

Synergic Pulse welding units for automation and robotics





Technology for MIG/MAG- and the PulseARC-Process!

MERKLE POWER SOURCES

With the power sources HighPULSE 352, 452 and 552 RS Merkle offers a perfectly balanced performance program for all demands in the automation of your welding processes.

The HighPULSE line consists of Synergic PulseARC welding power sources which are especially designed for the interface with Robots and CNC controllers. Based on modern and highly efficient, high performance 100 kHz inverter power modules and 32 bit high speed processors.

HighPULSE Power Sources:

Type	WELDING CURRENT
HighPULSE 352 RS	20 - 350 A, 60 %
HighPULSE 452 RS	20 - 450 A, 50 %
HighPULSE 552 RS	20 - 550 A, 40 %

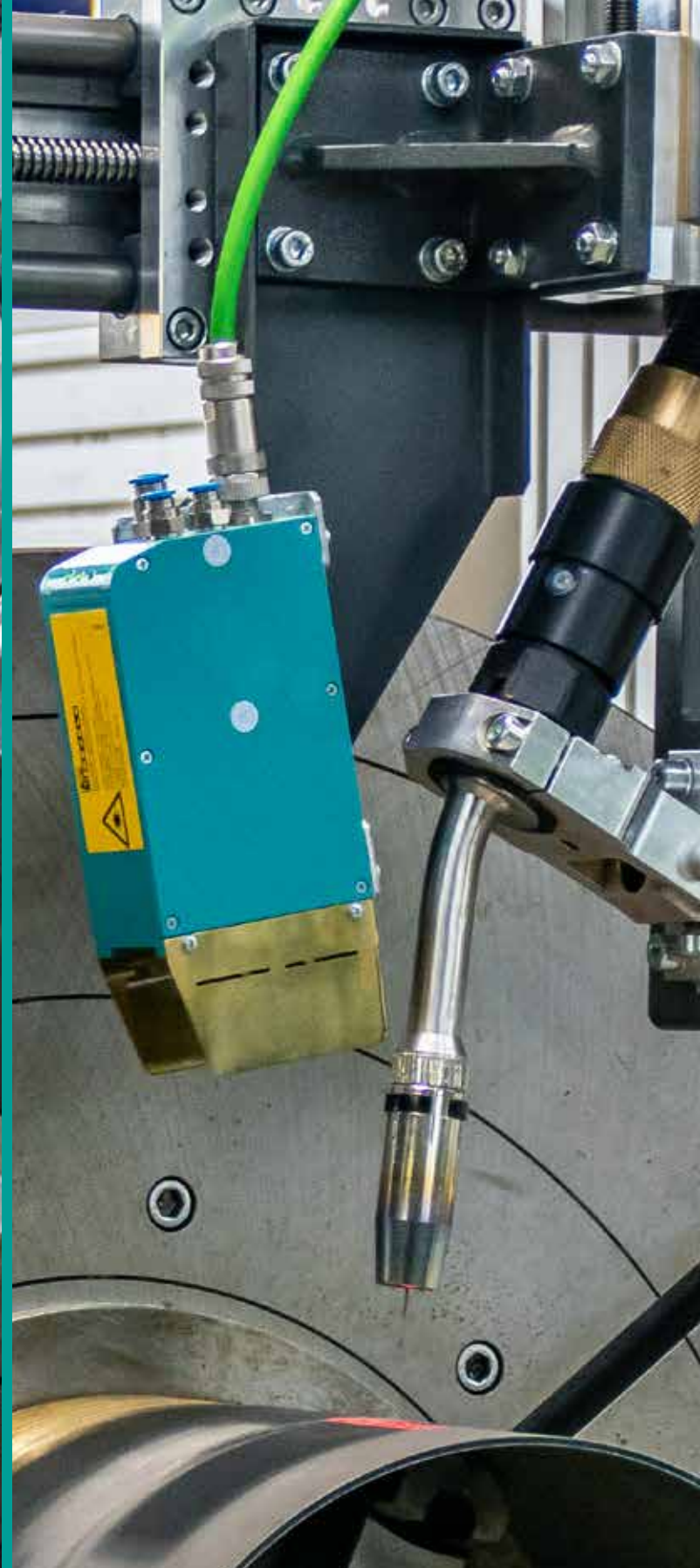
OUR POWER SOURCES ARE PERFECTLY SUITED FOR THE FOLLOWING WELDING PROCESSES:

- MIG/MAG
- PulseARC
- MIG Brazing
- High-Performance Welding (HighPULSE 552 RS)
- DeepARC
- ColdMIG
- HighUP
- ProSWITCH
- Interpulse

INTERFACE OPTIONS:

Various versions of interface for control of the welding power sources are available:

- Merkle Q.MACS
- Bus interfaces:
 - DeviceNet
 - CANopen
 - Profibus
 - Interbus
 - ProfiNet
 - Ethernet
 - other bus interfaces on demand
- Analog interface
- Digital job operation



TACTILE SENSOR

A simple mechanical surface scan in 2 axis, e.g. height and sideways correction, is possible with the tactile sensor. The mechanical movement through the tactile sensor is transmitted over the electrical controller directly to the motorized slides. Various exchangeable sensor tips are available to enable a constant and precise control when riding over spot welds, stamped holes etc.

