IGBT Mini Constant Current Regulator
ALS30

OPERATION AND MAINTENANCE MANUAL

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1.0 History of Change

Page	Revision	Description	Checked	Approved	Date
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2.0 WARRANTY

Airfield Lighting Systems UK LTD, (ALS), guarantee their ALS30 Constant Current Regulator, for a period of 12 months from purchase, against failure due to faulty components or manufacture. This excludes general wear and tear, and misuse.

3.0 Safety

a) Please carefully read and observe all safety related warnings throughout this manual. Failure to do so could result in serious injury, death or damage to equipment.

b) It is recommended that you read these instructions carefully and ensure that they are fully understood before use of this product.

c) Please observe any local site and regional safety requirements before commencing work on any part of an AGL Circuit.

d) Work to only be carried out by qualified and competent persons, to be deemed so by the aerodrome or authorising persons.

4.0 Introduction

This product is a small, portable CCR designed for testing lamps, fittings, transformers, and sections of airside lighting circuit.

A maximum of 1KW is available with an adjustable and pre-selected brilliance steps output from 2.5A to 6.70A.
For safety if the output voltage tries to exceed 170V, the ALS30 will display Load to High and the output will turn off.

Uses for the ALS30 include:

- Test a LED or Halogen Lamp fitting.
- Test a fitting without a transformer.
- Test a transformer and fitting together.
- Prove a new or repaired circuit, or section of circuit, before connecting it to the CCR.
- Analyses sections of primary circuits locally with multiple earth faults.

5.0 Instructions For Use

The IGBT Mini CCR (ALS30) is a robust, desk top Sine-Wave, Constant Current Regulator.

Any operator is advised to read the full instructions before using the ALS30 for the first time, however simple instructions are shown below for those that just need a reminder.

a) Quick Start Instruction

- Check that the input voltage matches the supply to the ALS30 (230VAC).
- Allow room for proper ventilation behind the ALS30 case.
- Connect the input lead to the IEC connector at rear of the ALS30.
- Connect the Light fitting with or without isolation transformer alternatively a small circuit up to 1KW to the two AC Output Posts on the front of the ALS30.
- Switch on the power switch at the front of the ALS30.
- Press the On/Reset button and adjust the current to the desired value. When current is flowing, the display will indicate current being drawn with output voltage.
- If “Load to High” is displayed then either the load impedance is too high or the output is open circuit.

b) Full Instruction

The ALS30 allows competent persons to energies’ and test isolated primary circuits without risk of shock.

Proving newly installed sections of circuits can be carried out safely, without permits, or specially trained personnel. Faults can be rectified, the circuit re-tested and proved prior to being connected to the CCR in the substation.

The ALS30 has a maximum output voltage of 170V 50Hz, and a maximum current of 6.7A. It can be powered from a sine wave inverter supply at 230VAC or from a 230VAC mains supply.

All the controls, including the input connections, are on the front panel.
The ALS30 generates heat that is extracted by fan from the rear of the cabinet. Make sure that there is adequate space behind the ALS30 to provide good airflow. Should the airflow be restricted, this may cause internal damage.

An IEC input fused socket is provided to the rear of the ALS30 (fuse rating 6.3A Type: time lag 5 X 20mm ceramic) an input cable with the appropriate power plug is provided. Plug in the input cable at both ends and switch on the ALS30.
Switch on the illuminated power switch on the front of the ALS30, the display will indicate its firmware version for a few seconds, then switch to display the output of the ALS30, which will depend on the current step selector Knob next to the power switch.
This Knob has 6 positions, see table below.

Var	Variable Current	2.5A to 6.7A
L1	Pre-set Current step 0.3%	2.8A
L2	Pre-set Current step 1%	3.4A
L3	Pre-set Current step 10%	4.1A
L4	Pre-set Current step 30%	5.2A
L5	Pre-set Current step 100%	6.6A

the first position “Var” indicating variable current adjust, this is adjustable via the second Knob (“Var Adjust”) the following 5 positions are pre-set current levels from 2.8A to 6.6A

The knob marked “Var Adjust” is an encoder, not a potentiometer, and rotates with no end stop. The faster the knob is rotated, the faster the current changes. For delicate control, rotate the knob slowly. The current is limited between 2.5A to 6.7A maximum.
Each time the input power is switched off, the output will default to 2.5A when switched on again when the first Knob is set to “Var”.

Connect the circuit to be tested to the two AC output connection posts.
The LCD first line will display “O/P OFF” the second line will display the current that the unit will output when energized, as per the position of the current select knob.

Press the On/Reset button, the output current will be ramped up slowly.
The first line will change the O/P state from off to on and indicate Current percentage, the second line will indicate output current and voltage in real time, as the ALS30 finds the correct voltage to provide a current as selected. Using the select Current knob, the current can be set to the desired value.

If the ALS30 does not stabilize at the pre-selected current an asterisk is displayed after the current reading on the display. This can occur if the load is constantly changing or there is an intermittent connection in the circuit. The AC output should be switched off and the fault corrected.

When the Off button for the AC Output is pressed, the display will show O/P off and the display will remain at the last selected current. This will be the current applied the next time the AC Output is switched on.

If there is a break in the circuit being tested, the output will automatically switch off and the display will show “Load to High”. If the output suddenly changes to a low impedance or a short circuit the output will automatically switch off, the display will show “Over Current”. Find the fault in the circuit, press the On/Reset button to reset the fault and proceed as before.

6.0 Maintenance

The ALS30 requires no regular maintenance to ensure continued operation.

If cleaning is required, the case can be wiped with a damp cloth.

a) MCCR Fuse Replacement Procedure

The ALS30 has one internal fuse which on occasion, after prolonged use or over voltage and open circuit fault conditions, may blow. Should any problems be encountered during use, please follow the procedure below:

- Remove ALS30 lid. There are 4 screws on either side, which need to be removed. The lid then lifts vertically off and will sit behind the ALS30 on end. There is an earthing strap which connects the lid to the main case.
- The fuse location is shown below in figure 1, fuse type 10A fast blow.
- The fuse is removed by lifting the fuse holder and sliding the fuse from the holder. The fuse can be checked with a continuity meter. Any faulty fuses should be replaced.
- Refitting the lid is the reverse of removal, ensure that the earth strap does not get caught between the case and the lid.

FIG 1

7.0 Specification

Power requirements 230V 50/60 Hz 1 kW

Output	2.5A to 6.70A constant current at 1v to 160V
Maximum Power	1 Kilo watt
Waveform	Sinusoidal
Controls	2.5A to 6.70A encoded control, & 5 Pre-set steps
Accuracy & Stability	Better than ±2% of 6.60A
Ambient Temperature Range	-20°C to +40°C