Instructions for use

KaVo EDUnet ULTRA HD

KaVo. Dental Excellence.

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1 User instructions

1.1 User guide

Requirement
Read these instructions prior to first use to avoid misuse and prevent damage.

1.1.1 Abbreviations

Abbre-viation	Explanation
IfU	Instructions for use
CI	Care instructions
AI	Assembly instructions
TI	Technician's instructions
SC	Safety checks
IEC	International Electrotechnical Commission
RI	Repair instructions
RK	Retrofitting kit
AS	Assembly set
EP	Enclosed parts
EMC	Electromagnetic compatibility
PI	Processing instructions

1.1.2 Symbols

⚠	See the Safety/Warning Symbols section
ℹ	Important information for users and technicians
CE	CE mark (European Community). A product bearing this mark meets the requirements of the applicable EU directive.
▶	Action required

1.1.3 Target group

This product is for assisting education and training at dental universities, institutions of continuing education, and for continuing education for dentists at hospitals in and universities.

1.2 Service
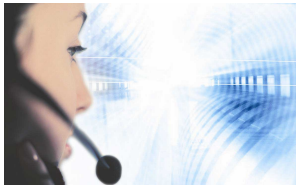
Service hotline:
+49 7351 56-2700
Service.Multimedia@kavo.com
Please refer to the serial number of the product in all inquiries!
For further information, please visit: www.kavo.com

1.3 Warranty terms and conditions

Within the scope of the applicable KaVo delivery and payment conditions, KaVo guarantees proper function, absence of defects in material and workmanship for a period of 12 months from the date of purchase as confirmed by the salesperson.
In case of justified complaints, KaVo will honour its warranty with a free replacement or repair.
The warranty does not cover defects and their consequences that arose or may have arisen due to natural wear, improper handling, cleaning or maintenance, non-compliance with operating, maintenance or connection instructions, corrosion, contaminated media supply or chemical or electrical influences deemed abnormal or impermissible in accordance with factory specifications.
The warranty does not usually cover lamps, light conductors made of glass and glass fibres, glassware, rubber parts and the colourfastness of plastic parts.
The warranty expires if defects or their consequences could possibly have arisen because the product has been modified or changed. Warranty claims can only be asserted when they are immediately reported to KaVo in writing.
This notification must be accompanied by a copy of the invoice or delivery note on which the manufacturing number is clearly visible. In addition to the guaranty, the statutory warranty claims of the purchaser also apply with a warranty period of 12 months.

1.4 Transportation and storage

1.4.1 Currently valid packaging regulations

Note
Only valid for the Federal Republic of Germany.

Dispose of and recycle the sales packaging appropriately in accordance with current packaging regulations, employing waste management or recycling companies. Comply with the comprehensive return system. KaVo has had its sales packaging licensed for this purpose. Please comply with the regional public waste-disposal system.

1.4.2 Damage in transit

In Germany

If the packaging is visibly damaged on delivery, please proceed as follows:

1. The recipient of the package must record the loss or damage on the delivery receipt. The recipient and the representative of the shipping company must sign this delivery receipt.
2. Leave the product and packaging in the condition in which you received it.

3. Do not use the product.
4. Report the damage to the shipping company.
5. Report the damage to KaVo.
6. Consult with KaVo first, before returning a damaged product.
7. Send the signed delivery receipt to KaVo.

If the product is damaged but there was no discernable damage to the packaging on delivery, proceed as follows:
1. Report the damage to the shipping company immediately and no later than 7 days after delivery.
2. Report the damage to KaVo.
3. Leave the product and packaging in the condition in which you received it.
4. Do not use a damaged product.

Note

Failure on the part of the recipient to comply with any of the above-mentioned obligations will mean that the damage will be considered to have arisen following delivery (in accordance with the General German Freight Forwarders´ Terms and Conditions, Art. 28).

Outside Germany

Note

KaVo shall not be held liable for damage arising from transportation.
The shipment must be checked on arrival.

If the packaging is visibly damaged on delivery, please proceed as follows:
1. The recipient of the package must record the loss or damage on the delivery receipt. The recipient and the representative of the shipping company must sign this delivery receipt.
   Without this evidence, the recipient will not be able to assert a claim for damages against the shipping company.
2. Leave the product and packaging in the condition in which you received it.
3. Do not use the product.

If the product is damaged but there was no discernable damage to the packaging on delivery, proceed as follows:
1. Report any damage to the shipping company immediately and no later than 7 days after delivery.
2. Leave the product and packaging in the condition in which you received it.
3. Do not use a damaged product.

Note

If the recipient fails to comply with any of the above-mentioned obligations, the damage will be considered to have arisen following delivery
(in accordance with CMR law, Chapter 5, Art. 30).

1.4.3 Information on the packaging: Storage and transportation

Note

Please keep the packaging in case you need to return the product for servicing or repair.

The symbols printed on the outside are for transportation and storage, and have the following meaning:

⇧⇧	Transport upright with the arrows pointing upwards!
	Fragile - protect against impact!
	Protect from moisture!
...kg max	Permissible stacking load
℃	Temperature range
%	Humidity
hPa	Air pressure

2 Safety

2.1 Description of safety instructions

2.1.1 Warning symbol

⚠	Warning symbol

2.1.2 Structure

⚠ **DANGER**

The introduction describes the type and source of the hazard.
This section describes potential consequences of non-compliance.
▸ The optional step includes necessary measures for hazard prevention.

2.1.3 Description of hazard levels

The warning and safety notes in this document must be observed to prevent personal injury and material damage. The warning notes are designated as shown below:

⚠ **DANGER**

In cases which – if not prevented – directly lead to death or severe injury.

⚠ **WARNING**

In cases which – if not prevented – could lead to death or severe injury.

⚠ **CAUTION**

In cases which – if not prevented – could lead to minor or moderate injury.

NOTICE

In cases which – if not prevented – could lead to material damage.

2.2 Purpose - proper use

2.2.1 General information

The user must ensure that the unit works properly and is in satisfactory condition before each use.

KaVo accepts liability for the safety, reliability, and performance of components supplied by KaVo, provided:
▪ installation, instructions, expansions, adjustments, changes or repairs were carried out by KaVo or KaVo-trained technicians or by the personnel of authorised distributors.
▪ the unit is operated in accordance with the instructions for use, care and installation.

▪ the IT components supplied by the operator meet the technical requirements in these instruction for use for hardware and software, and they are installed and set up according to the descriptions of these components.

Users have a duty to:

▪ Only use equipment that is operating correctly
▪ to protect himself, the user and third parties from danger.
▪ to avoid contamination from the product.

The following persons are authorised to repair and service the KaVo product:

▪ Technicians of KaVo branch offices after appropriate product training.
▪ Specifically KaVo-trained technicians of KaVo franchised dealers.

Note
Only accessories licensed for use with this machine may be used.

Disposal

Note
Any waste which is generated must be recycled or disposed of in strict compliance with all applicable national regulations in a manner which is safe both for people and the environment.
If you have any questions regarding proper disposal of the KaVo product, please contact the KaVo branch.

Disposal of electronics

Note
According to EC directive 2002/96 concerning used electrical and electronic devices, this product is subject to the cited directive and must be disposed of accordingly within Europe.
Additional information can be obtained from KaVo (www.kavo.com) or your dental supplier.

2.2.2 Product-specific

Use

The KaVo EDUnet ULTRA HD links simulation and computer work-stations for dental training.
The EDUnet ULTRA HD must not be used for treatment of patients.

2.3 Safety instructions

⚠ CAUTION

Incorrect power supply connection.

Electrical shock or fire.

▸ Make sure that the supply voltage that is used corresponds to the supply voltage indicated on the rating plate of the power supply.
▸ Make sure that the power supply module is only connected to a power supply with protective conductors.
▸ Protect the power supply module from high temperatures, moisture, wetness, and dust.
▸ Make sure that the vents in the housing are not covered. Ensure sufficient ventilation.

NOTICE

External voltage at the protective conductor installation

Video signal transmission error

▸ If the computer and monitors have protective conductor connections, make sure that the protective conductor installation is free of external voltage.

3 Product description

3.1 System requirements

All common computer and operating systems are supported. Specifically, the following requirements must be met.

Graphics board:	Features DVI-I, DVI-D, HDMI connector or DisplayPort. It supports digital signals only. .
Monitor connector:	DVI or HDMI connector
Connecting cable:	The scope of delivery includes cables for HDMI connectors. The max. permissible cable length for DVI signals is 5 m, or more for HDMI. If longer cables are needed, they must be of very high quality or amplifiers need to be used.
Resolution:	max. 2560 x 1600 (QXGA) can be extended up to 3840 x 2160 (UHD)
USB connection:	An unoccupied USB port on the PC is needed.
Mouse and keyboard:	Standard input devices (HID) without special additional function, such as, e.g., scanners, card-readers, etc., are supported. Likewise, special additional keys, as are meanwhile present on some keyboards, are not supported. The same type of mouse should be used on all work-stations. If different types of mice are used at different resolutions, no remote control with the mouse as possible.
Arrangement:	The maximal cable length between two work-stations should not exceed 30 m.
Power supply:	An additional outlet socket is needed for each set of two work-stations.
Bus wiring:	The manufacturer-released patch cables included in the delivery must be used to set up the network. Despite identical specifications, there are major differences in the quality of commercially available patch cables.

Note

Additional connecting cables or longer cables can be ordered from the manufacturer.

