Arc Welding with Kawasaki

Kawasaki Robotics (USA), Inc.

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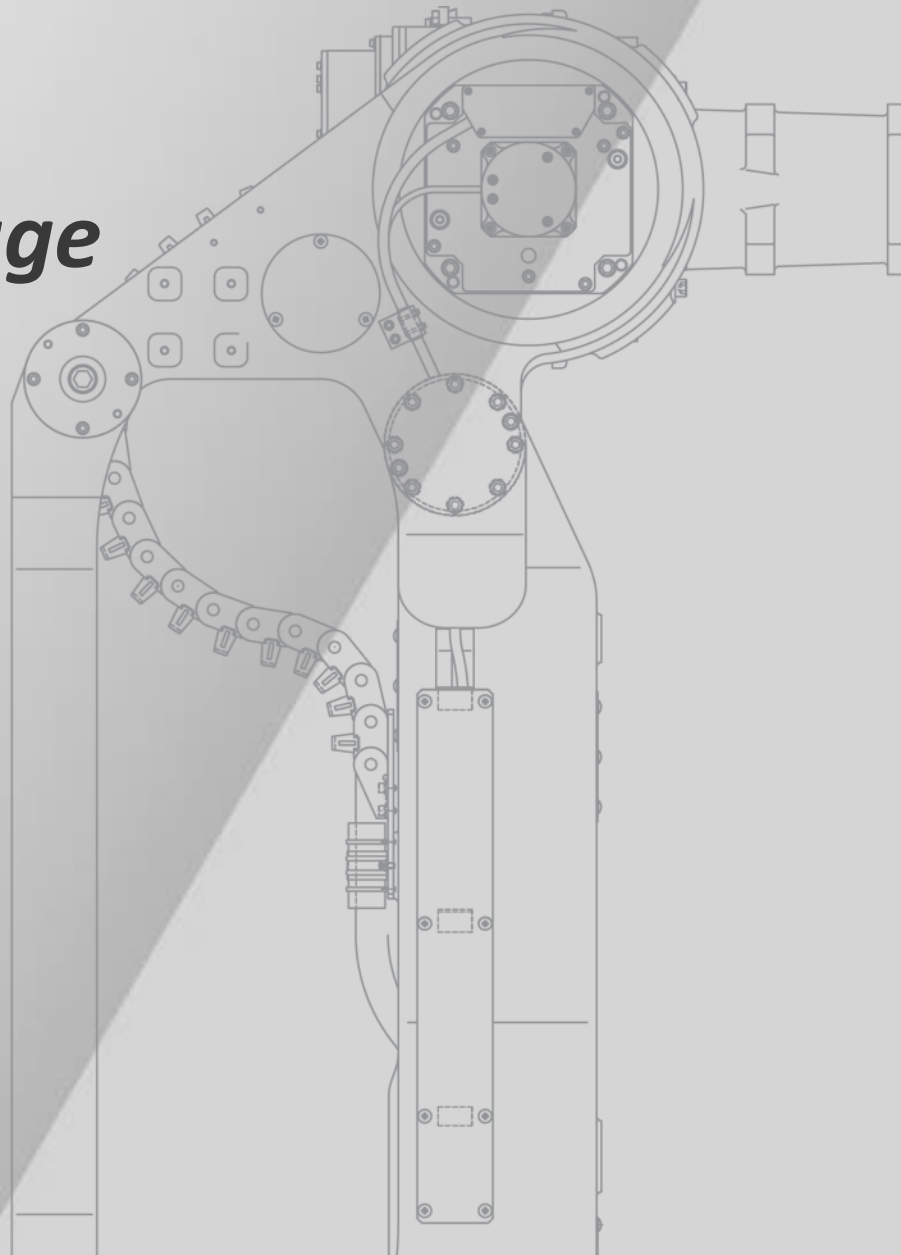
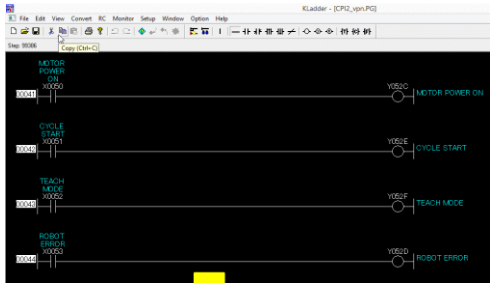
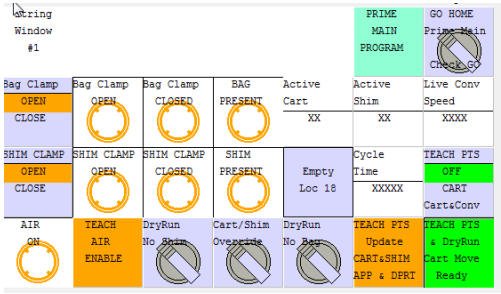
The Kawasaki Advantage



