



EU Declaration of Conformity

For the following products

- IRTrans USB
- IRTrans Serial
- IRTrans IR Bus Module
- IRTrans Translator / XL
- IRTrans Mediacotroller
- IRTrans Ethernet / IRDB
- IRTrans Ethernet PoE / IRDB / IO
- IRTrans LAN Controller
- IRTrans LAN Controller XL

we hereby declare that they conform to the declarations regarding Electromagnetic Compatibility as defined in



EN 55024: 1998 + A1: 2001 + A2: 2003

Users Manual IRTrans System © 2006-2009 IRTrans GmbH

Users Manual



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Information regarding the Macintosh Software can be found in the Manual shipped with the Macintosh Software.

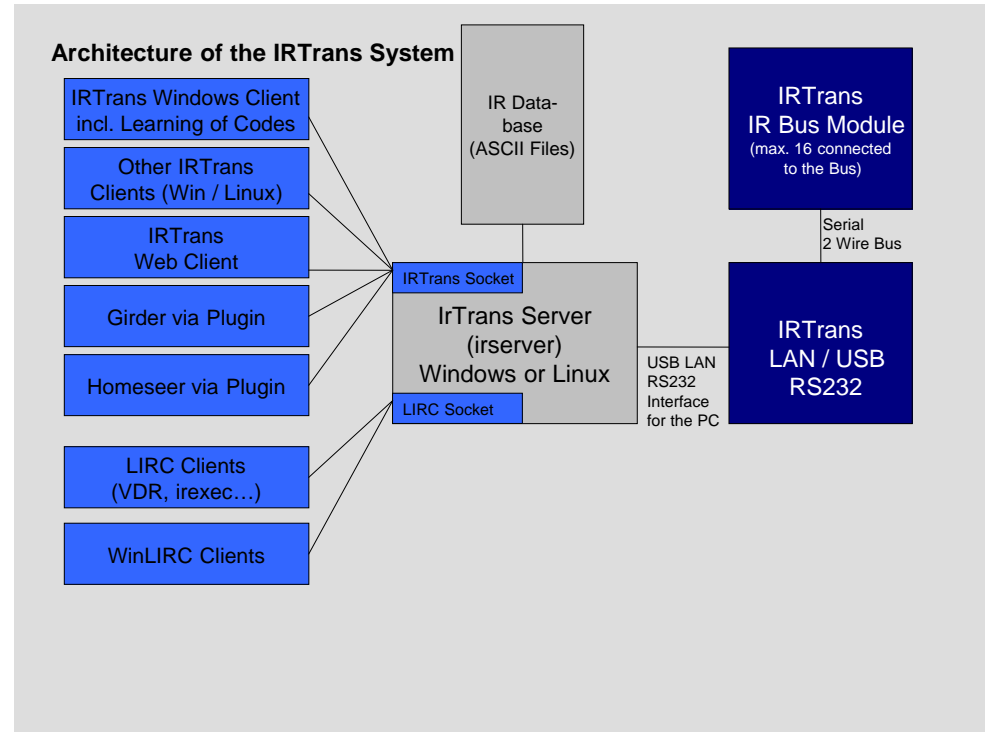


Damage to the IRTrans, the computer system or even personal property might arise as a result of not following advices marked by that symbol.



This symbol marks important tips for handling and using the IRTrans system.

All trademarks mentioned herein belong to their respective owners.



Overview of the Architecture of the IRTrans System

The iRed Mac Software uses a different architecture. Please refer to the iRed Manual for details.



Please note that iRed is distributed exclusively via Download. Download instructions are part of the iRed License Mail every new customer gets.

1. IRTrans – Quick reference Guide

1.1. Installing the Hardware

The Installation of the Hardware is described in detail in Chapter 2 of this manual. When using the USB Version the USB Driver has to be installed, too. This is also described in detail in the corresponding chapter.

1.2. Installing the Software

- **On Windows** it is enough to just put the CD into the drive. Windows now automatically starts the installation on the CD. In most cases the default installation is applicable.
- **On LINUX** the script `install.sh` on the CD has to be started. By default the software will be installed in the folder `/usr/local/irtrans`. It can also be copied to other folders:

```
cd /cdrom
./install.sh
```
- **Installation Instructions for the Mac** can be found together with the Mac Software.

1.3. Starting the Server

- **On Windows** the server is started through the Start Menu. The Start Menu uses the `irtranstray` utility, that puts the Server in the Windows Toolbar. Wenn the RS232 Version is not connected to COM1 the Menu Entry has to be modified accordingly.
- **On LINUX** the server is started with the command `irserver <device>`. Device can either be a serial Port (e.g. `/dev/ttyS0`), `usb` for an USB Device `lan` for a LAN device or an IP address. If the USB device can not be found automatically your LINUX distribution uses non-standard USB device files. Then you need to find out the active USB device node via `cat /proc/bus/usb/device`.

The `irserver` is TCP/IP based. Therefore it can be accessed by different Clients that can even be installed on different Systems in a Network. Of course it can also be accessed via large, routed Networks or even the Internet. Of course it can be accessed by several Clients at a time that can run on different Operating Systems.



All IRTrans Clients need a running `irserver`!

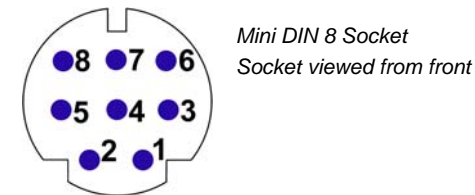
2. Installing and connecting the Hardware

2.1. General

The DIP Switch is used to set the address of the controller on the serial bus. The transceiver connected to the PC should have the address "0". The address is coded in binary. It is possible to set up to 16 different addresses. Every Unit should have a unique ID. When USB / RS232 Transceiver is used, the Address is set via Software. The device connected to the PC should in general have the Address "0".

All IR Bus Modules have DIP Switches to set the address.

External components are connected using a Mini DIN 8 socket:



Pin Configuration of the 8pin MiniDIN Socket:

- 1: Masse / GND
- 2: +8 – 16V= Supply Voltage Serial Bus
- 3: Data I/O
- 4: +5V stabilized Voltage (Input)
- 5: Relay Contact PowerOn (1)
- 6: Output for additional IR Transmitter (Anode / +)
- 7: Output for additional IR Transmitter (Cathode / -)
- 8: Relay Contact PowerOn (2)



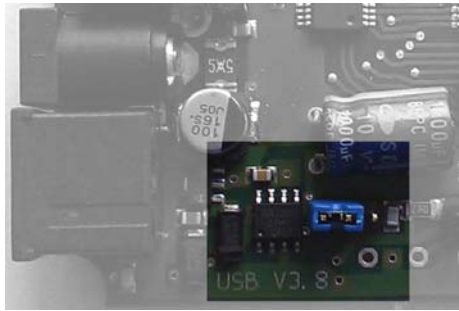
If the additional 5V Input (Pin 4) is used, care must be taken that only a stabilized Voltage of 5V is applied. A wrong voltage on that Pin might destroy the IRTrans.

