

MODUL N°

ONE

**THE ULTIMATE IN
REALTIME WIRELESS HD-VIDEO**



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**THANK YOU,
for choosing MODUL NO.1!**

Please read this manual carefully and make sure that you understood everything before installing and using the device.

MODUL NO.1 is a powerful, wireless HD-SDI transmission device using the 5GHz band allowing you to transmit Full HD-Video data, uncompressed up to 1080p60 and 4:2:2 sampling, frame synchronous. MODUL NO.1 Transmitter (TX) is equipped with a loop-through 3G-SDI input/output. Transmitted video and audio can be received by up to 4 different Receivers (RX), offered by Multicast version. MODUL NO.1 is a powerful, lightweight device not requiring a fan, offering optimal integrated multi-antenna system which uses all kind of reflections and therefore works properly even without line of sight. Receiver (RX) interface includes two 3G-SDI outputs.

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1 Directions for use

Observance of these Operating Instructions will help you to avoid danger, reduce repair costs and downtime as well as to increase reliability and the service life MODUL NO.1 zu erhöhen.

1.1 Symbol descriptions



ATTENTION!

... Indicates a possible hazardous situation that can lead to damage to goods and personal, if they are not prevented.



NOTE!

... Highlights useful information and recommendations as well as information for efficient and failure-free operation.



DISPOSAL INFORMATION!

1.2 Copyrights and property rights

This Operating Instruction contains information which is only meant for the purchasers of MODUL NO.1. The content of this manual is property of TQ-Systems Durach GmbH.

As long as there is no explicit permission from TQ-Systems Durach GmbH this Operating Instruction is only intended for the operation or maintenance of MODUL NO.1.

Content and works published in this manual are subject to German copyright law. Copying, processing, distributing and any kind of use outside the limits of copyright law require the written approval of the particular author, respectively compiler TQ-Systems Durach GmbH.

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1.3 Haftungsbeschränkung

Prior to use please check the video data transmitted. Manufacturer does not accept any liability caused by incorrect transmission of video data.

All data and notes in these Operating Instructions were prepared with consideration to the statutory standards and regulations, the present state of technology, as well as our many years of knowledge and experience.

The manufacturer accepts no liability for damage caused because of:

- Non-compliance with the Operating Instructions
- Non-specified use
- Use of untrained personnel
- Arbitrary modification
- Technical changes
- Use of uncertified spare parts

The actual scope of delivery can, by special designs, deviate from the explanations and presentations given here, because of the utilization of additional order options, or because of the most recent technical changes. The responsibilities agreed in the delivery contract, the General Terms and Conditions as well as the delivery conditions of the manufacturer and the statutory regulations valid at the time of the conclusion of the contract are effective. We reserve the right to make alterations and modifications within the framework of legal provisions, as well as changes aimed at improving product quality.

1.4 Warranty & Service

Warranty period for MODUL NO.1 is one year after purchase.

Warranty will be voided within the warranty period, by MODUL NO.1 by any unauthorized repair attempts, by opening the housing, improper use, damage caused by failure to observe the operating instructions or by improper use or other external influences leading to product damage, malfunction or damage due to excess or deficiency of power or short circuit of power, fluid immersion, physical damages caused by careless handling, dropping or vibration, When any assistance is required, please contact your authorized dealer or TQ-Systems Durach GmbH via: WirelessVideo@tqs.de. Furthermore, our employees are always interested in new information and experience arising from use, valuable for the improvement of our products.

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2 Safety Instructions



To ensure your own personal safety and to avoid personal injury (including death) caused by fire or strong heat, release of chemicals and smoke emission, product- or material damage, you necessarily must read, understand and follow the following safety instructions. Use the product properly.

