional memory. You can use the DOS "mem" command and check the "largest executable program size." If this number is less than 550 K, you will need to set up your computer so that it loads boot-up programs and drivers into upper (or high) memory or simply load fewer drivers (e.g., network or CD-ROM). Restart your computer to free up the additional memory.

## Installing Short Cut

**CR500/PC500 users:** Start by installing PC500. Its installation procedure will step you through installing Short Cut. Refer to the CR500 manual for instructions on using Short Cut.

**Other users:** Insert the Short Cut disk into drive A: and change to that drive. Type "install" at the DOS prompt and press Enter. It is recommended that you accept default subdirectories.

**MetData1 users:** Start by installing Short Cut as described above. Before you write your weather station program, you will need to run the batch file METDATA.BAT to configure Short Cut for your use. To use Short Cut for general datalogger programs, run DEFAULT.BAT to restore Short Cut to its default configuration. Both of the batch files can be found in the subdirectory where you installed Short Cut.

## Starting Short Cut

**Windows:** Double-click on SC.EXE in File Manager or Windows Explorer. Or, you can start a DOS session by changing to the subdirectory where you installed Short Cut and typing "SC."

**DOS PC208E or PC500:** If you used the default installation subdirectories, choose Short Cut by selecting it under the File main menu item. Hint: Establish an association between a station and a program file under PC208E's EDIT | FILE menu item. Then, start Short Cut under the FILE menu. When you return to Short Cut again to change your program, Short Cut will start using the filename you associated with the station.

**Older versions of DOS PC208:** Change to the subdirectory where you installed Short Cut and type "SC" at the DOS prompt.



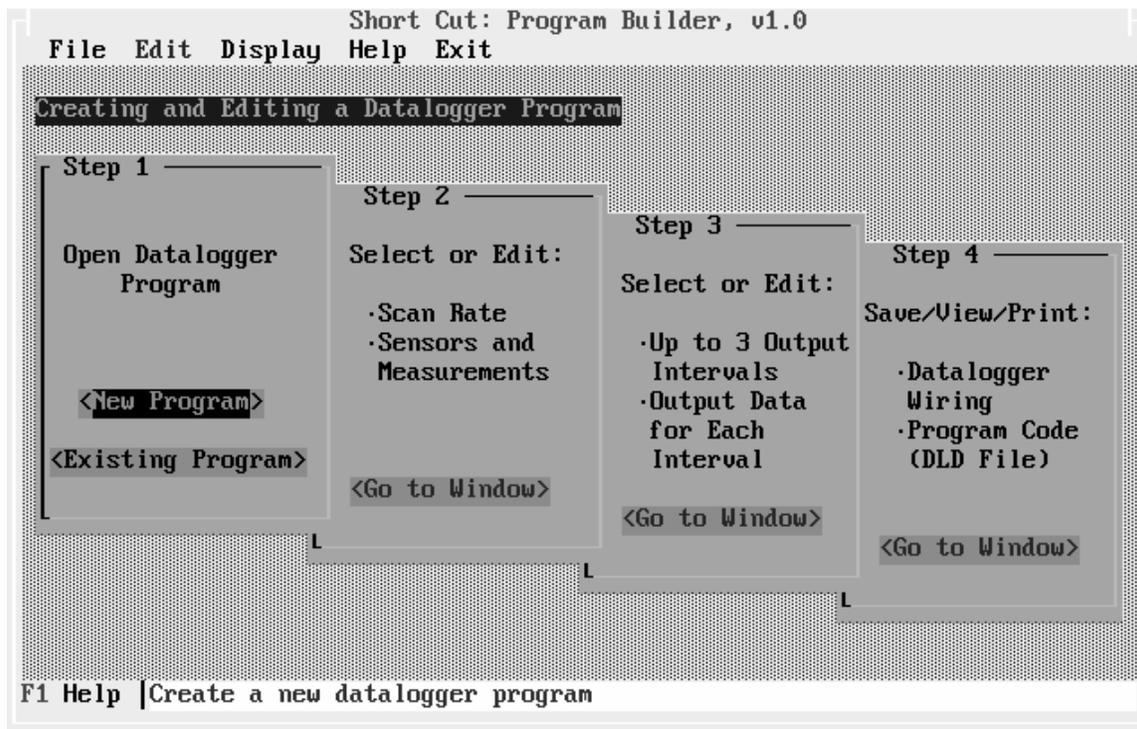
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## SHORT CUT

