

Power Wave® 455M Robotic & Power Wave® 455M/STT® Robotic



Superior Arc Performance. Revolutionary Communication.

For welding thicker materials with robotics and hard automation, choose the Power Wave® 455M Robotic. For those applications where heat input control, minimal distortion, and reduced spatter are essential, opt for the Power Wave® 455M/STT® Robotic. Both models feature Waveform Control Technology® for superior arc performance on a variety of materials, including steel, stainless steel, aluminum and nickel alloys. Both deliver custom control of the arc for a given wire type, size and shielding gas configuration for consistent welds time after time.

The Power Wave® 455M Robotic and Power Wave® 455M/STT® Robotic are designed to be components in a modular, multi-process welding system capable of digital communication with other industrial machines to create a highly integrated and flexible welding cell.

Processes

MIG, Pulsed, STT, Flux-Cored



Output



Input



Advantage Lincoln

- Choose from over 60 standard welding waveform programs that offer a broad range of electrode size, type and shielding gas combinations to give you optimal appearance, penetration, beadshape and travel speed for each application.
- Modular design enables robotic, hard automation and semiautomatic applications using a single machine platform.
- Optional communication modules provide networking capabilities via DeviceNet™ or Ethernet.
- Utilizes ArcLink® - the leading digital communication protocol for welding, making it the best choice for seamless, time critical integration to the power source and networked equipment.
- Software based controls can be upgraded as new features become available.
- Process and production monitoring with access to real time (500Hz) feedback such as arc current, voltage and wire feed speed. Access to internal data acquisition (10KHz) and access to real time machine status such as fault/alarm conditions and arc time.
- A Power Wave® inverter operates at a high efficiency (88-90%) with a 95% minimum power factor (at rated output) and is capable of operating from a universal input voltage (208 to 575 volts).
- Power Wave® 455M/STT® Robotic features Lincoln's Surface Tension Transfer® Process, which controls heat input for great penetration control and reduced spatter and fumes.

TECHNICAL SPECIFICATIONS

Product Name	Product Number	Input Voltage	Rated Output Current/Voltage/Duty Cycle	Input Current @Rated Output	Output Range	Dimensions H x W x D in (mm)	Net Weight lbs (kg)
Power Wave® 455M Robotic	K2262-1	208/230/460/575/3/50/60	60Hz: 450A/38V/100% (570A/43V/60%)	60Hz: 58/53/25/22A (82/78/37/31A)	5-570A	26.1 x 19.9 x 32.9 (663 x 505 x 835)	286 (130)
Power Wave® 455M/STT® Robotic	K2263-1		50Hz: 400A/36V/100% (500A/40V/60%)	50Hz: 49/45/23/18A (67/61/31/25A)			293 (133)

PERFORMANCE

- The Power Waves® contains a large library of welding programs or “weld modes.” Each weld mode is a specific software program that defines the output characteristics of the power source for simple processes like Stick and TIG to more complex processes like Synergic MIG (GMAW) and Pulsed MIG (GMAW-P). Weld modes were developed to handle a broad range of applications. They may be tuned to a specific electrode type, electrode diameter, gas type or application.
- All Power Waves® share a common digital control platform to maximize interoperability, interchangeability and compatible software tools.

Nextweld

Lincoln's Power Wave® power sources are equipped with Nextweld® innovations that offer seamless system integration, high efficiency and reliability, and outstanding arc control. Here are just a few of Nextweld's technologies and processes that are standard with this machine.

- Waveform Control Technology® controls and shapes the output waveform. Optimizes metal transfer to reduce spatter and improve stability. Simplifies process selection and controls heat input.
- Surface Tension Transfer® (STT®)(1) is a Waveform Control process that uses current controls to adjust the heat independent of wire feed speed, provides low heat input without overheating or burning through. Distortion, spatter and smoke are reduced.
- The Power Wave® 455M features Ethernet and DeviceNet™ compatibility, as well as ArcLink®, the leading communication protocol for welding and the best choice for seamless, time critical integration to the power source and networked equipment.

- Power Wave® Robotic Welding Systems feature weld mode selection, PRE-FLOW, RUN-IN, ARC CONTROL, BURNBACK, POST-FLOW and CRATER that provide the operators full control over the welding procedure and sequence.
- Synergic welding eliminates the need to independently set the wire feed speed and voltage. Synergic welding automatically sets both voltage and pulse characteristics based on the wire feed speed.

