



166, avenue Jean Lagarrigue
Les Essarts B.P. 41 76530 GRAND COURONNE
Tél : 02 35 67 26 80 Fax : 02 35 67 01 64
E-mail : contact@smpr.com – Web : <http://www.smpr.com>
S.A.S. au capital de 1 015 200 Euros
R.C.S. Rouen 394 499 131 – APE 332B
SIRET 394 499 131 00032 – N° T.V.A. : FR 17 394 499 131

MUX8

8 channels multiplexer for measuring instruments

OPERATING INSTRUCTIONS



Agence d'Anncy : SMPR CONTROLE 22, avenue des vieux moulins BP 424 - 74020 ANNECY CEDEX
Tél : 04 50 45 24 61 Fax : 04 50 51 73 83 E-mail : contact@smpr.com – Web: www.smpr.com
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READ THE SAFETY NOTICES IN APPENDIX C BEFORE USING.

WARNING

The information you will find in this document can be modified without notice.

The manufacturer allows no warranty of any kind including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

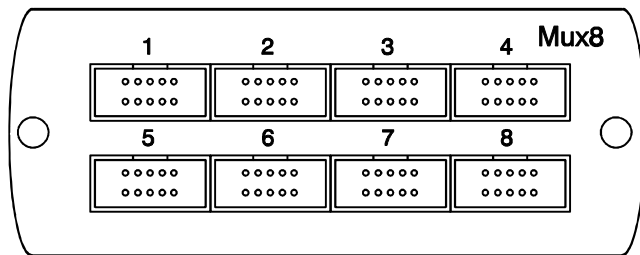
The manufacturer is responsible neither for mistakes which can appear in this handbook nor for direct or indirect damages arising from the equipment, the performances and the use of this material.

PRESENTATION

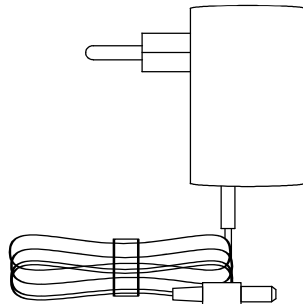
The MUX8 multiplexer for instruments enables the communication between 1 to 8 instruments with a computer or a similar device equipped with an RS232 type interface. So the computer can make the data acquisition from different instruments.

Mitutoyo instruments and Sylvac, Tesa Brown & Sharpe, ... instruments with an "Opto RS duplex" circuit can be connected too.

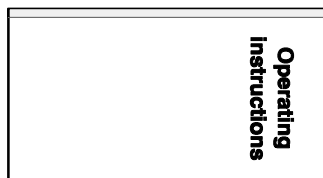
WHAT HAS BEEN SUPPLIED



MUX8



ELECTRICAL ALIMENTATION MODULE



OPERATING INSTRUCTIONS

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I. STARTING PROCEDURE

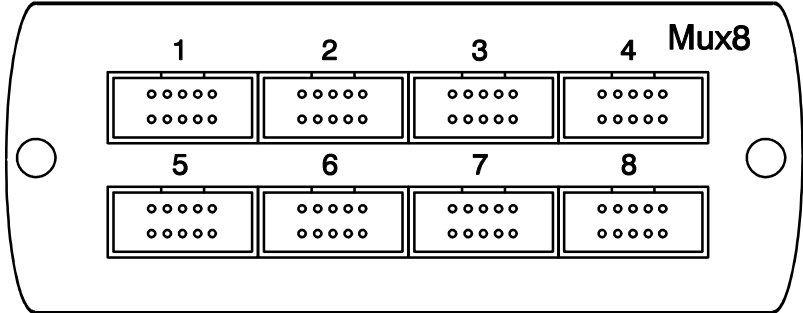
1. OPERATION

Connect the mains socket adapter, the instruments and the RS 232 linkage cable.

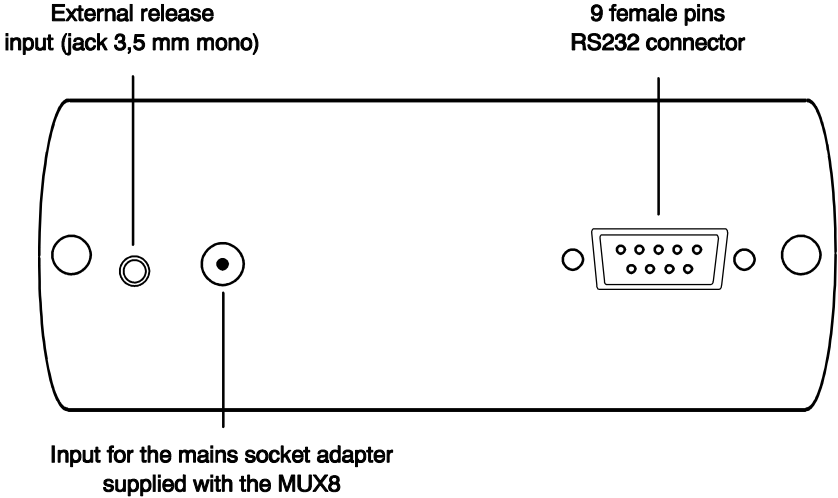
Connect the mains socket adapter on the electric network.

IMPORTANT: **The mains socket adapter connection must be linked to a single-phase electric network shielded with a fuse on all conductors.**

2. FRONT PANEL



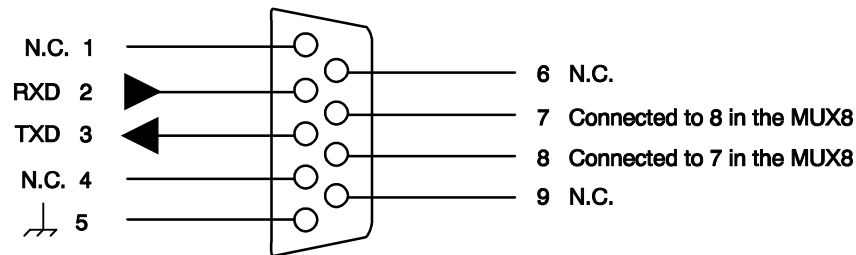
3. REAR PANEL



II. RS 232 PORT

The RS 232 port is fitted with a Sub D 9 female pin connector.

1. SIGNALS DESCRIPTION AND PINS ALLOCATION



N.C. : Not connected in the MUX8

2. DATA

Data are transmitted according to the following format :
9600 bauds, 8 data bits, no parity, 1 stop bit

3. CHECKING MESSAGES ON THE RS 232 PORT

Messages received on the RS232 port are filtered :

- Only the following characters are allowed : @ Esc * L D N 0 1 2 3 4 ? R T S $C_R^{L_F}$
- Only the characters 1, 2, 3, 4, @ and Esc are allowed as 1st character of a message.
- A message must end with a L_F character (except interrogations 1,2,3,4 in multiplexed mode).
- Each received character releases a delay time (of 0,07 seconds) ; the next character must arrive before the end of this delay time (so, messages cannot be entered manually) ; a L_F character cancels this delay time.

If these criteria are not respected, the message being received is cancelled and the reception buffer is dumped.

4. STATUS MESSAGE

A special message enables the detection of the multiplexer presence (switched off, wrongly connected or disconnected) and to get its serial number.

Commands : @? $C_R^{L_F}$ ou Esc? $C_R^{L_F}$ ou @*? $C_R^{L_F}$ ou Esc*? $C_R^{L_F}$

The multiplexer answers with « M4nnnnnnn $v1.00 C_R^{L_F}$ » : M4nnnnnnn = serial number on 9 characters,
□ = space, v1.0x = programm version on 5 characters.

III. COMMANDS THROUGH THE RS 232 PORT

The MUX8 multiplexer can operate according to two different modes:

- the multiplexed mode.
- the "MULTIMUX" addressed mode which requires the use of a foot switch.
This mode ensures a total compatibility with our other multiplexers : MIMUX4 and MULTIMUX.

1. MULTIPLEXED MODE

This mode is automatically selected when switching on.

A) DIRECT TRANSMISSION OF INSTRUMENTS

The MUX8 scans continuously channels 1 to 8 and transmits the value of an instrument (MULTIMUX format) as soon as the operator uses the "transfer" key of this instrument.
Values are transmitted according to the following format :

Vx:□uuuu□ttt□seeeee.dddddd C_R^LF

- x gives the instrument number.
- □ space
- uuuu unit : mm, inch, IN, rps, m/s, ... (□□□□ when unit not transmitted)
- ttt tolerance : GO□, +NG, -NG, ABS, REL, MIN, MAX, ... or □□□
- s read value sign
- eeeee 5 digits : whole part preceded by 0s when necessary
- . decimal point
- ddddd 6 digits : decimal part followed by 0s when necessary
- C_R^LF C_R (ASCII 0D) + L_F (ASCII 0A) end the transmission

For example : Value -1.25 mm on channel 2 will be transmitted as follows :
V2.□mm□□□□□□.00001.250000 CRLF

B) ACQUISITION REQUEST FROM AN INSTRUMENT (MUX50 Type MITUTOYO MODE)

Commands '1' to '8' (ASCII characters 31h to 34h, without C_R^LF) received on the MUX8 RS 232 port release reading and then values transmission (MULTIMUX format) of instruments 1 to 8.

2. MULTIMUX ADRESSED MODE

As soon as a correct addressing instruction is received on the RS232 port, the multiplexer selects the corresponding instrument input. Then it is working in *MULTIMUX addressed mode*.

A) INSTRUMENT SELECTION COMMAND

This command is setting up the connection to an instrument. This connection will remain valid until reception of a new configuration. The MUX8 does not answer this command.

Command Format:

Character	@ or Esc	*	N	x	CR	LF
Decimal	64 or 27	42	78	49 to 52	13	10
Hexadecimal	40 or 1B	2A	4E	31 to 34	0D	0A

x and y characters represent the selected input number, that is to say 01 to 08.

B) INSTRUMENT READING COMMAND

It causes the selected instrument reading, then the value transmission on the RS232 port.

Command format:

Character	@ or Esc	*	L	D	CR	LF
Decimal	64 or 27	42	76	68	13	10
Hexadecimal	40 or 1B	2A	4C	44	0D	0A

When an instrument has been selected, its value transmission can be released also through the external release input (foot switch) or through the instrument "transfer" key.

C) TRANSMITTED VALUES

Values are transmitted according to the following format :

$$Vx:\square uuuu\square ttt\square seeeee.dddddd\ C_R\ L_F$$

- x gives the instrument number.
- \square space
- uuuu unit : mm, inch, IN, rps, m/s, ... ($\square\square\square\square$ when unit not transmitted)
- ttt tolerance : GO \square , +NG, -NG, ABS, REL, MIN, MAX, ... or $\square\square$
- s read value sign
- eeeee 5 digits : whole part preceded by 0s when necessary
- . decimal point
- ddddd 6 digits : decimal part followed by 0s when necessary
- $C_R\ L_F$ C_R (ASCII 0D) + L_F (ASCII 0A) end the transmission

For example : value -1.25 mm on channel 2 will be transmitted as follows
 $V2:\square mm\square\square\square\square\square\square-00001.250000\ C_R\ L_F$

D) ERROR MESSAGES

When a reading is requested on an input which is not connected to an instrument or when this instrument is not switched on, an error message is transmitted according to the following format :

Vx:Ex^{C_RL_F}

"Ex" represents the error code :

- "E1" = communication with instrument error.
 - "E3" = instrument reading error.
-

IV. TECHNICAL SPECIFICATIONS

MUX8	
Dimensions L x D x H	108 x 68 x 44 mm
Weight	0,230 kg
Material	Aluminium
Operating temperature	0° C to + 45° C
Storage temperature	- 40° C to + 70° C
Permissible relative humidity	80%
Not permissible relative humidity	80%
Protection	IP 42
Inputs - Outputs	<ul style="list-style-type: none"> • 8 inputs for MITUTOYO format or Opto RS instruments (1200 or 4800 bauds SYLVAC, TESA, ... type) • 1 external release input (Jack 3,5 mono)
Low voltage supply	7,5V $\overline{\text{---}}$ through external mains adapter
Power consumption	50 mA maxi (all inputs connected)

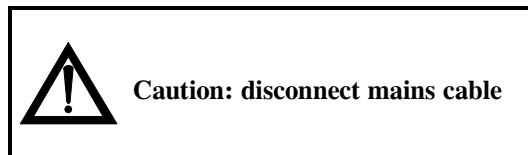
AL.0030.075.1S COMATEC AC/DC SECTOR ADAPTER	
Mains voltage	230V \pm 10%
Frequency	\sim 50 Hz
Output	7,5V $\overline{\text{---}}$ 300Ma

V. OPTIONS

- **SERIAL LINKAGE CABLE - P/N CA09RS09**
For RS 232 linkage with a P.C. - 9 pin socket.
 - **SERIAL LINKAGE CABLE - P/N CA09RS25**
For RS 232 linkage with a P.C. - 25 pin socket.
 - **CABLE BETWEEN OPTO RS 232 INSTRUMENT AND MUX8 - P/N : M4-OPTO**
 - **FOOT SWITCH FOR VALUES TRANSFER - P/N: PEMX4OOE**
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APPENDIX A

CLEANING



Use a soft cotton cloth slightly soaked with an ethyl alcohol based product.

DO NOT USE the following products: acetone, benzene, toluene and halogens hydrocarbons.

APPENDIX B

ONE YEAR LIMITED WARRANTY ON MUX8 PARTS

MANUFACTURERS RESPONSABILITY

MUX8 - PRODUCTS HARDWARE AND LABOUR PARTS. For a period of one year from the effective warranty date, the manufacturer will pay for service labour and replacement parts. Replacement parts may be new or remanufactured at the option of the manufacturer and are warranted for the remaining portion of the original warranty period.

FIRST END-USER COVERAGE. This warranty applies only to the first end-user of the product and is not assignable to any other subsequent purchaser or user.

NOT COVERED. Any accessory or expansion item not included in the original factory packaging for the product is not covered.

Costs of installation or adjustment or damage resulting from causes beyond the control of the manufacturer, including acts of God, misuse, neglect, accident damage occurring in shipment or from improper installation, operation or application; or damage resulting from use of products, components, accessories or expansion items not supplied by the manufacturer are not covered. It also does not cover products which have been altered in any way without the written approval of the manufacturer including electrical or mechanical alteration, removal of serial numbers or the manufacturer trademarks or other identification.

THE SOLE REMEDY UNDER THIS WARRANTY SHALL BE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS AS PROVIDED ABOVE. UNDER NO CIRCUMSTANCES SHALL THE MANUFACTURER BE LIABLE IN ANY WAY TO THE USER FOR INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO, ANY LOSS OF DATA, BUSINESS OR PROFITS, WHETHER OR NOT FORESEEABLE AND WHETHER OR NOT BASED ON BREACH OF WARRANTY.

THE PRESENT WRITTEN WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ALL WARRANTIES ARE EXPRESSLY EXCLUDED AND NEGATED.



OWNERS RESPONSIBILITY

OPERATING MANUAL AND OTHER DOCUMENTATION. Read your operating manual and other documentation carefully so that you will understand the operation of your products. It may be possible to avoid unnecessary service work which may not be covered by this warranty.

AFTER SALES SERVICE. If the product is defective, take it to an authorized dealer.

APPENDIX C

SAFETY NOTICES

		<p>Caution: To reduce the risk of electric shock which could cause personal injury, follow all safety notices. The symbols shown are used in your documentation and on your equipment to indicate safety hazards.</p>
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The mains adapter (electric power supply module) cannot be repaired.
When defective, it should be thrown or sent back to the distributor.

CE: This device meets the EN 61010-1 safety standards and the electromagnetic compatibility EN55011 class A, ENV 50140 Criterium A, ENV 50141 Criterium A, ENV 50204 Criterium A, EN 61000-4-2 Criterium B, EN 61000-4-4 Criterium B.

The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.