



Littfinski DatenTechnik (LDT)

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Command Codes for

High Speed Interface-88-USB (HSI-88-USB)

(Firmware from version 0.71)

(Software-version 1.2)

Brief description:

The **HSI-88-USB** is an **interface** for the transmittance from the **s88-feedback bus** to the **Universal Serial Bus (USB) of the PC**.

The interface contains **three s88-bus plugs**. This provides the **advantage** of a **faster response time** and the possibility to build-up **three bus lines** on the layout-system.

The three plugs are named as **left, middle** and **right bus-plug**. It is possible to control **max. 31*16 feedback contacts**. Each bus-line controls max. **31*16** contacts but as **summary not more as 31*16** contacts can be read.

There will be always **16 feedback inputs** combined into **one module**. The **module** with the **number 1** will be the **first module on the left bus line**. Up to the **last registered module** on the left bus line will be counted now upwards. Then it will be continue with the **first module** of the middle line. The module with the highest module number will be the last module on the right line.

The **HSI-88-USB** has been equipped with an **USB 1.1/2.0 Full-Speed-Connection**.

Installation:

The **HSI-88-USB** will be **automatically recognized** by the system after plugging into an **available USB port**. The **HSI-88-USB** is an **integrated unit (HSI-88-USB and DiCoStation)**. Therefore will be **two USB units** recognized in series. At first the “**DiCoStation-USB**” and then the “**HSI-88-USB**”. It is required to **install always both software driver**.

Each **HSI-88-USB** will be supplied together with a **CD** which **contains the required software driver**. Presently the following **operating systems** will be **supported**:

- **Windows 10 (32- and 64-Bit)**
- **Windows 8 (32- and 64-Bit)**
- **Windows 7 (32- and 64-Bit)**
- **Windows Vista (32- and 64-Bit)**
- **Windows XP**
- **Windows 2K**
- **Windows ME**
- **Windows 98**

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Set-up of the communication connection:

The **connection to the unit** will be applied as by opening an ordinary **file**. Therefore will be the **communication** via **all common programming tools** possible. It has been tested with **Microsoft C++** and **Java**.

There is a **special unit identification** required as similar to a serial interface. This name will be not "COM1" but **\\.\HsiUsb1**. The two backslashes, the dot and the third backslash will indicate the unit-name. "**HsiUsb**" will identify the **unit software driver** and "**1**" will be the **unit number**.

The **reading** and **writing** will be carried out as per **common file options**. A **synchronous** as well as an **asynchronous** transmittance will be supported.

If there will be **several HSI-88-USB** connected to an **USB** port, the connected units will be **numbered by the unit software driver**.

The **first connected HSI-88-USB** will receive the **number 1**. The second will receive the number 2 etc.

The **HSI-88-USB** will **remember** this **registration number** even after switching off the system. If at a later time e.g. only unit 2 will be connected this unit will be identified under the name "**\\.\HsiUsb2**" even if the unit 1 will be presently not be connected. This assures which concrete **HSI-88-USB** will be contacted.

It will be within to option of the developer of the control-program if or not **several HSI-88-USB** shall be supported at the same time. The **highest theoretical possible unit number** will be **255**.

Service Tools:

The **unit number** of a particular **HSI-88-USB** can be afterwards changed with the **Service Tool "DiCoStationHSI-88.exe"**. This **service tool** has been integrated within the **CD** supplied with each **HSI-88-USB** and contains the following possibilities:

- Changing the **unit number** of a **HSI-88-USB** or a **DiCoStation**.
- **Information Area** about **Firmware-** and **Driver-Versions**.
- **Up-date Area** for the possibility to update the **HSI-88-USB** and the **DiCoStation** with actually **Firmware**.
- **HSI-88 Terminal** for **direct communication** with the **HSI-88-USB** using the commands described within this instruction.

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Differences to the serial Version:

The **instruction address complies** to the **serial version** and therefore to the address of the **HSI-88** for the **RS-232 interface**. Therefore should be the adaption of the **HSI-88-USB** easily possible.

There are only the **following variations**:

- Different unit names (see above)
- The command “**v**” will return a variable length. It is recommended to request the single signs until receiving the <CR>. Maximum length is 255.

Command structure:

There will be **commands** and **data** transmitted. The **last character** of each command is **carriage return**.

Is the **TerminalMode switched off** there will be **unsigned hex-bytes** transmitted (one value equals to one byte). Is the **TerminalMode switched on** there will be **ASCII-characters** (one value = two bytes), transmitted as hexadecimal values.

TerminalMode:

Command format: “**t**” <CR>

Command length: 2 byte

Response: “**t**” <on (“**1**”) or off (“**0**”)>
<CR>

Response length: 3 byte

After the **start** is the **TerminalMode switched to off**. With “**t**” it can be switched **on** to **communicate** e.g. with help of the **Servicetool “DiCoStation HSI-88.exe** via a **keyboard** and **screen** with the **HSI-88-USB**.



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Initialization / Register the feedback module:

Command format: "s" <number of modules left>
<number of modules middle>
<number of modules right>
<CR>

Is the maximum number of modules of 31 exceeded there will be the standard value adjusted (2 modules each line).

Command length: TerminalMode **off**: 5 byte
TerminalMode **on**: 8 byte

1. Response: "s" <total number of registered modules>
<CR>

The input condition of the registered modules will be read between the 1. and the 2. response.

2. Response: "i" <number of modules to be registered>
<module number> <HighByte> <LowByte>
<module number> <HighByte> <LowByte>
.....
<module number> <HighByte> <LowByte>
<CR>

Response length: TerminalMode **off**: (6 + (number of modules) * 3) byte
TerminalMode **on**: (8 + (number of modules) * 6) byte

By the 2. response will be the contents of **all** registered modules transferred.

The module number can be dynamically changed during the program flow by using the "s" command.

After switching-on the interface all input changes of the feedback modules (over "i") will be registered beginning after the first "s" command.



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HSI-88-USB reports changes:

Response: “i“ <number of registered modules>
 <module number> <HighByte> <LowByte>
 <module number> <HighByte> <LowByte>

 <module number> <HighByte> <LowByte>
 <CR>

Response length: TerminalMode **off**: (3 + (number of modules) * 3) byte
 TerminalMode **on**: (4 + (number of modules) * 6) byte

Only the content of modules with **changed** input conditions will be transmitted.

PC query of input conditions:

Command format: “m“ <CR>

Command length: 2 byte

Response: “m“ <number of registered modules>
 <module number> <HighByte> <LowByte>
 <module number> <HighByte> <LowByte>

 <module number> <HighByte> <LowByte>
 <CR>

Response length: TerminalMode **off**: (3 + (number of modules) * 3) Byte
 TerminalMode **on**: (4 + (number of modules) * 6) byte

The content of **all** registered modules will be transmitted.



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Version inquiry:

Command format: "v" <CR>

Command length: 2 byte

Response: "V.x.xx / HSI-88-USB / y.yy Win XP / (c) 2007 LDT & Falkner" <CR>

Response length: variable

It is recommended to request the single signs until the <CR>. The maximum response length is 255.

Meaning: x.xx is the Firmware-Version of the HSI-88-USB
y.yy is the USB-Software-Driver-Version within the request sample for Windows XP.

Subject to technical changes and errors. © 04/2018 by LDT & Falkner

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