

# Actuator Remote Control Module

## DX-ARC5

### INSTALLATION MANUAL



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## 1 Introduction

The Actuator Remote Control (ARC) module is an ideal alternative for users who have difficulty using or accessing actuator controls built into a *DX Master Remote*.

The module can be mounted in a suitable position for the wheelchair user or an attendant/carer.

The ARC is supplied with a lightweight holder to provide a secure mounting. Replacement ARC holders can be ordered, part number GME62219.

Dynamic Controls welcomes feedback from its customers on its products and documentation. If you would like to comment on this manual or the product it describes, please contact us at any of the addresses at the back of this manual, or by email at:

**[info@dynamic-controls.co.nz](mailto:info@dynamic-controls.co.nz)**

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## 2 Installation

**Warning!!** Do not use the frame of a wheelchair or scooter as the earth return for any lights or actuators. Making any low resistance connection to the frame is regarded as a possible safety hazard and not allowed by international performance and safety standards for wheelchairs and scooters.

Ensure that all wiring is suitably restrained and of such a length that it is physically impossible to connect the motor directly to the battery.

The installation process involves:

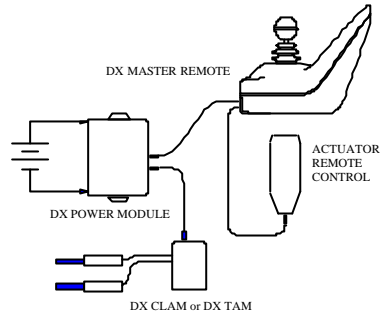
1. Plugging the ARC into the DX system
2. A minimal amount of programming
3. Suitable mounting.

The ARC is to be installed in a DX system already comprising a *DX Power Module*, *DX Master Remote*, and either a *DX-CLAMB*, or *DX-TAM Module*.

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**Important** The Actuator Remote Control is not compatible with either the *DX Chin Master Remote* (Part Number DX-REM32) or *DX Tray Master Remote* (Part Number DX-REM35) with serial numbers prior to 98E12381 and 98C10058 respectively.

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## Connection to the DX System

With the DX system turned off, the ARC should be plugged into an available DX Bus socket. This will normally be either the *DX Power Module* or *DX CLAMB* or *DX TAM*.

## Programming

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**Warning !!** Incorrect or inappropriate programming of a DX System can put the wheelchair into a dangerous state. Dynamic Controls accept no responsibility or liability for accidents caused by incorrect programming. This Programming section, the HHP Manual, and the Wizard Manual must be read and understood before attempting to program a DX System.

If a wheelchair is programmed with settings other than default, under some very rare fault conditions default settings could be automatically restored, thereby changing driving characteristics. This in turn could lead to a chair moving in a direction or speed that is not intended. Programmers should consider this risk when programming settings other than default.

Ensure that the programmed wheelchair complies with all prevailing regulatory requirements for your country and application.

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To use the ARC the following parameters need to be set in the *DX Master Remote* using the Wizard programmer. The “CLAM enable” can also be set using the HHP (Hand Held Programmer).

Actuator Setting		Comments
CLAM Enable	Yes	
Actuator 1 Enable	Yes	Set to Yes for each actuator that you wish to use.
to		
Actuator 5 Enable		
ARC Enable	Yes	
Joystick Actuators	No	
Number Actuator Buttons	Two	Mom - operates actuator only while button is pressed Latch - actuator will operate until fully extended or retracted.
Latching Actuators	Mom	
Actuators While Driving	No	Yes - actuators can be operated either when the wheelchair is being driven or is stationary. No - actuators can be only be operated when the wheelchair is stationary and the park brake is applied. The Actuator Remote Control Module ignores commands while driving.

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**Warning !!** When a setting has been modified, the installation must be checked for safety before being returned to the user.

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## Mounting

The ARC should be mounted in a position that is safe, secure and accessible for the intended user.

It is highly recommended that the ARC holder, part number GME62219 be used. The ARC holder should be securely fixed to a flat surface with M5 countersunk screws to a maximum torque of 4.8Nm.

The selected position and orientation should also give maximum mechanical and environmental protection. Avoid positions in which the module or its wiring can be knocked or physically damaged or those which are exposed to splashing and/or other forms of abuse.

## 3 Operation

Once the ARC has been installed, operation is as easy as pushing a button. Up arrows indicate up functions, and down arrows down functions. Up to five actuators can be operated as illustrated.

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### Note 1 UCM1\* Products

Either the ARC or DX Master can control operation of seating. Both can not be enabled simultaneously.

### Note 2 UCM2\* Products

Both the ARC and DX Master can control operation of seating. Both can be enabled simultaneously.

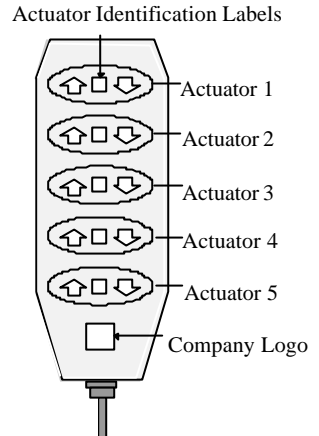
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Depending on how the unit is programmed it may or may not be possible to operate actuators while driving.

Again depending on programming actuator operation can be either momentary (actuator operation only while button is pressed), or latching (actuator will continue operating until fully extended or retracted).

