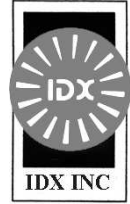




DISPLAY ONLY / DISPLAY AND TIMER



LITTLE TWO TIMER & BIG TIME TWO TIMER

DUAL TIME / VALUE ACCUMULATING TIMER AND DISPLAY

U.S. PATENT #5,371,681

OPERATING INSTRUCTIONS

Rev. 5/02 – BT5A & BT6A After 7/01/02

GENERAL TIMER OPERATION

The LTT802 Little Two Timer, BT902 and BT912 Big Time Two Timer basic operation starts with a scrolling “welcome message”, followed by a scrolling “sales message”, followed by a scrolling message indicating how much money to deposit to turn on the output and start the timer. This display cycle will repeat until coins are deposited. As coins are deposited, the display will show the total dollar amount deposited so far. When sufficient coins are deposited to start the timer, the output will turn on and the display will then show the amount of time remaining before the timer turns off. After the service time has expired, a scrolling “exit message” will repeat three times, then the timer will return back to the start of the sequence and scroll the “welcome message”.

TWO TIMER OPERATION

The TWO TIMER function allows you to offer your premium services at a different price or time than your other services. This allows you to reconfigure your car wash to the “Night Owl Special” promotional at the flip of a switch. The TWO TIMER SELECT input or P1-4 on both the LTT series and the BT series, controls which of the two time/value settings are set at any given instant. When this wire (gray wire on LTT) or terminal (BT) is not connected to anything or is connected to 24VAC power Hot, it will cause the timer to use “Mode A” coins to start and service time values. When the TWO TIMER SELECT input is connected to P1-2, a.k.a., 24VAC Common, it will cause the timer to use “Mode B” coins to start and service time values. If the timer operation is switched from “Mode A” to “Mode B” when the timer is on and counting down, it will instantly recalculate and display the remaining time in the new Mode for the value of service time remaining. For example, if “Mode A” was set for 4 minutes at \$1.50 (40 sec per coin) and “Mode B” was set for 6 minutes at \$1.50 (60 sec. per coin) and the timer was currently counting down in “Mode A” and was down to 1 minute when the switch was changed to “Mode B”, then the LTT802 or BT902 would instantly recalculate and display the remaining time/value in “Mode B” as 1 minute and 30 seconds since 50% more time is given for “Mode B” than “Mode A” services. The example above could be only 6 seconds per coin difference between “Mode A” and “Mode B”. The owner can set the amount of time difference.

EXP: 50% of 40 sec. = 20 sec.
50% of 60 sec. = 30 sec.

1 Min in “A Mode” = 1 ½ quarters left in credit.
1 Min 30 sec. “Mode B” = 1 ½ quarters in credit.

Self Service Bay Application.

In a self-serve bay application, one should first determine which of the services are to operate with “Mode A” time/value settings and which are to operate with “Mode B” time/value settings. Connect a 47K Ohm ¼ Watt resistor (available at Radio Shack cat. #271-042) to each terminal of the rotary service selector switch that actuates the services to operate from “Mode A” settings. Tie the other end of each of these resistors together and connect them to the P1-4 TWO TIMER SELECT input.

Promotional Application.

In a self-serve bay application, one first determines which of the services are to operate with “Mode A” time/value settings for normal operation and sets the “Mode B” time/value settings for the promotional settings. Then the TWO TIMER SELECT input, P1-4, is connected to a simple toggle switch with the second terminal of the toggle switch connected to 24VAC Common, P1-2 (ground). A single switch can be used for simultaneously changing all bays by connecting all of the TWO TIMER SELECT inputs together, and verifying that each LTT802, BT902 or BT912 24VAC Common (P1-2) connection is indeed connected to the common grounded terminal of each of the 24VAC power transformers.

QUARTERS or DOLLARS (LTT800 / BT800 / BT802 / LTT802 / BT902 / BT912)

The LTT or BT can operate with coin pulses that coincide with either \$1.00 or \$0.25 increments. This is determined by the S1 switch on the processor board of the LTT marked “\$” or “Q”. To access this switch on the LTT, gently pull the Display Board out of the housing to expose the Processing Board. You may use a small screwdriver to gently pry each corner up a little at a time until you can grab it with your fingers. After you have finished this section and the next, carefully align the connector pins between the boards and gently press the Display Board back into place. To access this switch on a BT, remove the front cover and depress the SW1 switch on the left just below the LED’s marked “\$” or “Q”. The LTT and BT comes factory set for operations with quarters.