Kawasaki Advantage – Lower cost of Integration

- Standard: Discrete I/O (1TW/1GN)
  - 32/32 - Discrete I/O (PNP)
  - 4 - Analog Out, user configurable (0-10V/0-15V, +/- 10V)
- Standard: SW EtherNet/IP m/s
- Standard: 7th Axis Drive Unit
- Standard: Integrated PLC (K-Logic / K-Ladder)
  - K-Logic – Internal PLC in Controller
  - K-Ladder – Ladder Logic Programming Software
  - No External Hardware Required
  - Monitor Ladder Logic on Teach Pendant
- Standard: Configurable, Basic HMI





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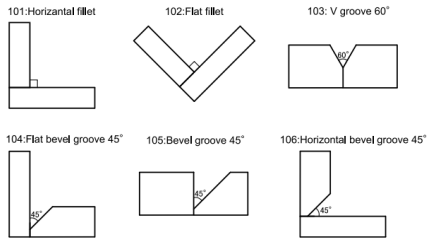
Kawasaki Advantage – Extensive Functionality

- Standard: Touch Sense
  - Start-Point Sensing for six pre-defined joint (allows for customized joint types)
- Standard: Advanced Weaving
  - Five weave standard weave patterns including circular
  - Pendulum Weaving (allows the torch to tilt +/-10 degrees)
  - Weld Signal Boost (adjust wire-feed/voltage +/- 100% to alter sidewall penetration)
  - User customizable weave patterns
- Standard: Weld Database (Templates)
  - User configurable templates for various welding conditions
- Standard: Endless Positioner Function
  - Ability to reset positioner rotations without physically having to “unwind” the positioner.
- Standard: Positioner Cooperative Motion
  - Coordinated motion with positioner / external axis



Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7
						

Type of weld joint	Leg length/Thickness (mm)
Horizontal fillet	3, 4, 5, 6, 7, 8
Flat fillet	3, 4, 5, 6, 7, 8
Lap fillet	1.2, 1.6, 2.3, 3.2, 4.5, 6.0
Corner fillet	1.2, 1.6, 2.3, 3.2, 4.5, 6.0
Butt I fillet	1.0, 1.2, 1.6, 2.0, 2.3, 3.2, 4.0, 4.5
Downhill fillet	3, 4, 5, 6

Pattern No.	Pattern name	Motion	Motion of torch tip
Standard	Simple harmonic		
1	Simple harmonic both ends stop		
2	Triangular		
3	Reciprocating triangular		
4	Circular (Clockwise)		
5	Circular (Counterclockwise)		
6 to 10	Unregistered	—	—

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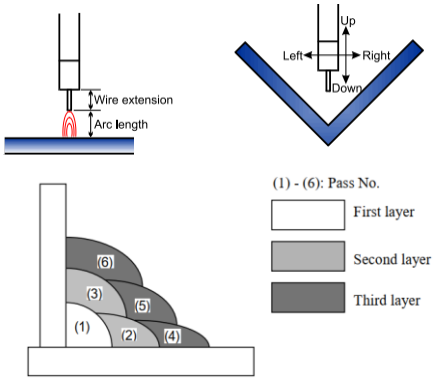
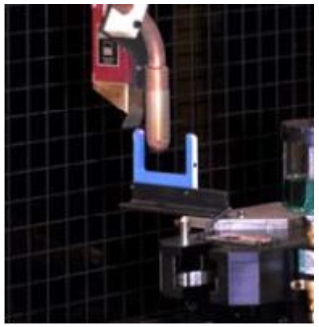
Kawasaki Advantage – Advanced options

