



Modular Mobility System

DX Switchbox (DX-ARC-SWB) Installation Manual

by



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About this Manual

This manual has been designed to help you install and configure a Dynamic DX Switchbox (DX-ARC-SWB) module for a 'generic' brand powerchair. For this reason there are no guidelines for specific applications, and this should be read in conjunction with the Installation Manuals for all other DX Modules present in the system.

If there is a specific requirement for your application, please contact Dynamic Controls or one of the sales and service agents, as we can assist you to configure the DX-ARC-SWB for this application.

Throughout this manual there are a few symbols that will help you quickly identify the purpose of the paragraph that follows:



Notes:

*Notes provide supporting information for the previous paragraph or section that **should** be followed in order to install, configure, and use the DX-ARC-SWB safely and efficiently.*



Warnings:

*Warnings provide important information for the previous paragraph or section that **must** be followed in order to install, configure, and use the DX-ARC-SWB safely and efficiently.*

The DX-ARC-SWB is not user serviceable. Specialized tools are necessary for the repair of any DX-ARC-SWB component.

Do not install, maintain or operate this equipment without reading, understanding and following this manual – including the Safety and Misuse Warnings – otherwise injury or damage may result.

Due to continuous product improvement Dynamic reserves the right to update this manual. This manual supersedes all previous issues, which must no longer be used.

Any attempt to gain access to or in any way abuse the electronic components and associated assemblies that make up the powerchair system renders the manufacturer's warranty void and the manufacturer free from liability.

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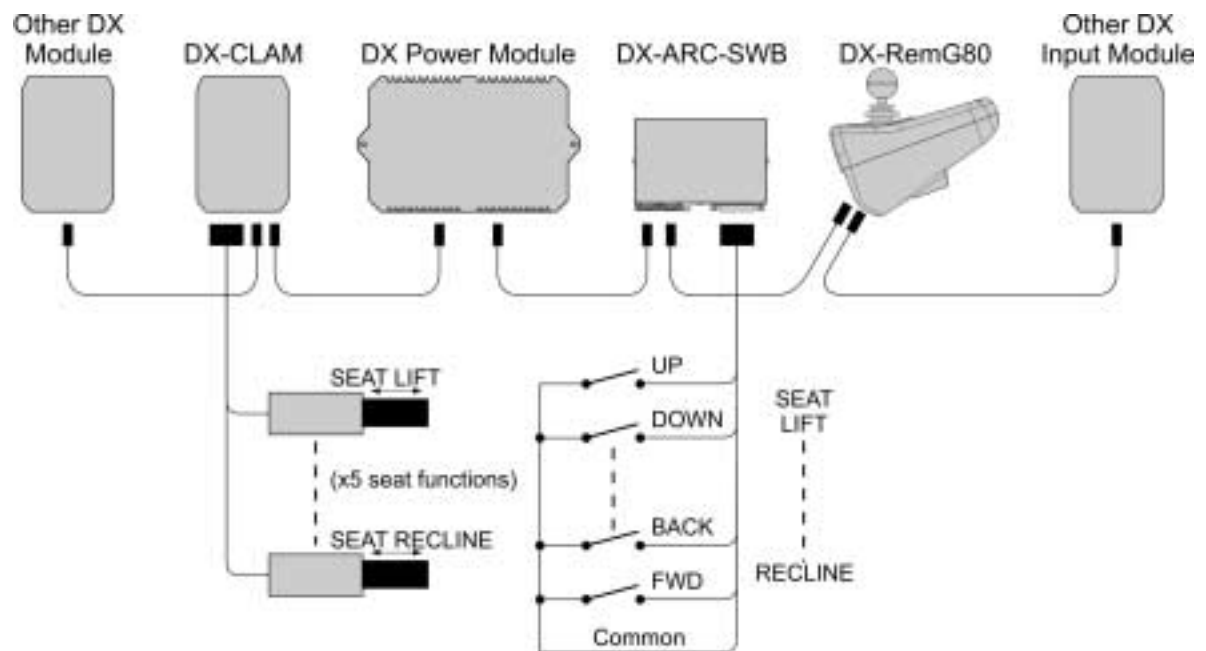
1 Introducing the DX Switchbox

The Dynamic DX Switchbox (DX-ARC-SWB) is a DXBUS compatible module that allows up to 5 seat functions to be operated by switches connected to a DB15 connector. Functionally, it is equivalent to a DX Actuator Remote Control (DX-ARC5), but with the added versatility of allowing switch type and position to be tailored to suit specific individuals.