3.2 Network components

① Bus cable ② Room keyboard
③ Participant control box (optional) ④ Participant box
⑤ Audio box (optional) ⑥ Mains adapter

3.2.1 Scope of delivery

The following is needed for each set of 2 work-stations (includes teacher):

- Participant box (1x) **Mat. no. 1.012.6728** FHD+ up to 2560p x 1440p
- Manufacturer-released patch cables for interconnecting the participant boxes (1x) **Mat. no. je nach benötigte Länge des Kabels**
- HDMI-HDMI (for audio), HDMI-DP depending on configuration, 1.8 m (4x)
- USB connecting cable type A-B, 1.8 m (2x)
- Power supply 5 V DC, 4 A (1x)

In addition, the following is needed for installation of the EDUnet ULTRA HD:
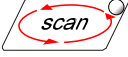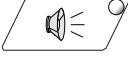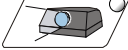
- **Mat. no. 1.012.6720** EDUnet Ultra HD room keyboard approx. 120 stations
- or
- **Mat. no. 1.012.6722** EDUnet Ultra HD room keyboard approx. 60 stations

3.2.2 Optional accessories

Optional components for each work-station:

- Participant control box with approx. 1.5 m cable (1x) **Mat. no. 1.012.6725**
- Audio box with 3 connecting cables (1x) **Mat. no. 1.012.6726**

3.3 Controls

Control keyboard 50

Control keyboard 100

Participant control box

Keys of the room keyboard

		To all
		Dark monitor

	Get picture released
	Release help request
	Remote control
scan	Scan
C	Clear
	Audio
A	Group
6	Participant
D	Teacher
	Notebook
	Beamer

Keys of the participant control box

Hilferuf an Dozent	Call help
Bild holen	Get picture

4 Assembly

A participant box is needed for each set of two work-stations in the network. The participant box is placed between the connections of the computer to the monitor, keyboard, and mouse.

The participant boxes establish the connection between the individual participant work-stations and the teacher station and are connected to each other through the EDUnet bus cable.

The participant boxes carry all connectors for one work-station on each side: two HDMI sockets for connection of monitor and graphics board of the computer as well as USB ports for mouse and keyboard.

Optionally, TID and audio boxes can be connected.

Each participant box must be connected to a power supply.

4.1 Connecting participant boxes

> **Note**
>
> Installed in a cable channel, a sufficient safe distance from other power conducting lines must be maintained in accordance with IEC 61010-1.

▸ Affix the participant box under the table top with the fastening clip.

or

▸ Put the participant box directly in a cable channel.

▸ Connect the HDMI-HDMI (for audio), HDMI-DP and USB connecting cable to the designated connectors on the participant box.

▸ Connect the corresponding output of the graphics board of the PC to the HDMI-DVI cable of the participant box.

▸ Connect the UCB cable to the corresponding USB port of the PC. Please note that only one USB cable per PC is required, since the participant box is recognised as a combination device (mouse and keyboard) by the PC.

▸ Connect mouse, keyboard, and monitor to the designated connectors of the participant box.

▸ Connect the power supply to the participant box and plug it into the mains.

4.2 Connect the bus cable

All participant boxes are connected to each other by the bus cable in a ring system.

The physical arrangement of the participant boxes in the bus depends on their code/ arrangement on the room keyboard.

NOTICE

Malfunction due to inappropriate cables.

Image transmission error.
  ▸ Always use the manufacturer-released patch cables included in the delivery.
  ▸ If you use other cables, have the cables tested by the manufacturer.
  ▸ Use only bus cables with a length of no more than 30 m.
  ▸ Do not use UTP cables.
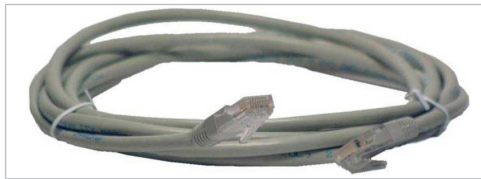
NOTICE

Product damage due to kinking or mechanical pulling.

Irreversible breakage of the electrical lines in the bus cable.
  ▸ Always run the bus cables with sufficient play.
  ▸ Do not kink bus cables.
  ▸ Do not pull on bus cables.

Note

The maximal length of the bus cable between two participants is 30 m. If the arrangement of the participants is complicated, the ring network can be split into "branches" with a switch.

Abb. 1
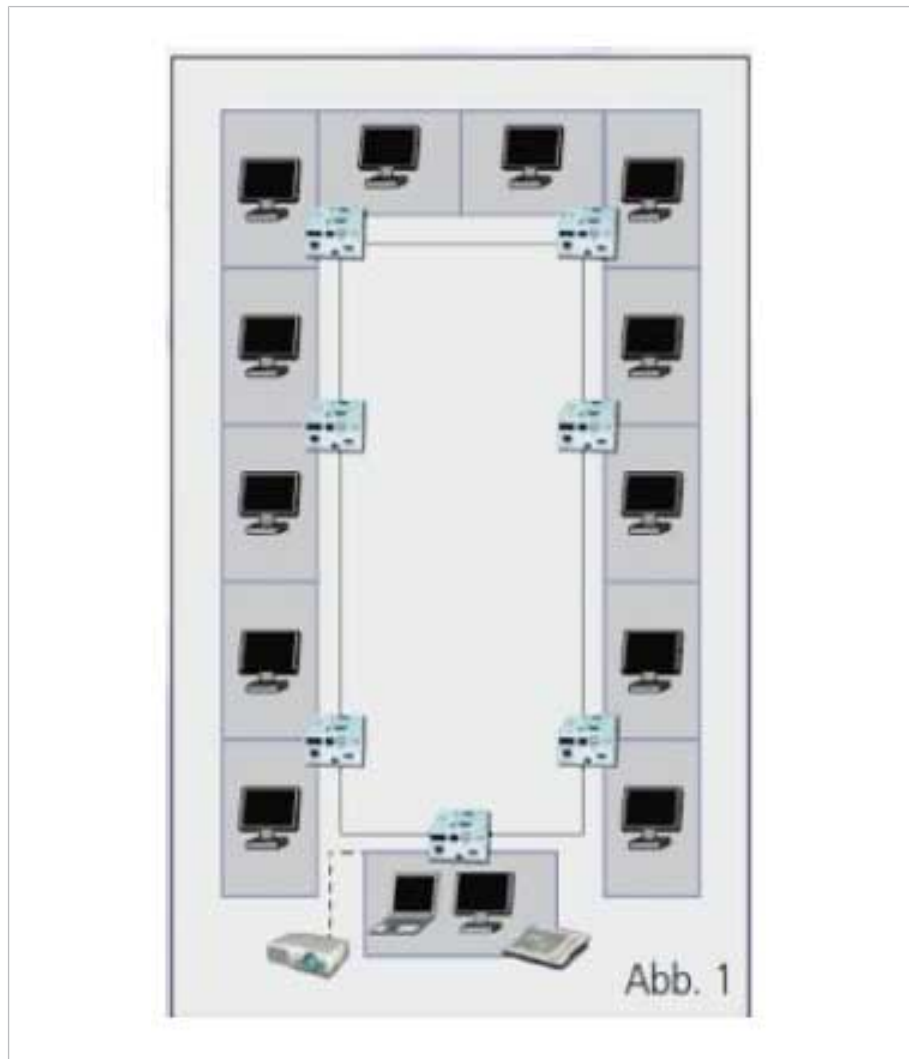
▸ Start with any participant box and connect the bus cable to the "BUS out" connector and to the "BUS in" connector of the next participant box. Please note that the "BUS in" connector can be recognised by its control light (LED).

▸ Connect all participant boxes to each other as described (see ring system).

▸ Connect the unoccupied "BUS in" connector of the first participant box to the last unoccupied "BUS out" connector to form the ring.

▸ Outline the wiring in the enclosed installation plan.
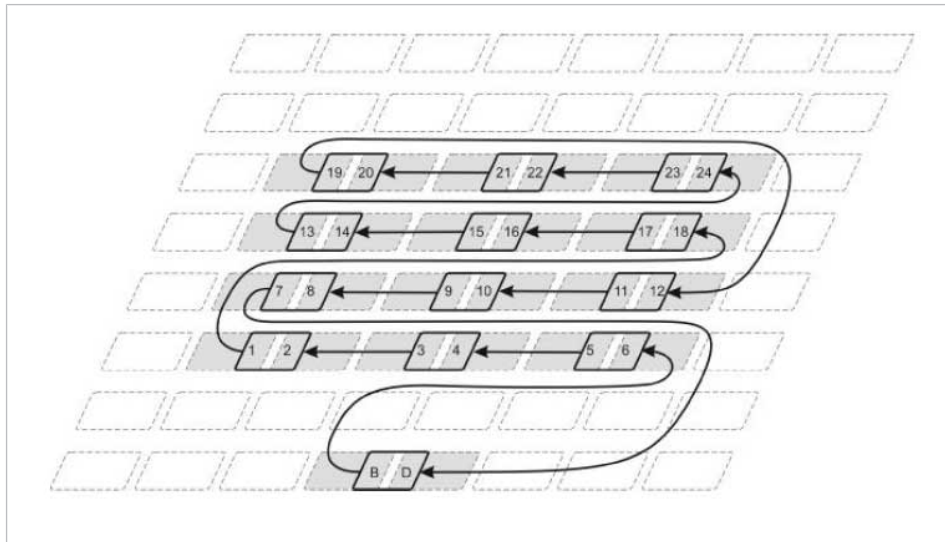
Example of an installation plan

The ring system allows defects (defective participant box, defective cable) to be identified quickly through the outline drawing.

4.3 Connecting the room keyboard

▶ Connect the room keyboard to the teacher's participant box using the enclosed cable.

▶ Place the room keyboard within easy reach of the teacher.

Note
The room keyboard can be connected to any participant box. The two additional connecting sockets on the room keyboard (RJ10 and RJ12) are not needed for normal operation and are intended for optional extensions.

4.4 Connecting the audio box (optional)

As an option, the EDUnet ULTRA HD can be equipped with audio boxes with individual volume settings. 1 patch cable is enclosed with each audio box.

▶ Connect only a headset to audio box. PC transmits directly by HDMI.

