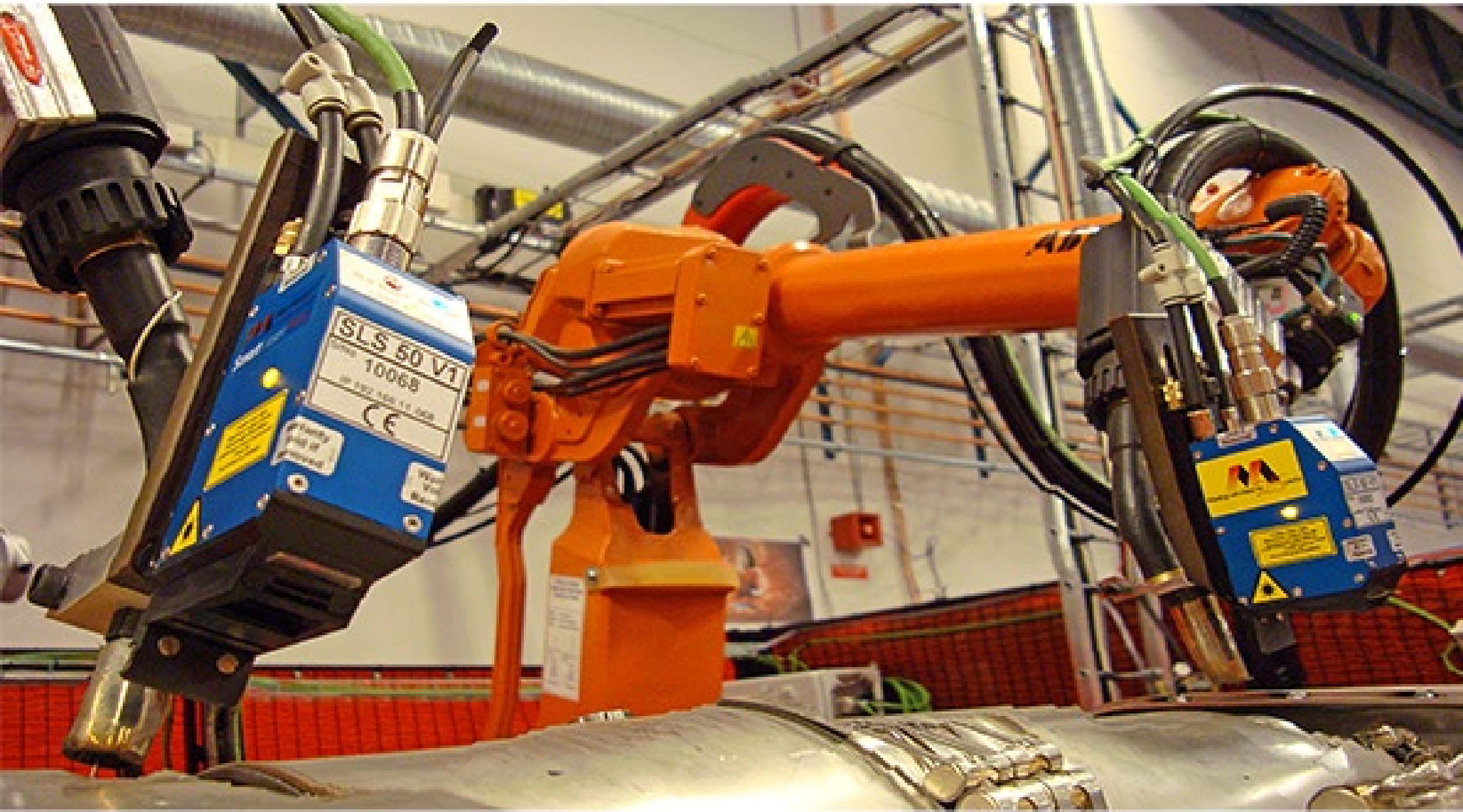


# Smart Laser Pilot



## Meta Laser Vision System for Robot Welding

Smart Laser Pilot (SLPi) is a non contact weld seam finding and tracking system for robot welding. By mounting the Smart Laser Sensor (SLS) to the welding torch so that it looks ahead of the welding point, the Smart Laser Pilot adjusts the robot path to keep the welding wire positioned correctly in the joint.

Perhaps the single biggest problem in robot arc welding is to make sure that the welding wire is always in the right place in each and every joint to produce a good weld. Variations in the position of weld joints arise from several sources: from variations in the parts themselves, for example from springback in pressings; from variations in jigs and fixtures; from differences in the ways that parts are tacked together, etc. In addition to these setup errors, thermal distortion from the weld itself can cause further dynamic changes as the weld is taking place. Smart Laser Pilot solves these problems by sensing the actual position of the weld joint in real time before and during the welding process.

Smart Laser Pilot is a completely new approach to seam finding and tracking for robot welding. The image processing hardware and software are contained with the Smart Laser Sensor itself. Combined with the latest Mega Pixel camera technology, special custom optics and incorporating over 25 years of robot welding know how and experience, SLPi represents a major breakthrough in the use of laser vision in robot welding.

