User Manual

C887T0001, valid for C-887

CarM, KSch, BRo, FRie, 12/7/2023

PIHexapodEmulator

Emulating the C-887 controller and connected mechanics

Contents

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Subject to change. This manual is superseded by any new release. The latest respective release is available for download on our website.

1 Other Applicable Documents

The devices and software tools from PI mentioned in this documentation are described in separate manuals.

Product	Document
C-887 controller	MS244E user manual
Hexapod, e.g., H-811 hexapod (default emulated hexapod)	MS235E user manual (H-811 hexapod) MS203E (H-206 hexapod) MS252E (H-810 hexapod) MS253E (H-812 hexapod) MS207E (H-820 hexapod) MS200E (H-824 hexapod) MS250E (H-825 hexapod) MS201E (H-840 hexapod) MS222E (H-845 hexapod) MS202E (H-850 hexapod) MS259E (H-855.H2A hexapod) H860T0002 (H-860.S2H hexapod)
PIMikroMove	SM148E user manual
Release News	C-990.CD1_Releasenews
User manuals in general	A000T0081 “Downloading Manuals from PI”

2 Product Description

Purpose of PIHexapodEmulator

The PI Software Suite provides the PIHexapodEmulator software which emulates the C-887 controller and the connected mechanics (hexapod and additional axes A, B). You can run this emulation software on a Windows PC and use it, for example, to implement the communication with the controller if no hardware is present.

Features and most important limitations of the emulation

This user manual describes the most important differences between the emulation and a “real” hexapod system.

- With the emulation, the single struts of the hexapod are **not accessible** for commands. Hence it is **not** possible to do strut tests with the emulation.
- The emulation can be used in PIMikroMove or with other software running on the same PC as the emulation software. When using PIMikroMove, the connection is established

using a certain connection type (p. 5). When using another software than PIMikroMove, the connection to the emulation must be established via TCP/IP interface. The IP address of the emulation is *localhost*, the default port is *50000*.

- **Hexapod model** used by default: H-811.I2

  You can change the hexapod model as described on p. 6.
- **Serial number** of emulated controllers: 111111111
- Emulated **analog input channel** with identifier 1; intensity maximum is at the position X = Y = Z = 0.4 mm and U = V = W = 0.
- Emulation of the **data recorder commands** is possible, but the recorded data is always zero.
- **Wave generator** execution may be slowed down depending on the PC hardware.
- **Scanning** procedures and routines are only partially available.
- **Parameters** are only partially available and cannot be saved with the `WPA` command or the corresponding software functions.
- **Status register bits** are only partially emulated (servo mode, in motion, on target).
- The emulation is **not updated** each time a new revision of the controller firmware becomes available.

3 Installing the PIHexapodEmulator

INFORMATION

The PIHexapodEmulator needs the QEMU third-party software to run. QEMU is a free and open-source emulator that performs hardware virtualization. QEMU 8.1.0 (64 bit) is **installed automatically** when installing the PI Software Suite.

Tools and accessories

- PC with Windows operating system (Windows 10 64 bit, Windows 11)
- Installation media: C-990.CD1 PI software storage device (in the scope of delivery of the C-887 controller)

Installing the PIHexapodEmulator via installation of the PI Software Suite

1. Open the file explorer and find *PISoftwareSuite.exe* in the root directory of the installation media.
2. Run *PISoftwareSuite.exe* to install the PI Software Suite.
3. Follow the instructions on the screen.

4 Starting the PIHexapodEmulator

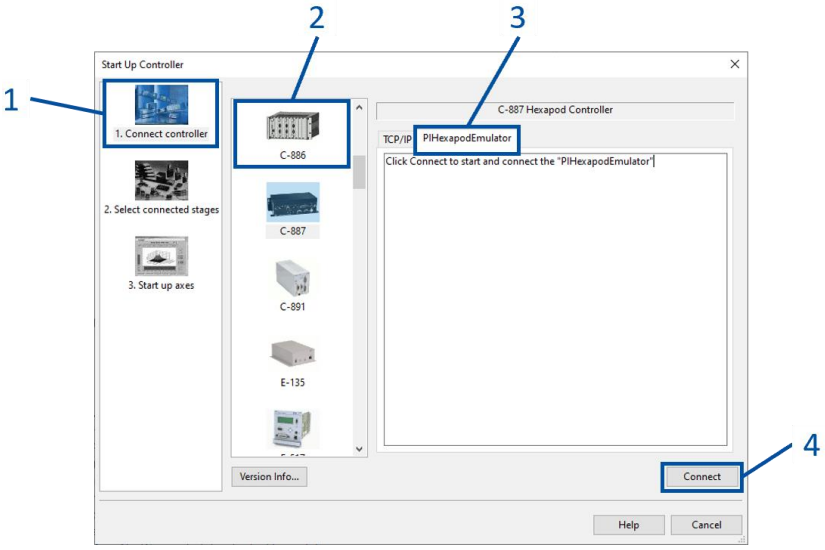
4.1 Starting the PIHexapodEmulator with PIMikroMove

Tools and accessories

- PC with Windows operating system on which the PIHexapodEmulator and QEMU are installed (see p. 3)
- PIMikroMove installed on the same PC as the emulation software

Starting the PIHexapodEmulator with PIMikroMove

1. Open PIMikroMove via the ***Start*** > ***PI Software Suite*** > ***PIMikroMove*** menu entry.
   » The ***Start Up Controller*** window opens at the ***Connect controller*** step.
2. Select the ***C-887*** controller.
3. Select the ***PIHexapodEmulator*** tab.
4. Select ***Connect***.



