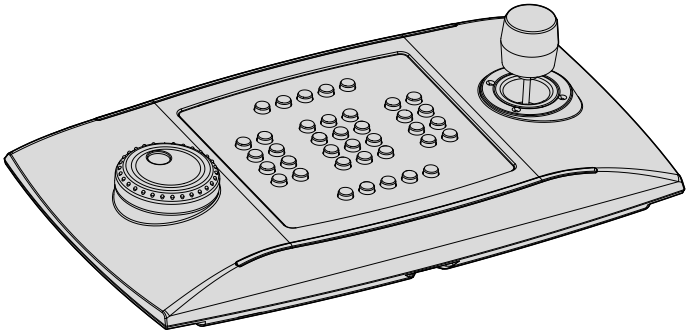
EN **English** - Instructions manual

MOBOTIX PTZ Keyboard

Universal keyboard for PC software applications



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1 About this manual

Before installing and using this unit, please read this manual carefully. Be sure to keep it handy for later reference.

1.1 Typographical conventions

DANGER!
High level hazard.
Risk of electric shock. Disconnect the power supply before proceeding with any operation, unless indicated otherwise.

WARNING!
Medium level hazard.
This operation is very important for the system to function properly. Please read the procedure described very carefully and carry it out as instructed.

INFO
Description of system specifications.
We recommend reading this part carefully in order to understand the subsequent stages.

2 Notes on copyright and information on trademarks

The quoted names of products or companies are trademarks or registered trademarks.

Microsoft®, Windows® 2000, Windows® XP, Windows® Server, Windows® Vista, Windows® 7, Windows® 8 and the Windows® logo are trademarks registered by Microsoft Corporation in the US and/or other Countries.

Linux® is a trademark registered by Linus Torvalds in the US and/or other Countries.

USBDView is a free software produced by NirSoft (**www.nirsoft.net**).

3 Safety rules

The manufacturer declines all responsibility for any damage caused by an improper use of the appliances mentioned in this manual. Furthermore, the manufacturer reserves the right to modify its contents without any prior notice. The documentation contained in this manual has been collected with great care. The manufacturer, however, cannot take any liability for its use. The same thing can be said for any person or company involved in the creation and production of this manual.

- The device must be installed only and exclusively by qualified technical personnel.
- Before any technical work on the appliance, disconnect the power supply.
- Do not use power supply cables that seem worn or old.
- Never, under any circumstances, make any changes or connections that are not shown in this handbook. Improper use of the appliance can cause serious hazards, risking the safety of personnel and of the installation.
- Use only original spare parts. Not original spare parts could cause fire, electrical discharge or other hazards.
- Before proceeding with installation, check the supplied material to make sure it corresponds to the order specification by examining the identification labels ("4.2 Product markings", page 6).

- This device complies with FCC (Federal Communications Commission) Part 15 Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
  FCC ID: 2AAIPDCZ.

4 Identification

4.1 Product description and type designation

MOBOTIX PTZ Keyboard is a dedicated keyboard used to control software programs on Personal Computers.

This keyboard simplifies and rationalizes the user interface quite remarkably and adds a joystick and jog shuttle to the control system. It has been conceived so that it can be used by both right-handed and left-handed users.

Every time the operator uses the keyboard, it will generate an event:

- Pressing of a touch key;
- Release of a touch key;
- Movement of the joystick;
- Movement of the jog dial;
- Movement of the shuttle ring.

All keys are totally independent. The pressing and release of keys is recognised, whatever the combination used. The software application will interpret the command.

The keyboard also has an internal buzzer and back-lighting for the keys. The software application manages the buzzer and back-lighting of keys.

It can be connected to a PC together with other standard peripherals (standard keyboard, mouse, videogame joystick etc.).

Patent Pending.

4.2 Product markings

See the label attached to the outside of the package.

5 Explanation of terminology

5.2.1 Driver and configuration files

Software and configuration files requested by the Operating System during installation to recognize peripherals.

5.2.2 MSD Device (Mass Storage Device)

USB peripheral device used to store and back-up data. The most common MSD device is the USB PenDrive. It does not require the installation of drivers as it is recognized directly by the Operating System.

5.2.3 HID Device (Human Interface Device)

USB peripheral device used to exchange information with human beings. The definition also includes PC keyboards, mouse, video game joystick and controls.

The HID peripheral device does not require the installation of drivers as it is recognized directly by the Operating System.

5.2.4 CDC Device (Communication Device Class)

USB peripheral device used to exchange information via serial channels.

When connected, the CDC peripheral device is recognized by the OS which installs it without the need for a driver (when using Linux) or after reading a configuration file supplied by the peripheral manufacturer (Windows).

5.2.5 Virtual com port (VCOM)

CDC device that emulates a standard serial port. This is managed via a series of simple and consolidated standard programming techniques which are available for most programming languages. The Windows OS will request a configuration file in order to recognize the device during installation.

5.2.6 Joystick HID (JOYHID)

USB joystick that is recognized as a standard video games joystick.

6 Preparing the product for use

Any change that is not expressly approved by the manufacturer will invalidate the guarantee.

6.1 Contents and unpacking

When the product is delivered, make sure that the package is intact and that there are no signs that it has been dropped or scratched.

If there are obvious signs of damage, contact the supplier immediately.

Keep the packaging in case you need to send the product for repairs.

Check the contents to make sure they correspond with the list of materials as below:

- MOBOTIX PTZ Keyboard keyboard
- Die cut sheets with transparent protective panel
- Quick Start
- Instructions manual

6.2 Safely disposing of packaging material

The packaging material can all be recycled. The installer technician will be responsible for separating the material for disposal, and in any case for compliance with the legislation in force where the device is to be used.

Bear in mind that if the material has to be returned due to a fault, using the original packaging for its transport is strongly recommended.

7 Installation

7.1 Installing the upper panel

In the standard keyboard the joystick is located on the right and the jog shuttle on the left.

This layout can be changed to suit the needs of a left-handed operator.

Remove the upper panel secured with adhesive tape.

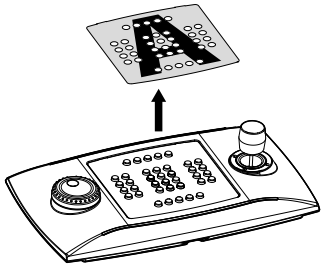


Fig. 01

Remove the lower film.

