

DataView II

(CD295)

DUAL LINE DATA DISPLAY
FOR CR200 SERIES DATALOGGERS
INSTRUCTION MANUAL

Version 02/05

Warranty and Assistance

The CD295 DataView II dual line display and PC295 software are warranted by **Campbell Scientific Australia Pty. Ltd.** to be free from defects in materials and workmanship under normal use and service for **twelve (12) months** from date of shipment unless otherwise specified. Campbell Scientific Australia's obligation under this warranty is limited to repairing or replacing (at Campbell Scientific Australia's option) defective products. The customer shall assume all costs of removing, reinstalling and shipping defective products to Campbell Scientific Australia. Campbell Scientific Australia shall return such products by surface carrier prepaid. This warranty shall not apply to any Campbell Scientific Australia 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 Australia is not liable for special, indirect, incidental or consequential damages.

The CD295 has no user-serviceable parts and must be returned to Campbell Scientific Australia or an authorised agent of Campbell Scientific Australia for repair. Products may not be returned without prior authorisation. To obtain a Returned Material Authorisation (RMA) number, please call +61 7 4772 0444. After an application engineer determines the cause of the problem, an RMA number will be issued. Please write the RMA number together with a description of the problem on documentation accompanying the returned product. Campbell Scientific Australia's shipping address is as follows:

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DataView II

DUAL LINE DATA DISPLAY
FOR CR200 SERIES DATALOGGERS

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INTRODUCTION

The DataView II is a two line, 32 character LCD that displays real time values from a CR2xx series datalogger along with a pre-defined description string and units string.

Two buttons allow the user to scroll through the programmed locations that are updated as often as they are measured. When the user has not pressed a button within a user-defined period (default 120 seconds), the DataView II switches to low power mode, drawing a current of less than 1mA.

The DataView II is easily configured using the Windows based PC295W & DevConfig packages.

N.B. Throughout this document the terms 'DataView II', 'CD295' and 'DataView2' are used interchangeably.

SHIPPING KIT

The CD295 Dataview Shipping Kit includes:

- CD295 Dataview II display
- CD295 programming cable
- PC295 software on CD
- CD295 Manual
- CD295 MountingTemplate
- 4 x stainless steel mounting screws, dome nuts, stainless steel and rubber washers.

If the CD295 is to be mounted in the front door of an enclosure the CD295 door kit will also be included. This kit includes:

- CD295 stainless steel door
- stainless steel screw with nylon spacer, PTFE, rubber and stainless steel washers, and "nylock" nut
- CD295 door mounting diagram

SPECIFICATIONS

Physical

Width: 130mm
 Height: 100mm
 Depth: 30mm
 Weight: 235g

Power Supply

8-16Vdc (12V nominal)

Power Consumption (at 12Vdc)

Active with backlight - 30mA
 Active without backlight - 3mA
 Asleep - 1mA

Communications

Physical protocol - RS232 DTE
 Network protocol - PakBus
 Configuration protocol - DevConfig

Environmental

Temperature

Operating -20°C to +55°C
 Asleep -25°C to +70°C

Humidity

Inside enclosure
 0-90% (non-condensing)
 Outside enclosure
 IP65 when mounted in enclosure door with supplied sealant.

General

No of screens 30 max
 Value update interval 1 – 65535 sec
 Backlight period 0 – 60 secs (default 10)
 Power down period 5 – 254 secs (default 120) (255 = never sleep)

CD295 address 1 – 4094 (default 4090)
 Logger address 1 – 4094 (default 1)

Description string 16 chars max
 Units string 8 chars max
 Decimals 0 – 6 digits after decimal

INSTALLATION PROCEDURE

Below is a general guide to the steps involved in configuring and programming a DataView II (CD295)

1. Using the CD from the CD295 shipping kit, install PC295W and DevConfig on your computer.
2. Connect the programming cable's 9pin D-connector into the CD295 data cable and the other end into your PC's serial COM port.
3. Using PC295W and the CR200 datalogger program, write your Dataview II configuration program (DV2 file).
4. Using DevConfig send the DataView II program (DV2 file), and change any settings necessary (Pakbus Address).
5. Remove the programming cable.
6. Mount the CD295 into your datalogger enclosure.
7. Connect the CD295 data cable to the datalogger's I/O port.
8. Power-up the datalogger and CD295 and verify correct operation.

HARDWARE

OVERVIEW

Below is a general description of normal operation of the DataView II (CD295).

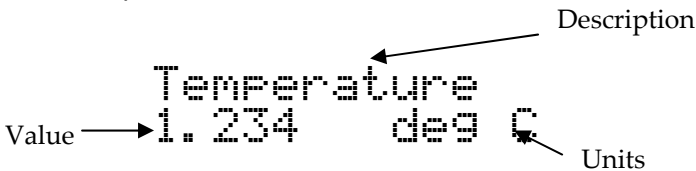
When first powered up, the DataView II displays the following greeting,

Canbell
Scientific

and the backlight will be lit.

After some time (default 10 secs), the backlight will turn off, however the text will remain visible until the unit enters sleep mode (default 120 secs). Whenever one of the buttons on the front panel is pressed, these two timers (Backlight timer and Power Down timer) are both reset. As a result, the DataView II can be woken from sleep mode by pressing either of the buttons.

After a program has been successfully downloaded, the CD295 is configured and connected to a CR200, it is ready for general use. Pressing one of the buttons on the CD295 will cause the LCD to display something like the example below.



The top line contains a string referred to as the 'Description', and the second line contains both the value retrieved from a Public Variable in the datalogger and a string referred to as 'Units'. The value displayed on the second line can be displayed with a user-selectable number of decimal places.

Together, the combination of 'Description', Public Variable, 'Units' and number of decimal places, is referred to as a 'screen'. The CD295 is capable of holding and displaying up to 30 'screens'. There are no limitations on the order of screens, or which Public Variables are displayed. Pressing the buttons on the front panel of the DataView II will cause the next (or previous) screen to be displayed.

The CD295 will attempt to collect a new value from the datalogger under the following conditions:

- The user has changed 'screen'
- the scan interval of the datalogger has expired

While in sleep mode the DataView II will continue to respond to PakBus communications, however the LCD is turned off and no requests are sent to the datalogger.

