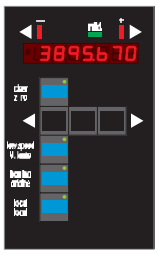
Section 3
Local Front Panel Operation

3.1 Description of Front Panel

The MM2500 is equipped with either a blank front panel, or a numeric front panel display including local push-buttons that allow manual control of each axis.

Blank Front Panel



Display + Manual Control

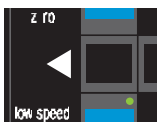
The following applies to MM25000 with front panel and manual motor controls only. If your MM25000 is equipped with the blank front panel, you may skip to section 3.3.

3.2 Push-button Functions

Position clear

To perform a position reset, press and release this switch located beneath the display you wish to reset.

Activating this button resets the position display readout to zero.



Move in negative direction

To move a single step at a time (or a fraction of step depending on the type of motor board), press and release this switch.

Move in positive direction

To move a single step at a time (or a fraction of step depending on the type of motor board), press and release this switch.

To move continuously (jog) at low speed, press and hold this switch (more than 300 ms).

High speed

While this button is pressed in combination with either jog button, the motor moves at high speed. The motor slows down and stops when either button is released.

Low speed (locking type button)

Activating this button lowers speed values for jogging and homing by a factor of 10. A green LED located above the upper right corner of this switch indicates when this function is active.

To disactivate the "low speed" function, press this switch again. The green LED shuts off.

Home Search

When this button is pushed, the stage returns to the home position.

A yellow LED located above the upper rigth corner of this switch indicates that a home search is in progress.

NOTE

The home position is permanently fixed inside the stage. This home position can be sensed by any controller and used as an absolute position reference.

Local

Pressing this button enables front panel push-buttons when the priority of the host-computer is disabled (MC1 command). If this command is not sent and you push on this button, LED light come on the front panel, but buttons do not permit displacements. This function avoids accidental displacements at the time of a program accomplishment.

When the "local" button is pushed, functions of other push-button are authorized. A red LED located in the upper right corner of the switch indicates that local mode is enabled.

NOTE

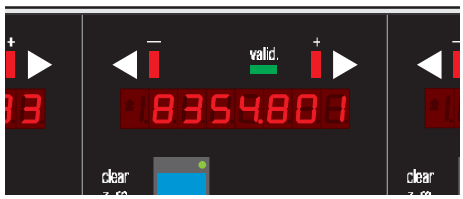
However local position is only enabled if not superseded by the Host Computer Mode.

3.3 Display

Each optional front panel display is capable of displaying up to 8 digits, from -19999999 to +19999999, showing the motor position.

Also located above each axis display are three LEDs whose meanings are described below:

- Two red limit of travel LEDs, labeled "+" and "–". Indicate the positioning stage has reached either its positive limit ("+" LED on), or its negative limit ("–" LED on).
- One green LED indicates stage power is ON and is labeled "valid". When a stage is powered, the closed loop control, servo, will hold the stage in position until commanded to move.



Display and LEDs.

Section 5
Programming by Host Computer

5.1 EZ_COMM Program

The EZ_COMM program permits to communicate with all the controllers equipped with an IEEE-488 or RS-232-C interface. The software supports the Hewlett Packard HP_IB 82990 or 82335 and National Instrument NI GPIB-PCII/IIA cards.

5.2 Principle

Each command involves:

- an axis number:
  01 or 1 for axis 1,
  02 or 2 for axis 2,
  0a or a for axis "a",
  00 or 0 a blank for all the axes.
  "a" may be upper to 2 only in RS-232-C daisy chain mode.
- a 2-character mnemonic code for each command (may be in upper case or lower case).
  Example: AB or VE or PR or TS, etc.
- possibly an argument in the form of a whole number (without comma), preceded by the "-" sign if necessary (but not by the "+" sign):
  Example: 20000 or -100000
- A "CR" or "LF" end of line character (terminator; 13 or 10 ASCII code).

Example: "02PA20000"

Request for a displacement of axis 2 to the absolute position "+20,000".

Several commands may be included in the same sequence as long as this does not exceed 250 characters and the commands are separated by commas.

