Analog transmitter U8/12-1M

Manual

Digital optical transmitter
for analog voltage signals

Distributed by: Reliant EMC LLC, 3311 Lewis Ave, Signal Hill CA 90755, 408-916-5750, www.reliantemc.com

Inhaltsverzeichnis

1 Box contents

Quantity	Description
1	Transmitter U8/12-1M
1	Receiver U8/12-1M
1	optical fiber 62,5 / 125µm
2	Chargers (or 1+1 power supply)
1	Manual (english)
1	External battery pack1 (optional)

The shipment includes charged batteries. However, due to the self-discharging of NiMH-batteries they should be recharged again before use.

Read chap. 5 before charging!

Read chap. 4 (Maintenance) before charging the devices!

2 Characteristics

The ***U8/12-1M*** can be used to optically transmit analog voltage signals. Because of the optical transmission, the system is very robust against EMS (electromagnetic susceptibility). It can withstand high electric and magnetic fields, like they appear in EMC-tests and also is optimized for low noise emission.

The standard voltage range of the system is +/-15V. It is available in numerous variants. For more information about the variants, see datasheet or call us.

Power is supplied by internal NiMH-batteries which make the system easy to use. The ***U8/12-1M*** is prepared for the use of external batteries (with optional battery pack).

3 Field of application

- Transmission of analog signals during EMC-tests
- Transmission of analog signals over long distances without voltage loss (up to 100m or more, depending on timing requirements)
- Handle ground potential problems

The U8/12-1M has integrated filters enabling EMS and EMI testing. There is no need for external filtering.

4 Maintenance

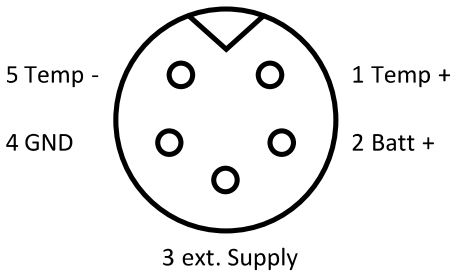
Recharge batteries after use with the enclosed charger. To prevent a lazy battery effect, discharge the devices every 5 times completely by using the automatic switch off (Leave the system on, until it turns off automatically). Afterwards, charge the devices as usual.

Maximum charging current is 1 A

The devices have to be turned off before connecting to the charger. If this is disregarded, the system might get damaged!

Devices must be turned off before connecting to charger, or else the system might get damaged!

Fig. 4.1 shows the pinning of the charge connector. Chargers have to be connected to pin 2 (+) and pin 4 (GND). An external supply (8-10V, 0.5A) can be connected to pin 3 (+) and pin 4 (GND). **Use only power supplies which are certified by mk-messtechnik.**



Pinning of charge- / buffer connector

Fig. 4.1: Pinning of charge- / buffer connector

The included chargers are not meant to power the transceivers during operation. The transceiver outside the shielded room can be run with an external power supply (optional). The internal transceiver can be run with an external battery, if needed (optional). Do not use the external power supply or charger to power the transceiver inside the shielded room while EMI-tests are running. This might damage the transceiver!

Do not use charger or power supply during EMI-test!

Due to self-discharge issues with NiMH batteries, recharge batteries before use, if the system has not been used for a longer time.

Do not use cleaning agents or solvents to clean the devices, only use a slightly moistened, soft cloth.

Do not open the devices! Short cut / fire hazard!

Do not open the devices, as there are no parts inside which have to be maintained. The opened housing can pose a fire hazard through short-circuit currents! Please contact your distributor or the manufacturer if you have any problems. Send in the complete system (both transceivers), if a problem cannot be solved by turning the devices off and on again or by checking the positions of the switches. Please contact us in any case before sending in the devices.