- Before using an external power supply, always check that the voltage is within the specified range and that the polarity of the connector is correct, as this will avoid smoke or fire.
- Do not attempt to disassemble, modify or repair this product yourself. That may cause fire or electric shock. Please refer inspection and repair services to your dealer or TQ-Systems Durach.
- Do not use this product near water or in high humidity environments. This may cause fire or electric shock. .
- In case of damage, smoke, unusual smell or other unexpected situations, stop use immediately and consult your dealer or TQ-Systems Durach GmbH
- Turn off the power immediately if any, liquid or substance gets inside the product. Continuous use under such condition may cause shortage, fire or electric shock.
- Before touching please take note that during operation the casing may heat-up. However Velcro can be used.
- Do not stare at LED lights on the side panel of the MODUL NO.1, as this may cause damage to the eyes.
- Do not place this product on an uneven surface or one with vibration. It may cause failure or damage.
- Always ensure that the system is mounted properly.

MODUL NO.1 is designed not to exceed the limits for exposure to radio waves recommended by international guidelines and include safety margins designed to assure the protection of all persons, regardless of age and health. During a longer operation a minimum distance between product and operator`s head of 20cm is recommended. This product is approved for technical standard compliance certification as a wireless device of radio stations with low antenna specified under international and U.S. FCC radio wave regulations. Therefore a license for radio station use is not required to operate this product. MODUL NO.1 uses 5GHz band.

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3 Compliance with FCC guidelines

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

Operation of this device is subject to the following two conditions:

- this device may not cause interference
- this device must be fail-safe against all interference to which it is exposed, including that which could impact the operation of the device.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio reception. However, there is no guarantee that interference will not occur in a particular installation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. During the installation and utilization of this device, please ensure that there is a distance of at least 20 cm between the device and your body.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The device may only be used within the permitted radiation according to part 15 of FCC rules. Any kind of modification that lead to frequency range outside the authorized frequency band is strictly forbidden and will lead to legal consequences.

4 General information on MODUL NO.1

MODUL NO.1 transmits uncompressed FULL HD-Video data up to 1080p60 and 4:2:2 sampling. The transmitter broadcasts its input signal to the receiver without frame delay using 5GHz frequency band. MODUL NO. Transmitter (TX) is equipped with a loop-through 3G-SDI input/output. Transmitted video and audio can be received by up to 4 different Receivers (RX) and a range of 100m line of sight. Without line of sight range differs according to obstacles, like walls of reinforced concrete, steel buildings, or structures which may attenuate the signal and decreases the transmission distance.

MODUL NO.1 is a powerful, lightweight device not requiring a fan, offering optimal integrated multi-antenna system which uses all kind of reflections and therefore works properly even without line of sight. Receiver (RX) interface includes two 3G-SDI outputs. Transmitter (TX) is directly connected to a camera or other video data source via SDI-cable. Receiver can be connected with different displays or recorders via SDI-cable.

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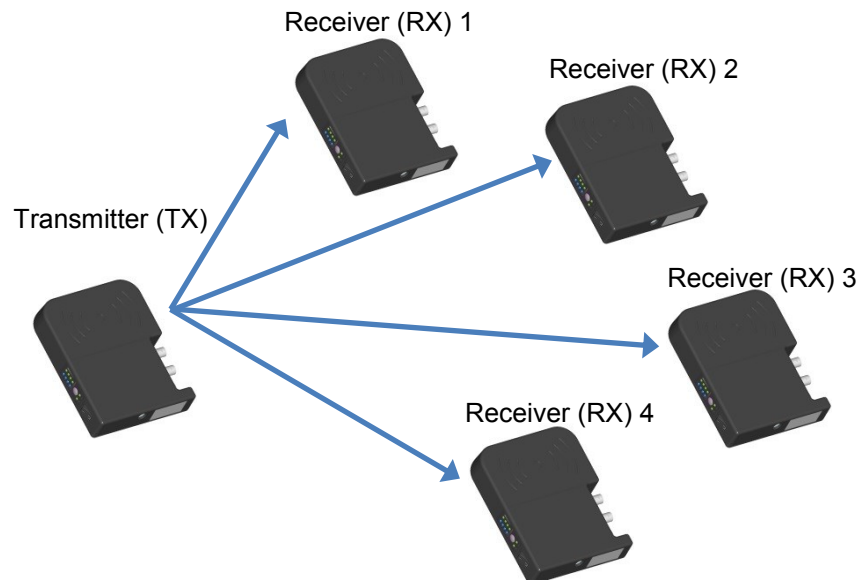
4.1 Product versions

