

R-net Programming Options

The recent introduction of a Programming and Diagnostic Test Tool (DTT) means that the PGDT R-net Rehab Control System is probably the most versatile in terms of how it can be programmed. While options for On-Board Programming (OBP), using the joystick and built-in LCD screen, and PC Programming Software are well established, the DTT offers dealers and providers a significant increase in flexibility and storage options when working with Rehab Powerchairs.

The R-net effectively contains all its programming in the Power Module. This approach was chosen, as the Power Module tends to be the least frequently replaced part of a control system. This means that if the Joystick Module, for example, is replaced, and then no programming for the new part is required. The Power Module also defines the programming menu structure, content and language, so that when a programming tool is connected, the actual display format and content will be automatically derived from the personality of the powerchair. This is useful as it removes the need for different access level or non-English language versions of programmers, and therefore allows the DTT to be used on any powerchair that uses the R-net, regardless of manufacturer.


A simple menu structure, four navigation keys and three 'soft' keys form the basis of the DTT's user-interface.



From this opening menu, there are four basic functions – Programming, My Files, Diagnostics and DTT Info.


Programming

The programming screens have been designed to show as many profiles and parameter as possible, while ensuring the layout does not become too cluttered. Typically, up to four profiles can be viewed at one time and it is easy, via the left or right navigation keys, to scroll across to see more. The parameter selected for adjustment is clearly highlighted in the darker blue and values are changed using either the - or + soft-keys.

Forward 				
	Pr1	Pr2	Pr3	Pr4>
Acc▲	30	35	40	45
Acc▼	15	20	20	20
Dec▲	40	45	50	55
Dec▼	20	25	25	25
Spd▲	30	40	60	80
Spd▼	10	15	20	25

- +

Hand-held programming tools are often preferred over OBP or PC methods as they allow adjustments to be made and tested when the client is seated in the powerchair. To support this requirement, the DTT allows full drive functionality all the time it is connected. In addition, a Training Mode allows the individual directions of the chair to be inhibited. A typical example may be to left and right steering when training a new powerchair user.

Training Mode 	
Forward Inhibit	No
Reverse Inhibit	No
Left Inhibit	Yes
Right Inhibit	Yes

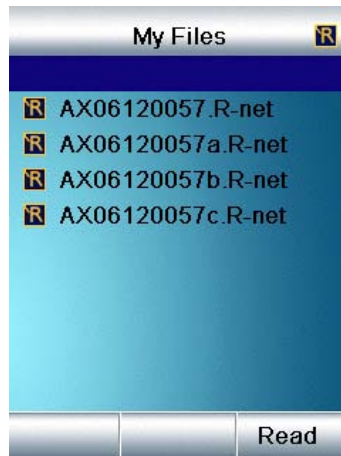
Read

My Files

The DTT has two USB connectors; A Type A; into which a USB memory stick can be connected; and a Type mini-A that allows direct USB connection to a PC.

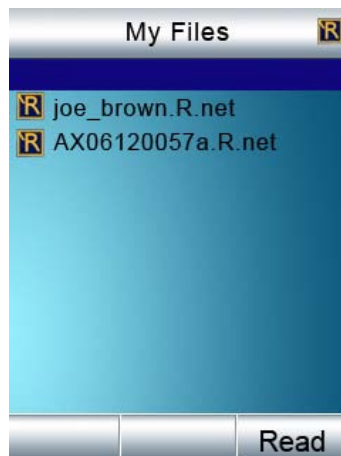
Application Note

After the powerchair has been set-up, it is possible to save the entire 'program' to the DTT's memory. The *Read* command takes all the parameter settings from the R-net system and saves them in the DTT with a file name corresponding to the serial number of the Power Module and an extension of .Rnet.



If a memory stick is connected, then files can be saved directly onto the stick itself. Navigating to the Memory Stick folder and then exercising the Read command achieve this. When the DTT is connected to a PC, then it will appear as a conventional drive with the name DTT and conventional Windows® commands can then be used to organize folders and files, including Rename, Copy and Delete options.

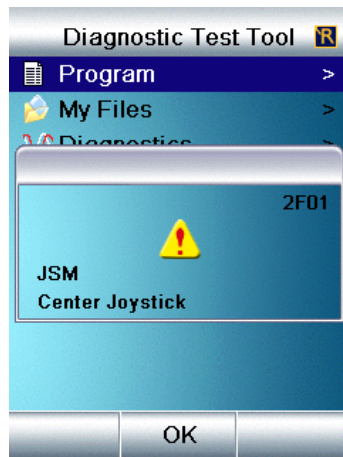
The DTT can also be used as a medium to transfer programming files into the R-net system. For example, it is possible for a file to be created elsewhere then emailed to a more local PC, where it can be either stored directly onto a connected DTT or to a memory stick. If the file has been stored onto the DTT, then it can be selected and programmed into the R-net by using the Write command. Similarly, if the file is on a memory stick that is connected to the DTT, then by navigating to the Memory Stick folder and highlighting the file, the Write command will load the file to the R-net.



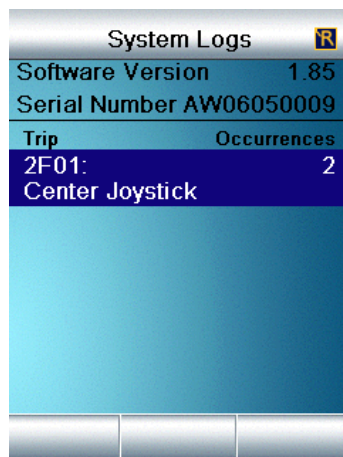
It is also possible to swiftly transfer entire programs from one powerchair to another. By '*Reading*' from one then '*Writing*' to the other. Some real-life examples of the file management capabilities of the DTT are given at end of this note.