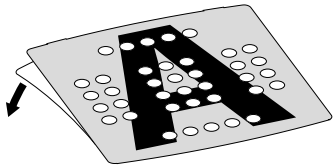


Fig. 02

Choose the layout for the keyboard and affix the adhesive panel, making sure that it does not touch the keys.

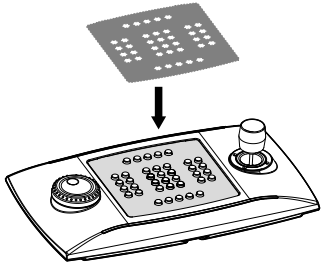


Fig. 03

To confirm the layout and the operating mode, follow the selection procedure described in the following paragraph.

7.2 Quick keyboard configuration at switching on

The MOBOTIX PTZ Keyboard keyboard can operate in two different modes:

MODE	EMULATION
Virtual com port (VCOM).	Virtual serial port.
Joystick Human Interface Device (JOYHID).	Video-game joystick (default).

Tab. 01

When switching on the keyboard, press the following keys simultaneously:

- **SET** + **4**: Virtual Com Port mode
- **SET** + **5**: HID Joystick mode.

Any previous change to the configuration will be lost.

7.3 LED status at switching on

When the keyboard is switched on, the backlit keys briefly show the current configuration of the keyboard:

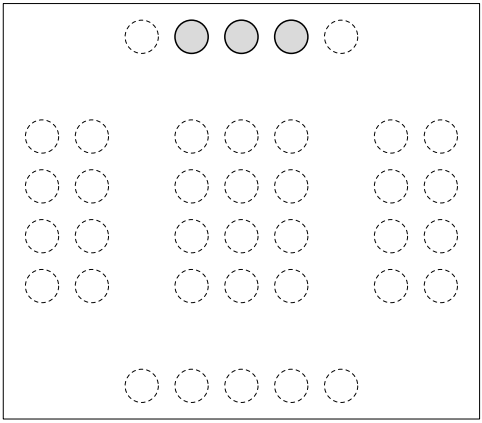


Fig. 04 HID Joystick mode.

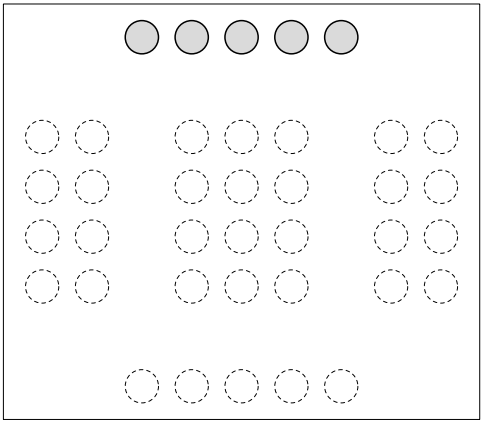


Fig. 05 Virtual Com Port mode.

The keyboard is correctly oriented when the LED bar is on the upper part.

When the keyboard is switched on, the central backlit numeric keys show the firmware version and could be needed in case of technical assistance.

7.4 Installation in HID Joystick mode

The keyboard does not require installation. It is automatically recognised by the operating system.

7.5 Installation in Virtual Com Port mode

7.5.1 Installation on PC with Windows environment

Installation consists of three phases:

- Retrieval of the configuration file
- Keyboard connection and recognition
- Change of the serial port number.

7.5.1.1 Online retrieval of the configuration file

Download the driver at:
http://support.videotec.com/ .

7.5.1.2 Retrieval of the unsigned configuration file from keyboard

Some Windows® versions do not request a signed driver (Windows® XP, Windows® Vista, Windows® 2000). You can download the driver from the keyboard.

Press and hold the **ESC** key and connect the keyboard to the PC.

This will allow the keyboard to be recognised as a MSD device on start-up. The OS recognizes it using system drivers.

In **Computer resources** search for the relative device (defined as **Removable disk**).

The device contains two files:

- **xp_vista.inf** for Windows Xp and Vista Operating Systems;
- **win2000.inf** for Windows 2000 OS.

Copy the file required by the installed OS to the PC.

Disconnect the keyboard.

7.5.1.3 Keyboard connection and recognition

Connect the keyboard without pressing any keys. The OS wizard procedure will ask for the driver. Enter the path to where the configuration file has been saved.

Follow the wizard instructions to complete the operation.

7.5.1.4 Modifying the serial port number in Windows

The Windows OS allows for mapping of the serial ports. Regardless of the hardware configuration, each serial port can be assigned a COM number from 1 to 256.

When installing on Windows environment, the OS will automatically assign a port number which may not necessarily meet the needs of the user.

To change the serial port number:

- Connect and install the MOBOTIX PTZ Keyboard keyboard.
- Go to the settings in **Control Panel/System/ Hardware/ Device Manager**.
- Scroll the list of peripherals and select **Ports (COM and LPT)**. The **USB CDC serial port emulation (COMx)** port corresponds to the MOBOTIX PTZ Keyboard keyboard.
- Click on **Property** for the required port.
- Go to **Port settings/Advanced** and change the port number in **COM port number.** Some ports may indicate they are **in use** by other devices, though this is not usually the case. If you select a port **in use**, check whether other devices (for instance an analog modem) are already using it.
- Press Confirm and exit.

After changing the port number, the **Device Manager** tab may still indicate the old COM number.

Close the **Device Manager** tab and then re-open it again to see if the number has been changed.

The installation windows of Windows® 7 and Windows® 8 are different between them. For further instructions please visit the address http://support.videotec.com/ and download the file MOBOTIX PTZ Keyboard Installation.

7.5.2 Removal

If there is an error during installation or it has not been completed correctly, the keyboard can be removed from the device list.

- Connect the MOBOTIX PTZ Keyboard keyboard. A message may pop up to warn the user that the device was not installed because an error occurred.
- Go to the settings in **Control Panel/System/ Hardware/Peripheral Devices**.
- Scroll the list of peripherals and select **Ports (COM and LPT)**:
- Select the **USB CDC serial port emulation (COMx)** port .
- Select **Uninstall** in the **Action** menu and confirm.
- Disconnect the keyboard.

The next time the keyboard is connected, the installation wizard will appear again, as indicated in the sections above (**Installation wizard for new hardware**).

