R-NET
USER GUIDE

SUNRISE MEDICAL | FAMILY OF BRANDS

Contents

About this manual

The User Guide introduces the R-net Control System.

Throughout the manual icons are used to draw the reader's attention.

The icons used are:

NOTE: **A general point for best practice.**

CAUTION: **A point of safety which if ignored could result in damage to the Control System or the vehicle.**

WARNING: **A point of safety which if ignored could cause injury to the individual.**

Magic Mobility accepts no liability for any losses of any kind if the cautions and warnings are not followed.

Chapter 1 – Operation

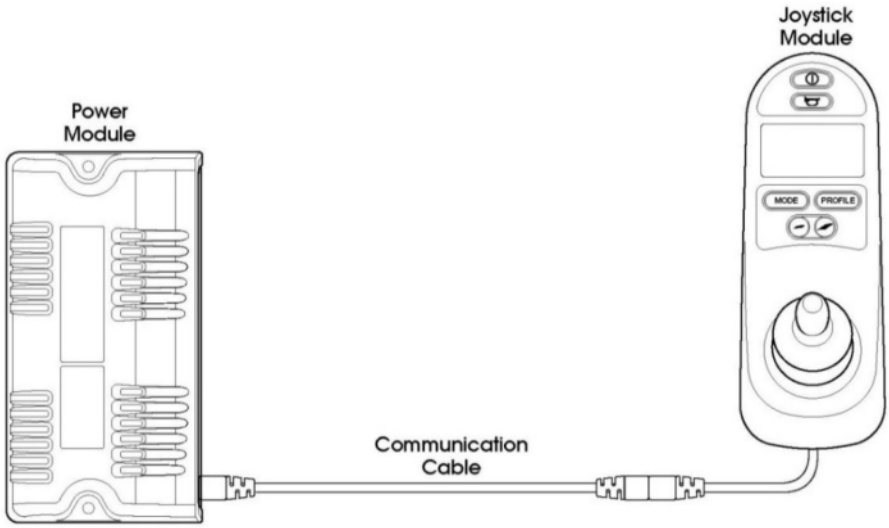
1 INTRODUCTION

The operation of the R-net wheelchair control system is simple and easy to understand. The control system incorporates state-of-the-art electronics, the result of many years of research, to provide you with ease of use and a very high level of safety. In common with other electronic equipment, correct handling and operation of the unit will ensure maximum reliability.

Please read this chapter carefully - it will help you to keep your wheelchair reliable and safe.

2 GENERAL

An R-net control system comprises a minimum of two modules - Joystick Module and Power Module. Because of the modular design, the depth of the control system can be greatly increased. The following diagram shows the basic set-up.



2.1 Handling

Avoid knocking your control system and especially the joystick. Be careful not to strike obstacles with the control system or joystick when you drive. Never drop the control system.

When transporting your wheelchair, make sure that the control system is well protected. Avoid damage to cables.

2.2 Operating conditions

Your control system uses industrial-grade components throughout, ensuring reliable operation in a wide range of conditions. However, you will improve the reliability of the control system if you keep exposure to extreme conditions to a minimum.

Do not expose your control system or its components to damp for prolonged periods. If the control system becomes contaminated with food or drink clean it off as soon as possible.

2.3 Cleaning

Clean the control system and the joystick with a cloth dampened with diluted detergent. Be careful when cleaning the joystick and screen.

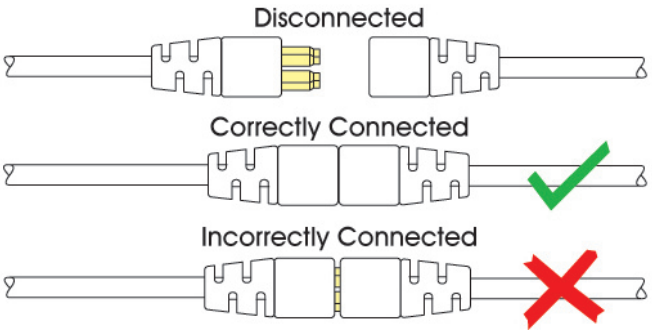
Never use abrasive or spirit-based cleaners.

3 MATING CONNNECTORS

To connect the Communication Cables:

- Holding the connector housing, firmly push the connector into its mate until you can no longer see the yellow plastic.

The connectors are secured using a friction system.



To disconnect the Communication Cables:

- Holding the connector housing firmly, pull the connectors apart.

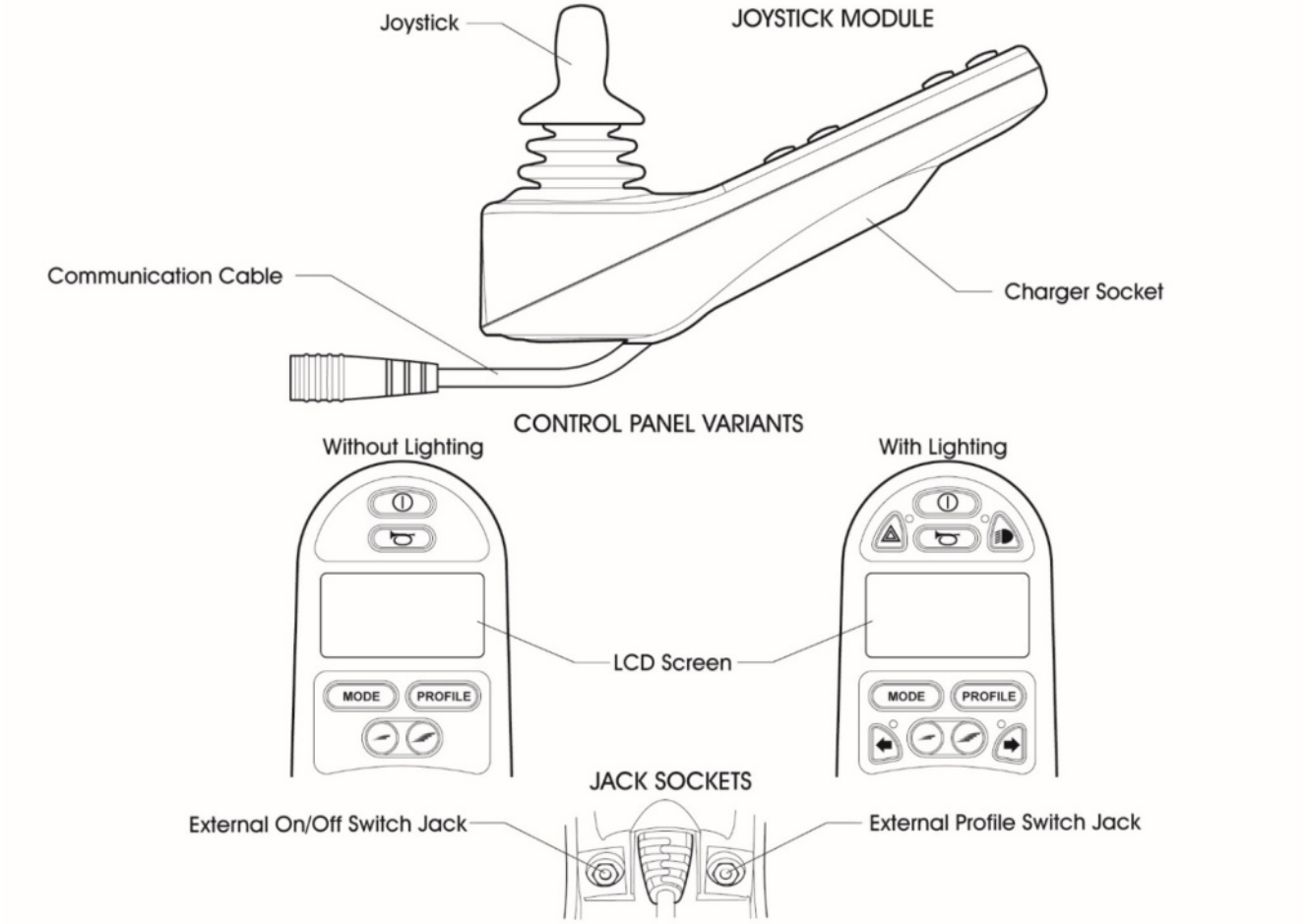
NOTE:

Do not hold or pull on the cable. Always grip the connector when connecting and disconnecting.

When the control system is first switched on after a connection, or system component change the Timer will be displayed whilst the system checks itself and then the Re-start icon will be displayed. Switch the control system off and on again to operate.

4 CONTROLS

The R-net control system has two versions of Joystick Module – with and without lighting control. Most of the controls are common to both however, the lighting buttons are only included on the Joystick Module with lighting control. Each of the controls is explained within this section.

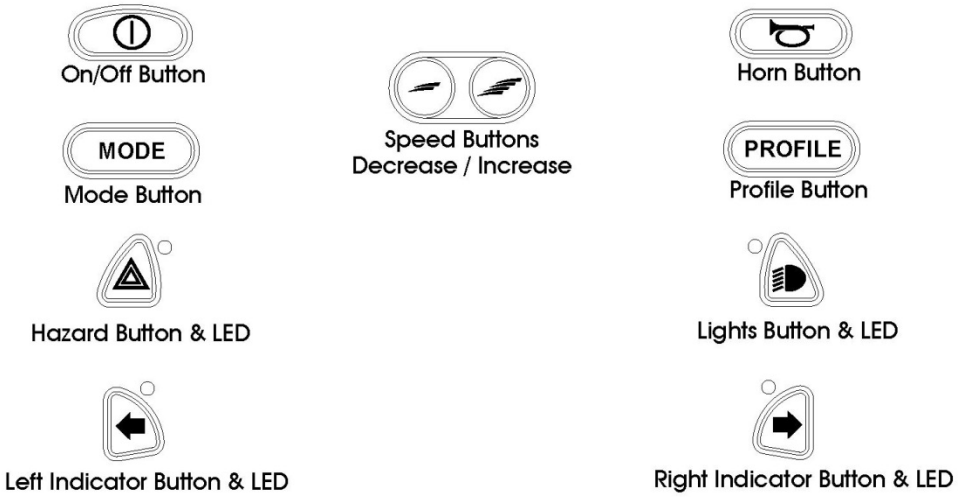


4.1 Joystick

The primary function of the joystick is to control the speed and direction of the wheelchair. The further you push the joystick from the centre position the faster the wheelchair will move. When you release the joystick, the brakes are automatically applied.