WHAT IS NEXTWELD®?



Nextweld® incorporates Lincoln's technologies, processes and products to create a technologically advanced arc welding platform. Waveform Control Technology®, power electronics and digital communications provide the foundation for Nextweld innovations, including Surface Tension Transfer®, Pulse-On-Pulse™,  Chopper Technology®, ArcLink™ and many more. Try Nextweld® products for ultimate arc control, high efficiency/reliability, and seamless system integration.

- State-of-the-Art Inverter technology provides high power efficiency, excellent welding performance and a lightweight, compact design. Rigorous environmental, mechanical and weld testing ensures ruggedness and reliability.

FEATURES

- When connected to a Fanuc robot, welding software is accessible via the Robot's teach pendant or a computer via the RS232 serial port.
- Welding software is upgradable via the RS232 serial port or via a network using the optional Ethernet module.
- Simple, reliable input voltage changeover.

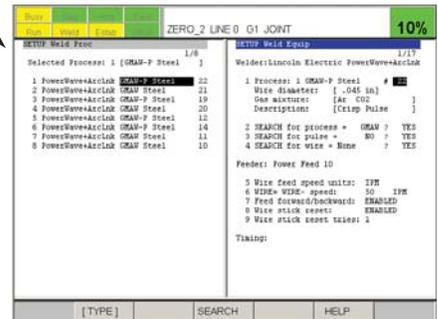
- Auto device recognition simplifies accessory cable connections.
- Individual status light for each system component.
- DeviceNet™ or Ethernet modules can be field installed.

Robot Teach Pendant

- Select from over 60 standard welding procedures in the power source library from the robot's Teach Pendant.
- Search by process and wire type.
- Full access to all power source details, including: control loop gains, machine calibration, arc statistics, unfiltered feedback signals.
- Access to power source diagnostic such as fault/alarm status/details.
- ArcLink® is a leading digital communications protocol for sharing information between intelligent components in an arc welding system.
- Individual status light for each system component.