▶ Turn the volume regulator to adjust the volume.

4.5 Connecting the participant control box (TID) (optional)

As an option, the EDUnet ULTRA HD may be equipped with participant control boxes. The participant control box allows the participants to use the functions, "Get picture" and "Help request".

▶ Connect the participant control boxes to the "Option" connector of the respective participant box at all participant work-stations using the enclosed cable.

4.6 Connecting the beamer (optional)

Note

If the beamer is set-up at a large distance (e.g, as a ceiling installation) and if cables of more than 5 m in length need to be used, appropriate operation with the DVI interface is no longer ensured. In each individual case, the use of high-quality cables or of a DVI or HDMI amplifier must be considered.

As an option, the EDUnet ULTRA HD can be expanded through an LC display, a beamer or other projection device.

Connect beamer to teacher work-station

▶ Connect the beamer to the teacher's participant box in place of the teacher's monitor.

or

▶ Connect the beamer and the teacher's monitor jointly to the teacher's participant box. A DVI or HDMI splitter is needed for this purpose.

⇨ The display of the teacher's screen is shown on the beamer.

Connect beamer to participant box.

▶ Connect beamer like a participant monitor to an unoccupied port on a participant box.

A separate computer is not needed at this station. This allows the teacher to show any participant display in the training room and to continue working on his own computer. The room keyboard is then used for operation exclusively.

4.7 Connecting a notebook (optional)

As an option, a notebook can be connected to the EDUnet ULTRA HD. If a beamer is used simultaneously, it makes sense to connect a notebook.

The easiest option is to connect beamer, notebook, and teacher jointly to one participant box. The one station consists of monitor and teacher's PC, whereas beamer and notebook are connected jointly to the other station.
This allows for optimal utilisation of the participant box.

By assigning the "Notebook" key, the screen content of the notebook can be viewed and distributed through the EDUnet network by the teacher just like the screen content of any other participant.

Moreover, the beamer can be assigned to the notebook as a local monitor. Any other images can be sent in the EDUnet network at the same time. Accordingly, a variety of contents can be communicated simultaneously to the participants or the teacher has the option to view the participants' screens during a presentation or exercise.

5 First use

NOTICE
A monitor is not suitable for a high-resolution image.

The monitor cannot be synchronised or is damaged.
▸ Before startup, make sure that all monitors are suitable for the image refresh rate of all connected devices.

After set-up of the EDUnet ULTRA HD, all PCs are ready for use, i.e. all participants can use their PC as usual.

5.1 Activating and deactivating the room keyboard

In order to activate the EDUnet ULTRA HD, the room keyboard needs to be activated.

▸ Press the "Clear" and "Remote control" keys simultaneously.

⇨ This turns on the EDUnet ULTRA HD.

▸ Press the "Clear" and "Remote control" keys simultaneously.

⇨ - This switches the EDUnet ULTRA HD into sleep mode.

⇨ - The control lights of the function keys flash.
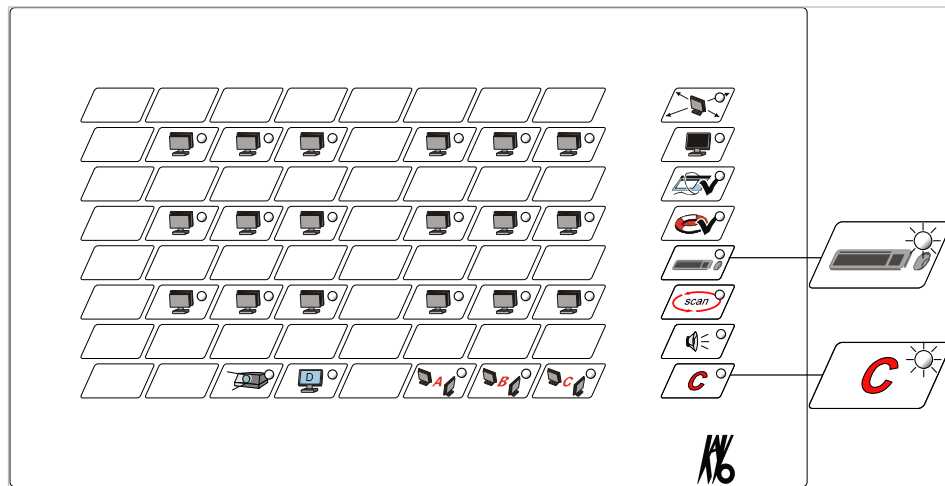
The individual stations can be recognised by means of the spatial arrangement on the keyboard.
There is no need to assign numbers to the keys.

The image of a monitor seen from behind corresponds to the participant stations.

The image of a monitor seen from the front with a capital "D" corresponds to the teacher station.

5.1.1 MultiMaster function (optional)

If the EDUnet ULTRA HD is equipped with the optional MultiMaster function, an identification number needs to be assigned to each room keyboard.

The identification number is issued the first time the room keyboard is turned on. It is required for operation of MultiMaster. A total of five identification numbers can be issued. If several room keyboards are used, each room keyboard may only be assigned one identification number.

Note

If only one room keyboard is connected to the network, it is given the identification number 1.

Note

An acoustic error message signals when an additional EDUnet room computer is turned on.
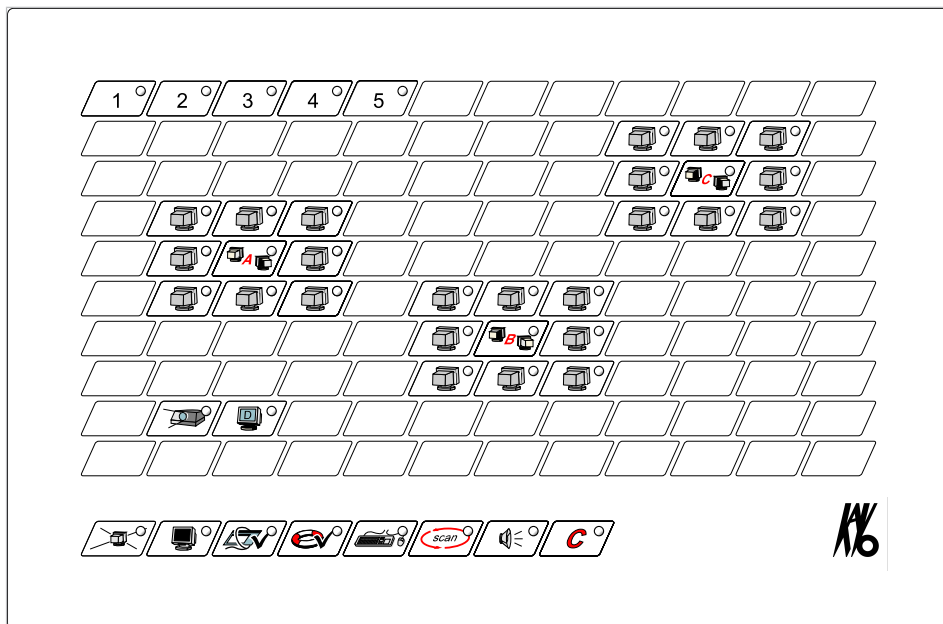
Note

The identification number can still be changed at a later point in time.

Changing the identification number of the room keyboard

▸ If the EDUnet room keyboard is turned on, switch it to sleep mode. For this purpose, press the "Clear" and "Remote control" keys simultaneously.
⇨ This switches the EDUnet ULTRA HD into sleep mode.

▸ Hold down the "Release help request" key and press the "Clear" and "Remote control" keys simultaneously.
⇨ This switches the EDUnet ULTRA HD into active mode again.

▸ Hold down the "Release help request" key until you hear an acoustical signal.
▸ Release the "Release help request" key.
⇨ The LEDs of the five keys in the top row from the left flash.

▸ Assign the identification numbers with the number keys.
⇨ The keyboard automatically initialises and goes to standby.

5.2 Assign the participant keys

Note

In order to avoid addressing conflicts, all stations must be assigned to the participant keys of the room keyboard. If only one PC is connected to a participant box initially, the unoccupied second station should be assigned to a key a little ways away from the other keys in order to prevent it from being pressed inadvertently.

Each networked work-station must be assigned a participant key on the room keyboard.

The assignment can be changed at any time. Additional work-stations can also be included at any time. For ease of orientation, the keys should be arranged on the keyboard to match the position of the participant stations in the room.

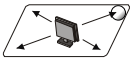▸ If the EDUnet room keyboard is turned on, switch it to sleep mode. For this purpose, press the "Clear" and "Remote control" keys simultaneously.

⇨ This switches the EDUnet ULTRA HD into sleep mode.

▸ Press and hold down the "To all" key.

▸ Press the "Clear" and "Remote control" keys to turn the EDUnet ULTRA HD on again.

▸ Hold down the "To all" key until an acoustical signal is issued and all participant keys flash.

⇨ The programming mode is active.

▸ At the work-station to be programmed, press the "Get picture" key on the help button.

⇨ - The control light on the participant control box is on.

⇨ - The monitor goes dark.

▸ On the room keyboard, press the "Participant' key to be assigned to the work-station.

⇨ The control lights of the participant control box and of the selected "Participant" key are turned off.

▸ Repeat the last two steps for each additional work-station to be programmed.

⇨ With each new assignment, the control light of the assigned participant key is turned off.

▸ Press the "Clear" key to save the programming.

▸ To check the programming, press the "Help request" key on the participant control box.

⇨ The control light of the key assigned to the work-station flashes when the "Help function" of the room keyboard is released.
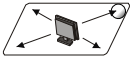
5.3 Assign the teacher key

Note

For operation of the EDUnet ULTRA HD, a teacher station must be assigned. In the absence of a teacher station, no further functions are available.

▸ Temporarily connect a participant control box to the teacher work-station.

