



DNC-100



OPERATION AND INSTALLATION MANUAL

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TMQ DNC-100 Introduction

The DNC-100 is a serial data combiner that takes sentences from up to 3 serial devices and combines them into a single output stream.



Therefore allowing a PC program such as TMQ C-Plot to use a single COM port to receive data from multiple devices.

Additionally computer programs running on the same PC can share data from the same source, for example TMQ C-Plot and Piscatus can both receive GPS and Depth data on different serial ports.

Specifications

The input sentences can be customised to suit various applications such as:

Sounders, Autopilots, GPS and AIS.



Power Supply:

Between 10-35V DC.

Dimensions:

9.5cm x 6.35cm x 2.8cm
(3.72" x 2.5" x 1.1")

Connections:

Internal terminal strip.

Input Sentences:
(Correction for CS, SS)

GGA, GNS, GLL, RMC, VTG, HDG, HDM, HDT, DBT, MTW, MTA, ZDA, MWD, MWV, TLL, TTM, RBY, BLV, OSD, DTM, DPT, XDR, RSD



Installation Requirements

TMQ DNC-100

Position

The TMQ DNC-100 should be mounted in a position protected from Rain and Salt Water at all times.

Wiring

Access for wiring should be provided at the front and rear of the unit. Cables should be allowed to run to all necessary equipment and Power Supply.

Magnetic Effect

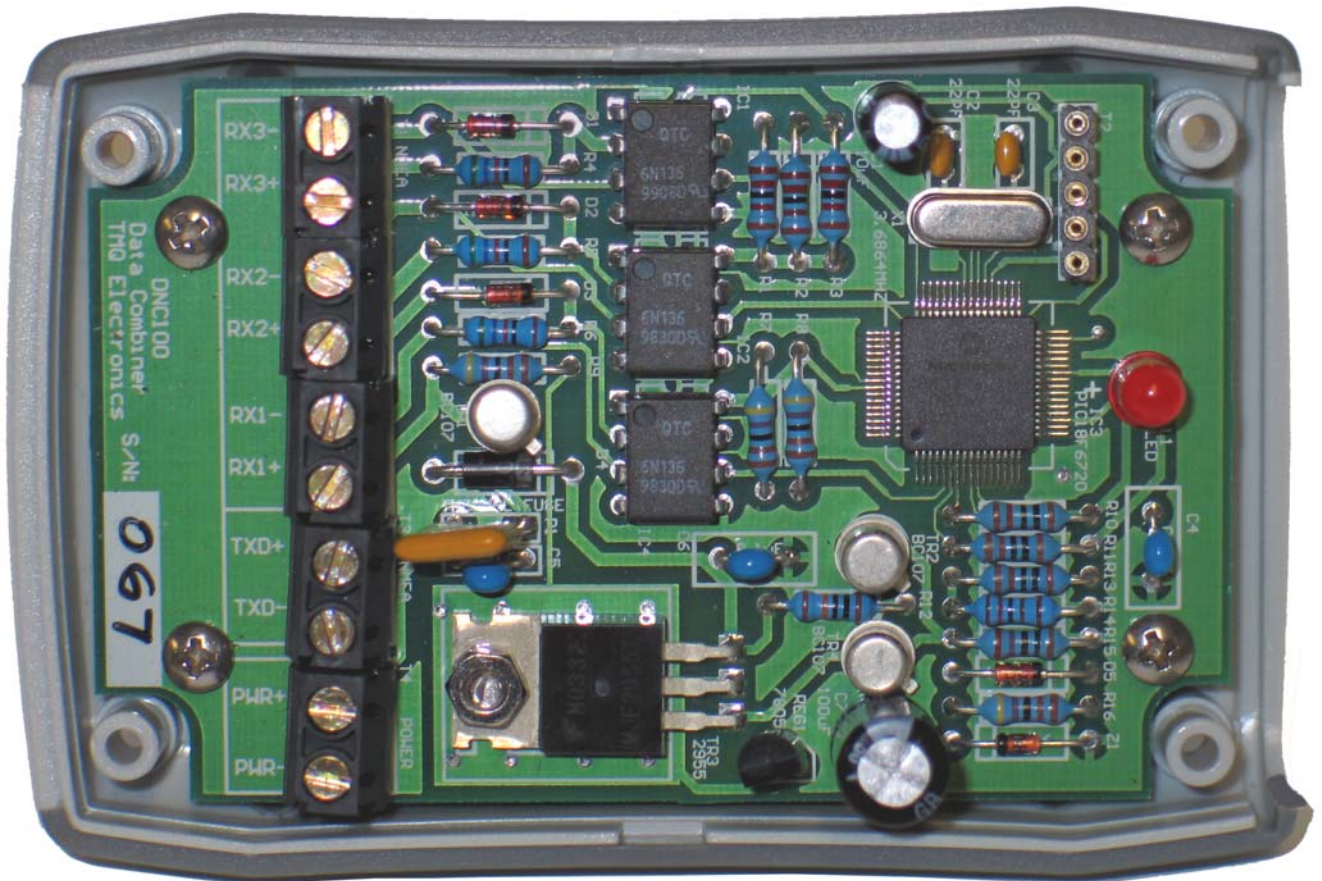
As a minimum amount of Steel is used in the construction of the TMQ DNC-100 there would be negligible affect on the steering compass.

