

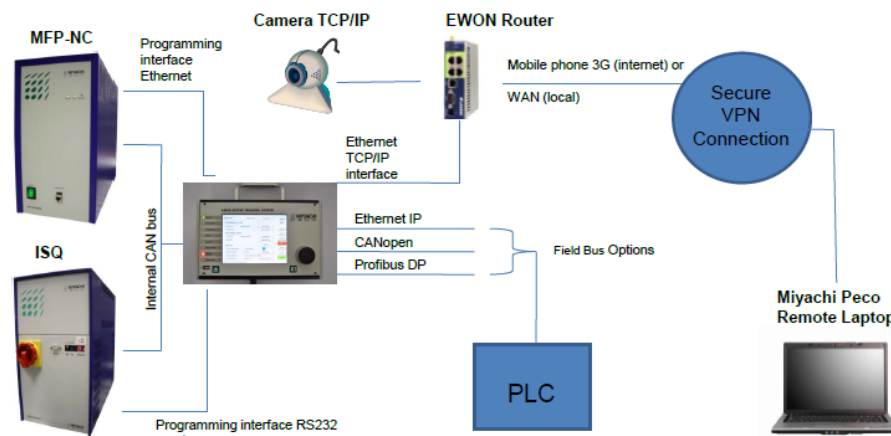
AWS3 Active Welding System

AWS3 Advanced Features and Benefits

- The AWS3 Active Welding System combines the well-known MFP motorised weld heads or weld pincers as well as the ISQ inverter family with a proven motor control all in one unique system. Its various interfaces make AWS3 an easy to integrate system for automation.
- The complete system is an integrated solution providing process control, monitoring and quality analysis all in one.
- The multilingual user interface as well as operating concept are very intuitive and offer an intelligent design, a status line, a menu bar and an interactive user guide with help functions. It has a graphical colour display, status LED, a USB Port and can be operated in various languages. This makes it an intelligent easy to use system.
- Pushing a button allows saving and transferring of critical parameters such as system configuration, data logging and screen shots on a USB stick.
- Integrated process control is ensured for all electrical and mechanical welding parameters i.e. for current, voltage, power time, force and distance.
- AWS3 realises production monitoring through data logging, static and dynamic monitoring, troubleshooting, fault history and statistical process control (SPC). Process stability can be achieved using histogram and run-chart screens.
- Reference waveform management and process analysis with SPC provide an integrated and reliable quality analysis.
- The digital operator or control panel is a robust and very user-friendly device.
- The new remote diagnostics feature allows customers with several AWS3 to monitor production of various workstations and enables MIYACHI PECO technical service to check, adjust and record technical issues or do maintenance from long distance.



Remote Diagnostics



AWS3 Product Overview

The **Miyachi Peco Active Welding System** includes the following components:

Criteria	AWS3 Basic	AWS3 Advanced
Features		
Graphical waveform		x
SPC		x
Process monitoring	static	static, dynamic
Data logging		x
Communication		
Digital I/O	x	x
RS 232	x	x
Ethernet TCP/IP	x	x
CANopen		x
Profibus or Ethernet IP		Optional
Dual Head Operation	Optional	Optional
Hardware		
Operating Panel	AWS3 Display	AWS3 Display Advanced
Motor Control	MFP-NC-AWS3	
Weld Heads	MFP2, MFP1, MFP60, MFP25	
Weld Pincers	MFP2-Z or MFP1-Z	
Welding Control	ISQ20-3K, -6K or -10K	



Active Welding System 3

The Active Welding System is available as basic or advanced version. It includes four main components, which are an operating panel, a welding control, a motor control, a weld head such as MFP60 or a weld pincer such as MFP1-Z.

The AWS3 can control 1 or 2 weld heads or weld pincers depending on the configuration selected. An additional servo module for a second axis is available.

