narda
Safety Test Solutions
an L3 Communications Company
http://www.narda-sts.it

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S.r.l. Socio Unico

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User's Manual

PMM SB600

AUTOMATIC SLIDE-BAR SYSTEM

SERIAL NUMBER OF THE INSTRUMENT
You can find the Serial Number on the rear panel of the CP 100 Controller.
Serial Number is in the form : 0000X00000.
The first four digits and the letter are the Serial Number prefix, the last five digits are the Serial Number suffix. The prefix is the same for identical instruments, it changes only when a configuration change is made to the instrument.
The suffix is different for each instrument.

NOTE:

If the instrument is used in any other way than as described in this Users Manual, it may become unsafe

Before using this product, the related documentation must be read with great care and fully understood to familiarize with all the safety prescriptions.

To ensure the correct use and the maximum safety level, the User shall know all the instructions and recommendations contained in this document.

This product is a **Safety Class I** and **Installation Category II** instrument according to IEC classification and has been designed to meet the requirements of EN61010-1 (Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use).

This product has a **Pollution Degree II** normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected.

The information contained in this document is subject to change without notice.

KEY TO THE ELECTRIC AND SAFETY SYMBOLS:

You now own a high-quality instrument that will give you many years of reliable service. Nevertheless, even this product will eventually become obsolete. When that time comes, please remember that electronic equipment must be disposed of in accordance with local regulations. This product conforms to the WEEE Directive of the European Union (2002/96/EC) and belongs to Category 9 (Monitoring and Control Instruments). You can return the instrument to us free of charge for proper environment friendly disposal. You can obtain further information from your local NARDA Sales Partner or by visiting our website at www.narda-sts.it .

Warning, danger of electric shock

Earth

Read carefully the Operating Manual and its instructions, pay attention to the safety symbols.

Unit Earth Connection

Earth Protection

Equipotential

KEY TO THE SYMBOLS USED IN THIS DOCUMENT:

DANGER **The DANGER sign draws attention to a potential risk to a person's safety. All the precautions must be fully understood and applied before proceeding.**

WARNING **The WARNING sign draws attention to a potential risk of damage to the apparatus or loss of data. All the precautions must be fully understood and applied before proceeding.**

CAUTION **The CAUTION sign draws attention against unsafe practices for the apparatus functionality.**

NOTE: **The NOTE draw attention to important information.**

Contents

Figures

SAFETY RECOMMENDATIONS AND INSTRUCTIONS

This product has been designed, produced and tested in Italy, and it left the factory in conditions fully complying with the current safety standards. To maintain it in safe conditions and ensure correct use, these general instructions must be fully understood and applied before the product is used.

- When the device must be connected permanently, first provide effective grounding;
- If the device must be connected to other equipment or accessories, make sure they are all safely grounded;
- In case of devices permanently connected to the power supply, and lacking any fuses or other devices of mains protection, the power line must be equipped with adequate protection commensurate to the consumption of all the devices connected to it;
- In case of connection of the device to the power mains, make sure before connection that the voltage selected on the voltage switch and the fuses are adequate for the voltage of the actual mains;
- Devices in Safety Class I, equipped with connection to the power mains by means of cord and plug, can only be plugged into a socket equipped with a ground wire;
- Any interruption or loosening of the ground wire or of a connecting power cable, inside or outside the device, will cause a potential risk for the safety of the personnel;
- Ground connections must not be interrupted intentionally;
- To prevent the possible danger of electrocution, do not remove any covers, panels or guards installed on the device, and refer only to NARDA Service Centers if maintenance should be necessary;
- To maintain adequate protection from fire hazards, replace fuses only with others of the same type and rating;
- Follow the safety regulations and any additional instructions in this manual to prevent accidents and damages.