*Short Cut's main screen leads you through four easy steps:*

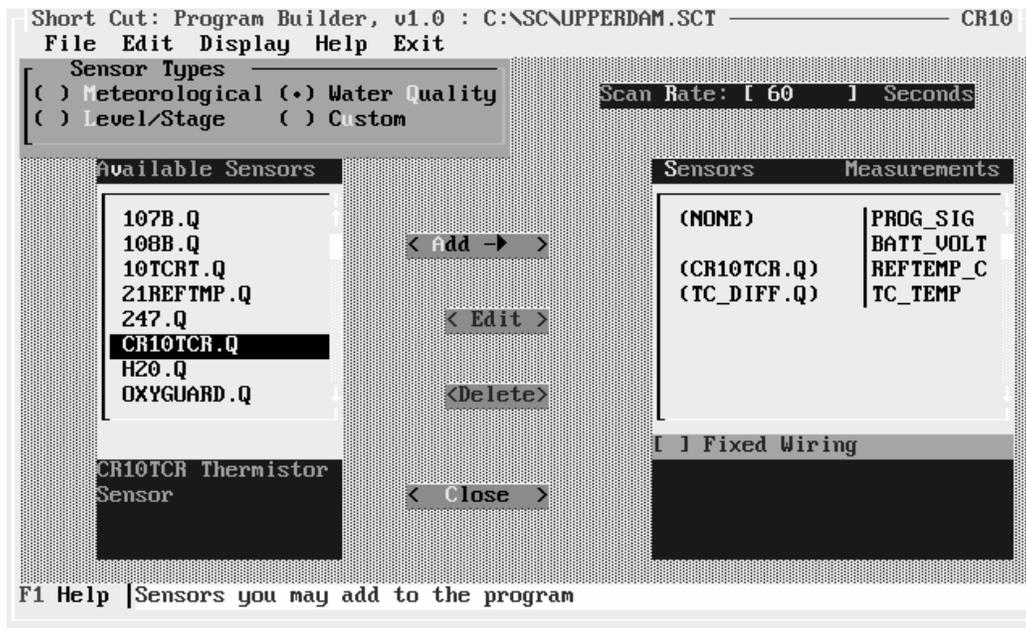


### STEP 1. OPEN A PROGRAM WITH AN EIGHT-CHARACTER DOS FILENAME

Short Cut will use this name for the datalogger program it creates. Hint: If you are using PC208E or Graphterm, you may want to use the same name that you use for the station. When prompted, select your datalogger type. For the MetData1 choose CR10/CR10X. The datalogger type cannot be changed after this selection has been made. *Remember the dynamic help line at the bottom of the screen and the additional help provided by pressing the F1 function key.*

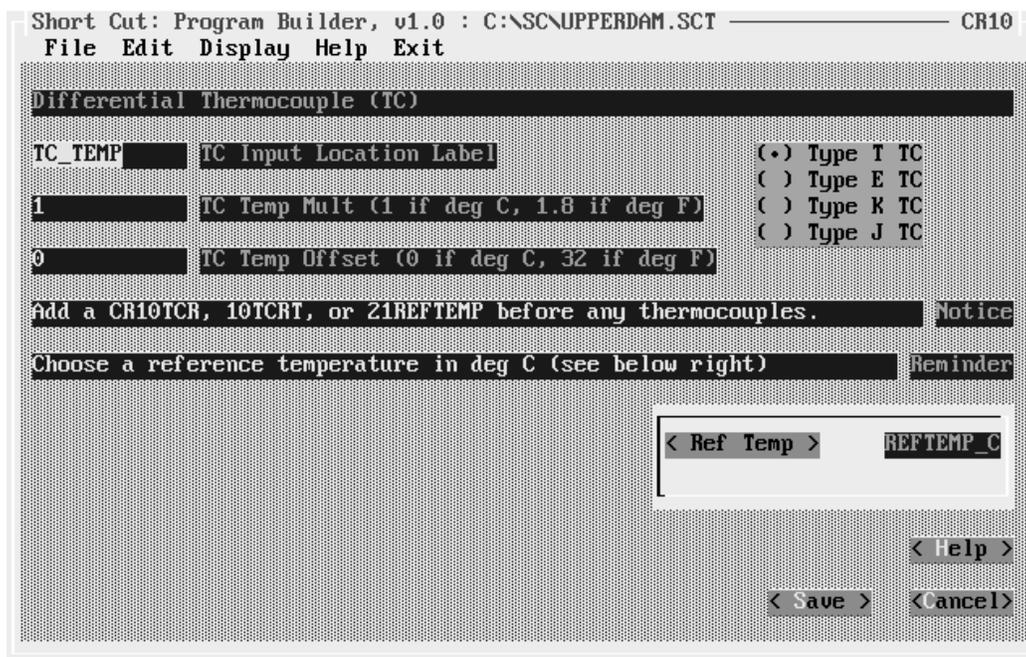
Hint: If you associate the .DLD file with the station, Short Cut will use the associated datalogger program when returning to review or change it.

