

TMQ C-Temp



Operating Instructions

www.tmq.com.au

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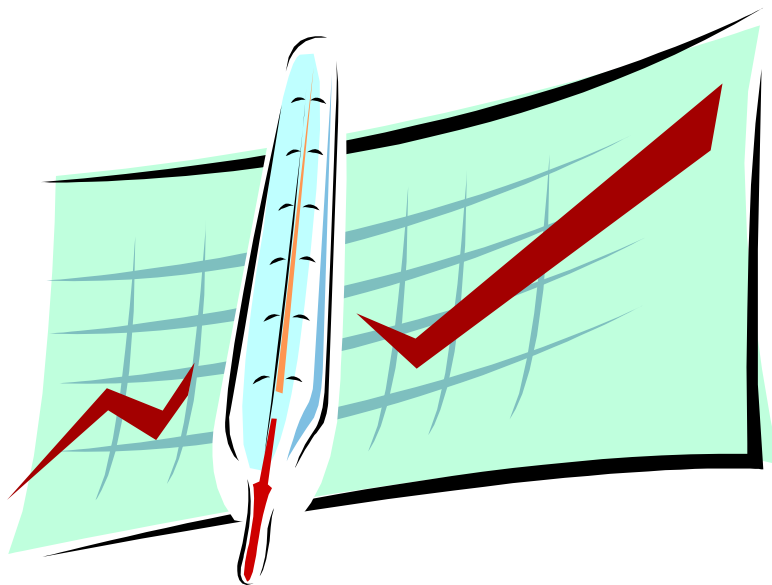
Chapter

1

1.0 Overview of C-Temp

1.1 What is C-Temp?

Congratulations on purchasing the C-Temp Temperature Monitoring System. C-Temp enables temperature input information to be displayed and monitored easily and effectively. C-Temp is a 'C-Com Enabled' application, which means it makes use of the C-Com server to gather any temperature information that is entering the system via the computer's communications ports. The following manual outlines the features of the C-Temp system and how it can be used to efficiently service any temperature monitoring needs.



1.2 System Requirements

C-Temp operates under Microsoft Windows 98, Windows ME or Windows NT™ on IBM™ or compatible personal computers (PC's). The minimum system requirements for C-Temp are:

- CPU: Intel™ Pentium Processor, 400MHz or better
- RAM: 32 Mb
- 256 colour Windows compatible graphics driver
- At least 1 serial communications port
- Mouse or Trackball pointing device

1.3 Item Check List

The following list details the items that you should have received as part of the C-Temp product pack.

- ✓ 1 x CD-ROM containing the necessary files to install C-Temp.
- ✓ 1 x Operating instruction book.
- ✓ 1 x Serial Temperature transducer.

Chapter 2

2.0 The Main Window

The Main Window, as the name suggests, represents the core component of C-Temp. The window is comprised of eight areas of interest as shown in Figure 1. These areas will be discussed in more detail in the following sections.

1. Main Menu
2. Main Temperature Display
3. Alarm Settings
4. Trend Indicator
5. Temperature Graph
6. Positional Information
7. Status Display
8. Celsius/Fahrenheit Button

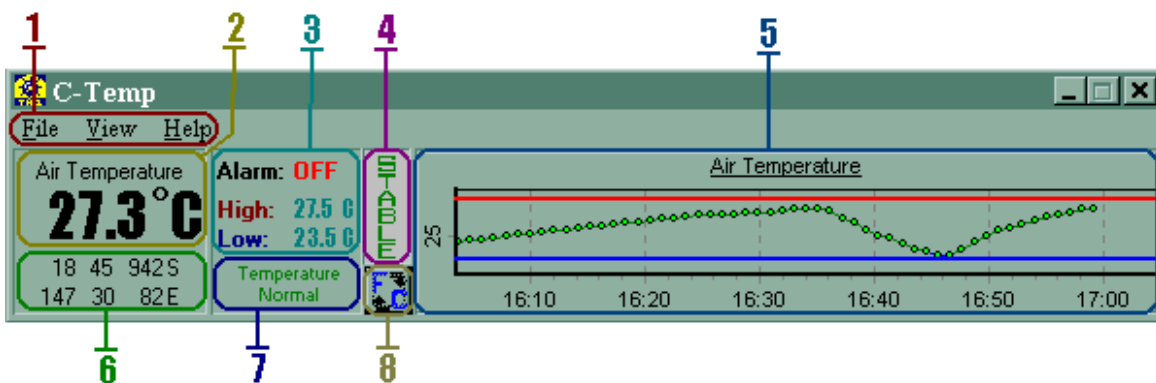


Figure 1.

2.1 The Main Menu

The Main Menu provides access to a number of useful secondary windows. An expanded view outlining the structure of the Main Menu is shown in Figure 2. The 'File' Menu allows the application to be closed. All

of the Secondary windows can be accessed via the ‘View’ Menu. The ‘Help’ Menu accesses the ‘About’ window, which contains information about C-Temp. The Secondary windows will be discussed in more detail in section 3.0.