If the wheelchair is fitted with actuators, the joystick can also be used to move and select actuators, refer to section 5.5 for more details.

4.2 Buttons



4.2.1 ON/OFF BUTTON

The On/Off button applies power to the control system electronics, which in turn supply power to the wheelchair's motors. Do not use the On/Off button to stop the wheelchair unless there is an emergency. (If you do, you may shorten the life of the wheelchair drive components).

4.2.2 HORN BUTTON

The Horn will sound while this button is depressed.

4.2.3 SPEED DECREASE BUTTON

This button decreases the maximum speed setting.

Depending on the way the control system has been programmed a momentary screen may be displayed when the button is pressed. Refer to section 5 for details of the momentary screen.

4.2.4 SPEED INCREASE BUTTON

This button increases the maximum speed setting.

Depending on the way the control system has been programmed a momentary screen may be displayed when the button is pressed. Refer to section 5 for details of the momentary screen.

4.2.5 MODE BUTTON

The Mode button allows the user to navigate through the available operating Modes for the control system. The available modes are dependent on programming and the range of auxiliary output devices connected to the control system.

4.2.6 PROFILE BUTTON

The Profile button allows the user to navigate through the available Profiles for the control system. The number of available Profiles is dependent on how the control system is programmed.

Depending on the way the control system has been programmed a momentary screen may be displayed when the button is pressed. Refer to section 5 for details of the momentary screen.

4.2.7 HAZARD WARNING BUTTON AND LED

This button activates and de-activates the wheelchair's hazard lights. Depress the button to turn the hazards on and depress the button again to turn them off. When activated the hazard LED and the indicator LEDs will flash in sync with the wheelchair's indicators.

4.2.8 LIGHTS BUTTON AND LED

This button activates and de-activates the wheelchair's lights. Depress the button to turn the lights on and depress the button again to turn them off. When activated the lights LED will illuminate.

4.2.9 LEFT INDICATOR BUTTON AND LED

This button activates and de-activates the wheelchair's left indicator. Depress the button to turn the indicator on and depress the button again to turn it off. When activated the left indicator LED will flash in sync with the wheelchair's indicator(s).

4.2.10 RIGHT INDICATOR BUTTON AND LED

This button activates and de-activates the wheelchair's right indicator. Depress the button to turn the indicator on and depress the button again to turn it off. When activated the right indicator LED will flash in sync with the wheelchair's indicator(s).

4.2.11 EXTERNAL ON/OFF SWITCH JACK

This allows the user to turn the control system on and off using an external device, such as a buddy button.

4.2.12 EXTERNAL PROFILE SWITCH JACK

This allows the user to select Profiles using an external device, such as a buddy button. To change the Profile whilst driving simply press the button.

If the control system is set to latched drive or actuator control operation, then the polarity of the jack input is reversed to effect a fail-safe system; meaning this input will provide an External Profile Switch function and an Emergency Stop Switch function.

NOTE:

The Joystick Module is supplied with rubber bungs that must be inserted into the Jack Socket when no external device is connected.

4.3 LCD Screen

The status of the control system can be understood by observing the LCD screen. The control system is on when the screen is backlit. Refer to section 5 for details on screen symbols.

4.4 Charger socket

This socket should only be used for charging or locking the wheelchair. Do not connect any type of programming cable into this socket. Refer to section 13 for more details on charging.

This socket should not be used as a power supply for any other electrical device. Connection of other electrical devices may damage the control system or affect the E.M.C. performance of the wheelchair.

WARNING:

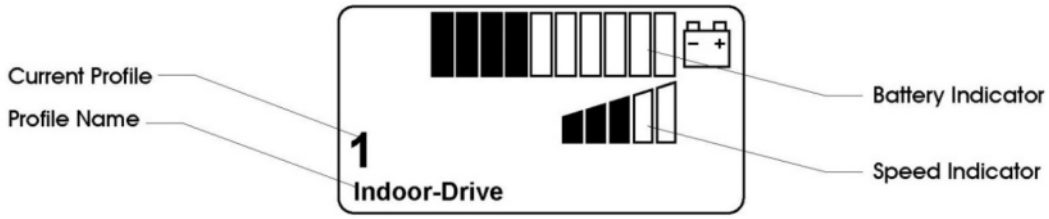
The control system's warranty will be voided if any device other than a battery charger supplied, with the wheelchair, or the lock key is connected into this socket.

5 LCD SCREEN - MONOCHROME

The status of the control system can be understood by observing the LCD screen.

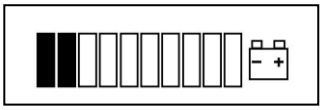
5.1 Screen symbols

The Drive screen for the R-net has common components, which will always appear, and components that will only appear under certain conditions. Below is a view of a typical Drive screen in Profile 1.



5.1.1 BATTERY INDICATOR

This displays the charge available in the battery and can be used to alert the user to the status of the battery.



This displays the charge available in the battery and can be used to alert the user to the status of the battery.

Steady	This indicates that all is well.
Flashing Slowly	The control system is functioning correctly, but you should charge the battery as soon as possible.
Stepping Up	The wheelchair batteries are being charged. You will not be able to drive the wheelchair until the charger is disconnected and you have switched the control system off and on again.

Refer to section 12 for a description of how to read the Battery Gauge.

5.1.2 SPEED INDICATOR

This displays the current speed setting.

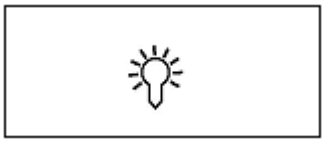
The speed setting is adjusted using the Speed Buttons.

5.1.3 CURRENT PROFILE

The Profile Number describes which Profile the control system is currently operating in.

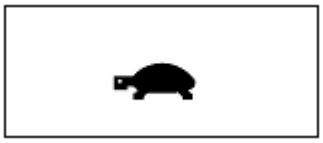
The Profile Text is the name or description of the Profile the control system is currently operating in.

5.1.4 FOCUS



When the control system contains more than one method of direct control, such as a secondary Joystick Module or a Dual Attendant Module, then the Module that has control of the wheelchair will display the In Focus symbol.

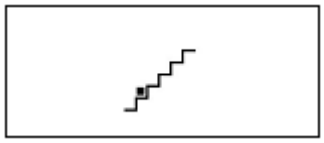
5.1.5 SPEED LIMIT



If the speed of the wheelchair is being limited, for example by a raised seat, then this symbol will be displayed.

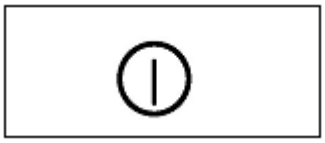
If the wheelchair is being inhibited from driving, then the symbol will flash.

5.1.6 LATCHED



When the control system is operating in a latched condition this symbol will be displayed.

5.1.7 RESTART

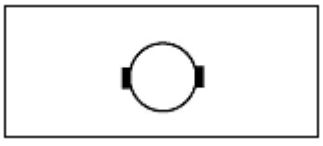


When the control system requires a reboot; for example, after a module re-configuration, this symbol will be flashed.

5.1.8 FAULT

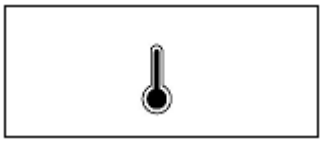
The control system can detect a wide variety of errors. When the system has detected an error that is not severe enough to cause the system to trip, then this symbol will be displayed.

5.1.9 MOTOR TEMPERATURE



This symbol is displayed when the control system has intentionally reduced the power to the motors, in order to protect them against heat damage.

5.1.10 CONTROL SYSTEM TEMPERATURE



This symbol is displayed when the control system has intentionally reduced its own power, in order to protect itself against heat damage.

5.1.11 TIMER

This symbol is displayed when the control system is changing between different states. An example would be entering into Programming Mode. The symbol is animated to show the sands falling.

5.1.12 E-STOP

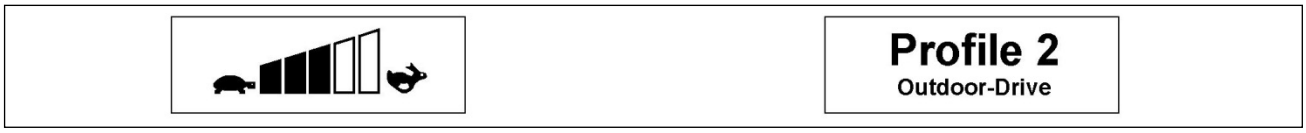
If the control system is programmed for latched drive or actuator operation, then it is normal for an Emergency Stop Switch to be connected into the External Profile Switch Jack. If the Emergency Stop Switch is operated or disconnected, this symbol will be displayed.

5.1.13 BLUETOOTH

When Bluetooth Mode is entered the screen will display the following icon.

5.2 Momentary screens

If the momentary screens are programmed to be displayed, then pressing the Speed or Profile Buttons will display screens such as below.

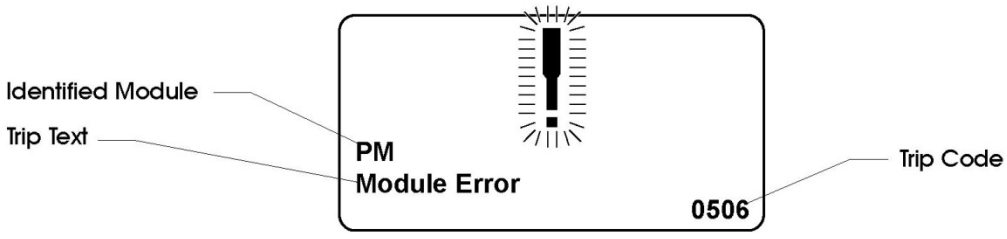


Speed Momentary Screen **Profile Momentary Screen**

5.3 Diagnostic screen

When the control system safety circuits have operated, and the control system has been prevented from moving the wheelchair a diagnostics screen will be displayed.

This indicates a system trip, i.e. the R-net has detected a problem somewhere in the wheelchair's electrical system.