## STEP 2. SELECT YOUR SCAN RATE, SENSORS, AND MEASUREMENTS



The first time you enter Step 2, you will be asked for the Scan Rate. Press F1/Help if you need guidance here. Select the sensor type (meteorological, water quality, water level/stage, or custom), then select sensors from the list of available sensors and select Add. Short Cut supports most sensors available from CSI. *Remember to check Help (dynamic and F1) for explanations if things are not clear.*

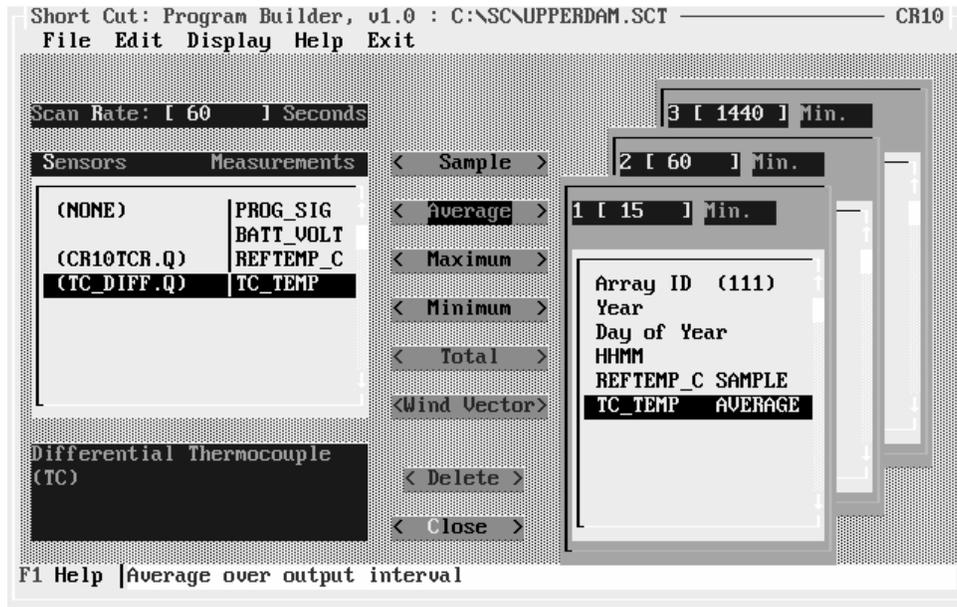
**NOTE:** Whenever you create or change a program using Short Cut, a new .DLD program file is written to your disk. If you had modified a version of that same program to include VS1 Voice Synthesizer/Modem code or to customize it in any way, those changes will be lost when you save the program again from within Short Cut.



As you add a sensor in Step 2, you will see the sensor's setup screen. You may need to add details specific to your sensor, such as calibration information. You may also choose your own input location labels, which must be unique in any given program.