MODUL NO.1 comes in two versions: Unicast (UC) and Multicast (MC). Unicast (UC) transmits video data to only one dedicated Receiver (RX). The Transmitter (TX) of this version cannot serve more than one Receiver (RX) simultaneously. The Multicast (MC) version transmits video and audio data up to four Receivers (RX) simultaneously. Whereby all transmission lines are 128-bit encrypted.

Unicast (UC):



Multicast (MC):



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4.2 Scope of supply

MODUL NO.1 is supplied in a special transportation- and storage case. Additional Receivers (RX) for Multicast (MC) enlargement are supplied in standard sales packaging. Components supplied depend on type of version:

Artikelnummer	Bezeichnung	Komponenten	Anzahl
TQD:F0001-X-1	Modul No.1 /SDI Wireless HD Video Unicast Set: Transmitter (1x) / Receiver (1x)	Transmitter (Transmitter TX)	1
		Receiver (Receiver RX)	1
		Adapter cable	2
		Ferrite for SDI-Kabel	2
		Operating Instructions (german / english)	1
TQD:F0001-X-2	Modul No.1 MC /SDI Wireless HD Video Multicast Set: Transmitter (1x) / Receiver (1x)	Transmitter (Transmitter TX)	1
		Receiver (Receiver RX)	1
		Adapter cable	2
		Ferrite for SDI-Kabel	2
		Operating Instructions (german / english)	1
TQD:F0001-X-3	Modul No.1 MC /SDI 2RX, Wireless HD Video Multicast Set: Transmitter (1x) / Receiver (2x)	Transmitter (Transmitter TX)	1
		Receiver (Receiver RX)	2
		Adapter cable	3
		Ferrite for SDI-Kabel	3
		Operating Instructions (german / english)	1
TQD:F0001-X-4	Modul No.1 MC /SDI 3RX, Wireless HD Video Multicast Set: Transmitter (1x) / Receiver (3x)	Transmitter (Transmitter TX)	1
		Receiver (Receiver RX)	3
		Adapter cable	4
		Ferrite for SDI-Kabel	4
		Operating Instructions (german / english)	1
TQD:F0001-X-5	Modul No.1 MC /SDI 4RX Wireless HD Video Multicast Set: Transmitter (1x) / Receiver (4x)	Transmitter (Transmitter TX)	1
		Receiver (Receiver RX)	4
		Adapter cable	5
		Ferrite for SDI-Kabel	5
		Operating Instructions (german / english)	1
TQD:F0001-X-6	Modul No.1 MC RX /SDI, Wireless HD Video Receiver	Receiver (Receiver RX)	1
		Adapter cable	1
		Ferrite for SDI-Kabel	1

MODUL NO.1 does not include SDI-cable that is necessarily used for operation.

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4.3 Checklist components

Transmitter (Transmitter: TX)

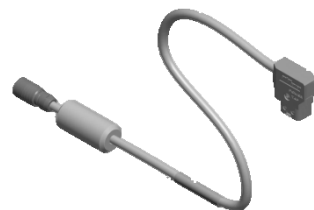


applicable version is marked:
Unicast (UC) or Multicast (MC)

Receiver (Receiver: RX)



applicable version is marked:
Unicast (UC) or Multicast (MC)

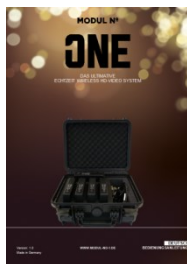


HR10/ D-Tab Adapter cable with ferrite,
one each for Transmitter (TX) and Receiver (RX)



Additional ferrite for SDI-cable (75 Ohm), one each for Transmitter (TX) and Receiver (RX), fix the ferrite near to casing

Operating Instructions (german / english)



Please make sure that you do not lose one of the components described above.

