LABFACILITY
TEMPERATURE & PROCESS TECHNOLOGY

Thermocouple & Fine Wire Welder
Model No. L60+

Web www.labfacility.com

e-mail sales@labfacility.com

Telephone +44(0)1243 871280

Issue:

050004.OM.G

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Operating Instructions

The L60+ welder is designed for sensor manufacturers to produce commercial grade thermocouple junctions, and by users of large numbers of exposed junction thermocouples such as test and development laboratories where multipoint temperature sensing of test pieces is required.

No special skills are required and most people will be capable of producing quality work with minimal practice. A satisfactory thermocouple junction is produced without using argon, but where argon is available a momentary purge is automatically triggered immediately prior to the weld to give optimum weld integrity.

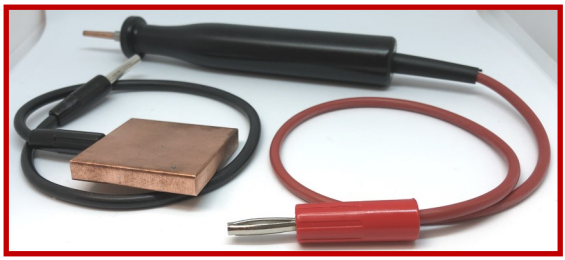
Safety Note

1. Always protect the eyes with a suitable filter during welding – never view the weld discharge with the naked eye.
2. Avoid touching the rear of the welder during operation as the power switch heat sink may run hot. This is a normal operating condition.
1. Do not allow the hand to directly contact the welding electrode during operation.

Accessories

Standard:

Wire Holding Pliers With Lead
Safety Glasses
Magnifying Eyeglass
Spare Carbon Electrode
Spare 2A Fuse
Impact clip
Pen and plate
Argon Hose
Hexagon key (for electrode change)
Mains Lead
Footswitch (Allows One Handed Operation)



Front Panel Controls

A. Arc — Argon gas and weld current controlled by the "Weld" switch. LED indication.

B. Purge — Allows the gas line and electrode shield to be purged of air prior to a new welding period

C. Weld Switch — Initiates a welding operation (in "arc" mode also opens the Argon valve).

D. Argon LED — Indicates when the Argon control valve is open and gas is flowing.

E. Wait LED — Glows when weld charge is building.

F. Ready LED — "Ready to Weld" indication.

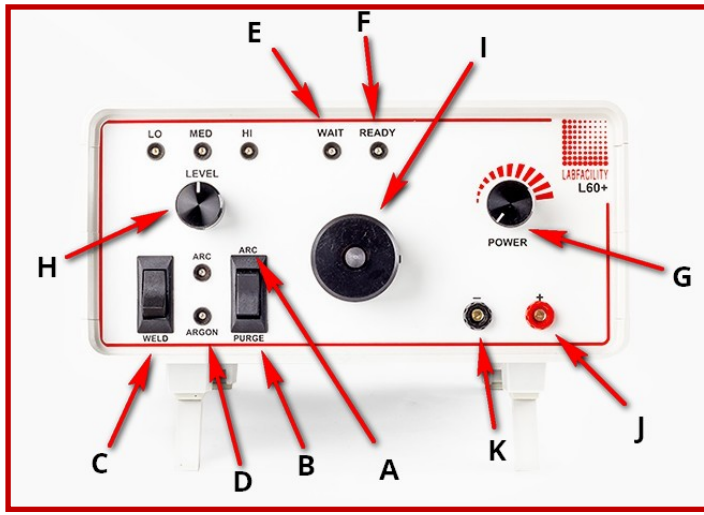
G. Power — Rotary control of the capacitor charge voltage.

H. Level selector — Selects the total capacitance available giving the following values with LED indication.
"LO" = 0 to 6 Joules
"MED" = 0 to 28 Joules
"HI" = 0 to 64 Joules