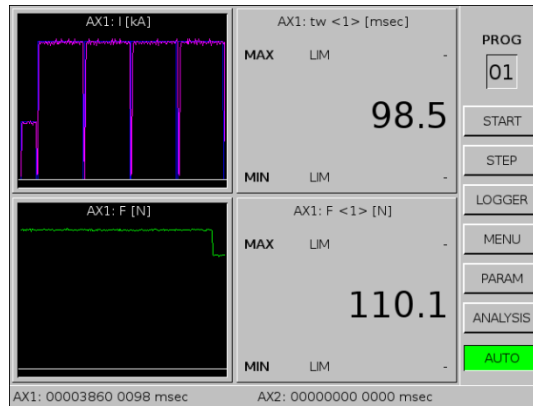
Automatic calculation and monitoring of critical values, programming of weld power and weld force profiles as well as the static and dynamic process monitoring are critical elements to achieve optimum welds. The AWS3 combines these elements into one premium system that enables quick and precise parameter settings.

Remote control services are available for all AWS3 versions and allow the Miyachi technical service experts to trouble shoot several devices on-site or to perform a prompt root cause analysis from long distance by MIYACHI PECO technical experts minimising maintenance cost and giving maximum uptime.

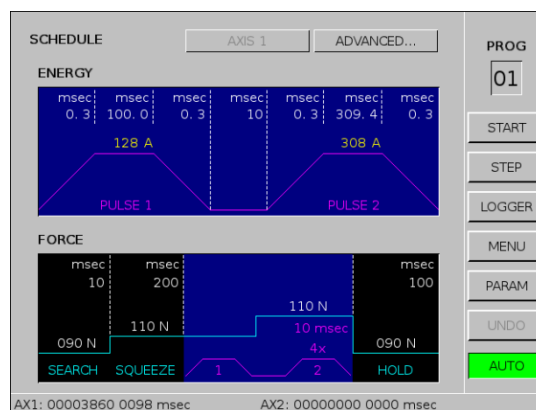
AWS3 Operating Panel

➤ Configurable Run Screen

The high resolution colour display and user configurable run screen enables users to configure the display to show information relevant to their particular job function or chosen welding environment. The AWS3 is operated easily by turning and pushing the toggle wheel. Up to 99 programs for various parameter settings can be stored.

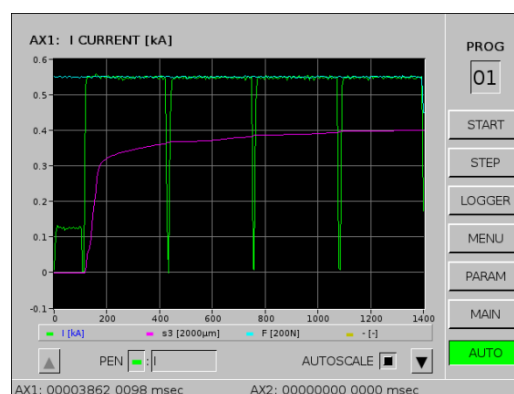


➤ Configuration of Weld Parameters



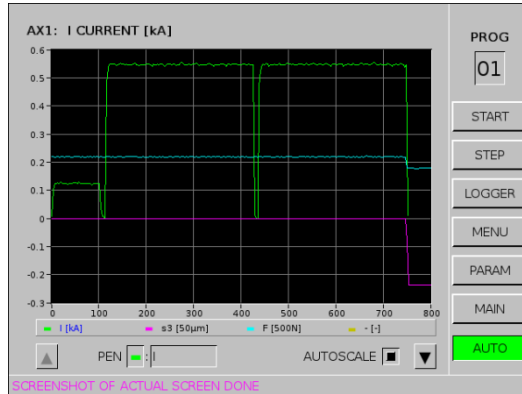
➤ Welding Oscilloscope Functions / Process Development

The AWS3 can be used as oscilloscope for analysing measured waveforms and for comparing measuring values. This can be done all in a single screen using different pen colours for up to four traces.