▸ If the EDUnet room keyboard is turned on, switch it to sleep mode. For this purpose, press the "Clear" and "Remote control" keys simultaneously.

⇨ This switches the EDUnet ULTRA HD into sleep mode.

▸ Press and hold down the "To all" key.

▸ Press the "Clear" and "Remote control" keys to turn the EDUnet ULTRA HD on again.

▸ Hold down the "To all" key until an acoustical signal is issued and all participant keys flash.

⇨ The programming mode is active.

▸ Press the "Get picture" key on the participant control box.

⇨ - The control light of the participant control box is on.

⇨ - The monitor goes dark.

▸ Hold down the "Dark monitor" key and press the "Teacher" key.

⇨ The control light of the "Teacher" key and the control light of the participant keyboard go dark.

▸ Press the "Clear" key to save the programming.

⇨ After assignment of the participant keys and teacher key, all connected participant boxes are queried and the room keyboard displays the stations that have been found through flashing LEDs.

⇨ The control lights of the participant stations flash slowly.

⇨ The control light of the beamer and of the teacher station flash rapidly.

⇨ All monitors show the local monitor display.

5.4 Assign group keys

Like the participant keys, the group keys can also be arranged anywhere on the entire keypad.

▸ If the EDUnet room keyboard is turned on, switch it to sleep mode. For this purpose, press the "Clear" and "Remote control" keys simultaneously.

⇨ This switches the EDUnet ULTRA HD into sleep mode.

▸ Press the "Clear" and "Remote control" keys to turn the EDUnet ULTRA HD on again.

▸ Hold down the "Dark monitor" key until you hear an acoustical signal and the control light of the "Dark monitor" key flashes.

▸ Release the "Dark monitor" key.

⇨ The control lights of all participant keys in the upper keypad flash.

▸ Press the group keys one after the other in the order, A, B, C.

⇨ After the third key was pressed, the arrangement is saved automatically.

⇨ The keyboard initialises automatically.

5.5 Assign the beamer key

▸ Temporarily connect a participant control box to the participant box of the beamer.

▸ If the EDUnet room keyboard is turned on, switch it to sleep mode. For this purpose, press the "Clear" and "Remote control" keys simultaneously.
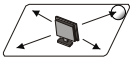
⇨ This switches the EDUnet ULTRA HD into sleep mode.

▸ Press and hold down the "To all" key.

▸ Press the "Clear" and "Remote control" keys to turn the EDUnet ULTRA HD on again.

▸ Hold down the "To all" key until an acoustical signal is issued and all participant keys flash.

⇨ The programming mode is active.

▸ Press the "Get picture" key on the participant control box.

⇨ The control light of the participant control box is on.

▸ On the room keyboard, hold down the "Release help" key, and press the "Beamer" key.

⇨ The control lights of the room keyboard and of the participant control box go dark.

▸ If a notebook is to be assigned to the EDUnet ULTRA HD, assign the notebook right after assigning the beamer key.

See also:
　📄 5.6 Assign the notebook key, Page 25

or

▸ Press the "Clear" key to save the programming.

5.6 Assign the notebook key

For connection of a notebook, the combination of beamer and notebook is recommended. Accordingly, no additional participant box and/or additional station is required in the EDUnet ULTRA HD.

▸ Press the "Get picture" key on the participant control box.

⇨ The control light of the participant control box is on.

▸ Press the "Notebook" key on the room keyboard.

⇨ The control lights of the room keyboard and of the participant control box go dark.

▸ Press the "Clear" key to save the programming.

5.7 Function Test

Following the installation of the participant boxes and assignment of all stations to the keys on the room keyboard, all PCs should be operational, i.e. all monitors should display the local screen image and mouse and keyboard can be used as usual.

For a complete function test, the following steps must be performed at the room keyboard and individual work-stations. The EDUnet ULTRA HD functions properly when the listed results occur.

▸ Switch the EDUnet ULTRA HD into sleep mode and then switch it on again.

⇨ The room keyboard queries all stations and displays them.

⇨ Participant and notebook are on, Beamer flashes slowly, teacher flashes quickly.

> **Note**
>
> If the teacher station is not recognised, no further functions can be executed. The teacher key needs to be re-assigned.

See also:

▶ Press "Clear" key.

▶ Press the "To all" key.

⇨ - The teacher display is shown on all participant screens.

⇨ - Keyboard and mouse input is possible only on the teacher station, all other participant stations have their keyboard inputs and mouse blocked.
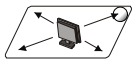
▶ Press "Clear" key.

⇨ This releases the keyboards and mice of the participants.

▶ Press all participant keys in sequence.

⇨ The screens of the participants are displayed sequentially on the teacher screen.

⇨ All basic functions of the EDUnet ULTRA HD have been tested.

Depending on the selected configuration of the EDUnet ULTRA HD, additional optional functions are available.

6 Basic functions

6.1 Setting the sender and recipients

- The sender can always be recognised by its control light being on.
- After pressing the "Clear" key, the system switches to stand-by, no sender is active.
- When some functions are called up for the first time (beamer, To all, etc.), the teacher is automatically activated as the sender.
- Moreover, one or more workstations can be selected as receivers. Receivers can be recognised by their flashing control lights.

Note

Each workplace can be selected as a recipient or sender independent of whether it is assigned as the teacher or participant workplace.

6.1.1 Selecting sender and receiver

▶ Press and hold the sender key. Press all of the keys for the recipients sequentially.

⇨ –The sender's control light shines.

⇨ – The control lights of the recipients flash.

⇨ – All participants selected as recipients see the screen contents of the sender on their screens.

⇨ – The mouse and keyboard of all the workplaces selected as recipients are blocked.

6.1.2 Changing sender only

▶ Press the Sender key.

⇨ - The sender's control light is on.

⇨ - All participants selected to be receivers view the sender screen contents on their screens.

⇨ - The previous sender sees his local screen display.

6.1.3 Only change the recipients

▶ To deselect receivers, press the key that is activated as the receiver.

⇨ – The control lights of the deselected receivers go dark.

⇨ – All deselected receivers see their own screen contents on their screens again.

▶ To select a new receiver, hold down the key of the current sender, and sequentially press the keys of the desired additional receivers.

⇨ – The control lights of the newly selected receivers flash.

⇨ – All newly selected receivers see the screen contents of the sender on their screens.

6.2 Form groups

Each participant can be assigned to one of the three groups, A, B, and C. The functions, "To all" and "Dark monitor", only apply to the active groups. Active groups can be recognised by their control lights being on. At the time of delivery, all participants are assigned to Group A.

Note

Each participant can only be a member of one group.

See also:

7 Using the room keyboard

7.1 Turning the EDUnet ULTRA HD on and off

The EDUnet ULTRA HD has no On/Off switch. The EDUnet ULTRA HD can be activated or switched into sleep mode. In sleep mode, all participant PCs can be used for local work and the system is in energy saving mode.

> **Note**
>
> After 2 hours of operation without a key being pressed (time can be set between 1 and 8 hours), the EDUnet ULTRA HD automatically switches to sleep mode. If room keyboards are removed from the EDUnet ULTRA HD, all participant boxes are also switched to sleep mode after one minute. The work-stations can still be used for local work.

▶ Press the "Clear" and "Remote control" keys simultaneously.

⇨ This turns on the EDUnet ULTRA HD.

▶ Press the "Clear" and "Remote control" keys simultaneously.

⇨ - This switches the EDUnet ULTRA HD into sleep mode.

⇨ - The control lights of the function keys flash.
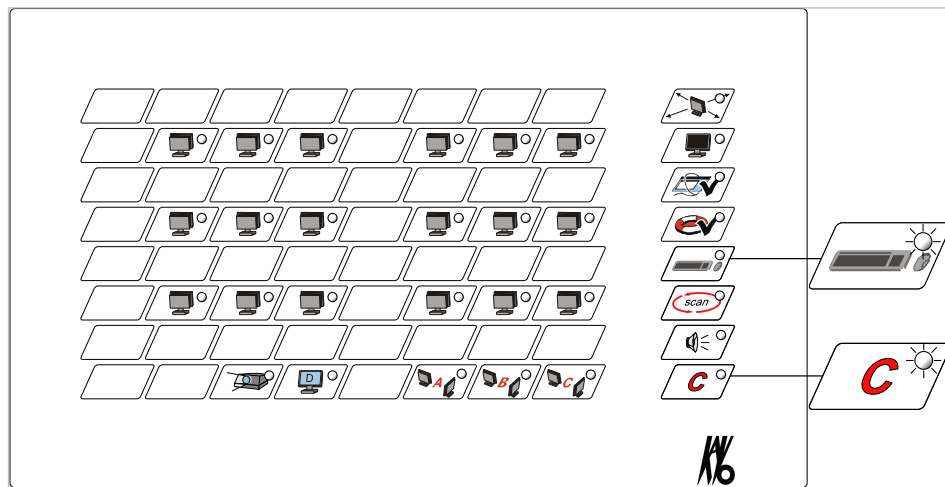
7.2 Re-setting to default

▶ Press "Clear" key.

⇨ – The ON status of the EDUnet ULTRA HD will be restored.

⇨ – Only the control lights of the three "group keys" are on.

⇨ – The teacher and all participants see their own screen and can work locally without restriction.

All operating functions are explained starting from the default status.

7.3 Send screen content "To all"

▶ Press participant key to select one participant to be the sender.

or

▶ Press the "Clear" key, to select the teacher to be the sender.