I. Electrode Holder — Holds the replaceable carbon electrode which is accessible by removing the outer Argon Shield.

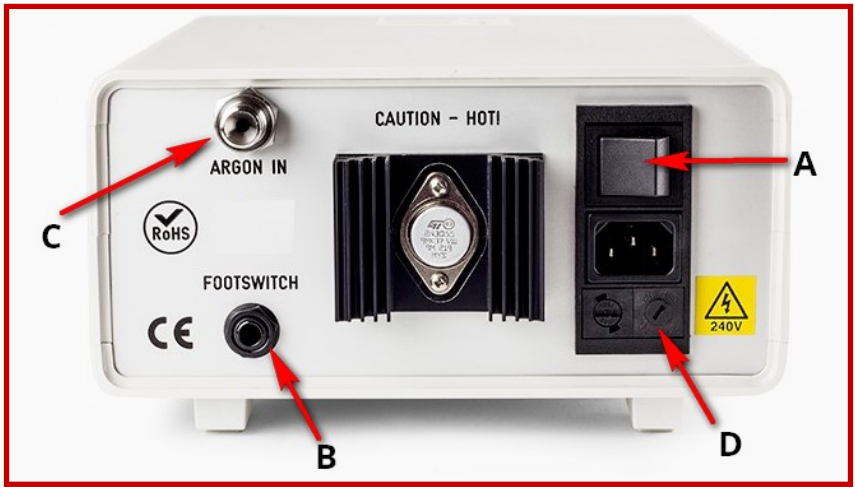
J. Red socket — Output socket for using the pliers supplied.

K. Black socket — Output socket, this provides an additional earth point if required.



Rear Panel Controls

A. ON/OFF switch	Power to instrument ON/OFF
B. Weld jack socket	Footswitch connection
C. Argon inlet	For connection to Argon supply
D. IEC power inlet module	For selection of 110-120 Vac or 220-250 Vac power supply. Factory default setting 220-250 Vac.



Setting Up Procedure

1. Using a suitable connector fused at 5 amps, connect to mains supply.
2. If Argon is to be utilised, couple argon hose to rear of welder. Do not over-tighten as a good seal will be made with the nut slightly more than finger tight.
3. Connect free end of argon hose to the argon supply via an argon flow regulator.
4. Switch on.
5. Hold welding mode switch in "purge" position and adjust argon flow to 8 litres per min.

The apparatus is now ready for use.

Welding Instructions

Arc Welding

1. Connect the work-holding pliers to the red output socket.
2. Depress the purge switch for 3 or 4 seconds to rid the system of air.
3. Reset the mode to “Arc”.
4. Set the energy level to the desired value.
5. Prepare the wires to be welded and grip in the pliers, leaving about 1mm or more protruding.
6. Position the wires 5 or 6mm in front of the carbon, whilst steadying the hand.
7. Press the “weld” switch or foot switch and slowly move the work towards the carbon until the arc is struck.
8. Release the switch and remove the work for examination.

Preparation of Wires for Arc welding

For small diameter wires, strip off about 12mm of insulation and twist together. Then, with side cutters or scissors cut the wire off square leaving sufficient un-insulated material to give approximately 1mm protruding when gripped in the welding pliers.

Larger diameter wires may be held side by side in the welding pliers, but ensure that they are in firm contact with each other and trimmed off square. This method will be found useful for attaching solid leads to resistance thermometer detectors.

However, when attaching stranded leads, it will be found more convenient to use the twisting method and then to carefully untwist after welding.

Impact Welding – Using Impact clip

Impact welding is the term used for welding wires to a conductive metal surface. This process is common when thermocouples are required to be welded to a test piece/ structure or similar application.

The impact welding clip attachment should be plugged into the black negative (-) socket on the front of the L60+ welder. The impact clip should then be attached in close proximity to where the thermocouple is required to be attached.

The thermocouple wires are then gripped in the holding pliers and pressed against the surface to which they are to be welded.

The weld switch or footswitch is then pressed triggering the L60+ welder discharge that will attach the wires to the applied surface. Once the thermocouple has be success-fully welded the impact weld clip can be removed.

Pen and Plate Resistance Welding Accessory

The kit consists of a Copper Plate with a black lead and a Copper tipped spring-loaded pen with appropriate red lead. The leads are terminated in 4mm banana plugs which connect to the corresponding sockets on the front of the L60+ Welder.

It is suitable for welding ribbon materials of ferrous and higher resistance metals such as Nickel & Chromium alloys. It will not weld low resistance metals such as Copper, Silver, Gold or Brass.

In use, the materials to be joined are placed on top of the other on the copper plate and the pen tip is applied with moderate pressure. The weld is then triggered by the switch on the L60+ or footswitch (if used). Test welds will determine optimum settings for material size and composition. We recommend that the Operator starts off with a Medium Energy setting and check the state of the weld. The energy setting can be increased if the weld pulls apart easily or lower if the weld is too severe. With flat materials, a pattern of welds may be made to increase the strength of the joint.

