

# EES LDM 4 Operating Instructions

The EES LDM 4 is made to extend the range for MIDI connections - normally 15m - up to 1000m. The LDM 4 will be used paired always.

The LDM 4 is in conformity to .


## Introduction.

RS422 is a well known transmission standard in the computer technology for long distances. It is very safe and works up to 1000m up to 1MBaud ( MIDI: 31,250KBaud only! ).

The LDM 4 is a hardware-converter MIDI - RS422 - MIDI. Therefore there are no protocol-problems and a very little delay in timing.

One pair of LDM 4 enables four transmission lines, two in each direction. So the LDM 4 has two MIDI Ins and two doubled MIDI Outs. The doubled MIDI Outs will often save a MIDI Thru box.

The control LEDs are showing the states of the MIDI and RS422 connections:

If the red connection-failure LEDs  are shining, something is wrong with the RS422 connection or the second LDM 4 is not powered on.

The green Power-LED shows that the LDM 4 is powered on.

By incoming MIDI data the red MIDI In LEDs are blinking. The green MIDI Out LEDs are blinking by MIDI data from the RS422 connection ( that is the MIDI data from the corresponding MIDI In of the second LDM 4 ).

Both LDM 4 need to be powered up by mains ( 230V~ about 1,5VA only ).

## Connection-diagram of the 9pin D-Sub connection.

The safe data transmission of the RS422 are based on the „right“ connection cable. The LDM 4 connection needs 4 twisted pairs of wires and a 9th wire - or better a screening - for the ground-connection. It is very important that the pairs are twisted and for any connection one pair is used. That's the way the RS422 will give its full range of safety. Up to 100m AWG26 (0,14mm<sup>2</sup>) and for longer distances AWG24 (0,22mm<sup>2</sup>) are recommendable. This is normal cable from computer-networking.

Con 1 ----- Con 2 Pin ----- Pin		LDM 4 1 -----LDM 4 2 MIDI -----MIDI
1 ----- 3 6 ----- 8	Pair 1	Out1 ----- In1
2 ----- 4 7 ----- 9	Pair 2	Out2 ----- In2
3 ----- 1 8 ----- 6	Pair 3	In1 ----- Out1
4 ----- 2 9 ----- 7	Pair 4	In2 ----- Out2
5 ----- 5	Ground (Screening)	