Mounting

Double sided tape can be used to secure the TMQ DNC-100 to the required Surface. Alternatively, 2 mounting holes can be drilled in the Rear Cover for Screw Fastening.

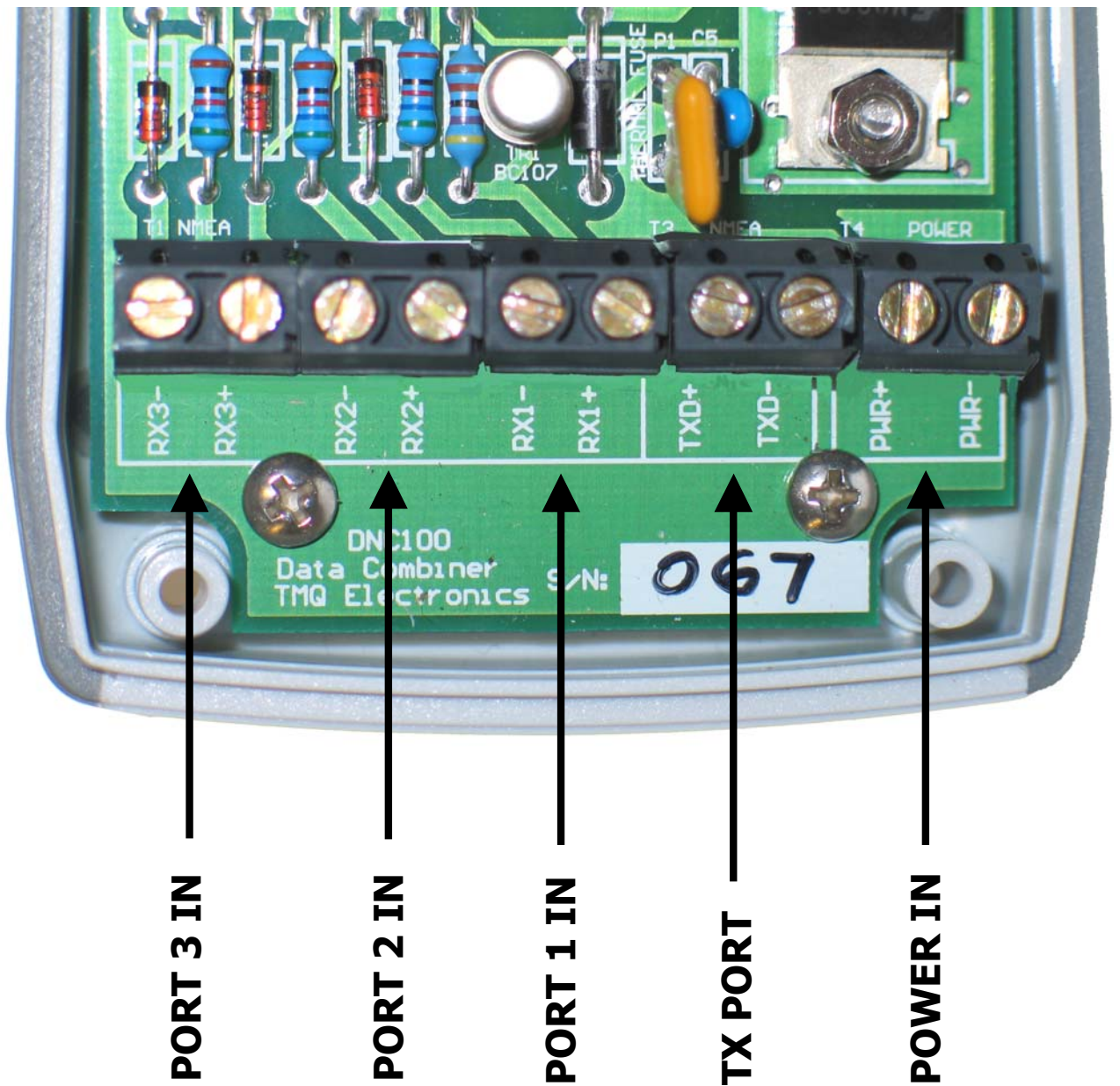
Internal Connections

The casing of the DNC100 must be removed by unscrewing the four screws holding the rear cover on. All connections to the DNC-100 are made internally.



The PCB connections are shown in Figure 1.

Figure 1 DNC-100 Internal Terminal Strip



Power

The TMQ DNC-100 can be powered from 10-35V DC. Since there is no fuse within the unit, external protection is required.