If the error is in a non-active module, for example in the ISM but with a drive Profile is selected, then drive will still be possible, however, the diagnostic screen will appear intermittently.

5.3.1 IDENTIFIED MODULE

This identifies which module of the control system has registered the problem, such as:

PM Power Module
JSM Joystick Module
ISM Intelligent Seating/lighting Module

5.3.2 TRIP TEXT

The Trip Text gives a brief description of the trip type.

5.3.3 TRIP CODE

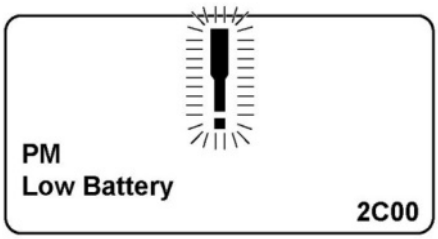
The 4-digit code displayed gives the exact trip that has been recorded.

5.3.4 DIAGNOSTIC PROCEDURE

Please follow this procedure:

- Read and note the Trip Text displayed, the identified Module and the Trip Code.
- Switch off the control system.
- Make sure that all connectors on the listed Module and the wheelchair are mated securely.
- Check the condition of the battery.
- Note the Trip Text description, and take the required action.
- Switch on the control system again and try to drive the wheelchair. If the safety circuits operate again, switch off and do not try to use the wheelchair. Contact your service agent.

Example:



Identified Module	**Power Module**
Trip Text	**Low Battery**
Trip Code	**2C00**

This means the battery needs charging or there is a bad connection to the battery.

- Check the connections to the battery. If the connections are good, try charging the battery.

5.4 Locking the control system

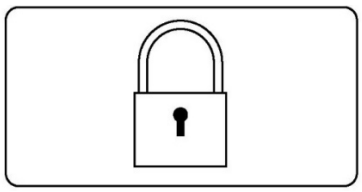
The Control System can be locked in one of two ways. Either using a button sequence on the keypad or with a physical Key. How the Control System is locked depends on how the wheelchair manufacturer has programmed the system.

5.4.1 KEYPAD LOCKING

To lock the wheelchair using the keypad:

- While the control system is switched on, depress and hold the On/Off button.
- After 1 second the control system will beep. Now release the On/Off button
- Deflect the joystick forwards until the control system beeps.
- Deflect the joystick in reverse until the control system beeps.
- Release the joystick, there will be a long beep.
- The wheelchair is now locked.

The following screen will be displayed, the next time the Control System is switched on.



If an LED Joystick Module is fitted the Speed Indicator LEDs will ripple from left to right.

To unlock the wheelchair:

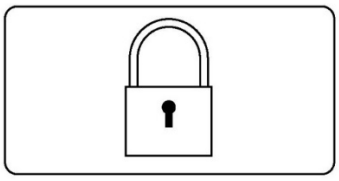
- If the control system has switched off, press the On/Off button.
- Deflect the joystick forwards until the control system beeps.
- Deflect the joystick in reverse until the control system beeps.
- Release the joystick, there will be a long beep.
- The wheelchair is now unlocked.

5.4.2 KEY LOCKING

To lock the wheelchair with a key:

- With the Control System switched on, insert and remove a R-Net supplied key into the Charger Socket on the Joystick Module. A short beep will be heard.
- The wheelchair is now locked.

The following screen will be displayed, the next time the Control System is switched on.



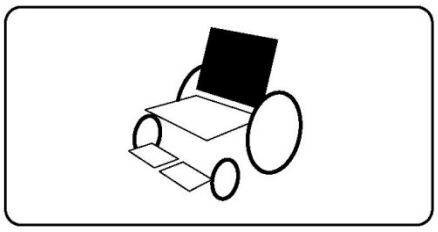
To unlock the wheelchair:

- If the control system has switched off, press the On/Off button.
- Insert and remove a R-Net supplied key into the Charger Socket on the Joystick Module. A short beep will be heard.
- The wheelchair is now unlocked.

5.5 Actuator selection screen

To adjust the seat position, the actuator screen must be visible.

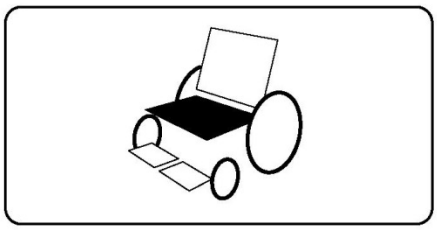
Depress the Mode Button to scroll through the Mode screens until you reach the actuator screen, displayed below.



Actuator adjustment is achieved as follows.

- Move the Joystick sideways to select the desired axis.

  (This is indicated by the section of the wheelchair that is highlighted)
- Move the joystick forwards and backwards to move the actuator.



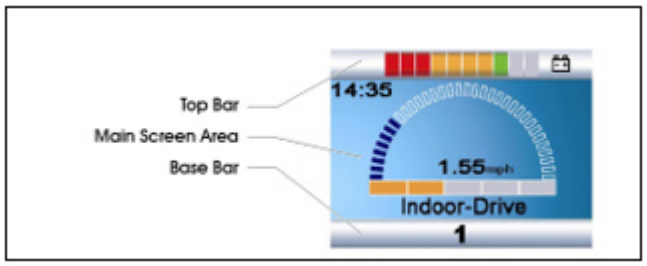
- Repeat these steps for each actuator that requires adjustment.

To drive again depress the Mode button until the Drive screen is reached or, in the case of the LED joystick module, until the Speed Indicator returns to its normal state.

6 LCD SCREEN - COLOR

This section covers those Joystick Modules that are fitted with a colour LCD screen.

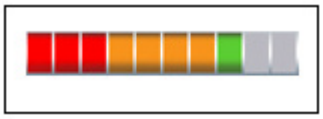
The colour LCD screen is split into 3 areas of information. The Top Bar, the Base Bar and the Main Screen Area.



Each area is covered separately within this section.

6.1 Top bar

6.1.1 BATTERY INDICATOR



This displays the charge available in the battery and can be used to alert the user to the status of the battery.

Steady: This indicates that all is well.

Flashing Slowly: The control system is functioning correctly, but you should charge the battery as soon as possible.

Stepping Up: The wheelchair batteries are being charged. You will not be able to drive the wheelchair until the charger is disconnected and you have switched the control system off and on again.

Refer to section 12 for a description of how to read the Battery Gauge.

6.1.2 FOCUS

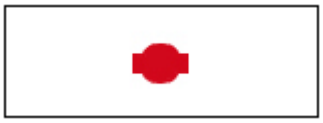
When the control system contains more than one method of direct control, such as a secondary Joystick Module or a Dual Attendant Module, then the Module that has control of the wheelchair will display the In Focus symbol.

6.2 Base bar

6.2.1 CURRENT PROFILE

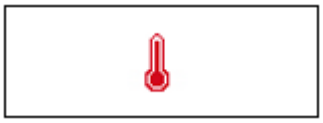
The currently selected Profile is shown in numeric form.

6.2.2 MOTOR TEMPERATURE



This symbol is displayed when the control system has intentionally reduced the power to the motors, in order to protect them against heat damage.

6.2.3 CONTROL SYSTEM TEMPERATURE



This symbol is displayed when the control system has intentionally reduced its own power, in order to protect itself against heat damage.

6.3 Main screen area

Drive Screen

6.3.1 PROFILE NAME

This is a text string that displays the name of the currently selected Profile.

6.3.2 CLOCK

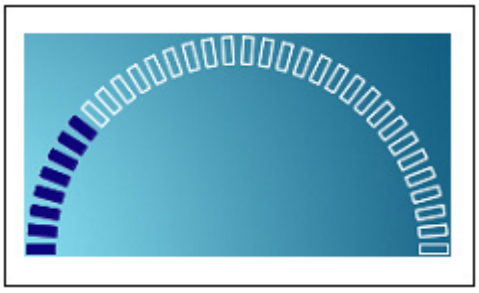
This displays the current time in a numeric format. The clock is user adjustable.

Adjustable options are:

- Visibility, whether the clock is displayed on screen.
- The display format, 12 or 24 hour.
- The time, the user can adjust the time.

These adjustments are made within the Settings Menu. Refer to section 8 for details.

6.3.3 SPEED DISPLAY

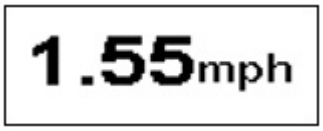


This gives a proportional display of the wheelchairs speed

6.3.4 MAXIMUM SPEED INDICATOR

This displays the current maximum speed setting.

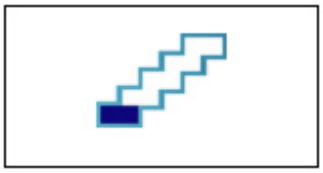
6.3.5 DIGITAL SPEED DISPLAY



This displays the actual speed of the wheelchair derived from the motors. The display can be set to mph or km/h.

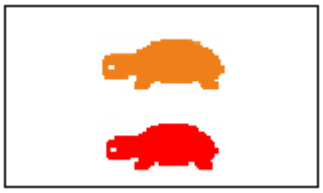
These adjustments can be made in the OBP Menu.

6.3.6 LATCHED



When the control system is operating in a latched condition this symbol will be displayed.

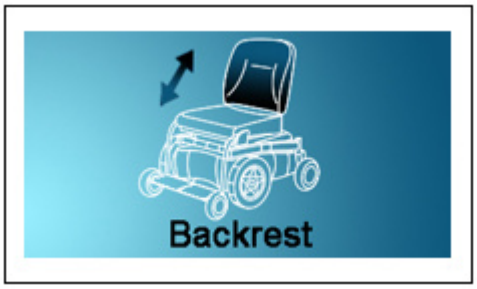
6.3.7 INHIBIT



If the speed of the wheelchair is being limited; for example, by a raised seat, then this orange symbol will be displayed.

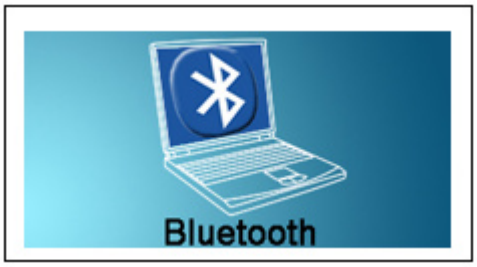
If the wheelchair is being inhibited from driving, then this red symbol will be flashing.

