

Handbook for the LT3500

Current Sensing Coin Operated Timer



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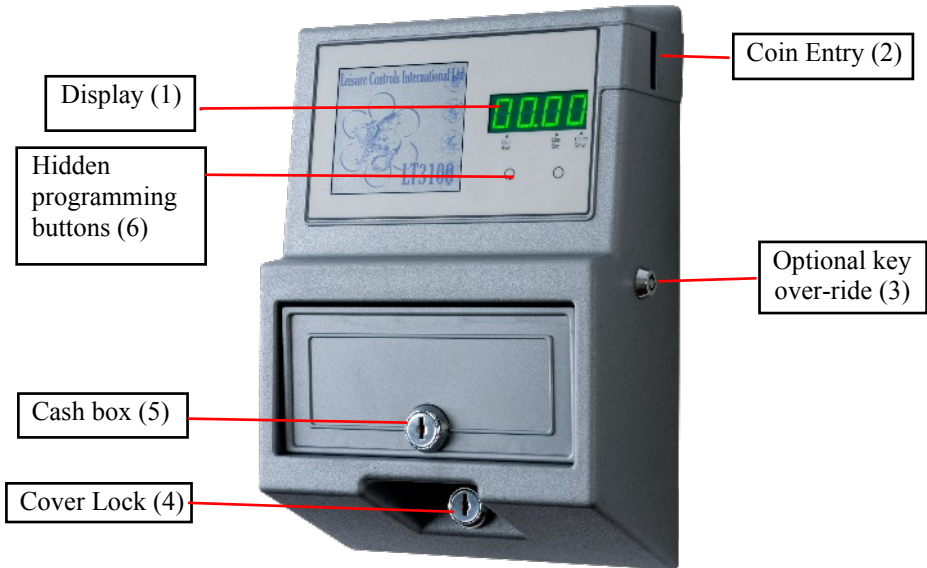
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Introduction

Operational Features

The LT3500 incorporates a programmable current sense facility which stops the timer counting down when the connected appliance is turned off. This is particularly useful with applications such as air conditioning and heaters in apartments and community halls where the user may turn off the heating or cooling when vacating the premises.

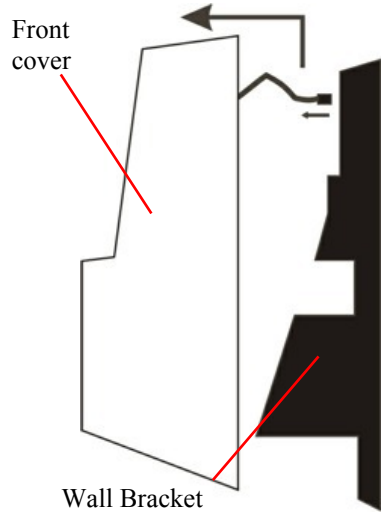


- (1) The 4 digit 7 segment display, in conjunction with the hidden programming buttons, is used to program the LT3500, as well as showing time remaining and mode of operation (see Figure 4).
- (2) The coin entry accepts tokens or 20p, £1, €½, €1 coins.
- (3) The optional key over-ride switch turns the timer output on permanently.
- (4) Access for installation is via the cover lock.
- (5) Cash box holding 100 coins.
- (6) Hidden programming buttons (page 3).

Figure 1 Main Features

Installation

1) Unlock the front cover of the meter and lift upwards slightly and away from the wall bracket (see Figure 2). Unplug the cover flying lead from the wall bracket and remove front cover.



Wall Bracket
Figure 2 Removing Cover

2) The LT3500 should be mounted on a smooth vertical wall making sure access to the side coin entry is not obstructed. Take care to mount the case level in both the vertical and horizontal axes; failure to do so may prevent the coin mechanism from operating correctly. Mark positions of the mounting holes using the wall bracket as a template and drill suitable holes in the wall. For solid masonry use a 7 mm masonry drill bit and plug holes with wall plugs sufficient for 38 mm long screws. For wooden surfaces use a 3.5 mm drill bit and screws of a minimum length of 15 mm; longer screws are advised for very soft

surfaces. Fit the top two screws to the wall leaving the head of the screw approximately 7 mm from the surface. Hang the wall bracket on the wall, check that the bracket is level and tighten the screws. Fix the bottom of the wall bracket to the wall using the two remaining screws.