Connection is to the 2-Way Terminal strip as follows:-

PWR+	-----	10-35V Fused DC
PWR -	-----	GND

Data Input / Output

Data input is to the three Input Ports, Port 1, Port 2 and Port 3

Note that RX1-, RX2-, RX3- and TXD- are the ground connections for their respective data lines (RX1+, RX2+, RX3+ and TXD+).

Please note TX- is not isolated from negative (PWR-).

If requiring full isolation, please use the 'TMQ Depth by Colour Lead'.

See the 'Connection Diagram' on page 17 for more details.

Default Configuration

The factory standard settings are as follows:

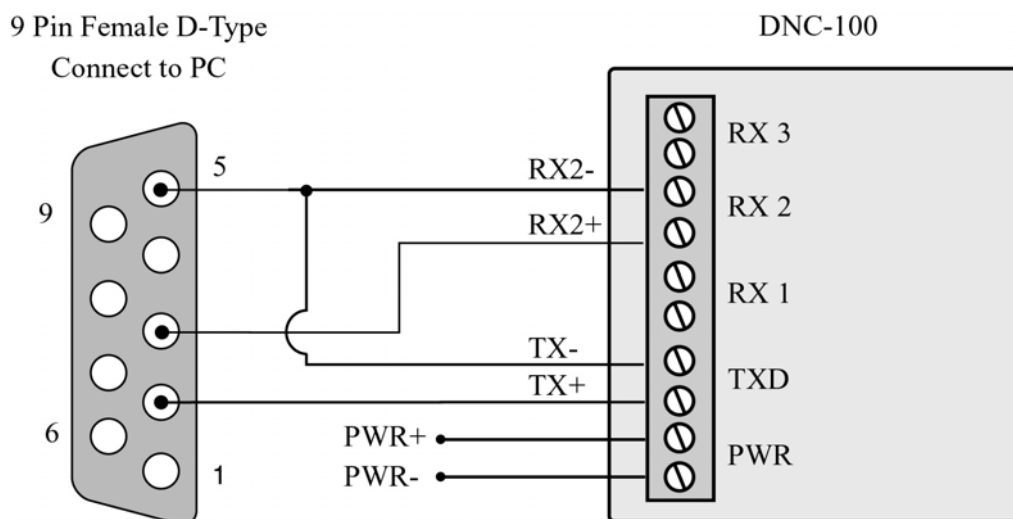
Input:

Port	Baud Rate	Device Type	Sentence
1	4800	GPS	GGA, GGL, RMC
2	4800	Autopilot	HDM
3	4800	Depth Sounder	DBT, DPT, XDR

Output:

Port	Baud Rate	Description
2	4800	Combined Sentences

Computer Connection Lead



Configuration Procedure

The TMQ DNC-100 connects to the PC is via Port 2 and TX+, TX-.

Two types of settings can be customised:

- Baud rates for Port 1 and Port 2 can be independently set to 4800, 9600 or 38400 bps.
(Note that changing the setting on Port 2 changes the output as well as the input speed. Also note that Port 3 is fixed at 4800 bps)
- Sentence lists define what types of sentences will be accepted on each port. Up to 20 different sentences can be accepted per port.

Changes to these settings are stored in non-volatile memory so that they are not lost when the power is disconnected.

To access the calibration menu, the input and output of Port 2 should be connected to the serial port of a PC.

A terminal emulation program such as HyperTerminal or Minicom should be configured to access that COM port using the current baud rate setting of Port 2 (factory default is 4800 bps).

Note: Refer to section ‘HyperTerminal Set up procedure’ if required.

The following sequence should be typed to suspend the normal operation of the data combiner and enter the calibration menu:

@CAL<enter>

If the unit is connected correctly, the main menu should be displayed:

TMQ Data Combiner v1.45 Configuration

Main Menu

1: Baud Rate
2: Sentence Selection
3: Priority Port
4: Version Number
5: Data Dumping
6: Master Reset
Q: Quit
>

- **Baud Rate** is used to set the baud rates of Port 1 and Port 2 as described above.
- **Sentence Selection** allows entries to be added and deleted from a sentence list individually or using pre-defined lists. Pre-defined lists replace all sentences in the current list.
- **Priority Port** is used to nominate an input port which has the highest transmission priority. If multiple ports receive data simultaneously the first sentence output will be the one received on this port.
- **Version Number** is used by TMQ staff to upgrade the DNC-100 software in case of future upgrades.
- **Data Dumping** can be used to monitor the data currently being read on any of the input ports. This is useful for determining which sentences should be added to the sentence list.
- **Master Reset** is used to restore the data combiner back to the factory default settings.
- **Quit** leaves the menu and resumes regular data combining operation.

The available options are shown at the left of the screen.
Typing any other key will redisplay the current menu.
Five consecutive unknown key presses will cause the menu to exit.

Sentence Correction

Checksum correction occurs for all sentences apart from those generated by TMQ Autopilot heads (AP500, AP55, AP45).

Sentence structure correction occurs for the following sentence types:

GGA, GNS, GLL, RMC, VTG, HDG, HDM, HDT, DBT,
MTW, MTA, ZDA, MWD, MWV, TLL, TTM, RBY, BLV,
OSD, DTM, DPT, XDR, RSD.

Special Sentences

The following sentence types are handled specially when used in a sentence list:

JRC - Matches proprietary JRC sentences (e.g. PJRCD)

VDO or VDM - Causes both VDM and VDO messages to be passed.

Troubleshooting

If data is not coming from the output, Port 2 of the DNC-100:

- Check that the LED is flashing. The LED will flash at a fixed speed when the data combiner is idle. It will flash at intermittent intervals when incoming data is being processed.
- Use the Data Dumping facility to check the types of sentences being received on each input port. Ensure that at least one of these sentences appears in the Sentence Selection corresponding to this port.
- Check that the speed of the COM port on the PC is the same as Port 2.
- There is no data output while the menu is being displayed. Quit the main menu to resume data combining operation.