## SHORT CUT

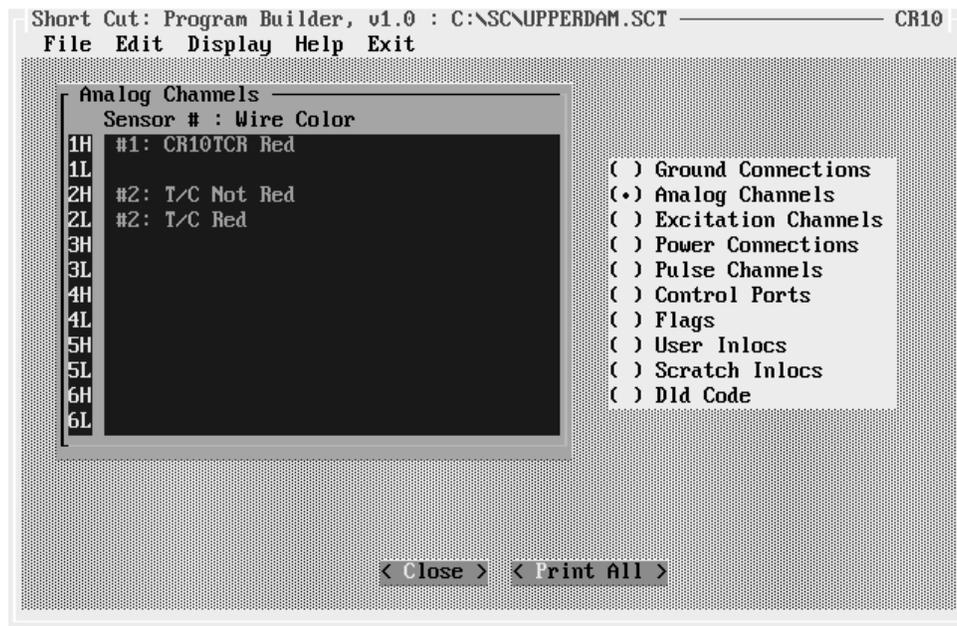
### STEP 3. SELECT OUTPUT DATA AND INTERVALS



You may specify up to three output intervals. First select the report you want to work with among the three cascaded windows. The hot keys are Alt-1, Alt-2, and Alt-3. Change the output interval, if desired. Next, select a sensor/measurement from the list on the left followed by the type of processing (sample, average, etc.) that you want from the buttons in the middle of the screen. The output labels will appear in the report window as they are added.

The report for each interval starts with an array (report) ID number and a time stamp. If you do not add any measurements to a report, that report will be disabled.

### STEP 4. SAVE PROGRAM, VIEW AND PRINT WIRING DIAGRAMS, DATA LABELS FOR MONITORING, AND LISTS OF OUTPUT DATA



Use the radio buttons (check boxes) on the right of the screen to select the information you want to view. Select Print to print a complete print-out of this information.

**NOTE:** MetData1 users will not find wiring information in Step 4 since MetData1 stations have numbered connectors to make wiring even easier.

## SENDING PROGRAM TO DATALOGGER

The datalogger program created by Short Cut (filename.DLD) has the file name entered in Step 1 with the extension .DLD. It is already compiled and ready to be downloaded to the datalogger. The program must be loaded into the datalogger using PC208 or via a storage module.

**DOS PC208E:** Open the station for the datalogger. Then choose TOOLS | SEND DATALOGGER PROG to send the program to the datalogger.

**Windows PC208W:** After adding your station to the network, start a session with the datalogger. Hint: Select the Tools tab and then select Send to download the program.

## GENERATING REPORTS USING SPLIT

Short Cut creates Split parameter files for you automatically. After retrieving data, you can generate reports by selecting the Run Split option under FILE | REPORTS in PC208E. For older versions of PC208 you will need to run SPLIT.EXE at the DOS prompt. For Windows PC208W, select "Report" on the toolbar and choose File | Open. In your Short Cut directory you will find Split parameter files created for each output interval you used in Step 3.

## PERIODIC OFFSET ADJUSTMENT

*Some sensors (e.g., water level and pH sensors) require occasional offset adjustment for accuracy in long-term monitoring projects. Short Cut makes this offset adjustment easier by performing a measurement, subtracting this measurement from the present or standard level that you enter, and automatically using the difference as the new offset. The present or standard level is placed in a Scratch Input Location shown in Step 4. There are three ways to adjust the offset of a sensor in a program generated by Short Cut. The following are examples of adjusting the offset for a water level measurement.*

### Option 1. Using Short Cut

Enter the present water level (e.g., a staff gage reading in a stream or lake, or a chalked tape reading in a well) while adding or editing the sensor settings in Step 2. Then immediately send the program to the datalogger.