EC Conformity Certificate

(in accordance with the directives: EMC 89/336/EEC and low voltage 73/23/EEC)

This is to certify that the product: PMM SB600 Automatic Slide-Bar System

Produced by: NARDA S.r.l.
Safety Test Solution
Via Benessea 29/B
17035 Cisano sul Neva (SV) - ITALY

complies with the following European Standards
Safety: EN 61010-1:1993 + A2:1995:
EMC: EN 55011 – EN61000-3-2 – EN 61000-3-3 - EN 50082-1;

This product complies with the requirements of the Low Voltage Directive 73/23/EEC, amended by 93/68/EEC, and the EMC Directive 89/336/EEC amended by 92/31/EEC, 93/68/EEC, 93/97/EEC.

NARDA S.r.l.

1 - General Information

1.1 Documentation

Enclosed with this manual are:

- a service questionnaire to send back to NARDA in case of equipment service is needed
- an accessories check list to verify all accessories enclosed in the packaging.

1.2 Introduction to PMM SB600

The PMM SB600 allows to do an automatic power radiated measurement following the standard EN 55014.
This test has the scope to measure the emission of power radiated due to the power supply cable using an absorbing clamp.
This standard asks to find the maximum level of emission due to power supply cable considering that in the complete length of the cable it is possible to have different level of emission.
The frequency range covered is 30 - 300 MHz, for this reason it is necessary to measure using a cable with length of 5 m; in fact at 30 MHz the wavelength (λ) is 10 m and $\lambda/2$ is 5 m.

1.3 Instrument items

PMM SB600 includes the following items:

- PMM CP100 Controller
- PMM Slide-bar
- Connection cable PMM CP100 – Slide-bar
- Serial cable

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2 – Slide-bar Installation

2.1 Introduction

This section provides the information needed to install the PMM Slide-bar.
Included is information pertinent to initial inspection, power requirements, line voltage and fuse selection, power cables, interconnection, environment, instrument mounting, cleaning, storage and shipment.

2.2 Initial inspection

To avoid hazardous electrical shock, do not turn on the instrument when there are signs of shipping damage to any portion of it.

2.3 Packing and Unpacking

Inspect the shipping container for damage.
If the shipping container or cushion material is damaged, it should be kept until the contents of the shipment have been checked for completeness and the instrument has been checked mechanically and electrically.
Verify the accessories availability in the shipping referring to the accessories check list enclosed with the User's Manual.
Notify any damage to the carrier personnel as well as the NARDA Representative.

2.4 Environment

The operating environment is specified to be within the following limitations:

- Temperature +10° to +40° C
- Humidity < 90% relative
- Altitude < 4000 meters

The instrument should be stored in a clean, dry environment
The storage and shipping environment is specified to be within the following limitations:

- Temperature -40° to + 50° C
- Humidity < 95% relative
- Altitude < 15000 meters

2.5 Return for service

If the instrument should be returned to NARDA for service, please complete the service questionnaire enclosed with the User's Manual and attach it to the instrument.
To minimize the repair time, be as specific as possible when describing the failure. If the failure only occurs under certain conditions, explain how to duplicate the failure.
If possible, reuse of the original packaging to ship the equipment is preferable.
In case other package should be used, ensure to wrap the instrument in heavy paper or plastic.
Use a strong shipping container and use enough shock absorbing material around all sides of the equipment to provide a firm cushion and prevent movement in the container.
To prevent damage during shipment in particular protect the front panel.
Seal the shipping container securely.
Mark the shipping container FRAGILE to encourage careful handling.

2.6 Equipment cleaning

Use a non abrasive clean, soft and dry cloth for equipment cleaning.

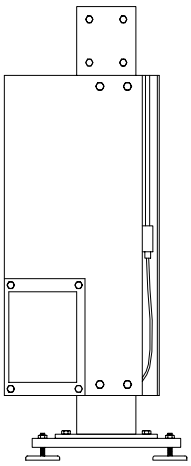
To clean the equipment do not use any solvent, thinner, turpentine, acid, acetone or similar matter to avoid damage to external enclosure.

