





ACTIVE WELDING SYSTEM 3 SERVO MOTORISED

The Active Welding System is available as standard or with displacement force measurement 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 MFP400-Z.

The AWS3 can control 1 or 2 weld heads or weld pincers depending on the configuration selected. An additional pneumatic lower stroke unit 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 Amada Miyachi Europe technical service experts to trouble shoot several devices on-site or to perform a prompt root cause analysis from long distance by Amada Miyachi Europe technical experts minimising maintenance cost and giving maximum uptime.



AWS3 Servo Motorised Active Welding System

The AWS3 Active Welding System combines servo motorised weld heads / weld pincers (MFP-series) with an inverter power supply (ISQ-series) and a numeric motor control (MNC-series) 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 (optional touch panel).

The new remote diagnostics feature allows customers with several AWS3 to monitor production of various workstations and enables Amada Miyachi Europe technical service to check, adjust and record technical issues or do maintenance from long distance.

PRODUCT OVERVIEW

The MIYACHI PECO Active Welding System includes the following components:

Criteria	AWS3 servo motorised - Basic	AWS3 servo motorised - Advanced	
Features			
Graphical waveform	X		
SPC		x	
Process monitoring	static	static, dynamic	
Data logging	X		
Communication			
Digital I/O	Х	X	
RS 232	Х	X	
Ethernet TCP/IP	х	x	
Modbus TCP	x		
Profibus or Ethernet IP	Optional		
Control			
Two separate weld heads (figure 4)	Second motor control required		
Dual weld head series, step (figure 5)	Second motor control required		
Force control	X X		
Force monitoring	х	x	
Displacement monitoring	Х	X	
Hardware			
Operating panel (figure 3)	Operating panel OP-AWS3 or Touch screen TP-AWS3		
Motor control (figure 2)	MFP-NC-AWS3		
Weld heads (figure 5)	MFP25, MFP60, newhorizon [™] servo motorised weld heads MFP400, MFP800		
Weld pincers	newhorizon™ weld pincers MFP400-Z or MFP800-Z		
Compacting modules	C16, C25 and C70		
Welding control DC (figure 1)	ISQ20-3, -6, -10 or -20		
Welding control AC	ISQ20-8		



figure 1: ISQ20



figure 2: MNC400



figure 3: Touch screen panel TP-AWS3



figure 4: Two separate MFP400 weld heads



figure 5: MFP400 dual weld head

TECHNICAL SPECIFICATIONS

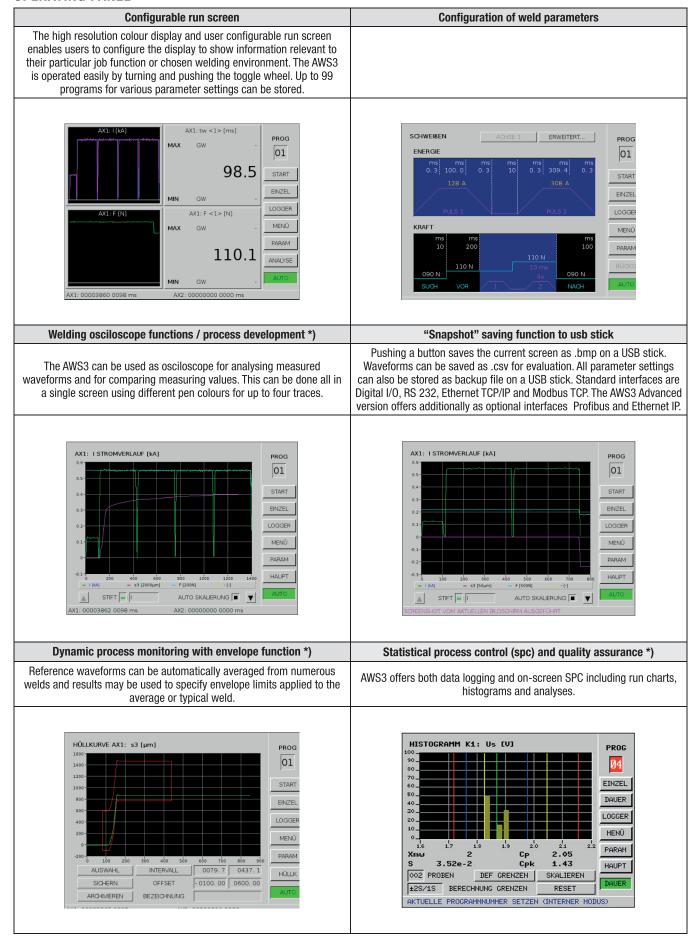
WELDING CONTROL

ISQ20	as a compact unit:	
	ISQ20-3-DC	for 3 kA
	ISQ20-6-DC	for 6 kA
	ISQ20-10-DC	for 10 kA
	ISQ20-20-DC	for 20 kA
	ISQ20-8-AC	for 8 kA
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 ISQ20-8, ISQ20-10 and ISQ20-20.