7.5.2.1 Incomplete removal

If it is not possible to remove the port, or the operation has not been completed, we recommend using USBDView (**http://www.nirsoft.net/utils/usb_devices_view.html**) to uninstall the device.

Go to **Options** and select **Display Disconnected Devices** , then identify the device with the VendorID **204f**. Select or remove it using **File/Uninstall Selected Devices**.

7.5.3 Functional testing with Windows environment

Download the file Test software for virtual com port mode at:
http://support.videotec.com/ .

7.5.4 Installation with Linux environment

Linux does not require any driver to recognize the keyboard.

Launch **lsusb** from the terminal to obtain the list of connected USB devices: the keyboard is recognized as a **204F:0101** device.

The keyboard is managed by the system file as a **/dev/ ttyACM0** device.

7.5.5 Functional testing with Windows environment

Minicom is used for these tests.

Launch the application on the terminal and request the **/dev/ttyACM0** device.

Type in `[Buzzer+]` to activate the buzzer. Type `[Buzzer-]` to deactivate it. If the buzzer enables and disables the keyboard, it has been recognized and is operating correctly.

8 Configuration

8.1 Identification ID

The keyboard has no ID as the serial ports are identified universally by the OS. Even when more than one keyboard is connected via a USB HUB to the same USB port on the PC, they will be recognized as separate serial ports (for instance COM3 and COM4).

8.2 Setup procedure

A specific key sequence allows users to access the setup phase to:

- Set the keyboard orientation;
- Calibrate the joystick;
- Select the operating mode;
- Reset configuration to default values.

8.3 How to enter setup

- Press the **START** key;
- Press the **LEARN** key;
- Press the **ESC** key;
- Release the **ESC** key;
- Release the **LEARN** key;
- Release the **START** key.

The key LEDs will light up when setup has been accessed successfully:

- **ESC**: Exit without changes;
- **1**: Invert the keyboard;
- **3**: Calibrate the joystick;
- **4** and **7**: VCOM mode (with or without reset of the lookup chart);
- **5** and **8**: JOYHID mode (with or without reset of the lookup chart);
- **9**: Reset the configuration in VCOM mode.

Functions which have flashing keys are to be used very carefully as they could lead to apparent malfunctions of the keyboard.

After any option has been selected, the setup procedure terminates automatically.

8.4 Keys

8.4.1 Key 1: Inverting the keyboard

The keyboard can be used:

- By right-handed users (joystick on the right, jog shuttle on the left);
- By left-handed users (joystick on the left, jog shuttle on the right).

To invert the keyboard compared to the current settings:

- Enter setup and press **1**. The keyboard will save the setting and return to its normal operating mode.
- Remove the caption panel, paying attention to the fastening tabs. Rotate it by 180° and then replace it.
- Adjust the feet on the bottom of the keyboard to obtain the inclination required for each different surface.
- Carefully remove the USB cable from the bottom of the keyboard and insert it in the serpentine, making sure it is not a nuisance to the operator.

The inversion of the keyboard has nothing to do with the PC application which must not be changed.

The orientation of the keyboard can be set using VCOM commands `[Orientation+]` and `[Orientation-]`.

8.4.2 Key 3: Joystick calibration

The joystick can be calibrated if it malfunctions.

To calibrate the joystick:

Enter setup and press **3**. The LEDs in the centre of the keyboard will flicker during the calibration phase.

Move the joystick for a few seconds as far as it will go, in both a horizontal and vertical direction. Rotate the knob clockwise and counter clockwise several times, as far as it will go.

Release the joystick to assess its position when idle.

After 5 seconds of inactivity, the keyboard will save the values and confirm the calibration.

8.4.3 Keys 4 and 7: VCOM mode

Selecting VCOM mode:

Key **4**: Select VCOM mode with reset of the lookup chart.

Key **7**: (**for experts only**) select VCOM mode without reset of the lookup chart.

When key **4** is pressed, all the changes made to the key lookup chart are cancelled and the default configuration is reinstated (each key is assigned a number which corresponds to its default logical address).

(**For experts only**) Select key **7** to save any changes made to the lookup chart. Some keys may not necessarily be recognized as they were previously assigned to the emulation of the joystick keys.

When setup has been completed, disconnect and then reconnect the keyboard to enforce the changes.

8.4.4 Keys 5 and 8: JOYHID Mode

Selecting JOYHID mode:

Key **5**: select JOYHID mode with reset of the lookup chart.

Key **8**: (**for experts only**) select JOYHID mode without reset of the lookup chart.

When key **5** is pressed, all the changes made to the key lookup chart are cancelled and the default configuration is reinstated.

(**For experts only**) Select key **8** to save any changes made to the lookup chart.

When setup has been completed, disconnect and then reconnect the keyboard to enforce the changes.

8.4.5 Key 9: Configuration reset

The keyboard configuration is set to VCOM mode. All changes made to the configuration (e.g. the key lookup chart) will be lost.

8.5 Use in HID Joystick mode

When the keyboard in in JOYHID mode, it is recognized as a standard 4-axis 40 key joystick (38 real keys and 2 emulated (Jog dial)).

According to the USB specifications (ref. USB HID Usage Tables, ver1.12, paragraph 4.2 Axis Usages) the axes are assigned by default as follows:

Pan: X axis

Tilt: Y axis

Zoom (rotation): Z axis

Shuttle ring (rotation): Rx axis

Jog dial (rotation): At every step, a pressing of key 33 (anti-clockwise rotation) or key 34 (clockwise rotation) is emulated.

On pressing a key, the relative LED will light up.

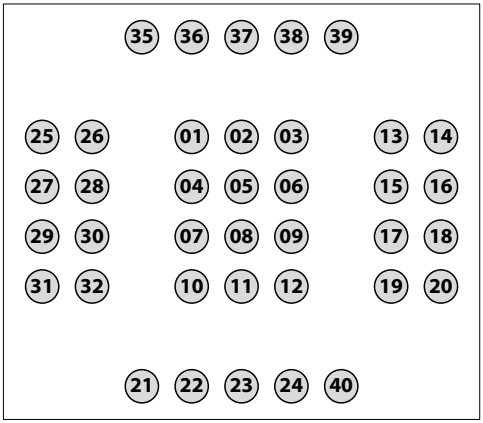


Fig. 06

The functions of the joystick's keys are established by the application. Refer to the relevant installer's manual.