LAST MINUTE ALERT and/or X-TRA TIME (LTT800 / BT800 / BT802 / LTT802 / BT902 / BT912)

The LTT and BT have both of these functions built in as standard. One or both is selected by the X-tra time switch located at S1 on the Processor Board of the LTT, just beneath the Display Board. To access this switch, gently pull the Display Board out of the LTT housing to expose the Processor Board as described in the "Quarters or Dollars" paragraph above. On the BT the SW1 switch is located just below the LEDs. The switch comes factory set with X-tra Time "ON". Flip this switch to the left if you wish to turn off "X-tra Time" and leave on "Last Minute Alert". The horn will only sound if the "-H" option is ordered and a horn (LC521-AC or LC525-AC) is installed.

The "Last Minute Alert" function will cause the time remaining to blink when it gets to less than one minute and will sound the horn starting at 1 minute remaining if the "-H" option is ordered. Any coins deposited before the end of the timing cycle will add the appropriate time to the remainder of the cycle. The horn can be factory or field programmed with the RC800 or IR800 to sound for either the entire last minute or to give short beeps during the first 10 seconds of the last minute. The "-H" Horn option is required for the horn to sound if the audio alert is desired.

With the "X-tra Time" function selected, the LTT or BT cycle time will run down to 0:00 minutes, at which time it will beep the horn 5 times and scroll "ADD ONE OR MORE COINS FOR X-TRA TIME" repeatedly for 20 seconds. If one or more coins are deposited during this 20-second interval, the timer will restart without meeting the usual requirement for the minimum coins to start. The "-H" Horn option and a horn must be installed if the audio alert is desired.

NOTE: The other switches on the Processor Board should, in almost all cases, be set with the "COINS" Switch to the left and the "SERV" switch to the right, as per factory setting.

BONUS TIME (Not available in LTT800/BT800/BT802 Displays as Timer must also have Bonus Time)

"Bonus Time" is an incentive feature to encourage the customer to initially deposit more coins by providing an added additional bonus time of 1 second to 13 minutes for every coin deposited when the timer reaches Bonus time setting. This option may be turned on, "ENABLED", or turned off, "DISABLED", in the field with the RC800 or IR800 remote control unit.

EXP: \$1.25 to start for 4 min = 48 sec. per coin- Bonus time - 60 sec. per coin to start at 8 min. Set timer to "ENABLE" Bonus time to start at 7 min and 55 sec then program bonus time for 12 sec per coin.

LATCH TIME Option (Only available in LTT802 / BT912 WITH "BT6A chip only") BONUS TIME NOT AVAILABLE WITH LATCH TIME.

REMOTE RESET (LTT800 / LTT802 / BT800 / BT802 / BT902 / BT912)

You may remotely reset the LTT or BT by installing a switch connected between the coin switch (Red with Green stripe) and Common (Black) on the LTT or between P1-3 (Coin Switch terminal) and P1-2 (24 VAC Common terminal) on the BT. When this switch is held active for between 1.5 and 5 seconds then released, the LTT or BT knows that a real coin pulse couldn't possibly last this long and interprets it as a request for reset. (See also the OUT OF SERVICE and LEARN sections of this document)

LATCH TIME RESET "with BT6 chip" (LTT802 / BT912)

#1 Service input (**BT912-T or Green wire on LTT802-T**) is used to reset the unit if the time has been latched. A 24V signal on this input causes the unit to reset only when the unit is in "Latch Time". If not in "Latch Time", this input is ignored.

#2 Service input (**BT912-T or Blue wire on LTT802-T**) is used for enabling/disabling "Latch Time". An open condition on this input enables "Latch Time". A 24V signal present on this terminal will disable "Latch Time".

OUT OF SERVICE (LTT802 / BT902 / BT912)

An "Out of Service" condition may be caused by either a hardware failure or by command. In either case, if the unit is capable, it will repeatedly scroll the message "SORRY...OUT OF SERVICE"; and, if the "-D" Disable Coin Acceptor option has been installed, power to the acceptor will be interrupted. You may command an "Out of Service" condition for maintenance or other purposes by installing a switch connected between the P1-3 (Coin Switch) input and the P1-2 (24VAC Common) connection. When this switch is activated for more than 10 seconds, the LTT802, BT902 or BT912 knows that a real coin pulse couldn't possibly last this long and interprets this as a request for "Out of Service". (See also the REMOTE RESET and LEARN sections of this document.)

BAY CLEAN UP (LTT802 / BT902 / BT912)

To have maintenance personnel activate the bay equipment without the need for coins, tokens or remote control units, IDX offers a Key Switch, IDX Part # MB199-23, which will bypass the LTT802 / BT902 / BT912 timer output to power the bay equipment. The key can only be removed from the switch in the "OFF" position. With the "-S" option the LTT802 / BT902 / BT912 will monitor the time used in this bypass condition and makes the information available through the RS232 interface on plug P2. This information is not accessible via the RC800 or IR800 hand held remote control.