It also features a switched 24-Volt/1-Amp auxiliary power supply output suitable for powering miscellaneous external devices, if required.

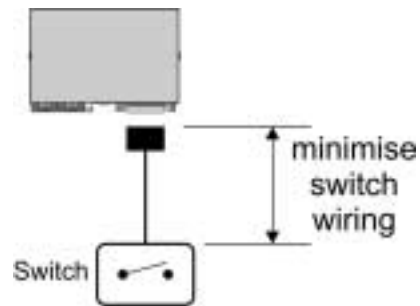
This unit **cannot** be used with a DX-ARC5 as part of the same system.



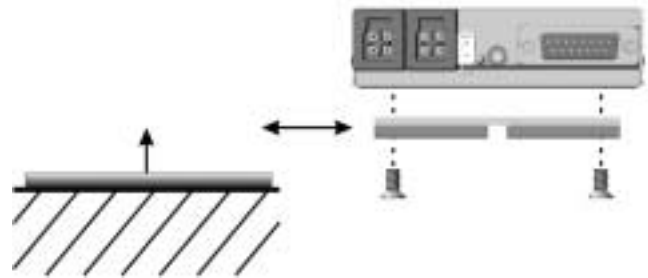
TYPICAL DX-ARC-SWB USAGE

2 Mounting and Installation

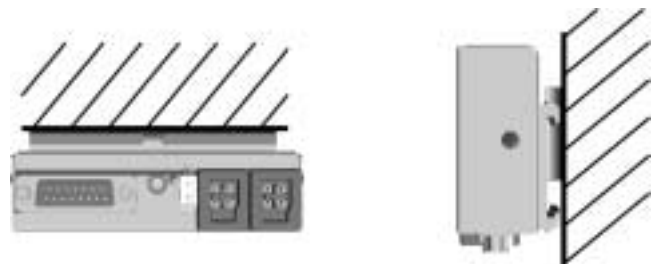
The DX-ARC-SWB should be positioned to minimize the length of the switch wiring.



Secure the unit appropriately. A removable mounting system can be implemented if desired using the supplied mounting kit.



It is preferable that the DX-ARC-SWB is mounted in the following orientations.



Parts supplied with the DX-ARC-SWB: Mounting bracket and screws
DB15 Connector
Molex Plug and pins

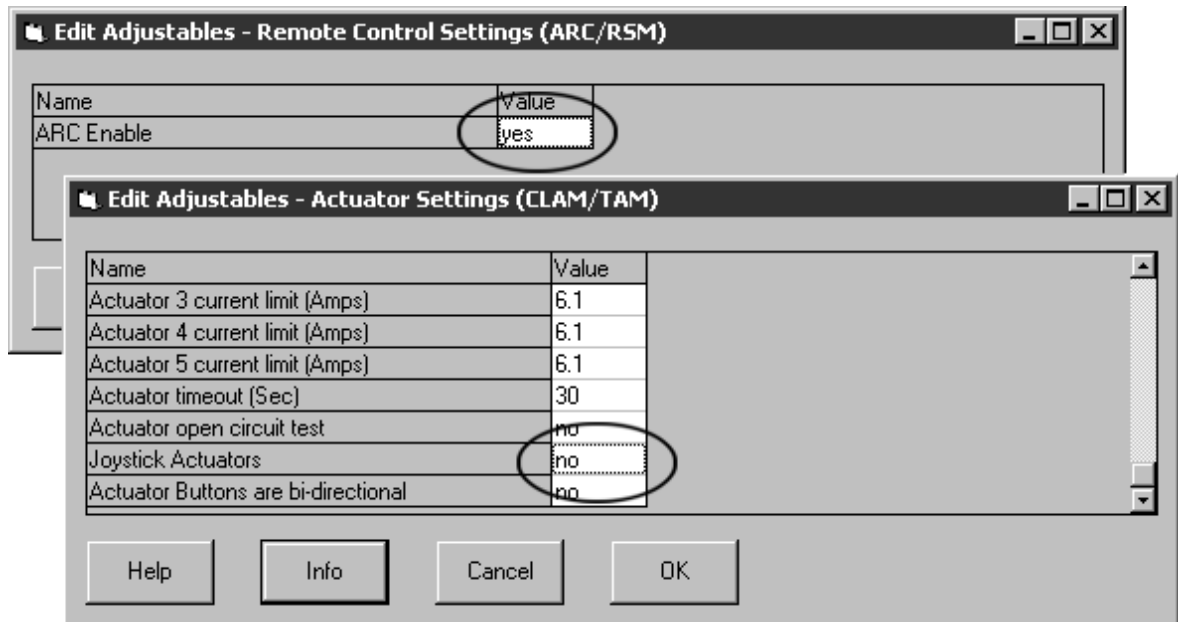


Warning:

*The DX-ARC-SWB (and associated switches and cabling) is **not** waterproof and should be mounted and installed to provide maximum protection from ingress of fluids and mechanical abuse.*

3 Programming

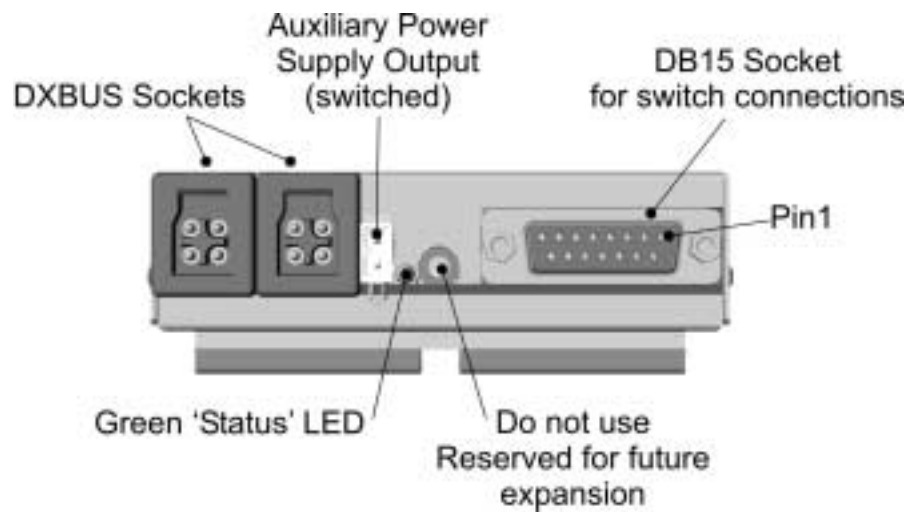
For the DX-ARC-SWB to function correctly, the **ARC Enable** setting must be set to **Yes**, and the **Joystick Actuators** setting set to **No** (depending on the Master Remote used), using the Wizard programmer.



Most DX Master Remotes will allow only one Actuator control, the DX-ARC-SWB or the Master Remote, but not both.

Set any other parameters as required to achieve the desired drive performance and operation for the other DX Modules. Further details about programming can be found in the manuals of the DX Modules concerned.

4 Connections and Wiring



The DX-ARC-SWB connections are located along the front panel of the case. When all wiring has been completed, it must be securely fastened to the powerchair frame to ensure there is no strain on the connectors.



Ensure that all wiring is suitably restrained to prevent snagging.

Ensure that the unit and all connections are suitably protected against environmental contamination (water, dust, etc.).

Before making any connections to the DX-ARC-SWB, disable the powerchair by one of the following means to prevent accidental movement:

- 1) Place the battery circuit breaker in the open position,*
- 2) Disconnect the motor or batteries, and/or*
- 3) Elevate the drive wheels.*

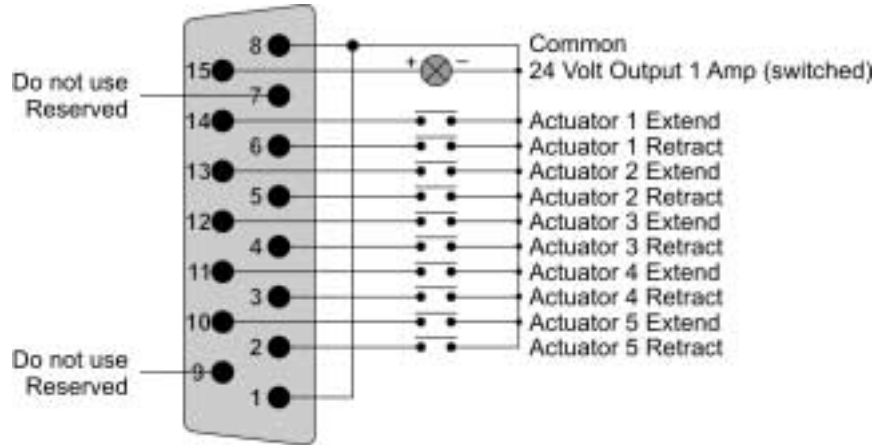
4.1 DXBUS

The DX-ARC-SWB has 2 DXBUS sockets to connect to the DXBUS system. Both sockets are identical. Connect a DXBUS cable from either socket to the DXBUS socket of any other DX Module. Route and secure the cable to prevent mechanical damage and snagging.