Appropriate accessories:

- Thread adapter 3/8" to 1/4"
- XLR Adapter cable
- SDI-cable in different lengths

Malfunction or product damages caused by incorrect storage, poor maintenance, damage due to accidents, to negligence, to improper / incorrect usage, self-constructed connection cables or manipulation by unauthorized personnel will lead to guarantee void.

4.4 Technical Data

Latency	<1ms
Auflösung	1080p60; 1080p50; 1080p30/29.97; 1080p25/24.97; 1080p23.98/24; 1080i60/59.94; 1080i50; 1080psf30; 1080psf25; 720p60; 720p50
Audio	embedded
Frequency band	5,180 - bis 5,825GHz
DFS Frequencies	5,270 up to 5,550GHz and 5,670GHz for EU&US
Modulation	OFDM/QAM
Übertragungsmethode	MIMO (multiple in / multiple out) integrated multi-antenna system
Protection class	IP41 / splash protected
Range	Up to 100m LoS Without line of sight less range due to dampening impact of different material
Weight	Less than 250g
Display	Signal strength / Selected Transmitter (Preset)
Size	146mm x 117mm x 28mm
Voltage supply	HR10-7P-4S / D-Tab Adapter cable 10,5 V – 36 V DC
Power consumption	5-6 W
Interface	HD 3G-SDI Video
Übertragungsstandard	WHDI
Certification	CE, FCC
Fastening	2 x 3/8" Thread, optional Velcro
Storage temperature (tested)	-40-85°C at 10%~90% humidity
Operating temperature (tested)	0-40°C at 10%~90% humidity