This Pin can be used to power the IRTrans via the Standby Voltage of an ATX Power supply. That allows switching on the PC via Infrared together with the PowerOn Option.

To protect the PC from Short Cuts this Supply Line should be protected by a fuse.



The output for additional IR Transmitters might get damaged by Shortcuts or applied voltages. Therefore extra care should be taken when connecting external Transmitters.



Jumper for USB Standby power. Shown in the normal position (no USB Standby power).

USB V3.6 and V3.8 devices can also be powered via USB while the PC is off (if the PC main board supports this). As the USB standard only allows to draw 0,5mA from the USB when the PC is off or in standby IRTrans USB devices are by default off when the PC is off or in standby. To allow the IRTrans USB to be powered via USB while the PC is off or in standby the blue jumper inside the IRTrans has to be set to the rightmost position.

If every Transceiver has its own Power Supply only the Pins 1 & 3 are needed to make up the Serial Bus. If the Pins 1, 2 & 3 are used only one IRTrans needs to have a Power Supply connected. It is not possible to power Transceivers connected to the Serial Bus by the USB or RS232 Interface of the PC.



Every Transceiver connected to the Serial Bus has to be powered. Otherwise Termination Problems and Malfunctions of the Serial Bus may arise.

The Power Supply connector is used to Power Bus units or PC Units while the PC is switched off. The external Power Supply has to deliver 8-16V= with 50mA for each IRTrans connected to the Bus. The Plus Pole is the inner contact of that Connector.



Only the DC Connector of the IRTrans should be used to power the Serial Bus. This connector is protected by an automatic fuse. If the power is supplied directly into the Serial Bus Cables a fuse should be used to protect the Bus System from short cuts.

2.2. USB Version

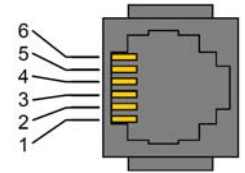
Before connecting the Device to the PC the software from the CD should be installed.

A USB A-B Cable is used to connect the USB Device to the PC or a USB Hub. After connecting the PC detects the Device and starts the Driver installation. The USB Version is always powered by the PC. However, an external Power Supply might also be connected.

2.3. RS232 Version

The new serial IRTrans Versions use a 6pin Western Connector to connect the IRTrans to the PC. This cable has to be configured as follows:

Signal	Pin No. (PC DSUB 9)	Pin No. IRTrans
GND	5	5
RTS	7	4
CTS	8	2
RxD	2	1
TxD	3	3



Of course a suitable cable may be ordered.

At least GND / RxD / TxD are needed.

A power supply is needed for the IRTrans RS232 or Mediacontroller. This power supply needs to deliver 8-16V DC with about 100 mA. The positive pole has to be connected to the inner contact of the power connector (as usual).

2.4. IRTrans Ethernet Devices

To use an Ethernet device an IP address needs to be assigned first. That can be done using the ip_assign tool. Then the irserver/irtranstray can be started using the parameter "lan". That way the irserver is searching for IRTrans devices on the local network. Depending on the LAN configuration and firewalls auto find might not work in some configurations. Then the server can also be started using the IP Address of the IRTrans as a parameter.

Details regarding the Ethernet devices can be found in the IRTrans Ethernet manual.

2.5. Connecting the PowerOn Option

An IRTrans Module with PowerOn Option is shipped with a connecting cable. This Cable can be connected to the Power Switch of the ATX PC. To do that the cable is to be connected between the Power Switch and the Main board.

In no case that Contact might be used to switch high current, high voltage or even Mains!

The additional (isolated) Cable can be used to power the IRTrans with +5V Standby Voltage. Then no external Power Supply is needed. To allow that, the ATX Power supply has to deliver at least 1A on the Standby Line. Unfortunately in most PCs that Voltage is not readily available on a connector.

That means that a cable must be tapped. That should only be done when you have the needed equipment (Measurement Tools) and knowledge. Mistakes when connecting the Module (other Voltages then 5V) might damage the IRTrans, Short-Cuts might damage the PC / Power Supply or in the worst case might even cause Fires. To avoid that, the system should always be protected by a Fuse in the Cable.

Before making any connections the Mains Connector should always be removed before making any connections because the Standby Voltage is present even when the PC is switched off.

If there's any doubt an external Power Supply should be used.

Additional tips how to power an USB device via USB while in standby can be found in chapter 2.1.

The Software settings to use the PowerOn Options are done in the Status Page of the GUI or ASCII Client. That is explained in Detail in Chapter 4.5 of this manual.



2.6. Building a multizone system

The IRTrans System can be used to control larger homes, too. To do that up to 16 IRTrans devices can be connected using the serial two wire bus.

Cables and infrastructure can be freely chosen, no special cables are needed.

- The serial bus has been tested with cables up to 30m long. Depending on the environment larger distances are possible. However, connecting devices in different buildings is not allowed without a galvanic isolation of the two devices.
- No special cables are needed. They do not have to be shielded or twisted. Of course an existing TP wiring can be used.
- The topology can be freely chosen. It is possible to use bus and star topologies. Even combinations are allowed.

If a three wire bus is used, the supply voltage for all units can be transferred over the bus, too. Any of the connected units can be used to power the bus. The power supply has to deliver 8-16V= with about 50mA for each connected module.

Please also read the general instructions for the IRTrans Bus in Chapter 2.1.

Of course IRTrans Ethernet devices can also be used for multizone systems. Such a configuration can consist of up to 255 LAN devices. Of course every device can be addressed individually. With WLAN access points IRTrans Ethernet devices can also be integrated into wireless networks.

3. USB Driver installation

3.1. Windows 2000 / XP / Server 2003 / Vista

The IRTrans USB drivers are digitally signed and part of the Windows software installation package (setup.exe). Installing the IRTrans Software with the default options will also preinstall the USB drivers. When an IRTrans USB Device is connected these drivers will be installed automatically.

The IRTrans USB drivers are also contained in the Microsoft driver database. If the system is configured correctly the drivers will be loaded and installed over the Internet. – Of course it is faster and easier to install them from the CD.