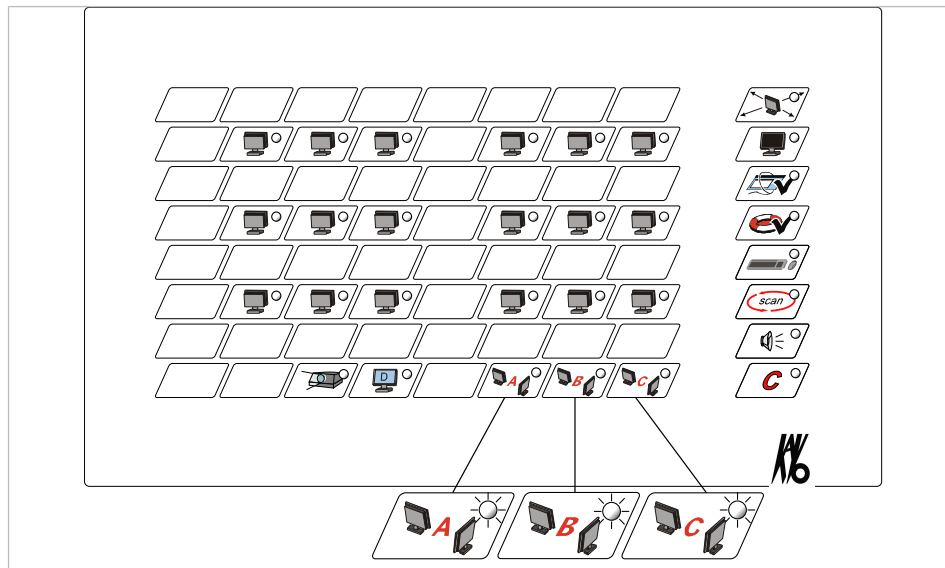▶ If applicable, activate or deactivate desired group.
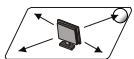
▶ Press the "To all" key.

⇨ – All participants see the content of the teacher's screen.

⇨ - The control lights of the active groups, selected sender (teacher), and of the "To all" key are on.

⇨ – While the screen content is being sent to all participants, all other functions of the EDUnet keyboard are blocked.

▶ To stop the procedure, press the "To all" key again.

⇨ –The participants see their own screen again.

⇨ - The sender selection is maintained.

> **Note**
>
> When the function "To all" is activated, the mice and keyboards of all the participants' (recipient) computers are blocked except for those of the teacher's (sender) computer.
> The block is cleared by turning off the "To all" function, or by pressing the "Clear" key.

7.4 Display the screen of a participant

▶ Press "Clear" key.

▶ Press a participant key.

⇨ – The teacher automatically becomes a receiver and sees the screen contents of the selected participant.

⇨ – The control light of the selected participant (sender) is on.

⇨ – The teacher's control light flashes.

▶ To view the screens of other participants, press the desired participant keys.

▶ Press the "Clear" key again to terminate the procedure.

▶ Press the "Remote control" key to be able to remote-control the mouse and keyboard of the participant.

7.5 Send the teacher screen to participant(s)
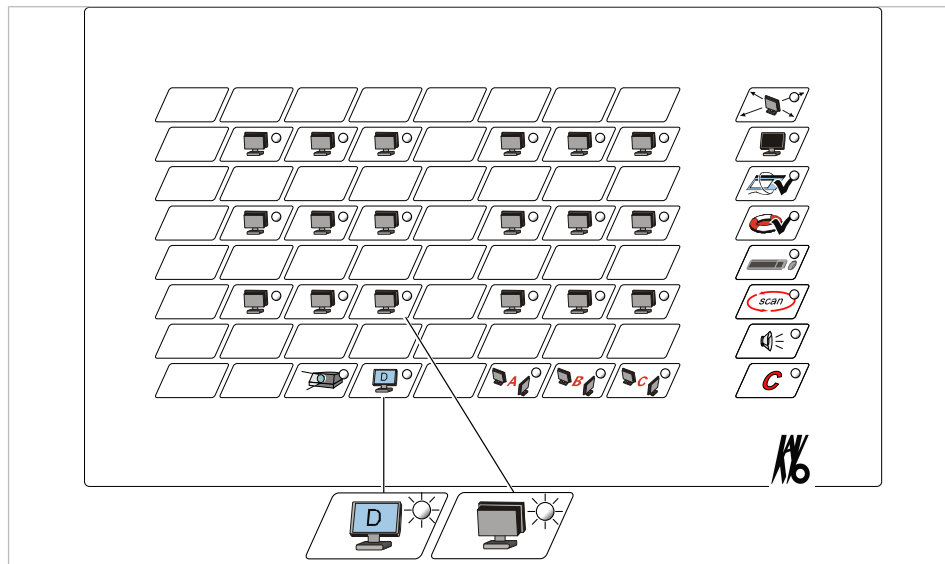
▶ Hold down the "Teacher" key.

▶ Press one or more participant keys.

▶ Release the "Teacher" key.

⇨ – The selected participants will see the content of the teacher screen on their screen.

⇨ – The teacher's (sender's) control light is on.

⇨ – The control lights of the recipients (participants) flash.

▶ If needed, add additional participant stations using the same procedure.

> **Note**
> The teacher computer can also be remotely controlled by a participant.
> When the teacher transmits to a participant and presses the "Remote control" key, the participant can remotely control the teacher's computer. Additional participants can then be added.

Disconnect participants

> **Requirement**
> Do not press the sender key again.

▸ Press the "Participant" key again.

Stop the transmission

▸ Press "Clear" key.

7.6 Send the participant screen to the participants

▸ Hold down the participant key (desired image source) to select the participant as the sender.

▸ Press one or more participant keys to select them as receivers.

▸ Release the participant key of the selected sender (image source).
⇨ – The control light of the selected participant (sender) is on.
⇨ – The control lights of the receivers flash.
⇨ – The teacher automatically becomes a receiver also and sees the screen contents of the current sender.
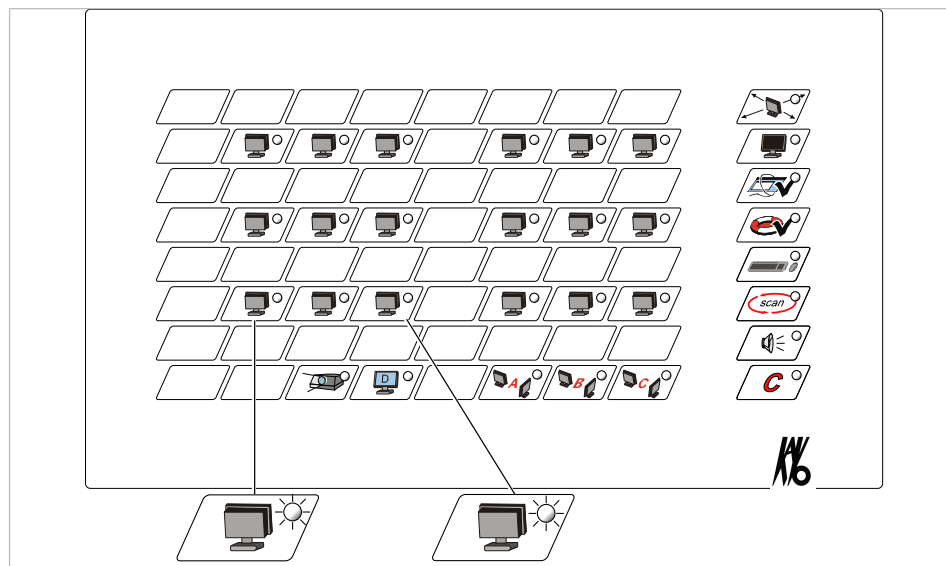
▸ Press the "Teacher" key to close the teacher screen.

⇨ The teacher sees his own screen content.

▸ Add additional participant stations in the same manner, i.e., hold down the sender key again.

▶ Press the "Clear" key to terminate the procedure.

Disconnect participants

Requirement
The sender key (selected participant key) is no longer pressed.

▶ Press the "Participant" key again to end the participant stations as recipients.

7.7 Make the participant screen goes dark

All screens of the participants of the currently active group are switched to be dark, the teacher continues to see his local screen display. The beamer also does not respond to this command.
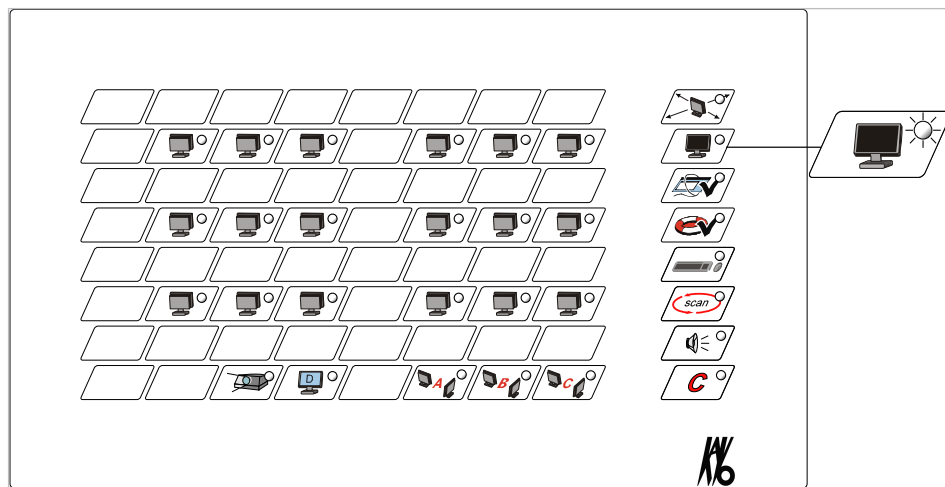
▶ If applicable, activate or deactivate groups.

▶ Press the "Dark monitor" key.

⇨ – The control light of the "Dark monitor" key is on.

⇨ – The screens of all participants are switched to be dark. The teacher sees his own screen.

▶ To release the screens, press the "Clear" key.

or

▶ Press the "Dark monitor" key again.

Note

The mice and keyboards of all the participant computers (recipients) are automatically blocked except for the teacher computer (sender) as soon as the participants do not see their own screen contents.

