

LADI Analog-Digital Interface

OPERATOR'S MANUAL



ENGLISH



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12/05

THANKS! For having chosen the QUALITY of the Lincoln Electric products.

- Please Examine Package and Equipment for Damage. Claims for material damaged in shipment must be notified immediately to the dealer.
- For future reference record in the table below your equipment identification information. Model Name, Code & Serial Number can be found on the machine rating plate.

| | |
|-------------------------|--|
| Model Name: | |
| | |
| Code & Serial number: | |
| | |
| Date & Where Purchased: | |
| | |

ENGLISH INDEX

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Technical Specifications






| NAME | | INDEX | |
|--|------------------------------|---------------------------|---------------------|
| LADI | | K14152-1 | |
| INPUT | | | |
| Input Voltage U ₁ | Input Amperes I ₁ | | EMC Class |
| 42Vac | 4A | | A |
| RATED OUTPUT | | | |
| Duty Cycle 40°C (based on a 10 min. period) | | Output Current | |
| 100% | | 385A | |
| 60% | | 500A | |
| OUTPUT RANGE | | | |
| Welding Current Range | | Peak Open Circuit Voltage | |
| 5 ÷ 500A | | 113Vdc or Vac peak | |
| DIMENSION | | | |
| Weight | Height | Width | Length |
| 4,5 kg | 72 mm | 213 mm | 345 mm |
| | | | |
| Protection Rating | | Operating Temperature | Storage Temperature |
| IP23 | | from -10°C to +40°C | from -25°C to 55°C |



WARNING

This equipment must be used by qualified personnel. Be sure that all installation, operation, maintenance and repair procedures are performed only by qualified person. Read and understand this manual before operating this equipment. Failure to follow the instructions in this manual could cause serious personal injury, loss of life, or damage to this equipment. Read and understand the following explanations of the warning symbols. Lincoln Electric is not responsible for damages caused by improper installation, improper care or abnormal operation.

| | |
|--|--|
| | WARNING: This symbol indicates that instructions must be followed to avoid serious personal injury, loss of life, or damage to this equipment. Protect yourself and others from possible serious injury or death. |
| | READ AND UNDERSTAND INSTRUCTIONS: Read and understand this manual before operating this equipment. Arc welding can be hazardous. Failure to follow the instructions in this manual could cause serious personal injury, loss of life, or damage to this equipment. |
| | ELECTRIC SHOCK CAN KILL: Welding equipment generates high voltages. Do not touch the electrode, work clamp, or connected work pieces when this equipment is on. Insulate yourself from the electrode, work clamp, and connected work pieces. |
| | ELECTRICALLY POWERED EQUIPMENT: Turn off input power using the disconnect switch at the fuse box before working on this equipment. Ground this equipment in accordance with local electrical regulations. |
| | ELECTRICALLY POWERED EQUIPMENT: Regularly inspect the input, electrode, and work clamp cables. If any insulation damage exists replace the cable immediately. Do not place the electrode holder directly on the welding table or any other surface in contact with the work clamp to avoid the risk of accidental arc ignition. |
| | ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS: Electric current flowing through any conductor creates electric and magnetic fields (EMF). EMF fields may interfere with some pacemakers, and welders having a pacemaker shall consult their physician before operating this equipment. |
| | CE COMPLIANCE: This equipment complies with the European Community Directives. |
| | ARTIFICIAL OPTICAL RADIATION: According with the requirements in 2006/25/EC Directive and EN 12198 Standard, the equipment is a category 2. It makes mandatory the adoption of Personal Protective Equipments (PPE) having filter with a protection degree up to a maximum of 15, as required by EN169 Standard. |
| | FUMES AND GASES CAN BE DANGEROUS: Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. To avoid these dangers the operator must use enough ventilation or exhaust to keep fumes and gases away from the breathing zone. |
| | ARC RAYS CAN BURN: Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing. Use suitable clothing made from durable flame-resistant material to protect you skin and that of your helpers. Protect other nearby personnel with suitable, non-flammable screening and warn them not to watch the arc nor expose themselves to the arc. |