6.3.8 ACTUATOR MODE



Displays the sections of the chair currently selected for movement, the name given to the selection and a direction arrow showing what sort of movement is available.

6.3.9 BLUETOOTH MODE



When Bluetooth Mode is entered the following screen will be displayed.

6.4 Message window

The R-net displays warning icons and informational messages, in a dedicated message window.

6.4.1 RESTART

When the control system requires a reboot; for example, after a module re-configuration, this symbol will be flashed.

6.4.2 TIMER

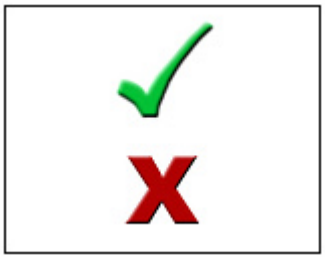
This symbol is displayed when the control system is changing between different states. An example would be entering into Programming Mode. The symbol is animated to show the sands falling.

6.4.3 SLEEP

This symbol will be displayed for a short time before the R-net enters into a sleep state.

6.4.4 CROSS & TICK

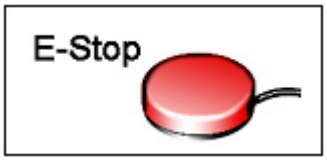
These symbols will be displayed during configuration procedures.



Process completed correctly.

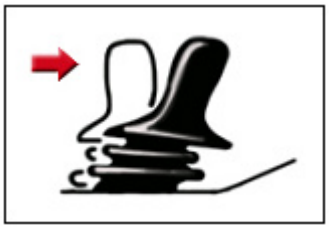
Process not completed correctly.

6.4.5 E-STOP



If the External Profile Switch is activated during drive, or actuator operation, this symbol will be displayed.

6.4.6 JOYSTICK DISPLACED



If you operate the Joystick before or just after you switch the control system on, the screen will flash the joystick displaced screen.

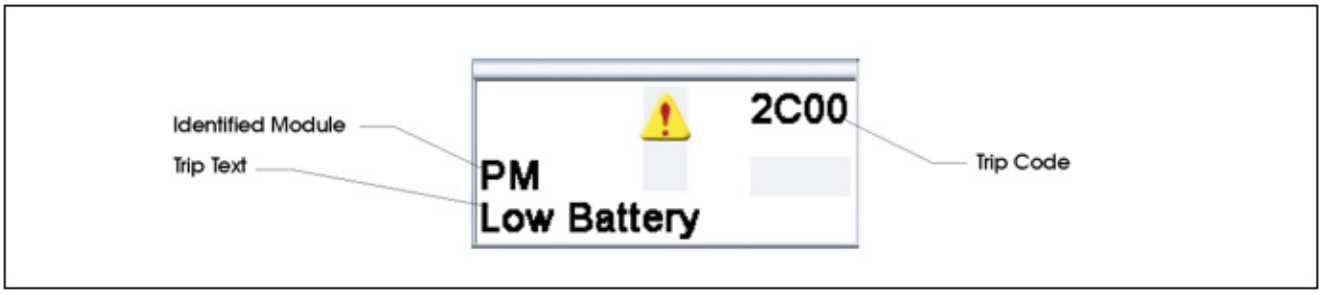
You must release and centre the Joystick to resume normal operation. If you do not release the Joystick within five seconds the wheelchair will not be able to move, even if you release the Joystick and operate it again. The screen will display a diagnostic screen at this time. You can reset this condition by switching the control system off and on again.

6.4.7 CONTROL SYSTEM LOCKED

The Control System can be locked in one of two ways. Either using a sequence of deflections and presses with a Joystick or with a physical Key. How the Control System is locked depends on how the wheelchair manufacturer has programmed it.

Refer to Section 5 for a detailed description of the Locking and Unlocking procedures.

6.4.8 DIAGNOSTIC SCREEN



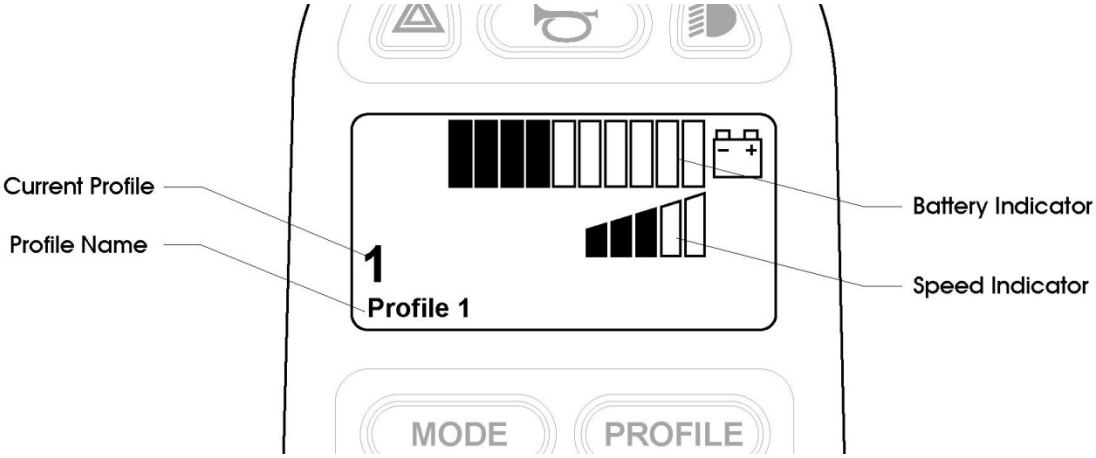
When the control system safety circuits have operated and the control system has been prevented from moving the wheelchair a diagnostics screen will be displayed.

This indicates a system trip, i.e. the R-net has detected a problem somewhere in the wheelchair's electrical system.

Refer to section 5 for a detailed description of Diagnostic screen and procedure. Refer to Chapter 3 Diagnostics for a complete description of the Trip Texts.

7 GETTING READY TO DRIVE

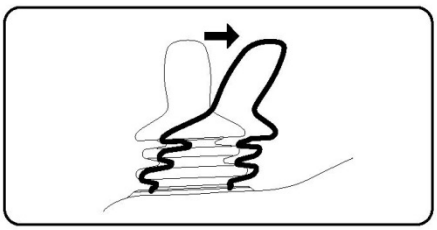
- Operate the On/Off switch. The screen will go through an initializing process then show the base screen as follows. In the case on an LED Joystick Module the battery gauge will illuminate.



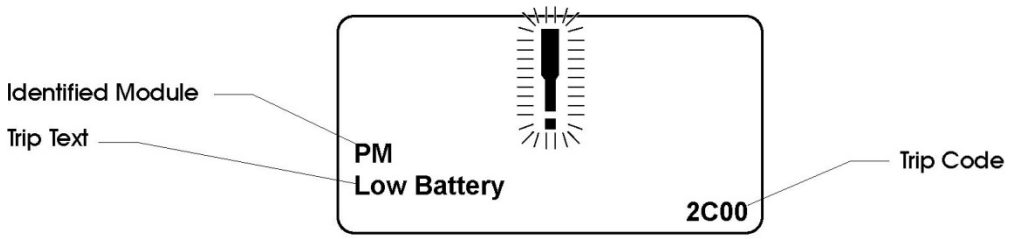
- Check that the Speed Setting is at a level that suits you.
- Push the joystick to control the speed and direction of the wheelchair.

NOTE:

If you push the joystick before or just after you switch the control system on, the screen will flash the joystick displaced screen. You must release and centre the joystick to resume normal operation. If you do not release the joystick within five seconds the wheelchair will not be able to move, even if you release the joystick and push it again. The screen will display the diagnostic screen at this time. You can reset this condition by switching the control system off and on again.

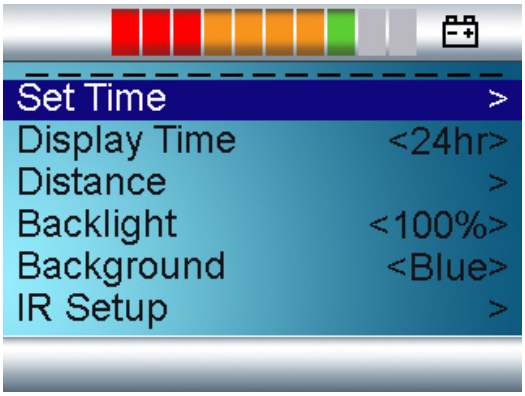


If you do not push the joystick as you switch the wheelchair on and the diagnostic screen is displayed, as in the following diagram, then the R-net has detected a problem somewhere in the wheelchair's electrical system.



8 SETTINGS MENU

The Settings Menu allows the user to adjust the CJSM display in terms of clock adjustment and display format, the brightness of the backlight, the background colour and the behaviour of the odometer. The menu is accessed by depressing the Speed Down and Speed Up buttons simultaneously. A typical Settings Menu display would be as below.



Each of the menu items are described in the following sections.

8.1 Set time

A right joystick deflection will enter a clock adjustment screen in which further joystick deflections are used to set the time.

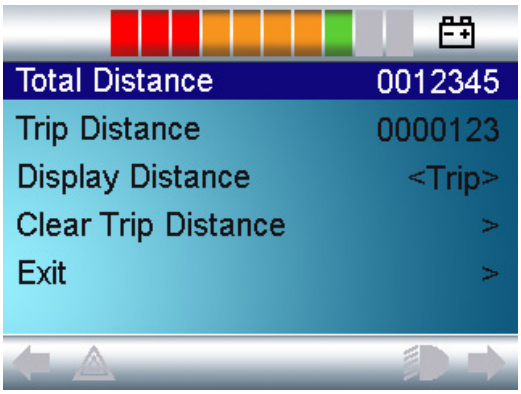
8.2 Display time

This sets the format of the time display or turns it off.

The options are 12hr, 24hr or Off. Left and right joystick deflections are used to change between the options.

8.3 Distance

This sets the functionality of the odometer and a screen as below will appear.



Total Distance:	This is a value held in the Power Module and relates to the total distance driven using that Power Module.
Trip Distance:	This is a value held in the CJSM and relates to the total distance driven since the last reset.
Display Distance:	Sets whether Total Distance or Trip Distance appears as the odometer display on the CJSM.