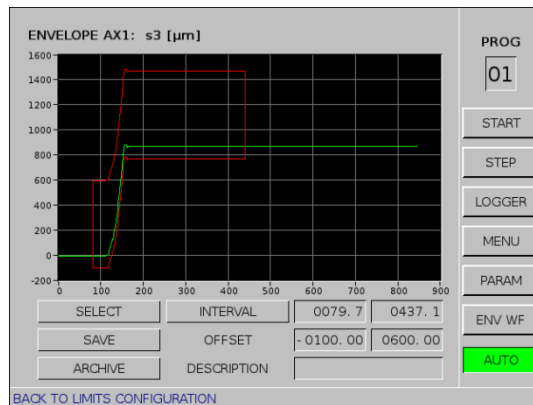
➤ **“Snapshot” Saving Function to USB stick**

Pushing a button saves the current screen as .bmp on a USB stick. Waveforms can be saved as .csv for evaluation. All parameter settings can also be stored as backup file on a USB stick. Standard interfaces are Digital I/O, RS 232 and Ethernet TCP/IP. The AWS3 Advanced version offers even more standard or optional interfaces.



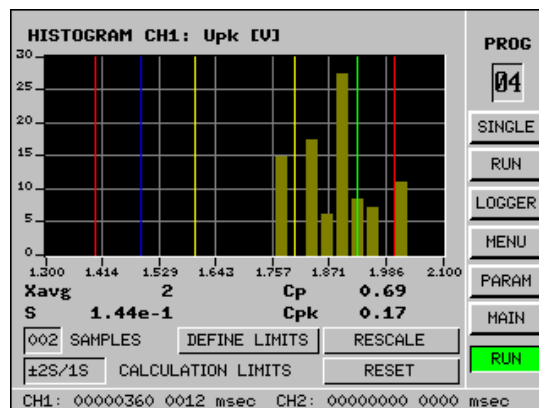
➤ **Dynamic Process Monitoring with Envelope Function**

Reference waveforms can be automatically averaged from numerous welds and results may be used to specify envelope limits applied to the average or typical weld.



➤ **Statistical Process Control (SPC) and Quality Assurance**

AWS3 offers both data logging and on-screen SPC including run charts, histograms and analyses. The Miyachi Peco WinWeld data collection and analysis software provides a comfortable method for process monitoring, comparison and storage.



AWS3 Motor Control

	<i>MFP-NC-K</i>	<i>MFP-NC 19"</i>
Mains Voltage	230V~, Option: 110V~	
Mains Frequency	50 / 60HZ	
Mains Cable	3 x 0,75mm ² , 2m long	
Connected Rating	60W	
Protection Class	IP20	
Cooling	Air cooled	
Operation	Via operating panel AWS3	
Programmable Weld Schedules /External Weld Schedule Selection	99 at single axis; 49 per head at dual axis	
Error Detection	Part detection, servo temperature, weld displacement pass or fail	

AWS3 Weld Pincers

	<i>MFP2-Z</i>	<i>MFP1-Z</i>
Configuration	Floating weld pincers horizontal or vertical mounting; equipped for quick-change electrode holders	
Closing Stroke	Servomotor-driven	
Welding Pressure	Servomotor-driven	
Weld Force max	150 – 600N	50 – 200N
Air Pressure Supply	max 6bar	
Weld Force Adjustment	Via motor control unit	
Electrode Shape	square electrodes 7.5 x 7.5mm depending on application	
Electrode Holder	Two quick-change electrode holders	
Secondary Cables	4x95mm ² , 700mm depending on application	2x95mm ² , 700mm depending on application
Environment Temp.	0-40°C	
Cooling	Water-cooled electrode holders	