| | |
|--|---|
|  | <p>WELDING SPARKS CAN CAUSE FIRE OR EXPLOSION: Remove fire hazards from the welding area and have a fire extinguisher readily available. Welding sparks and hot materials from the welding process can easily go through small cracks and openings to adjacent areas. Do not weld on any tanks, drums, containers, or material until the proper steps have been taken to insure that no flammable or toxic vapors will be present. Never operate this equipment when flammable gases, vapors or liquid combustibles are present.</p> |
|  | <p>WELDED MATERIALS CAN BURN: Welding generates a large amount of heat. Hot surfaces and materials in work area can cause serious burns. Use gloves and pliers when touching or moving materials in the work area.</p> |
|  | <p>CYLINDER MAY EXPLODE IF DAMAGED: Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. Always keep cylinders in an upright position securely chained to a fixed support. Do not move or transport gas cylinders with the protection cap removed. Do not allow the electrode, electrode holder, work clamp or any other electrically live part to touch a gas cylinder. Gas cylinders must be located away from areas where they may be subjected to physical damage or the welding process including sparks and heat sources.</p> |
| HF | <p>CAUTION: The high frequency used for contact-free ignition with TIG (GTAW) welding, can interfere with the operation of insufficiently shielded computer equipment, EDP centers and industrial robots, even causing complete system breakdown. TIG (GTAW) welding may interfere with electronic telephone networks and with radio and TV reception.</p> |
|  | <p>EQUIPMENT WEIGHT OVER 30kg: Move this equipment with care and with the help of another person. Lifting may be dangerous for your physical health.</p> |
|  | <p>SAFETY MARK: This equipment is suitable for supplying power for welding operations carried out in an environment with increased hazard of electric shock.</p> |

The manufacturer reserves the right to make changes and/or improvements in design without upgrade at the same time the operator's manual.

Installation and Operator Instructions

General Description

The LADI box is an analog-digital communication interface which allows to use the ArcLink® (5P) power feeders with the analog (14P) power sources.

Read this entire section before installation or operation of the machine.

Controls and Operational Features

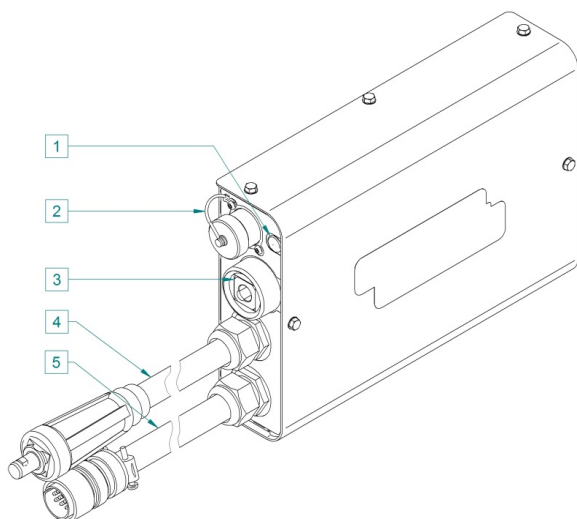


Figure 1



1. **Status Light:** A two color light that indicates system errors. Normal operation is steady green light. Error conditions are indicated, per Table 1.

NOTE: The status light will flash green, and sometimes red and green, for up to one minute when the machine is first turned on. When the power source is powered it can take as long as 60 seconds for the machine to be ready to weld. This is a normal situation as the machine goes through initialization.