Example: "01PR2000,02PR1000,TS":

- Relative displacement of 2000 steps on axis 1;
- Relative displacement of 1000 steps on axis 2;
- Demand for status on the 2 axes.

NOTE

In RS-232-C daisy chain mode, command sent to the first MM2500 unit and separated by commas, are transmit to the following MM2500 units, in separated command strings.

The responses obey the same rules but may occasionally be doubled ("n" responses for "n" axes).

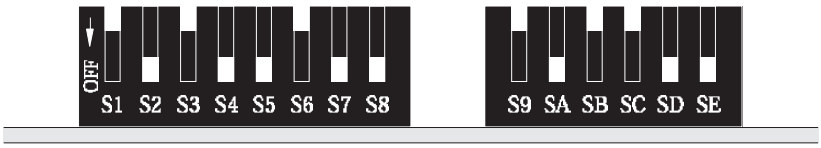
The responses to "TK" command (Tell blocK: reading the memory block) obey to a different syntax:

- As much strings as memorized positions (max 2500).
- The command consists of two numbers spaced by ":".

5.3 RS-232-C Interface

5.3.1 Configuration

There are 8 switches at the top of the board for programming the series connection. For accessing them, remove the upper cover of the MM2500:



	RS-232-C Configuration	*IEEE-488 Configuration*
S1 :	Off: IEEE-488	On: RS-232-C
S2 :	Off: 1 stop bit	On: 2 stop
S3 :	Off: 7 bits	On: 8 bits
S4 :	Off: Odd Parity	On: Even Parity
S5 :	Off: Zero Parity	On: Parity according to S4

S6	**S7**	**S8**	: Transmission Baud Rate
Off	Off	Off	: 19200 bauds
Off	Off	On	: 1200 bauds
Off	On	Off	: 4800 bauds
Off	On	On	: 300 bauds
On	Off	Off	: 9600 bauds
On	Off	On	: 600 bauds
On	On	Off	: 2400 bauds
On	On	On	: 38400 bauds

S9	to	**SD**	: IEEE-488 Configuration.
SE :	Off: terminator = "CR"		On: terminator = "LF"

NOTE

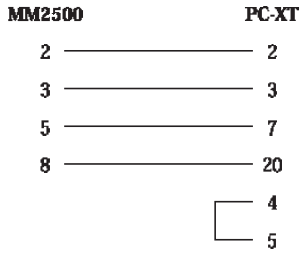
The configuration is scanned when the system is started up (or when the "Reset" button on the rear panel is pressed).

5.3.2 Examples of RS-232-C cable links

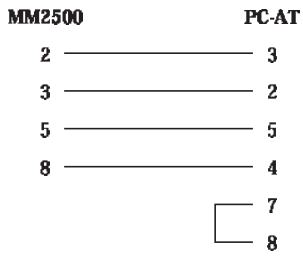
NOTE

Refer to appendix A for pinouts of the RS-232-C connector.

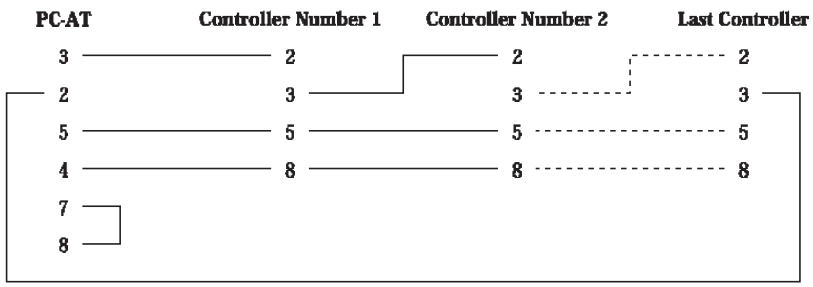
Cable for 25-pin connector (PC-XT)



Cable for 9-pin connector (PC-AT)



Cable for PC-AT in daisy chain mode



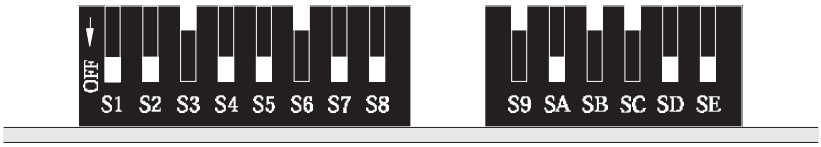
NOTE

If one of the connectors is unused, you must connect the free location by a plug with a link between the pins 2 and 3.