3) The timer will require a fused double pole switch for the mains input. Wire the unit as shown in Figure 3 using appropriately rated and approved cable conforming to the relevant regional standards. The meter can either be connected to the supply via a cable fed through the hole at the bottom left hand side of the wall bracket or through the back of the meter. Ensure the cables are secured underneath the cable clamps.

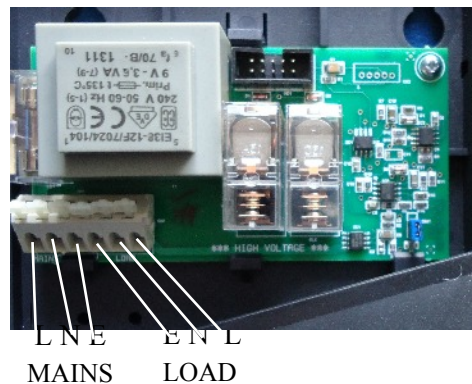


Figure 3 Wiring Diagram

4) Plug the flying lead from the cover to the connector located in the wall bracket and fit the front cover onto the wall bracket, drop down slightly and lock into place.

5) Apply power and the meter will briefly show 'Pxx.x' then any credit remaining where xx.x is the version number of the firmware and should be quoted if requesting technical assistance.

IMPORTANT: PROTECT THE INPUT BY A FUSE RELEVANT TO THE LOAD

Service Mode

The service mode consists of thirteen settings split in to four functional areas:-

1. Programming current sense values
2. Programming credit
3. Audit functions
4. Other functions

To access service mode remove the coin box, press and release button B (Figure 4) to step to the desired setting number (St.01 to St.13). Simultaneously pressing and releasing both buttons A and B will step back to the previous setting. On reaching the required setting number press button A to enter desired values.

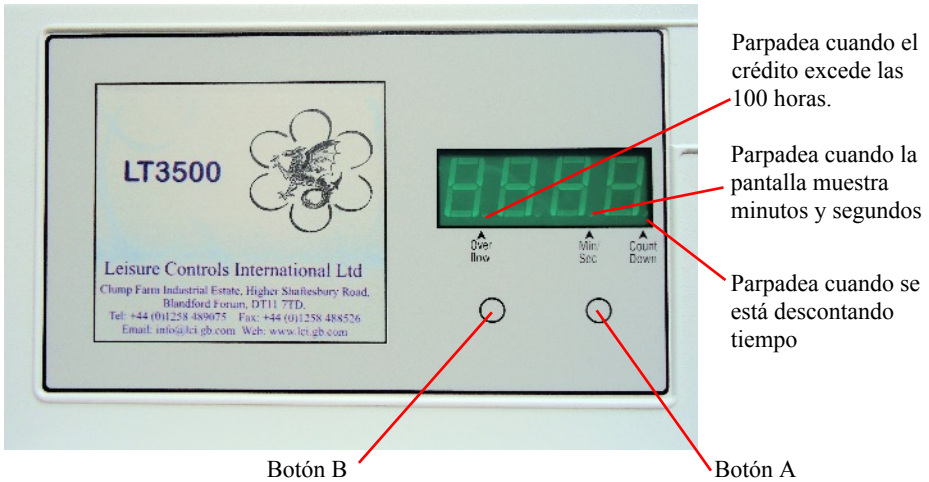


Figure 4 - Front Panel

Programming current sense values

For the LT3500 to operate successfully the current consumption of the load must be programmed at installation. It is recommended that the appliance is turned on and the current monitored in both idle (low current value) and “in use” (high current value) modes using setting St.11. With air conditioning units in particular it is advised to check if there is an intermediate stage where the appliance has stopped cooling or heating but enters a shut down mode which consumes current. This current should be used as the idle current. The LT3500 should then be programmed for “in use” current values and idle current values using settings St.13 and St.12 respectively.

St.11 Real time current reading

Press and release button B to step to setting number St.11. Press button A to enter setting. The display shows a real time current reading in hexadecimal format (see

the following messages initially: -

no.in There is no reply from the sensor (timer can not function correctly)

in.lo The value from the sensor is below the trigger level setup in ST.12.

trig The value from the sensor is above the trigger level setup in ST.13.

Press button A to switch to current display mode, this will show "i-xx", where xx is the current reading as a value in hexadecimal format (see appendix 1); this value will change as the load current consumption varies.