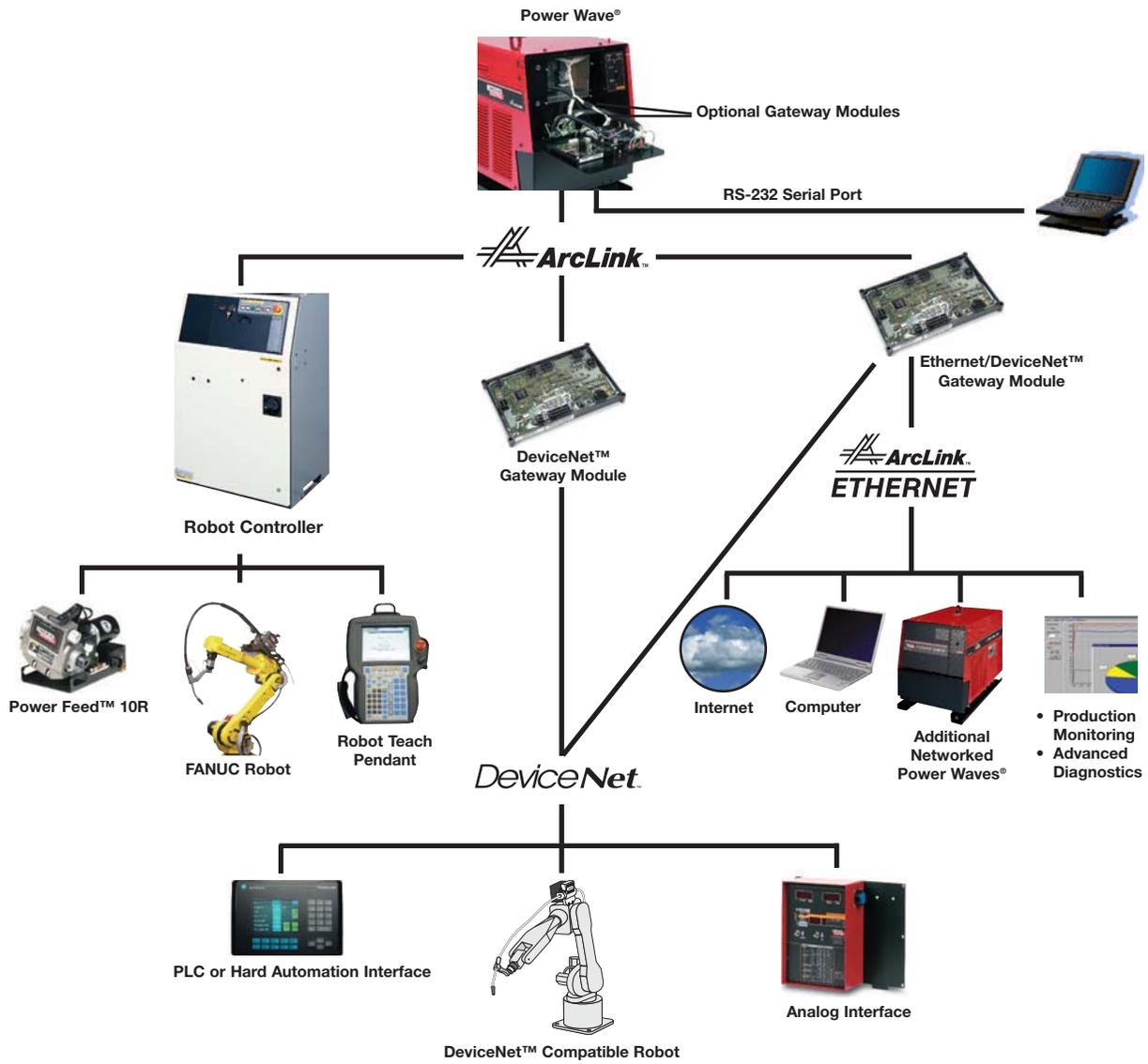
FANUC Robot Teach Pendant



Welding Software

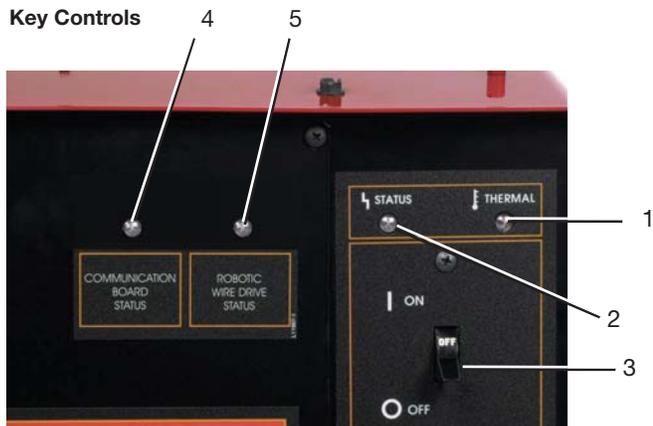
(1) Power Wave® 455M/STT® only

*Digital Communications,
Seamless Integration*



A CLOSER LOOK

Key Controls



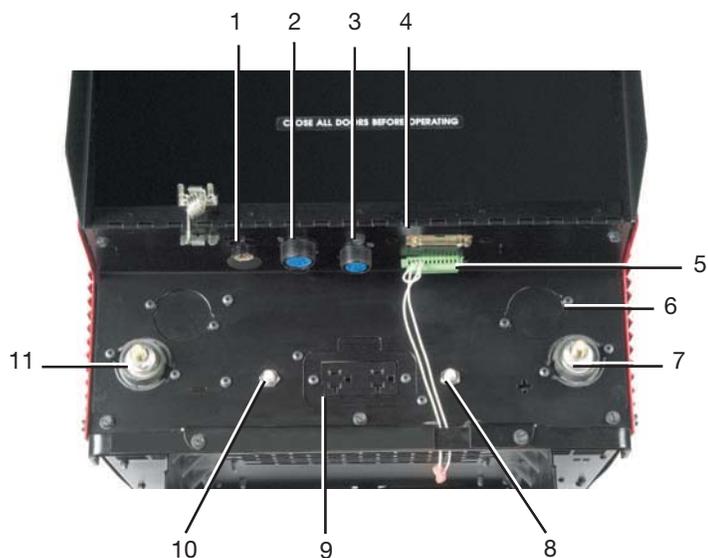
1. Thermal Light
2. Power Supply Status Light
3. On/Off Switch
4. Communication Module Status Light (DeviceNet™ or Ethernet/DeviceNet™) (Optional)
5. Feeder Status Light (for Power Feed™ 10R or AutoDrives™)

Power Wave® 455M Robotic and 455M/STT® Robotic Front Panel.