The PIHexapodEmulator is started. When the communication is established successfully, the ***Start Up Controller*** window switches to the ***Start up axes*** step.

5. Follow the instructions in the “Starting Motion” section in the user manual of the C-887 controller.

4.2 Starting the PIHexapodEmulator from the Start Menu

INFORMATION

By default, it is not possible to start the PIHexapodEmulator via the Start menu when the PIControllerEmulatorGCS3.0 is running on the same PC.

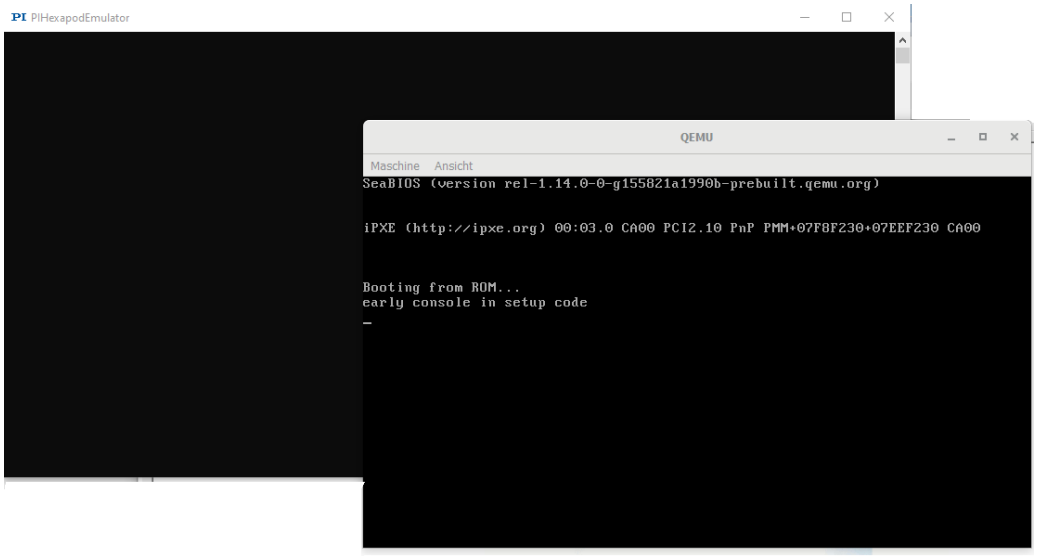
Tools and accessories

- PC with Windows operating system on which the PIHexapodEmulator and QEMU are installed (see p. 3)

Starting the PIHexapodEmulator from the Start menu

➢ Start the PIHexapodEmulator via the ***Start*** > ***PI Software Suite*** > ***PIHexapodEmulator*** menu entry.

The following windows will appear:



Now, the communication between the PIHexapodEmulator and other software can be established via TCP/IP to emulate the C-887 controller and connected mechanics. For the default TCP/IP settings to establish the connection manually, see p. 3.

If you want to use the PIHexapodEmulator with PIMikroMove, see p 5.

5 Changing the Hexapod Model

Requirements

✓ You have started the PIHexapodEmulator (p. 6).

✓ You have established the communication between the PIHexapodEmulator and, for example, PIMikroMove (p. 5).

Changing the hexapod model

1. If you want to change the hexapod model, send the following command, e.g., in the ***Command Entry*** window of PIMikroMove:

   `DBG? SIMUHEXAPOD <string>`

   `<string>` is the new hexapod model, which can be one of the models listed in the list below.

   `<string>` is **not** case-sensitive, but the hyphen and the dot are important and must not be omitted.

   If changing the hexapod model was successful, the emulation sends the response **1**, otherwise it sends **0**.

   Note that the response to a `CST?` command will still show the old hexapod model.

2. To load the new hexapod model, restart the emulation software by sending the `RBT` command. Afterwards, communication must be established again (see p. 5).
3. Check the hexapod model by sending the `CST?` command. The response should show the new hexapod model.

Possible entries for <string>

INFORMATION

Note that the list below may not contain all currently available hexapod models. If your hexapod model is not listed or changing the hexapod model fails for some other reason, contact our customer service (service@pi.de).

- H-206.F1
- H-206.F2
- H-810.D1
- H-810.D2
- H-810.I2
- H-811.D1
- H-811.D2
- H-811.D2V
- H-811.DV
- H-811.F2
- H-811.I2
- H-811.I2V
- H-811.S1
- H-811.S2
- H-812.S2I
- H-820.D1
- H-820.D2
- H-824.D1
- H-824.D2
- H-824.D2V
- H-824.DV
- H-824.G1
- H-824.G2
- H-824.G2V
- H-824.GV
- H-825.D2A
- H-825.G2A
- H-840.D1
- H-840.D2
- H-840.D2A
- H-840.D2I
- H-840.G1
- H-840.G2
- H-840.G2A
- H-840.G2I
- H-840.G2IHP
- M-840.5DG
- M-840.5PD
- H-845.D11
- H-845.D21
- H-845.D31
- H-845.D41
- H-845.D51
- H-845.D61
- H-850.G1
- H-850.G2
- H-850.G2A
- H-850.G2I
- H-850.G2V
- H-850.GV
- H-850.H1
- H-850.H2
- H-850.H2A
- H-850.H2I
- H-850.H2V
- H-850.HV
- H-855.H2A
- H-860.S2H
- H-860.S2L