Table 1

| LED Light Condition | Meaning |
|---------------------------|--|
| | Only machines which using ArcLink® protocol for communication |
| Steady Green | System OK. Power source is operational, and is communicating normally with all healthy peripheral equipment. |
| Blinking Green | Occurs during power up or a system reset, and indicates the power source is mapping (identifying) each component in the system. Normal for first 1-10 seconds after power is turned on, or if the system configuration is changed during operation. |
| Alternating Green and Red | If the status lights are flashing any combination of red and green, errors are present in the power source. Individual code digits are flashed in red with a long pause between digits. If more than one code is present, the codes will be separated by green light. Read the error code before the machine is turned off. If occurs, to clear the error try to turn Off the machine, wait for a few seconds, then turn ON again. If the error remains, a maintenance is required. Please contact the nearest authorized technical service center or Lincoln Electric and report the error code read. |
| Steady Red | Indicate no communication between the power source and device which has been connected to this power source. |



2. **Feeder Control Connection:** 5 pins receptacle for wire feeder. To communication wire feeder with power source is used ArcLink® protocol.



3. **Welding Output Socket:** Allows the connection, with the power cable, to the wire feeder.



4. **Welding Input Cable:** Allows the connection to the power source.



5. **Control Input Cable:** 14-pins connection. To communication LADI with power source is used analog control.

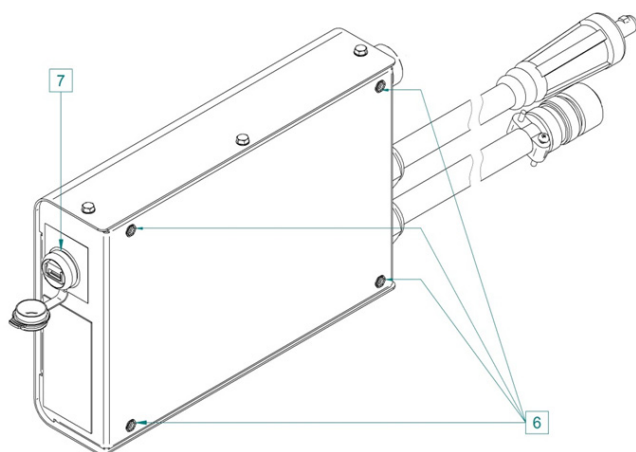


Figure 2

6. **Mounting holes:** Allows the fastening, with 4 screws (M5x20), to the power source. Use the attached drill mask (R-0010-599-1) to position LADI on the power source.



7. **USB Receptacle:** Allows the connection, with USB cable (A-A type), to the personal computer. The USB port is used for the software upgrades of LADI or ArcLink® wire feeder.

Configuration for Welding

To start welding with LADI device:

- Fix LADI to power source – use the drill mask and assembly instruction attached to LADI package.
- Connect system according to Connection Diagram chapter.
- Connect power source to the supply network - read and understand the power source and wire feeder manuals before connecting them to the supply network.
- Use P.84 parameter in the wire feeder setup to select your power source.
- Start weld according to the power source and wire feeder manuals guidelines.

USB Operation

The USB port may be used only to software upgrades of LADI or ArcLink® wire feeders.

To operate using the LADI USB:

- Install the Lincoln Electric USB serial drivers on your PC - contact your Lincoln Authorized Service Facility (LASF)
- Use the USB A-A type cable to connect a PC with LADI

Recommended Equipments

Recommended Power Sources:

- CV420
- CV425
- CV505
- CV510

Recommended Feeders:

- Power Feed 22
- Power Feed 26
- Power Feed 42
- Power Feed 44
- Power Feed 46

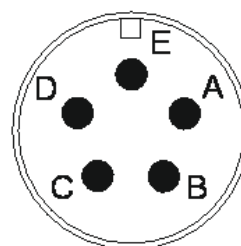
Equipment limitation

- The power feeders may require a software update
- Welding Processes must be within the duty cycle and rating of the power source, wire feeders and LADI
- Does not include welding cable
- LADI operates with 42Vac input supply
- With LADI, only one wire feeder may present anywhere in the system

Cable Connections

There are two circular connectors on the front of the LADI (see 5-pin – Figure 3 and 14-pin - Figure 4)