- Option: Automatic Voltage Control (AVC)
  - Height control for Plasma Cutting or TIG welding
- Option: Through-Arc Seam Tracking (RTPM)
- Option: Multi-Layer
- Option: AutoTCP (Automatic TCP Calibration)
- Option: Laser Seam Tracking
- Option: Adaptive Welding





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Product Range

BA series – Through Arm Robots

- Payload – 6 kg
- Reach – 1445 / 2036 mm
- 45mm (1 ¾”) Hollow Wrist
- Flexibility and accuracy deliver quality welding
- Standard Robot Dress packages from major Power Source manufacturers

Applications

- **Arc Welding**
- Material Handling

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R series – Small to Medium Payload Robots

- Payload – 3 to 80 kg
- Reach – 620 to 3150 mm
- Ultra high-speed operation
  – Up to 13,400 mm/s
- High torque & wide work envelope
- Integrated features
  – Built-in pneumatic lines and internal wiring
- Compact design
  – Ideal for high-density applications
- Environmental protection
  – IP 67, washdown arm

Applications

- Assembly
- **Arc Welding**
- Dispensing
- Inspection
- Machine Tending
- Material Handling
- Material Removal

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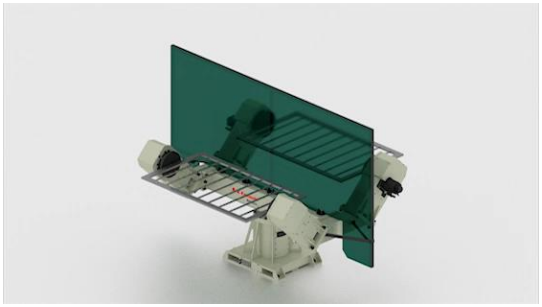
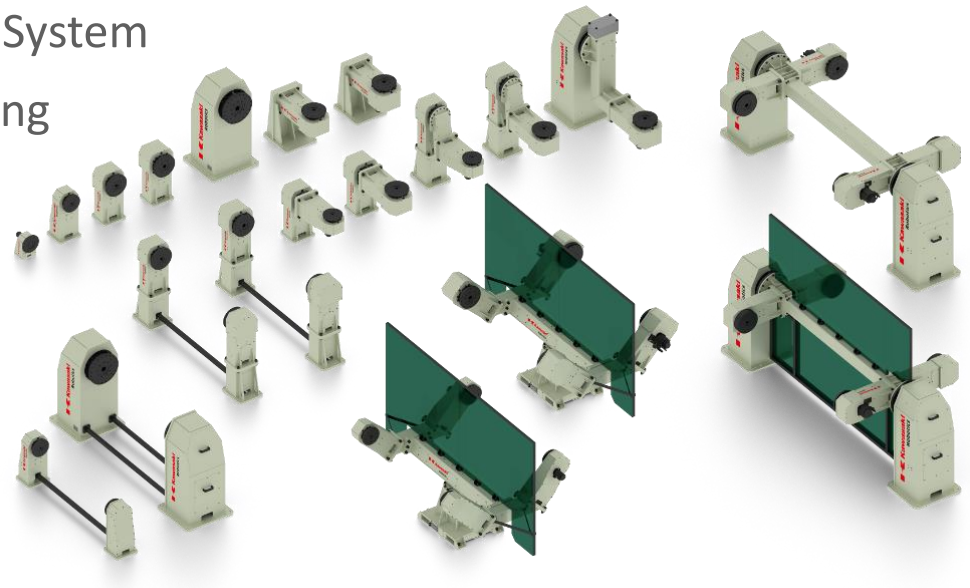
Positioners