Clear Trip Distance: A right joystick deflection will clear the Trip Distance value.

Exit: A right joystick deflection will return to the Settings Menu.

8.4 Backlight

This sets the intensity of the LCD backlight.

The adjustable range is 0% to 100% in steps of 10%. Adjustments are made with left and right joystick deflections.

8.5 Background

This sets the colour of the screen background. Blue is the standard, but in very bright sunlight then a white background will make the display more visible.

The options are Blue, White and Auto. Left and right joystick deflections are used to change between the options.

Blue means the background will be blue in all Profiles.

White means the background will be white in all Profiles.

Auto means the colour will be set by the programmable parameter, Background, which can be set to be different across the Profiles. For example, blue for the slower Profiles that are for indoor use and white for the faster Profiles intended for outdoor use.

8.6 IR Setup

IR Set up allows the user access the Omni IR (Infra Red) menus.

8.7 Exit

Exits the Settings Menu back to normal operation.

9 TIPS FOR USING YOUR CONTROL SYSTEM

9.1 Driving - General

Make sure that the control system is mounted securely and that the joystick position is correct. The hand or limb you use to operate the joystick should be supported, for example by the wheelchair arm pad. Do not use the joystick as the sole support for your hand or limb - wheelchair movements and bumps could upset your control.

9.2 Driving Technique

The control system interprets your joystick movements and produces appropriate movements of your wheelchair. You will need very little concentration to control the wheelchair, which is especially useful if you are inexperienced. One popular technique is to simply point the joystick in the direction you want to go. The wheelchair will “home-in” on the direction you push the joystick.

The further you push the joystick away from the rest position, the faster the wheelchair will go. Releasing the joystick will stop the wheelchair.

The intelligent speed control system minimizes the effects of slopes and different types of terrain.

WARNING:

The wheelchair user must be capable of driving a wheelchair safely.

9.3 Slow or sluggish movement

If the wheelchair does not travel at full speed or does not respond quickly enough, and the battery condition is good, check the maximum speed setting. If adjusting the speed setting does not remedy the problem then there may be a non-hazardous fault. Contact your service agent.

10 PRECAUTIONS FOR USE

NOTE:

In the event of the wheelchair moving in an unexpected way RELEASE THE JOYSTICK. This action will stop the wheelchair under any circumstances.

10.1 Hazards

Do not drive the wheelchair:

- Beyond restrictions indicated in your wheelchair user manual, for example maximum inclines, curb height etc.
- In places or on surfaces where a loss of wheel grip could be hazardous, for example on wet grassy slopes.
- If you know that the control system or other crucial components require repair.

WARNING:

Although the R-net control system is designed to be extremely reliable and each unit is rigorously tested during manufacture, the possibility of a system malfunction always exists (however small the probability). Under some conditions of system malfunction the control system must (for safety reasons) stop the chair instantaneously. If there is any possibility of the user falling out of the chair as a result of a sudden braking action, it is imperative that a restraining device such as a seat belt is supplied with the wheelchair and that it is in use at all times when the wheelchair is in motion.

Do not operate the control system if the chair behaves erratically, or shows abnormal signs of heating, sparks or smoke. Turn the control system off at once and consult your service agent.

Electronic equipment can be affected by Electro Magnetic Interference (EMI). Such interference may be generated by radio stations, TV stations, other radio transmitters and cellular phones. If the chair exhibits erratic behaviour due to EMI, turn the control system off immediately and consult your service agent.

It is the responsibility of the chair manufacturer to ensure that the wheelchair complies with appropriate National and International EMC legislation.

The wheelchair user must comply with all wheelchair safety warnings.

11 SAFETY CHECKS

The electronic circuits in your control system have been designed to be extremely safe and reliable. The on-board microcomputer carries out safety checks at up to 100 times per second. To supplement this safety monitoring you should carry out the following periodic checks.

If the control system fails any of these checks, do not use the wheelchair and contact your service agent.

11.1 Daily checks

Joystick: With the control system switched off, check that the joystick is not bent or damaged and that it returns to the centre when you push and release it. If there is a problem, do not continue with the safety checks and contact your service agent.

11.2 Weekly checks

Parking brake: This test should be carried out on a level floor with at least one metre clear space around the wheelchair.

Switch on the control system.

Check that the screen remains on after initialization and that the battery gauge is displaying a reasonable amount of charge.

Push the joystick slowly forwards until you hear the parking brakes operate. The chair may start to move.

Immediately release the joystick. You must be able to hear each parking brake operate within a few seconds.

Repeat the test a further three times, pushing the joystick slowly backwards, left and right.

Connectors: Make sure that all connectors are securely mated.

Cables: Check the condition of all cables and connectors for damage.

Joystick gaiter: Check the thin rubber gaiter or boot, around the base of the joystick shaft, for damage or splitting, check visually only, do not handle the gaiter.

Mounting: Make sure that all the components of the control system are securely mounted. Do not overtighten any securing screws.

11.3 Servicing

To ensure continued satisfactory service, we suggest you have your wheelchair and control system inspected by your service agent after a period of 1 year from commencement of service. Contact your local Magic Mobility service agent for details when the inspection is due

12 BATTERY GAUGE

The battery gauge is included to let you know how much charge is left in your batteries. The best way for you to use the gauge is to learn how it behaves as you drive the wheelchair. Like the fuel gauge in a car, it is not completely accurate, but it will help you avoid running out of "fuel".

The battery gauge works in the following way:

When you switch on the control system, the battery gauge shows an estimate of the remaining battery charge.

The battery gauge gives you a more accurate reading about a minute after you start driving the wheelchair.

NOTE:

When you replace worn out batteries, fit the type recommended by the wheelchair manufacturer. If you use another type the battery gauge may be inaccurate.

The amount of charge in your batteries depends on a number of factors, including the way you use your wheelchair, the temperature of the batteries, their age and the way they are made. These factors will affect

the distance you can travel in your wheelchair. All wheelchair batteries will gradually lose their capacity as they age.

The most important factor that reduces the life of your batteries is the amount of charge you take from the batteries before you recharge them. Battery life is also reduced by the number of times you charge and discharge the batteries.

To make your batteries last longer, do not allow them to become completely flat. Always recharge your batteries promptly after they are discharged.

If your battery gauge reading seems to fall more quickly than usual, your batteries may be worn out.

12.1 How to read a battery gauge

If the battery gauge shows red, yellow and green, the batteries are charged. (Bars 1 – 10)

If the battery gauge shows just red and yellow, then you should charge the batteries as soon as you can. (Bars 1 – 7)

If the battery gauge shows just red, either steady or flashing slowly, then you should charge the batteries immediately. (Bars 1 – 3)

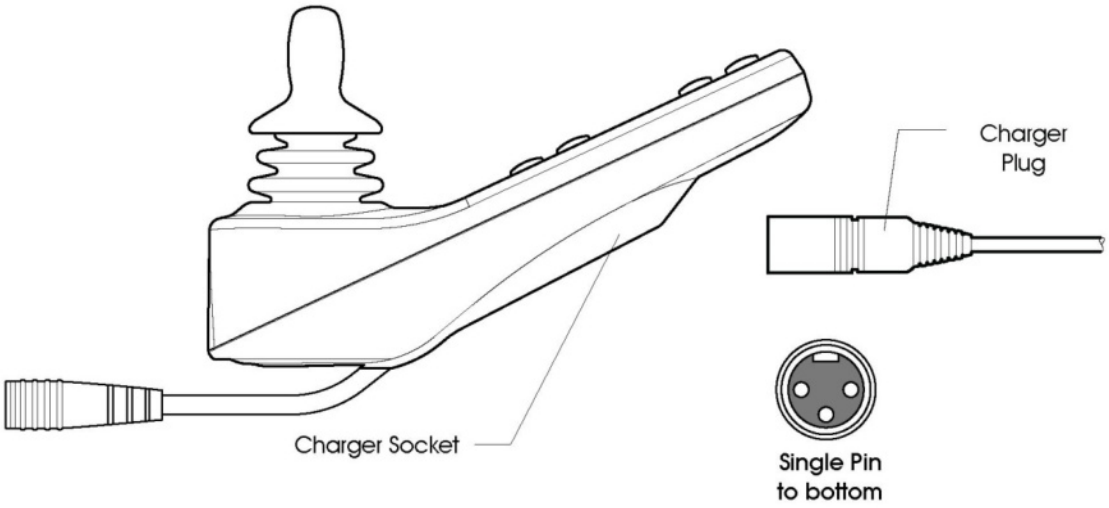
WARNING:

Do not operate the control system if the battery is nearly discharged. Failure to comply with this condition may leave the user stranded in an unsafe position, such as in the middle of a road.

13 BATTERY CHARGING

To charge the wheelchair batteries connect the charger plug into the battery charger socket on the R-net JSM. You will not be able to drive the wheelchair when the charger is connected.

To connect the charger plug, ensure the single pin is at the bottom, as shown in the following illustration, then offer the charger plug to the R-net in a horizontal orientation. The moulded guide on the R-net will help you to locate the plug. Ensure the plug is pushed fully in position.



WARNING:

Do not exceed the maximum charging current of 12Arms. Always use an off-board charger fitted with a Neutrik NC3MX plug. Failure to observe these conditions could result in poor contact resistance in the

charger connector resulting in overheating of the charger plugs. This presents a potential burn hazard for the user.

Ensure that the charger plug pins are of the correct polarity to be compatible with the pin polarity shown on the control system's specific data sheet. Failure to observe this condition could result in a burn hazard or fire hazard.

Do not disconnect batteries or open-circuit the circuit breaker while charging is in progress. Failure to observe this condition could result in a burns hazard or fire hazard.

Only use the battery charger that has been supplied with your wheelchair. The use of incorrect chargers could damage the batteries, wheelchair, control system or charger itself, or may result in parts overheating creating the potential for burns or even fire.

14 PROGRAMMING

The control system can be programmed to meet your needs. Programming can be performed using the OBP (On-board Programming) feature or the specialist R-net software and Dongle or the Diagnostic Test Tool (DTT).