MOUNTING

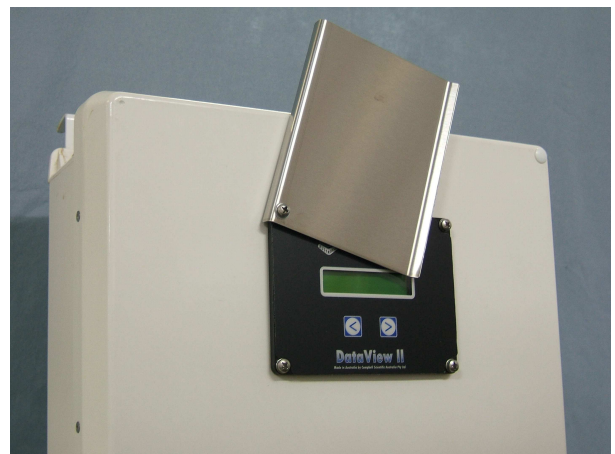
The CD295 can be mounted in either of two ways, in the enclosure door or mounted on the Enclosure backplane.

If the DataView II will be mounted in the enclosure door and exposed to the elements, it is important to also fit the CD295 door kit, as explained below.

IN THE ENCLOSURE DOOR

1. Use the template provided to mark out the four mounting holes and cut-out for the CD295.
2. Drill the four corner holes using a 4.5mm drill and cut out the mounting hole using a jig-saw or nibbler.
3. Apply a thin coating of neutral-cure silicon sealant between the flange of the CD294 and enclosure door.
4. Use the screws and nuts provided to attach the CD294. Insert the head of the screw followed by a flat washer through the front of the CD294. On the inside of the enclosure, fit the rubber o-ring washer then the second flat washer followed by the dome nut.

*N.B. If you are fitting the CD295 door kit, only 3 bolts are required to be fitted at this step. The bolt in the top-left corner of the CD295 front panel is **not required**. In this case, only fit the remaining three bolts, and use the longer (30mm) bolt supplied in the door kit in the top-left hole.*



MOUNTING THE CD295 DOOR KIT

1. If fitted, remove the nut, bolt and washers from the top-left mounting hole of the CD295 front panel.
2. Remove the 'nylock' nut, stainless steel and rubber washers from the bolt assembly fixed to the CD295 door. At this point, the Bolt assembly holding tag should be exposed.
3. Insert the bolt assembly through the top-left mounting hole of the CD295 front panel
4. From the inside of the enclosure, fit the rubber washer, stainless steel washer and 'nylock' nut onto the stainless steel bolt assembly.
5. After confirming that all hardware has been fitted in the correct order, tear off the 'Bolt Assembly Holding Tag'.
6. Tighten the 'nylock' nut until the black rubber washer is tightly compressed.

N.B. Do not overtighten as this will cause damage to rubber washer.

See Appendix A for the assembly diagram for the CD295 door kit.

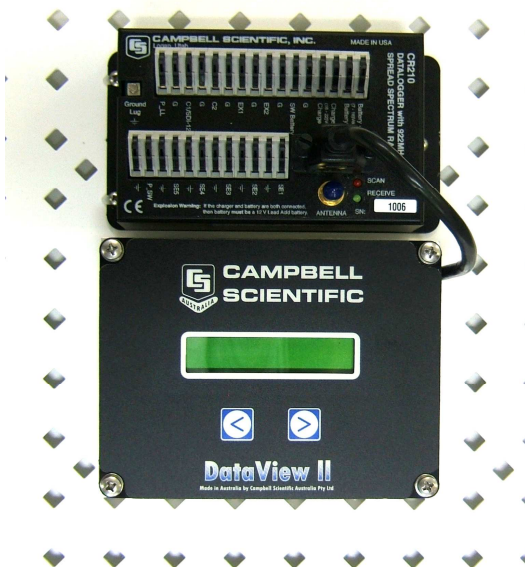
ON THE BACKPLANE

The CM295 is an optional backplane mounting kit available from Campbell Scientific Australia. The CM295 allows the CD295 to be mounted on a punched metal backplane as supplied with standard Campbell Scientific enclosures.

OPTIONS

CM295 Backplane mounting kit includes the following:

Aluminium c-section mounts
4 x screws, washers, nuts and backplane grommets



SOFTWARE

COMPUTER SYSTEM REQUIREMENTS

Minimum Configuration

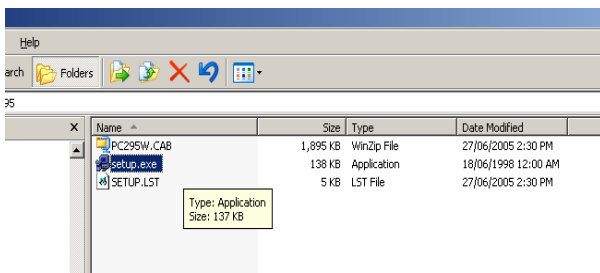
PENTIUM-class machine with 64MB RAM running Windows 98.

Recommended Configuration

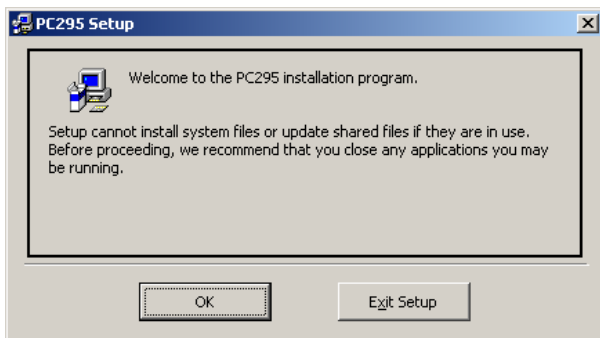
PENTIUM-class machine with 128MB RAM running Windows 2000/XP.

SOFTWARE INSTALLATION

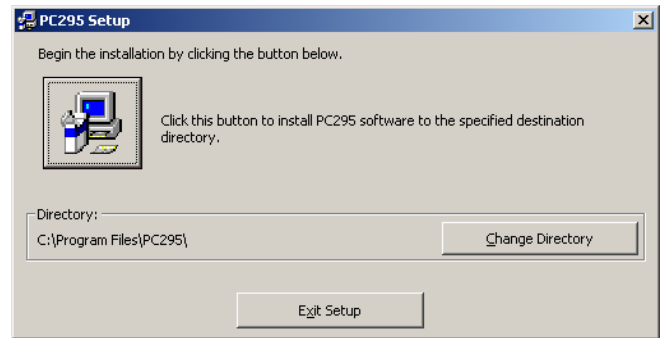
1. To begin the installation of the PC295 software, insert the PC295 CD into your computer, and locate and open the setup.exe file which contains the software to be used.