9 VCOM communication protocol

When the keyboard is in VCOM mode it communicates with the PC via a simplified ASCII protocol. Printable characters are transmitted and any numbers are transmitted as strings (not as decimal or hexadecimal bytes).

No flow of hardware or software communication is managed.

The PC application will open the serial port which corresponds to the connected keyboard (the baudrate and serial port configuration are irrelevant) and it transmits/receives on this channel. The keyboard responds to every command given by the PC with an acknowledge message. Messages transmitted by the keyboard do not require acknowledgement by the PC application.

9.1 Key and LED layout

The MOBOTIX PTZ Keyboard keyboard manages a 72 key layout and the corresponding LEDs (8 rows, each with 9 columns).

Regardless of the actual number of keys available and used by the operator, each key/ LED coordinate is always identified by the same 2 numbers: row (1..8) and column (1..9).

When a key is pressed and released it transmits a lookup chart value.

The lookup chart default values correspond to the logical coordinates for each key:

11	12	**13**	**14**	**15**	**16**	**17**	18	19
21	22	23	24	25	26	27	28	29
31	**32**	33	**34**	**35**	**36**	37	**38**	**39**
41	**42**	43	**44**	**45**	**46**	47	**48**	**49**
51	**52**	53	**54**	**55**	**56**	57	**58**	**59**
61	**62**	63	**64**	**65**	**66**	67	**68**	**69**
71	72	73	74	75	76	77	78	79
81	82	**83**	**84**	**85**	**86**	**87**	88	89

Fig. 07

Example: On a default MOBOTIX PTZ Keyboard keyboard, the **ESC** key is represented by code `13`, the **MONITOR** key by `14`, etc.

If the keyboard is rotated by 180°, the configuration remains unaltered and there is no change from a PC application point of view.

By changing the value associated to each key on the lookup chart, it is possible to redefine its function and to allow the user to use keys with the same value.

9.2 Typographic conventions

The following typographic conventions are used in the protocol described below:

- [messages]: Transmitted message
- `variable_parameter`: Variable parameter inside a message
- ±: Plus or minus sign.

9.3 Syntax of messages

The messages sent to and from the PC consist in printable characters (from ASCII 32 to ASCII 127 codes, excluding ASCII 91 and 93) which are delimited by brackets [and]:

- [(ASCII 91) Open square bracket, **STX start of transmission**
- Message text of variable length
- [(ASCII 93) Closed square bracket, **STX start of transmission**

Given the type of messages transmitted and the quality of the USB communication, no checksum system is foreseen.

Example: When the **ESC** key is pressed (row 1, column 3) the default keyboard will transmit `[K+13]`:

- `[`: Identifies the start of the message
- `K+`: Pressed key
- `13`: Key lookup value (row 1, column 3)
- `]`: Identifies the end of the message.

9.4 Messages from keyboard to PC

The MOBOTIX PTZ Keyboard keyboard transmits every event to the PC and does not expect an acknowledge message.

The events are:

EVENT	MESSAGE	PARAMETERS
Pressing of a touch key.	[K+**val**]	**val**: Value of the key in the lookup chart.
Pressing of a touch key + shift.	[K+**val:shift**]	**val**: Value of the key in the lookup chart. **shift**: Pressed "shift" keys (‘1’..’8’).
Release of a touch key.	[K-**val**]	**val**: Value of the key in the lookup chart.
Pressing a "shift" key.	[H+**shift**]	**shift**: Number of "shift" key (‘1’..’8’).
Releasing a "shift" key.	[H-**shift**]	**shift**: Number of "shift" key (‘1’..’8’).
Movement of the joystick.	[J**±pp±tt±zz**]	**±pp**, **±tt**, **±zz**: Pan, tilt, zoom position -07..+07.
Movement of the shuttle.	[S**±aa**]	**±aa**: Rotation angle -70°..+70°.
Movement of the jog dial.	[D+1]	Clockwise rotation by one click (10 clicks per turn angle).
Movement of the jog dial.	[D-1]	Counter clockwise rotation by one click (10 clicks per turn angle).

Tab. 02

9.5 Messages from PC to Keyboard

All the messages transmitted from the PC to the keyboard are confirmed by the MOBOTIX PTZ Keyboard keyboard by an acknowledge message. The messages from PC to Keyboard are:

COMMAND	ACKNOWLEDGMENT BY MOBOTIX PTZ KEYBOARD	MEANING
[Status?]	[Ready]	Keyboard online presence test.
[Model?] [Firmware?] [Date?]	[Model=...] [Firmware=...] [Date=...]	Keyboard model and firmware version.
[Led+**rc**]	[Led**rc**Set]	Led on. **rc**: Row 1...8 column 1…9*.
[Led-**rc**]	[Led**rc**Set]	Led off. **rc**: Row 1...8 column 1…9*.
[Led-**Al**]	[Led**Al**Set]	Switching off all LED's.
[Led/**rc**]	[Led**rc**Set]	Led blinking. **rc**: Row 1...8 column 1…9*.
[LedRow**rsssssssss**]	[LedRowSet]	Led row setting. **r**: Row 1..8. **sssssssss**: LED row status (+ on. – off, / blinking).
[LedImmediate]	[LedImmediateSet]	Immediate LED ("9.6 LED updates", page 16).
[LedDelayed]	[LedDelayedSet]	Delayed LED update ("9.6 LED updates", page 16).
[LedUpdate]	[LedUpdateDone]	LED update ("9.6 LED updates", page 16).
[LedCopy]	[LedCopyDone]	LED status copy ("9.6 LED updates", page 16).
[Buzzer+]	[BuzzerSet]	Start buzzer.
[Buzzer-]	[BuzzerSet]	Stop buzzer.
[Buzzer/]	[BuzzerSet]	Alternated start buzzer.
[Orientation±]	[OrientationOk]	Keyboard orientation: + Joystick on the right, jog shuttle on the left, - Joystick on the left, jog shuttle on the right.
[JoyDir**X±**] [JoyDir**Y±**] [JoyDir**Z±**]	[JoyDirOk]	Positive direction of the joystick axis: allows you to invert the direction of the individual joystick axis. **X+**: To the right (default), **X-**: To the left, **Y+**: Upwards (default), **Y-**: Downwards, **Z+**: Clockwise (default), **Z-**: Counter clockwise.
[LookupWrite**rc,val**]	[Lookup(**rc**)<-val]	Definition of the **val** value for the **rc** key* in the lookup chart ("9.7 Lookup chart (for experts only)", page 16).
[LookupRead**rc**]	[Lookup(**rc**)=val]	Lookup value read set for a logical coordinate key **rc*** ("9.7 Lookup chart (for experts only)", page 16).
[BlockModeStart]	[BlockModeStart]	This allows you to modify the configuration without using the memory following multiple changes in values.
[BlockModeEnd]	[BlockModeEnd]	This saves the last modified values [BlockModeStart].