If typing '@CAL' does not display the calibration menu:

- Check that the speed of the terminal emulator program on the PC is the same as Port 2.
- Ensure that the transmit and receive pins of Port 2 have been connected to the PC correctly.

Piscatus Connection Details

When using the DNC-100 to interface equipment to the PC running TMQ C-Plot and Piscatus, connect as follows.

DNC-100	Equipment
Port 1.....	GPS Data
Port 2.....	Heading Data
Port 3.....	Depth Data
TX.....	C-Plot Serial Port (Com Port) Piscatus Serial Port (Com Port)

Status Message

The data combiner will transmit a proprietary sentence on PORT 2 when it is powered on. The message will be in the form:

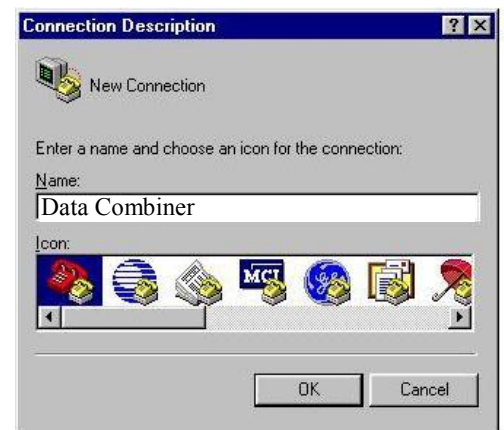
\$PTMQV,<version>,<spbrg>

- version - is the firmware revision of the data combiner software.
- spbrg - is the value of the Baud Rate Generator register for PORT1.

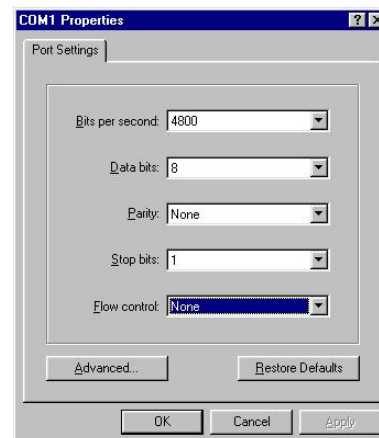
HyperTerminal Set up procedure

Adjustment of the installation settings can be made using the following procedure.

1. Connect the DNC-100 to your Computer's Communication (com.) port; this requires to be an unused port for the duration of the system configuration.
2. Run a com. Server program such as HyperTerminal which is included on the installation discs for Windows 98SE, Windows 2000, Windows XP etc. (Start -> Programs -> Accessories -> Communications -> HyperTerminal)
3. Start a new connection and name it Data Combiner. For example in Hyper Terminal.



4. Select connection to the Com port that the programming lead is connected to, for example, connect using: Direct to COM1