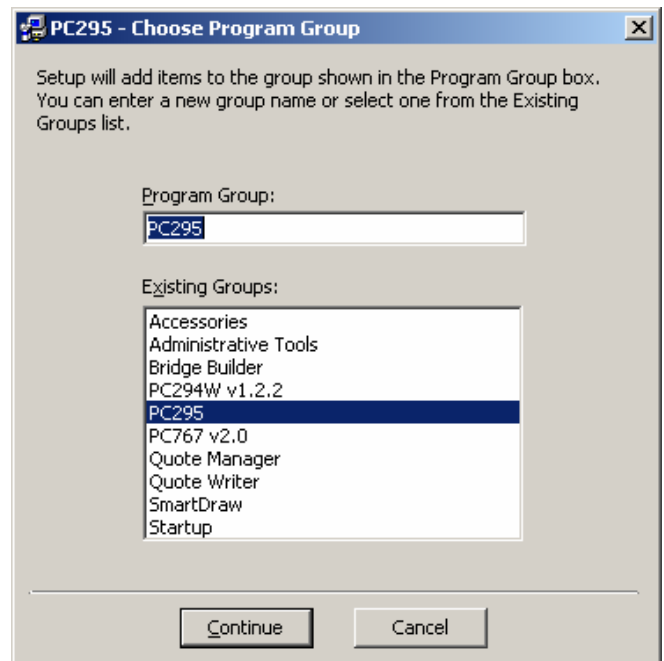
2. After starting Setup.exe you will be presented with a welcome screen giving a brief introduction to the software. Click OK.



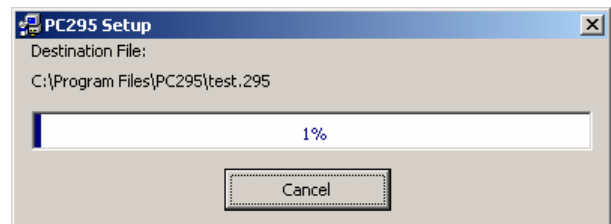
3. The next screen asks where you would like PC295 installed on your hard disk. If you wish to install into a path other than the default, Click "Change Directory" and use the windows dialog to choose a suitable location. Once the path is correct, click the Install icon in the top left corner of the window.



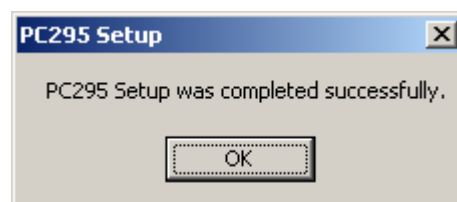
4. The next dialog to appear asks which program group on the start menu, you would like to add PC295. The default is usually acceptable, however if not, you are free to choose your preferred program group in this step. Click Continue.



5. File copying will now begin.



6. Once the Setup is complete, the following window is displayed. You are now ready to start using PC295. Click OK.



PC295

INTRODUCTION

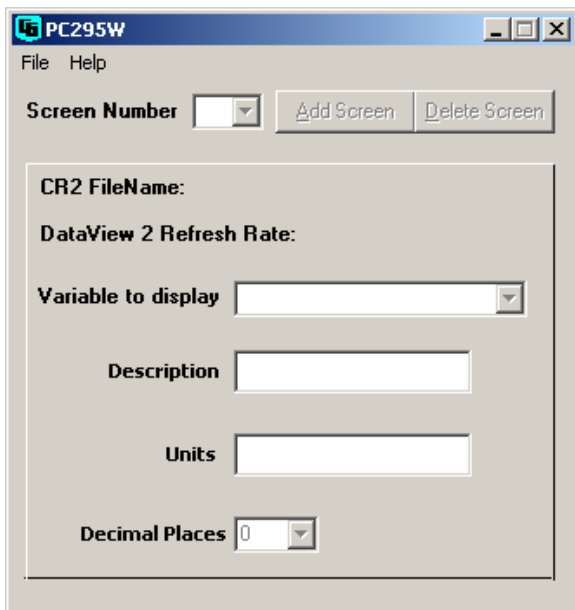
PC295 software is a freeware utility provided by Campbell Scientific Australia to write programs for the DataView II.

PC295 first reads the CR200 program (CR2 file), to generate the list of Public Variables, and to determine the scan rate of the datalogger. Once this information has been determined, the user is able to choose a public variable to display, and can associate 'Description' and 'Units' strings with it to form a 'screen'. A group of screens forms a user program, and PC295 saves this program to disk in a DV2 file.

By default, the first part of the filename is the same as the CR200 program from which it was generated. So for example, if you opened station1.cr2 to create the DataView II program, PC295 would save the program as station1.dv2. This naming convention is strongly recommended, but not mandatory.

OPERATION

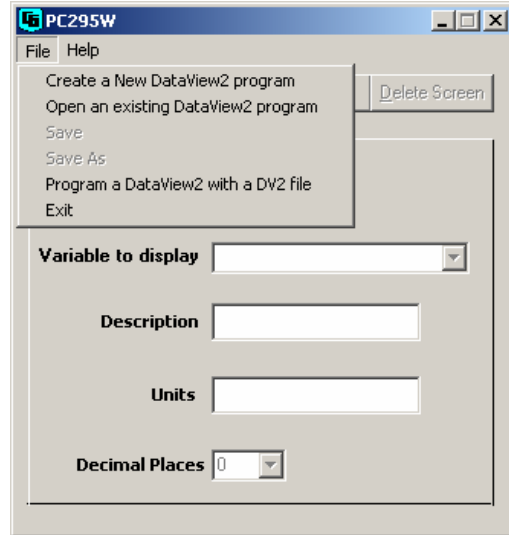
1. To start PC295, Click Start > Programs > PC295W DataView2 Programming Software > PC295W DataView2 Programming Software.
2. Once the PC295 program starts you will see the main screen.



3. The first step in creating a DataView II program is to select 'Create new DataView2 Program' from the File menu. This will open a file browser window which will allow you to locate the CR200 datalogger program (with

CR2 extension). When the correct CR200 program is selected, Click Open.

If you already have created a DataView II program that you wish to edit, select 'Open Existing Dataview2 Program' in the File Menu. A file browse window will appear. Locate your DataView II program (DV2 extension), and Click Open.

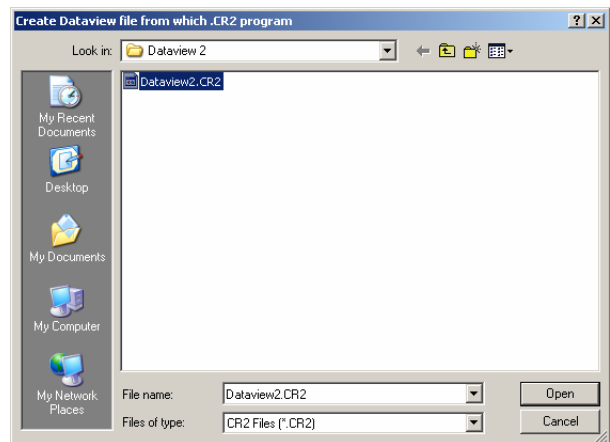


4. If you have chosen to 'Create a new DataView2 program', a file browse window will appear.

To operate correctly, your DataView II needs some information about the program running in the datalogger to which it will be connected.