AWS3 Weld Heads

	<i>MFP2</i>	<i>MFP1</i>	<i>MFP60</i>	<i>MFP25</i>
Configuration	Servo motorised weld head with stand and quick-change electrode system; MFP-A versions are without a stand.			
Closing Stroke	Servomotor-driven			
Welding Pressure	Servomotor-driven			
Weld Force max	150-600N	50-200N	20-60N	1-25N
Weld Force Adjustment	Via motor control unit			
Electrode Shape	Locked or cylindrical, top and bottom MFP2: d = 10mm; MFP1: d = 6mm; MFP60: d = 3 / 6mm; MFP25: d = 4mm			
Electrode Holder	Quick change holder with anti-rotation protection			
Max Electrode Stroke	25mm		30mm	25mm
Secondary Cables	4x95mm ² , 700mm dep. on application	2x95mm ² , 700mm dep. on application	2x95mm ² , 700mm dep. on appl	2x50mm ² , 700mm dep. on appl
Environment Temp.	0-40°C			
Cooling	Water-cooled electrode holders		Option: water-cooled electrode holder	

AWS3 Welding Control ISQ20

ISQ20-Kompakt	as a compact unit: ISQ20-3K for 3kA ISQ20-6K for 6kA ISQ20-10K for 10kA
The ISQ20 is a weld control, which contains the mains switch, the power and the control electronics. The transformer rectifier block is an extra component for ISQ20-10K.	

<i>General</i>	<i>ISQ20-3K and ISQ20-6K</i>	<i>ISQ20-10K</i>
Weld current type	Controlled DC inverter current	AC or DC inverter
Configuration	Compact version w/integrated transformer, voltage sensor cable	Compact version w/voltage sensor cable; transformer not included
Options	19" plug-in unit ISQ20-MFC	---
Control / Control Mode	Current, voltage or power feedback control, independently adjustable independently for each pulse, APC (Active Part Conditioner) function and current, voltage, performance and energy limits	
Programmable Weld Schedules /External Weld Schedule Selection	99 at single axis; 49 per head at dual axis	
# of weld pulses	1 st and/or 2 nd pulse, 2 nd pulse can be repeated max 10 times (decrease adjustable down to 1% of 2 nd pulse)	
Weld Pulse Control	Up slope, weld-time, down-slope	
Current Measurement	Integrated toroidal coil (Rogowski coil)	external toroidal coil
Voltage Measurement	Potential free, external connection (X10 axis/head 1; X11 axis/head 2)	
Limit Values	Display with limit exceeding. upper and lower limit, time limit, welding energy limit with sensitive components (weld to limit)	
Out of Limit Error Message	Text indication with limit and device errors; monitoring limits for U, I or P; + and – tolerance windows individually adjustable	
Parts Check	Test pulse for part detection (pre-weld-check)	
Operation	One button toggle wheel, colour display, Optional: Profibus or Ethernet IP	