2.7 Slide-bar parts

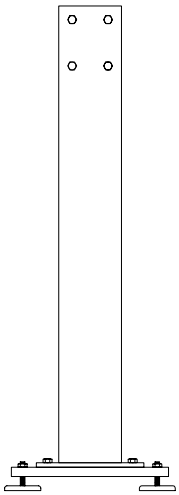
The slide-bar is composed by the following parts:

- 4 foot stands
- 4 support columns
- 3 railways
- 1 short cog-belt closed
- 1 long cog-belt opened
- 1 trolley
- 32 bolts and nuts

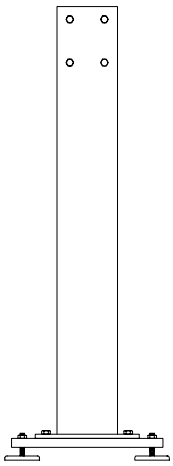
N. 1 SUPPORT (A)



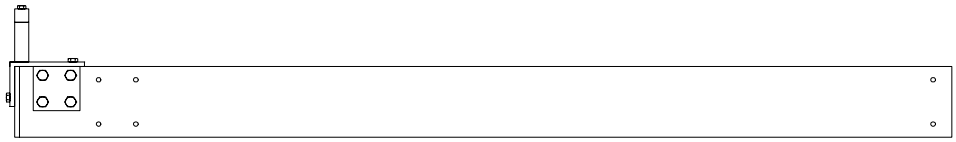
N. 2 CENTRAL SUPPORT(B and C)



N. 1 SUPPORT (D)

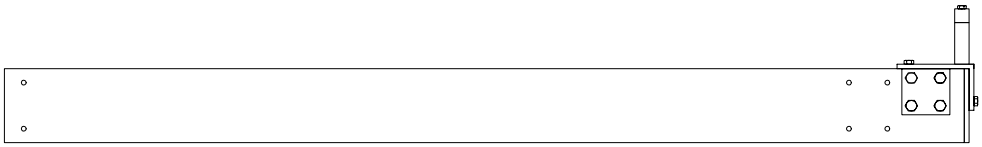


N. 1 RAILWAY (E)

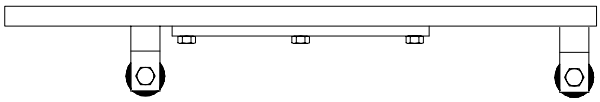


N. 1 CENTRAL RAILWAY (F)

N. 1 RAILWAY (G)



N. 1 TROLLEY (H)



N. 1 COG-BELT

N. 16 SMALL-HEAD DARK-GREY BOLTS

N. 16 BIG-HEAD LIGHT-GREY BOLTS

To mount the PMM Slide-bar use the following steps:

Position each column on it foot. For this operation the number on the foot has to correspond with the number on the bottom of the column.

Fix the column on the foot using the metallic bolts and nuts. (see fig 2-1)

Position the columns about 2 meters far each other and fix the slide on the top of the column (see fig 2-2). Observing the number on the foots the series is: 1 - 2 - 3 - 4.
The number label on the slide must correspond to the number label on the top of the column. The series, observing the number on the column or on the slide, is: 5 - 6 - 7.