If necessary the plate can be cleaned with fine wire wool, and the welding pen tip may be cleaned with a find grade emery cloth if necessary.

Please note that during welding done using the pen/plate Argon will not be utilised and therefore should be turned off at the front of the welder.

Energy Settings

Arc Welding

The following settings may be used as a guide. The correct setting for a particular metal combination and wire gauge will produce a spherical bead.

A flattened bead indicates that the energy setting is too high.

Wire Diameter (mm)

Switch at “LOW”	0.1	Switch at “HIGH”	0.3
	0.15		0.5
	0.2		0.7
	0.25		0.8

Electrodes

To replace or adjust carbon electrode, first turn the welder on its side and slacken screw on base of argon shield, which may be then pulled off. This reveals grub screw which holds carbon electrode in place.

Maintenance

Apart from keeping the electrode in good order, no other maintenance is required.

Specifications

General

Energy Output	0-60 Joules
Welding Capacity	Wires up to 1.1mm diameter
Duty Cycle	Minimum 5-10 welds/min
Weld Voltage	49 V

Mechanical

Physical Dimensions	220mm Wide x 120mm High x 250mm Depth
Weight	4kg

Electrical

Power Supply	110-120 Vac or 220-250 Vac, 50-60Hz
Power Consumption	Max 170VA dropping to 20VA during charging
Fuse Characteristics	12A/250V

All information given is correct at time of going to press. Please note that specifications and availability of certain items may be subject to change.

Warnings

Power Supply 110-120 Vac or 220-250 Vac, 50-60Hz
(***220-250 VAC set as default***)

Specifications

General Description	The Thermocouple Welder, manufactured by Labfacility, is a compact, simple-to-use instrument designed for thermocouple and fine wire welding.
Dimensions	220mm (W) x 120mm (H) x 250mm (D)
Power Consumption	Max 170VA dropping to 20VA during charging
Power Supply	110-120 Vac or 220-250 Vac, 50 -60Hz
Standards Met	CE
Energy Output	0-60 Joules
Duty Cycle	Minimum 5-10 welds/min
Welding Capacity	Wires up to 1.1mm diameter
Maintenance	Apart from keeping the electrode in good order, no other maintenance is required.
Accessories	Wire Holding Pliers & Lead / Safety Glasses & Magnifying Eyeglass / Argon Hose / Carbon Electrodes / Impact clip / Pen and plate / Spare 2A Fuse & Mains Lead / Footswitch for greater ease of use

EC DECLARATION OF CONFORMITY

We: Labfacility Ltd
of: Units 5&7, Block K, Southern Cross Industrial Estate, Shripney Road, Bognor Regis, West Sussex, PO22 9SE

in accordance with the following Directive(s):

2004/108/EEC	Electromagnetic Compatibility directive, as applicable to arc welding equipment.
2014/35/EU	Low Voltage Equipment Directive.
hereby declare that:	L60+ Fine Wire Welder

is in conformity with the applicable requirements of the following documents

BS EN 61000-6-1: 2007	Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments.
BS EN 61000-6-3: 2007 + A1: 2011	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments

The basis on which Conformity is being declared
The manufacturer / distributor hereby declares that the products identified above comply with the protection requirements of the EMC directive and with the principal elements of the safety objectives of the Low Voltage Equipment directive.

Note:
Installation compliance aspects
The attention of the specifier, purchaser, installer or user is drawn to special measures and limitations to use which must be observed when these products are put into service to maintain compliance with the above directives.
The recommendations and connection configurations indicated in the Installation & Operating Instructions relevant to each product must be observed and applied during the installation of the product (with particular regard to wiring & connections and precautions when operating the equipment).

Labfacility Ltd

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Contact Information

Northern Division:
Labfacility Ltd
Unit 3B,
Outgang Lane
Dinnington
Sheffield
S25 3QT
Tel : +44 (0)1909 569446

Southern / Export Division:
Labfacility Ltd
Units 5 & 7, Block K
Southern Cross Industrial Estate
Shripney Road
Bognor Regis
West Sussex
PO22 9SE
Tel : +44 (0)1243 871280

www.labfacility.com

sales@labfacility.com

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Certificate No. 4746