5. Set the baud rate to 4800,
Data Bits = 8,
Parity = None,
Stop Bits = 1,
Flow Control = None.

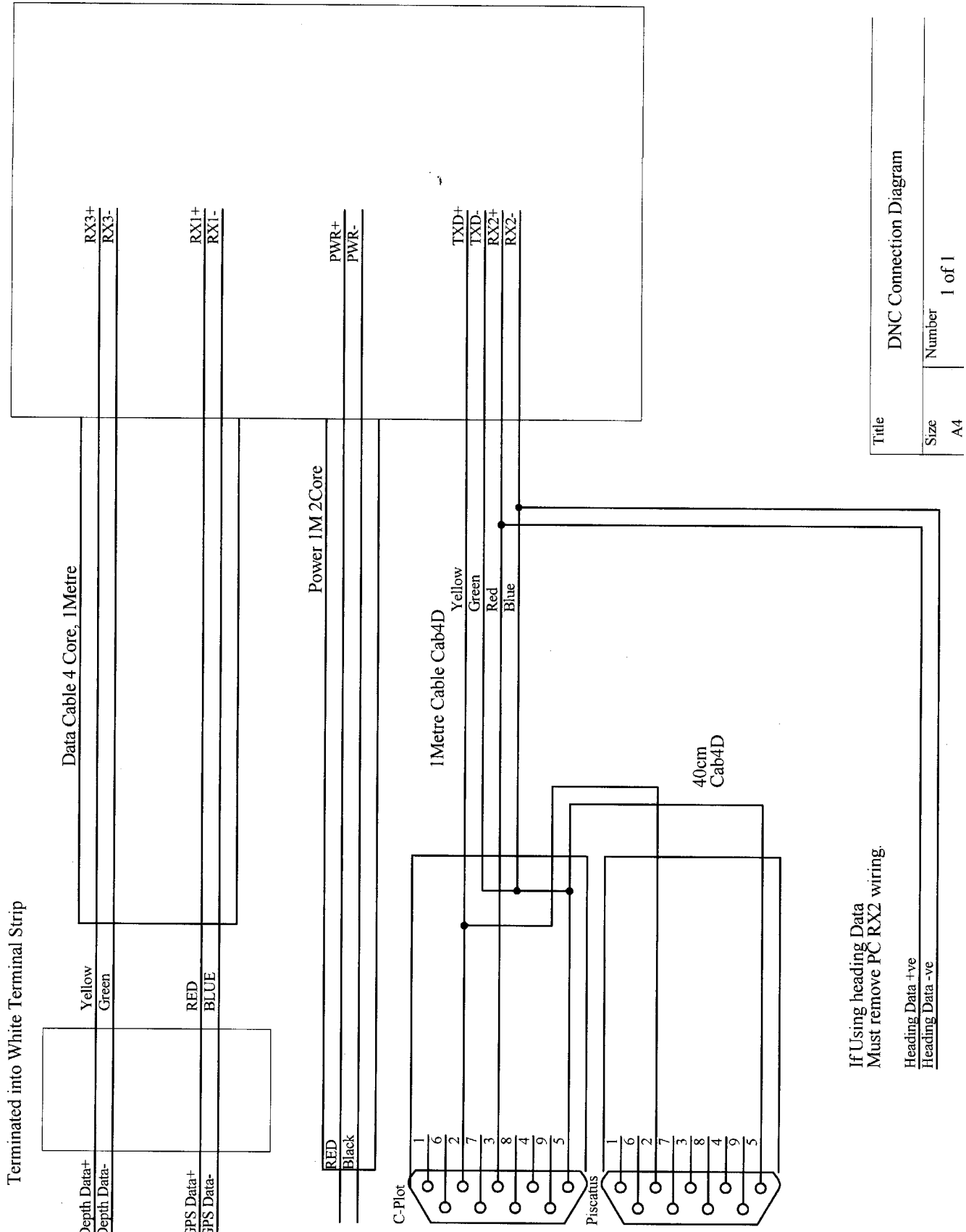
-
6. Switch on the DNC-100, using the Hyper Terminal Program connect to the com. port. Data should now be visible in the text editor window.
 7. In that window enter the text '@cal ' The text is not visible as it is typed. The 'TMQ Data Combiner v1.45 Configuration Main Menu' will now be displayed.
 8. Following the instruction in the Menu to alter the configuration settings as required, save and exit the configuration menu.
 9. These settings will be retained in the DNC-100s' memory.