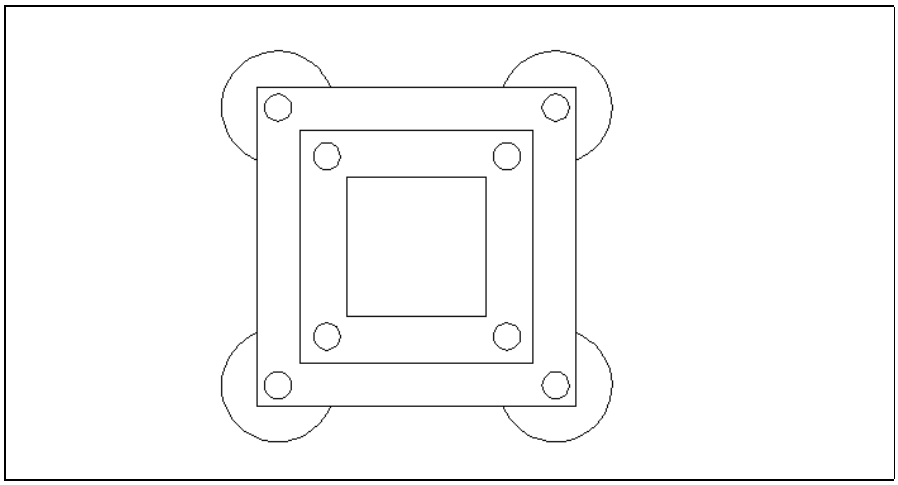


Fig. 2-1 Fixing foots

2.8 Installation and mounting

PHASE 1

Fix the central railway **F** to the supports **B** and **C** using 4 light-grey big-head bolts for each support.

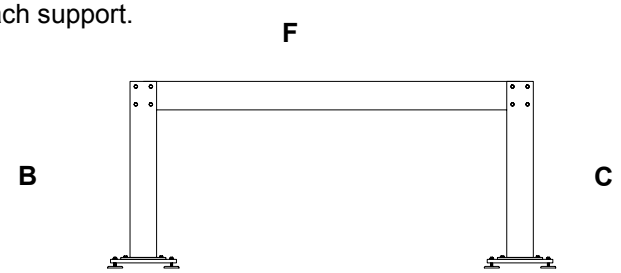
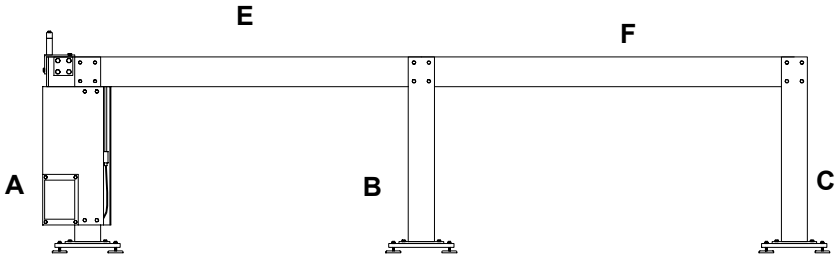


Fig. 2-2 Positioning Columns.

PHASE 2

Fix the railway **E** to the support **A** using 8 dark-grey small-head bolts, and to support **B** using 4 light-grey big-head bolts.



PHASE 3

Fix the railway **G** to the support **D** using 8 dark-grey small-head bolts, and to the central support **C** using 4 light-grey big-head bolts.

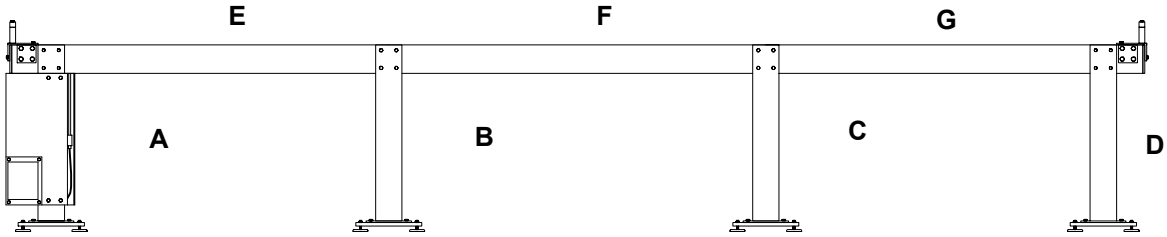


Fig. 2-3 Final mounting

PHASE 4

Wrap the cog-belt around the 2 cog-weels **L** on guides **E** and **G**, you should have the cog-belt ends on the upper side.

