Operating instructions

SPEED LIMIT MODULE   MXHLU

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1.   Introduction

The module generates speed limits in 5 steps (and "stop") for three track sections using the ZIMO feature of "signal controlled speed incfluence".

MXHLU is intended to be used for simple applications and in order to make the user familiar with the "signal controlled speed incfluence". For large applications the Track section module MX9 is to be prefered !

NOTE: Only ZIMO decoders respond to speed limits and stop !
DCC decoders from other manufactures don't change their speed.
MXHLU can be used together with ZIMO command station MX1 only !

Traditionally (it is a ZIMO feature already for a long time) the main speed limit steps are called

"F" - Full speed = no speed limit
"L" - Slow (German: "Langsam") speed
"U" - Ultraslow speed
"H" - Stop = Halt

Intermediate ("no-name") speed limit steps are beween these steps;
so you have in all 5 speed limit steps (and "stop" and "full").

The specific response of a decoder to each of the 5 speed limit steps is defined by configuration variables # 51 - 55 on an individual basis. See operating instructions of the ZIMO decoders for this.

The "signal controlled speed influence" can be overridden by "MAN" key on the cab at any time - then the loco holds or resumes the speed given by the cab's slide control. On the other hand a speed limit never can make a loco faster than the cab's speed - the ZIMO decoder always takes the smaller of the two values (from cab and from track section) for driving the motor.

2.   Specifications

Tr ack voltage (from command station MX1) .... 12 - 24 V
Track output current .... 5 A (no short-circuit protection)
Dimensions .... 106 x 106 x 22 mm
....

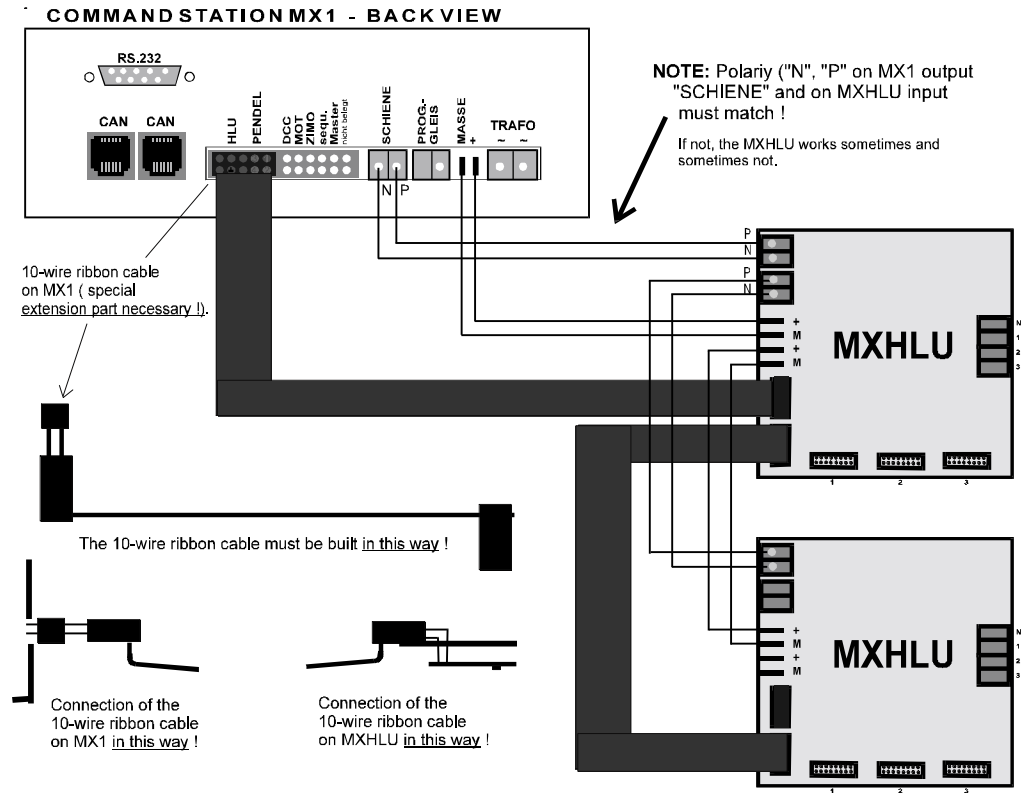*ATTENTION: Track outputs must not loaded by capacity !*

This is a general rule for all DCC operated layouts. But track sections connected to MXHLU are even more sensitive, i.e. the speed limit eventually would not work if there is a capacity of more than 1 uF..