Figure 2.

The ‘Minimal View’ menu item resizes the Main Window so that only the Main Menu, Main Temperature, GPS Position, Alarm Settings, and Temperature Status Displays are showing. This enables C-Temp to have less of a screen presence allowing other applications to be seen effectively. When C-Temp is in minimal mode, the ‘Minimal View’ menu item changes to ‘Expanded View’. This allows easy toggling between the two displays.

2.2 The Main Temperature Display

As the name suggests this area of the Main Window displays the temperature currently being monitored, as a numeric value. The temperature units for this display can be toggled using the ‘Celsius/Fahrenheit’ button (see section 2.8). The Main Temperature Display also shows the name of the temperature currently being monitored (i.e. Water Temperature, Air Temperature, etc). The temperature name can be modified through the ‘Options’ window (see section 3.2).

2.3 Alarm settings

This area of the Main Window displays the current state of the alarm settings. It shows if the alarm is ‘SET’ or ‘OFF’ and the High and Low alarm limits. These settings can be altered in the ‘Alarm Settings Window’. This can be accessed by choosing View → Settings → Alarm in the Main Menu, or simply clicking on any of the parameters in the Alarm Settings area of the main display window.


2.4 Temperature Trend Indicator

This indicates the current trend of the temperature input. It has three states:

1. Stable – Denoted by the word ‘STABLE’.
2. Rising – Denoted by a red coloured up arrow.
3. Falling – Denoted by a blue coloured down arrow.

2.5 Temperature Graph

The Temperature Graph plots trends in the temperature over time. The default ‘Time Scale’ is 10 minutes. This means that the entire width of the graph shows the last 10 minutes of temperatures with a frequency of 1 reading every ten seconds. Time Scales of 1 hour, 12 Hours and 24 Hours can also be displayed (See ‘The Options Window’ section).

Each point on the graph can be queried by simply clicking on the desired point (the cursor will change to a hand ). Doing this will display an Information window, as shown in Figure 3, that displays the Temperature, the Offset, the Time, and the GPS Position for the selected point.

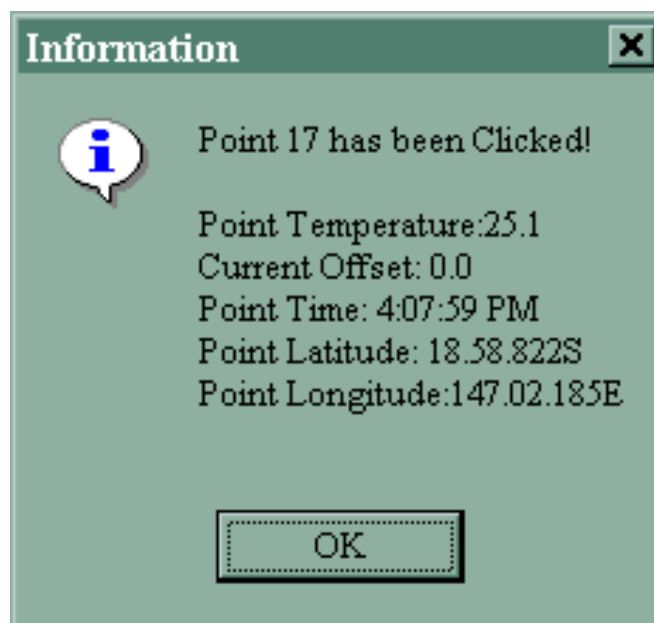


Figure 3.

2.6 The GPS Position Display

This area of the Main Window displays the current GPS Position of the vessel. If the GPS input has been set to 'None', this area will remain blank.

2.7 Temperature Status Display

The Temperature Status Display provides a visual display of the status of the system. The display can contain any one of the following phrases given the appropriate circumstances.

- Temperature Normal – As expected this indicates that the system is running error free, and that the temperature is between the set limits if the alarm is 'SET'. If the alarm is 'OFF' this will be displayed even when the temperature is outside of the alarm limits.
- Temperature Alert! – This is displayed when the alarm is 'SET' and the temperature being monitored has moved outside of the alarm limits. An audible message will also sound to indicate that a breach of alarm limits has occurred.
- No Temperature Data! – This is a fairly straightforward message and is usually accompanied by a similar audible alert. If this message is encountered, check the Setup configuration and the connection of the temperature sensor to the computer.
- No GPS Data! – This occurs if the GPS input has been set up, however no data has been received from this device for at least 10 seconds. This is also accompanied by a similar audible alert.

2.8 Celsius/Fahrenheit Button

Clicking on this button changes the temperature units from Celsius to Fahrenheit and vice versa. The units will be changed in the Main Temperature Display, the Alarm Settings Display, and on the Temperature Graph.

Chapter

3

3.0 Secondary Windows

Secondary windows allow such things as the alarm settings to be changed, the temperature and GPS inputs to be configured, etc. Each of C-Temps secondary windows will be discussed in turn.