The clear windows between each actuator function, allows customised labels to be added to simplify identification.

An additional window near the bottom of the keypad allows a company logo to be included.



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## 4 Intended Use and Regulatory Statements

### **Intended Use**

The DX-ARC5 Actuator Remote Control is an accessory of the DX system intended to allow users or attendants to operate up to five actuators. The DX-ARC5 is to be installed in a DX system already comprising a DX power module, DX master remote, and a DX actuator module. The module may be mounted in a position accessible to the wheelchair user or attendant/ caregiver, in preference to actuator controls built into a DX Master Remote.

### **Device Classification**

#### **Europe**

The DX-ARC5 Actuator Remote Control is a component of a Class I medical device as detailed in the Council Directive 93/42/EEC concerning Medical Devices.

#### **USA**

The DX-ARC5 Actuator Remote Control is a component of a Class II medical device (Powered Wheelchair) as detailed in 21 CFR § 890.3860.

### **Compliance and Conformance with Standards**

In accordance with the device classification, the DX-ARC5 Actuator Remote Control is designed to comply with the requirements of the European Medical Device Directive and 21CFR § 820.30.

The DX-ARC5 Actuator Remote Control has been designed such that the combination of the wheelchair and the controller along with accessories as applicable, complies with the requirements of the MDD harmonized standards EN12182 & EN12184 and the FDA Consensus standard ISO7176 for performance.

However, final compliance of the complete wheelchair system with international and national standards is the responsibility of the wheelchair manufacturer or installer.

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## 5 Electromagnetic Compatibility (EMC)

Dynamic Electronic Controllers have been tested on typical vehicles to confirm compliance with the following EMC standards:

Emissions:	CISPR22, class B
Susceptibility:	IEC1000-4-3
ESD:	IEC1000-4-2
USA:	ANSI/RESNA WC/Vol:2 – 1998 Sec 21
Europe:	EN12184: 1999 Sec 9.8. 1-3
Compliance levels and set-up as per ISO 7176, part 21.	

National and international directives require confirmation of compliance on particular vehicles. Since EMC is dependant on the particular installation, each variation must be tested. The guidelines in this section are written to assist with meeting EMC requirements.

### Minimising Emissions

Motors	Motor brushes generate electromagnetic emissions. It may be necessary to fit capacitors between the brush holders and the motor case. Ensure the leads are kept as short as possible. A suitable capacitor is 4n7, 250V Ceramic.
Wiring	Keep wire lengths as short as practical for a tidy layout. Minimise any wire loops, particularly loops of single wires as opposed to wire return pairs. Endeavour to run wires as send and return pairs. Where practical, attach cables to wheelchair frame.

### Immunity to Radiated Fields

Follow the wiring recommendations for minimising emissions.

### Immunity to ESD

Follow the wiring recommendations for minimising emissions.  
Ensure all vehicle sub-frames and modules are electrically connected.  
Ensure any metal casing on speed setting potentiometers is electrically connected to the vehicle frame.  
Do not leave connection points unnecessarily exposed.

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## 6 Product Disclaimer

Dynamic Controls products built today allow our customers' vehicles to conform to national and international requirements. In particular to:

ISO7176-9 - Climatic Tests for Electric Wheelchairs

ISO7176-14 - Power and Control Systems for Electric Wheelchairs

ISO7176-21 - Requirements and test Methods for Electromagnetic Compatibility of Electric Powered Wheelchairs and Scooters.

However the performance of controllers fitted to wheelchairs and scooters is very dependent on the design of the scooter or wheelchair so final compliance must be obtained by the vehicle manufacturer for their particular vehicle. No component compliance certificate issued by Dynamic Controls relieves a wheelchair/scooter manufacturer from compliance testing their particular vehicles.

User manuals should contain EMC warnings along the following lines:

*Most electronic equipment is influenced by Radio Frequency Interference (RFI). Caution should be exercised with regard to the use of portable communications equipment in the area around such equipment. While the manufacturer has made every effort to ensure that RFI does not cause problems, very strong signals could still cause a problem. If RFI causes erratic behaviour, shut the wheelchair off immediately. Leave off while transmission is in progress.*



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## 7 Safety and Misuse Warnings

This manual must be read in conjunction with the installation manuals for all other DX Modules to be used in your application. Heed all safety and misuse warnings and if in doubt ask for advice.

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. The DX-ARC5 is rated IPx4 – position the unit such that water ingress is avoided.

A warning must be conveyed to the operator that they have the responsibility to ensure that the vehicle is kept in a good safe operating condition, and ensure that components, such as cables, are protected from damage by securing them in optimum positions.

The user must turn the system off while getting in and out of the wheelchair.

If a wheelchair is programmed with settings other than default, under some very rare fault conditions default settings could be automatically restored, thereby changing driving characteristics. This in turn could lead to a chair moving in a direction or speed that is not intended. Programmers should consider this risk when programming settings other than default.

Users and Suppliers of Assistive Mobility products should give consideration to the possibility of a failure to operate, or an incorrect operation, by the product. Should an operator be left with limited or no mobility due to an equipment failure, they should still be able to summon assistance from where ever they may be.

## 8 Sales and Service Information

For further information and assistance, including Sales and Servicing, contact Dynamic.

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**Note:** The controller should be clearly labelled with the manufacturer's service agent's telephone number.