

K-mirror – Cabinets Electrical Interface

Interface Document: LN-MPIA-FDR-INT-062		Issue: 1.1
Relevant Documents: LN-MPIA-FDR-ELEC-005, LN-MPIA-FDR-INT-313, LN-MPIA-FDR-INT-072		
Brief Description: This document describes the electrical connection of the MHWS to the cabinets.		
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Interface Description

This document describes the electrical interface between the K-mirror stages and the cabinets. The patchbox represents the interface between the motor electronics (cabinet) and the motor unit (mounting stage). The K-mirror unit, to accomplish the field de-rotation, uses, as motor unit, a rotatory stage servo motor from Faulhaber (DC-Micromotor 2232 012SR) with a Faulhaber Encoder.

Interface Specification

One motor unit (mounting stage) gets two connectors from the patchbox, one connector for motor signals, limits-/ref. switch and incremental encoder and one connector for the power supply. All cables from the patchbox to a motor unit are shielded. The maximum cable length is three meters, this is the maximum distance between the patchbox and the K-Mirror unit.

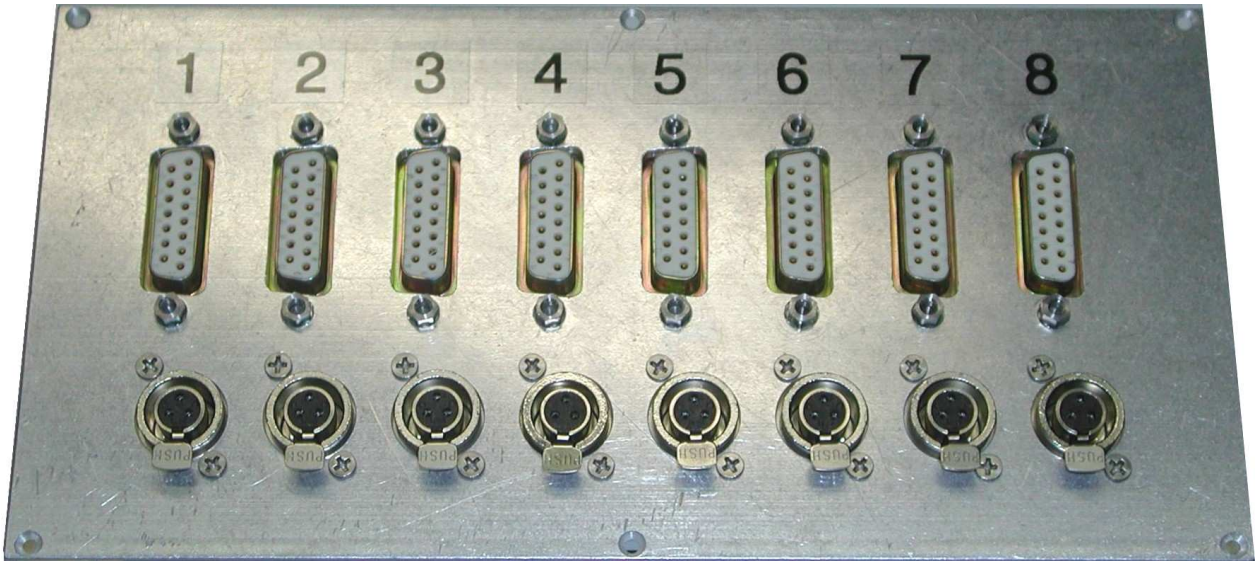
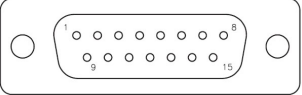
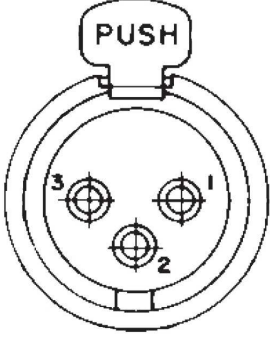


Figure 1: The patchbox; in the bottom part there are the plugs for the power supply cables, while in the top part there are the plugs for the signal cables.

The following table shows the pin configuration of each of the two connectors:

Description	Connector type	Pin configuration
Motor signals, limit switch, reference switch and incremental encoder	 <p>15-pin Sub-D Female</p>	<p>1 n.c.</p> <p>9¹⁾ Motor (-)</p> <p>2¹⁾ Motor (+)</p> <p>10 Power GND</p> <p>3²⁾ MAGN</p> <p>11²⁾ SIGN</p> <p>4 +5V input</p> <p>12 NLIMIT</p> <p>5 PLIMIT</p> <p>13 REFS</p> <p>6 GND (Limit)</p> <p>14 Encoder A+</p> <p>7 Encoder A-</p> <p>15 Encoder B+</p> <p>8 Encoder B-</p>
<p>¹⁾ For Active Drive motors, pin 2 and 9 are not connected and the power connector is used.</p> <p>²⁾ For the rotatory servo motor Faulhaber DC-Micromotor 2232 012SR , pin 3 and 11 are not connected and the power connector is not used.</p>		

Power	 <p data-bbox="699 591 970 622">Switchcraft Tini Q-G</p>	<ul style="list-style-type: none"> <li data-bbox="1018 224 1149 255">1 GND <li data-bbox="1018 264 1340 295">2 Voltage input (24V) <li data-bbox="1018 304 1126 336">3 n.c.
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Special Requirements

The K-mirror rotatory stages are servo motors. There are two stages, one for each NIRVANA arm. The stages share the patchbox with the servo motors used for CCD focusing in the two MHWS (Doc. LN-MPIA-FDR-INT-313) and also with the two servo motors used to position the Beam-Splitters/Mirrors below the two MHWS towers (which are part of the Patrol Camera System, Doc. LN-MPIA-FDR-INT-072).