Tab. 03 * The coordinates refer to the logical address of the LEDs, and not the value set in the lookup chart.

9.6 LED updates

The effect of the [Led+**xx**], [Led-**xx**] abe [Led/**xx**] commands is usually immediate.

If it is necessary to set a number of LEDs at the same time, there may be an update delay mainly due to the asynchronous communication between the keyboard and the PC.

A temporary buffer is used to avoid a delay of this kind. After setting the temporary buffer values, an update operation is performed so that the contemporary change of all the modified LEDs is visible.

The following commands are used to this purpose:

COMMAND	MEANING
[LedImmediate]	The update of the LED is immediate.
[LedDelayed]	The update of the LEDs is delayed until the first command is received [LedUpdate]. In the meantime, all the [Led+**xx**], [Led-**xx**] and [Led/**xx**] commands are memorized in a temporary buffer.
[LedUpdate]	The temporary buffer is copied to the active buffer and all the modification made in the meantime are now visible.
[LedCopy]	The active buffer copies back to the temporary buffer.

Tab. 04

9.7 Lookup chart (for experts only)

Each key is assigned a value found on the key lookup. The default value corresponds to the logical coordinates of the key (for instance, the **ESC** key row 1, column 3, corresponds to a value of 13).

The LookupWrite command allows you to modify the value assigned to a key.

The changing of lookup values can cause apparent system malfunctions in the event that it is necessary to replace the keyboard at a later date. It is highly recommended to document any modifications made.

Changing lookup values enables you to:

- Have more keys which are acknowledged as the same key;
- Change the default position and the number of joystick keys in JOYHID mode.

9.7.1 Lookup value index

The lookup values range from 0.to 65535.

Certain value intervals have a special meaning:

- **0**: Disabled key;
- 1..99: Normal key, the value is sent when the key is pressed and released;
- 1001..1008: Shift Key descriptions;
- 50011..50089: Definition of multiple keys;
- 60001..60040: Assigning of keys in JOYHID mode;
- 60101..60103: For internal use, not available.

If a value of 01-99 is set, the corresponding code will be sent by the keyboard when the key is pressed/ released in VCOM mode.

By setting a value between 1001-1008, the key becomes a shift key. If any key is pressed while one or more shift keys are pressed the message [K+**xx**] changes to [K+**xx:pressed_shift_list**]. More than one shift key can be contemporaneously pressed at any time.

If a value of 500**rc** (**rc** within the range of 11..89) is set, this creates an alias and links the behaviour of the key to another **rc**. logical coordinate key. This allows you to manage a number of keys with the same behaviour as if they were one single key.

If a value of 600**nn** (**nn** in the range of 01-40) is set, the key will be assigned to the corresponding joystick key **nn** in JOYHID mode.

9.7.2 Modifications to the lookup chart to move and change the number of joystick keys.

Modification to the lookup chart allows you to change the position or the number of joystick keys when in JOYHID mode.

9.7.2.1 Creating shift keys in VCOM mode

The keyboard can have up to 8 shift keys, used to change the behaviour of ordinary keys.

Example: Transform key 86 into shift key number 1, and key 87 into shift key number 7.

OPERATION / COMMAND	EFFECT
Enter the programming settings	
Select **4**.	It switches to VCOM mode resetting the joystick lookup chart.
Disconnect and reconnect the keyboard.	It restarts in VCOM mode
`[BlockModeStart]` Command.	This allows you to modify the internal memory without using it for multiple writing commands.
`[LookupWrite86,1001]` Command.	Creates the shift key 1 changing the behaviour of key on row 8, column 6.
`[LookupWrite87,1007]` Command.	Creates the shift key 7 changing the behaviour of key on row 8, column 7.
`[BlockModeEnd]` Command.	Saves the modifications to the internal memory.

Tab. 05

To check the correct definition of the shift keys:

- Press **ESC** (key 1,3) without any shift key: The keyboard sends the code `[K+13]`;
- Press **INFO** (key in line 8, column 6, defined as shift number 1) and **ESC**: The key sends the code `[K+13:1]`. The shift keys that have been pressed are identified by the colon;
- Press **SHIFT** (arrow-up symbol, key in line 8, column 7, defined as shift number 7) and **ESC**: The keyboard sends the code `[K+13:7]`;
- Press **INFO**, **SHIFT** and **ESC**: The keyboard sends the code `[K+13:17]`.

9.7.2.2 Reduced modifications to the joystick default settings

Example: If you want to maintain most of the central group of keys, move key 1, create a double key for number 2.

OPERATION / COMMAND	EFFECT
Enter the programming settings	
Select **5**.	Resets the JOYHID key chart to default settings.
Disconnect and reconnect the keyboard.	It restarts in JOYHID mode.
Enter the programming settings again	
Select **7**.	It switches to VCOM mode without resetting the joystick lookup chart.
Disconnect and reconnect the keyboard.	It restarts in VCOM mode.
`[BlockModeStart]` Command.	This allows you to modify the internal memory without using it for multiple writing commands.
`[LookupWrite34,0]` Command.	Cancels key 1 from the default position (row 3, column 4)
`[LookupWrite31,60001]` Command.	Assigns key 1 (60001) to the key on row 3, column 1.
`[LookupWrite32,60002]` Command.	Creates a second 2 key on row 3, column 2.
`[BlockModeEnd]` Command.	Saves the modifications to the internal memory.
Enter the programming settings	
Select **8**.	Switches to JOYHID mode without resetting the lookup chart that has just been modified.
Disconnect and reconnect the keyboard.	It restarts in JOYHID mode.
Check that the corresponding LEDs come on when the keys are pressed.	