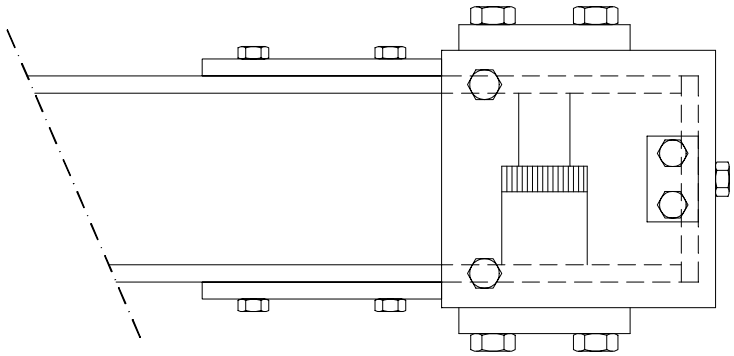


Fig. 2-4 long opened cog-belt mounting

PHASE 5

Fix both ends of the cog-belt under the trolley **H**, taking care to tension it.

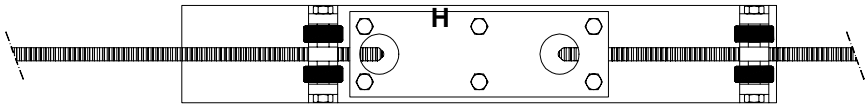


Fig. 2-5 Fixing the trolley.

PHASE 6

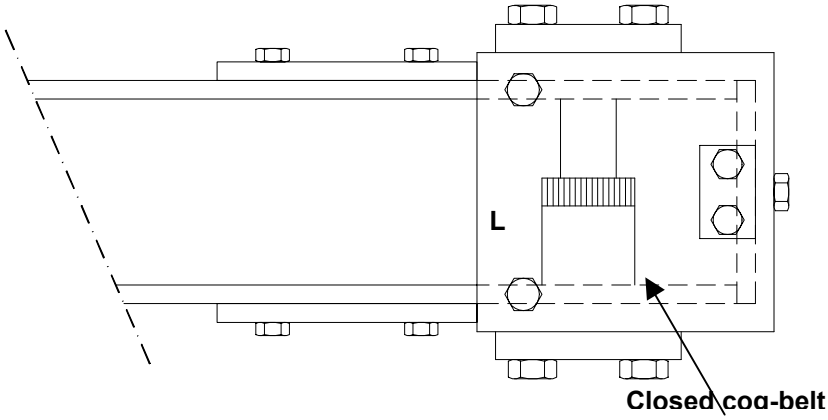


Fig. 2-6 Fixing closed toothed belt.

Put the long toothed belt into the bar, positioning it on the gear wheel on the bar. The bar is empty inside, put the belt inside positioning it with tooth direct to high ; outside the tooths has to be direct to low. (see fig 2-5.)

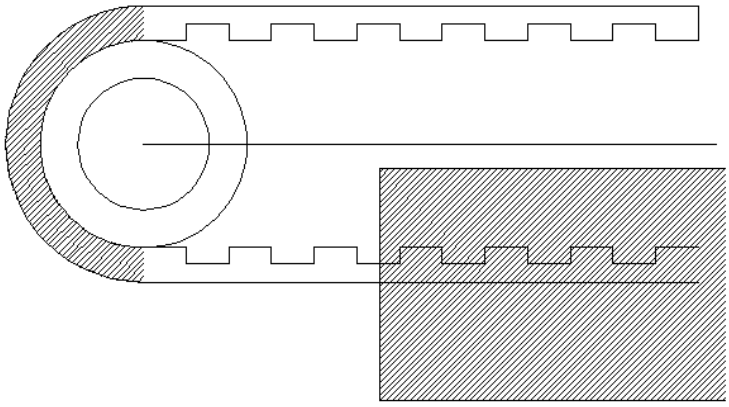


Fig. 2-7 Positioning toothed belt opened.

Fix the slide on the long toothed belt (see fig. 2-6). The belt has to be fixed below the slide.

Finally put the cover on the motor.