WARNING:

Programming should only be conducted by your Magic Mobility Representative with in-depth knowledge of R-Net electronic control systems. Incorrect programming could result in an unsafe set-up of a wheelchair for a user.

15 SERVICING

All repairs and servicing must be carried out by authorised service personnel. Opening or making any unauthorized adjustments or modifications to the control system or its components will invalidate any warranty, may result in hazards to yourself or other people and is strictly forbidden.

WARNING:

If the control system is damaged in any way, or if internal damage may have occurred through impact or dropping, have the product checked by qualified personnel before operating.

16 WARRANTY

The R-net control system is covered by a warranty period defined by the wheelchair manufacturer. For details of the warranty period, please contact your service agent.

The warranty will be void if the R-net control system has:

- Not been used in accordance with the R-net control system Technical Manual, SK77981.
- Been subject to misuse or abuse.
- Been modified or repaired by non-authorized persons.

WARNING:

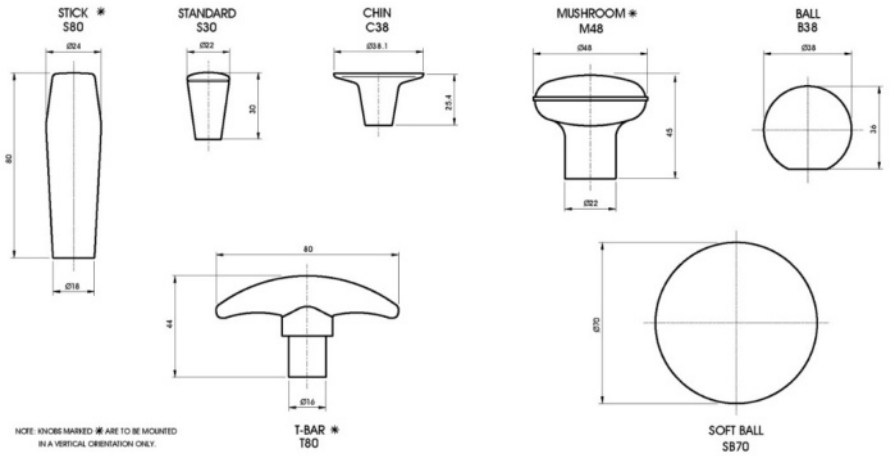
The warranty will be void if the R-net has not been used in accordance with this User Guide, the R-net has been subject to misuse or abuse, or if the R-net has been modified or repaired by unauthorised persons.

17 JOYSTICK KNOBS

The knob fitted to your joystick is suitable for most applications. If you would prefer another type, there is a range of alternatives available. Please contact your wheelchair distributor or manufacturer for advice. Do not replace the joystick knob with any unauthorized item - it may cause hazardous operation.

WARNING:

Do not replace the joystick knob with any unauthorized item It may cause hazardous operation.



Chapter 2 – ELPM 90, JSM-LED & SM

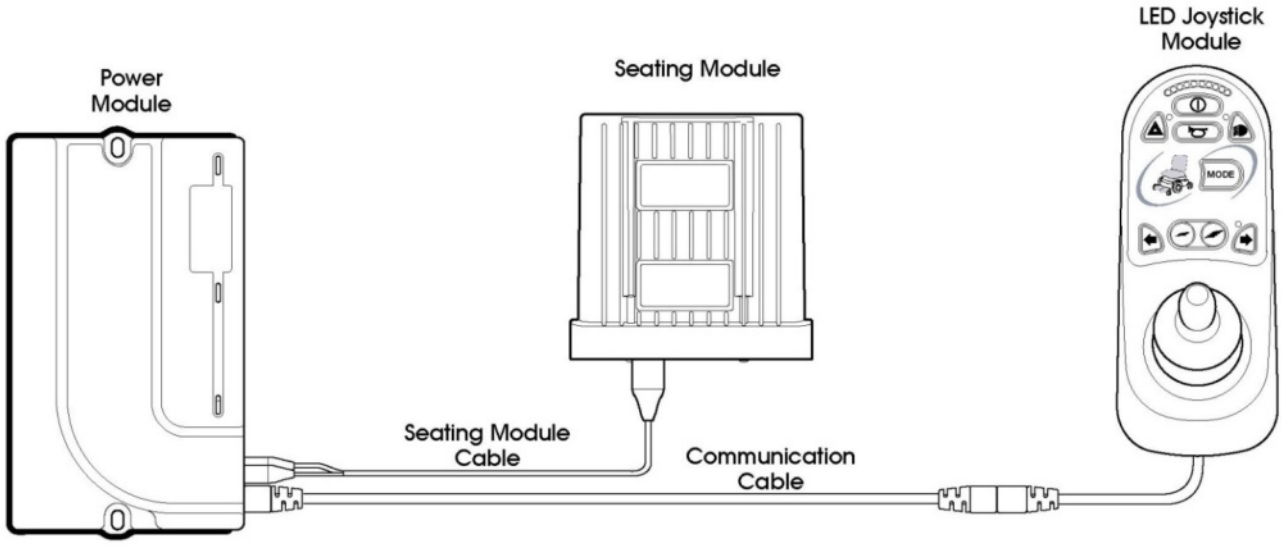
1 INTRODUCTION

JSM-LED: LED Joystick Module

JSM-LED-L: LED Joystick Module with lighting control buttons

EL PM90: EL 90A Power Module

SM: Seating Module



NOTE:

The EL PM90 can be used with any R-net JSM, including LCD based versions, as well as an Omni or any other Input Device.

The LED JSMs can be used with any R-net PM, ISM or any other Output Device.

The SM can only be used with the EL PM90.

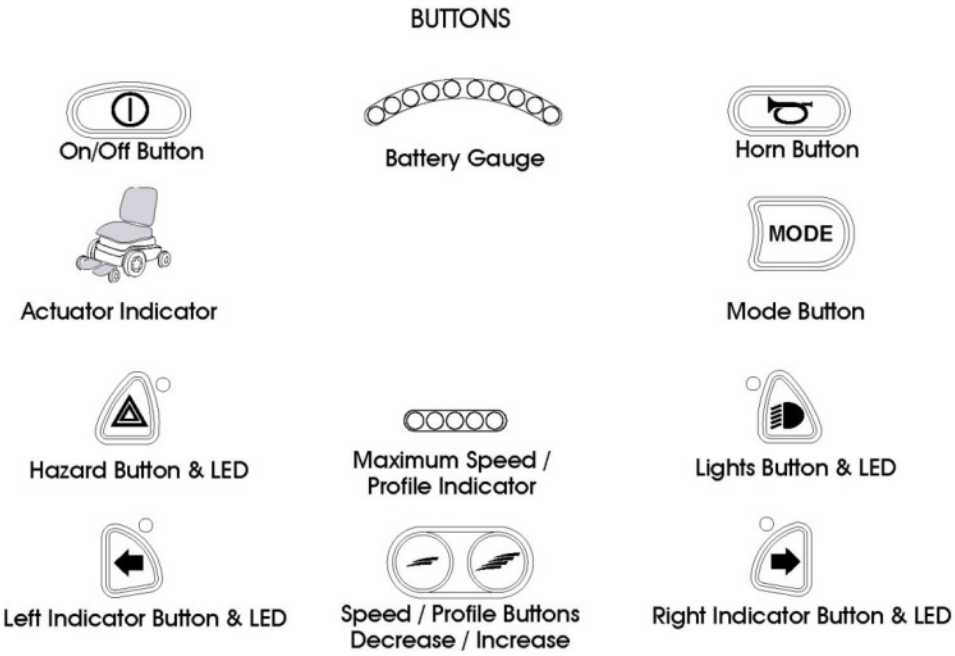
The JSM-Led should not be used for Latched drive operation, there is no facility to fit an E-stop switch to the LED Joystick Module.

2 CONTROLS – JSM-LED AND JSM-LED-L

There are common controls between the R-net and R-net LED control systems that operate as previously described in Chapter 1. Where a control has been moved this will be noted, however where a control has changed, a description of its new functionality and use will be given.

All information regarding handling advice, cleaning requirements and overall control described in Chapter 1 should be followed.

2.1 Buttons



2.1.1 BATTERY GAUGE

The battery gauge shows you that the wheelchair is switched on. It also indicates the operating status of the wheelchair. Details are given in section 3.

If the battery gauge shows red, yellow and green, the batteries are charged. (LEDs 1 – 10)

If the battery gauge shows just red and yellow, then you should charge the batteries as soon as you can. (LEDs 1 – 7)

If the battery gauge shows just red, either steady or flashing slowly, then you should charge the batteries immediately. (LEDs 1 – 3)

WARNING:

Do not operate the control system if the battery is nearly discharged. Failure to comply with this condition may leave the user stranded in an unsafe position, such as in the middle of a road.

2.1.2 MAXIMUM SPEED / PROFILE INDICATOR

This is a gauge which shows the maximum speed setting for the wheelchair or, if the control system is programmed for drive profile operation, the selected drive profile.

This gauge also indicates if the speed of the wheelchair is being limited or if the control system is locked, refer to section 3.

2.1.3 MAXIMUM SPEED INDICATOR

This is a gauge that shows the maximum speed setting of the wheelchair. There are five speed settings – step 1 is the lowest speed and step 5 is the highest speed.

2.1.2 PROFILE INDICATOR

This is an indicator that shows the selected drive profile. There may be up to 5 drive profiles available, this depends on the programming of the control system.

2.1.3 SPEED / PROFILE DECREASE BUTTON

This button decreases the maximum speed setting or, if the control system is programmed for drive profile operation, selects a lower drive profile.

It is possible to program the control system so this button has no effect while the wheelchair is being driven.

2.1.4 SPEED / PROFILE INCREASE BUTTON

This button increases the maximum speed setting or, if the control system is programmed for drive profile operation, selects a higher drive profile.

2.1.5 MODE BUTTON

The Mode button allows the user to navigate through the available operating Modes for the control system. The available modes are dependent on programming and the range of auxiliary output devices connected to the control system.

NOTE:

When in any Mode other than Drive and Seating the Speed and Actuator LEDs are all extinguished.

2.2 Actuator Indicator

This LED set displays which Actuator channel is currently being controlled when the Control System is in Actuator Mode

Actuator selection and operation is achieved using the Joystick.