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3.   Connecting the MXHLU to Command station MX1

MXHLU modules should be located near the command station MX1 (length of the 10-wire ribbon cable to the first MXHLU should be not more than 0,5 m).

Ribbon cable and "SCHIENE" are obligatory connections.

Flat terminals (MASSE and "+") are recommanded connections (for lower voltage drop and better safety in operation.

COMMAND STATION MX1 - BACK VIEW

NOTE: Polariy ("N", "P") on MX1 output "SCHIENE" and on MXHLU input must match !

If not, the MXHLU works sometimes and sometimes not.

10-wire ribbon cable on MX1 (special extension part necessary !).

The 10-wire ribbon cable must be built in this way !

Connection of the 10-wire ribbon cable on MX1 in this way !

Connection of the 10-wire ribbon cable on MXHLU in this way !

4.   Connecting the track sections

The following example shows a braking section followed by a stop section. If a train coming from the left side enters the first section, its speed is reduced to limit "U". This needs not to take place suddenly, but the slowing down is dependent on the content of the configuration variable # 50 of the decoder, which defines individually for each decoder the deceleration time. After entering the stop section, the train comes to standstill, again the slowing down is dependent on CV # 50.
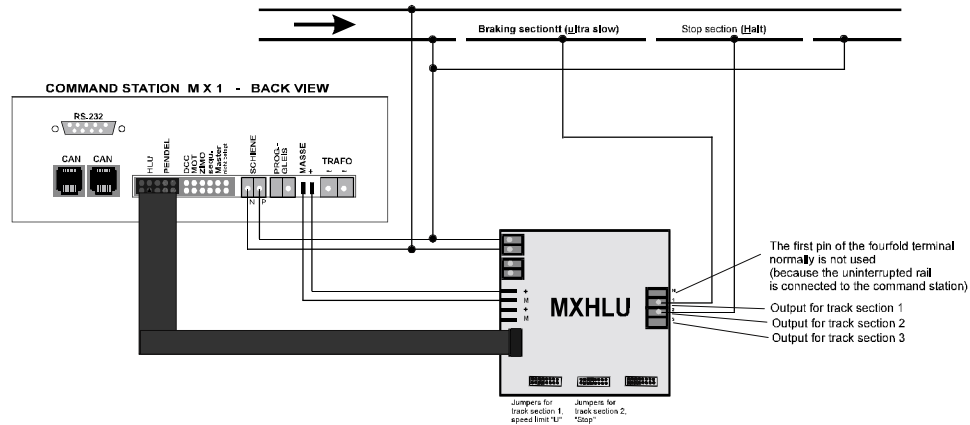

If an isolation gap is bridged by a loco or by lighted cars, the higher speed limit will be valid. This can cause problems in bringing a train to standstill at the end of the stop section (it could "slip through"). One method to avoid this problem is to insert short track sections (about 5 cm - in the length of a bogie), which are connected nowhere, at the places of the isolation gaps.
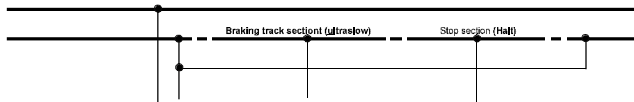
Note: It is also possible, to build sophisticated logic or computer control around the MXHLU in order to make block and route control, but in most cases you should prefer using MX9 for such cases !

5.   The jumpers for defining speed limits

A 16-pin connector is provided for each of the three track sections. By jumpers speed limits can be defined. Instead of using jumpers you can connect wires to the connector and define the speed limits by external elements (switches or relais).
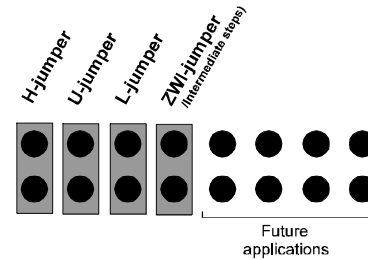
All 4 jumpers inserted	- "F"
H-jumper not inserted	- "H"
U-jumper not inserted, H-jumper inserted	- "U"
L-jumper not inserted, H- and U-jumpers inserted	- "L"

ZWI-jumper insertes   - above table is validt
ZWI-jumper not inserted - one intermediate step higher