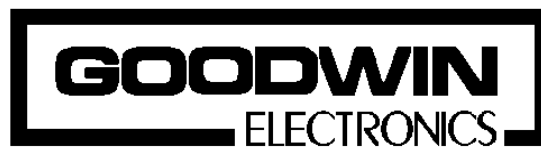


# *MultiStop*

## OPERATOR MANUAL

D1005  
R&D data\Current Products\Manuals\MultiStop



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## **DOCUMENTATION**

The MultiStop product is available with three manuals;

**MultiStop** Technical Specification Manual

**MultiStop** Operators Manual.

**PowerTalk** Programming Reference Manual

This is the operator manual which has been written for a programmer to refer to when using the PowerTalk language to write control programs for the **MultiStop** controller.

## **PLEASE NOTE**

The contents of this manual are designed to give the reader an understanding of how the **MultiStop** operates and assumes that they are familiar with the machine onto which the unit is connected. The particulars of the product, and its use are given by Goodwin Electronics in good faith. However, it is acknowledged that there may be errors and omissions in this document. We shall not be liable for the loss or damage whatsoever arising from the use of any information in, or any omissions from, this document.

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## INTRODUCTION

The **MultiStop** controller is designed to control up to two axes of movement. It is a fully self contained unit incorporating,

- a clear LCD display
- the ability to control the movement of one or two axes
- digital inputs and digital and analogue outputs
- watchdog output
- RS 485 serial communications link

There are two models one has one axis of motion the other has two. Where this manual refers to two axis the axis for the second axis will not be applicable on a single axis unit.

After switching the power on the unit defaults to the AUTO mode window. This is described later.

The controller requires a program to be resident in its memory before any automatic cycle can be carried out. However the datumming cycle, and jogging of the axes can always be carried out.

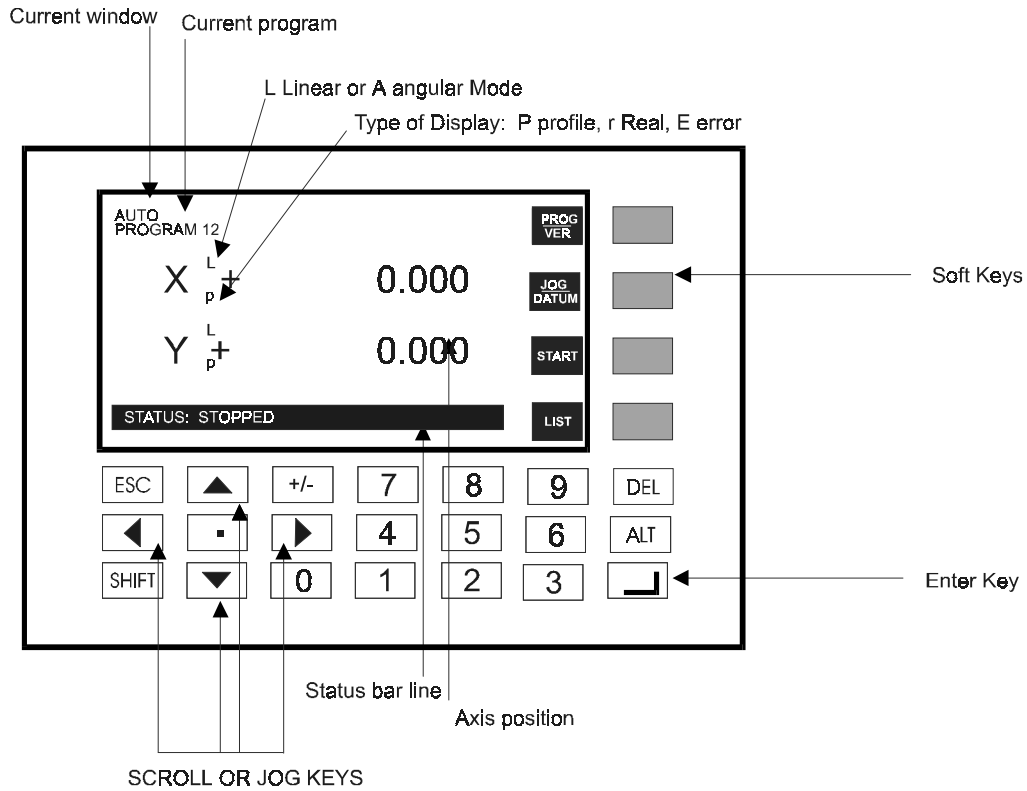
It is assumed that the **MultiStop** has been configured correctly for the machine on which it is to be used.