- Comprehensive range of Workpiece Positioners
- Five Types (50+ variants)
  - Trunnion (Headstock / Tailstock)
  - Turn Table
  - 2-Axis / Skyhook
  - H-Frame
  - Ferris Wheel
- Payload – 125 - 1000 kg, Span – 1600 - 3000mm
- Electrically Insulated (Weld ground only on fixture-/tooling-flange)
- Integrated Weld Ground Transfer System
- Hollow Shafts for easy cable routing
- “Plug ‘n Play”
  - Cables
  - Motors
  - External- / Additional-Axis Drives
  - Configuration & Mastering Data





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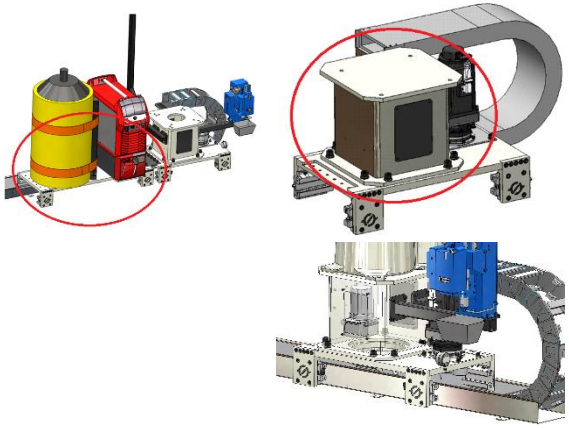
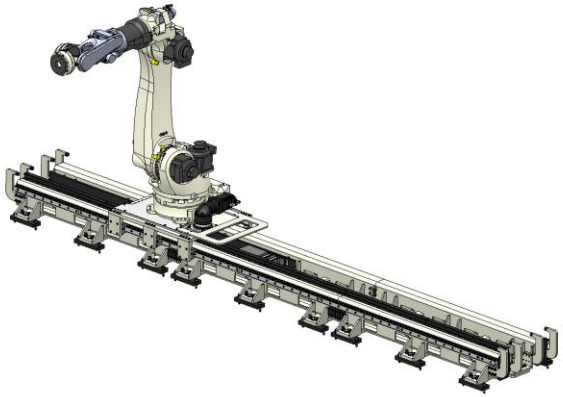
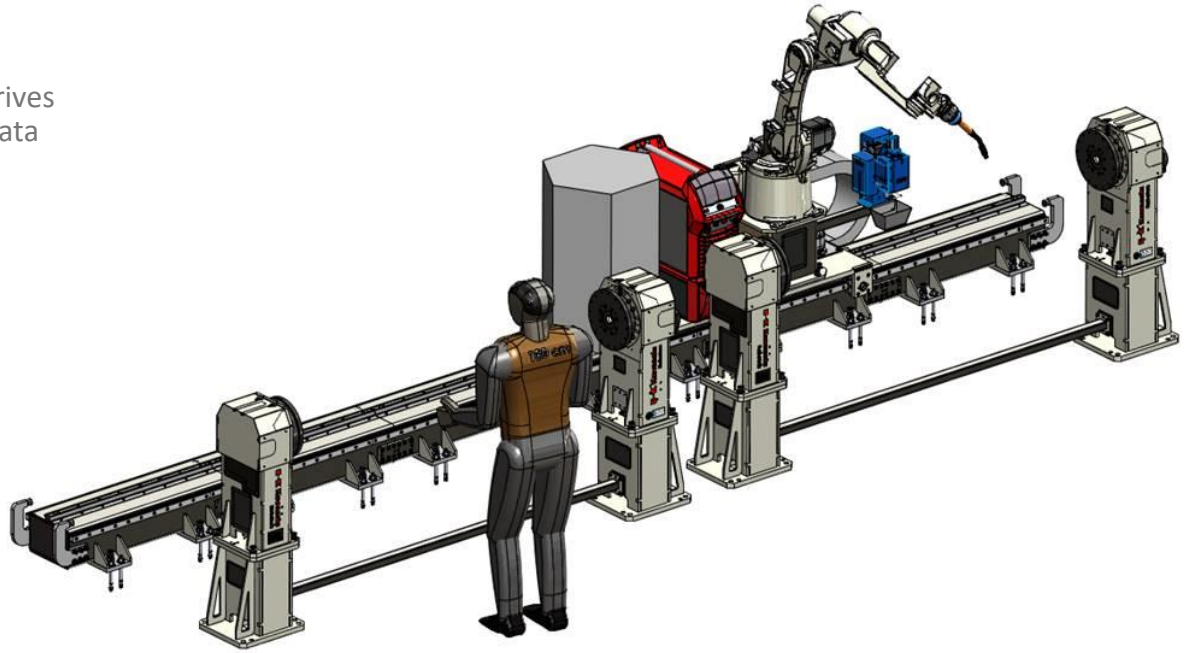
RTU – Tracks