PC295 reads the CR200 program file you select at this step, and extracts information such as the Scan Interval and the list of **Public** variable names.

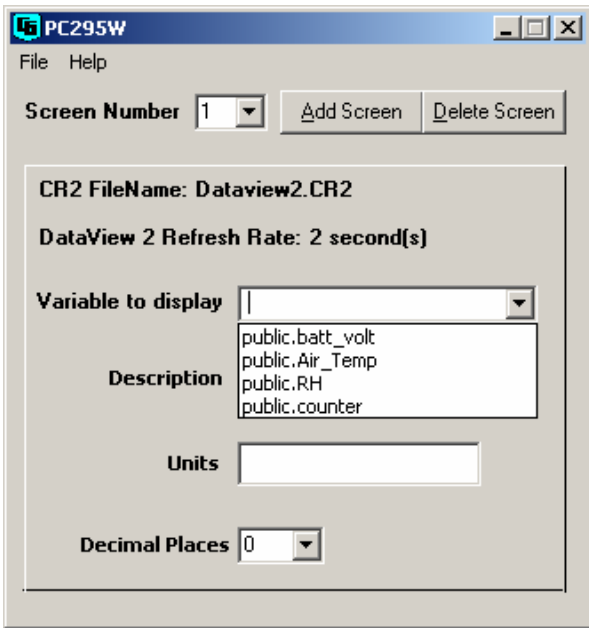
Locate the CR2 program and select Open.



5. PC295 will now return to the main screen, however the 'CR2 FileName' and 'DataView 2 Refresh Rate' will no longer be blank. PC295 has read your datalogger program, and is now ready for you to create a DataView II program.

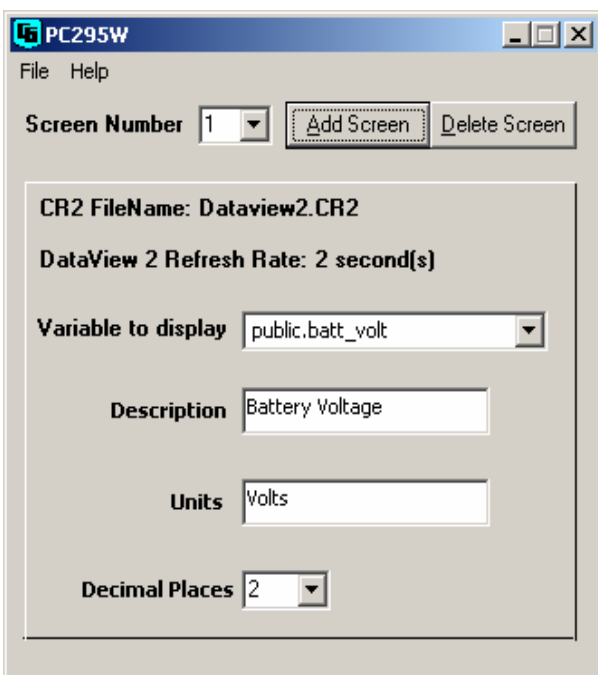
Select the 'Add Screen' button.

'Variable to Display' has a drop-down list, from which you are able to choose a Public Variable used in the datalogger program.



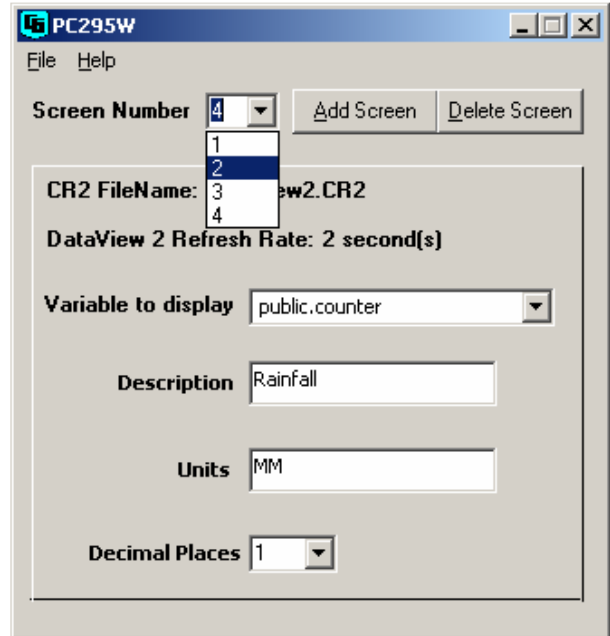
- The 'Description' and 'Units' fields are free-form text strings that are displayed on the CD295 along with the value collected from the datalogger. These fields can be used to provide a user friendly description and engineering units of the value displayed. It is also possible to choose the number of decimal places to be used when displaying the value.

Complete the Description, Units & Decimal places.



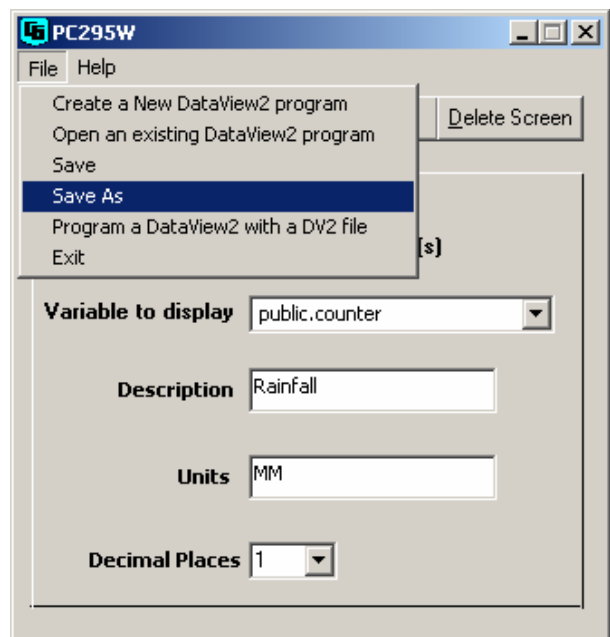
You can now continue adding screens by repeating steps 5 & 6, as many times as necessary.

- If at any time you would like to return to an earlier screen, you can do so by using the 'Screen Number' drop down. Also, if you would like to delete a screen you can select the screen you would like to delete from the 'Screen Number' drop down and click the 'Delete Screen' button.