At some time it will be necessary for an engineer to set the parameters in the Configuration mode, see the **MultiStop** Technical Specification manual for further details.

Program data and configuration data are kept in battery backed ram. The battery normally has a ten year life and as its voltage is continuously monitored by the controller. When it requires changing a message will be displayed in the status bar window. The procedure necessary to replace the battery is given in the MultiStop Technical Manual.

If it is necessary to disconnect any of the cabling attached to the **MultiStop** controller make sure that the strain relief attachments are used to remove the Klippon 8 way sockets and minimum force is applied to the controller. When reconnecting these sockets ensure that the socket is firmly 'home'.

## FRONT PANEL AND DISPLAY LAYOUT



## MODES OF OPERATION

In all modes of operation a window will be displayed and this information will consist of,

- four Soft keys whose function will be indicated
- a status bar window in which the current most important message will be displayed
- any other information that is relevant
- access to some modes are password protected. This feature can be cancelled by setting the appropriate details in the password parameter page, (see MultiStop Technical Specification)

All other keys are divided as follows

- four Soft keys whose function will be indicated
- numeric keys used for entering data
- jog keys that can be also used for scrolling through data presented in some windows
- ENTER key used to enter any keyboard data into the controller
- ESC key that is used to return to the previous window
- SHIFT key used in conjunction with the Soft keys to access different modes of operation
- DEL key used to delete programs, program lines or data entries

## AUTO MODE WINDOW

This is the default mode into which the controller powers up.

- the mode window will display **AUTO MODE**.
- the name of the currently selected program is displayed
- the current position of the axes will be displayed
- all keys other than the Soft keys are disabled
- the Soft key options which are
  - Soft key 1 (PROG) to select the program mode  
(password may be required)
  - SHIFT and Soft key 1 (VER) to display the Software version installed
  - Soft key 2 (JOG) to select the axes jog mode  
(password may be required)
  - SHIFT and Soft key 2 (DATUM) to select the datumming mode  
(password may be required)
  - Soft key 3 (START) to start a cycle
  - Soft key 4 (LIST) to list all the programs resident in the  
controller (password may be required)
- the status bar will indicate the current state of the machine e.g., out of cycle (i.e. stopped).

The selected program will run when Soft key 3 (START) is pressed providing that the **MultiStop** has first been datummed . The status line will indicate that the program is running.

When a program is being executed, pressing Soft key 3 (HALT) will halt the program in cycle, pressing START again will re start the program from where it halted. Soft key 4 (STOP) will terminate the program at the point of the STOP key press. This should NOT be done during the execution of a circular or arc move. If this is done and then the move continued by pressing START the final destination of the interrupted move is not guaranteed.

Pressing ESC will also HALT the execution of the program.  
In the HALTED state pressing ESC will terminate the program.

## PROGRAM WINDOW

This mode is selected by pressing Soft key 1 (PROG), a password may be required. In this mode a listing of the currently selected program that is resident in the controller will be displayed.

The name of the currently selected program is displayed.

The other keys that are active are,

- ESCAPE which will return to the AUTO window
- the UP and DOWN arrow keys are active
- ENTER which will allow the current line of the program to be edited or saved

For more detailed instructions on creating a program refer to the PowerTalk programming reference manual.