- Motions to the Left or Right select different actuator channels.
- Motions Forward and Backwards move the actuator(s) selected.

3 CONTROL SYSTEM STATUS INDICATION

The battery gauge and maximum speed /profile indicator show the status of the control system.

3.1 Battery gauge is steady

This indicates that all is well.

3.2 Battery gauge flashes slowly

The control system is functioning correctly, but you should charge the battery as soon as possible.

3.3 Battery gauge steps up

The wheelchair batteries are being charged. You will not be able to drive the wheelchair until the charger is disconnected and you have switched the control system off and on again.

3.4 Battery gauge flashes rapidly (even with the joystick released)

The control system safety circuits have operated and the control system has been prevented from moving the wheelchair.

This indicates a system trip, i.e. the R-net has detected a problem somewhere in the wheelchair's electrical system. Please follow this procedure:

- Switch off the control system.
- Make sure that all connectors on the wheelchair and the control system are mated securely.
- Check the condition of the battery.
- If you can't find the problem, try using the self-help guide given in section 3.7.
- Switch on the control system again and try to drive the wheelchair. If the safety circuits operate again, switch off and do not try to use the wheelchair.

Contact your service agent.

3.5 Speed indicator ripples outwards

In this instance the LEDs make a ripple motion starting with the middle LED and then stepping outwards on both sides. The Control System has detected that a new module has been added and is reconfiguring.

3.6 Speed indicator LEDs 2 & 4 flash

Speed 2 + 4

When the control system requires a reboot; for example, after a module re-configuration, the second and fourth speed indicator LEDs will flash.

3.7 Self-help guide

If a system trip occurs, you can find out what has happened by counting the number of LEDs on the battery gauge that are flashing.

Below is a list of self-help actions. Try to use this list before you contact your service agent. Go to the number in the list which matches the number of flashing LEDs and follow the instructions.

If the problem persists after you have made the checks described below contact your service agent.

1 LED 	The battery needs charging or there is a bad connection to the battery. Check the connections to the battery. If the connections are good, try charging the battery.
2 LED 	The left hand motor* has a bad connection. Check the connections to the left hand motor.
3 LED 	The left hand motor* has a short circuit to a battery connection. Contact your service agent.
4 LED 	The right hand motor* has a bad connection. Check the connections to the right hand motor.
5 LED 	The right hand motor* has a short circuit to a battery connection. Contact your service agent.

6 LED 	The wheelchair is being prevented from driving by an external signal. The exact cause will depend on the type of wheelchair you have.
7 LED 	A joystick fault is indicated. Make sure that the joystick is in the centre position before switching on the control system.
8 LED 	A possible control system fault is indicated. Make sure that all connections are secure.
9 LED 	The parking brakes have a bad connection. Check the parking brake and motor connections. Make sure the control system connections are secure.
10 LED 	An excessive voltage has been applied to the control system. This is usually caused by a poor battery connection. Check the battery connections.
7 LED+ S 	A communication fault is indicated. Make sure that the joystick cable is securely connected and not damaged.
Actuator Flash 	An Actuator trip is indicated. If more than one actuator is fitted, check which actuator is not working correctly. Check the actuator wiring.

Please note: If the programmable parameter, Motor Swap has been enabled, then left and right hand references in this table will need transposing.

3.8 Slow or sluggish movement

If the wheelchair does not travel at full speed or does not respond quickly enough, and the battery condition is good, check the maximum speed setting. If adjusting the speed setting does not remedy the problem, then there may be a non-hazardous fault.

Contact your local Magic Mobility service agent.

3.9 Maximum speed / Profile indicator is steady

The display will vary slightly depending on whether the control system is programmed to operate with drive profiles.

3.10.1 Speed indication

The number of LEDs illuminated shows the maximum speed setting. For example, if the setting is speed level 4, then the four left hand LEDs will be illuminated.

3.10.2 Profile indication

The LED illuminated shows the selected drive profile. For example, if drive profile 4 is selected, then the fourth LEDs from the left will be illuminated.

3.11 Maximum speed / Profile indicator ripples up and down

This indicates the control system is locked, refer to Chapter 1 section 5.4 for details of how to unlock the control system.

3.12 Maximum speed / Profile indicator flashes

This indicates the speed of the wheelchair is being limited for safety reasons. The exact reason will depend on the type of wheelchair; however, the most common cause is that the seat is in the elevated position.

4 GETTING READY TO DRIVE

- Operate the On/Off switch. The battery gauge will blink then remain on after a few seconds.
- Check that the maximum speed control is set to a level that suits you.

WARNING:

If you push the joystick before or just after you switch the control system on, the battery gauge will ripple up and down. You must release and centre the joystick to resume normal operation. If you do not release the joystick within five seconds the wheelchair will not be able to move, even if you release the joystick and push it again. The battery gauge will flash 7 LEDs at this time. You can reset this condition by switching the control system off and on again. Refer to section 3.

If the battery gauge flashes rapidly, then the R-net has detected a problem somewhere in the wheelchair's electrical system. Refer to section 3 for details.

Chapter 3 - Diagnostics

1 INTRODUCTION

The primary objective of this chapter is to assist service personnel in finding the likely area of a detected trip within the whole wheelchair electrical system. It is important to realize that even though the control system is signalling a trip, it may not be the control system itself that is defective. This is because the control system is able to detect problems in other electrical components (motors, batteries, solenoid brakes, etc.) or, more importantly, the wiring to them. When a control system has detected a trip, a system trip is indicated.

This chapter covers the diagnostic process for an LCD based JSM. If a JSM-LED is being used, refer to section Control System Status Indication in Chapter 2.

WARNING:

Diagnostics should only be conducted by healthcare professionals with in-depth knowledge of R-Net electronic control systems. An incorrect or badly effected repair could result in an unsafe set-up of a wheelchair.

1.1 Diagnostic Procedure

To diagnose a trip please follow this procedure:

- Read and note the Trip Text displayed, the Identified Module and the Trip Code. Refer to section 2.
- Switch off the control system.
- Make sure that all connectors on the listed Module and the wheelchair are mated securely.
- Check the condition of the battery.
- Find the definition of the Trip Text, and take the required action. Refer to section 3.
- Switch on the control system again and try to drive the wheelchair. If the safety circuits operate again, switch off and do not try to use the wheelchair.
- Contact your service agent.

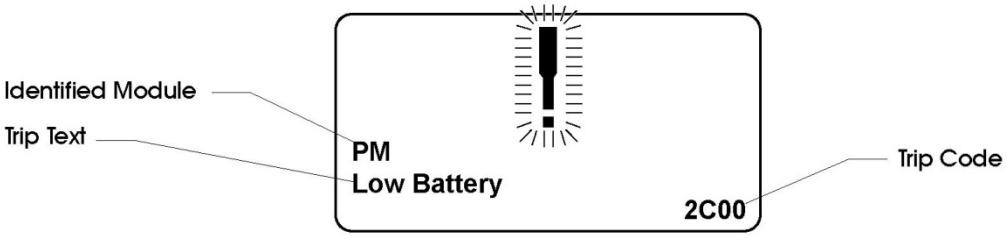
2 DIAGNOSTIC SCREENS

2.1 Current diagnostic screen

When the control system safety circuits have operated and the control system has been prevented from moving the wheelchair a diagnostics screen will be displayed.

This indicates a system trip, i.e. the R-net has detected a problem somewhere in the wheelchair's electrical system.

If the error is in a non-active module, for example in the ISM but with a Drive Mode selected, then drive will still be possible, however, the diagnostic screen will appear intermittently.



2.1.1 IDENTIFIED MODULE

This identifies which module of the control system has registered the problem, such:

PM: Power Module

JSM: Joystick Module

ISM: Intelligent Seating/lighting Module

2.1.2 TRIP TEXT

The Trip Text gives a brief description of the trip type.

2.1.3 TRIP CODE

The 4 digit code displayed gives the exact trip that has been recorded.

2.1.4 EXAMPLE

The example screen shown in section 2.1 shows the following information

Identified Module: Power Module

Trip Text: Low Battery

Trip Code: 2C00

This means the battery needs charging or there is a bad connection to the battery.

- Check the connections to the battery. If the connections are good, try charging the battery.

3 DIAGNOSTIC TEXT DEFINITIONS

Once a trip text and module have been established use the following definitions to ascertain the possible cause and required corrective procedure.

3.1 Centre joystick

The most common cause of this trip is if the joystick is deflected away from centre before and during the time the control system is switched on. The joystick displaced screen will be displayed for 5 seconds, if the joystick is not released within that time then a trip is registered.

- Ensure that the joystick is centred and power-up the control system.

If the trip is still present then the joystick or Joystick Module may be defective.

3.2 Low battery

This occurs when the control system detects that the battery voltage has fallen below 16V.

- Check the condition of the batteries and the connections to the control system.

If the trip is still present after the batteries and connections have been checked, then the Power Module may be defective. Refer to section 5.

3.3 High battery voltage

This occurs when the control system detects that the battery voltage has risen above 35V. The most common reasons for this are overcharging of the battery or bad connections between the control system and the batteries.

- Check the condition of the batteries and the connections to the control system.

If the trip is still present after the batteries and connections have been checked, then the Power Module may be defective. Refer to Section 5.

3.4 Brake error

This occurs when the control system detects a problem in the solenoid brakes or the connections to them.

1505: M1 Brake Error

1506: M2 Brake Error

- Check the solenoid brakes, cables and connections to the control system.

If the trip is still present after the above checks have been made, then the Power Module may be defective. Refer to Section 5.

3.5 Motor error

This occurs when the control system detects that a motor has become disconnected.

3B00: M1 Motor Error

3C00: M2 Motor Error

- Check the motors, cables and connections to the control system.

If the trip is still present after the above checks have been made, then the Power Module may be defective. Refer to Section 5.

3.6 Inhibit active

This occurs when any of the Inhibit inputs are active and in a latched state.

- Cycle the power. This will drop out of Latched Mode that might clear the trip.
- Check all wiring and switches connected to the indicated Inhibits.

If the trip is still present after the above checks have been made, then the PM or ISM may be defective. Refer to Section 5.

3.7 Joystick calibration error

This occurs when the Joystick Calibration process has not been successful.