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3 – CP100 Controller

3.1 Introduction

PMM CP100 Controller is designed to drive a step motor, directly or in remote mode through the serial communication. Using directly it is possible to move the slide in different position of the bar with different speeds.
To connect the CP100 Controller to the slide-bar use the include cable and connect from the rear panel of the CP100 to the step motor: the connector of the motor is below the step motor.

3.2 Front panel

All commands can be given by the functional key in the front panel.
1 - data input keys
2 - setting speed
3 - F1 key
4 - remote/local key
5 - setting position

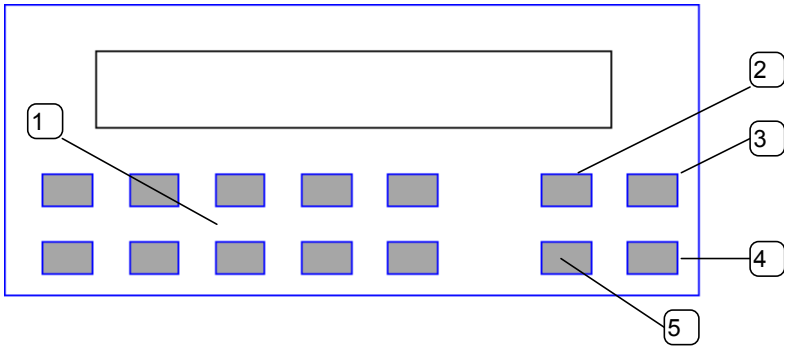

Fig. 3-1 Front panel

3.3 Rear panel

1 - Mains input.
2 - IEEE 488 port (NOT AVAILABLE).
3 - serial port
4 - Step motor connector.

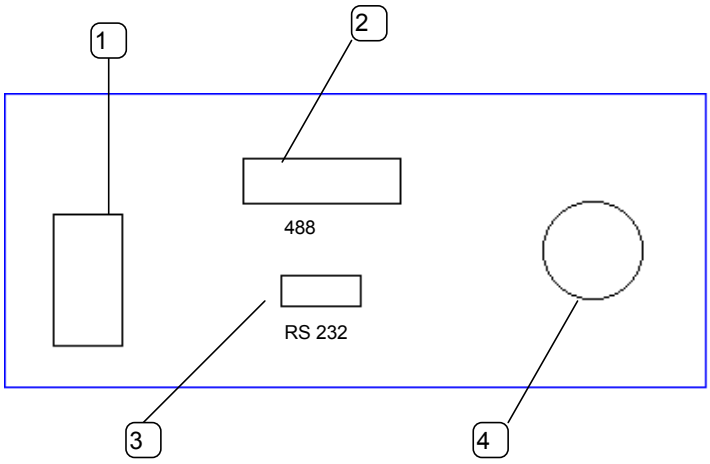

Fig. 3-2 Rear panel

3.4 CP100 commands

Switching on the CP100 Controller the display will give the following message :

CP 100 SLIDE BAR CONTROLLER

3.5 Setting position.

Switching on the instrument the CP100 Controller will move the slide at position 0.
The position zero will be set when the slide will switch on the limit switch positioned in the bar.
To set a different position follow the steps :

1) Digit the new position using the data input keys

2) Press the position key to enter the position, the slide will move at the position desired.

In the left corner on the top line of the display it is indicated the current position value in mm.

In the left corner on the top line of the display it is indicated the target position value in mm.

The maximum length is 5750 mm

Using the FRANKONIA absorbing clamp (ACF-01) the maximum length is 5200 mm. Giving an higher value the slide will beat to the end of the bar.

3.6 Setting speed

It is possible to set the speed between the value 50 mm/s and 250mm/s.
To set the position follow the steps :

To set a different speed follow the steps :

1) Digit the new speed using the data input keys.

2) Press the speed key to enter the new speed.

In the left corner on the bottom line of the display it is indicated the current speed value in mm/s.

3.7 Stopping the slide

It is possible to stop the slide pressing together the keys :

F1 and REMOTE

3.8 Local and remote

Connecting the CP100 controller to the PMM 9000 or to the PMM 8030 or to the PMM 8000 it is possible to control in remote mode the slide bar.
When the CP100 is controlled in remote mode will appear the message in the right corner of the bottom line of the display :

REMOTE RS-232.