St.13 High current (In Use) Value

Press and release button B to step to St.13. Press button A to enter setting. Once entered this mode will turn on the relays and the display will show "H-xx" to indicate the stored hexadecimal setting for the high current mode. To learn a new current value, set the load into its minimum high power state then press button A and wait as the timer counts down from 8 to 0, with the display showing "C-xx", where xx is the count down in seconds. If the value exceeds, equals or is just too close to the low value then an "Err " will be displayed and no changes will be made; when a good value is accepted it will be stored as the new setting. The display will return to showing the current hexadecimal value for the high power state.

St.12 Low current (Idle) value

Simultaneously press and release both buttons A and B to step back to St.12. Press button A to enter setting. Once entered this mode will turn on the relays and the display will show "L-xx" to indicate the stored hexadecimal setting for the low current mode. To learn a new current value, set the load to its idle state then press button A and wait as the timer counts down from 8 to 0, with the display showing "C-xx", where xx is the count down in seconds. If the value exceeds, equals or is just too close to the high value then an "Err " will be displayed and no changes will be made; when a good value is accepted it will be stored as the new setting. The display will return to showing the current hexadecimal value for the low power state.

Programming credit

The credit functions allow the meter to be programmed for fixed time, session time or session cost for charging purposes. Additionally a factory set option allows a combination of session time and session cost. Once the initial cost is met further coins will add time allocated to that coin. This is referred to as top-up mode.

Press and release button B to step to the desired setting number.

When the required number is showing on the display press and release button A to display the existing setting. Press and release button A to select the digit to be changed then press and release button B to alter that digit.

NOTE

Coins and tokens are validated by two coin sensors. Coin 1 sensor validates £1 coins, L2 and L4 tokens. Coin sensor 2 validates €1, €½, 10p, 20p, L1 token

St.01 Credit (Fixed Time) Per Coin 1

Sets the amount of credit given by coin sensor 1 (£1 coin, L2 or L4 tokens). Set in HH.MM or MM.SS (When the meter is set in single coin or Totalise + Top Up mode).

St.02 Credit (Fixed Time) Per Coin 2

Sets the amount of credit given by coin sensor 2 (€1, €½, 10p, 20p coins or L1 token)
Set in HH.MM or MM.SS (When the meter is set in single coin or Totalise + Top Up mode)

St.08 Maximum Credit (Lockout)

Sets the maximum amount of credit to be given at any one session (activated by pressing the start button 'A'). Set in HH.MM or MM.SS depending on the factory configuration (entering zero disables this feature).

St.09 Totalise Value (Session Cost)

Sets the amount of money which needs to be inserted before any credit is given, e.g. £1:20.

St.10 Totalise Credit (Session Time)

Sets the amount of credit given when the correct amount of money is inserted . Set in HH.MM or MM.SS

Audit functions

Audit functions allow the operator to check the meter against cash receipts taken from the coin box.

St.03 Total Money

Displays the total amount of money/tokens inserted since the last factory reset.
This is a read only display and cannot be changed.

St.04 Total Credit

Displays the total amount of credit given since the last factory reset.
This is a read only display and cannot be changed.

Also see resettable counter on page 6.

Other Functions

St.05, St.06, St.07 are settings used in other meters in the LT3000 range. They show as 00.00 on the display and are read only and cannot be altered.

Operating Instructions

To Operate Meter

Insert coin/token. The display will briefly show 'Coin'. The display will then show the remaining credit. If the credit is greater than one hour it will be displayed in hours & minutes, e.g.; 2 hours will be displayed as '02:00'. If the credit is less than one hour it will be displayed in minutes & seconds, e.g.; 40 minutes will be displayed as '40:00' and an indicator will flash on the display to show this (Figure 4).

Resettable Money (Token) Counter

When the coin box becomes full, the message 'COLL' (collect) is displayed.

Upon removal of the coin box the display will automatically show the resettable money counter. This shows how much money has been inserted into the meter since the last collection. When the coin box is reinserted, the money counter will automatically zero before displaying the remaining credit.