3.1 Alarm Settings Window



This window can be accessed by either choosing View→Settings→Alarm in the Main menu or clicking on any of the parameters in the Alarm settings area of the Main Display Window.

This window allows the Alarm to be activated/deactivated and the high and low alarm limits can be set. To turn the alarm on, simply check the 'Alarm On' checkbox by clicking on the square. If a tick appears in this square (☑), the alarm has been

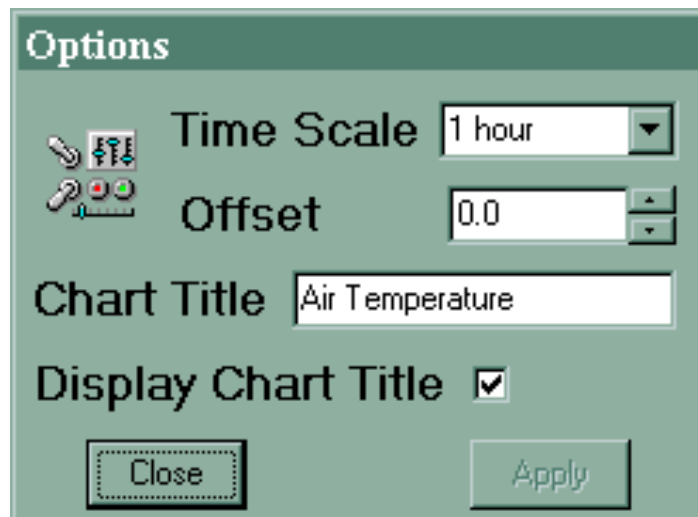
'SET'. Clicking this box when the alarm is on will deactivate the alarm.

The high and low alarm limits can be set, simply by clicking the appropriate Up/Down arrow. Each click on an arrow will change the alarm limit by 0.1 of a degree when in ‘Celsius’ units.

Once the limits have been set click the ‘Apply’ button to accept the changes. A line corresponding to each limit will appear on the Temperature Graph at the appropriate temperature setting (A Red line for High and a blue line for low).

Note: The High alarm limit cannot be set lower than the Low alarm limit and vice versa. The alarm limit lines only appear on the Temperature Graph if the value of the limit is between those being displayed on the temperature axis.

3.2 Options Window



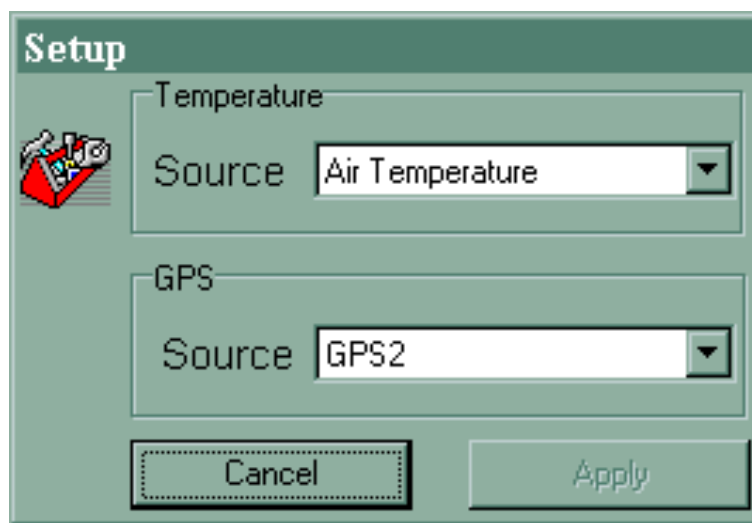
This window can be accessed by either choosing View → Settings → Options in the Main Menu, clicking on the Temperature Graph, or clicking on the Temperature Name above the Main Temperature Display.

This window allows Temperature Graph options to be set, along with a temperature offset (calibration). The ‘Time Scale’ field can be set to one of four values, 10 min, 1 hour, 12 hours and 24 hours. This time represents the amount of time shown on the time axis of the Temperature graph. The ‘Chart Title’ field allows the title of the Temperature Graph to be altered.

Changing the chart title will also change the Temperature name in the Main Temperature Display and the associated temperature name in the temperature source list on the 'Setup Window'. The chart title should not be longer than 30 characters, including spaces. The 'Display Chart Title' checkbox can hide or show the Title on the Temperature Graph, however the Temperature Name in the main display is always visible.

Once the desired changes have been made to the options clicking the 'Apply' button will save these changes. Clicking the 'Cancel' button will close the window without making changes to the options.

3.3 Setup Window



This window can only be accessed by choosing View→Setup in the Main Menu.

The 'Setup Window' allows the Temperature and GPS inputs to be assigned. If the GPS source is set to 'None', the GPS Position area on the Main Window will be blank. Any changes made to the Chart Title from the options window will affect the name of the current temperature in the temperature source list. Once the desired input choices have been made, click the 'Apply' button for these settings to take effect.