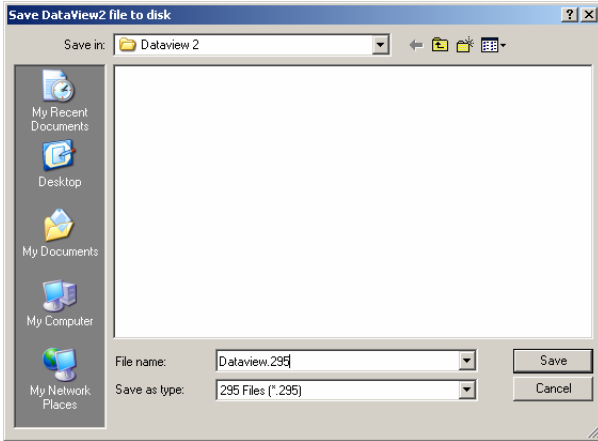


- After entering all of the screens in your DataView II program, you will probably want to save your work. Click File > Save As and this will open a dialog in which you can specify a filename and save your DataView II program.

If you are modifying an existing program or have already saved your work, you can select the 'Save' option which will not prompt for a new filename.



a simple step by step guide to writing your DataView II program.

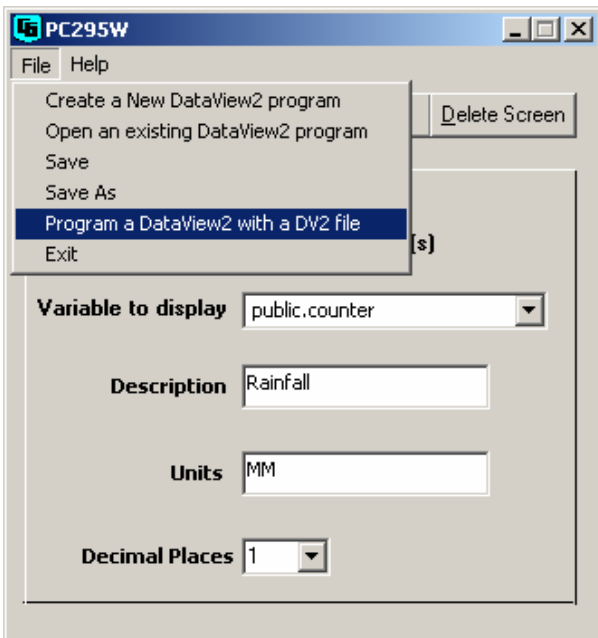
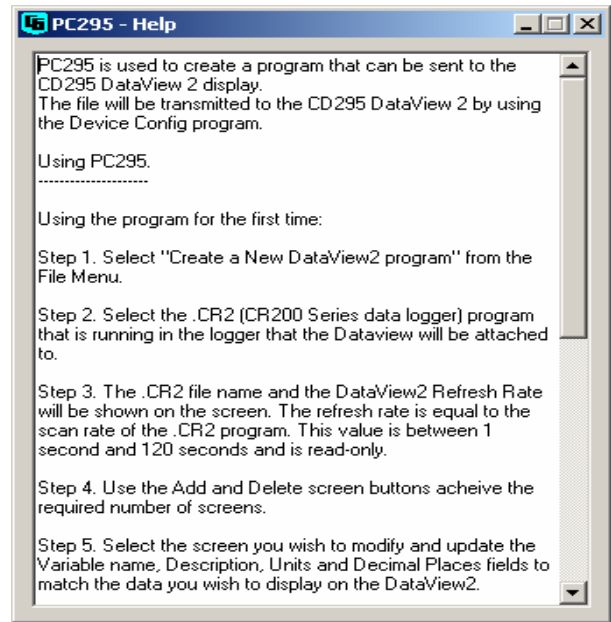
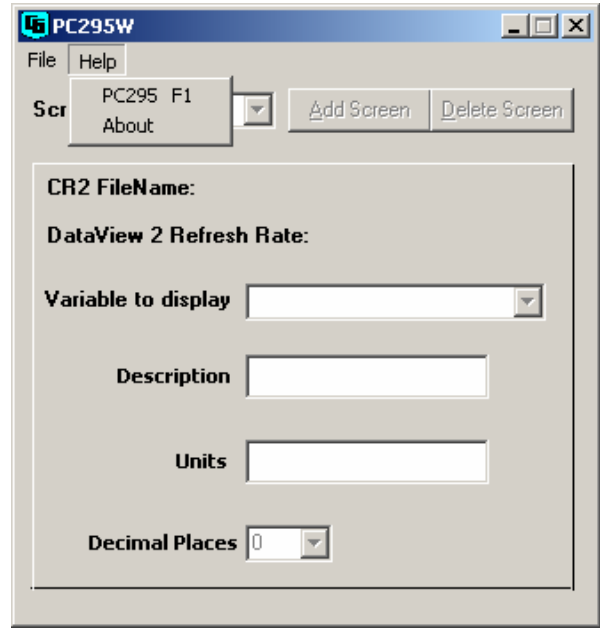


- Once you have completed and saved the DataView II program, you are ready to download the program into the Dataview II itself.

N.B. To do this you must have the 'Device Configuration' utility installed on your computer. Please ensure that it is installed before proceeding.

To continue with programming the DataView II (CD295), please refer to the section of this manual titled 'Device Configuration'.

From within PC295, 'Device Configuration' can be started through the file menu. Click File > 'Program a Dataview2 with a DV2 file'.



ONLINE HELP

PC295 has two items on the Help menu – 'PC295' and 'About'. About lists the version number of the PC295 software, and 'PC295' contains online help to guide you through operation of the software. It is

DEVICE CONFIGURATION (DEVCONFIG)

INTRODUCTION

Device Configuration (DevConfig) is a freeware utility provided by Campbell Scientific for the configuration of PakBus devices. This tool allows the user to send programs, upgrade firmware in the device, and modify device settings.

In the case of the CD295, DevConfig allows you to download your program, and read/modify the following settings:

Version

the operating system version number

CD295 Address

the PakBus address of the DataView II

Logger address

the PakBus address of the datalogger from which the CD295 should collect values

Logger Security Code

the security of the datalogger – this should always be 0 for the CR200

Power Down Timer

the period of time after which the CD295 should return to sleep mode

Serial Number

the serial number of the DataView

Backlight Timer

the period of time to keep the backlight on

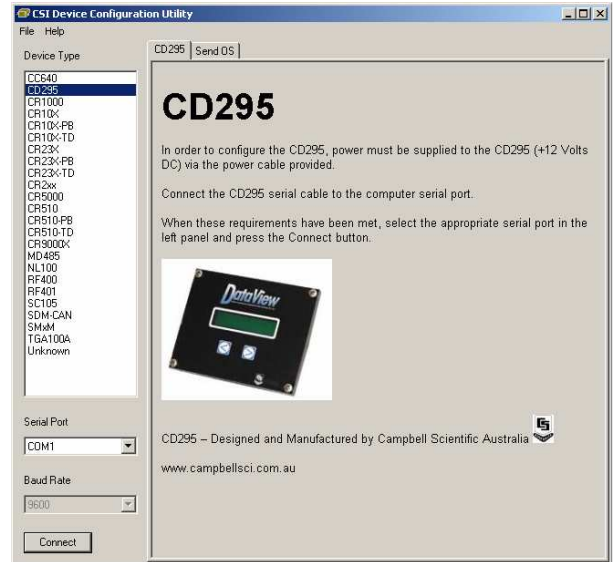
Before using DevConfig, it is important to provide power to your DataView II (CD295) and connect the serial port of your computer to the CD295, using the programming cable provided (see figure below).