- AW Track designed for BA- / RA-Series Robot
- Standard Tracks for CX- / BX-Series Robot
- High Performance
  - Max. Velocity 2.0 m/s
  - Acceleration 5m/s^2
  - Repeatability ±0,05mm
- “Plug ‘n Play”
  - Cables
  - Motors
  - External- / Additional-Axis Drives
  - Configuration & Mastering Data







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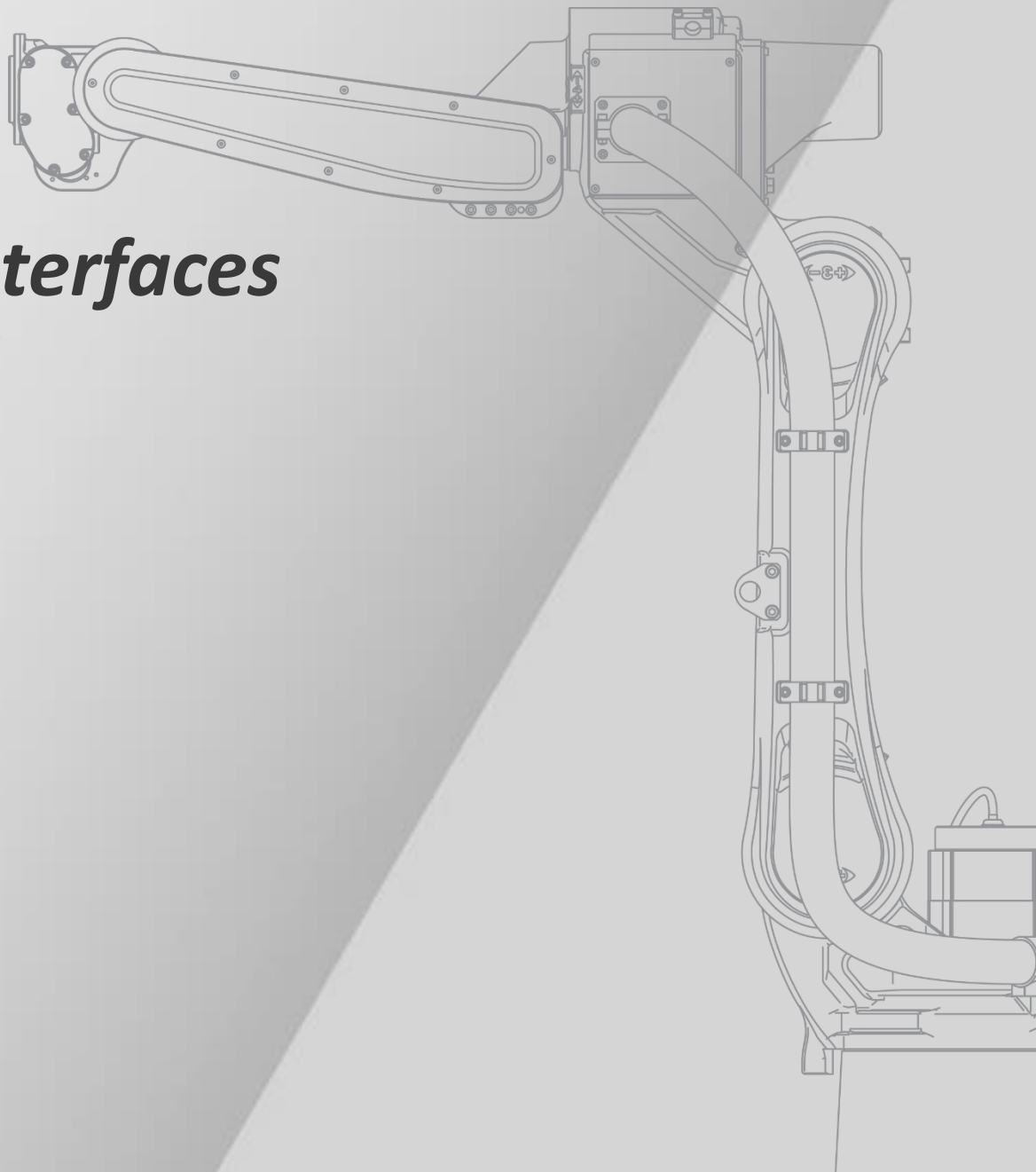
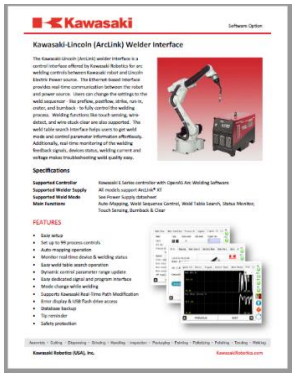
Power Source Interfaces