BAY WASH DOWN CYCLE WITH IR800 REMOTE (BT6A after 7/01/02- LTT802/BT912 ONLY)

To have maintenance personnel activate the bay equipment without the need for coins or tokens, simply point the IR800 infrared remote at the IRM800 receiver and press "CLEAN". The "Clean" function is enabled/disabled on the IR800 with the IDX I.R. Cloner software available with each IR800.

BURGLAR ALARM (LTT800 / BT800 / BT802 / LTT802 / BT902 / BT912)

The "-B" Burglar Alarm option is triggered by the impact sensor switch which is installed on the LTT or BT and is activated by a shock impact in excess of 10g to the enclosure surface. If the switch circuit becomes momentarily open, the "Alarm" will be set off. When the alarm is set off, the horn will beep and the display will flash "ALARM" for one minute. After that time, the alarm will automatically reset if the switch is again in the

closed position. It will, however, re-trigger if the switch is still open or becomes open. To reset the alarm manually, a coin may be deposited or reset with the remote. The "Burglar Alarm" input signal is ignored in the case of an "Out of Service" condition to facilitate maintenance. The "Alarm" status is made available through the RS232 interface on plug P2 for remote monitoring.

PROGRAMMING WITH THE RC800 REMOTE OR IR800 INFRARED REMOTE CONTROL (LTT800 / BT800 / BT802 / LTT802 / BT902 / BT912)

With the RC800 / IR800 handheld remote control, one can access and reset the total coin count, change the "Coins To Start" for both "Mode A" and "Mode B", change the "Service Time" for both "Mode A" and "Mode B", enable or disable "Bonus Time", set the "Last Minute Alert" mode and change any of the three programmable messages. First plug the RC800 cable into P2 of the LTT or into the remote box of the BT and press the "EDIT" key to begin communication. With the IR800 (USE ONLY WITH THE BT6A chip in the LTT802 or BT912) point the transmitter towards the IRM800 receiver that is plugged into the P2 of the LTT or into the remote box of the BT and press the "EDIT" key to begin communication.

Total Coins.

The first response of the LTT or BT is to display the "Total Coins" deposited (coin pulse count) since last cleared. If you wish to clear the count, press the "DELETE" button and the "SAVE" button. If you wish to leave the count intact, just press the "NEXT" button to move to the next menu item.

Coins to Start A and Coins to Start B

The next two menu items will prompt you with current values for "Coins to Start A:" and "Coins to Start B:". To change these values simply press the "▲" or "▼" buttons and then press the "SAVE" button. If you wish to leave the start count intact, just press the "NEXT" button to move to the next menu item.

Service Time A & Service Time B

The next two menu items will prompt you with the current values for "Service Time A:" and "Service Time B:". To change these values by increments of 10 seconds, simply press the "▲" or "▼" buttons and then press the "SAVE" button. **If you wish to change between editing the 10 seconds digit and the 1 seconds digit, press the "►" or "◄" button.** If you wish to leave the start count intact, just press the "NEXT" button to move to the next menu item.

Bonus Time (not available with the "-T" option)

You will be prompted with "Enable Bonus Time" "Y/N". Press the "Y" button to enable "Bonus Time". The next prompt is the start time for "Bonus Time". Use the "►", "◄", "▲", and "▼" buttons to select the desired start time for bonus coin to be enabled, then press the "SAVE" button. The next prompt is the additional time per coin desired, use the "►", "◄", "▲", and "▼" buttons to select time and press the "SAVE" button to go to the next step.

Latch Time (only available with the "-T" option)

You will be prompted with "LATCH TIME COINS TO START". Use the "►", "◄", "▲", and "▼" buttons to select the desired coins for "Latch Time" then press the "SAVE" button. The next prompt is for the total amount of "Latch Time". Use the "►", "◄", "▲", and "▼" buttons to select the amount and press the "SAVE" button to go to the next step. **If you wish to change between editing the 10 seconds digit and the 1 seconds digit, press the "►" or "◄" button.**

Last Minute Alert Beep

You will be prompted with either the "10 SEC" or "1 MIN" options. You may switch between them by pressing the "▲" or "▼" buttons and then pressing the "SAVE" button. If you wish to leave the current choice intact, just press the "NEXT" button to move to the next menu item. The "10 SEC" selection will cause the "Last Minute Alert" horn to beep for 10 seconds at the start of the last minute of remaining time. The "1 MIN" selection will cause the "Last Minute Alert" horn or strobe light to turn on for the entire last minute of remaining time. Note that if the "X-tra Time" feature is selected, the auxiliary output will turn on for both the "Last Minute Alert" and "X-tra Time". The "-H" HORN option and a horn must be installed if the audio alert is desired. With the "-H" HORN option and a horn, the audio alert will also function as a coin beeper every time a coin is accepted.