LASER SENSOR

The laser sensor is used to achieve a contactless scan of the weld bead position. Three parallel beams of light illuminate the welding joint. The outputs are analog signals for controlling the torch by motorized slides in height and horizontal movement. To enable a successful scanning of the joint, a Hi-Lo, a lip, or an air gap of at least 0.2 mm (0.008") is required.

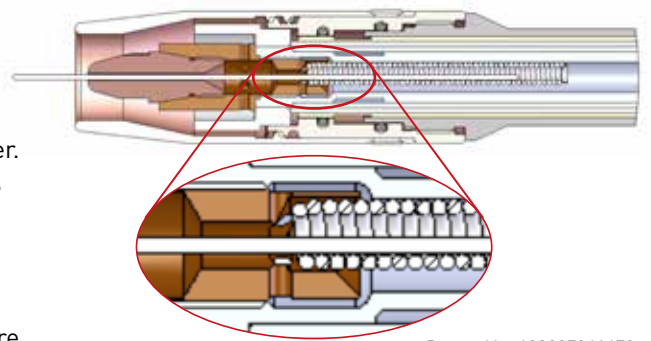


Patented technology for perfect welding results

RELIABILITY AND FUNCTIONALITY

Patented: Forced Wire Contact:

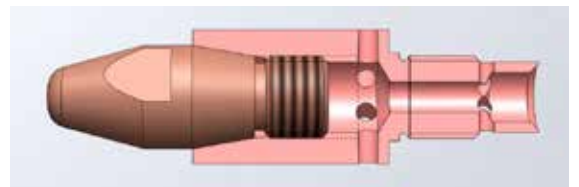
- This Merkle patent ensures that the wire is forced into contact with the contact tip through eccentric feeding into the tip holder. A permanent electrical contact between wire and contact tip is thus guaranteed under all conditions.
- The result is perfect quality, process safety and reliability even under the most difficult operating conditions.
- For the reliable evacuation or wire dust evacuation channels are integrated into the tip holder.



Patent No. 102007061678

Conical Contact Tip:

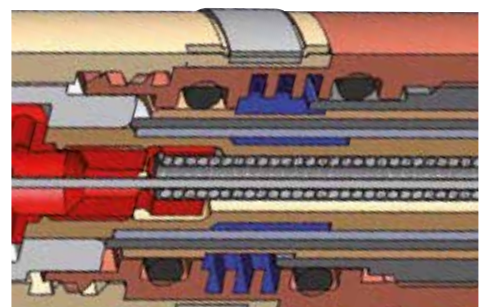
- The contact tip is received conically into the tip holder. This increases the contact area and improves cooling.



Twin Chamber Cooling System:

Our proven cooling systems ensures:

- Optimal cooling of the gas nozzle directly through the water jacket.
- Systematic and reliable transport of heat from the inside of the torch.





The first choice for automation and robotics!

WELDING TORCH

ROB 505/355 W

Automation and Robotic Welding Torch ROB 505 W:

Three versions are available: straight, 22° bent or 45° bent. All three versions impress through a robust construction, with the torch neck manufactured in stainless steel, capable of withstanding the most arduous conditions. With the quick change mechanism a simple exchange of torch bodies is possible. The TCP remains accurate even after a torch body change.

Standard and High Performance Gas Nozzles:

Both types of gas nozzle offer, through a combination of push-on and screw fixing, an optimized heat conductance and a perfect mechanical restraint. The High Performance gas nozzle is designed for extreme heat loads.

Gas nozzle	Standard version	High performance version
Duty cycle* 60 %	450 A (36.5 V)	500 A (39.0 V)
Duty cycle* 100 %	400 A (34.0 V)	450 A (36.5 V)

* With MIG/MAG using mixed gas 82/18

Optional Push-Pull System:

When welding with aluminium wires, very thin welding wires, or long hose assemblies, we recommend the use of our push-pull gearbox. The system is attached between the welding torch body and the fixing flange. It ensures that a permanent tensioning load is applied to the welding wire, guaranteeing a reliable and constant wire feed under the most difficult conditions.