Note: These Setup options do not require communications port information. This information should be set on the 'Serial Setup' page of C-Com. If there are any problems regarding receiving Temperature or GPS data, please consult the C-Com User manual.

4.0 Appendices



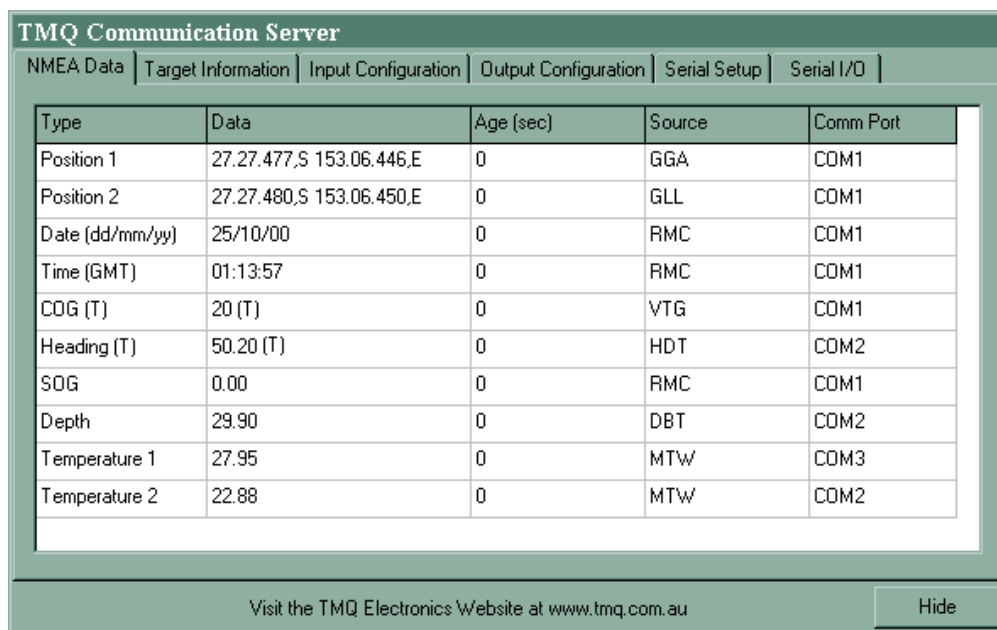
Appendix A: C-Com Communications Server

TMQ C-Com Communications Server

User Manual

C-Com enables full control of a systems communication ports, such as COM1. The application enables incoming data to be shared amongst all *C-Com Enabled* TMQ applications. C-Com allows effortless monitoring and configuration of all data inputs. All user settings are saved and hence modification of the configuration of C-Com should only need to be done when new hardware is connected to the system, or when the current hardware input of the system has been modified. C-Com can also aid in diagnosing any input related errors that may occur during the normal operation of the system. The following manual outlines the features of the C-Com server and how it can be used to efficiently integrate input data for use by all *C-Com Enabled* Applications.

1.0 Exploring the Main Window



The screenshot shows the 'TMQ Communication Server' application window. At the top, there are several tabs: 'NMEA Data', 'Target Information', 'Input Configuration', 'Output Configuration', 'Serial Setup', and 'Serial I/O'. The 'NMEA Data' tab is selected, displaying a table with the following data:


Type	Data	Age (sec)	Source	Comm Port
Position 1	27.27.477,S 153.06.446,E	0	GGA	COM1
Position 2	27.27.480,S 153.06.450,E	0	GLL	COM1
Date (dd/mm/yy)	25/10/00	0	RMC	COM1
Time (GMT)	01:13:57	0	RMC	COM1
COG (T)	20 (T)	0	VTG	COM1
Heading (T)	50.20 (T)	0	HDT	COM2
SOG	0.00	0	RMC	COM1
Depth	29.90	0	DBT	COM2
Temperature 1	27.95	0	MTW	COM3
Temperature 2	22.88	0	MTW	COM2

At the bottom of the window, there is a footer that reads 'Visit the TMQ Electronics Website at www.tmq.com.au' and a 'Hide' button.

Figure 1.

The main window of C-Com contains the majority of features required to effectively configure the systems data inputs. C-Com consists of a Main window and a Communication Port configuration window (discussed in a later section). The user interface is very easy to use with a row of labelled tabs toward the top of the window (see Figure 1). Clicking

on any one of these tabs reveals the information associated with that particular tab.

In the bottom right-hand corner of the main window is the 'Hide' button, this button allows C-Com to run in the background (i.e. No screen presence). In order to render the main window visible, simply double-click on the TMQ Communications Server icon () in the System Tray. The following sections will outline each of the main window tabs and the information displayed.



The System Tray
(Bottom right corner of the screen).

1.1 The NMEA Data Tab

The NMEA Data tab (See Figure 1) is simply a displayed summary of the configured inputs. The display is in the form of a table with 5 labelled columns.