Pressing the local key the CP100 to disable the remote control.

4 - Using Slide-bar with PMM 9000

4.1 Introduction

Using the PMM 9000 receiver it is possible to control the CP100 Controller, in this way the test will be performed in automatic mode.
The PMM 9000 has installed the CP100 driver in the standard configuration ; the scope of this chapter is to give an indication about the use of the PMM 9000 with the SB600 System ; for more details about the PMM 9000 commands see the operating manual

4.2 PMM 9000 action

To control the CP100 needs to call the action EXTERN in the scantab of the sweep mode. This action call a driver of an external instrument.
The driver is called CP100DRV.exe and it is installed in the 9000/system directory.

An example of action is :
extern cp100drv table\rep50.sld

In the PMM 9000 operating Manual it is indicated how to do an action.
Using this action the PMM 9000 will repeat the sweep defined in the SCANTAB for different positions of the slide ; the file rep50.sld contains all the specifications regarding the setting of the slide-bar like start position, stop position and step and it has to be on the 9000/table direcory
This is an example :

Lower Limit	0
Upper Limit	520
Home	Yes
StepRepeat	10

where
Lower Limit : indicate the start position in cm
Upper Limit : indicate the stop position in cm
Home : Yes or No ; giving yes the slide will come at position 0 at the end of the measurement, giving No will not come at position 0 at the end of the measurement.
StepRepeat : indicate the step in cm ; this parameter can be also negative like -10,

Another possibility is to define in a file .sld all the positions, like the following example :

Lower Limit	0
Upper Limit	520
Position	20
Position	50
Position	200

where
Position indicate the position where the slide will stop in cm.
The speed will be always the speed set on the CP100 control.
Different commands can be combined to create different actions, for example see the following :
extern cp100drv table\rep50.sld
table 55014
Using this action the PMM 9000 will repeat the sweep defined in the SCANTAB for different positions of the slide but only in the frequencies defined in the table with name 55014; the file rep50.sld contains all the specifications regarding the setting of the slide-bar like start position, stop position and step.

In the attached diskette find this files :

rep_1.sld	copy in the directory 9000/table (example of slide bar setting
rep_2.sld	copy in the directory 9000/table (example of slide bar setting
scan_1.act	copy in the directory 9000/action (first example of action)
scan_2.act	copy in the directory 9000/action (second example of action)

4.3 Measurements

Using the PMM 9000 follow this steps to set the instruments for an automatic measurement.

1) Connect the PMM 9000 to the CP100 controller using the serial cable.
2) Connect the CP100 Controller to the motor using the included cable.
3) Go in sweep mode on PMM 9000.
4) Go in measure and set in the SCANTAB the measurement parameters (for this operation consult the PMM 9000 operating Manual and consider the frequency range 30 - 300 MHz).
5) Select in the action column the action correct (only EXTERN command)
6) Start the measurement

☞NOTE

The PMM 9000 will display a message during the movement of the slide. The limits are given considering the Quasi-Peak detector, but repeating a sweep for different positions using the quasi-peak detector can take a very long time.

To save time it is convenient to use the quasi-peak detector only when the emission is high ; for this reason we suggest to use the following procedure :

1) Connect the PMM 9000 to the CP100 Controller using the serial cable.
2) Connect the CP100 controller to the motor using the included cable.
3) Go in sweep mode on PMM 9000.
4) Go in measure and set in the SCANTAB the measurement parameters but enable only the peak and average detector(for this operation consult the PMM 9000 operating Manual and consider the frequency range 30 - 300 MHz).
5) Select in the action column the action correct (only EXTERN command).
6) Start the measurement.
7) At the end of the measurement save the file.
8) Go in marker menu, select the number of frequencies to save, then press the key SAVE TAB giving the name 55014.
9) Go in the sweep menu, then in measure and select in the action column the second action defined in the previous paragraph and enable also the quasi-peak detector.
10) Starting the measurement.
11) At the end of the measurement will be displayed different lines at different frequencies like result of measurement.