## Typical Applications:

Smart Laser Pilot is suitable for use with all the main robot welding processes including MIG, TIG and plasma, in applications such as:

- Automotive welding applications, including body parts, suspension members, exhaust systems
- Welding tanks and fittings
- Construction equipment
- Aerospace and Defence applications

## Key features of SLPi include:

- Very high quality, high resolution image generation by exploiting several novel and unique design features
- 100% digital system incorporating a completely up to date control structure with Ethernet backbone
- User friendly operator interface with colour touchscreen for setup, monitoring and diagnostics
- Range of laser sensors with different fields of view and standoffs
- Ethernet and Analogue/Digital interfaces to common robot controllers

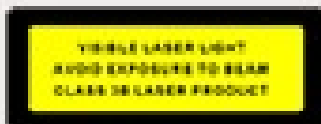
## SLPi System for Robot Welding

Main components of an SLPi system are:

- SLS Laser Sensor
- Sensor Break Out Board
- Graphical IO User Interface Device
- Ethernet IO Board  
(Optional for Analogue/Digital Interfaces)

### SLS Sensor Models:

Model	Field of View (mm)	Stand-off
SLS-025-H1	25	standard
SLS-025-V1	25	standard
SLS-050-V1	50	standard
SLS-050-V1LR	50	long range
SLS-100-V1LR	100	long range



## System Overview:

By using the latest developments in electronics and optics, Smart Laser Pilot defines a new performance price point for laser vision systems for robot welding. The sensor itself is packed with powerful digital electronics which perform the image processing in the sensor head itself. Yet Meta has used its more than 25 years of robot welding experience to make sure the system is robust and fully designed for the arduous robot welding factory environment.

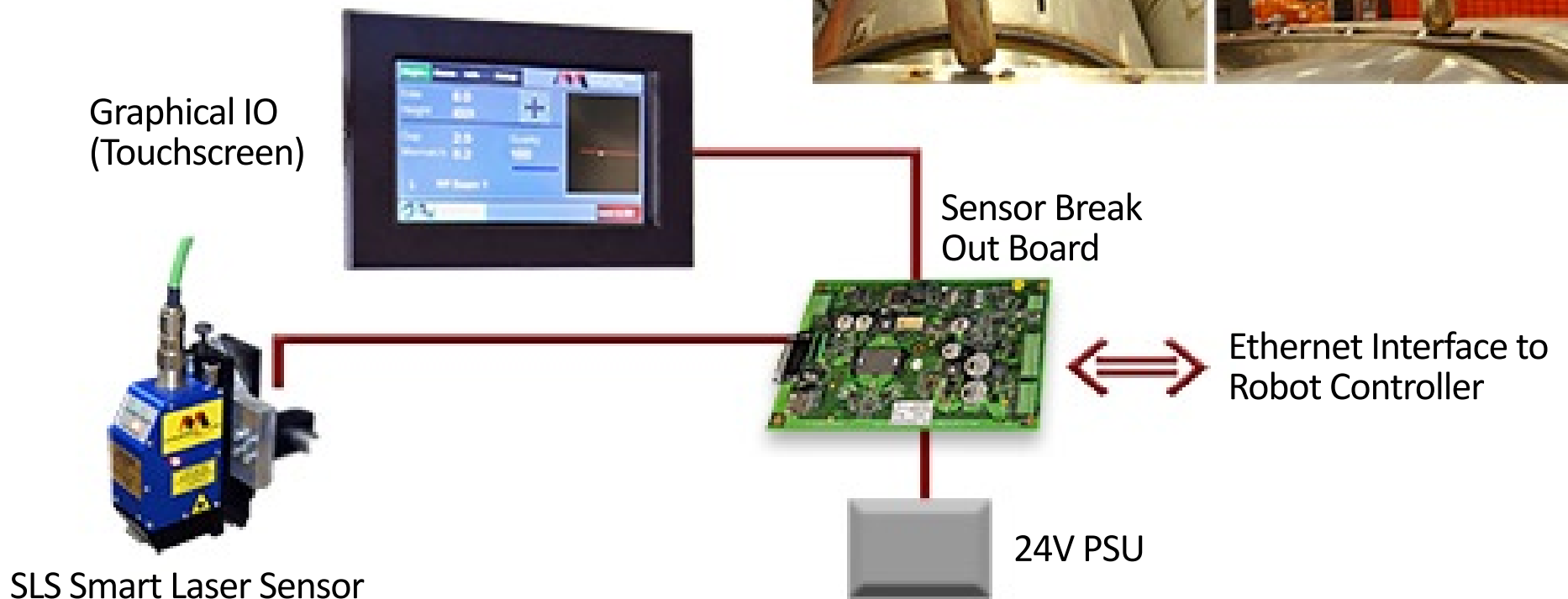
Since the sensor itself is so powerful, the system doesn't need a massive external cabinet. The sensor is connected to a Break Out Board which provides power to the sensor, protects it against electrical interference and provides laser safety circuits to meet current regulations. The output from the Break Out Board is standard Ethernet which can be connected straight into the robot controller.

High volume production lines need high reliability and easy diagnosis of problems. The SLPi comes equipped with a colour touchscreen which shows the live signal from the laser sensor. This can be used to check operation or to diagnose any problems.



# Smart Laser Pilot

Smart Laser Pilot (SLPi) Structure with Ethernet Robot Interface



**European Office**  
 Meta Vision Systems Ltd  
 Oakfield House  
 Oakfield Industrial Estate  
 Eynsham  
 Oxfordshire OX29 4TH  
 UK  
 Tel: +44 1865 887 900  
 Fax: +44 1865 887 901  
 sales@meta-mvs.com  
 meta-mvs.com

**North American Office**  
 Meta Vision Systems Inc  
 8084 Trans Canada Highway  
 Ville St Laurent Qc  
 H4S 1M5 Canada  
 Tel: +1 514 333 0140  
 Fax: +1 514 333 8636

# Welding with Vision