- **Type** – This column contains the types of data that have been configured in C-Com.
- **Data** – This column contains the actual value of the data that is being received.
- **Age** – This column displays the *age* of the data in seconds. Whenever new data is received and the *Data* column for that particular 'Type' is refreshed and the 'Age' display is reset to zero.
- **Source** – This column indicates the NMEA sentence that is being used as the source of the particular *Type* of data.
- **Comm Port** – This column indicates the communications port that has been configured to receive a particular NMEA sentence.

If there is a problem with receiving any type of data, the first sign on the C-Com display, will be an increasing *Age* for the data. Once the data has reached a certain age it is removed from this table.

1.2 The Target Information Tab

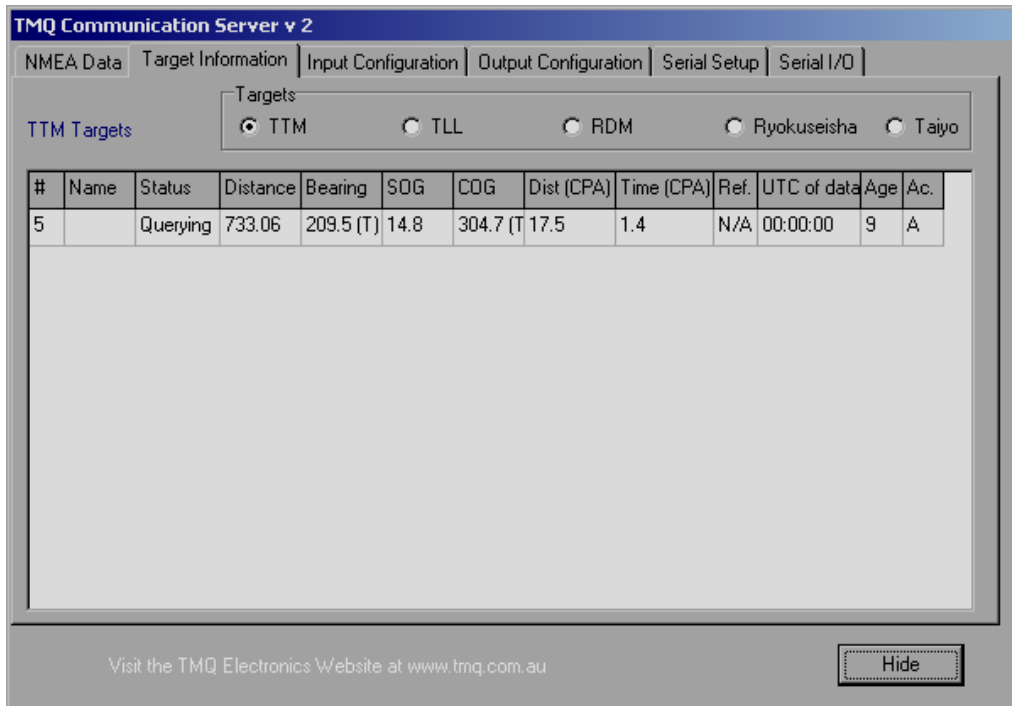


Figure 2

The Target Information tab display is much the same as the NMEA Data tab display. However, this tab displays information on various types of targets. There are three different types of targets represented on this display, *TTM Targets*, *TLL Targets*, *RDM Targets*, *Ryokuseisha* and *Taiyo*. Each of these target types is displayed in its own table (see figure 2). In order to view a particular Target Table, simply click the desired table in the box above the table. The targets are displayed in order of Target Number and, as with the NMEA Data display, when a target's *age* reaches a certain value the target is removed from the table.

1.3 The Input Configuration Tab

The Input Configuration tab allows the NMEA Source and Communications Port for each *Type* of data to be configured. In addition it allows the NMEA sentence to be checked for reliability (CSS & VCS).

This tab is comprised of two key areas, the Configuration table & the configuration modification section. The Configuration table displays the current configuration settings, while the configuration modification section allows the settings of the highlighted data type (Configuration Table) to be altered.

1.3.1 The Configuration Table

The first column of the configuration table (*Data*) lists all the possible data types that can be configured via C-Com. The next two columns, *Source* and *NMEA Type* display the current communications port and NMEA sentence settings. If these are 'None' it means that the data type in question has not yet been configured. The final two columns *CSS* (Check Sentence Structure) and *VCS* (Verify Check Sum) display the status of the reliability verification parameters.