## VERSION WINDOW

This window is selected from the AUTO window by pressing SHIFT and Soft key 1 (VER). The software version number and other firmware information is provided. This information may be requested when contacting the manufacturer for technical support.

Also in this window the facility exists to adjust the LCD contrast using the up and down arrow keys.

## JOG MODE WINDOW

This mode is selected from the AUTO window by pressing Soft key 2 (a password may be required).

If an axis is configured as '**open loop**' this axis cannot be jogged

In the JOG mode

- JOG mode is indicated in the current window line
- ESCAPE will return to the AUTO window
- READY TO FINE JOG (X) will be indicated in the status bar line
- all keys other than the JOG keys are disabled
- the Soft keys allow
  - the axis to be jogged to be selected
  - the jog speed to be set to coarse or fine feed
  - the axis to be zeroed
  - the datum window to be selected (password may be required)

If an extra encoder input is specified (Hardware Option) and an encoder is connected to this input then the axis can be jogged using this encoder. This arrangement is frequently referred to as a hand pulse generator (hpg).

## DATUM MODE WINDOW

This mode is selected from either the AUTO window (<SHIFT> and Soft key 2), or JOG windows (a password may be required), or by one of the external input lines.

If an axis is configured as '**open loop**' this axis cannot be datummed. For convenience this axis is assumed always to be datummed.

In the DATUM mode

- DATUM mode is indicated on the screen
- ESCAPE will return to the AUTO window
- all keys (except the Soft keys) are disabled
- the Soft key options are  
(DATUM X) which will begin an X datum cycle  
(DATUM Y) which will begin a Y datum cycle on two axes systems
- the status bar will indicate the status of the datum cycle

Pressing DATUM X soft key will commence the X datum cycle.

Pressing DATUM Y soft key will commence the Y datum cycle.

The datum cycles can be stopped at any time by pressing the ESC key.

The datum cycles can also be started and stopped using the external input lines.

## **LIST MODE WINDOW**

This mode is selected from the AUTO window by pressing Soft key 4 (LIST) and will list the directory of programs currently resident in the **MultiStop** (a password may be required).

- PROGRAM DIRECTORY will be displayed.
- ESC will return to the AUTO window
- Soft key 1 can be used to copy a program (the copy of the file that is created will carry a number suffix starting at zero for the first copy)
- Softkey 2 can be used to change the identity number of the program
- Softkey 3 can be used to change the description and title of the file
- Softkey 4 (NEW) can be used to create a new program
- the UP and DOWN arrow keys are active

All programs generated on the **MultiStop** controller will automatically be given ID numbers. Programs can have ID numbers beginning at 0 and extend to a maximum value of 256 .

The selected program (i.e., the one that will be executed in AUTO mode and edited in PROGRAM mode) will initially be displayed in reverse video (i.e., blue text on a white background).

A different program can be selected by using the UP or DOWN arrow keys and then pressing ENTER.



## GENERAL METHOD OF OPERATION

Normally the controller is configured such that after power up all datum positions will be lost. If this is the case then each axis must be datummed in turn. If an axis is configured as 'open loop' that axis is always assumed to be datummed and no datum cycle will occur.

### AUTOMATIC DATUM CYCLE

This option has to be configured, see MultiStop Technical Specification Manual.

Select the Datum window,

- Pressing DATUM X soft key will commence the X datum cycle.
- Pressing DATUM Y soft key will commence the Y datum cycle.

The datum cycles can be stopped at any time by pressing the STOP key or by asserting the STOP external input line.

A datum cycle can also be commanded using the external input lines. First the datum mode is externally selected and then the external START line can be used to commence the datum cycle for the X axis. Once the X datum cycle has been completed a second external START signal will begin the Y datum cycle.