1. Communication Interface Module - DeviceNet™ or Ethernet/DeviceNet™ upgrades can be field installed.

Power Wave® 455M Robotic and 455M/STT® Robotic Front Panel.



1. Devidenet™ or Ethernet/DeviceNet™ Receptacle (optional)
2. ArcLink Receptacle
3. Work Sense Lead Receptacle
4. RS-232 Diagnostic Receptacle
5. External Input Connector
6. STT Stud on Power Wave® 455M/STT® (not shown)
7. Positive Output Stud
8. CB2 (10A) 115V AC
9. 115VAC Receptacle
10. CB1 (10A) 40VDC
11. Negative Output Stud

Front Lower Panel

INTERFACE OPTIONS



- ArcLink is a digital communication protocol designed specifically for the arc welding industry. It integrates welding systems and networked components to create a flexible welding cell.
- ArcLink is a Controlled Area Network (CAN) based network with a 40V supply.
- ArcLink is used to connect the welding equipment such as the power supply and wire feeder together where reliable, priority-based operation is essential.



ArcLink Cable Connector

DeviceNet

- DeviceNet™ is a network that provides connections between simple industrial devices (such as sensors and actuators) and higher-level devices (Programmable Logic Controllers [PLC]). The Power Waves® can be interfaced with DeviceNet using a K2206-1 DeviceNet™ interface module.



DeviceNet™ Cables



- Data is transmitted through wide area network (10 baseT, IEEE 802.3 Compliant). Monitor/control all equipment from a single interfaced desktop computer. The Power Waves can be interfaced with Ethernet using a K2207-2 Ethernet/DeviceNet™ Interface Module.
- Also includes full DeviceNet™ capability.



Ethernet Cables

Hard Automation - DeviceNet™

- Standardized PLC connections enable engineers to connect welding systems to other automation devices. Sample application templates make it easy to implement typical control features. The Power Waves® require a K2206-1 or K2207-2 Interface Module.



Allen-Bradley Panelview 600

Serial

- All Lincoln digital equipment is configured with a serial interface.
- All software services are accessible for maintenance.
- RS-232 serial interfaces are inexpensive and easy to use and understand.

Analog

- This module provides Analog and Discrete Inputs/Outputs (I/O) for trigger controls plus feedbacks.



RS-232 Cable



RS-232 Port on the front lower panel of the machine.

WHAT IS DIGITAL COMMUNICATIONS?



Nextweld's® digital communications offers fabricators a fast, reliable, inexpensive way to integrate and operate equipment. Large amounts of data transmit reliably and accurately, and wiring costs are relatively low, especially when the number of devices on the network increase.



Analog Interface

QUALITY AND RELIABILITY

Design

Safety, reliability and serviceability are built into Lincoln's inverter design.

- A Power Wave® inverter operates at a high efficiency (88-90%) with a 95% minimum power factor at rated output and is capable of operating from a universal input voltage (208 to 575 volts).
- Open construction for preventative maintenance and diagnostics.
- Thermostatically protected.
- Electronic output over-current protection and electronic input over-voltage protection.
- Operating Temperature Range: -20°C to +40°C.
- Storage Temperature Range: -40°C to +40°C.
- Double insulation and varnish on main transformer.
- Shielded heavy duty input contactor in tightly sealed environmental enclosure.
- Electrical connections coated with insulating compound for long term reliability in harsh environments.
- Automotive grade sleeves protect leads from abrasion.
- Tough PC Boards — potted and trayed, filed with epoxy, double locked harness connectors, environmentally protected connectors, electrical silicone grease, high current rating. Extra attention to detail provides excellent protection from dirt, dust and the environment.
- Efficient Cooling System with industrial motor with sealed bearings and metal fan blade.
- Fan-As-Needed™ — reduces power consumption and the amount of debris that gets drawn into the machine by shutting the fan down when it is not needed.