3.2. Linux

Starting with LINUX Kernel version 2.6.5 / 2.4.26 the USB drivers for the IRTrans are included in the standard kernel.

In the kernel configuration the following USB drivers have to be activated:

- Usbserio
- FTDI_serio
- USB Subsystem

These drivers should be compiled as modules. If the USB Device daemon is running the system automatically detects the IRTrans and loads the correct driver. There are messages in the syslog documenting that procedure. Now a device will be assigned to the IRTrans (mostly /dev/ttyUSB0). If other serial USB devices are connected, that device number may shift. Once more there will be a message in the syslog showing which device was allocated.

4. Installing and using the software

4.1. IRTrans Server Software

The IRTrans Software uses a client / server structure. Every command is processed by the server (irserver). Therefore this server has to run all the time. Right now there are no clients which connect directly to the IRTrans hardware. This makes changes in the firmware and protocol a lot easier as only one application has to be changed. Furthermore every client can access the server and hardware using any TCP/IP network. Even an access using the internet or a VPN is possible. Client and server don't need to run on the same computer. The installation of the server is very simple:

On Windows setup.exe on the CD will install the complete IRTrans Software package. Afterwards there will be an entry in the Start Menu to start the server using the tray utility irtranstray. Of course it is also possible to start the server directly – then the server will run in an ASCII window.

The *irtranstray* Program (available only for windows) has got the following additional functions:

- Diagnostics dialog showing the messages of the server
- List of received IR Codes (for debugging)
- Learning of IR Commands (without Client)
- Reload of the IR Database after manual changes
- Sending of IR Commands



Important: Learning and sending of IR Codes should be done using the IRTrans GUI Client. Using the irtranstray menu only gives a fraction of the available learn options. Therefore the GUI Client should be used for learning.

On LINUX the installation script on the CD (install.sh) will copy the LINUX Software into the folder */usr/local/irtrans*. On LINUX the server will be started in shell window. First the correct device has to be known: USB devices are found automatically using the Pseudo Device “usb”. For serial devices the port has to be known. The first serial port is /dev/ttyS0.

The command „*irserver /dev/tty...*“ will now start the server. There will be some output from the server showing the startup procedure.

The following command line parameters are supported by irserver (and irtranstray):

-daemon	Start irserver in the background (only LINUX). Using Windows irserver can be started via the autostart folder. See Chapter 4.3
-debug_code	All received codes are logged
-hexdump	The server prints the complete communication between Server and Hardware. This can be used to debug codes or to record the communication to use the IRTrans with other systems.
-hexfile <file>	The server prints the complete communication between server and device into <file>. This can be used to record the communication to use the IRTrans with other systems.
-baudrate <baud>	Use this baudrate to communicate with an RS232 module
-http_port <port>	Activate the integrated Webserver at port <port>
-learned_only	Only Codes that have been learned are transmitted to the Network clients. NOTE: This option will become default in later versions of the irserver.
-logfile <file>	Location of the logfile
-loglevel	Sets the loglevel for debugging 0 No messages 1 Only fatal errors 2 Only errors 3 Show informational messages 4 Show Debug information
-netmask <mask>	Access control for networked clients. When this option is used at least once, only clients within the specified netmask are allowed to access the Server. The format is ip/bits. That means 192.168.12.0/24 defines a standard class C network. This option can be used more than once to define different networks. A single host can be defined with IP/32. The defined netmasks are used for all IRTrans and LIRC clients.
-no_lirc	Disable the integrated LIRC Client Interface
-no_reconnect	The server does not try to reconnect to the IRTrans device when the device was removed (USB devices only)
-set_id <ID>	Is used to set the Bus ID for new IRTrans Modules. Normally the standard setting "0" is used here. Only in special cases a different address is needed. This setting is stored in the IRTrans Module permanently.
-stat_timeout <to>	Sets the timeout (in s) after that the Cache for the device status is reread from the devices.
-version	Shows the version and the minimum needed version of the IRTrans Firmware
-xap	Enables the built in xAP Interface. It sends and receives standard xAP IR Messages.

4.2. Using and testing the software

To make the first Tests, the Server can be started in the Debug Mode. In the Debug Mode it displays detailed Information about all Parameters and the received IR Codes. To achieve that the Server has to be started via *irserver -loglevel 4 -debug_code <device>*. During startup the Server displays Information about the IR Database. Now the receiving of IR Codes can be tested by pressing buttons of different Remote Controls. The Server will show the decoded IR Data. If the command is found in the IR Database the Server will show the Name of the Remote & Command.

Furthermore the Debug Mode is very helpful when there is a problem learning certain IR Commands.

If the server on Windows is started in the tray bar using the irtranstray, this debug information can be accessed via the context menu of the irtranstray utility.

On a Windows system the IRTrans software can also be installed as a service. The setup.exe handles all needed steps if the option is selected in the setup process. All parameters for the irserver are now given using the *irserver.ini* file. Each parameter has to be entered into one line in the file.

IMPORTANT: On Windows Vista it is not possible for a service to emulate keyboard input. That means there is no control via keystrokes in the file apps.cfg possible. Furthermore no IR keyboards can be used. The reason is that Microsoft removed the needed functions in Vista.

4.3. Starting the Server automatically

After everything has been installed, most users want the server to be started automatically in the Background.

Using LINUX that is done via entries in so called rc Files. The Commandline Parameter *-daemon* (Option only available on LINUX) is used to start the Server in the Background. The *-loglevel* Option is used to indicate, where the Logfiles are to be stored by the Server.

On Windows Systems simply copy the correct irtranstray Startmenu Item (in the Menu folder IRTrans) to the Autostart folder. If needed, the Options used to start the server can be modified.

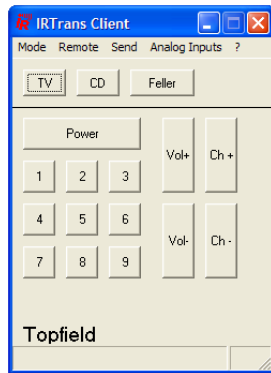
4.5. IRTrans GUI Client

The VB client allows learning of IR Commands. Furthermore IR Commands can be sent and you can set up a simple Remote Control. Even commands that are not included in the simple Remote Control can be sent. In addition, all the parameters of all IRTrans units connected to the serial bus can be configured. The GUI client uses the IRTrans Server Socket (21000) to connect to the server.

The GUI Client is a Windows program, nevertheless via a TCP/IP Network it can also control a system connected to a LINUX Server. When starting the Client the Hostname or IP Address of the IRTrans Server can be entered as a command line Parameter. If it is not entered this setting defaults to localhost.