Tab. 06

9.7.2.3 Substantial modifications to the joystick default settings

Example: If you want to use just 8 joystick keys on the left side of the keyboard.

OPERATION / COMMAND	EFFECT
Enter the programming settings	
Select **5**.	Resets the JOYHID key chart to default settings.
Disconnect and reconnect the keyboard.	It restarts in JOYHID mode.
Enter the programming settings again	
Select **4**.	It switches to VCOM mode resetting the lookup chart (no keys valid for the joystick).
Disconnect and reconnect the keyboard.	It restarts in VCOM mode.
`[BlockModeStart]` Command.	This allows you to modify the internal memory without using it for multiple writing commands.
`[LookupWrite31,60001]` Command.	Creates key 1 on row 3, column 1.
`[LookupWrite32,60002]` Command.	Creates key 2 on row 3, column 2.
`[LookupWrite41,60003]` Command.	Creates key 3 on row 4, column 1.
`[LookupWrite42,60004]` Command.	Creates key 4 on row 4, column 2.
`[LookupWrite51,60005]` Command.	Creates key 5 on row 5, column 1.
`[LookupWrite52,60006]` Command.	Creates key 5 on row 5, column 2.
`[LookupWrite61,60007]` Command.	Creates key 7 on row 6, column 1.
`[LookupWrite62,60008]` Command.	Creates key 8 on row 6, column 2.
`[BlockModeEnd]` Command.	Saves the modifications to the internal memory.
Enter the programming settings	
Select **8**.	Switches to JOYHID mode without resetting the lookup chart that has just been modified.
Disconnect and reconnect the keyboard.	It restarts in JOYHID mode.
Check that the corresponding LEDs come on when the keys are pressed.	

Tab. 07

9.7.3 Modifications to the lookup chart to define alias keys

It is possible to have several keys that all perform the same commands (e.g. the shift keys). If a series of alias keys are pressed together at the same time, the pressed key event (`[K+`**xx**`]`) is only transmitted the first time it is pressed; the released key event (`[K-`**xx**`]`) is only transmitted when all the keys with the same alias have also been released.

Example: The 5 bottom keys on the keyboard act as if they are the same key.

OPERATION / COMMAND	EFFECT
Enter the programming settings	
Select **4**.	Switches to VCOM mode resetting the lookup chart.
Disconnect and reconnect the keyboard.	It restarts in VCOM mode.
`[BlockModeStart]` Command.	This allows you to modify the internal memory without using it for multiple writing commands.
`[LookupWrite84,50083]` Command.	The key on row 8, column 4, is an alias of the key on row 8, column 3.
`[LookupWrite85,50083]` Command.	The key on row 8, column 5, is an alias of the key on row 8, column 3.
`[LookupWrite86,50083]` Command.	The key on row 8, column 6, is an alias of the key on row 8, column 3.
`[LookupWrite87,50083]` Command.	The key on row 8, column 7, is an alias of the key on row 8, column 3.
`[BlockModeEnd]` Command.	Saves the modifications to the internal memory.
Enter the programming settings	
Check that when the 5 lower keys are pressed, they all transmit the same message `[K+83]`.	

Tab. 08

10 Maintaining and cleaning

10.1 Plastic cover cleaning (PC)

We suggest using neutral soap diluted with water or specific products for lens cleaning applied with a soft cloth.

Avoid ethyl alcohol, solvents, hydrogenated hydrocarbide, strong acid and alkali. Such products may irreparably damage the surface.

11 Disposal of waste materials

This symbol mark and recycle system are applied only to EU countries and not applied to the countries in the other area of the world.

Your product is designed and manufactured with high quality materials and components which can be recycled and reused.

This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.

Please dispose of this equipment at your local Community waste collection or Recycling centre.

In the European Union there are separate collection systems for used electrical and electronic products.

12 Troubleshooting

PROBLEM	POSSIBLE CAUSES AND SOLUTIONS
The INF file is requested during installation	See chapter "7 Installation", page 7.
The keyboard is connected via a hub and will not switch on	Connect the keyboard directly to the PC or only use a hub which is powered separately and can supply 500mA to each port.
When the keyboard is connected, the other connected USB devices switch off or reset	**The USB power supplied by the PC does not meet required specifications.** Connect the keyboard to another USB port or use a hub that supplies 500mA per port.
The installation procedure was not successful and Windows does not allow you to complete the operation	Option 01: • Connect the keyboard anyway and ignore the error message; • Go to **Control Panel/System/ Hardware/Device manager** and identify **Ports (LPT and COM);** • Select the keyboard; • Right click on the description of the keyboard and select Uninstall from the popup menu; • Now reinstall it again. Option 02: • Use USBDView to view the USB devices installed (**http://www.nirsoft.net/utils/usb_devices_view.html**); • Enable **Option/Display Disconnected Devices;** • Uninstall it using **File/Uninstall Selected Devices**; • Now reinstall it again.
The LED and key coordinates do not correspond to your requirements	Option 01: • The keyboard has probably been inverted and must be rotated by 180°; • In VCOM mode transmit the `[Orientation+]` or `[Orientation-]` command or launch the setup procedure and press **1** to invert it; • Now rotate the upper panel and move the support feet and the cable on the bottom shell. Option 02: • The lookup chart has been modified; • Launch the setup procedure. Press **4** to enable VCOM mode and to reset the keyboard to factory settings.

Tab. 09

13 Technical data

13.1 General

Backlit rubber keys

Alarm buzzer

13.2 Mechanical

Dimensions: 379x89x224mm (15x3.5x8.8in)

Unit weight: 1.4kg (3lb)

13.3 Electrical

USB powered

Consumption: 350mA max

13.4 Communications

USB 2.0

13.5 Protocols

Dedicated Virtual Com Port protocol

Joystick HID 4-axis 40 keys emulation

13.6 Operating system

Windows® compatible (drivers available on http://support.videotec.com/): Windows® 2000, Windows® XP, Windows® Server, Windows® Vista, W indows® 7, Windows® 8

Linux® compatible

13.7 Environment

Indoor

Operating temperature: 0°C (32°F)/+45°C (+113°F)

13.8 Certifications

Electrical safety (CE): EN60950-1, EN62368-1

Electromagnetic compatibility (CE): EN50130-4, EN55022 (Class B),EN61000-6-3, FCC Part 15 (Class B)

UL certification: cULus Listed

EAC certification

KC certification

14 Technical drawings

The values are in millimeters.