Hollow Wrist Robot Welding Torch ROB 355 W:

The Merkle welding torch for hollow wrist robots offers all the benefits of our forced wire contact and twin chamber cooling. The hose package allows an unlimited rotation about its own axis and therefore a 360° rotation of the robot welding torch about the robot arm axis.





Technology leading solutions for the highest usability!

PERIPHERY COMPONENTS

Water Cooling Unit WK 325:

- Mounting directly under the welding power source (if required)
- Highly effective cooling capabilities due to the high performance water pump and high performance heat exchanger
- Optional connector on the welding power source as well as coolant pressure monitoring over the electrical connection on the rear of the machine



Torch Cleaning System with integrated Wire Trimming Station:

- Mechanical cleaning
- Milling head available as spare/wear part
- Function for applying anti spatter spray

Intergrated Crash Protection:

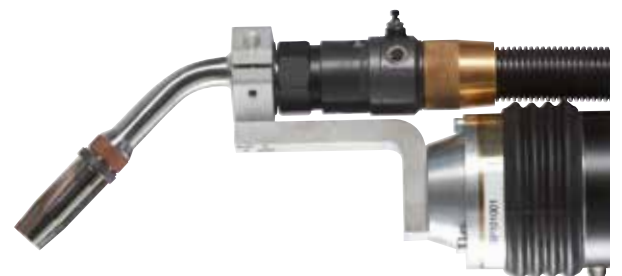
A totally reliable damage limitation system resulting from the fully intergrated crash protection for standard and hollow wrist robots:

Standard Crash Protection

- Protects the robot and torch from major damage
- Collision protection with an especially long shutdown stroke whilst still maintaining the highest levels of TCP precision
- Mounting flange for all common robot types

Hollow Wrist Crash Protection

- Suitable for hollow wrist robots
- Unlimited rotation possibilities for the hose package
- Transportation of coolant feed and return





Precise wire feed control for best results!

WIRE FEEDING SYSTEMS

Standard Wire Feed Unit ROB DV 26

For standard robots, hollow wrist robots and automation

- 4 roller gearbox, 0.5 - 25 m/min
- Button for gas test
- Purge function
- Compact design, only 5 kg



High Performance Wire Feed Unit ROB DV 32

For standard robots and automation

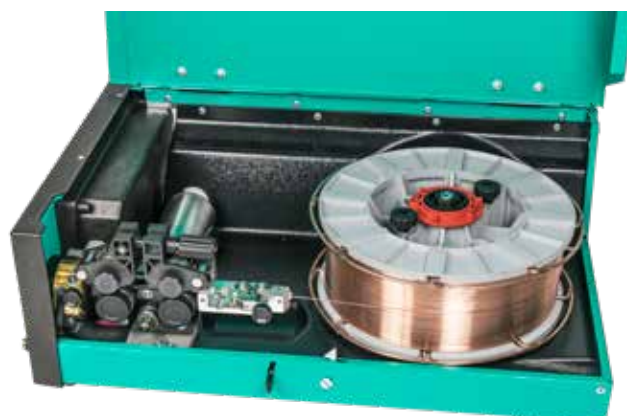
- 4 roller gearbox, 0.5 - 30 m/min
- Wire straightening module (option)
- High performance motor
- Gas test and purge functions



Wire Feed Unit Auto DV 31

For Automation

- Room for an internal wire spool D300/15



3.3.1. HighPULSE 352 RS

Primary:

Power supply:	3 x 400 V
Frequency:	50 / 60 Hz
Contin. power:	12 kVA
Contin. current:	17 A
Max. current:	25 A
cos phi:	0.98

Secondary:

Open circuit voltage:	57 V
Welding voltage:	15 - 31.5 V
Welding current:	20 - 350 A
Duty cycle 60% (10 min.):	350 A (40 °C)
Duty cycle 100%:	300 A (40 °C)



Protection class:	IP 23
Insulation class:	H
Cooling:	AF
Arc length:	Automatic energy control
Program capacity:	512 programs
Programs:	MIG/MAG, PulseARC, MIG brazing, DeepARC, ColdMIG, HighUP, ProSWITCH, InterPULSE
Program selection:	material, wire diameter and gas at the display (option)
Gas check:	button with hold function and automatic switch off
Wire inching:	button
Digital display:	current, voltage, wire feed speed and material thickness with pre-display and hold function
Energy adjustment:	control via the interface, job operation mode
LEDs:	mains, failure, temp. protection, hold function
Automated functions:	choke inductance, pulse shape, wire burn back adjustable at display, soft start programmable
Job mode:	2000 jobs programmable
Power source:	inverter
Sockets 95 mm ² :	earth lead and torch
Torch cooling:	external water cooler (option)
Socket water cooling unit:	6-pol.
Mains supply cable:	4 x 2.5 mm ² , 5 m long with plug 3 x 400 V, 32 A
Gas hose:	2 m
Stabilization:	± 10 % power mains fluctuation
Norm:	EN 60974-1 "S" / CE
Air filter:	as a standard
Weight:	51 kg
Dimensions l x w x h:	740 x 350 x 690 mm