4.4.1 Cable connection Transmitter (TX) / Receiver (RX)

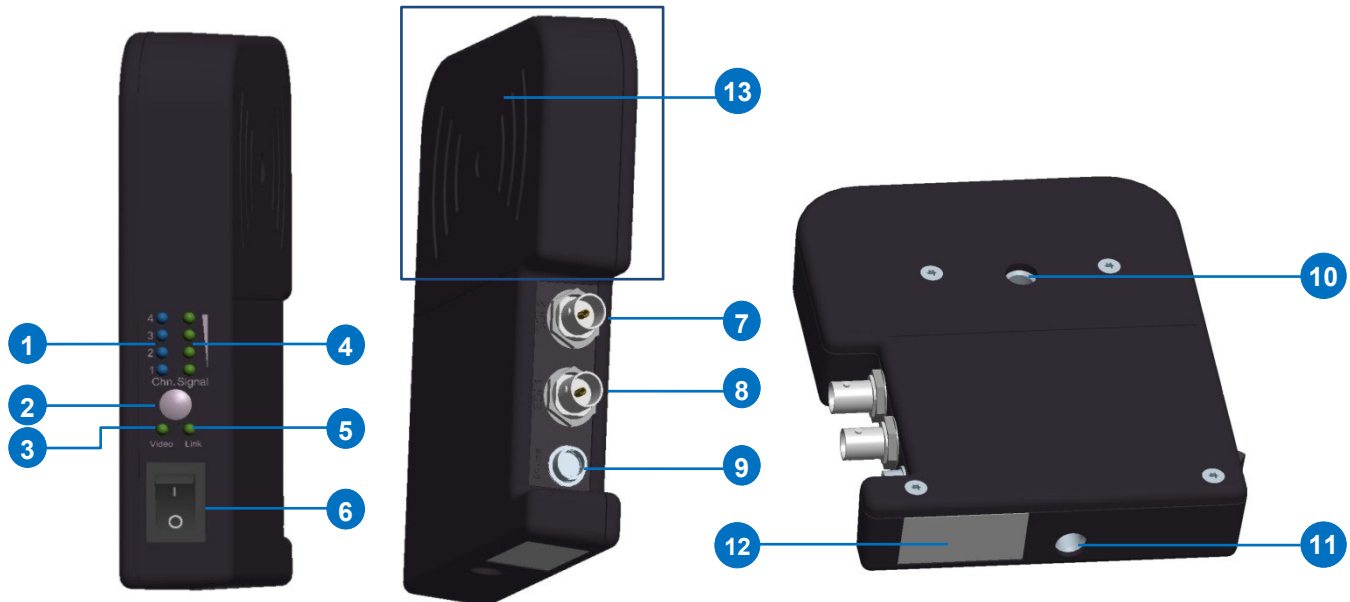
Cable connection

- 1.) Use included / authorized power-supply cord
- 2.) Use locking Hirose (HR10-7P-4S) circular connector to connect the system with camera / battery / power supply:
 - Pin 1: negative (-)
 - Pin 2: --
 - Pin 3: --
 - Pin 4: positive (+)
- 3.) The voltage range is between 10.5V – 36V DC
- 4.) For **Transmitter** (TX) BNC jack **SDI1** is the SDI input which has to be connected to the SDI-output of the video source.
- 5.) For Transmitter (TX) BNC jack **SDI2** is the loop through and can be used as output for the original signals.
- 6.) BNC Jack SDI1 and SDI2 can be used as output.

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4.5 Part designation



Transmitter und Receiver

1	Preset selection key display	Only for Receiver: The blue LED display shows the selected programme channel where Transmitter has been programmed on Receiver prior to use. Receiver allows programming up to 4 different Transmitter.
2	Selection button	Using the selection button it is possible to change any time between the memorized presets. Using selection button for system reset: switch the device on and press the reset button for at least 20 seconds before releasing it again.
3	Video signal display	If this LED shows green light the input video signal was detected.
4	Signal strength display	Monitors how strong / stable the signal is. The higher the signal strength the more green LED lamps will be on. (1 LED poor / 4 LED best)
5	Field strength display	LED monitors whether Transmitter and Receiver are connected.
6	On/off-switch	O=Off / I=on
7	SDI 2	BNC/SDI output and Loop-through (only Transmitter)
8	SDI 1	BNC/SDI connection for SDI-Input (Transmitter) and SDI-Output (Receiver)
9	Spannungsversorgung	HR10/ D-Tab adapter cable
10 & 11	3/8" Thread	Stable mounting at two areas
12	Labelling area	Label identification regarding type of: Transmitter (TX) or Receiver (RX) UC for Unicast version and MC for Multicast version
13	Antenna area	This area should not be covered



After two minutes the LED the system will be turned off to avoid irritating light sources while recording. Press the selection button (2) at any time to reactivate the LEDs.

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5 Set into operation



Please mount MODUL NO.1 vertically to avoid antenna area is covered.

5.1 Connecting Transmitter (TX) and Receiver (RX)

5.1.1 Connecting Transmitter

- 1.) Use D-Tab adapter cable to connect Transmitter (TX) and power supply, please make sure that power supply range is within 10.5V to 36V DC.
- 2.) Use SDI1-Input to connect Transmitter and video source via SDI-cable.
- 3.) SDI2 can be used as Loop-through.



5.1.2 Connecting Receiver

- 4.) Use D-Tab adapter cable to connect Transmitter (TX) and power supply, please make sure that power supply range is within 10.5V to 36V DC.
- 1.) SDI1 and SDI2 each can be used as output.



5.1.3 System Start-up

- 1.) Switch the Transmitter on using the on/off switch (6).
- 2.) Switch the Receiver on using the on/off switch (6).



In delivery state, Transmitter and Receiver are paired and will automatically link after the system has been started. The Field strength display (5) will blink during connection build-up.

Connection setup is completed. Continuous lit of Field strength display (5) at Transmitter (TX) and Receiver (RX) indicates the connection has been setup successfully. If a valid video signal is applied it will be transmit to Receiver (RX).

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5.2 Preset Programming

MODUL NO.1 Receiver may store different presets up to four different video sources.