Compatible with most power sources
Ethernet Interface for major brands



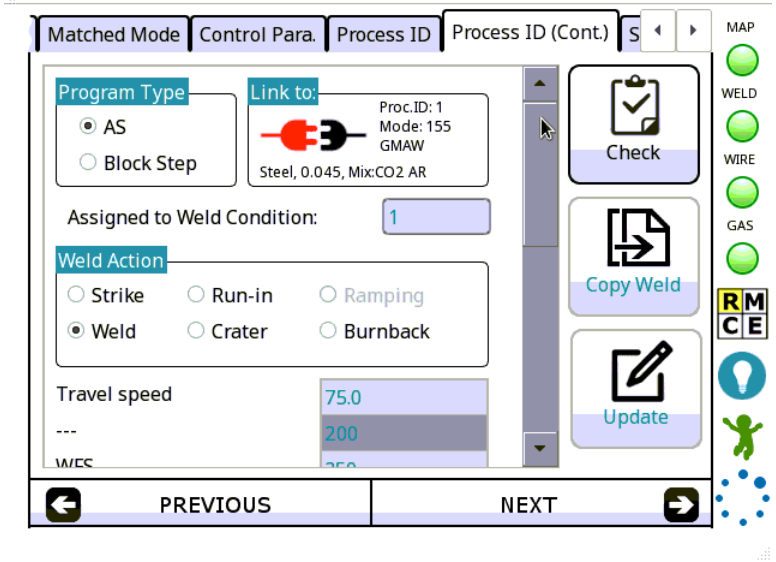
Kawasaki-Lincoln Welder Interface (ArcLink®XT)

The ArcLink®XT based interface provides real-time communication between the robot and power source and allows the programmer to select the welding process and modify weld related settings on the robot teach pendant.



The interface consists of Load files, Supporting documents and Documentation.

- Robot Dress Kit
- Easy setup
- Auto-Mapping Operations
- User friendly GUI
- All required signals are pre-configured
- Real-time feedback plots



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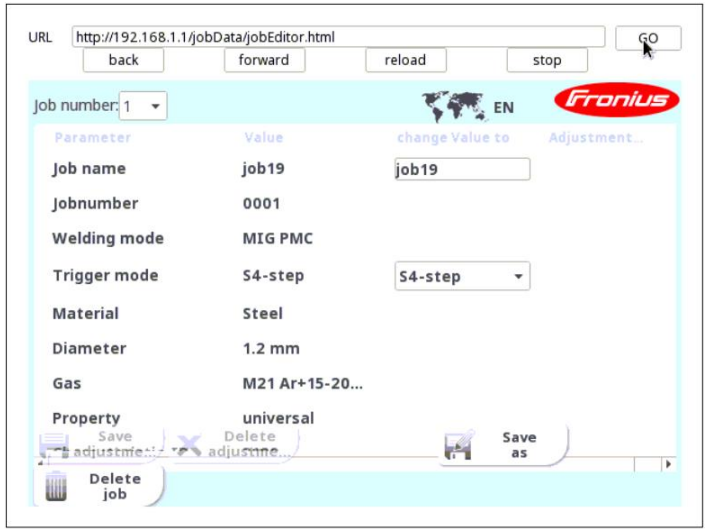
Kawasaki-Fronius Welder Interface

The Fronius EtherNet/IP™ based interface provides real-time communication between the robot and power source. Edit jobs directly on teach pendant and the Interface Panel displays welder feedback.