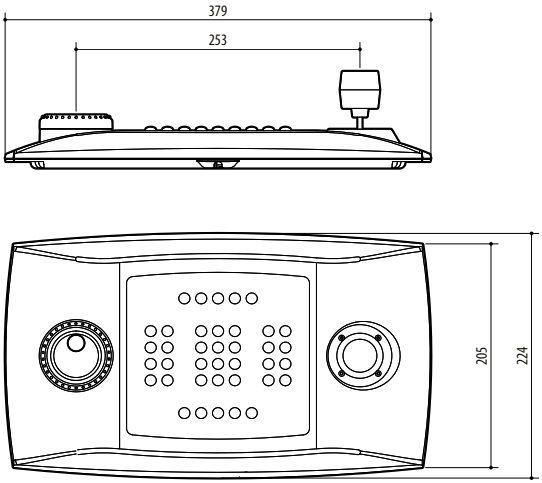
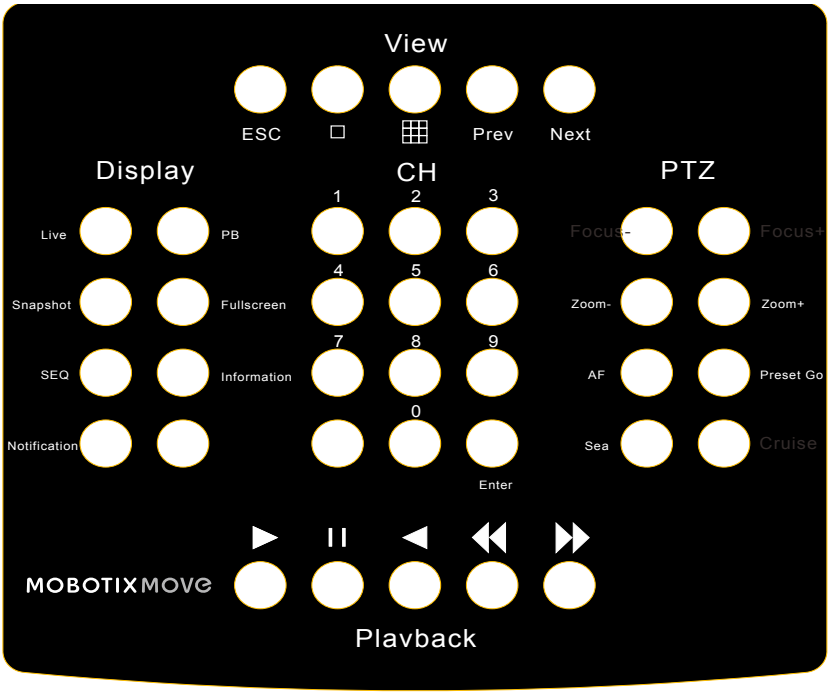


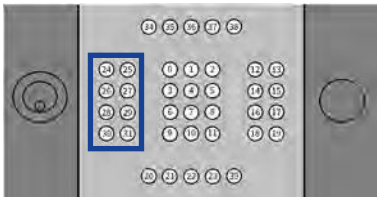
Fig. 08 MOBOTIX PTZ Keyboard

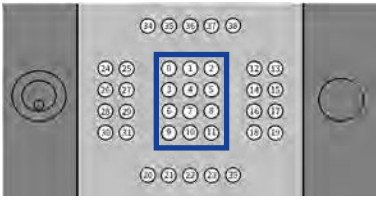
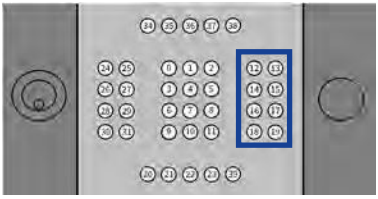
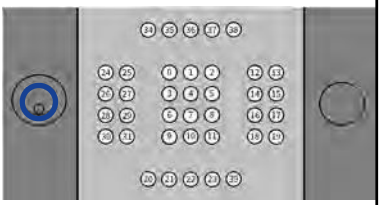
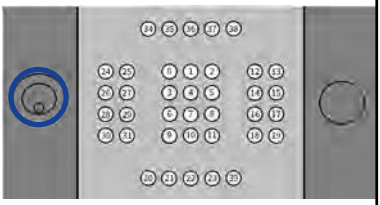
15 MOBOTIX PTZ Keyboard integration into Mx MOVE NVR

The MOBOTIX PTZ Keyboard is fully integrated into Mx MOVE NVR. To switch the Mx MOVE NVR Specific Panel see "7 Installation", page 7.