TMQ Data Combiner v1.45 Configuration

Main Menu

1: Baud Rate
2: Sentence Selection
3: Priority Port
4: Version Number
5: Data Dumping
6: Master Reset
Q: Quit
>

TMQ DNC-100 Configuration Menu

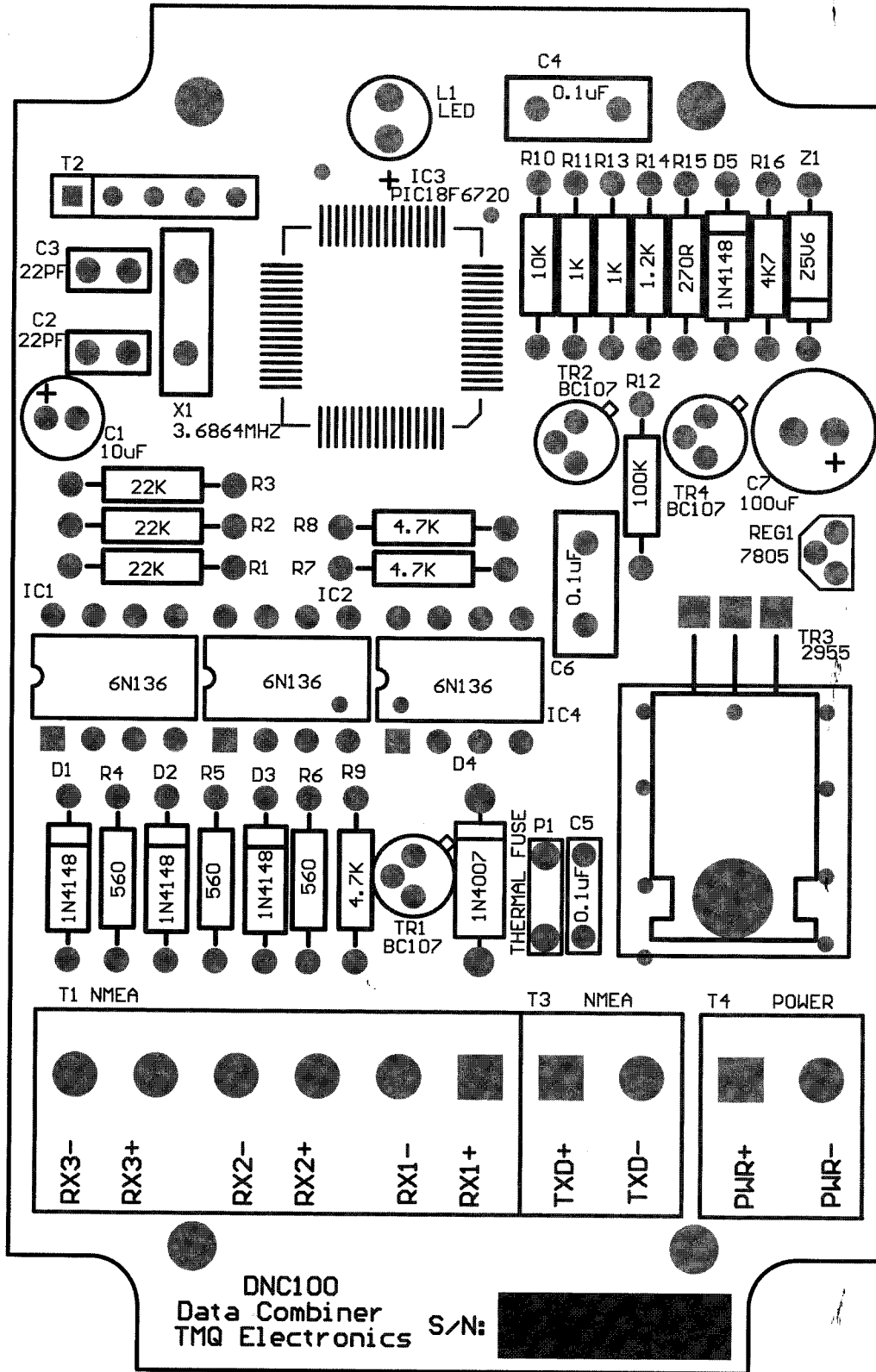


If Using heading Data
Must remove PC RX2 wiring.
Heading Data +ve
Heading Data -ve

Title		DNC Connection Diagram	
Size	A4	Number	1 of 1

Piscatus Connection Diagram

PCB Overlay



Circuit Diagram