The interface consists of Load files, Supporting documents and Documentation.

- Robot Dress Kit
- Easy Setup
- Programming Example
- Job Editor and Interface Panel
- All required signals are pre-configured



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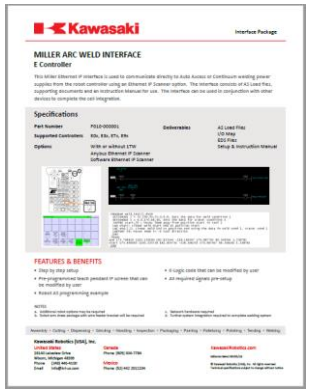
Kawasaki-Miller Welder Interface

The Miller EtherNet/IP™ based interface provides real-time communication between the robot and power source. This interface provides real-time communication between the robot and power source and an Interface Panel displaying welder feedback.

The interface consists of Load files, Supporting documents and Documentation.

- Robot Dress Kit
- Easy Setup
- Programming Example
- Job Editor and Interface Panel
- All required signals are pre-configured



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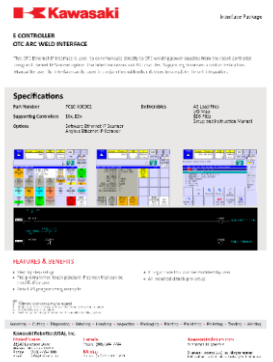
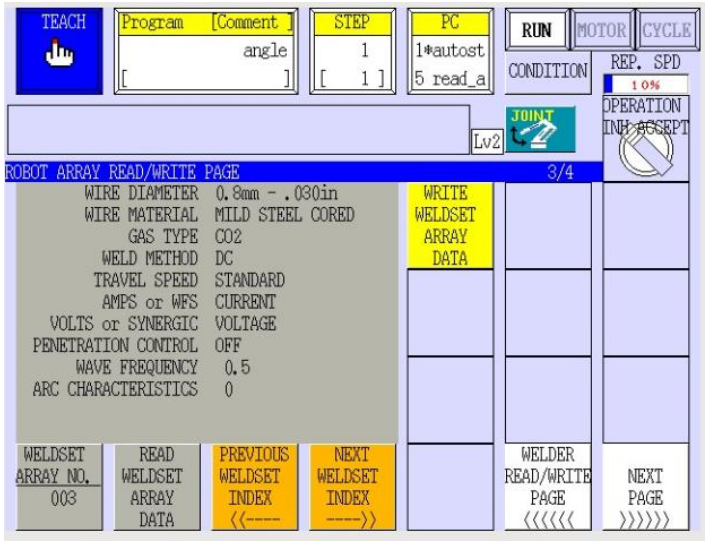
Kawasaki-OTC Welder Interface

The OTC EtherNet/IP based interface provides real-time communication between the robot and power source. Users can select welding processes from the power source library and set-up parameters directly from the teach-pendant.

The interface consists of Load files, Supporting documents and Documentation.

- Robot Dress Kit
- Easy Setup
- Programming Example
- Job Editor and Interface Panel
- All required signals are pre-configured





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Kawasaki-Generic Welder Interface

The generic welder interface is for power-sources that are controlled in a conventional fashion (i.e. Analog reference for Weld Voltage and Wire-Feed plus digital signals for Arc-On, Wire-Feed On) through discrete I/O or fieldbus (i.e DeviceNet, EtherNet\IP).

The interface consists of Load files, Supporting documents and Documentation.

- Easy Setup
- Configuration and Programming Examples

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