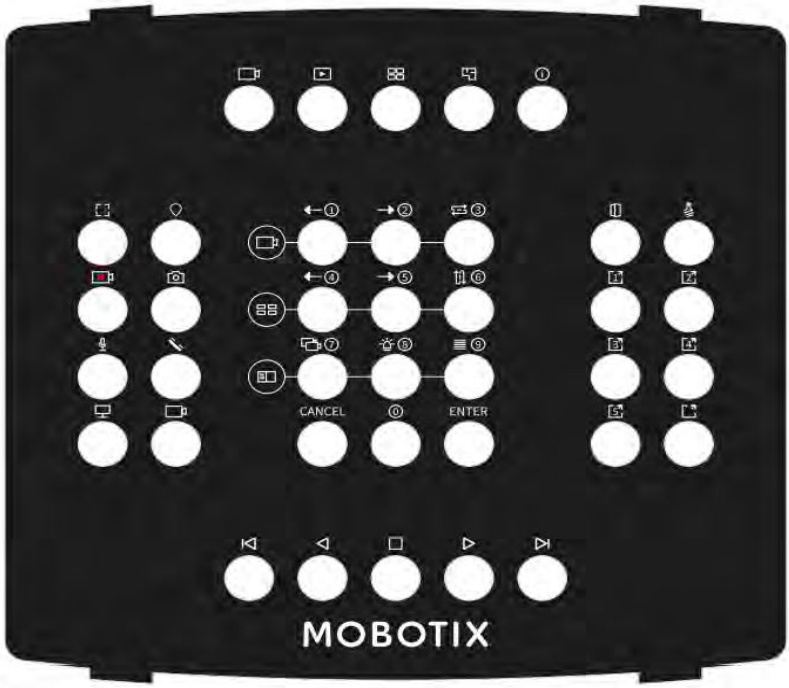
15.1 Mx MOVE NVR related key assignment

BUTTON	PRIMARY FUNCTION	
	Section View	
ESC	Quit current function	
SINGLE	Switch to single channel with number button E.g., SINGLE+1+6 : Switch to CH16.	
SPLIT	Switch to split mode with numbert buttons 1~9 (4/9/16/25/36/49/64/100/128 segments). E.g., SPLIT+3 : Switch to 16 segments split mode. Pressing this button without number button: go to next split mode.	
Prev	Switch to previous page of current split mode.	
Next	Switch to next page of current split mode.	
	Section Display	
Live	Switch to live tab	
PB	Switch to Playback tab	
Snapshot	Make snapshot from current image	
Fullscreen	Toggle full screen mode	
SEQ	Toggle sequence mode	
Information	Open/Close system information panel	
Notification	Open/Close system notification panel	

BUTTON	PRIMARY FUNCTION		
	Section CH		
0-9	Number button, used with View/PTZ button		
	Section PTZ		
Focus- / Focus +	Set focus with number buttons. E. g. Focus+3: increase focus by 3.		
Zoom- / Zoom+	Set zoom with number buttons. E. g. Zoom+3: increase zoom by 3.		
AF	Set Auto Focus		
Preset Go	Set preset position with number buttons. E. g. Preset Go +3: go to preset position 3.		
Seq	Set sequence with number buttons. E. g. Seq+3: run sequence 3.		
Cruise	Set cruise with number buttons. E. g. Seq+3: run cruise 3.		
	Section - Playback		
Start			
Pause			
Rewind			
Fast Forward			
Slow Forward			
	Joystick		
PTZ motion			
	Jog Wheel		
Turn right	increase playback speed forward		
Turn left	increase playback speed backward		

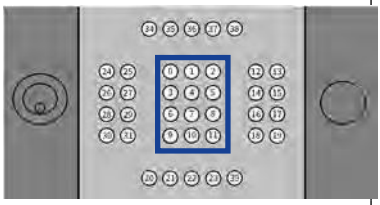
16 MOBOTIX PTZ Keyboard integration into Mx Management Center

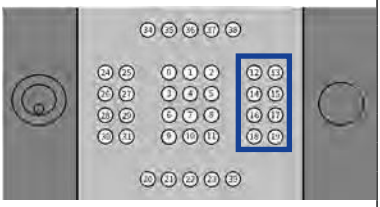
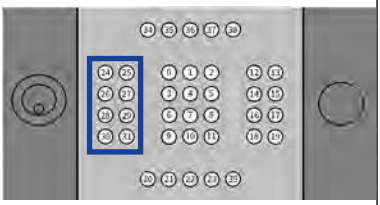
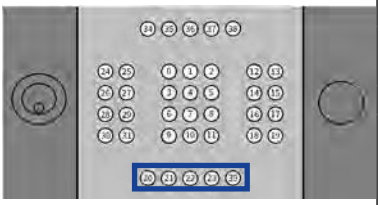
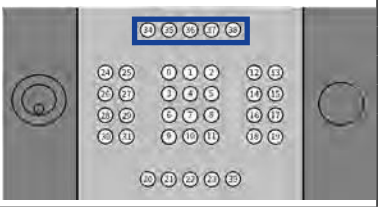
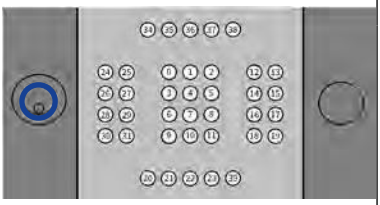
The MOBOTIX PTZ Keyboard is fully integrated into Mx Management Center. To switch the MxMC Specific Panel see "7 Installation", page 7.

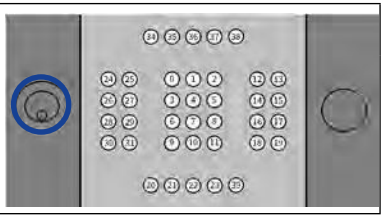


16.1 MxMC related key assignment

BUTTON NUMBER	PRIMARY MXMC FUNCTION	SECONDARY FUNCTION (AFTER PRESSING A "SELECT" BUTTON
Middle Section		
0	Previous Camera	1
1	Next Camera	2
2	Cam Sequencer	3
3	Previous Group	4
4	Next Group	5
5	Group Sequencer	6
6	Device Tree	7
7	Alarm Bar	8
8	Smart Data B ar	9
9	Cancel	Cancel
10	0	0
11	Enter	Enter



BUTTON NUMBER	PRIMARY MXMC FUNCTION	SECONDARY FUNCTION AFTER PRESSING A "SELECT" BUTTON	
		Right Section	
12	Door Opener		
13	Light toggle		
14	Softbutton 1		
15	Softbutton 2		
16	Softbutton 3		
17	Softbutton 4		
18	Softbutton 5		
19	Softbutton SELECT * (Button Combination)		
		Left Section	
24	Full Window		
25	PTZ SELECT * (Button Combination)		
26	Live Recording START / STOP		
27	Snapshot		
28	Microfone On / Off		
29	Handset Pick up / Hang up		
30	Select Monitor (Button Combination)		
31	Select Camera (Button Combination)		
		Bottom Section	
20	Previous Image		
21	Backward Play		
22	Stop / Pause		
23	Forward Play		
39	Next Image		
		Top Section	
34	Live View		
35	Playback View		
36	Grid View		
37	Graphic View		
38	Info View		
		Jog Dial	
Turn right	Next Image		
Turn left	Previous Image		
		Jog Wheel	

Turn right	increase playback speed forward	4th axis	
Turn left	increase playback speed backward	4th axis	

17 MOBOTIX PTZ Keyboard integration into MOBOTIX HUB

The Keyboard is integrated into MOBOTIX HUB as a HID-Device (Type: DCZ). In the Joystick setup menu you can select which function can be achieved by a PTZ-Joystick axis movement and what specific MOBOTIX HUB functions can be associated to the keyboard buttons.

Please refer to the detailed Installation Instructions in the MOBOTIX HUB VMS software.