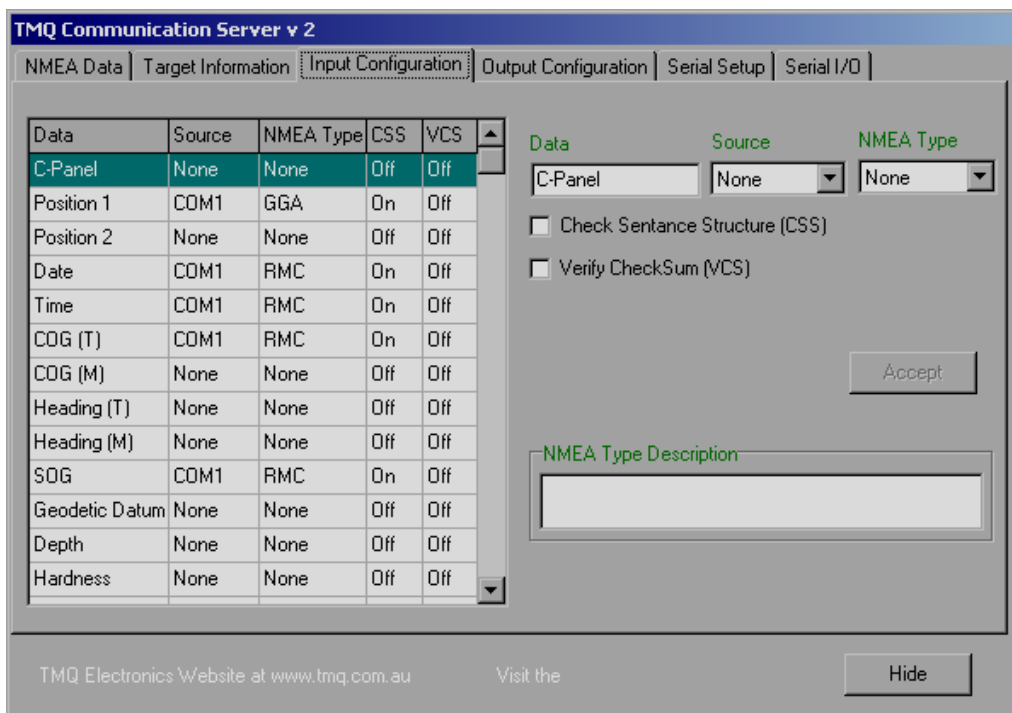


Figure 3.

- Check Sentence Structure (CSS): This option configures C-Com to check the particular NMEA Sentence to ensure it has the correct sentence structure (i.e. The correct number of fields). This can improve the reliability of the system by discarding sentences that may have been corrupted while being transmitted between devices.
- Verify Check Sum (VCS): This option configures C-Com to verify the check sum of the NMEA sentence in question. This method is far

more reliable than the CSS method, unfortunately contrary to the NMEA Standard 0183, many companies fail to include a check sum in their sentences and in these cases the VCS feature should not be set.

1.3.2 Configuration Modification Section

This section is made up of everything else that appears on this tab apart from the configuration table. The first fields to identify are those marked *Data*, *Source* & *NMEA Type*. These fields relate directly to the first three columns of the table. When a row in the configuration table is highlighted, the information in the above mentioned fields reflect that of the highlighted row. It is now possible to modify the configuration of the highlighted row. The *Source* and *NMEA Type* can be modified via the drop down lists (The data field cannot be modified). The two check boxes below allow the CSS and VCS checks to be turned on or off. If the check box is 'checked' the associated check is 'ON', and vice versa.

Once the desired changes have been made in the configuration modification section click the *Apply* button to apply these changes to the Configuration Table. Continue making changes until all desired *Data* types are configured then click the *Accept All* button. Once *Accept All* has been clicked the configuration displayed in the configuration Table will take effect. Check the NMEA Data tab to ensure that all of the configured *Data* types are being received correctly. If the *Reset* button is clicked, instead of the *Accept All* button, the configuration will return to settings that were established the last time *Accept All* was clicked. A flowchart outlining the input configuration procedure can be found in the accompanying documentation.