AWS3 Technical Specifications at a glance

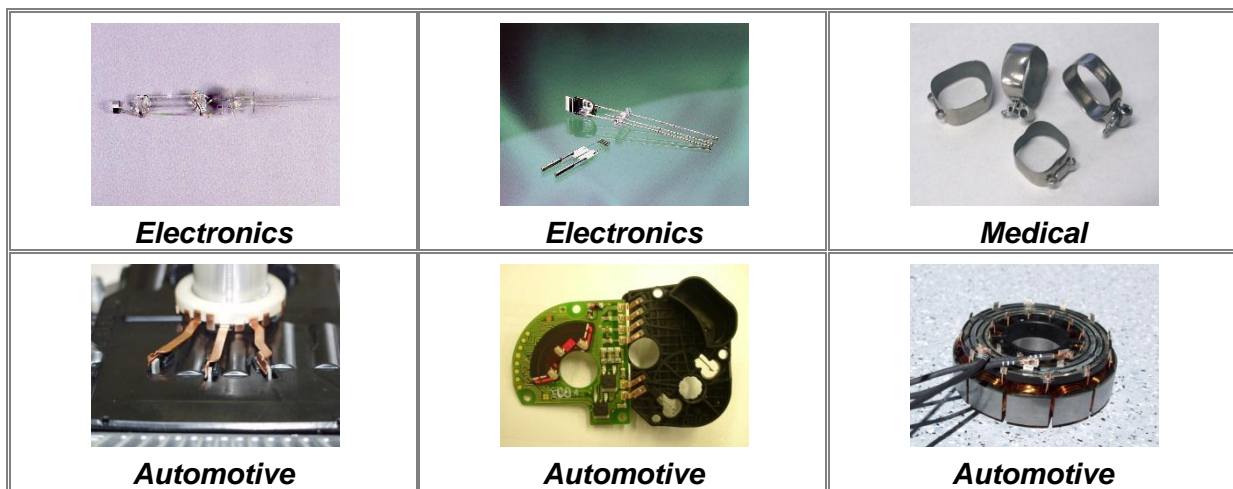
	MFP-NC AWS3	ISQ20-x-AWS3*
Configuration Hardware	Servo weld head control and weld pincer control w/remote control	Welding inverter for regulation and monitoring of electrical parameters and time
Options	19" unit	19" unit (ISQ20-MFC)
Supply Voltage	230V +/- 10% (110V optional)	3 x 400V AC +10%/ -20%
Mains Frequency	50-60 Hz	
Connected Rating	60 W	11 kVA or 22 kVA
Fusing	6A delayed	3 x 16A delayed internal
Mains Cable	3 x 0,75mm ² , 2 m	4 x 2,5mm ² + PE, 2 m long
Protection Class	IP20	IP30
Control/Control Mode	Welding force, speed and positioning control	Current, voltage or power regulations adjustable for each pulse
Weld Head Control	Electrical	Variable hold, rest and repeat times
Programmable and external weld schedules	99 at single axis; 49 per head at dual axis	
# of weld pulses	n/a	1 st and/or 2 nd pulse, 2 nd pulse can be repeated max 10 times (decrease adjustable down to 1% of 2 nd pulse)
Weld transformer	n/a	Internal for 3kA, 6kA; 10 kA requires external transformer
Weld pulse control	Search time, squeeze time, hold time	Up slope, down slope and welding time
Analog in- and output		Pressure sensor and proportional valve
Data Links Standard: Options AWS3 Advanced	Digital I/O, RS232, Ethernet TCP/IP and USB port see AWS3 standard incl. CANOpen, Profibus or Ethernet/IP are optional	
Binary interface input	Configurable setting of e.g. start, quick-stop, proximity switches, pressure sensor, locking cylinder	
Binary interface output	Configurable settings of parts error, displacement error, stepping contact, ready, locking cylinder, additional chargeable options programmable	Configurable settings of ready, locking, stepping contact, counter, set point deviation, closing stroke, welding pressure,
Monitoring Features	Monitoring limits for U, I or P; + and – tolerance windows individually adjustable; advanced parts check with APC function, pre-weld check and current limit with oxidized parts: audio-visual display shows upper and lower limits, time limit and welding energy limit with sensitive components; independent monitoring of current, voltage, power and energy individually for each pulse; display measurements on panel	
Displacement Accuracy	+/-0.01 mm/over the entire stroke of the welding head	n/a
Environment Temp.	0-40°C	
Cooling	Air-cooled	Air-cooled, external transformer water-cooled

***Power Data:** Weld Voltage: 4V at 6kA, Open-circuit: 10V, Inverter frequency: max 20kHz Nominal Power, Max Power Rating and max weld current differ as per ISQ20 version selected, Max weld or pulse period (with 2-impulse weld cycle): 620 ms

AWS3 Weight – Dimensions – Legal Approval

	MFP-NC AWS3	ISQ20-x-AWS3
Weight	approx. 19 kg	ISQ20-3K: approx. 33 kg, ISQ20-6K: approx. 43 kg ISQ20-10K: approx. 20 kg
Dimensions (L x H x D)	216x420x480 mm; 482x133x380 mm (19" unit)	216x420x550 mm; 482x177x330 mm (19" unit)
Legal Approval	CE	CE

AWS3 Applications



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