OPERATION

Establishing a Connection

1. Start the 'Device Configuration' utility.
2. Select CD295 from the 'Device Type' on the left hand side of the window. Verify the Serial Port in the bottom left of the window is correct and Click the 'Connect' button.



3. DevConfig will automatically detect the connection speed and PakBus address of the DataView II. Once detection is complete, 3 tabs should appear in the window on the right-hand side. These are 'Program Control', 'Send OS' and 'Settings Editor'.

The 'Program Control' tab is used to send a program to the DataView II, and is the most commonly used of the three tabs.

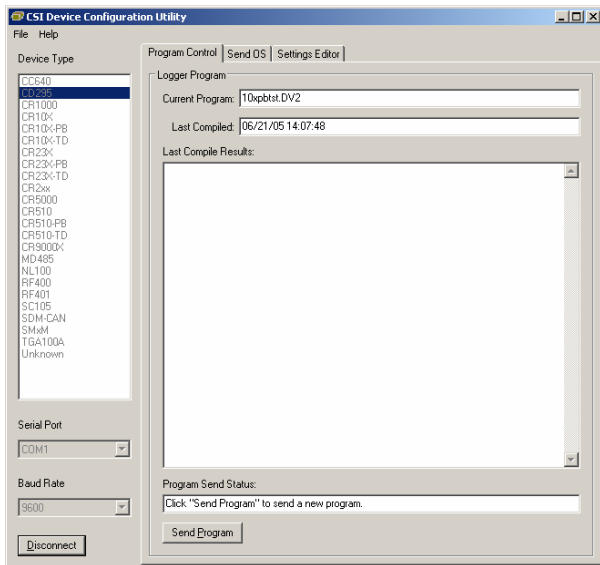
As the name suggests, the 'Send OS' tab is used to send an Operating System (OS) to the DataView II. This is used to upgrade the firmware of the CD295.

The 'Settings Editor' tab is used to read/modify the addresses & timers mentioned above.

Downloading a Program

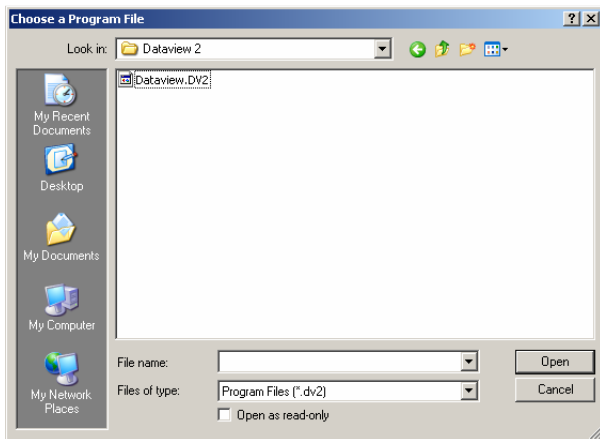
1. To download a program, ensure that you are already connected to the CD295 and the 'Program Control' tab is selected. Click the 'Send Program' button.

DataView II (CD295) – Dual Line Display

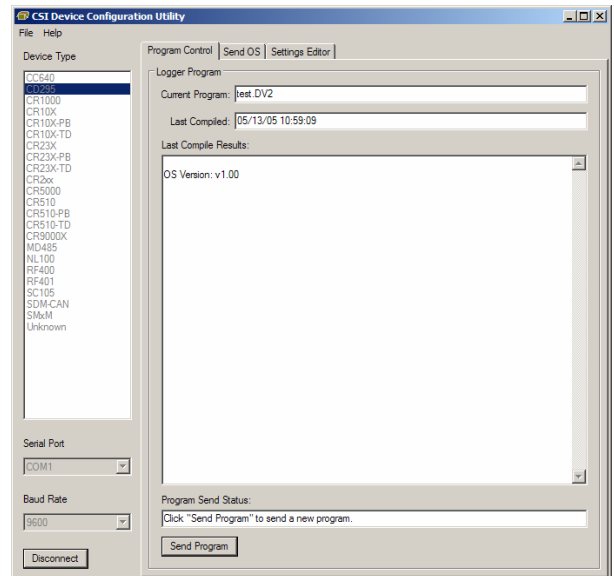


2. A file browser window will appear. Locate the DV2 file you wish to download and Click Open.

*N.B. When a DataView II program is created, PC295 creates two files – the DV2 file for download to your DataView II, and a .295 file which contains internal configuration information for the PC295 program. You should **only** send the DV2 file to your CD295.*



3. DevConfig will download your program to the DataView II and return to 'Program Control'.

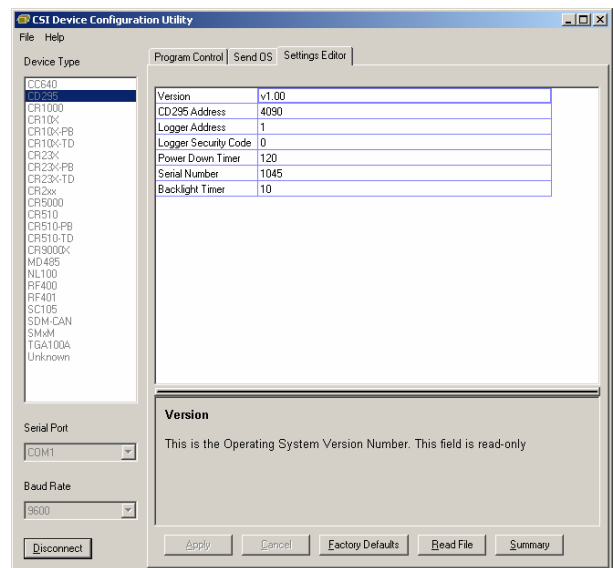


Modifying Settings

1. The 'Settings Editor' tab allows you to read/modify any device-specific settings in the CD295. To change a setting, double click the settings you wish to change, and type the new value. Repeat for as many settings as necessary.

N.B. Some settings are read-only, and others have limits on the range of acceptable values. A description along with the maximum and minimum values appears in the comments box at the bottom of the window.

2. After all changes are complete, Click Apply to send the new settings to the DataView II. After the settings are applied, DevConfig will show the new values of the Settings from the CD295.