Note: To prevent the money counter from zeroing, insert the coin box with 'B' pressed

Error Messages

Thirteen error messages are displayed to help fault finding in the unlikely event of meter malfunction. Error messages are displayed in the format Er.xx

- Er.01 Opto 1 detected an object not conforming to the required parameters.
Opto 1 is the coin sensor used to validate £1 coins, L2 & L4 tokens. If the sensor detects that the coin is the wrong size it will show the error message.
- Er.02 Opto 2 detected an object not conforming to the required parameters.
Opto 2 is the coin sensor used to validate 20p, 10p, €1, 50c coins or L1 tokens. If the sensor detects that the coin is the wrong size it will show the error message.
- Er.03 Not used
- Er.04 Not used
- Er.07 Opto 1 validated but St.01 is zero.
Set a value in St.01
- Er.08 Opto 2 validated but St.02 is zero.
Set a value in St.02
- Er.10 Meter configured in Totalise or Totalise + Top Up mode but St.09 is zero.
Set a value in St.09.
- Er.11 Totalise + Top Up on £1 only (or token) meter but St.09 has fractional value.
Change St.09 to show whole number) e.g; 02.00.
- Er.12 St.09 set with odd 10p on 20p meter. E.g. set to £1.50.

If the following error messages are encountered contact the LCI support desk.

- Er.05 Opto 1 validated but meter is configured as a 10p or 20p only.
Use CFG.1 – digit 1 to set the meter up for the correct coinage.
- Er.06 Opto 2 validated but meter is configured as a £1 only.
Use CFG.1 – digit 1 to set the meter up for the correct coinage.
- Er.09 Configuration number 1 (CFG.1), digit 2 is zero.
Digit 2 of CFG.1 must contain a vaue
- SynC Software re-synchronising with the mains frequency

Appendix I Hexadecimal

The value of the current being consumed by the appliance displayed by the LT3500 is expressed in hexadecimal which is base 16. Humans use a base of ten (decimal) but computers often use other bases such as two for the binary system. With base 16 the characters representing numbers are zero to the letter F (0123456789ABCDEF). i.e. the decimal value for '1' is represented in hexadecimal as '1' but the hexadecimal value of decimal 15 is shown as 'F' and the value of decimal 17 is '11' in hexadecimal.

Decimal	Hex	Decimal	Hex	Decimal	Hex
1	1	11	B	30	1E
2	2	12	C	40	28
3	3	13	D	50	32
4	4	14	E	60	3C
5	5	15	F	70	46
6	6	16	10	80	50
7	7	17	11	90	5A
8	8	18	12	100	64
9	9	19	13	500	1F4
10	A	20	14	1000	3E8

Appendix II Service Mode Settings

Setting	Description	Comment	Setting	Description	Comment
St.01	Coin 1 credit	HH:MM:SS	St.08	Max. credit	HH:MM:SS
St.02	Coin 2 credit	HH:MM:SS	St.09	Totalise value	0.00
St.03	Total Value	Read Only	St.10	Totalise time	HH:MM
St.04	Total Time	Read Only	St.11	Actual current	Hexadecimal
St.05	Not Used	Read Only	St.12	Low current	Hexadecimal
St.06	Not Used	Read Only	St.13	High current	Hexadecimal
St.07	Not Used	Read Only			

Specifications

230V Models

Input	230V 50Hz 7A
Switching capacity	3kVA standard (13A resistive)
Power consumption	Less than 22W in standby, no output load active

115V Models

Input	115V 60Hz 7A
Switching capacity	1.5kVA standard (13A resistive)
Power consumption	Less than 22W in standby, no output load active

All Models

Fuses	Type T HBC 250V breaking capacity, 20x5mm 100mA
Colour	White
Time intervals (99.99 Max)	Programmable minutes & seconds or hours & minutes
Display	0.6 inch high green LED
Dimensions	H: 270mm W: 183mm D: 93mm
Weight	1.4kgm
Case	ABS
Lock	Radial 8 pin with two keys
Cash box capacity	100 coins of 23mm diameter x 2.5mm thick

Service Information

The LT3500 meter has been designed to provide reliable long-term use for a variety of timing applications. No regular servicing is required, apart from emptying of the cash box.

Repairs

When reporting any fault with the timer it is useful to quote the serial number (located on underside of the timer) and the firmware issue numbers first displayed when the timer is turned ON. In most cases it is not necessary to remove the timer from the wall.

WARNING

Remove all sources of power from the timer before attempting any repairs.

Technical Support

Before contacting technical support please visit the support section of Leisure Controls International's web site at www.lcigb.com/support where many answers to questions may be found.

Alternatively contact technical support directly by one of the following:-

E-mail: support@lcigb.com; Telephone: +44 (0)1258 483574; Fax: +44 (0)1258 488526