The block is cleared by turning off the "Dark monitor" function, or by pressing the "Clear" key.

If the teacher remotely controls a participant workplace before activating this function, the remote control remains active. The teacher can remotely control the participant's computer without the participant seeing.

7.8 Remote control of mouse and keyboard

Using the EDUnet ULTRA HD, it is basically possible to remote control any mouse and keyboard of a participant or of the teacher if the corresponding screen image is displayed. No difference is made between teacher and participant stations. Each work-station can be remote-controlled from any other work-station.
The mouse and keyboard of the remote-controlled participant workstation are automatically blocked in the process.

Requirement

There is 1:1 transmission (1 sender, 1 receiver).

The remote-controlling entity sees the screen content of the participant.

▸ Press the "Remote control" key to turn on the remote control.

⇨ – The teacher (sender) can remote-control the participant computer.

⇨ – The control light of the "Remote control" key is on.

⇨ – The teacher's (sender's) control light is on.

⇨ - The control light of the participant (receiver) flashes.
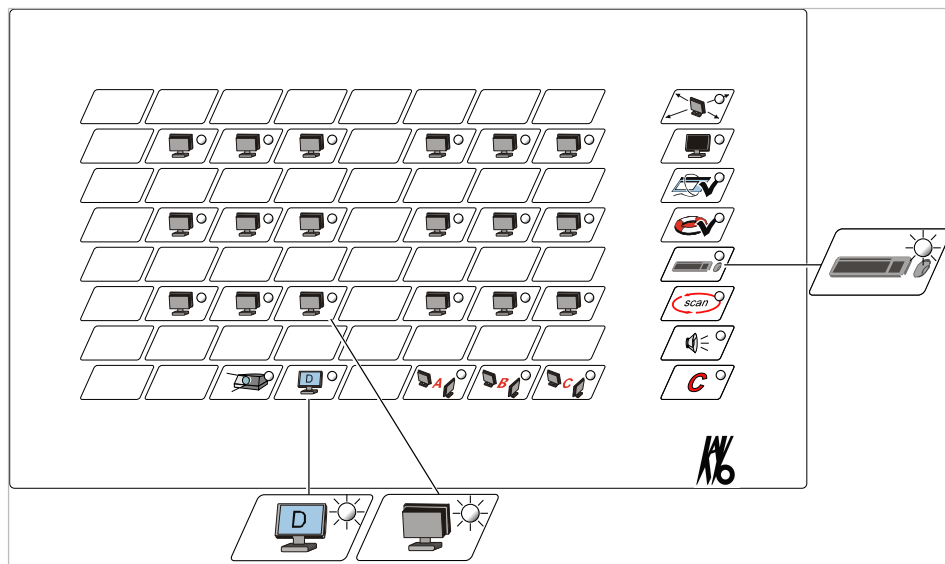
Requirement

"Remote control" function is active.

▸ Press other participant key to remote-control other participant PCs.

▸ Press the "Remote control" key again to turn off the remote control.
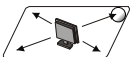
or

▸ Press "Clear" key.

7.8.1 Remote control of all participant PCs

Note

Only the keyboards of all participant PCs can be remote-controlled, whereas the mice cannot be remote-controlled in this condition (only in 1:1 transmission).

▸ Press a participant key.

▸ Press the "To all" key.

▸ Press the "Remote control" key until an acoustic signal is issued.

⇨ – The teacher can remote-control all keyboards of the participant PCs simultaneously.

⇨ – The control light on the "Remote control" key is on.

⇨ – The teacher's (sender's) control light is on.

⇨ – The control lights of all participants (receivers) flash.

▸ After the teaching operation, press the "Clear" button to activate the mouse on all PCs.

7.9 Setting the stand-by time

If the keyboard is not operated for a defined time period (1 to 8 hours), the system switches to the local status automatically. The standard time is set at 2 hours by the manufacturer. Work can be done locally at the participant stations and the system consumes only a minimum of energy.
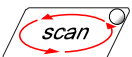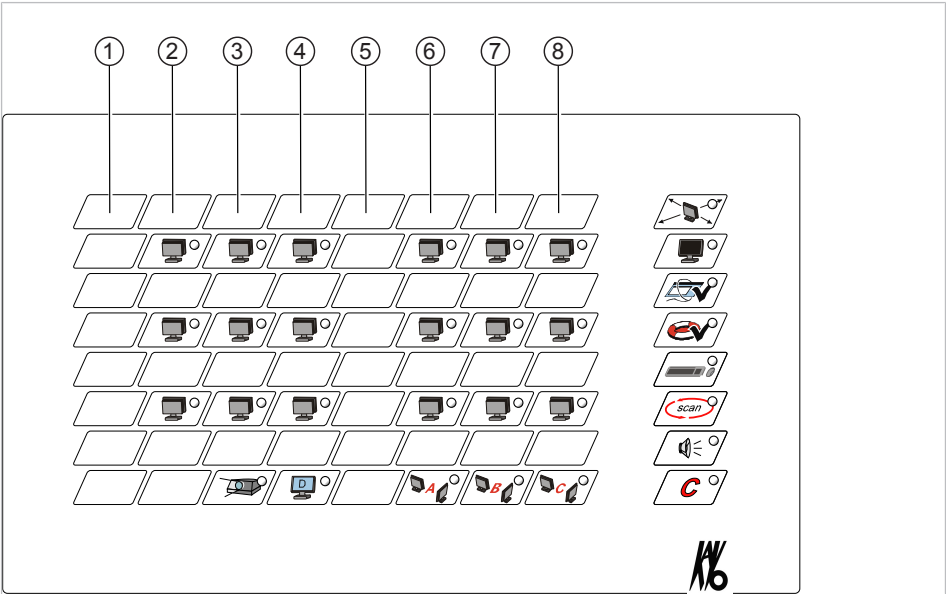
▸ Hold down the "Scan" button.

▸ To activate the room keyboard, press the "Clear" button and "Remote control" key until an acoustic signal is issued.

⇨ The "Scan" button and the eight buttons for the time setting flash.

▸ Press the button "1" to "8" to set the desired time (1 to 8 hours).

⇨ Acoustic signals sound in accordance with the set time, e.g. 4 tones for 4 hours.

8 Optional additional functions

8.1 Operating the participant control box

8.1.1 Call help

Each participant can discretely request help from the teacher.

▸ Press the "Call help" key.

⇨ – The control light of the participant quickly flashes on the room keyboard.

⇨ – The control light on the user control box is on.

Once the teacher acknowledges the help request, both control lights go dark. The requesting participant thus knows that the teacher noticed the request.
The teacher can release or turn off the help request by pressing the "Lifebelt" key on the room keyboard. Imminent help requests are deleted in the process.

8.1.2 Release the screen for "Get picture"

The teacher can release any screen content for all the participants to individually access (for example as an aid).
The participants can display the released screen content by pressing the "Get picture" key on the participant control box.

See also:
📄 8.1.3 Get picture, Page 38

▸ Select the sender by pressing the corresponding key (normally, the teacher station).

▸ Press the "Release picture" key to release access to the screen content (sender).

⇨ – The control light on the "Get picture released" key is on.

⇨ – The selected sender's control light is on.

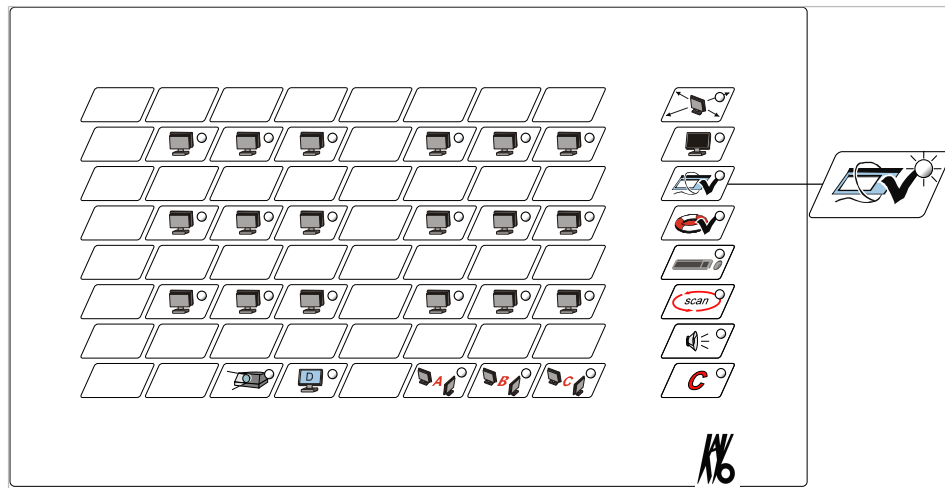▸ Press the "Release picture" key again to terminate access to the selected screen content.

⇨ The selected sender is retained.

or

▸ Press "Clear" key.

⇨ Access to the selected screen content is terminated.

8.1.3 Get picture

Each participant can get a released image on his screen using the participant control box.

▶ Press the "Get picture" key.

⇨ – The control light of the "Get picture" key is on.
⇨ – The screen shows the screen released by the teacher.

▶ Press the "Get picture" key again.

⇨ The control light of the "Get picture" key goes dark.
⇨ The access to the screen released by the teacher is ended.

8.2 Assign the participant to a group

Each participant can be assigned to one of the three groups, A, B, and C. The functions "To all" and "Dark monitor" only apply to the active group. At the time of delivery, all participants are assigned to Group A.

> **Note**
>
> Each participant can only be a member of one group.

▶ Press the desired group key until it flashes.

⇨ All participant keys flash.

▶ Press the participant keys to be assigned.

⇨ The control lights of the assigned participants go dark.

▶ Press the "Clear" key to terminate programming.