After programme channel setting you can switch video source using select button (2). To switch between presets please proceed as follows:

- 1.) Start set up with Receiver: please press select button (2)
- 2.) LED (1) indicates current selection
- 3.) LED of video signal display (3) indicates change by flashing green
- 4.) After successful connection, status LED of video signal display (3) will continuously lit.

5.3 Pairing – Channel Storing

All MODUL NO.1 sets are paired in delivery status. After System Reset (chapter 5.6), if a different configuration is needed, or additional Receivers should be connected to extend the multicast set up, Transmitter (TX) and Receiver (RX) can be paired as follows:

Please note that during pairing the distance between Transmitter (TX) and Receiver (RX) should be at least 30cm.

- 1.) Please switch on Transmitter and Receiver using On/off switch (6) and wait at least 30 seconds until the system is up.
- 2.) Select channel by pushing select button on Receiver (RX). LED will indicate the selected channel.
- 3.) Press the select button for 5 seconds on Transmitter (TX). LED (5) will flash slowly.
- 4.) Press the select button for 5 seconds on Receiver (RX). At first LED (5) will indicate pairing process by flashing slowly, if Transmitter (TX) and Receiver (RX) are connected successfully LED (5) flashes fast.
- 5.) LED (5) continuously lit if pairing process has been successfully completed successfully.
- 6.) Transmitter (TX) and Receiver (RX) indicate the same programme channel.



When power switch is turned on, Transmitter (TX) and Receiver (RX) will start searching for a frequency that it can be linked to. If there is any disturbance in the chosen frequency the system will change the link mode automatically. Regarding pairing: Previously executed programming will be replaced. A programme channel (Preset) cannot be used twice. Both, Transmitter (TX) and Receiver (RX) must have the same programme channel selected. Additional Receiver (RX) can be added as described.

5.4 Transmission Range

Transmission range may vary due to environmental circumstances, radio wave conditions, buildings or weather conditions. Signal reception may vary depending on MODUL NO.1 placement. Optimal alignment of the system is to place it vertically where the antenna area remains uncovered (see 5.1).

5.5 Error-handling

Error	Cause / source	Solution
No signal given by Receiver (RX)	Connection between Transmitter(TX) and Receiver (RX) may be interrupted or cannot be set up properly	1) Check whether LED indication (5) of field strength continuously lit. 2) Check whether Transmitter (TX) and Receiver (RX) are paired. 3) Check distance between Transmitter (TX) and Receiver (RX)
However Transmitter (TX) and Receiver (RX) are paired no video data is transmitted	Cable connection might be damaged	1) Please check SDI-cable connection. 2) Please check video-signal validity.
Pairing fails	Distance between Transmitter (TX) and Receiver (RX) too short.	Vergrößern Sie den Abstand zwischen Transmitter und Receiver (mindestens 30cm).
Pairing fails	Channel programming (Preset) has been started with Receiver (RX)	Start pairing with Receiver (RX) and pair one by one. Simultaneous pairing of different receiver (RX) is not possible.

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5.6 System Reset

To revert to factory settings please follow the instruction below:

- 1.) Switch on Transmitter (TX) und Receiver (RX) using on/off switch.
- 2.) Press select button for 20 seconds (2) at Receiver (RX).
- 3.) Press select button for 20 seconds (2) at Transmitter (TX).
- 4.) Switch off both, Transmitter (TX) and Receiver (RX).
- 5.) Switch on both, Transmitter (TX) and Receiver (RX).



Reestablish the connection between Transmitter (TX) and Receiver (RX) by following the instructions under chapter „5.3 Pairing “

6 Waste Disposal



Only EU (and EEA). The crossed-out refuse container symbol on this product or literature indicates that it should not be disposed with other business waste at the end of its working life. The product should be handed in at a designated collection point or to an authorized collection site for recycling waste electrical and electronic equipment (EEE). Improper handling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, the correct disposal of this product will contribute to the effective use of natural resources.

For more information about where to drop waste equipment for recycling, please contact your local city office, waste authority, approved WEEE scheme or your household waste disposal service.