5.4 IEEE-488 Interface

5.4.1 Configuration

The IEEE 488 link is configured by means of 5 switches on top of the board. For accessing them, remove the upper cover of the MM2500.



					RS-232-C Configuration / *IEEE-488 Configuration*
S1 :	Off: IEEE-488				On: RS-232-C
S2	to	**S8**			: RS-232-C Configuration
S9	**SA**	**SB**	**SC**	**SD**	: Adress IEEE-488
Off	Off	Off	Off	Off	: Adress 31
On	Off	Off	Off	Off	: Adress 30
Off	On	Off	Off	Off	: Adress 29
On	On	Off	Off	Off	: Adress 28
Off	Off	On	Off	Off	: Adress 27
On	Off	On	Off	Off	: Adress 26
Off	On	On	Off	Off	: Adress 25
On	On	On	Off	Off	: Adress 24
Off	Off	Off	On	Off	: Adress 23
On	Off	Off	On	Off	: Adress 22
Off	On	Off	On	Off	: Adress 21
On	On	Off	On	Off	: Adress 20
Off	Off	On	On	Off	: Adress 19
On	Off	On	On	Off	: Adress 18
Off	On	On	On	Off	: Adress 17
On	On	On	On	Off	: Adress 16
Off	Off	Off	Off	On	: Adress 15
On	Off	Off	Off	On	: Adress 14
Off	On	Off	Off	On	: Adress 13
On	On	Off	Off	On	: Adress 12
Off	Off	On	Off	On	: Adress 11
On	Off	On	Off	On	: Adress 10
Off	On	On	Off	On	: Adress 9
On	On	On	Off	On	: Adress 8
Off	Off	Off	On	On	: Adress 7
On	Off	Off	On	On	: Adress 6
Off	On	Off	On	On	: Adress 5
On	On	Off	On	On	: Adress 4
Off	Off	On	On	On	: Adress 3
On	Off	On	On	On	: Adress 2
Off	On	On	On	On	: Adress 1
On	On	On	On	On	: Adress 0
SE :	Off: terminator = "CR"				On: terminator = "LF"

5.5 Command Set

5.5.1 Configuration of ramps

RV Ramp slow Velocity

RW Ramp Width

RX Ramp eXecute calculation

XV maX Velocity

5.5.2 Configuration origin search cycles

OH Origin High speed

OL Origin Low speed

OT Origin Tempo

5.5.3 Displacement

AB ABort

OR Origin Research

OW Origin and Wait

PA Position Absolute

PR Position Relative

5.5.4 Inputs/Outputs

CB Clear Bit

DO Desired Outputs (1)

RB Read Bit (1)

SB Set Bit

5.5.5 Positions

DH Define Home

DP Desired Position (2)

SL Set Left limit

SR Set Right limit

TL Tell Left limit (2)

TP Tell Position (2)

TR Tell Right limit (2)

5.5.6 Speed control

DV Desired Velocity (2)

SV Set Velocity

5.5.7 Encoders

ID Init Divisor

IM Init Multiplier

SC Set enCoder

5.5.8 Memorization

CG Command triGger

MK Mode blocK

TK Tell blocK

TN Tell Number

RK Reset blocK

5.5.9 Output pulses

PB Pulse Begin

PE Pulse End

PI Pulse Increment

PS Pulse Start

5.5.10 Speed mode

CA Command hAlt

CS Choise Sign

MV Modify Velocity

5.5.11 Miscellaneous

CH CHain

MC Host computer priority

SY SYnchronize (1)

TS Tell Status (2)

VE VErsion (1)

WP Wait for Plus

WM Wait for Minus

WS Wait for Stop

NOTES

1) These commands provok a response from the MM2500 controller.

2) These commands provok as much responses as concerned motor axes.