- Enter OBP and attempt calibration.

If the trip is still present after the above has been attempted, then the Joystick Module may be defective. Refer to Section 5.

3.8 Brake lamp short

This occurs when the control system detects a short in the Brake Lamp Circuit.

Check the brake lamps, cables and connections to the control system.

If the trip is still present after the above checks have been made, then the ISM may be defective. Refer to Section 5.

3.9 Lamp short

This occurs when the control system detects a short in either of the Lamp Circuits

7205: Left Lamp Short

7209: Right Lamp Short

- Check the lamps, cables and connections to the control system.

If the trip is still present after the above checks have been made, then the ISM may be defective. Refer to Section 5.

3.10 Indicator lamp short

This occurs when the control system detects a short in either of the Indicator Circuits

7206: Left Indicator Short

720A: Right Indicator Short

- Check the indicators, cables and connections to the control system.

If the trip is still present after the above checks have been made, then the ISM may be defective. Refer to Section 5.

3.11 Indicator lamp failed

This occurs when the control system detects a failure in either of the Indicator Circuits. This is most likely to be an indicator bulb failure.

7207: Left Indicator Failed

7208: Right Indicator Failed

- Check the indicator bulbs, cables and connections to the control system.

If the trip is still present after the above checks have been made, then the ISM may be defective. Refer to Section 5.

3.12 Over-current

This occurs when the control system detects an excessive amount of current in an Actuator Channel.

This may be due to a faulty endstop switch, actuator motor, cables or connections.

- Check the movement of the actuator is not obstructed.
- Check the endstop switches (if fitted) are terminating the power to the actuator motor.

If the trip is still present after the above checks have been made, then the SM or ISM may be defective. Refer to Section 5.

3.13 Overtemp (acts)

This occurs when the control system detects that the SM or ISM's actuator circuitry has become too hot. The control system will cease drive to the actuator motor in question.

- Allow the SM or ISM to cool.
- If the SM or ISM is frequently overheating check the condition of the actuator motors and the connections to them.

If the trip persists, contact your service agent.

3.14 Overtemp (lamps)

This occurs when the control system detects that the ISM's lighting circuitry has become too hot. The control system will cease supplying current to the lamp in question.

- Allow the ISM to cool.
- If the ISM is frequently overheating check the condition of all the connected bulbs and lamps.

If the trip persists, contact your service agent.

3.15 DIME error

This occurs when the control system detects an identification conflict between two modules in the system.

If a new module has been introduced:

- Disconnect the new module and cycle the power.
- If no trip is present connect the new module to the system and cycle the power.
- If the trip reappears then the new module must be the cause of the problem.

If there have been no additions:

- Disconnect one module at a time and cycle the power.

If the trip is still present after the above checks have been made, contact your service agent.

3.16 Memory error

This is a non-specific memory error that could be caused by any of the modules within the system.

- Check all cables and connections.
- Cycle the power.

If the trip is still present and the system contains 3rd Party Modules:

- Disconnect all the non-R-Net modules and cycle the power.

If this has cleared the trip:

- Connect each 3rd Party Module in turn, cycling the power each time.
- If the trip reappears after one of the power cycles then the last module to have been added to the system must be defective.

If the trip is still present after the above checks have been made, then the PM may be defective. Refer to Section 5.

3.17 PM Memory error

This is a specific Power Module based trip.

- Check all cables and connections.
- Using the R-net PC Programmer, re-program the control system.

This should be done with either the most current specific program file for the wheelchair or the manufacturer's original programming file.

WARNING:

Programming should only be conducted by healthcare professionals with in-depth knowledge of R-Net control systems. Incorrect programming could result in an unsafe set-up of a wheelchair for a user.

If the trip is still present after the above checks have been made, then the PM may be defective. Refer to Section 5.

3.18 Bad cable

This occurs when the control system detects a fault in the wiring in the communication cables between any of the modules.

- Check all cables and connections for continuity.
- If there is any visible damage to cables, replace and cycle power.
- Disconnect one cable from the system at a time cycling the power after each disconnection.

If the trip is still present after the above checks have been made, then the PM may be defective. Refer to Section 5.

3.19 Bad settings

This occurs when the control system detects incorrect or invalid program settings.

- Check all parameter settings and re-program the control system using the R-net PC Programmer.
- Make a note of the current parameter settings and then reset the control system to default settings.
- Re-program the required settings in small groups, cycling the power after each group to see if the trip occurs.

If the trip is still present after the above checks have been made, then the PM may be defective. Refer to Section 5.

WARNING:

Programming should only be conducted by healthcare professionals with in-depth knowledge of R-Net control systems. Incorrect programming could result in an unsafe set-up of a wheelchair for a user.

3.20 Module error

This occurs when the control system detects a trip within a specific module. The module will be identified on the diagnostics screen.

- Check all cables and connections.
- Cycle the power.

If the trip is still present after the above checks have been made, then the module identified may be defective. Refer to Section 5.

3.21 System error

This occurs when the system detects a trip that cannot be attributed to a specific module.

- Check all cables and connections.
- Cycle the power.

If the trip is still present and the system contains 3rd Party Modules:

- Disconnect all the none-R-Net modules and cycle the power.

If this has cleared the trip:

- Connect each 3rd Party Module in turn, cycling the power each time.
- If the trip reappears after one of the power cycles then the last module to have been added to the system must be defective.

If the trip is still present after the above checks have been made, then the R-Net control system may be defective. Refer to Section 5.

3.22 SID Disconnected

The Omni has detected that the Specialty Input Device (SID) has become disconnected.

- Check all cables and connectors between the Omni and the SID.

If the error persists:

- Check that the setting of the parameter, 9-Way Detect, is appropriate for the SID that is being used. For example, if the SID has no detect-link, then this parameter should be set to Off.

If the trip is still present after the above checks have been made, then the Input Device may be defective. Contact your service agent.

3.23 Switch detached

This occurs when the CJSM2 or Omni has detected that either of the External Switch Jack Sockets has become disconnected.

The actual Switch that has become disconnected is indicated by the Trip Code. The code is in Hex.

1E07: External Profile/Mode Switch jack socket

1E08: External On/Off Switch jack socket.

- Check the operation of the switch and all cables and connectors between the CJSM2 and the switch.

If the trip is still present after the above checks have been made, then the switch or the CJSM2 may be defective. Refer to Section 5.

WARNING:

Because a disconnected User Switch means there is no emergency stop function, Magic Mobility recommend that Switch Detect for this option is always set to On.

3.24 Gone to sleep

This occurs when the control system has been left inactive for a time greater than the parameter Sleep Timer.

An entry is made in the system log each time this occurs.

3.25 Charging

This occurs when the control system detects that a charger is connected to either Inhibit 1 or Inhibit 3.

The Battery charging screen will be displayed during charger connection.

An entry is made in the system log each time this occurs.

If an On-Board Charger is used:

- Disconnect the charger from the AC supply.

If an Off-Board Charger is used:

- Disconnect the charger from the Wheelchair.

If the trip is still present after the charger has been disconnected, then the Joystick Module may be defective. Refer to Section 5.

3.26 Joystick stationary time exceeded

This occurs when the joystick is deemed to have been held stationary for an excessive period of time. The controller will stop drive to prevent possible damage the wheelchair's motors.

Turning the control system Off and On again will clear this error message.

If the trip is still present after the power has been cycled, then the R-Net control system may be defective. Refer to Section 5.

3.27 Orientation error

This error occurs when the programmed orientation of the ASM does not match the actual mounted orientation.

Check the programming of the parameter Orientation against the actual mounting of the ASM.

If the trip is still present after the above checks have been made, then the ASM may be defective. Refer to Section 5.

3.28 ASM disconnected

This error occurs when the control system detects an error with the ASM or the ASM becomes disconnected.

Check the motors, cables and connections to the control system.

If the trip is still present after the above checks have been made, then the ASM may be defective. Refer to Section 5.

3.29 Switch short

This occurs when the CJSM2 has detected that either of the External Switch Jack Sockets has a short-circuit.

The actual Switch that has the short-circuit is indicated by the Trip Code. The code is in Hex.

1E0D: External On/Off Switch jack socket.

1E0C: External Profile/Mode Switch jack socket

Check the operation of the switch and all cables and connectors between the CJSM2 and the identified switch.

If the trip is still present after the above checks have been made, then the switch or the CJSM2 may be defective. Refer to Section 5.

4 SERVICING OF DEFECTIVE UNITS

Excluding specific OEM approved replacement parts (for details of these contact the wheelchair manufacturer), there are no serviceable parts in the R-net control system. Consequently, any defective units must be returned to Curtiss-Wright or a Curtiss-Wright approved service organization for repair.

WARNING:

Any replacement work carried out without the wheelchair manufacturer's permission will invalidate the control system's warranty.

Opening or making any unauthorized adjustments or modifications to the R-net control system or its components will invalidate any warranty and may result in hazards to the vehicle user and is strictly forbidden.

Chapter 4 - Specifications

Supply Voltage:	24Vdc
Operating Voltage:	16Vdc to 35Vdc
Peak Voltage:	35Vdc
Reverse Battery Protection:	-40Vdc
PWM Frequency:	20kHz 4 0.5%
Brake Voltage:	12/24Vdc
Brake Current:	200×A min. 1A max.
Charger Connector:	Use only Neutrik NC3MX
Battery Charging Current:	12Arms max.
Maximum Drive Current:	
R-Net 80	80A
R-Net 90	90A
R-Net 120	120A
Indicator Outputs	42W per side
Lighting Outputs	21W per side
Brake Light Output	42W total
Actuator Current:	
- **ISM**	15A max at reduced speed. 12A max at full speed.
- **SM**	12A max.
Moisture Resistance:	Electronics to IPX4

	Non LCD Modules	Modules with LCD Screens
Operating Temperature:	-25°C to +50°C	-10°C to +50°C
Storage Temperature:	-40°C to +65°C	-20°C to +65°C

EMC tested on sample wheelchair:	Susceptibility:	Tested at 30V/m to EN12184 and ANSI/ RESNA requirements
	Emissions:	To EN55022 Class B
	ESD:	IEC801 part 2

Contact Magic Mobility if you require further information

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