The datum cycle is as follows,

- the axis is moved in the direction configured (Datum Direction) at datum feed until the NEAR HOME signal is seen.
- the direction is reversed and moves at 25% of datum speed until the reference marker pulse is seen.
- the axis is stopped and the configured datum value is loaded into the axis position
- the axis datummed flag is set (axis inposition output ON)
- when both axes have been datummed the axes datummed output is ON

### MANUAL DATUM

This option has to be configured, see MultiStop Technical Specification Manual.

To datum manually select JOG mode and jog the machine to the required datum position.

Then select the datum mode as described above.

Pressing DATUM X soft key will datum the X axis, and pressing DATUM Y soft key will datum the Y axis. If the external lines are used then when datum mode input is asserted both axes will be datummed at the same time.

### JOGGING

Each axis can be jogged around the machine by first selecting the JOG mode (a password may be required) and then use the UP/DOWN arrows to move the axes. The jog speed can be changed from FINE FEED to COARSE FEED at any time.

If an HPG is fitted then the axis can be moved using this facility

### RUNNING AN AUTOMATIC CYCLE

To operate an automatic cycle, a program that describes that cycle must exist and the operator should select which program the unit is to execute from the LIST window or via the external digital input lines.

Once a program has been selected the cycle can now be started.

After the cycle has been started the cycle can be either

- STOPPED The cycle will terminate immediately and the next cycle start will begin the program from the defined START position in the program. All outputs will either
  - retain their states when the cycle
  - or be set to the non asserted statedepending on how the MultiStop is configured.

The output of any open loop axis will be set to 0V.

- PAUSED (HALT). The cycle will stop at the current position and the next cycle start will begin execution from this point in the program. Any dwell instructions will time out. This should NOT be done if the controller is executing an ARC or a CIRCULAR move

## **FEED RATE OVERRIDE**

To operate feed rate override it is necessary that the Multistop has been configured for this feature (see Multistop Technical Specification V2.1 onwards) and the appropriate feed rate selection switch is available. The override will work on both axes simultaneously if MOVXY, VECTOR or arc commands are executed.

The feed rate override value produced are,

0, 5, 10, 30, 50, 70,100, 140% of the programmed feed rate

## MESSAGES

The following error messages can be displayed. Error messages cannot be ignored, warnings can.

| <u>Messages</u>              | <u>Cause</u>  |
|------------------------------|---|
| System Disabled              | System enable input is not present (disabled will be displayed on the right of the status bar), or system enable input has not been assigned to an input.   |
| Cannot start. Not datummed   | The Multistop must either run a datum cycle or be datummed manually before a cycle can be run.  |
| Call to undefined subroutine | A call to a subroutine has been programmed, but no subroutine exists.   |
| No I/O power                 | The external 24V DC required for the inputs and outputs is not connected.   |
| Program Full Delete Lines    | The number of programmes/program lines stored has exceeded the amount of memory available. Delete any unused programs.  |
| End Stop Hit                 | An End Stop input is asserted. The current move will stop and Jog mode will be selected.  |
| Following Error              | <p>A following error occurs when the controller is commanding a move but there is no encoder feedback to indicate a move is taking place. It can be caused for a number of reasons.</p> <ol style="list-style-type: none"><li>1. Faulty encoder or encoder cable.</li><li>2. Faulty servo drive (causing a motor move which has not been commanded)</li><li>3. Incorrect motor or encoder phase set in Configured Parameters (See the Technical Specification)</li></ol> <p>After a following error the controller <b>MUST</b> be redatummed.</p> |
| Feed rate not set            | A new program defaults the feed rate to zero. If no feed rate has been programmed using the FEED command or if a zero feed has been programmed this warning will be displayed when exiting program mode.  |
| Command not allowed          | <p>If an angular command is used and the axis is not configured as an angular axis</p> <p>If a linear command is used and the axis is not configured as a linear axis</p> <p>If a DAC command is used and the axis is not configured as open loop</p>   |