8.3 Display the screens of all the participants in sequence

The screen contents of all the participant workplaces are shown sequentially on the teacher screen. This allows the teacher to track and the learning progress of individual participants with out additional manipulation of the EDUnet and react when problems arise.
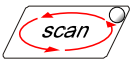
Have the screens displayed
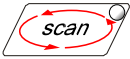
▸ Press the "Scan" key.

⇨ The control light of the "Scan" key is on.

⇨ The participants' screens are shown in sequence.

▸ Press the "Clear" or "Scan" key to quit the display.

⇨ The content of the last participant screen is displayed on the teacher screen.

Set the display time

A display time of each participant screen of 2, 4 or 8 seconds can be selected.

▸ Hold down the "Scan" key until it flashes.

▸ Press the first key of the top row to set the display time to 2 seconds.
Press the second key of the top row to set the display time to 4 seconds.
Press the third key of the top row to set the display time to 8 seconds.

▸ Press the "Clear" key to terminate programming.

⇨ The set scan time is shown for control purposes.
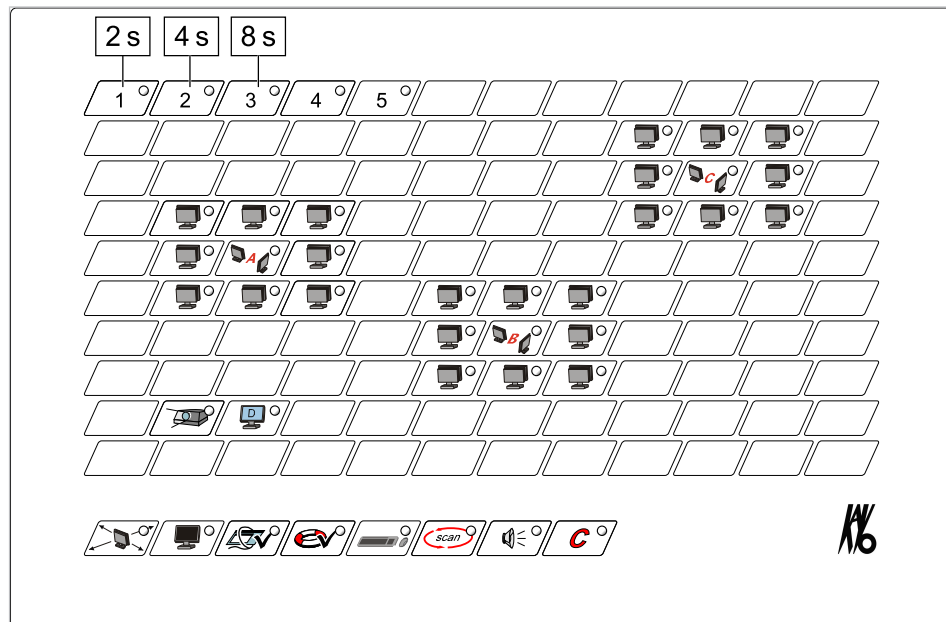
### Have participants of a group be displayed

▸ Press the desired group key until it flashes.

⇨ All participant keys flash.

▸ Press the "Scan" key.

⇨ The control light of the "Scan" key is on.

⇨ The control light of the "Scan" key going dark and an acoustical signal being is-
sued indicates that the scan process is completed.

▸ Press the "Clear" key to switch to default status.

8.4 Send the screen to beamer
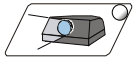
▸ Press the "Beamer" key to display the active sender screen on the beamer.

⇨ The control lamp of the "Beamer" key is on.

▸ Press the "Beamer" key again to terminate the procedure.
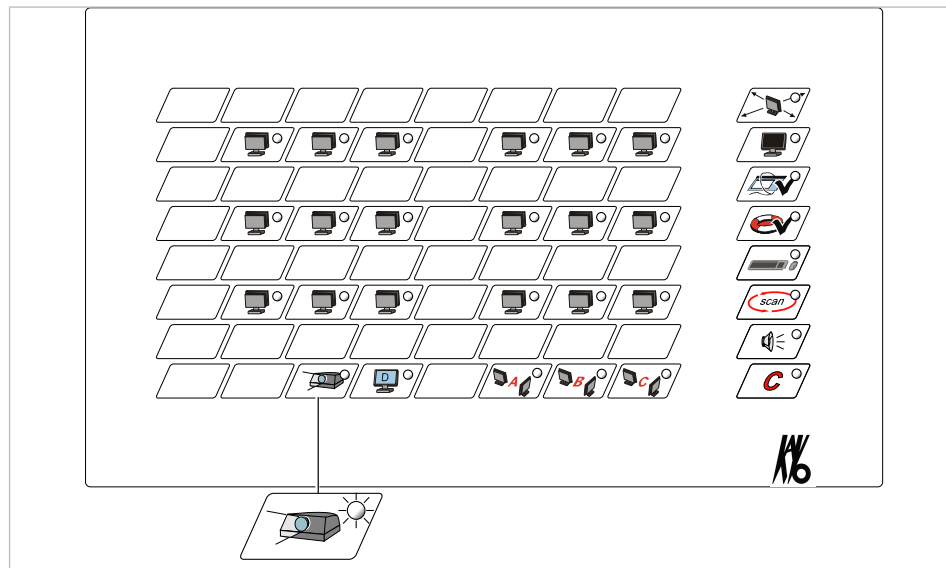
8.5 Including the notebook

The "Notebook" key allows the notebook to be accessed like any other participant
station.
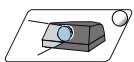
▸ Press the "Beamer" key.

⇨ Beamer is turned on/off.

▸ Hold down the "Beamer" key until you hear an acoustical signal.
⇨ This switches between beamer mode and local mode.

⇨ The beamer works like an external monitor of the notebook.

⇨ In local mode, the control light of the "Beamer" key flashes.

8.6 MultiMaster Function

With the MultiMaster function, up to five room keyboards with any key assignment can be connected. The teacher/teachers can therefore operate the network from different workplaces.

Note

The participant keys must be assigned for each keyboard.

Note

Only one room keyboard may be active at one time. If several room keyboards are in the network (MultiMaster), the inactive room keyboards must be switched to "sleep mode."
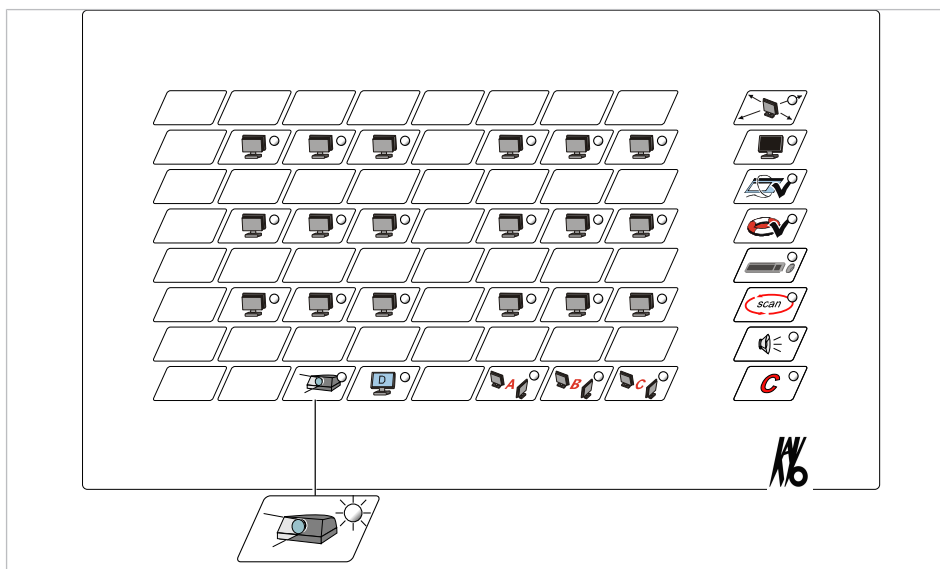
Note

An acoustic error message signals when an additional EDUnet room computer is turned on.

▸ Press the "Clear" and "Remote control" keys simultaneously.

⇨ This turns on the EDUnet ULTRA HD.

▸ Press the "Clear" and "Remote control" keys simultaneously.

⇨ - This switches the EDUnet ULTRA HD into sleep mode.

⇨ - The control lights of the function keys flash.

Next time the EDUnet ULTRA HD is turned on, the room keyboard of a different teacher station can be activated by the same procedure, if needed.

8.7 Audio transmission

If monitors with an HDMI port are used, sound is transmitted automatically as well. The audio boxes allow for communication by means of a headset. No additional use of keys is required.
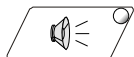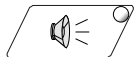
> **i**
>
> **Note**
> A conference call can only be held in case of a 1:1 connection (one sender, one re-
> ceiver).

▶ Press the "Audio" key for 2 seconds to activate or deactivate the audio function.

⇨ The control light of the "Audio" key is on.

⇨ The status remains saved after the room keyboard is switched off.

▶ Press the "Audio" key again to alternate between the stereo sound and confer-
ence call functions.

⇨ - The control lamp of the "Audio" key is on (yellow): the sound of the sender is
automatically transmitted along with the image.

⇨ – The control light of the "Audio" key is on (green): the conference call is activated.

⇨ - The control light is off: audio transmission is switched off.

9 Troubleshooting

General information on troubleshooting

- ▸ Check if all connected participants, the teacher as well as beamer and notebook, if applicable, are recognised properly.
- ▸ Turn the room keyboard off and on again.
- ▸ Check the display of the keys.
- ⇨ Participant keys and "Notebook" key are on.
- ⇨ The "Teacher" key flashes quickly, the "Beamer" key flashes slowly.
- ⇨ If, subsequently, only the three group keys are on, the assignment of keys is correct.

In case of error

- ▸ Reassign all keys.