WIRE FEEDER



LADI

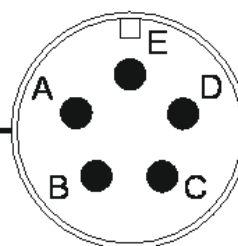


Figure 3

See table below:

WIRE FEEDER

| PIN | FUNCTION |
|-----|--------------------|
| A | ArcLink |
| B | ArcLink |
| C | "67" voltage sense |
| D | 40VDC |
| E | Common |

LADI

| PIN | FUNCTION |
|-----|--------------------|
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| C | "67" voltage sense |
| D | 40VDC |
| E | Common |

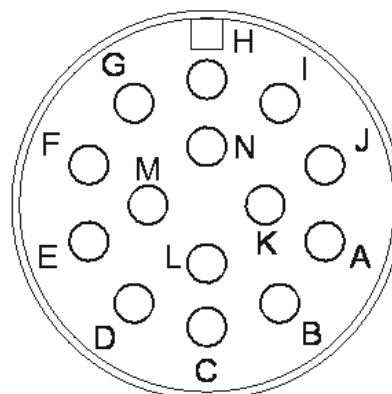


Figure 4

14-pin Connection diagram

14 – PIN CONNECTOR FOR POWER SOURCE

| Function | Pin | Wiring |
|--|-----|------------------------------|
| 14 pin connector for power source connectivity | A | |
| | B | ground |
| | C | trigger, common |
| | D | trigger input |
| | E | remote potentiometer, 5K |
| | F | remote potentiometer, wiper |
| | G | remote potentiometer, common |
| | H | Voltage sense |
| | I | 42VAC |
| | J | |
| | K | 42VAC |
| | L | |
| | M | |
| | N | |

Maintenance

WARNING

For any maintenance or repair operations it is recommended to contact the nearest technical service center or Lincoln Electric. Maintenance or repairs performed by unauthorized service centers or personnel will null and void the manufacturers warranty.

The frequency of the maintenance operations may vary in accordance with the working environment. Any noticeable damage should be reported immediately.

- Check cables and connections integrity. Replace, if necessary.
- Keep clean the machine. Use a soft dry cloth to clean the external case, especially the airflow inlet / outlet louvers.

WARNING

Do not open this machine and do not introduce anything into its openings. Power supply must be disconnected from the machine before each maintenance and service. After each repair, perform proper tests to ensure safety.

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 advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

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.

WEEE

07/06



Do not dispose of electrical equipment together with normal waste!

In observance of European Directive 2012/19/EC on Waste Electrical and Electronic Equipment (WEEE) and its implementation in accordance with national law, electrical equipment that has reached the end of its life must be collected separately and returned to an environmentally compatible recycling facility. As the owner of the equipment, you should get information on approved collection systems from our local representative.

By applying this European Directive you will protect the environment and human health!

Spare Parts

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Part List reading instructions

- Do not use this part list for a machine if its code number is not listed. Contact the Lincoln Electric Service Department for any code number not listed.
- Use the illustration of assembly page and the table below to determine where the part is located for your particular code machine.
- Use only the parts marked "X" in the column under the heading number called for in the assembly page (# indicate a change in this printing).

First, read the Part List reading instructions above, then refer to the "Spare Part" manual supplied with the machine, that contains a picture-descriptive part number cross-reference.

Authorized Service Shops Location

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- The purchaser must contact a Lincoln Authorized Service Facility (LASF) about any defect claimed under Lincoln's warranty period.
- Contact your local Lincoln Sales Representative for assistance in locating a LASF or go to www.lincolnelectric.com/en-gb/Support/Locator.

Electrical Schematic

Refer to the "Spare Part" manual supplied with the machine.

Suggested Accessories

| | |
|----------|-------------------------------|
| K14130-1 | LACI communication interface. |
|----------|-------------------------------|

Connections Diagrams