5 Trouble shooting

The following trouble shooting list is provided to assist you while having problems. It might let you use the system again without a long down time:

Error:	Possible reasons:	Solution:
No transmission, DC voltage at output	No optical signal at the receiver	Check optical fibers and connections, change fibers if necessary
	System (transmitter) turned off	Turn on the devices, take care of power-up sequence
Transmission stops	Low battery	Check LEDs at transmitter and receiver, recharge batteries
	Signal of source interrupted	Test source signal directly at the device under test
Device cannot be turned on, cannot be charged	Batteries damaged	Send in device to the manufacturer
	Internal fuse is broke	Send in device to the manufacturer
	Charger or cable damaged	Check / replace charger
	Batteries overdischarged	Charge batteries, maybe use other charger (5 battery cells)
Output voltage does not correspond to the expected value	Voltage divider was not taken into account	Set / Include ratio at the oscilloscope

Error:	Possible reasons:	Solution:
Low-impedance at input	Input wiring defective	Send in device to the manufacturer

6 Accessories / Options

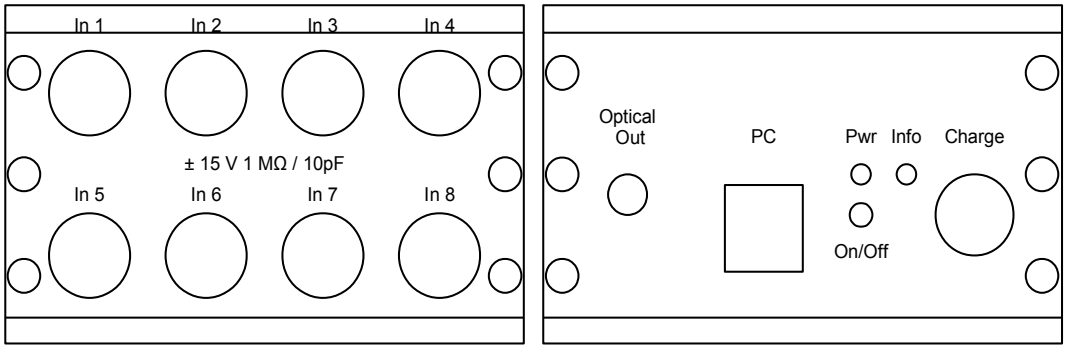
Part	Order number	Comment
Optical fiber	LWL-1-xm	x = length in m, simplex
External batteries	BP-84	8,4V/4Ah
Connector cable for BP-60	SC-20-5m-5m	Length approx. 20cm
Charger with connector plugs	CH-5	Standard charger
Manual	MA-*U8/12-1M*	German or english

Appendix: Details and operation

The following chapter is used to describe special details of the **U8/12-1M** system with 8 channels (+/-15V) for unidirectional transmission.

a) Housing and connectors / switches

Fig. a.1 shows the back (left) and front (right) side of the transmitter with connectors and switches. It is set up in a shielded metal case made to be used inside an absorber lined chamber. It has integrated filters. The signals can be connected directly to the BNC plugs at the back. To avoid interferences or other EMC issues, always use BNC cables as short as possible to connect your DUT.



Transmitter

Fig. a.1: transmitter with connectors

- Signal connectors BNC (*In1 .. 8: +/-15V 1MΩ||10pF*)
- Power push button with control LED (*Pwr On/Off*)
- Battery information LED (*Info*)
- Charge plug (*Charge*)
- Optical connector FSMA (*Optical Out*)
- *PC* USB connector, used for internal programming and firmware updates, not necessary for customer.

The housing of the BNC plugs is connected to the aluminum case, which is connected to the circuit GND. This should be taken into account during the test (possible ground loops, short circuits, parasitics to GND-plane!).

The BNC housings have the same potential as the aluminum case.