Open Construction



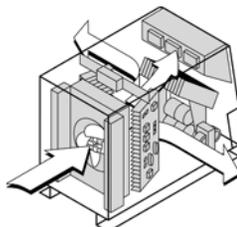
Coated Electrical Connections



Automotive Grade Sleeves



Cooling System



Trayed and Potted PC Board

Testing and Reliability

All Lincoln inverters are fully tested for reliability before and after assembly.

- Each machine undergoes a functional weld test to ensure performance.
- Lincoln inverters are operated in an environmental chamber under extreme conditions of temperature and humidity.
- Mechanical testing, including vibration and drop testing, is performed
- Extensive temperature testing is performed to ensure that all components are running within allowable range.
- Three-year warranty on parts and labor. Two-year extended warranty available in United States and Canada.
- Manufactured under a quality system certified to ISO 9001 requirements and ISO 14001 environmental standards.
- Designed to the IEC/EN 60974-1 standard. Meets tough NEMA EW 1, CSA NRTL/C standards.
- Meets rigorous IP21S environmental rating.



Environmental Chamber



Manufacturing and Testing

GENERAL OPTIONS

DeviceNet™ Interface Module
 This module provides Networking capabilities for Output Control, Weld Settings, Weld Mode Selection and Data Logging.
Order K2206-1



Ethernet/DeviceNet™ Interface Module
 This module provides all DeviceNet functionality as well as networking capabilities for Weld Development, Data Logging, Systems Updates, Diagnostics, Weld Settings and Weld Mode Selection.
Order K2207-2



Analog Interface Module
 This module provides Analog and Discrete Inputs/Outputs (I/O) for trigger controls plus feedbacks.
Contact Lincoln Automation at (216) 383-2667 for information.

GENERAL OPTIONS, CONT.

Dual Cylinder Platform Undercarriage
 Platform undercarriage for mounting two gas cylinders at rear of welder.
Order K1570-1



Cool-Arc® 40 Water Cooler
 Energy-efficient long life cooler for water-cooled welding applications.
Order K1813-1 for 115V
Order K2187-1 for 230V



WIRE FEEDER OPTIONS

Power Feed™ 10R
 The Power Feed™ 10R is a high performance, digitally controlled wire feeder designed to be part of a modular, multi-process welding system. It is specifically designed to mount to a robot arm or to use in hard automation applications.
Order K1780-2
Contact Lincoln Automation at (216) 383-2667 for Power Wave® Robotic upgrade.



AutoDrive™ 4R90
 Unique robotic wire feeder package focused on .035-.045 (0.9-1.2mm) wire applications. High performance wire drive system featuring compact package, lightweight, tool-less design, and durable and rugged.
Order K2685-2



AutoDrive™ 4R220
 Unique robotic wire feeder package focused on .045-1/16 (1.2-1.6mm) solid and 3/32" (2.4mm) cored wire applications. High performance wire drive system featuring compact package, lightweight, tool-less design, and durable and rugged.
Order K2685-1



The industry's first web resource exclusively for fabricators who rely on Lincoln Electric welding equipment.

PowerWaveSoftware.com offers users access to new product software releases, system upgrades, welding improvements, and Power Wave® Utilities.

Go to PowerWaveSoftware.com today!

POWER WAVE® 455M ROBOTIC & POWER WAVE® 455M/STT® ROBOTIC ORDER FORM

PRODUCT DESCRIPTION	ORDER NUMBER	QUANTITY	PRICE
POWER WAVE® 455M ROBOTIC	K2262-1		
POWER WAVE® 455M/STT® ROBOTIC	K2263-1		
RECOMMENDED GENERAL OPTIONS			
DeviceNet™ Interface Module	K2206-1		
Ethernet Interface Module	K2207-2		
Analog Interface Module	Contact Lincoln Automation		
Dual Cylinder Platform Undercarriage	K1570-1		
Cool-Arc® 40 Water Cooler - 115V	K1813-1		
Cool-Arc® 40 Water Cooler - 230V	K2187-1		
RECOMMENDED WIRE FEEDER OPTIONS			
Power Feed™ 10R	K1780-2		
AutoDrive™ 4R90	K2685-2		
AutoDrive™ 4R220	K2685-1		
	TOTAL:		

Call the Lincoln Electric Automation Division at 216.383.2667 for more information.

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company® is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.



THE LINCOLN ELECTRIC COMPANY

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