Currently the GUI Client supports German and English. The language is selected based on the language of the Operating System.



Main window of the IRTrans GUI Client

After starting the program the GUI Client shows a sample Remote Control. It is defined in the file *remote.irm* in the working folder of the GUI Client. It can easily be configured by editing this file. Of course that sample Remote Control does not work until the corresponding commands have been learned.

The sample remote.irm file is only a template for on creations.

The format of the file remote.irm:

```
[MAIN]
[FRMPIX]400,300
[SEP]0,45 [END]500,45

[MOD]10,10 [SIZE]40,25[PANEL]TV
[MOD]60,10 [SIZE]40,25[PANEL]CD

[END]

[CD]
[FRMPIX]460,280
[LBL]10,250 [SIZE]300,30[TEXT]CD[FONT]14
[SLED]3
[SDEVICE]0

[POS]10,10 [SIZE]100,30[TEXT]Power On [REMOTE]Yamaha [COMMAND]PowerOn
[POS]120,10 [SIZE]100,30[TEXT]Power Off [REMOTE]Yamaha [COMMAND]PowerOff
[POS]10,50 [SIZE]100,30[TEXT]Vol - [REMOTE]Yamaha [COMMAND]Vol -
[POS]120,50 [SIZE]100,30[TEXT]Vol + [REMOTE]Yamaha [COMMAND]Vol +
[POS]230,10 [SIZE]100,30[TEXT]CD [REMOTE]Yamaha [COMMAND]CD
[POS]340,10 [SIZE]100,30[TEXT]Tuner [REMOTE]Yamaha [COMMAND]Tuner

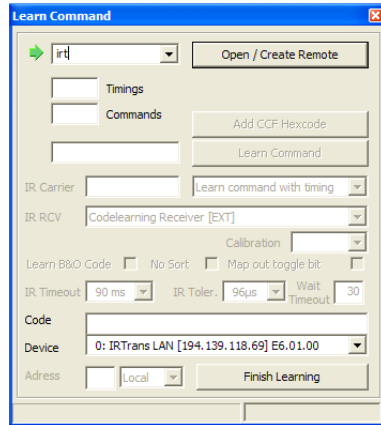
[POS]10,200 [SIZE]100,30[TEXT]Prev Track [REMOTE]Sony [COMMAND]Prev
[POS]120,200 [SIZE]100,30[TEXT]Play [REMOTE]Sony [COMMAND]Play
[POS]230,200 [SIZE]100,30[TEXT]Next Track [REMOTE]Sony [COMMAND]Next
[POS]340,200 [SIZE]100,30[TEXT]Stop [REMOTE]Sony [COMMAND]Stop
[END]
```

This excerpt shows a sample configuration

- The “[**Main**]” section defines the part of the remote that is always visible. This section should be used to place commands to select different devices or commands that should be available with every device (like Volume +/-). “[**MOD**]” lines define commands used to switch between different panels of the remote. In addition these remotes appear in the „Remotes“ menu.
- “[**FRMPIX**]” is used to define the size of different panels of the remote (in Pixels). That allows to use different sizes for different panels of the remote.
- “[**LBL**]” allows to insert texts in different sizes.
- “[**POS**]” defines the Remote Buttons itself. They can have different sizes and, of course, a text. “[**REMOTE**]” and “[**COMMAND**]” are used to assign the remote commands. Commands that are not defined in the current IR Database appear in Gray (disabled).
- “[**SLED**]” selects the IR LED used to send the codes from this page. The following values are supported:
 - 1 = Internal LEDs
 - 2 = External LEDs
 - 3 = All LEDs
 - 4-12 = External LED number (1-8 for LAN Controller XL)
- “[**SDEVICE**]” selects the IRTrans bus to send the codes. Bus 0 is always the first LAN / USB device.

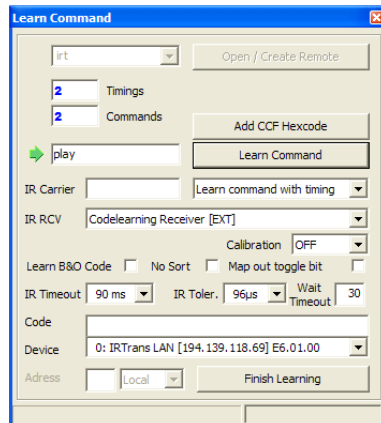
Learning of IR Commands

The command “Learn” in the “Mode” menu allows learning new IR codes. The first step is to enter the name for the remote control. The name also selects the filename of the ASCII file that is used to store these IR codes in the IR database. If the remote file already exists it will be extended with the new commands.



First the name of the remote control is selected and entered. Of course an existing remote control can be chosen. This remote control will then be extended with new IR codes.

Now new commands can be learned. To learn a command the remote control should be held at some distance from the IRTrans device. With normal IR Receivers the distance should be around 0,5 m, for the Universal code learning receivers the distance should be around 0,3 m. Holding the remote control too close to the IRTrans might overload the IR receiver of the IRTrans and the code cannot be learned correctly. The button of the remote control should only be pressed very shortly. Furthermore it is important that there are no sources of IR noise nearby. Common sources of IR noise are Plasma TVs, fluorescent bulbs and some LCD TVs.

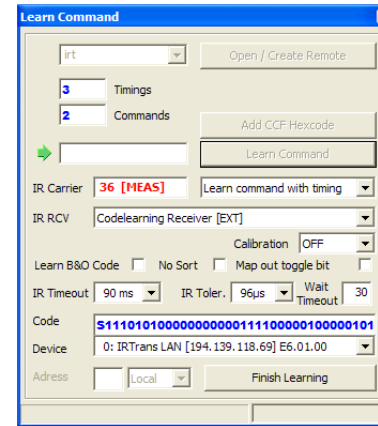


Now the IR commands can be learned. That is done by entering a name for the command and pressing the “Learn Command” button. The learn process is finished by pressing the button of the remote control.

To learn commands the button of the remote control should be pressed as short as possible.

Remark: It is no longer needed to learn commands and timings separately. With this software version both are learned in one step. That makes learning of commands easier.

Commands that are already in the database will be replaced by new commands with the same name.



This procedure will now be repeated for each IR command that needs to be learned. The GUI Client always shows the current learn status and the learned IR Code.

When the Universal code learning receiver is used the IR Carrier frequency is measured and shown in the learn dialog of the GUI client.

For special purposes there are additional Learn modes:

- **Repeat Code.** This mode learns Repeat Codes. These codes are sent if a key is held depressed. Not all remote systems use repeat codes. You only need to learn them if keeping a button depressed does not work. You only need to learn these codes for keys like “Vol-Up” or other keys you like to hold down. To learn these codes you need to keep the corresponding button of the remote control pressed a little bit longer (like 1s).
- **RAW Mode.** Certain remotes use codes, which are very special and cannot be decoded by IRTrans on the fly. These codes are rare but some exist. For instance some light control systems use very special codes as the receivers are very simple. Using RAW mode IRTrans can learn almost every Code and send it again. If you want to use RAW Codes to control the PC, the IRTrans has to be set into RAW mode in the status menu. You do not need to do that to learn and send RAW codes. If this mode is activated, only RAW codes can be used to control the PC. However you can still learn and send decoded commands. If the RAW mode is activated, RAW codes are also used on the serial bus. Because there is more data transferred and the recognition of commands is not as safe as in decoded mode the RAW mode of the IRTrans should only be enabled if you need to control the PC using a special remote. You can learn and send RAW codes even without activating the RAW mode.
- **RAW Repeat.** RAW Codes can also be learned as repeat codes. Here you also have to press the key a bit longer.

CCF/Pronto® Hex codes

The button “Add CCF Hex code” allows the direct entry of hex codes for the Philips Pronto® Remote. When this button is pressed a new window opens for the entry of the hex code. The hex code can be pasted directly into that window. The entered hex code will be converted into the IRTrans format by the irserver.

Further options:

Device: This combo box allows selecting one of the connected IRTrans devices to learn IR Codes.

IR RCV: Here the IR Receiver is selected. The receiver types are configured using the Device settings dialog. If the IRTrans device only has one receiver only that one is selectable. For IRTrans devices with software selectable receivers they can also be selected here.

Calibration: When learning very long IR Codes (especially for air conditioners) rounding errors might add up so that the IR code might no longer be recognized. This option allows to record additional calibration data with the IR code. When the codes are sent these calibration data is used to correct the rounding errors. These rounding errors only occur for IR codes longer than 50-80 bytes. Therefore that option generally is only needed for the IR Codes used by air conditioners. The different values define how often the calibration data inserted into the IR Code (every 10, 30 or 75 bytes). Using more calibration data will limit the available memory for the IR code itself. In most cases it will be enough to use the 30 or 75 byte option.

IR Carrier: Here the carrier frequency of the IR code can be entered – if it is known. The value used in this field does not influence the learning procedure itself – the carrier frequency is just added to the .rem file. Furthermore entering a frequency into this field does not make it possible to learn IR codes the used receiver cannot receive.

When using the Universal code learning receiver the carrier frequency measured by the IRTrans device is shown in that field. Due to the low precision of most remote controls when sending codes that value might differ a bit from the expected frequency. Differences of a few kHz will not affect range and quality of the IR codes.

Wait Timeout: The time (in s) the IRTrans Software waits until an IR Code is received. If no IR Code is received within that time a timeout error will occur. If the learn dialog of the GUI client is closed will the timeout is running the software might hang until the timeout has expired. Afterwards the GUI Client will work normally again.

Options derived from the Device status:

These options will be set using the Device status dialog but they can be overridden when learning IR Codes. The stored settings will not be changed, only the current learn process will use the changed parameters. In general using the default settings is fine in most cases.

A detailed description of all the parameters can be found in the chapter “Device settings”.

Learn B&O™ Code: 455 kHz Codes will be learned as B&O Codes. This option allows learning Bang & Olufsen™ codes. If no appropriate receiver is selected (Universal code learning receiver, 455 kHz receiver, 455 kHz plasma shielded receiver) this option will not have any effect.

No Sort: The IR Codes will not be sorted according to their length.

Map out toggle bit: A toggle bit defined in the Device Status dialog will be ignored when learning codes.

Remark: Codes learned with this option cannot be sent again, they can only be used to control the PC. Codes that should be used to control the PC but contain a toggle bit have to be learned with this option.

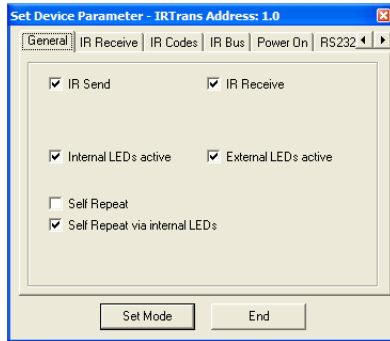
IR Timeout: The timeout (in ms) that is used to detect if an IR Code is finished. When learning codes to send them the default of 90 ms should be used at least.

IR Tolerance: Tolerance width when learning codes. For codes that are sent again the value should not be larger than 90 µs – 120 µs.

The IRTrans Device Status Dialog

The Device status dialog allows configuring the parameters for different sections. Devices with firmware version 6.0.0 and newer do have a large number of parameters, therefore the device status dialog has been extended to a number of tab pages. On the following pages we will describe all these settings.

General



The tab page “General” contains all the general configuration options.

IR Send: Switches IR sending on and off.

IR Receive: Allows switching off IR receiving altogether.

Internal LEDs active: This setting allows disabling the internal IR LEDs. Clients and programs using any of the IRTrans APIs can, nevertheless, control LED selection for each command they send.

External LEDs active: This checkbox allows disabling all external LEDs.

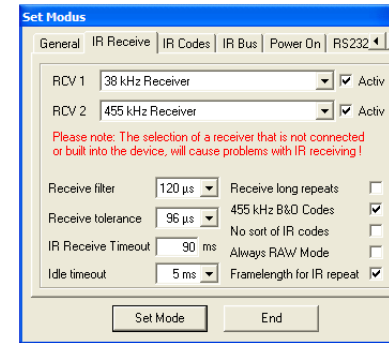
Self Repeat: If this option is activated, all received IR codes are sent again by the IRTrans. This allows relaying of IR Codes into a closet.

Note: Not all IR Codes are suitable for relaying.

Self Repeat via internal LEDs: This option allows selecting the LEDs to use for self repeat (sending of received IR codes). It allows selecting the internal LEDs to send the received IR codes.

Note: That might cause echoes or commands that are received multiple times if the device to control also receives the original IR signal.

IR Receive



The tab page “IR Receive” contains all the parameters to control IR Receiving.

Most of these parameters don't need to be changed for most remote controls or IR Codes. In general the Default settings should be used.

RCV 1 / RCV 2: These combo boxes allow the setting of the IR Receiver types. For devices with a single IR Receiver only that one can be selected. If an external receiver is selected, the appropriate jumper setting has to be done to enable the external receiver. If there are receivers in the list marked with “[EXT]” the IRTrans will switch automatically to the external input. The mark “[INT]” shows that the internal IR Receiver is switched automatically (for devices with multiple internal receivers).

The “Activ” checkboxes allow activating a receiver for instant receiving of IR signals. IR Learning will still be possible though.

Important: A wrong receiver selection will make receiving and learning of IR Codes impossible!

Receive Filter: With this combo box the IR noise filter is configured. IR signals shorter than the value selected here will be filtered. The larger the value is, the better IR noise will be filtered out.

If the value is larger than the shortest pulse used by an IR Code receiving will no longer work correctly. If codes are not received correctly it should be checked if the IR Code contains pulses that are shorter than the filter value. If in doubt use the default value of 120 µs.

When learning IR Codes the IRTrans will always use the shortest filter value.

Receive Tolerance: This value defines the tolerance width when receiving IR signals. The larger that value is the less susceptible for wrong receiving of codes the IRTrans gets. – On the other hand codes with IR pulse lengths that are very similar might not be received correctly.

If this value is chosen too large, not all information in an IR Code is recorded correctly. This will especially affect sending of IR Codes. If in doubt use the default value of 96 µs.

Codes that are learned for sending should be learned with a small tolerance value of 96 µs or 120 µs. This setting can be overridden when learning an IR Code.

IR Receive Timeout: Receive timeout for IR Codes. This value controls what pause lengths within an IR Code are possible. A pause that is longer than this value will terminate that IR Code. When receiving IR Codes for remote control of a PC a shorter timeout might be useful because remote control will be faster then. To make sure receiving works correctly it should be tested first if shorter values work correctly: When the timeout is shorter than the shortest pause within the IR Code the codes will be incomplete.

Codes that are learned for sending should be learned with a timeout of at least 90 ms. For some IR Codes an even greater timeout is needed (e.g. some Grundig remote controls).

This value can be overridden in the learn dialog when learning codes.

Idle Timeout: The idle timeout controls how long the pause between two IR Codes needs to be. It is used to resynchronize after one IR Code is received. The standard value of 5 ms is suitable for most scenarios. Shorter values might improve the repeat speed when a button is hold depressed. On the other hand too short values might lead to incomplete codes.

This setting does not influence learning or sending of IR codes.

Receive long Repeats: Normally 2 IR Repeats are counted when receiving an IR Code. Some IR Codes (rarely) consist of 2 repeats and a 3rd different code. The learn process of the IRTrans will learn these codes correctly because it analyzes more than 2 repeats. This option can be used to have the same behavior when receiving and relaying IR codes. It will only be needed if relaying does not work and the received IR code is shorter than the learned IR code.

This option is never needed to learn IR Codes.

455 kHz B&O Codes: Using this checkbox learning of B&O (Bang & Olufsen TM) codes will be enabled. This setting will only have any effect if a receiver is selected that supports receiving 455 kHz codes (Universal code learning receiver, 455 kHz

receiver, 455 kHz Plasma shielded receiver). All other learn / receive options are automatically set to the optimum setting for B&O Codes.

This option can be overridden when learning codes.

No sort of IR Codes: Received IR codes will not be sorted according to their pulse lengths. Depending on the IR code this option might ease recognizing of codes – especially with IR Codes that use many different timings.

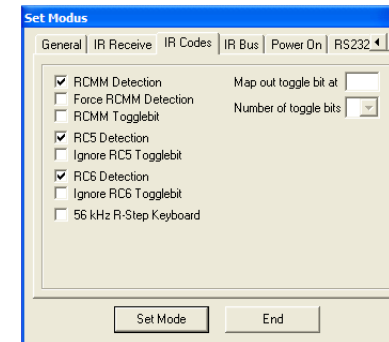
This option does not influence sending of IR Codes. When learning codes the option can be overridden.

Always RAW Mode: All IR Codes will be received in RAW mode. Also all IR Codes will be relayed in RAW mode. This option is rarely needed.

This option does not influence learning of IR Codes.

Frame length for IR Repeat: When measuring the timings for IR Repeats the length of the whole code frame (IR Code + pause) will be measured. Without this option the pause length will be measured. This is the algorithm used by earlier firmware versions. In most instances the new system works better, therefore this option should be enabled by standard. Only to be compatible with earlier versions the option can be disabled.

IR Codes



The „IR Codes“ tab page contains all the IR Code specific settings.

RCMM Detection: The IRTrans automatically detects and formats RCMM IR Codes. In case that RCMM Codes are misidentified this option allows to disable the RCMM detection altogether. In most cases that will not be needed.

Force RCMM Detection: With this option the RCMM detection uses wider detection windows. This will improve the RCMM detection. On the other hand this increases the risk that IR Codes are misidentified as RCMM codes. This option is especially suited for relaying of RCMM codes. For optimum detection a special (fast) IR Receiver is needed.

RCMM Togglebit: Some devices use RCMM codes with an additional toggle bit. Examples are some Kathrein STBs. Using this option the IRTrans automatically generates this toggle bits. RCMM devices that do not use these toggle bits will not work when this option is used.

RC5 Detection: This option activates automatic RC5 detection. In addition the RC5 toggle bits will be analyzed and generated when sending codes. There might be some (very few) remote controls with RC5 alike codes that do not work correctly with RC5 detection. In these cases RC5 detection might be disabled. Normally RC5 detection should be enabled.

RC6 Detection: This option activates automatic RC6 detection. In addition the RC6 toggle bits will be analyzed and generated when sending codes. There might be some (very few) remote controls with RC6 alike codes that do not work correctly with RC6 detection. In these cases RC5 detection might be disabled. Normally RC6 detection should be enabled.

Ignore RC5 / RC6 toggle bit: RC5 and RC6 IR Code normally use toggle bits. There are, however, some devices that use RC5 or RC6 codes without toggle bits. This options switch off the toggle bit handling. If one of these options is used together with a normal RC5 or RC6 code the codes will not work correctly.

When codes are learned for sending the option can be switched off after learning is done as the option is also stored in the .rem file after learning.

For relaying of IR Codes this option needs to stay activated. A mixed relaying of RC5 or RC5 Codes with and without toggle bits is not supported with this option; however a code specific IR translation will allow it nevertheless.

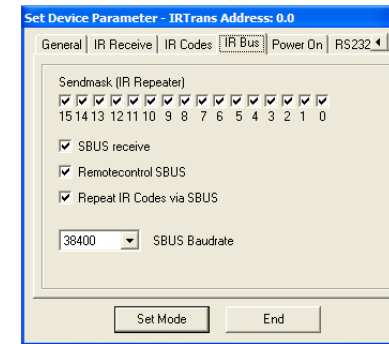
56 kHz R-Step Keyboard: This option allows using an IR keyboard with the R-Step protocol.

Remark: A 56 kHz IR receiver is needed to receive these codes.

Map out toggle bit at / Number of toggle bits: These settings control the mapping of arbitrary toggle bits in an IR code. To do that the position of the toggle bit (0-62, starting with 0) has to be chosen. Furthermore it can be selected if one or two toggle bits should be removed. The codes have to be learned with this option and the corresponding learn setting.

Important: Other IR Codes will not work with this option. Codes learned with this option cannot be sent again.

IR Bus



This tab page configures the setting for the IRTrans 2 wire serial bus.

Of course these options are only activated for modules with 2 wire bus.

Send mask: defines which source addresses are accepted as source for IR commands to be repeated.

SBus Receive: If this flag is set, IRTrans reacts on commands coming through the serial bus. If not, the IRTrans will ignore all received codes and IR Commands coming in via the 2 wire bus.

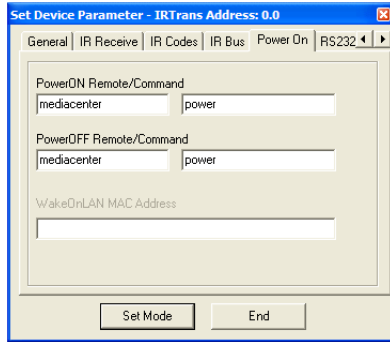
Remote control SBus: IR Codes received via the serial bus will be forwarded to control the PC via IR.

Repeat IR Codes via SBus: Received IR Commands will be forwarded via the serial bus. When this option is not set no IR relaying will be done by that IRTrans device. Sending via the serial bus is still possible.

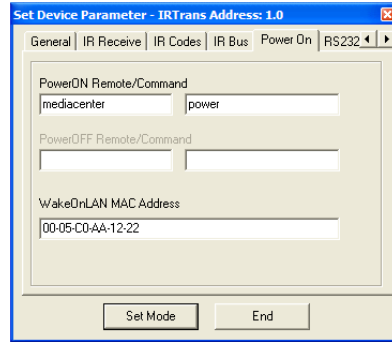
SBus Baud rate: This value sets the baudrate of the IRTrans Serial Bus. The default value is 38400 Baud. When using very long cables or in noisy environments lower values (down to 4800 Baud) can be used. The setting "Classic" allows to use the system together with older IRTrans modules using the first generation of the serial bus. Communication with modules with firmware versions < 4.0 is not possible due to different communication data structures. There might be restrictions when using modules with different firmware versions.

Important: All modules on the serial bus need to use the same baud rate.

Power On



Power On Tab page USB devices



Power On tab page LAN devices

PowerON Remote / Command: The remote control and command to switch the PC on.

USB devices: This command will only be used when the PC is switched off (or in Standby). On USB devices without the PowerOn option an USB resume event will be generated. Waking up a system from S3 suspend via USB will not work with all devices as it is not defined in the USB standards.

On devices with PowerOn option the relay in the IRTrans device is activated and will actuate the power switch of the PC. Of course that works when the PC is off and in all standby modes.

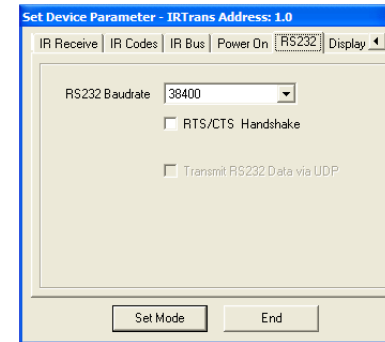
LAN devices: If the IR Code is received an Ethernet Wake on LAN package is generated and sent to the given MAC address in the local network. If that will wake up the PC or even switch it on depends on the configuration of the PC.

PowerOFF Remote / Command: The remote control and command to use to switch the PC off. This option is only supported on USB Devices with PowerOn option.

WakeOnLAN MAC Address: The MAC address to send the Wake on LAN magic packets to.

Important: All PowerOn options will only work with IR commands that can be recognized correctly. That should be verified using the "Detected IR Commands" window of the irtranstray utility.

RS232



The "RS232" tab page configures all RS232 settings. It is only available on devices with RS232 ports (IRTrans RS232 devices and LAN devices with RS232 ports like the LAN Controller XL)

RS232 Baudrate: This combo box sets the baud rate for the RS232 port. Supported values are 4800, 9600, 19200 and 38.400 Baud. Default is 38400 Baud.

Important: When changing the RS232 baud rate of an IRTrans device the new irserver has to be configured to use the new baud rate as well. That is done using the "-baudrate" option.

RTS/CTS Handshake: On devices supporting hardware handshake this option activates RTS/CTS hardware handshake. Of course the hardware handshake has to be enabled on the other end, too and a suitable cable needs to be used.

Transmit RS232 Data via UDP: Data received via RS232 is transmitted via UDP in the LAN. Only enabled on Ethernet devices with a firmware supporting this feature.

4.6. The ASCII / Batch Client

Works on Windows and LINUX. When the Server is running on the same System the Client can be started with the Command line `./irclient localhost`. The Client allows Learning and Sending of Commands and the setting of the Status flags of the IRTrans.

Normally the ASCII client offers control menus.

In addition the irclient can also be used for batch control:

Sending of IR commands:

```
irclient <ip> <remote> <command>
irclient <ip> <remote> <command> <sendmask> <bus>
irclient <ip> <remote> <command> <sendmask> <bus> <led>
```

Parameters:

```
<ip>:          IP address of the irserver
<remote>:     Name of the remote control
<command>:    Name of the IR command
<sendmask>:   Sendmask on the serial bus (0 selects all devices)
<bus>:        bus number (0=1st device ...)
<led>:        LED selection (i=internal, e=external, 1-8=LED number)
```

IR Database

```
irclient <ip> -flashirdb <bus> <actionstring> <remotelist>
irclient <ip> -loadirdb <bus> <filename>
irclient <ip> -reload
irclient <ip> -remotelist
irclient <ip> -commandlist <remote>
```

Parameters:

```
-flashirdb:    Load a list of remote controls into the IR Database
<actionstring>: Action string for received commands (enclosed in “”)
<remotelist>:  List of remote controls for the IRDB (enclosed in “”)

-loadirdb:    Load an IRDB definition file of the GUI client
<filename>:   Filename of the definition file (without .irdb)

-reload:      Reload the IR Database of the irserver

-remotelist:  Print a list of remote controls for the server
-commandlist: Print a list of commands for the remote control <remote> on the server
```

4.7. Using LIRC Clients

Every LIRC client can be used with IRTrans. The IRTrans server implements a standard LIRC application socket (only LINUX) and a standard LIRC TCP/IP socket to be compatible with LIRC. Every LIRC client can be used with IRTrans. Using LIRC clients you can remote-control your PC and send commands. Only the learning of commands has to be done through the GUI or ASCII client as the LIRC protocol does not support learning of commands.



The irserver completely replaces lircd. That means that the LIRC server (lircd) should not run on the system.

There can be several LIRC and IRTrans clients connected to the server at the same time. The TCP/IP socket allows connections from different clients over the network.

A very versatile client is irexec, delivered with LIRC. It allows executing any command triggered by an IR command received by IRTrans. It is also possible to send commands. That can be used to store complex commands: Switch on your Receiver and TV if you start the DVD player on the PC ...

The IRTrans Server is fully compatible with the LINUX VDR system. It is used in the same way as LIRC. Of course you have to learn your commands the right way, because the name of the commands is fixed inside VDR.



4.8. IRTrans and Homeseer 1.x

Every IRTrans Module is shipped with a Plug-in for the Home Automation Software Homeseer. That Plug-in allows to Control Homeseer via IR Commands. It also allows to Send Commands using Homeseer.

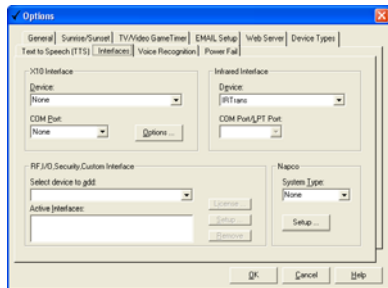
For Homeseer 2.x there is a similar plugin available for download from the Homeseer Homepage. Of course it is also freeware. It includes all the needed documentation.

- Installation**

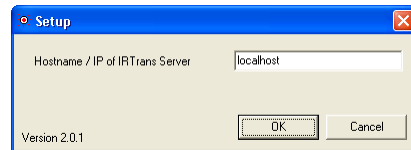
The IRTrans Plug-in (hspi_irtrans.ocx) located on the IRTrans Software CD or in the plugins folder of the IRTrans installation folder has to be copied into the Homeseer Installation Directory. If Homeseer is installed in the standard path this is done automatically by the IRTrans setup program.

- Setup**

As for all IRTrans Clients the irserver has to be running. In the Dialog View-Options-Interfaces IRTrans has to be selected in the Combo box "Device" as Infrared Interface. Now restart Homeseer. In the Event log a message should appear, saying that Homeseer has connected to the irserver. In the Dialog View-I/R Config the Button "Options" allows to set the IP Address of the irservers. Normally (same Computer) this is "localhost".



Homeseer Option dialog



Setup of the IRTrans Parameters

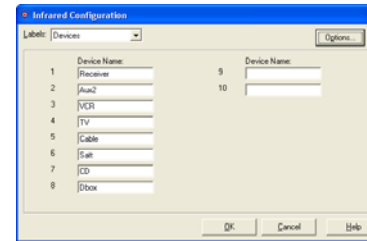


In one Homeseer Version (1.6.0) there is a problem using IR devices that do not have a direct Interface / Hardware Connection to Homeseer (IRTrans connects to Homeseer through the irserver). If it is not possible to connect to IRTrans it should be checked if there is an entry "ircomport=x" in the Section [Settings] of the file <Homeseer>\config\settings.ini. This entry has to be changed to "ircomport=1". If this entry does not exist at all, please add this line to the Section [Settings].

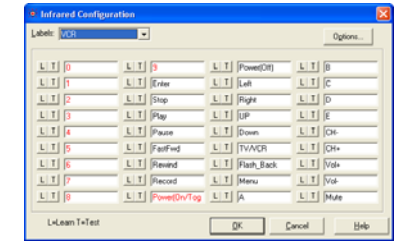


- Learning**

The IR Commands are controlled with the Dialog "View-I/R Config". In the Combobox "Labels" "Devices" should be selected first. Here the names for the



Devices Dialog in Homeseer



IR Dialog in Homeseer

Devices are set. To keep the whole system simple, that names should not be changed once commands have been learned. That means one should start by selecting the names of the Devices. Now the Devices can be selected in the "Labels" Combo box (e.g. TV). The Dialog now shows the Commands together with their names. These names might be changed, too.

Using the "L" Button in front of every command the commands can be learned now. Commands that already have a corresponding IR Command are marked in red.

After clicking "L" a learn dialog with Remote and Command appears. By clicking "Start Learn" the Learning process is activated. Now within 30s the corresponding Button of the Remote Control has to be pressed. There is no confirmation of the Learn Process but the learned Buttons will be marked in Red in the IR Dialog. This is how Homeseer works when Learning IR Commands.

The Commands are stored in the IRTrans Database as follows:

- The Remote is called `_hs_<Remotename>`; for example `_hs_TV`
- The command has the same name as the command in Homeseer

With the Button "T" (Test) the learned commands can be tested.

- Using Homeseer with IRTrans**

In the section View-Events new Events can be created. If "By IR Received" is selected as command type, a Combo box with all learned IR Commands appears. In this Combo box now a Command can be selected that triggers this Event.

To send IR Commands in "Infrared Control" IR Commands can be selected to be sent. It is possible to select more then one command here.

Declaration of Conformity

According to 47CFR, Parts 2 and 15 for
**Peripherals Power Supplies used
with Class B Personal Computers:**

We: IRTrans GmbH

Located at: Einsteinstraße 14, 85716 Unterschleißheim, Germany

Declare under sole responsibility that the product identified herein, complies with 47CFR Parts 2 and 15 of the FCC rules as a Class B digital device. Each product marketed, is identical to the representative unit tested and found to be compliant with the standards. Records maintained continue to reflect the equipment being produced can be expected to be within the variation accepted, due to quantity production and testing on a statistical basis as required by 47CFR §2.909. 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. The above named party is responsible for ensuring that the equipment complies with the standards of 47CFR §§15.101 to 15.109.

Trade Name: IRTrans IR Control System

Types or
Model Numbers: IRTrans USB
IRTrans RS232
IRTrans Translator / XL
IRTrans Busmodule
IRTrans Ethernet / PoE / IRDB / LANIO
IRTrans Mediacontroller
IRTrans LAN Controller
IRTrans LAN Controller XL

Signature of Party Responsible:

A handwritten signature in black ink, appearing to read 'Marcus Müller', written over a light blue horizontal line.

Printed name of Party Responsible: Marcus Müller

Executed on (Date), at (Place): 03-09-05, Dortmund