The second socket can be used to extend the DXBUS to other DX Modules, if required. If it is not used for this purpose, and the vacant socket is accessible to the user, a dummy plug or cap should be fitted.

4.2 Seat Switches

The switches used to operate the seat functions connect to the unit via the DB15 connector, pin-out as shown below.



'Normally-open' switches should be used so the required function operates on switch closure between the appropriate pin and **Common** (pin 8 of the connector).



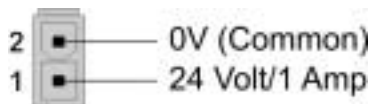
There must be a link between Pins 1 and 8 for the unit to operate!



Warning:

Use appropriate quality assemblies for the installation of the system.

4.3 Switched Auxiliary Power Supply Output



An unregulated 24-Volt/1-Amp (max) power source is available to power accessory devices if required through the Molex 2-Pin connector. This output is switched by the DX System On and Off.

The mating housing and pins are included with the DX-ARC-SWB.



The auxiliary power supply uses the same output as pin 15 of the DB15 connector. The total load of both outputs must not exceed 1 Amp.

5 Testing the Installation

To ensure that the powerchair meets a minimum level of safety, the following procedure should be undertaken to ensure that the powerchair operates safely. This procedure should be carried out in a spacious environment and with due regard to any possible unexpected powerchair movement in the event of faulty installation.

1. Turn the powerchair on by pressing the Power button on the DX Master Remote.
2. Check that the green DX-ARC-SWB 'Status' light turns on and is steady (i.e. not flashing).
3. Operate each seat switch in turn and check for the correct operation of all seat functions.
4. Check that all other chair functions operate normally.

