Hardware Guide

Ethernet - Ethernet PoE

Version 2013.02

EG Declaration of Conformity

The following products

IRTrans Ethernet / IRDB
IRTrans Ethernet PoE / IRDB / IO

are confirmed to comply with

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

Contents

1. IRTrans Ethernet

The IRTrans Ethernet is an IR Transceiver with network interface.

Basic features are:

- Receive an transmit IR
- 1 output fo external IR transmitter
- 1 input for external IR receivers
- 10/100 MBit network interface
- Webinterface for configuration

IRTrans devices with the optional IR database offer additionally:

- 128k IR database (sufficient for approx. 1000-1500 IR commands)
- Use withour IRServer
- 128k flash memory for own html pages

IRTrans devices with the optional 2X option:

- 2nd independent IR output (stereo jack output)

1.1 Connections

On the back there are:

IRTrans Ethernet back

- Ethernet connector
- 5,5/2,1mm connector for power supply
- Output for external IR transmitters

On the front there are 4 IR LEDs, 1 IR receiver and a 3,5mm jack to connect external IR receivers.

1.2 Power supply

The IRTrans Ethernet is powered by an external power supply. It must deliver 8-16V and 300mA per IRTrans device. The positive lead is wired to the center terminal of the 5,5/2,1mm hollow connector.

A 5,5/2,5mm connector may fit as well but will not have reliable contact. The IRTrans will encounter seemingly inexpliccable reboots.

When using external high power transmitters the power supply should be capable of delivering 500mA.

2. IRTrans Ethernet PoE

The IRTrans PoE is mostly identical to the IRTrans Ethernet devices. It is available with IR database and 2X option as well.

Differences to the IRTrans Ethernet:

- Power supply over Ethernet (PoE). Alternatively an external power supply may be used.
- 2x option with own connector

2.1 Connections

IRTrans Ethernet PoE back

On the back there are from left to right:

- Ethernet connector
- 2nd output for external transmitter: 3,5mm jack
- 1st output for external transmitter: 3,5mm jack
- above: connector for external power supply
- status LED of the power supply

The left 3,5mm jack is always built into the devices but deactivated without 2X option.

2.2 Power supply

The IRTrans Ethernet PoE may be supplied with power by an IEEE 802.3af conformal Power over Ethernet switch. According IEEE802.3af the power may be supplied by a free conductor pair as well as by a data pair.
Older switches not conforming to IEEE802.3af may not be usable to power the IRTrans PoE.

For an external power supply there is a 5.5/2.5mm hollow connector. The external power supply should be capable of delivering 4,5-6V with approximately 300mA. The positive lead must be wired to the center terminal.

If there is power available either via PoE or by external supply the blue LED next to the power connector will be lit´.

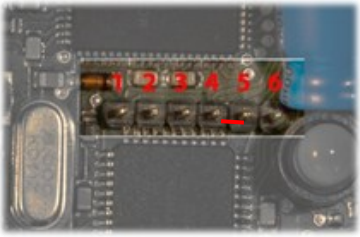
The IRTrans Ethernet PoE requires a different voltage power supply compared to other IRTrans modules. For this reason the power connector is 5,5/2,5mm.

3. Ethernet interface

The Ethernet interface allows to integrate the IRTrans in any IP based Ethernet. The IP stack runs on a Freescale MC9S12NE64 processor.

The ethernet interface is configured to use 10MBit/s per default. 100MBit/s is possible but not recommended due to higher power consumption and more heat generated inside the IRTrans. The packages used to control the IRTrans are usually not larger than 100 bytes so using 100MBit does not improve performance.

Switching to 100MBit is accomplished by setting a jumper inside the device. The jumper must short pins 4 and 5 of the 6 pin header.



Position of the 6 pin header

Communication between the IRTrans and the server usually happens on TCP/UDP port 21000. This port is registered for IRTrans and may have to be opened in firewalls.

When there is an active link the green LED on the Ethernet connector will light up. The yellow LED flashes when data is transmitted.

By default the IRTrans uses DHCP to acquire an IP Adress. If there is no DHCP Server available the device automatically falls back to **192.168.0.32**.

4. External IR transmitters

There are a variety of external transmitters available with 3,5mm jacks.

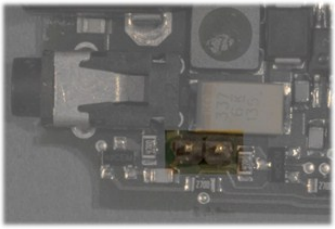
4.1 stick on minitransmitters

The minitransmitters can be sticked directly to the IR receiver of the your devices. Please note:

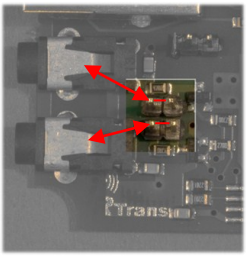
- The transmitter casing is not transparent all the way around. The transmitters will only work when the paper of the sticker is removed.
- Range is limited to 20-30cm (~1ft). The transmitters should be sticked directly to the IR receiver.
- Individual control of multiple external transmitters is not possible with the IRTrans devices covered by this handbook.
- Standard cable length is 1,8m (~6ft). Cables may be extendet to up to 5m (~15ft). Longer cables may cause signal distortions.
- Important: When using external high power transmitters there is a jumper to enable full power. This jumper must be removed when using minitransmitters.

4.2 external high power transmitters

The external high power transmitters are equal to the built in IR LEDs. They are available in a high frequency version as well (455kHz). The high frequency transmitters can be recognised by clear LEDs. High power transmitters can be connected to all of the IRTrans devices.
Cables should not be extended beyond standard length (1,8m~6ft). Longer cables lead to distorted IR signals.
For using external high power transmitters a jumper has to be set inside the IRTrans. The following pictures illustrate the position of this jumper:
The jumper must not be set when using stick on minitransmitters!



IRTrans Ethernet



IRTrans Ethernet PoE

4.3 Devices with 2X option

IRTrans modules with 2X option offer a second independent output for external transmitters. The IRTrans PoE is equipped with a second 3,5mm jack for this purpose. The IRTrans Ethernet uses a stereo plug for the second output.

5. Connecting external IR receivers

External receivers can be connected by a 3,5mm jack next to the built in IR receiver.

When using an external receiver it must be enabled in the device settings and the correct receiver type has to be selected.

Older IRTrans Ethernet modules (up to hardware revision 2.2) cannot select the receiver by software. When using an external receiver with this devices a jumper has to be set inside the IRTrans. This jumper is located behind the built in receiver and will disable the internal receiver thus enabling the external input. This is not necessary with current revision or PoE devices.

When using external receivers firstly the receiver must be enabled and secondly the correct receiver type has to be selected with the IRTrans software.

6. RS232 interface

Instead of connecting an external IR receiver the connector may be used as a serial communication port. To use this a special active RS232 cable is required and the connection can only be uni directional.

7. Start-Up

For configuring the IRTrans Ethernet / PoE there is a password. By default (factory settings) this password is:

user: admin

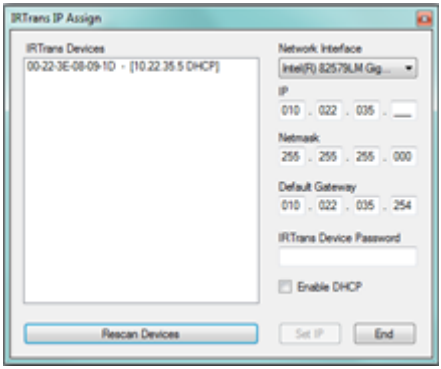
password: irtrans

The password may be changed in the user interface.

The IRTrans Ethernet / PoE devices ship with DHCP enabled. Hence the IRTrans searches for a DHCP Server and requests an IP adress with its MAC. The MAC adress is printed on the label.

If there is no DHCP server or the server does not assign an IP adress to the IRTrans the device will fall back to the IP adress **192.168.0.32**.

Included in the IRTrans software suite is the tool „IPAssign“. It is available both as GUI (Windows) and as console (Windows & Linux). Using IPAssign it is possible to modify the IRTrans IP settings. IPAssign „mimics“ a DHCP server for this purpose therefore the DHCP ports must not be blocked by a firewall.



IPAssign searches the network for IRTrans devices and sorts them according to MAC adresses. An entry marked with „DHCP“ means that this device obtained ist settings from a DHCP server. After selecting an IRTrans device its settings can be changed. Writing the settings to the device („Set IP“) requires the correct device password to be entered

Now knowing the IP adress of the IRTrans the IRTrans server can be started. Additional settings can be modified by the IRTrans servers „device status“ dialogue or the devices web interface.

8. Webinterface

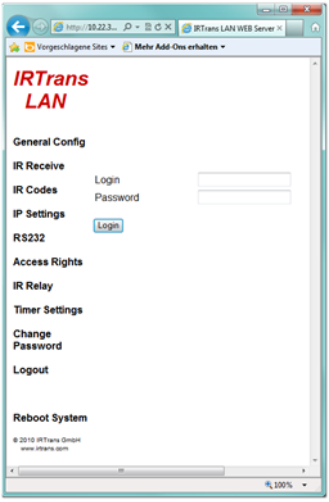
IRTrans devices with Ethernet offer a browser based configuration interface. All parameters that can be altered by the web interface can be accessed by the IR-Trans servers device status dialogue as well.

To access the web interface simply type the IP adress of the IRTrans in an internet browser:

http://192.168.0.32

The adress will chance according to your network settings.

You will now see the Login page:

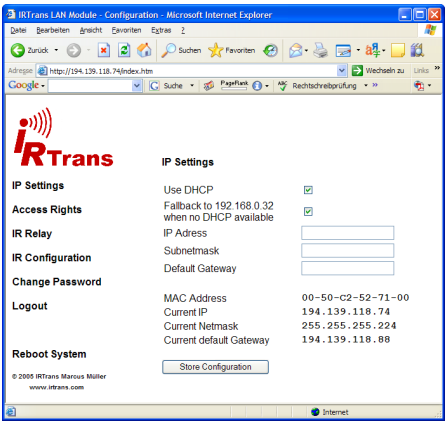


IRTrans Webinterface - Login

The password may be changed by selecting „Change Password“. Although access to the IR functions of the IRTrans may be restricted using access rights (refer to software handbook) the webinterface is always reachable from the subnet where the IRTrans is located.

All options accessible through the webinterface are identical to the corresponding options of the device status. For a detailed description refer to the software handbook.

The IP Settings dialog to configure the IP parameter. The following fields are defined:



Use DHCP: Activates the automatic IP assignment via DHCP.

Fallback …: When no DHCP server is available the device falls back to the default address 192.168.0.32 after 30s.

IP Address: Manually configured IP address

Subnet mask: Manually configured IP subnet mask

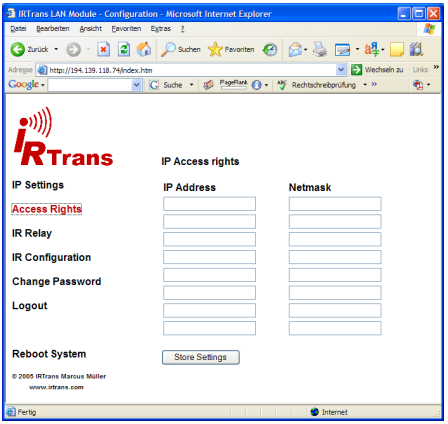
Default Gateway: Manually configured default gateway

In the lower lines the currently active parameters including the MAC address are displayed.

The button „Store Configuration“ transfers all values to the non-volatile EEPROM of the device.

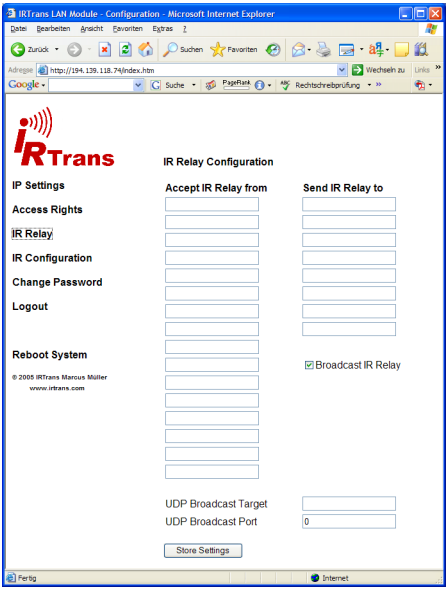
The Access Rights dialog configures the access rights of the device. If no values are entered here, any client can access the device. As soon as at least one value is entered only clients that fit into at least one of the entries are allowed to access the device.

Each entry consists of an IP address and a subnet mask: 192.168.0.0 / 255.255.255.0 enables all clients within the network 192.168.0.x. An entry 192.168.0.1 / 255.255.255.255 allows only one client to use the IRTrans LAN. The access rights are active for all TCP and UDP functions.



To avoid a complete lock-out it is always possible to access the web front end from within the local network of the device – even if there is no entry for that sub-net.

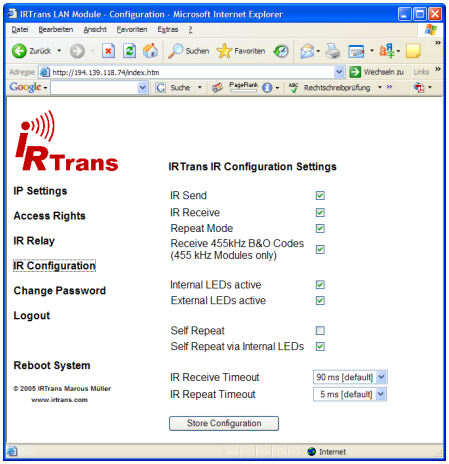
The IR Relay configuration is used to configure the relaying of IR signals from one IRTrans Ethernet to another. In general IR signals received by other IRTrans Ethernet modules will be relayed automatically. This relaying works without a server – even with IRTrans devices without an integrated IR database. The exact configuration of the relaying is done in this dialog.



In the list below “Accept IR Relay from“ all IRTrans IP Addresses can be entered from which IR relaying should be enabled. If the list is empty, all signals will be relayed.

The list below “Send IR Relay to“ tells the system to which devices received IR codes should be relayed. Normally it is enough to enable the checkbox „Broadcast IR Relay“. Only if IR data should be relayed to routed networks it is important to enter a target address because broadcasts will not be routed. The IR receiving of the irserver is also done via that broadcasts. That means either broadcast has to be enabled or the address of the host running the irserver has to be in this list – otherwise the irserver will not receive IR codes from this IRTrans module.

The UDP Broadcast fields are only used for modules with integrated IR Database. They define to which address and port formatted IR receive data has to be sent. The precise format of these telegrams is configured via the IR database.



The IR parameters can either be configured using the IRTrans GUI client or via the webpage “IR Configuration”.

All the fields and their meanings are explained in detail in the Users manual for the IRTrans system.

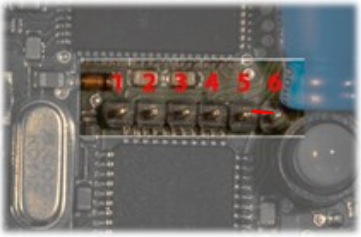
Of course both ways of configuration can be used alternately.

9. Reset to factory defaults

If it should become neccessary to reset the IRTrans to factory defaults (e.g. the password has been lost) this can be accomplished as follows:

Remove power from the device and open the case.

Resetting the IRTrans will be done by shorting pins 5-6 of the 6 pin header inside the device:



6-pin header

After putting a jumper on pins 5 and 6 power up the device and wait a few seconds. The status LED will flash green-red once. Now remove power again and remove the jumper. The IRTrans is reset to factory defaults.