1.4 Output Configuration Tab

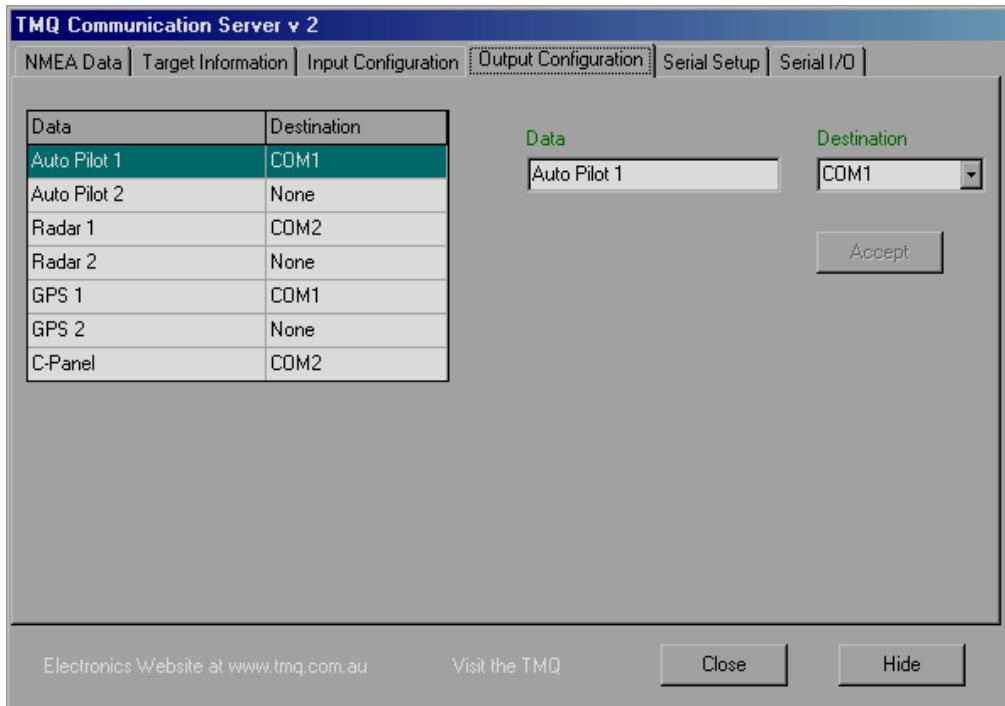


Figure 4.

The Output Configuration Tab allows the manner, in which C-Com outputs data, to be configured. It is organised in the same way as the Input Configuration Tab. The Output Configuration Table contains two columns *Data* and *Destination*. Similarly the Configuration Modification section has both *Data* and *Destination* fields. Only the *Destination* field can be modified through the use of the drop down list.

To configure an output to a device, simply choose the appropriate communications port for the desired device and click *Apply*. As with Input Configuration once all the desired devices have been provided with destination communication ports, click *Accept All* to accept the displayed configuration, or *Reset* to return to the settings saved when *Accept All* was last clicked.

1.5 Serial Setup Tab

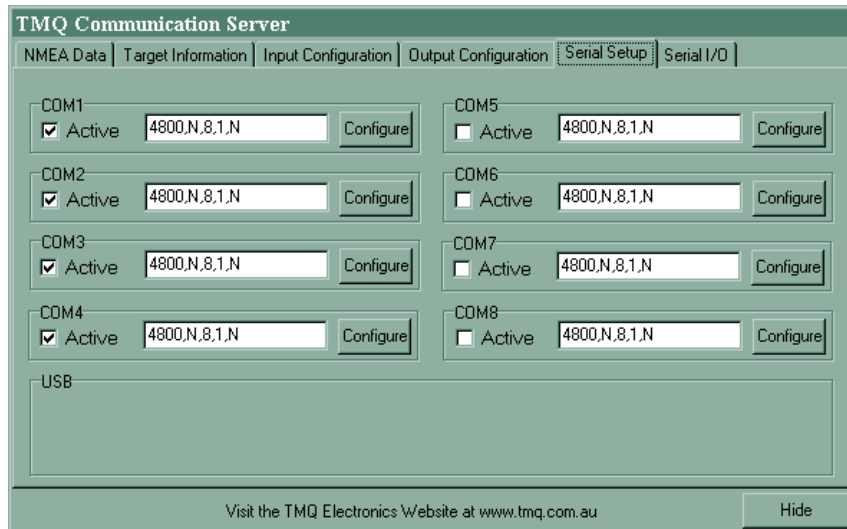
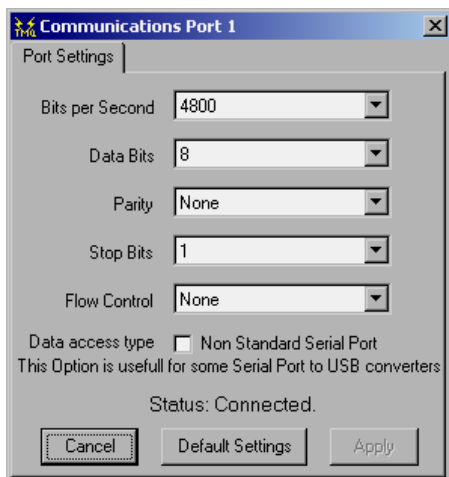


Figure 5.

The Serial Setup tab allows the individual communications ports to be configured. Each communications port has a check box marked *Active*, a field that displays the current configuration settings and a *Configure* button. The *Active* check box allows the associated communications port to be started or stopped (Checked = Started, Unchecked = Stopped). The configuration display field simply displays the current configuration; it cannot be modified from this field. In order to modify the configuration settings for communications port simply click the *Configure* button of the associated port.

Once the *Configure* button has been clicked a dialog box will appear.



Select the desired setting from the drop down list can set each of the fields. Once the desired modifications have been made click the *Apply* button. To cancel configuration of the communications port at any time, click *Cancel*. Click on the *Default Settings* button to return the configuration settings to the default values (i.e. 4800 bps, 8 Data Bits, Parity – ‘None’, 1 Stop Bit and Flow Control – ‘None’).

