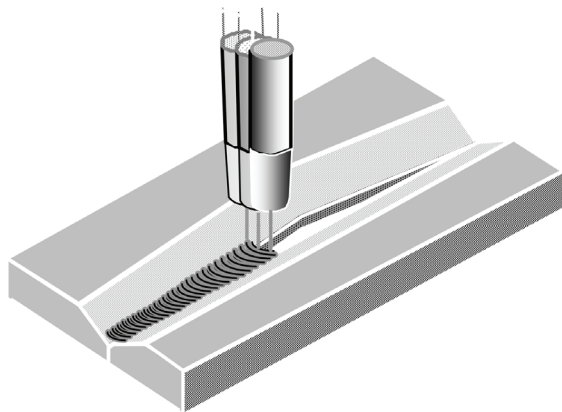


## Weldguide IV

The most powerful robotic Thru-the-Arc joint tracking on the market



Weldguide IV is a powerful Thru-Arc™ tracking sensor based on patented technology and designed for ABB robotic welding systems.

Weldguide IV provides tracking functionality by reading the true impedance values close to the arc at 25 kHz then guides the robot to the correct path. Weldguide IV is designed to track difficult welding joint variations resulting from cast components or other pre-process problems. Important improvements compared to Weldguide III, include:

- Enhanced reliability thanks to installation in the IRC5 cabinet at delivery, a new metal enclosure, upgraded cables and comprehensive testing
- Easy mounting on welding cables and lower sensitivity to external noise with optional split-core-sensor (sensor inside diameter 57 mm versus 27 mm inside diameter. solid-core-sensor)
- New tracking method “inverted centerline tracking”
- MultiMove functionality with up to two Weldguide IV units connected to one controller
- Visualisation of the actual track-log in RobotStudio including corrections and real current/voltage values - a unique monitoring feature under patent search
- Upgraded for new main computer, using Ethernet communication
- Backward compatible as spare part for Weldguide III

### Application Areas

To perform welding accurately it is important to see the arc, and to listen to the sound of the welding process. They say, a skilled welder can hear when the weld is performed successfully.

We kept this in mind when developing the new Thru-Arc tracking sensor Weldguide IV. It uses two sensor inputs - the welding current and the arc voltage, which allows the welder to „look and listen“.

The measurements are synchronized with the weave pattern of the robot along the weld seam and provides both vertical and horizontal correction signals to the robot controller, to ensure a consistent location of the welding arc along the seam. In heavy welding applications this is of the utmost importance.

The Weldguide IV sensor reads the real values from the welding arc 25,000 times per second, which means it is up to 25 times faster than traditional tracking methods. This ensures faster path corrections and better welding results. The combination of voltage and current is called impedance, and this measuring method is based on patented technology.

### User friendly interface

Weldguide IV is seamlessly integrated into the IRC5 controller which has the added advantage of being easy to program, putting pertinent information at your fingertips, creating path off-sets, both angle and position, forward/reverse path replay and path length control.

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01 Height sensing: The torch-to-work distance is maintained.

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02 Centerline tracking is used in weaving. The position of the weld can be adjusted side to side.

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03 Inverted centerline tracking with v-shaped weaving.

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04 Multi-pass provides multi-layer welding often needed in heavy welding.

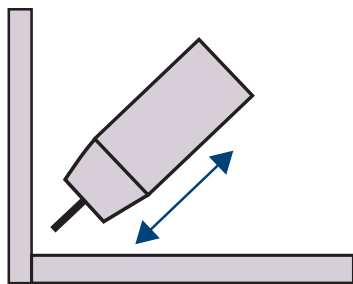
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05 Adaptive fill allows the robot to adjust to the changes in joint width, the robot's weave stroke will increase or decrease and the travel speed will be adjusted accordingly.

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06 Single side tracking is used to track a lap-joint where the arc may consume one side of the groove.

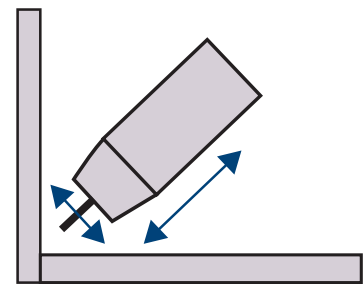
### Technical data

- Weldguide IV sampling data from the process: 25 kHz
- Minimum weave width: 1.5 x wire diameter
- Torch to height reference voltage: 0-80 V
- Torch to height reference current: 0-800 A
- Vertical correction: 0.01 mm increments
- Horizontal correction: 0.01 mm increments
- Real time arc voltage increments: 0.1 V
- Real time arc current increments: 1 A

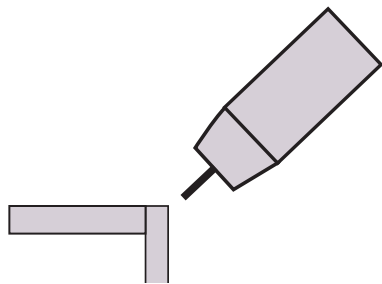
### Tracking modes - Basic



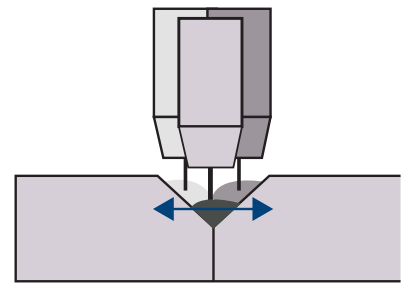
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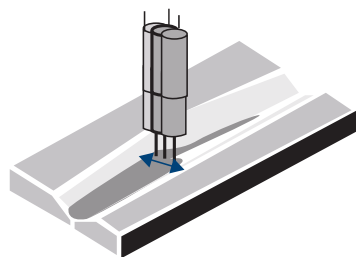


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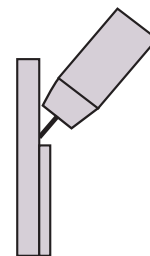


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### Tracking modes - Advanced



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### Welding modes

Modern power sources are providing many different welding modes. The common goal when controlling these welding processes is trying to keep a constant level of the welding current. This means that it is more difficult to use the measured current directly at the power source as the only input to a seam tracking system. By using an external current sensor and an additional sensor for arc voltage at a much higher measurement frequency and closer to the arc, Weldguide IV can perform thru-the-arc tracking in several different welding modes such as spray-arc, short-arc and pulsed-arc.