General	ISQ20-3 and ISQ20-6	ISQ20-8, ISQ20-10 and ISQ20-20	
Weld current type	Controlled DC inverter current	AC or DC inverter	
Configuration	Compact version w/integrated transformer, voltage sensor cable 19" plug-in unit ISQ20-MFC (optional)	Compact version w/voltage sensor cable; transformer not included	
Supply voltage	3 x 400 V 3 x 230 V 3 x 440-480 V	3 x 400 V 3 x 440-480 V	
Mains frequency	50-60 l	łz	
Protection class	IP30		
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	1st and/or 2nd pulse, 2nd pulse can be repeated max 10 times (decrease adjustable down to 1% of 2nd 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)		
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		
Force measurement	Internal		
Displacement measurement	Internal		
Operation	One toggle wheel, colour display, Optional: Profibus or Ethernet IP or optional touch screen		
Weld transformer	internal	external	
Analog in- and output	Pressure sensor and proportional valve, 0-10 VDC		
Data links (partly on display unit)	Digital I/O, RS232, Ethernet TCP/IP and USB port see AWS3 standard incl. Modbus, 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 ready, locking, stepping contact, counter, set point deviation, closing stroke, welding pressure,		
Environment temp.	0 - 40 °C		
Cooling	Air-cooled, external transformer water-cooled		
Legal approval	CE		
	, Open-circuit: 10 V, Inverter frequency: max 20 kHz Nomina ax weld or pulse period (with 2-impulse weld cycle): 620 m		

OPERATING PANEL



DISPLAY

	Operating panel (OP-AWS3)	Touch screen panel (TP-AWS3)
Resolution	VGA (5,7", diagonal 14,5 cm)	VGA (8,5", diagonal 21 cm)
Interface	2nd TCP-IP (RJ45)	2nd TCP-IP (RJ45)
Operation	One push/turn button	Touch
Data storage	USB stick	USB stick
Dimensions WxHxD	228x144x78 mm (without holder)	292x198x75 mm (105 with adapter)

WELD HEADS

	MFP25	MFP60	MFP400	MFP800
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	1-25 N	25-60 N	60-400 N	100-800 N
Weld force adjustment	Via motor control unit			
Electrode shape	Locked or cylindrical, top and bottom MFP25: d = 4 mm; MFP60: d = 3 / 6 mm; MFP400: d = 6 mm; MFP800: d = 10 mm			
Electrode holder	Quick change holder with anti-rotation protection			
Max electrode stroke	25 mm		30 mm	25 mm
Secondary cables	2x50 mm² 700 mm dep.on application	2x95 mm², 700 mm dep. on application	2x95 mm², 700 mm dep.on application	4x95 mm², 700 mm dep. on application
Environment temp.	0-40 °C			
Cooling	Option: water-cooled electrode holders		Water-cooled electrode holder	
Series weld head configuration	yes	yes	yes	yes

MOTOR CONTROL

	MNCx-Ax	
Configuration hardware	Servo weld head control and weld pincer control w/remote control	
Supply voltage	230 V +/- 10% (110 V optional)	
Mains frequency	50-60 Hz	
Protection class	IP20	
Weld head control	Welding force, speed and positioning control: - One servo motorised weld head or pincer - Two servo motorised weld heads or pincers **) - One dual servo motorised weld head **) - One compacting unit - Two compacting units**)	
Programmable and external weld schedules	99 at single axis; 49 per head at dual axis	
Weld pulse control	Search time, squeeze time, hold time	
Displacement accuracy	+/-0.01 mm/over the entire stroke of the welding head	
Environment temp.	0-40 °C	
Cooling	Air-cooled	
**) second motor control required	·	

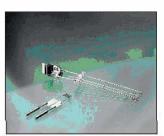
WEIGHT & DIMENSIONS

	MNCx-Ax	ISQ20-X
Weight	approx. 19 kg	ISQ20-3: approx. 33 kg ISQ20-6: approx. 43 kg ISQ20-8 and ISQ20-10: approx. 20 kg ISQ-20-20 approx. 21 kg
Dimensions (L x H x D)	216x420x480 mm; 482x133x380 mm (19" unit)	216x420x550 mm; 482x177x330 mm (19" unit)

TYPICAL APPLICATIONS



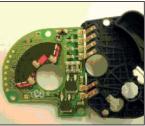
Electronics



Electronics



Automotive



Automotive



Medical engineering



Automotive