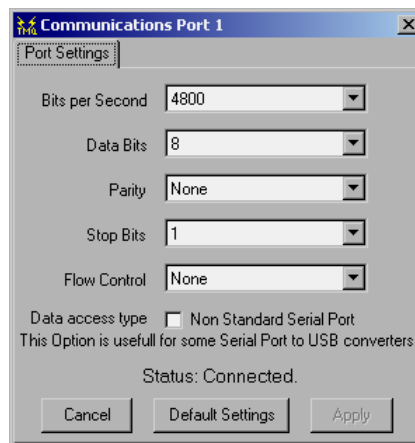
Place a ‘check’ in the box for ‘Data access type Non Standard Serial Port’ if data is not received on the serial port. Check for data using the ‘Serial I/O’ tab with the correct Com port selected.

1.5.1 C-Panel / C-Temp Special Configuration Information.

When configuring the C-Panel to enable external alarms or two way communication with some types of GPS antenna it may be necessary to place a 'Check' () in the 'Data access type Non Standard Serial Port' box for the configuration of that port. This should be done if the C-Panel does not produce an audible alarm signal when C-Plot is displaying an alarm, for example; C-Plot may be alarming due to an incorrect direction for a GOTO and the C-Panel isn't 'Beeping'.

When connecting a C-Temp probe do not place a 'Check' in the 'Data access type Non Standard Serial Port' box.

Under certain circumstances the C-Temp probe may need resetting if temperature data is not present. This can be achieved via the C-Com communications server. Select the 'Serial Setup' tab then deactivate the Com port that the temperature probe is connected to. Leave deactivated for 5 seconds and reactivate in again, this will reset the temperature probe.



Communication Port Configuration Dialog Box

1.6 Serial I/O Tab

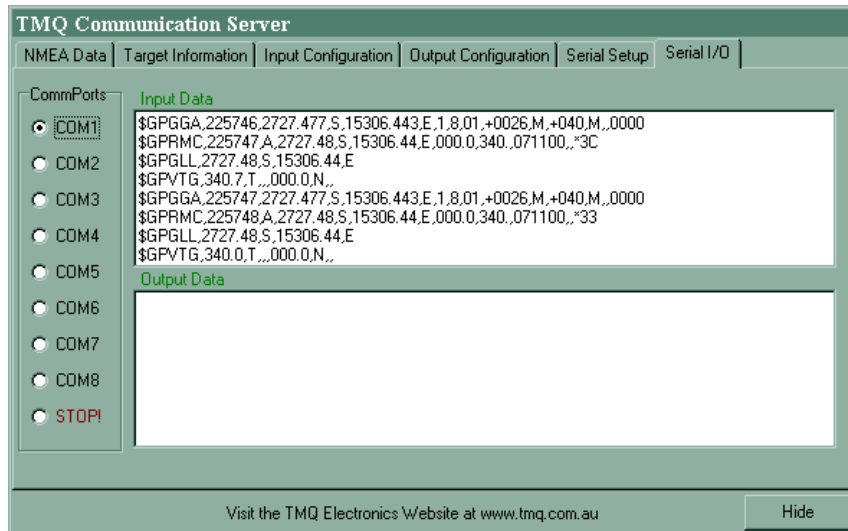


Figure 6.

The Serial I/O Tab allows the input and output data streams to be monitored. Simply click the desired communications port in the *CommPorts* box, to display the raw data being received and sent via this port. This is a useful tool to use when configuring the Input and Output settings of C-Com. Clicking on the ‘*Stop!*’ selection will prevent the data from scrolling up the screen so that it can be comfortably analysed.


2.0 Summary

C-Com is a powerful and productive tool allowing *C-Com Enabled* TMQ applications to share the communications ports effectively. A set of flowcharts is provided to enable C-Com to be used efficiently. These flowcharts outline such procedures as Input Configuration, Output Configuration and adding new devices to the system.

TMQ C-Com Communications Server

Quick Setup for C-Temp

This is intended as a quick guide / check procedure for the C-Temp settings.

1. Open C-Temp from the Desktop icon. Open C-Com by double left mouse clicking the  icon at bottom right corner of the screen.
2. Select the 'Serial Setup' tab.
 - Activate the Com Port that the temperature probe is connected to by placing a 'tick' in the 'Active' box.
 - If unsure of Com Port activate all possible Com Ports.
 - Check the Com Port configuration 4800,N,8,1,N (Default)
3. Select the 'Serial I/O' tab.
 - Select the Com Port that the temperature probe is connected to from the list on the left side of the window.
 - If unsure of Com port select one at a time to find DATA.
 - NMEA Data should be seen in the 'Input Data' window. (eg. \$YCMTW,025.59,C)
 - Select 'Serial I/O' tab and deactivate the other Com Ports previously activated if not required for other input devices.
4. Select the 'Input Configuration' tab.
 - Scroll down the input 'Data' list to 'Temperature 1', left mouse click on it.
 - Select the Com Port that the temperature sensor is connected to (eg. COM1) from the 'Source' box.
 - Select MTW from the 'NMEA Type' box.
 - Left mouse click the 'Accept' box.
5. Hide the C-Com Server.
 - Left mouse click the 'Hide' button.
6. Temperature data should now be displayed in C-Temp.
 - If temperature data is not displayed in C-Temp check the connections and the above setup.