Diagnostics

If the R-net system has detected an error in the powerchair's electrical system, then information such as: the module reporting the error; the type of error; and some help text will be displayed by the DTT. As with programming, the text details are contained within the R-net Power Module meaning the information can automatically appear in a preferred language.




If the powerchair is suffering from intermittent errors, then the DTT can be used to inspect each of the R-net modules' system logs in order to build up a history of what may have been happening. Taking this one stage further, the log files can also be transferred to a PC and emailed back to a technical center for detailed analysis.




Application Note

The DTT can also view system properties in real-time. For example, the *System Tests* option can be used to show details of battery and motor voltages and currents. The values are 'live' and can be inspected even when the powerchair is being driven. Further, the operational states of inputs and outputs can be checked allowing correct joystick or push-button operation to be confirmed, while seat actuator and brake outputs can also be monitored.

System Tests 	
Enter Drive Mode	

Communications	Ok
Battery Gauge	100 %
Battery Voltage	28.2 V
Battery Current	0.0 A
Voltage M1	0.0 V
Current M1	0.0 A
Voltage M2	0.0 V

System Tests 	
Enter Seating Mode	
CH 6 Current	0.0 A
Axis 1 Control	Stop
Axis 2 Control	Stop
Axis 3 Control	Stop
Axis 4 Control	Stop
Axis 5 Control	Stop
Axis 6 Control	Stop
Axis 7 Control	Stop

DTT Info

Within this menu option, it is possible to set the operating language of the DTT. While the parameter names are set by the R-net programming, the actual DDT command text will need to be set from here. The information screen is also useful in determining the software version of the DTT itself. In fact, if the software version is not the latest, then new files can be downloaded from the PGDT website and put into the DTT via the USB connector.

DTT Compatibility and Connection

The DTT is fully compatible with all R-net system modules and can be connected in at any convenient point. A range of cable options also allows the DTT to be connected into other PG systems, such as the VR2 or the VSI. Because the cable is detachable, it can be easily and cost-effectively replaced should it receive damage.

Example One

A Powerchair has been programmed and it is required to save the details on a central PC.

- Connect the DTT to the R-net system
- Select “My Files”
- A blank line at the top of the file list will be highlighted and right-hand soft-key will present a “Read” option. Press this key.
- The programming file will now be read from the R-net and stored in the file list. The name will be the serial number of the Power Module. (e.g., “AX08051234.R-net”)

There are now two options:

1. If you have a memory stick, the file can be stored on that and later copied to the central PC.
2. The file can be left on the DTT, which is then taken to the central PC and connected to it

Memory Stick

- Connect the memory stick into the USB Type A connector on the DTT
- Select “My Files > Memory Stick” and then exercise the “Read” command. The file will be read and automatically stored to the memory stick.

Connection to PC

- Take the DTT to the central PC and remove the detachable programming cable to expose the USB mini Type A connector. Use an appropriate cable to connect to the PC’s USB port.
- The DTT will be recognised by the PC as a conventional drive, but with the name DTT. (e.g., “E:\DTT”)
- Access the “My Files\Rnet” folder on the DTT drive and copy the file from there to the required location on the PC.
- If the “DTT\MyFiles\Rnet” is again accessed, then the PC could be used to rename the original file or delete it.

Example Two

An already created file is stored on a PC and it is required to transfer that file to the DTT and then load it into an R-net at a remote location.

- Take the DTT to the central PC and remove the detachable programming cable to expose the USB mini Type A connector. Use an appropriate cable to connect to the PC’s USB port.
- The DTT will be recognised by the PC as a conventional drive, but with the name DTT. (e.g., “E:\DTT”)
- Access the “My Files\Rnet” folder on the DTT drive. At this stage, it is possible to create new folders, with preferred names. (e.g., “DTT\My Files\Rnet\Powerchair #1”)
- The PC can now be used to save the required file, which in this example will be called “Joe Brown.Rnet”, to a folder on the DTT.
- Disconnect the DTT from the PC, reattach the programming cable and take the DTT to the powerchair.
- Connect the DTT to the R-net system on the powerchair.
- Select “My Files > Powerchair #1” and highlight the file “Joe Brown.Rnet”
- The right-hand soft-key will present a “Write” option. Press this key.
- The file “Joe Brown.Rnet” will now be programmed into the R-net.

Example Three

A provider wishes to rename the drive Profiles on a powerchair.

- Profiles can be renamed with the PGDT PC Programming software. Therefore, as per Example 1, put a copy of the powerchair file onto a PC that has such software installed. If there is no access to such a PC, the file could be emailed to another location.
- Use the PC Programmer to rename the Profiles as required and save the files.
- As per Example 2, load that file back into the R-net.

Example Four

It is required to email the R-net error logs to a central service center for analysis.

- Connect the DTT to the R-net system
- Select “Diagnostics > System Logs > My Logs”
- A blank line at the top of the file list will be highlighted and right-hand soft-key will present a “Read” option. Press this key.
- The System Logs of all the connected R-net modules will be read and stored in a single file. The name of the file will be serial number of the Power Module.
(e.g., “AX08051234.rnsi”)
- Alternatively, if a memory stick was connected and the “Read” command was exercised while the “Diagnostics > System Logs > My Logs > Memory Stick” folder was accessed, then the file will be stored onto the memory stick.
- The log file can now be copied to a PC as described in Example 1, and then emailed to the service center.

For more information on the Omni or any of PGDT’s products and services, please contact us at the addresses below.

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