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Fax: +39 0182 586400

Mod. 18-1

Caro cliente
grazie per aver acquistato un prodotto NARDA! Sei in possesso di uno strumento che per molti anni ti garantirà un'alta qualità di servizio. NARDA riconosce l'importanza del Cliente come ragione di esistenza; ciascun commento e suggerimento, sottoposto all'attenzione della nostra organizzazione, è tenuto in grande considerazione. La nostra qualità è alla ricerca del miglioramento continuo. Se uno dei Suoi strumenti NARDA necessita di riparazione o calibrazione, può aiutarci a servirla più efficacemente compilando questa scheda e accludendola all'apparecchio.
Tuttavia, anche questo prodotto diventerà obsoleto. In questo caso, ti ricordiamo che lo smaltimento dell'apparecchiatura deve essere fatto in conformità con i regolamenti locali. Questo prodotto è conforme alle direttive WEEE dell'Unione Europea (2002/96/EC) ed appartiene alla categoria 9 (strumenti di controllo). Lo smaltimento, in un ambiente adeguato, può avvenire anche attraverso la restituzione del prodotto alla NARDA senza sostenere alcuna spesa. Può ottenere ulteriori informazioni contattando i venditori NARDA o visitando il nostro sito Web www.narda-sts.it.

Dear Customer
thank you for purchasing a NARDA product! You now own a high-quality instrument that will give you many years of reliable service. NARDA recognizes the importance of the Customer as reason of existence; in this view, any comment and suggestion you would like to submit to the attention of our service organization is kept in great consideration. Moreover, we are continuously improving our quality, but we know this is a never ending process. We would be glad if our present efforts are pleasing you. Should one of your NARDA equipment need service you can help us serve you more effectively filling out this card and enclosing it with the product.
Nevertheless, even this product will eventually become obsolete. When that time comes, please remember that electronic equipment must be disposed of in accordance with local regulations. This product conforms to the WEEE Directive of the European Union (2002/96/EC) and belongs to Category 9 (Monitoring and Control Instruments). You can return the instrument to us free of charge for proper environment friendly disposal. You can obtain further information from your local NARDA Sales Partner or by visiting our website at www.narda-sts.it.

☑ **Servizio richiesto**: ☑ *Service needed*:

☐ Solo taratura ☐ Riparazione ☐ Riparazione & Taratura ☐ Taratura SIT ☐ Altro:
☐ Calibration only ☐ Repair ☐ Repair & Calibration ☐ Certified Calibration ☐ Other:

Ditta:
Company:

Indirizzo:
Address:

Persona da contattare: *Technical contact person:* **Telefono:** *Phone n.*

Modello: *Equipment model:* **Numero di serie:** *Serial n.*

☑ ***Accessori ritornati con l'apparecchiatura:*** ☐ **Nessuno** ☐ **Cavo(i)** ☐ **Cavo di alimentazione** **Altro:**
☑ *Accessories returned with unit:* ☐ None ☐ Cable(s) ☐ Power cable Other:

☑ ***Sintomi o problemi osservati:*** ☑ *Observed symptoms / problems*:

☑ ***Guasto***: ☐ **Fisso** ☐ **Intermittente** ***Sensibile a*** : ☐ **Freddo** ☐ **Caldo** ☐ **Vibrazioni** ☐ **Altro**
☑ *Failure*: ☐ Continuous ☐ Intermittent *Sensitive to*: ☐ Cold ☐ Heat ☐ Vibration ☐ Other

Descrizione del guasto/condizioni di funzionamento:
Failure symptoms/special control settings description:

Se l'unità è parte di un sistema descriverne la configurazione:
If unit is part of system please list other interconnected equipment and system set up:

Suggerimenti / Commenti / Note:
Suggestions / Comments / Note: