

Mux4 / Mux8



User's manual



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BEFORE USING THE MULTIPLEXER, PLEASE READ THE SAFETY RULES IN THE APPENDIX B VERY CAREFULLY

1. WARNING

The information contained in this document can be modified without notice.

The manufacturer does not give any guarantee regarding the guarantees for commercial quality of this material or for its ability to fit to a particular use.

The manufacturer is not responsible for the eventual errors to be found in this manual and is also not responsible for the direct or indirect damage resulting from the equipment, from the performances and from the use of this product.

We did our best to write a most precise possible manual. However, if you find any error in this guide, please feel free to contact the company Metro.

2. CLEANING

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

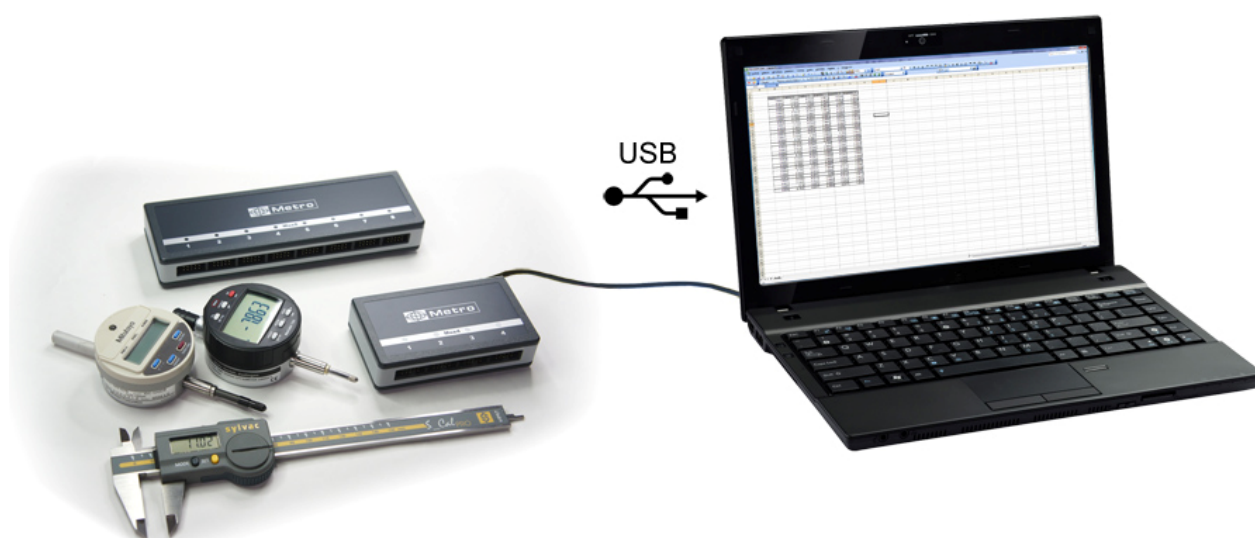
DO NOT USE the following products: acetone, benzene, toluene and halogen hydrocarbons.

3. PRESENTATION

The Mux2,4,8 multiplexer for instruments enables the communication between 1 to 8 instruments and a computer or a similar device equipped with a USB type interface

The computer can so make the data acquisition from the different instruments.

The instruments with Digimatic connectivity (Mitutoyo, Mahr) such as those having an « Opto RS duplex » interface can be connected equally.



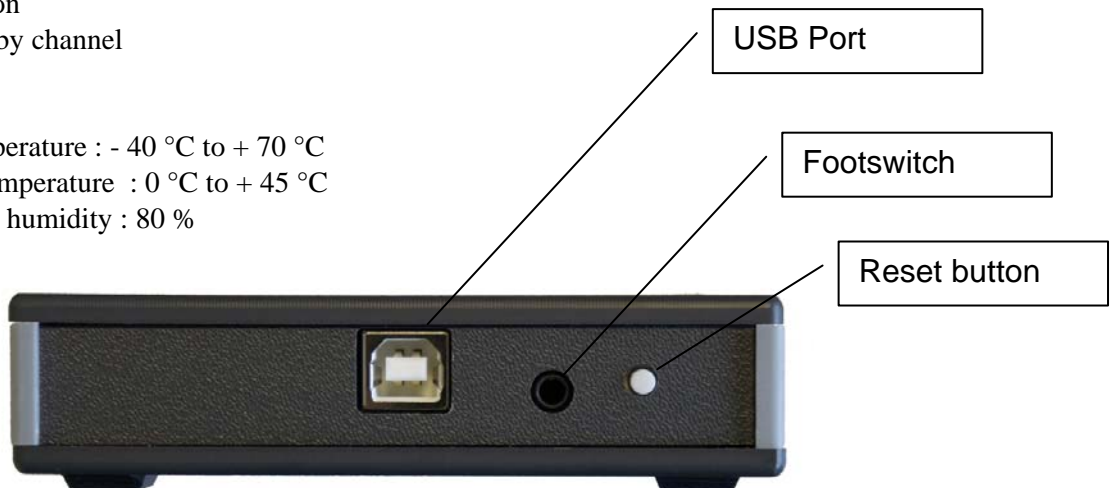
4. CONTENTS OF THE BOX



5. BASIC TECHNICAL DATA

- 1 USB port for connection to a computer and power supply
- 1 external release input (pedal or contact)
- 1 Reset button
- 1 blue LED by channel

- Storage temperature : - 40 °C to + 70 °C
- Operating temperature : 0 °C to + 45 °C
- Max relative humidity : 80 %

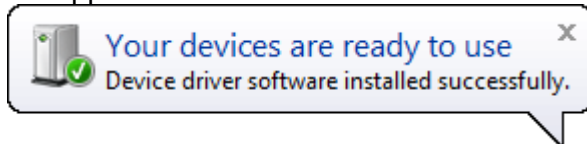


	Mux4	Mux8
Mitutoyo or Opto RS duplex inputs	4	8
Dimensions: width, height, depth in mm	104*28 *60	1856*28*60
Weight	165 g	235 g

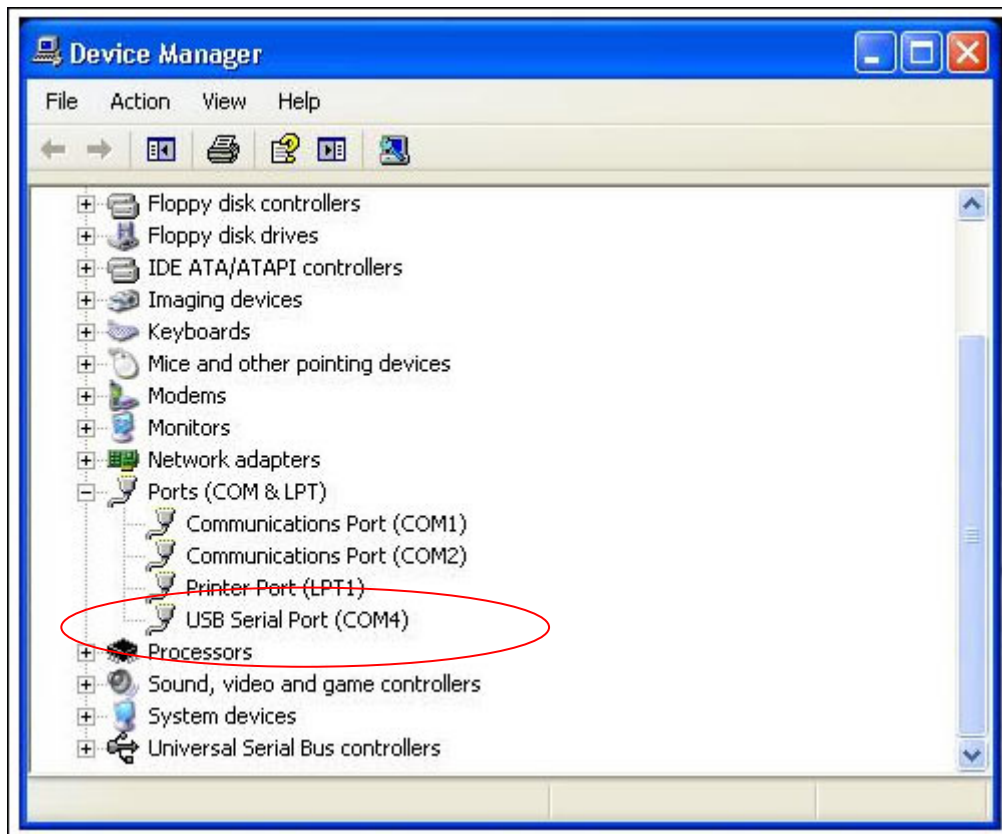
6. INSTALLATION

Please follow the following procedure before using your Mux 4 or 8:

- 1- Launch the file « driver USB.exe » located on the directory « Driver USB » that is on the CD. The installation is automatic.
- 2- Connect your Mux 4 or 8 onto your computer with the USB cable. The following message appears on windows :



- 3- A COM PORT (USB SERIAL PORT) appears in the Device Manager window (Control pannel → System → Device Manager → Ports (COM & LPT)
It is now possible to write the COM port number. This could be useful for configuring your acquisition software.



- 4- Your Mux 4 or 8 is now ready to operate

7. THE USB PORT

Data are transmitted according to the following format:

9600 baud, 8 data bits, no parity, 1 stop bit

Checking messages on the USB port

Under mentioned 'n' can take the values 2, 4, 8, according to the Mux channel number.
The messages received on the RS232 port are filtered:

- Only the following characters are allowed: @ Esc * L D N 1 to n ? R T S ^{C_R} ^{L_F}
- Only the characters 1 to n @ and Esc are allowed as 1st character of a message.
- A message must end with a LF character (except interrogations 1 to n in multiplexed mode).
- Each received character releases a delay time (of 0.07 second); the next character must arrive before the end of this delay time (the messages can so not be captured manually); a LF character cancels this delay time.

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

8. STATUS MESSAGE

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

Commands: @*?^{C_R} ^{L_F} or Esc*?^{C_R} ^{L_F}

The multiplexer is answering with « Mnyyyyyyúvx.xx^{C_R} ^{L_F} » : Mnyyyyyy = serial number on 9 characters, ú = space, vx.xx = program version on 5 characters

Two different modes are available to operate the Mux 4 or 8 multiplexer:

- The multiplexed mode. This mode is selected when device is powered up. Mux scan inputs and transmits the value of an instrument as soon as the operator uses the « transfer » key of this instrument.
- The addressed mode. As soon as it receives a correct addressing instruction on the USB port, the multiplexer selects the corresponding instrument input. The Mux is then in multiplexed mode. Only the selected instrument can send or receive data.

9. MULTIPLEXED MODE

This mode is selected when device is powered up.

The multiplexed mode allows direct transmission from an instrument.

Mux scan inputs and transmits the value of an instrument as soon as the operator uses the « transfer » key of this instrument.

The values are transmitted according to the following format:

Vx: # u u u u # t t t # s e e e e e . d d d d d d ^{C_R} ^{L_F}

- x Gives the instrument number.
- # Space
- uuuu Unit : mm, inch, IN, rps, m/s, etc.. (#### if unit not transmitted)
- ttt Tolerance : GO#, +NG, -NG, ABS, REL, MIN, MAX, etc.. or ###
- s Sign of the read value
- eeeee 5 figures: whole part preceded by 0s if necessary
- . Decimal point
- dddddd 6 figures: decimal part followed by 0s if necessary
- ^{C_R} ^{L_F} ^{C_R} (ASCII 0D) + ^{L_F} (ASCII 0A) end the transmission

Exemple : the value -1.25 on channel 2 can be transmitted as follows:

V2: #mm#####-00001.250000 ^{C_R} ^{L_F}

Transmission request to an instrument:

Command '1' to '4' (Mux4) or '1' to '8' (Mux8) (ASCII character 31h to 38h, without ^{C_R} ^{L_F}) receives on Mux USB port, triggers reading of the corresponding instrument, and then transmit the value.

10. ADRESSED MODE

In addressed mode, only one channel (the addressed one) can communicate. The Mux foot switch can be used.

As soon as it receives a correct addressing instruction on the USB port, the multiplexer selects the corresponding instrument input. It is then working in addressed mode.

Channel selection command

This command is setting up the connection to an instrument. This connection will remain valid until the reception of a new configuration. The Mux4 does not reply anything to this command.

Command format:

Character	@ or Esc	*	N	x	CR	LF
Decimal	64 or 27	42	78	49 to 56	13	10
Hexadecimal	40 or 1B	2A	4E	31 to 38	0D	0A

The x character represents the number of the selected input, i.e. 1 to 4 (Mux4) or 1 to 8 (Mux8).

Instrument reading command

This command causes the previously selected instrument reading and then the transmission of the value to the USB 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, the transmission of its value can also be triggered through the external trigger input (foot switch) or with the instrument « transfer » key.

Values are transmitted according to the format described chapter 8

Error messages

When a requested reading is impossible, an error message is transmitted according to the following format : **Nxy:Ex**^{C_RL_F} Error code : E1= communication ; E3= reading

11. GOING BACK TO THE MULTIPLEXED MODE

This command reset the Mux in the multiplexed mode (as when it is switched on).
The Mux does not answer this command.

Commands: @*R^{C_RL_F} or Esc*R^{C_RL_F}

12. APPENDIX A

ONE YEAR LIMITED GUARANTEE FOR Mux2, 4, 8 PARTS

MANUFACTURER'S RESPONSIBILITY

SPARE PARTS AND LABOUR.

The manufacturer commits himself to pay for repair or replacement costs (labour costs included) during a period of one year as from the date the guarantee came into force. The spare parts can be new or renovated and are guaranteed until the end of the initial guarantee period.

FIRST END-USER COVERAGE.

This guarantee applies only to the first end-user of the product and is not assignable to any other subsequent purchaser or user.

RESTRICTIONS.

Any accessory or expansion item not included in the original factory packaging is not guaranteed.

The present guarantee does not cover: installation or repair costs, damages resulting from circumstances beyond the manufacturer's control like damages following acts of God, misuse, or careless mistake from the user, damages during the transport or due to a wrong installation, use or application, such as any material damage caused by the use of non supplied products, components or accessories. It also does not cover products modified without any written approval

from the manufacturer, including electrical or mechanical modification, removal of serial numbers or of the manufacturer's trademarks or of any other identification.

THE SOLE RECOURSE UNDER THIS GUARANTEE SHALL BE THE REPAIR OR THE REPLACEMENT OF DEFECTIVE PARTS AS INDICATED ABOVE. UNDER NO CIRCUMSTANCES THE MANUFACTURER CAN BE HELD LIABLE FOR INDIRECT OR SPECIAL DAMAGES OR FOR DAMAGES RESULTING FROM THE USE OF THE PRODUCT, INCLUDING ANY LOSS OF DATA, BUSINESS OR PROFIT, AND WHETHER THESE DAMAGES CAN BE FORESEEN OR NOT AND WHETHER THEY ARE BASED ON A GUARANTEE VIOLATION OR NOT.

THE PRESENT GUARANTEE REPLACES ANY OTHER EXPRESSED OR IMPLIED GUARANTEE INCLUDING BUT NOT LIMITED TO ANY GUARANTEE OF MARKETING OR ADEQUACY FOR A PARTICULAR USE; AND ALL THESE GUARANTEES ARE EXPRESSLY EXCLUDED AND CANCELLED.

13. APPENDIX B

TECHNICAL SERVICE.

If the product is defective, bring it back to an authorised dealer.

Any modification or any change done without any manufacturer's approval can invalidate the right to use the equipment.



This device complies with the safety standards EN 61010-1 and the electromagnetic compatibility EN55022 class B, CEI 801-2 (level II), CEI 801-3 (level III), CEI 801-4 (level III).



NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.