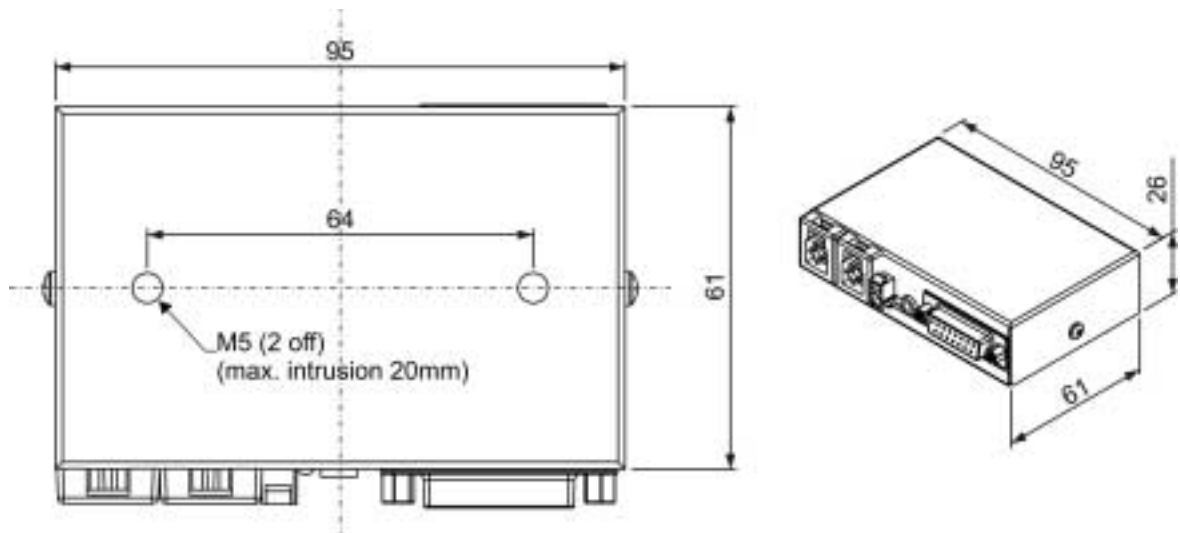
6 Specifications

6.1 Electrical Specifications

	Min	Nominal	Max	Units
General				
Operating Voltage	18	24	32	Volts
Quiescent Current, Off			1	mA
Actuator Switch Inputs				
Switch Closed (ON) Resistance	0	Short Circuit	100	Ohms
Switch Closed (ON) Current		2.5	10	mAmps
Switch Open (OFF) Resistance	5000	Open Circuit	∞	Ohms
Auxiliary Power Supply				
Output Voltage	$V_{BATT} - 1$		V_{BATT}	Volts
Output Current			1	Amps

6.2 Physical Specifications

Parameter				
Material	Aluminium alloy			
Finish	Epoxy powder-coated "Rolling Thunder"			
Protection Rating	Not rated			
Physical Size:	95mm x 61mm x 26mm			
Shipping Weight	100g			
	Min	Nominal	Max	Units
Operating Temperature Range	-25		50	°C
Storage Temperature Range	-40		65	°C
Operating Humidity Range	10		90	%RH



7 Appendix

7.1 *Intended Use Statement*

The DX-ARC-SWB is an accessory module intended to enable powered wheelchair users control of functions supported by the DX System, via 'normally-open' momentary switches of type and position determined by the installer.

Device Classification

The DX-ARC-SWB has been classified as a component of a Powered Wheelchair as detailed in 21 CFR § 890.3860 - Class II Medical Device.

The DX-ARC-SWB has been classified as a component of a Class I medical device as detailed in the Council Directive 93/42/EEC concerning Medical Devices.

Compliance and Conformance with Standards

DX-ARC-SWB has been designed such that the combination of the wheelchair controller and the DX-ARC-SWB conforms to the requirements of ISO7176. However, final conformity of the complete wheelchair system with international and national standards is the responsibility of the wheelchair manufacturer or installer. Further, national and international directives require confirmation of EMC compliance. Since EMC depends on the particular installation, compliance is the responsibility of the wheelchair manufacturer or installer.

Particular attention should be paid to the wheelchair controller installation manual(s) with respect to: -

- Product Disclaimer
- Electro Magnetic Compatibility
- Maintenance
- Safety & Misuse warnings

The selection and fail-safe operation of 3rd party equipment is the responsibility of the installer.

7.2 Maintenance

1. All vehicle components should be regularly checked for loose, damaged or corroded connectors, terminals, or cabling. All cables should be restrained to protect them from damage. Damaged components should be replaced.
2. All switchable functions on the Dynamic electronics system should be regularly tested to ensure they function correctly.
3. All Dynamic electronic components should be kept free of dust, dirt and liquids. If necessary, wipe with a cloth dampened with warm water or alcohol. Do not use solvents or abrasive cleaners.
4. There are no user-serviceable parts in any Dynamic electronic component. Do not attempt to open any case, or undertake any repairs, or warranty claims will be affected.
5. Where any doubt exists, consult your nearest service center or agent.

**Warning:**

If any component is damaged in any way, or if internal damage may have occurred (for example by being dropped), have it checked by qualified personnel before operating.

7.3 Warranty

All equipment supplied by Dynamic Controls is warranted by the company to be free from faulty materials or workmanship. If any defect is found within the warranty period, the company will repair the equipment, or at its discretion, replace the equipment without charge for materials and labour.

This Warranty is subject to the provisions that the equipment:

- has been correctly installed.
- has been thoroughly checked upon completion of installation, and all programmable options correctly adjusted for safe operation prior to use.
- has been used solely in accordance with this manual.
- has been used solely for the driving of electrically powered wheelchairs in accordance with the wheelchair manufacturer's recommendations.
- has been properly connected to a suitable power supply in accordance with this manual.
- has not been subjected to misuse or accident, or been modified or repaired by any personnel other than those authorized by Dynamic Controls.

7.4 Safety and Misuse Warnings

- Do not install, maintain or operate this equipment without reading, understanding and following the proper instructions and manuals, otherwise injury or damage can result.
- Use appropriate quality assemblies for the installation of the system.

7.5 Contact Details

Dynamic has a global network of sales and service centers. Please contact your nearest Dynamic representative for Sales and/or Service advice, or contact us directly through our web site:

<http://www.DynamicMobility.co.nz>



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