3. If after editing a setting, you wish to discard the changes, Click Cancel. DevConfig will show the current values of the settings, in order for you to verify that the changes were discarded.

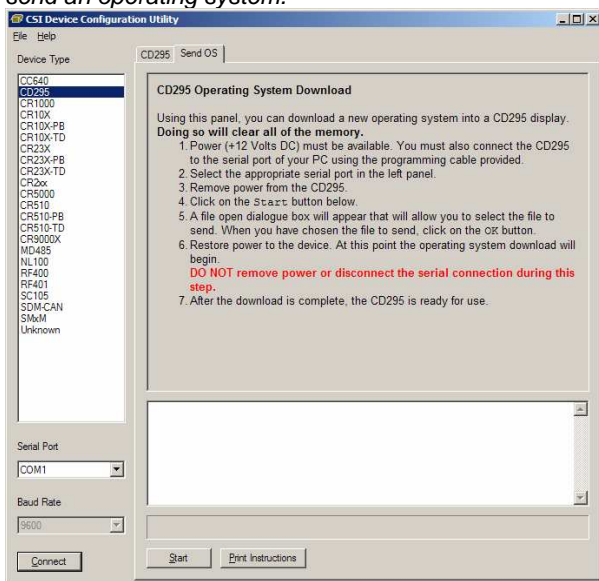
- It is possible to return the DataView II to its factory default settings. To do this, Click 'Factory Defaults'.

Upgrading the Operating System (OS)

From time to time, new operating system(s) for the DataView II may be released to correct errors in the operating system, or to add new functionality. To take advantage of this, it is necessary to send the new operating system (OS) to the DataView II.

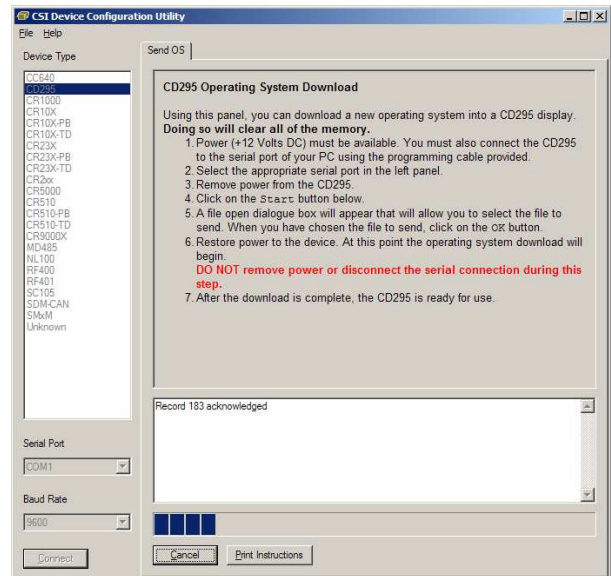
- If you need to send a Operating System to your Dataview2, open the 'Send OS' tab in 'Device Configuration' and select the Send OS button at the bottom of the window.

N.B. It is not necessary to 'Connect' using DevConfig to send an operating system.

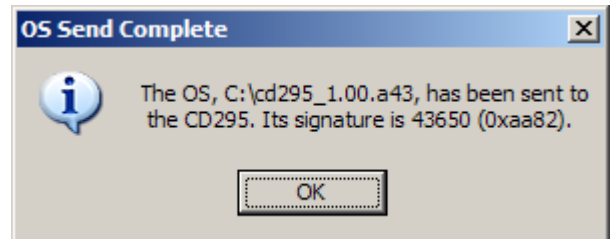


- A file browser window will appear. Locate the operating system file (A43 extension), provided by your supplier, and Click Open.
- After selecting the operating system file, it will be necessary to power cycle the DataView II. Disconnect the power from the CD295, and reconnect it.
- The download will begin, and progress bar should begin to fill.

N.B. It is VERY important that the power cable and programming cable remain connected while the download is underway. Failure to do so, may cause permanent damage to the CD295.



- When the download is complete, DevConfig will display a popup to confirm the success or to notify if there was an error.



- Once the download is complete, disconnect power from the CD295 for at least 30 seconds to ensure that it has been completely reset. After this, the new operating system will run.

TROUBLESHOOTING

- **Symptom**

The DataView II displays 'Waiting' in every location.

Explanation

This message indicates that the DataView requested a public variable from the datalogger, but has not yet received a response.

Things to check

Is the DataView II connected to the datalogger?

Check the serial cable from the DataView II to the datalogger.

Does the datalogger have power?

Check the power supply to the datalogger.

Does the PakBus address of the datalogger match the 'Logger Address' in the CD295?

Using DevConfig, check that the 'Logger Address' setting in the DataView II and the Pakbus address of the datalogger match (refer to your datalogger manual).

Is this the right version of the DataView program for the datalogger program?

It is important that the program that is running in the datalogger is the same as the one used when the DataView II program was written. If not, then the DataView II program may need to be re-written.

Could the datalogger be too busy to answer?

Consider the execution of the datalogger program, and modify if necessary.

- **Symptom**

The DataView II displays 'Waiting' in a few (but not all) screens.

Explanation

This message indicates that the DataView requested a public variable from the

datalogger, but has not yet received a response.

If some screens function correctly, then the logger address, is correct, and the datalogger is answering requests correctly.

Things to check

Is this the right version of the DataView program for the datalogger program?

It is important that the program that is running in the datalogger is the same as the one used when the DataView II program was written. If not, then the DataView II program may need to be re-written.

- **Symptom**

After sending a program to the DataView II, it displays 'No program' and won't show any of my screens.

Explanation

The 'No program' message indicates that the current program in the DataView II is incomplete or incorrect.

No permanent harm is done by sending an incorrect file, however it will not execute.

Things to check

Did you download the correct file?

It is very important that you select the DV2 file that you created with PC295, and not the 295 file which is only created for internal use by the PC295 software itself, or any other file on your computer.

Try downloading again.

Could your DV2 file be corrupt?

No software other than PC295 should be used to edit DV2 files. Even a slight change to the file is enough to cause the CD295 to reject the program.