See also:
- ▸ If there is an image transmission error, identify the corresponding work-station based on the installation plan.

Due to the ring system wiring, the screen contents are always sent from one participant box to the next following the ring.

- ▸ Identify defects and/or defective participant boxes, power supplies or wiring problems based on the installation plan by displaying the various participant screens and/or sending screen content "To all".
- ▸ Make sure that the "BUS out" connectors of the participant boxes are always connected to "BUS in" connectors of the subsequent participant box.
- ⇨ If image transmission is active and functional, the "PWR" and "LINK" LED are on.

Malfunction	Cause	Remedy
Operation impaired at individual work-stations.	The bus cable plug is loose at an unaffected unit.	▸ Make sure that all plugs are connected firmly.
	Defective computer.	▸ Check the function of the computer without the participant box and troubleshoot the problem on the computer, if necessary.
	Participant box or bus cable is defective.	▸ To find a defective part, exchange the participant box and bus cable one-by-one. For this purpose, make network smaller by moving the terminating resistor connectors.
The keyboards or mice cannot be remote-controlled for all the participant computers, whereas the mice and keyboards work in local mode.	Different or special mice and keyboards.	▸ Use identical mice and keyboards. Do not use any special mice and keyboards.

9 Troubleshooting

Malfunction	Cause	Remedy
A station has no local screen display.	DVI/HDMI connection cable is defective.	▸ Check DVI/HDMI connection cable. ▸ Exchange the cable for one of a work-station that works, if applicable.
Room keyboard does not respond to keys being pressed, function keys flash.	The system is in sleep mode.	▸ Press the "Clear" and "Remote control" keys simultaneously to turn the network on. ⇨ The keyboard initialises all participants and switches to the default state.
Room keyboard cannot be activated, an acoustical signal is issued, and the help release flashes.	Ring is disturbed and/or interrupted.	▸ Use the diagnostic mode.
	Power supply of one participant box is defective.	▸ Use the diagnostic mode.
	There are multiple room keyboards included in the network and a different room keyboard is active.	▸ Deactivate all room keyboards. ▸ Activate the room keyboard that is to be used.
Beamer shows no display.	"Beamer" key has not been activated. The LED of the "Beamer" key is not on.	▸ Press the "Beamer" key. ⇨ The LED of the "Beamer" key is on.
	Beamer cannot display the required resolution.	▸ Check screen resolution of the sender PC. ▸ Set screen resolution of sender PC to max. beamer resolution.
	The "Beamer" key has not been assigned correctly.	▸ Reassign the "Beamer" key.

Malfunction	Cause	Remedy
Teacher screen shows no display.	Power supply of the participant box of the teacher station is defective. Local operation is usually possible even without a power supply.	▸ Check power supplies and replace according to need.
	Teacher key is not assigned correctly.	▸ Reassign the teacher key. **See also:** ▤ 5.3 Assign the teacher key, Page 23
	"BUS in" and "BUS out" connectors on participant box have been interchanged or participant box or patch cable is defective (only if teacher receives no image).	▸ Use installation plan to identify the affected participant boxes (dark screen). ▸ Check the "BUS in" and "BUS out" connectors. ⇨ If the connection if active, the LED of the "BUS in" connector is on. If the connectors of a participant box have been interchanged, there must be at least one other participant box whose connectors have also been interchanged. ▸ If all connectors are plugged-in correctly, replace participant box or patch cable. ▸ If the connectors have been interchanged, check all participant boxes and switch connectors as needed.
's Teacher screen cannot be sent to all participants. Monitors of all or some participants go dark.	Teacher key is not assigned correctly.	▸ Reassign the teacher key. **See also:** ▤ 5.3 Assign the teacher key, Page 23
	"BUS in" and "BUS out" connectors on participant box have been interchanged or participant box or patch cable is defective.	▸ Send participant screen "To all". ⇨ The sender screen is displayed on at least one other participant screen. ▸ Use installation plan to identify the pertinent participant boxes. ⇨ The participant work-stations to which the sender screen is not transmitted are all situated in sequence. ▸ Check the "BUS in" and "BUS out" connectors. ⇨ If the connection if active, the LED of the "BUS in" connector is on. ⇨ If the connectors of a participant box have been interchanged, there must be at least one other participant box whose connectors have also been interchanged. ▸ If all connectors are plugged-in correctly, replace participant box or patch cable. ▸ If the connectors have been interchanged, check all participant boxes and switch connectors as needed.

Malfunction	Cause	Remedy
Teacher screen cannot be sent "To all". From a certain place within the ring system, all participant screens go dark.	The "BUS in" and "BUS out" connectors on the participant box of the last participant PC displaying the sender screen to the first participant PC with dark monitor are interchanged or participant box or patch cable are defective.	▸ Send participant screen "To all". ⇨ The sender screen is displayed on at least one other participant screen. ▸ Use installation plan to identify the pertinent participant boxes. ⇨ The participant work-stations to which the sender screen is not transmitted are all situated in sequence. ▸ Check the "BUS in" and "BUS out" connectors. ⇨ If the connection if active, the LED of the "BUS in" connector is on. ⇨ If the connectors of a participant box have been interchanged, there must be at least one other participant box whose connectors have also been interchanged. ▸ If all connectors are plugged-in correctly, replace participant box or patch cable. ▸ If the connectors have been interchanged, check all participant boxes and switch connectors as needed.
Teacher screen cannot be sent "To all". All participant screens with the exception of the teacher screen go dark.	Wiring from the teacher PC to the first participant PC is interchanged or participant box or patch cable is defective.	▸ Check the "BUS in" and "BUS out" connectors. ⇨ If the connection if active, the LED of the "BUS in" connector is on. ⇨ If the connectors of a participant box have been interchanged, there must be at least one other participant box whose connectors have also been interchanged. ▸ If all connectors are plugged-in correctly, replace participant box or patch cable. ▸ If the connectors have been interchanged, check all participant boxes and switch connectors as needed.

Malfunction	Cause	Remedy
Teacher cannot have all participant screens displayed.	Participant key of the "sender" is assigned incorrectly.	▸ Reassign the participant keys. **See also:** ▤ 5.2 Assign the participant keys, Page 23
	"BUS in" and "BUS out" connectors on participant box have been interchanged or participant box or patch cable is defective.	▸ Send participant screen "To all". ⇨ The sender screen is displayed on at least one other participant screen. ▸ Use installation plan to identify the pertinent participant boxes. ⇨ The participant work-stations to which the sender screen is not transmitted are all situated in sequence. ▸ Check the "BUS in" and "BUS out" connectors. ⇨ If the connection if active, the LED of the "BUS in" connector is on. ⇨ If the connectors of a participant box have been interchanged, there must be at least one other participant box whose connectors have also been interchanged. ▸ If all connectors are plugged-in correctly, replace participant box or patch cable. ▸ If the connectors have been interchanged, check all participant boxes and switch connectors as needed.
After the room keyboard has been turned on, no function can be activated although all participants are recognised and displayed.	Teacher is not being recognised.	▸ Turn the room keyboard off and on again. ⇨ Teacher key flashes rapidly, the teacher has been recognised. **See also:** ▤ 7.1 Turning the EDUnet ULTRA HD on and off, Page 29 ▸ Reassign the teacher key. **See also:** ▤ 5.3 Assign the teacher key, Page 23
The screen display of the connected notebook is not displayed on the teacher station and cannot be sent to all participants.	Is the beamer connected via the HDMI input?	▸ Connect the beamer via DVI. **or** ▸ Activate the DVI emulation using the control keyboard.
The local screen display of a work-station shows colour error and/or rather pixel error.	The DVI or HDMI cable from the computer to the participant box or monitor cable is loose or defective.	▸ Ensure that both cables are firmly connected. ▸ If the colour errors persist, disconnect both cables from the participant box and plug them together. – If this causes the colour errors to disappear, the participant box is defective. – If colour errors persist, replace the cable.
	The participant box is defective.	▸ Replace the participant box.

9 Troubleshooting

Malfunction	Cause	Remedy
Mouse and keyboard of a participant do not work properly.	The connections (keyboard/mouse) on the computer or participant box are loose.	▸ Check the USB connecting cable between PC and participant box.

10 FAQ - EDUnet ULTRA HD

▪ How do I know if all work-stations were recognised by the room keyboard and if the system is ready for use?

▸ Switch the EDUnet ULTRA HD into sleep mode and then switch it on again.

⇨ - The room keyboard queries all stations and displays them.

⇨ - Participant stations flash slowly, teacher station and beamer station (optional) flash rapidly.

Note

If the teacher station is not recognised, no further functions can be executed. The teacher key needs to be re-assigned.

See also:

📄 5.3 Assign the teacher key, Page 23

▪ How do I know if the work-stations are combined into various groups?

▸ Press the group key until an acoustical signal is issued.

▸ Press the "Scan" key.

⇨ All participants who are combined into this group are shown.

⇨ In the default state, all participants are assigned to group A.

See also:

📄 5.4 Assign the group keys, Page 24

▪ Can I use a beamer with an analogue input port (VGA, RGB) with the EDUnet ULTRA HD?

▸ Connect a DVI-VGA converter to the beamer to convert digital signals into analogue signals.

▸ Provide an additional mains outlet to supply electrical power to the DVI-VGA converter.

▪ Can I use a notebook with an analogue VGA output port with the EDUnet ULTRA HD?

▸ Connect a VGA-DVI converter to the notebook to convert analogue signals into digital signals.

▸ Provide an additional mains outlet to supply electrical power to the VGA-DVI converter.

▪ Can I use keyboards with built-in USB hub with the EDUnet ULTRA HD?

▪ Generally, yes. However, the EDUnet ULTRA HD not been tested extensively with devices of this type.

▸ If the keyboards do not work properly, send one keyboard to the manufacturer.

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