Receiver

Fig. a.2 and Fig. a.3 show the front and back side of the table top receiver:

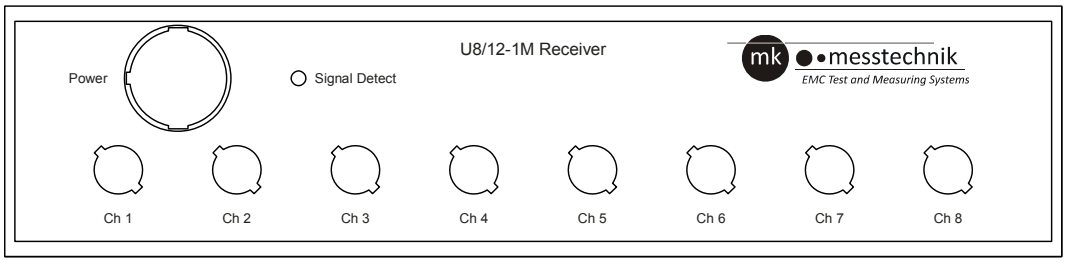


Fig. a.2: Front side of table top receiver

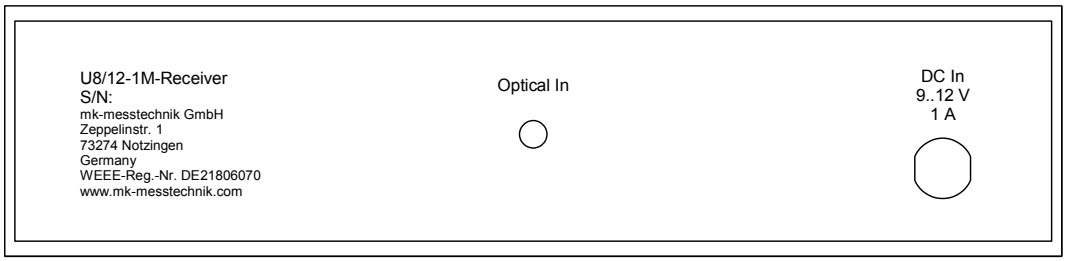


Fig. a.3: Rear side of table top receiver

- Power switch with control LED (*Power*)
- *Signal detect* LED gives information about the working link to the transmitter.
- Signal connectors BNC (*Ch 1 .. 8*): +/-15V 10mA
- Optical connector FSMA (*Optical In*)
- Power plug (*DC In 9 .. 12V 1A*)

b) Operation and handling of the *U8/12-1M*

- Connect the optical fiber
- Connect the analog signal cables to transmitter. It is recommended to choose the cables as short as possible, since the transmitter input (1MΩ || 10pF) is not matched to your application (avoid oscillations).
- Connect the output of the receiver to a suitable high-impedance voltage measurement device, such as an oscilloscope or multimeter. The length of the connector cable should not be significantly longer than 1m, since the upper frequency limit is lowered by the parasitic capacitive load.
- Set the voltage measurement device to the expected voltage and time range, if necessary. If used, take optional included voltage divider into account, while setting / checking your measurement device.
- Plug in power supply of the receiver.
- Turn on all devices (no order to be recognized). Communication between transmitter and receiver will be indicated by the Signal detect LED at the receiver.
- The ***U8/12-1M*** system is ready to use about two seconds after turning on the transmitter.
- Check info LED if transmission stops suddenly!

Check info LED if transmission stops suddenly!

If the transmission suddenly stops after a long duration of measurement, check the *Info* LED of the transmitter (see Figure a.1). If the battery power falls below 7,2V, the *Info LED* is switched on. The system should be reloaded soon. Below 5,8V, the system is turned off automatically.

Only use battery packs and connector cables provided from mk-messtechnik. Other modules influence EMS-performance and might damage the opto-system!

The measurements can be extended by using the optional battery pack (BP-84) with connector cable or a power supply certified by mk-messtechnik. The external supply can be connected to the system any time (parallel). The connection to the internal battery is decoupled with a diode.

Only use the battery pack and connector cables from mk-messtechnik! Others might lead to a damage of the system!