### Option 2. While Logging

After loading the program or during routine site visits with a portable computer, enter the real-time monitoring mode.

**DOS PC208:** Key in the present level using the "i" input location load function in PC208's Monitor mode. Then, set the associated sensor offset adjust flag (shown in Step 4) low.

**Windows PC208W:** Right click on the number you want to change on the Numeric Display tab in a datalogger session.

For example, if the current staff gage reading is **6.83** feet, the associated scratch input location is **29**, User Flag **1** is the offset adjust flag and the water level appears in Input Location **5** the following computer keystrokes in the PC208E RealTime|Monitor mode or GraphTerm monitor mode will automatically adjust the offset the next time the program is executed.

<u>Key In</u>	<u>Response on screen</u>	<u>Explanation</u>
L1..33	Displays first 33 Input Locations	
i	See bottom of screen	Tells the monitor that you are going to give it a value
<b>29:6.83</b> <Enter>	See 6.83 in location 29	Enters the value
Function key <F1>	See [F1] go from reverse video to normal video	Resets Flag 1 low
(wait for next Scan)	See [F1] in reverse video and 6.83 appears in Input Loc. <b>5</b>	Flag 1 goes high again, a new offset is calculated and the level is adjusted

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### Option 3. Using Keyboard/Display

Use the datalogger's keyboard/display. First, identify the associated staff gage Input Location and User Flag in Step 4. Then, following the example in Option 2, key in the following:

<u>Key In</u>	<u>ID:Data</u>	<u>Explanation</u>
*6	06:0000	Starts monitor mode
<b>29A</b>	29:0.0000	View Input Location 29
C	:0.0000	Enter mode to change value
<b>6D83A</b>	29:6.8300	Enter new desired level
D	10:000000	View User Flags
<b>1</b>	00:000000	Reset Flag 1 low (changes 1 to 0)
(wait)	10:000000	The 1 will reappear the next time the program executes.
A	29:6.8300	Viewing Input Location 29
<b>#5A</b>	05:6.8300	View Input Location 5: Level reading after offset has been adjusted on the next scan
*0	LOG12	Return to normal logging

The **bold** parts of this keystroke sequence represent the example settings. Note that the D key stands for the decimal point when entering a numeric value using the datalogger keyboard/display.

Hint: For the record and to keep track of sensor drift, record the offset in a daily report. The sensor mount or method of installation should be consistent for offset readings to be meaningful.

### LIST OF SHORT CUT FILES

SC.EXE	Short Cut executable file
*.HLP	Help files
*.INI	File Short Cut uses to save screen mode, datalogger type and sensor type information
*.M	Meteorological sensor files
*.L	Water level sensors
*.Q	Water quality sensors
*.O	Custom modules, such as an alarm or control
*.MD1	MetData1 system files
*.BAT	Short Cut reconfiguration batch files
RAIN_INT.PAR	Split parameter file for rainfall intensity data
*.TXT	Information files you may find interesting
CR10.	CR10 datalogger setup file
21X.	21X datalogger setup file
CR500.	CR500 datalogger setup file
METDATA.	MetData1 datalogger setup file

### OTHER FILES WHICH WILL APPEAR WHEN YOU RUN SHORT CUT

filename.SCT	"Answer" file written by Short Cut while you are creating a program
filename.DLD	Compiled datalogger program written by Short Cut when you save the program
filename.DEF	File written by Short Cut when you save your program. This file contains information useful in the field and is printed when you select Print in Step 4.
filenam1.PAR	Parameter file for use with PC208/Split to generate printed data reports for output interval #1
filenam2.PAR	Parameter file for use with PC208/Split to generate printed data reports for output interval #2
filenam3.PAR	Parameter file for use with PC208/Split to generate printed data reports for output interval #3

If you do not have the disk files, we will mail the disk to you upon request or you can download Short Cut from the following sources:

FTP: [ftp.campbellsci.com](ftp://ftp.campbellsci.com)

WWW: <http://www.campbellsci.com>