Roboter interface:	bus interface (Profibus, DeviceNet, CANopen, interbus, analogue interface, etc.)
Communication:	RS 232, ethernet 10 Mbit with RJ45 connector (option)

3.3.2. HighPULSE 452 RS

Primary:

Power supply:	3 x 400 V
Frequency:	50 / 60 Hz
Contin. power:	14.4 kVA
Contin. current:	25 A
Max. current:	34 A
cos phi:	0.98

Secondary:

Open circuit voltage:	72 V
Welding voltage:	15 - 36.5 V
Welding current:	20 - 450 A
Duty cycle 50% (10 min.):	450 A (40 °C)
Duty cycle 60% (10 min.):	400 A (40 °C)
Duty cycle 100%:	330 A (40 °C)



Protection class:	IP 23
Insulation class:	H
Cooling:	AF
Arc length:	Automatic energy control
Program capacity:	512 programs
Programs:	MIG/MAG, PulseARC, MIG brazing, DeepARC, ColdMIG, HighUP, ProSWITCH, InterPULSE
Program selection:	material, wire diameter and gas at the display (option)
Gas check:	button with hold function and automatic switch off
Wire inching:	button
Digital display:	current, voltage, wire feed speed and material thickness with pre-display and hold function
Energy adjustment:	control via the interface, job operation mode
LEDs:	mains, failure, temp. protection, hold function
Automated functions:	choke inductance, pulse shape, wire burn back adjustable at display, soft start programmable
Job mode:	2000 jobs programmable
Power source:	inverter
Sockets 95 mm ² :	earth lead and torch
Torch cooling:	external water cooler (option)
Socket water cooling unit:	6-pol.
Mains supply cable:	4 x 6.0 mm ² , 5 m long with plug 3 x 400 V, 32 A
Gas hose:	2 m
Stabilization:	± 10 % power mains fluctuation
Norm:	EN 60974-1 "S" / CE
Air filter:	as a standard
Weight:	62 kg
Dimensions l x w x h:	740 x 350 x 690 mm

Roboter interface:	bus interface (Profibus, DeviceNet, CANopen, interbus, analogue interface, etc.)
Communication:	RS 232, ethernet 10 Mbit with RJ45 connector (option)

3.3.3. HighPULSE 552 RS

Primary:

Power supply: 3 x 400 V
Frequency: 50 / 60 Hz
Contin. power: 19.4 kVA
Contin. current: 28 A
Max. current: 45 A
cos phi: 0.98

Secondary:

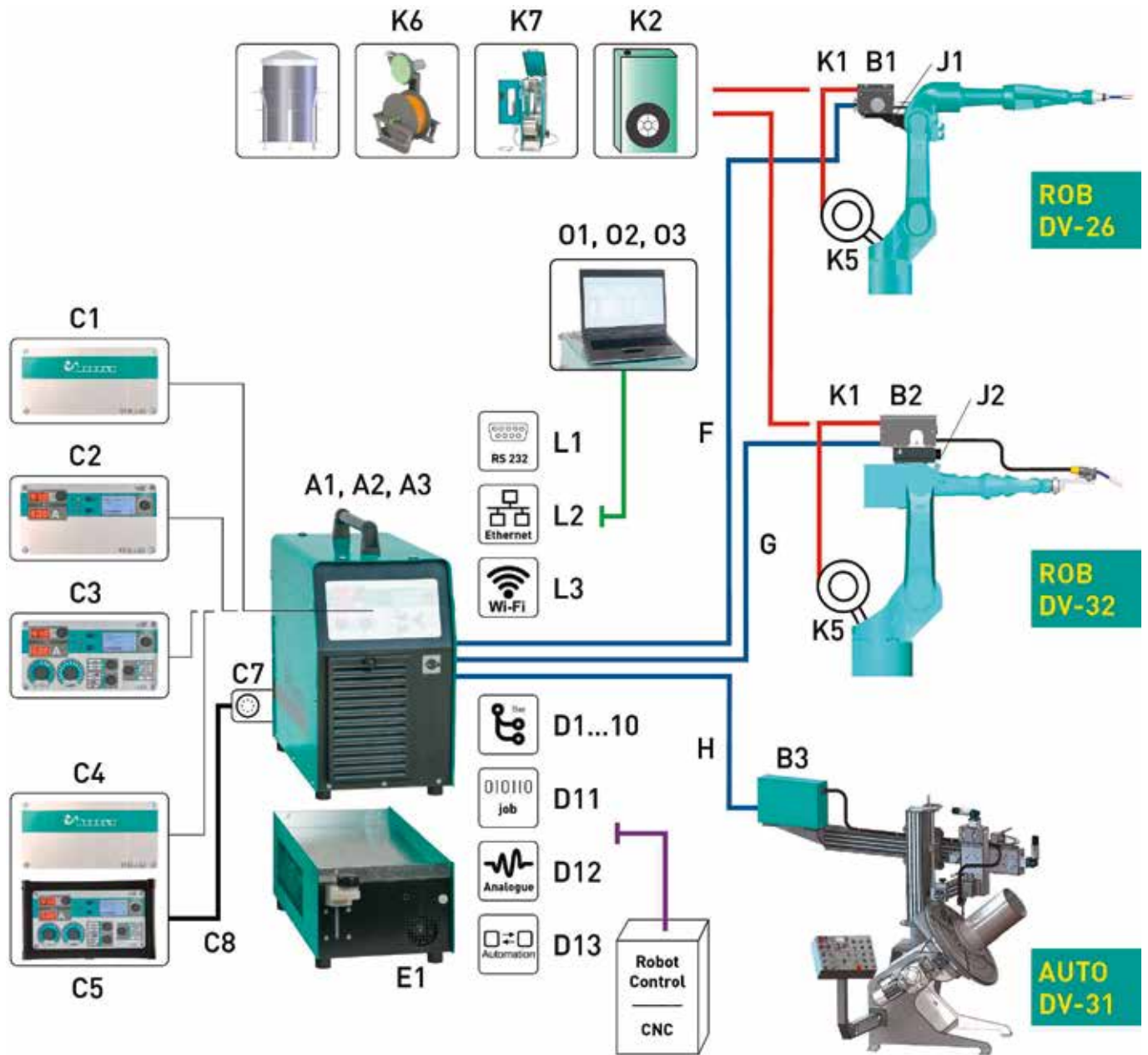
Open circuit voltage: 72 V
Welding voltage: 15 - 41.5 V
Welding current: 20 - 550 A
Duty cycle 40% (10 min.): 550 A (40 °C)
Duty cycle 50% (10 min.): 500 A (40 °C)
Duty cycle 60% (10 min.): 550 A (20 °C) | 470 A (40 °C)
Duty cycle 100%: 500 A (20 °C) | 420 A (40 °C)



Protection class: IP 23
Insulation class: H
Cooling: AF
Arc length: Automatic energy control
Program capacity: 512 programs
Programs: MIG/MAG, PulseARC, MIG brazing, DeepARC, ColdMIG, HighUP, ProSWITCH, InterPULSE
Program selection: material, wire diameter and gas at the display (option)
Gas check: button with hold function and automatic switch off
Wire inching: button
Digital display: current, voltage, wire feed speed and material thickness with pre-display and hold function
Energy adjustment: control via the interface, job operation mode
LEDs: mains, failure, temp. protection, hold function
Automated functions: choke inductance, pulse shape, wire burn back adjustable at display, soft start programmable
Job mode: 2000 jobs programmable
Power source: inverter
Sockets 95 mm²: earth lead and torch
Torch cooling: external water cooler (option)
Socket water cooling unit: 6-pol.
Mains supply cable: 4 x 6.0 mm², 5 m long with plug 3 x 400 V, 32 A
Gas hose: 2 m
Stabilization: ± 10 % power mains fluctuation
Norm: EN 60974-1 "S" / CE
Air filter: as a standard
Weight: 64 kg
Dimensions l x w x h: 740 x 350 x 690 mm

Roboter interface: bus interface
(Profibus, DeviceNet, CANopen, interbus, analogue interface, etc.)
Communication: RS 232, ethernet 10 Mbit with RJ45 connector (option)

3.3.4. Robot Synergic Pulse welding units



PRODUCT RANGE

- MIG/MAG Welding Units
- Synergic Pulse Welding Units
- TIG Welding Units
- MMA / Stick Electrode Welding Units
- Plasma Welding and Cutting Units
- Turntables and Roller Drive Units
- Welding and Cutting Torches
- Automation Components and Solutions
- Merkle Robotics



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