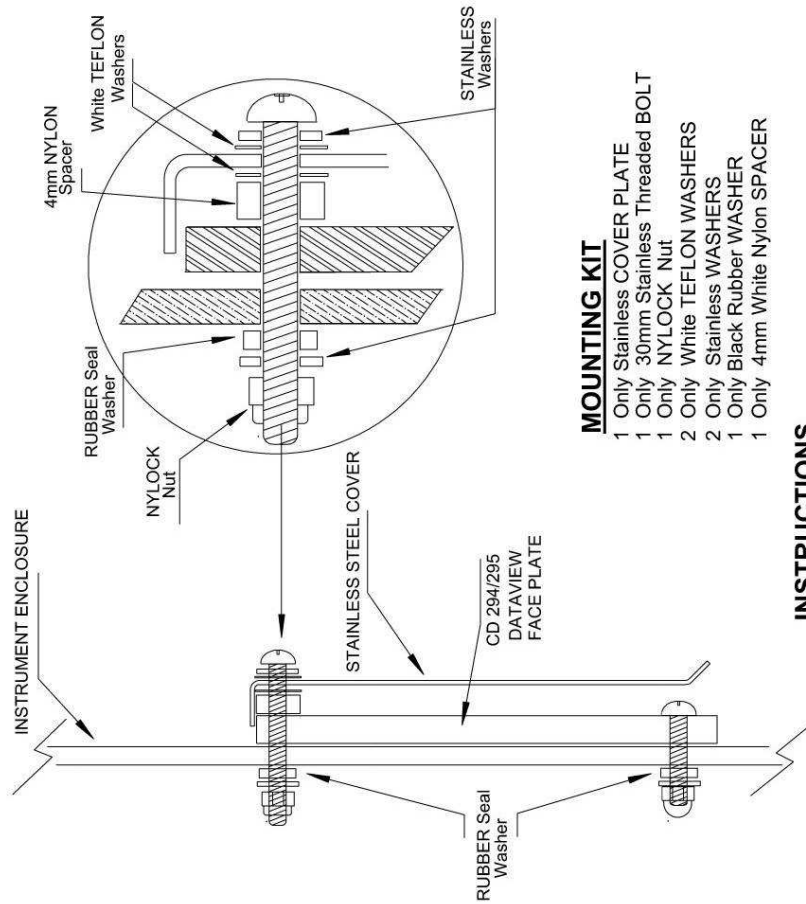
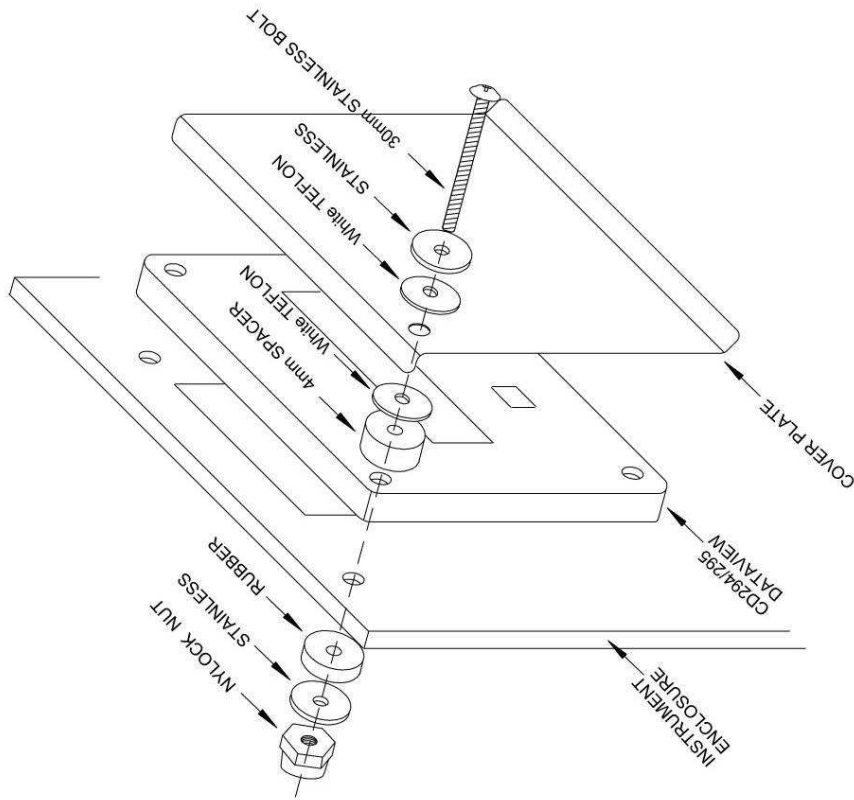
Try recreating the DV2 file in PC295, and download it again.

TEMPERATURE EXTREMES AND LCD ADJUSTMENT

The CD295 has been tested to -20°C . It will perform at this temperature although the display may be sluggish and dim.

Under temperature extremes, the CD295's liquid crystal display (LCD) may become difficult to read. LCD contrast can be adjusted by inserting a small jeweller's screwdriver (preferably plastic) into the round hole on the back of the CD295 cover and adjusting the LCD contrast potentiometer.

Appendix A – CD295 Door Kit Assembly Diagram



MOUNTING KIT

- 1 Only Stainless COVER PLATE
- 1 Only 30mm Stainless Threaded BOLT
- 1 Only NYLOCK Nut
- 2 Only White TEFLON WASHERS
- 2 Only Stainless WASHERS
- 1 Only Black Rubber WASHER
- 1 Only 4mm White Nylon SPACER

INSTRUCTIONS

Assemble as per diagram. (NOTE: Order of parts must be adhered to.)
Tighten NYLOCK Nut so that Black RUBBER Washer is firmly compressed.

Do not overtighten as this will cause damage to Rubber Sealing washer.

SIDE VIEW

N.B.

On existing installations remove TOP LEFT Mounting Bolt on DATAVIEW
Fit Stainless Steel Cover plate as per instructions above.



CD294-5 S.S. COVER

27 May 2005

Drawn by Ron Russo

Appendix B – CD295 Mounting Template

(NOT TO SCALE – REFER TO MOUNTING TEMPLATE SUPPLIED WITH CD295)

ALIGN TOP OF PAGE WITH TOP EDGE OF ENCLOSURE

DataView Mounting Template

Package Contents

- CD294 DataView Display
- CD294 Programming Cable
- Mounting Template
- 4 x screws, washers, nuts and rubber washers.

Package Contents

- CD295 DataView II Display
- CD295 Programming Cable
- CD295 Power cable
- Mounting Template
- 4 x screws, washers, nuts and rubber washers.

CUT-OUT

WARNING

It is highly recommended that the Stainless Steel Cover Plate is fitted to any installation where the DataView will be exposed to the elements—especially UV. Failure to do so may void warranty.

1. Align the top of this mounting template with the top edge of the enclosure.
2. Using a sharp marker / scribe, accurately mark the enclosure through the template at all 8 Points.
3. Remove the template and draw lines to join the 4 inner points (A,B,C and D). This will indicate the section to be cut out.
4. Remove the "CUT-OUT" from the enclosure using the appropriate tools.
5. Drill the 4 outer points (1,2,3 and 4) using a 4mm drill bit.
6. Mount the DataView display and the Stainless Steel Cover Plate as per supplied diagram