Welcome, Sales, and Exit Messages

The three programmable messages will be sequentially presented for editing. The "►" and "◄" buttons allow you to manually scroll the message right or left. The letter or character that is in the center of the display can be edited by pressing the "▲" or "▼" buttons, which cause the letter in the center position to cycle through the set of available letters and characters. Once the desired letter is chosen, the display is moved so the next letter to be edited is in the center position. To delete a letter simply press the "DELETE" button. To make room for another letter in the center of the message, press the "INSERT" button. When the message is correct, press the "SAVE" button. If you wish to leave the current message intact, just press the "NEXT" button to move to the next menu item.

LEARN MODE (WITH OUT RC800/IR800) (LTT800 / BT800 / BT802 / LTT802 / BT902 / BT912)

If you do not have an RC800 or IR800 to field program your LTT or BT you can still change the "Coins to Start" and the "Service Time" values for both "Mode A" and "Mode B" by invoking the LEARN mode and showing the LTT or BT a complete timing cycle. To do this, first install the remote reset switch as previously described and install the timer output bypass switch for bay clean up as previously described. First make sure the TWO TIMER SELECT input is set for a "Mode A" service. Then hold the remote reset switch "on" (across the coin switch terminals) for at least 5 seconds but less than 10 seconds then release. Upon release, the LTT or BT will display the word "LEARN". When using LTT800/ BT800/BT802 press the reset switch on the Timer. Now drop the desired number of coins to start into the coin acceptor. Then turn on the timer output bypass switch and watch as the time displayed counts up to the desired "Service Time" for the "Coins to Start". When it reaches this value turn off the output bypass switch and observe the verification message displayed to ensure the results are as expected. Repeat the same sequence for the TWO TIMER SELECT input when setting for "Mode B" service.

SERVICE DATA COLLECTION & COMPUTER CONTROL

Data on the individual services selected by the customer is sensed and recorded through connection of a wire from each of the terminals on the 8 position rotary switch to a terminal of the “-S” Service Data Collection option, on the LTT or BT. With the “-S” Service Data Collection option installed, the LTT802, BT902 or BT912 is capable of connecting to the IDX Self Serve Wash Data Acquisition System (CP3000) which will- a.) Automatically collect data on the individual services used and coins collected; b.) Monitor “Alarm” status, “Out of Service” status and bay cleanup (output bypass) status; c.) Provide automatic scheduling of promotional pricing and changing of scrolled messages; and, d.) Provide remote access to data and operational parameters via modem link to a PC computer with the IDX WashLink HQ software installed.

LTT800/BT800/BT802 Models are digital Displays that will convert most timers now in use to a Display Timer. The Two Timer capability of the BT802 does not have to be used if the Timer you are mounting has the capability of one timing range. All of the options can be installed if the Timer has the same capabilities.

TROUBLESHOOTING

1. Check the instructions and wiring related to the symptoms. If this fails to provide the answer, use a voltmeter and a diagram to check every connection against the wiring diagram and to check the electrical integrity of the connections.
2. Verify that the 24VAC supply voltages, coin switch voltages, and load voltages all are at expected levels at both ends of any connecting wires.
3. If you have another operational unit, look for differences between the two. Try swapping one Little Two Timer or Big Time Two Timer for another to verify functionality of the unit.
4. Verify that the problem unit does indeed have all the options installed that are expected for the application.
5. Verify that the switches have been set as instructed in this document.
6. Try other simple tests to verify connections and operation of peripheral equipment as related to this application.
7. If you are still not able to find the problem, prepare a list of what the symptoms are, under what conditions they appear or do not appear, what you have already checked or measured, and what, if anything (**and we mean anything**), has changed in your system between the time it last functioned well and now. Then call IDX at 1-800-643-1109 with your list at hand and ask for application assistance. You may also email the IDX application support team at support@idxinc.com.

SPECIFICATIONS

Power Supply Voltage:	24VAC +/- 20%
Power Consumption:	5 Watts typical
Timer Output Rating:	24VAC HOT switched by output 2.5 Amps Continuous: 20 Amps Inrush Short Circuit Trip BT912 or BT902-M relay output 5 Amps Continuous
Coin Switch Input:	Pulse Length: 20 ms to 1000 ms Pulse Polarity: Pull to Common, < 1.5 VDC
Two Timer Select:	Mode A: Open Circuit or Greater than 5VAC Mode B: Tied to 24VAC Common or less than 1VAC
Auxiliary Output Rating: (Horn or Strobe Light) LTT800/LTT802	24 VAC Common switched by output 150mA Continuous: 0.5 Amps Inrush Max Hole pattern -2.00” W x 3.00”H Overall size 3.35” W x 3.80”H x 3.15”D Display Visible 2.50” W x 0.70”H
BT800/BT802/BT810/BT902 BT800/BT802/BT810/BT902/BT912 BT912 with S/S case	Overall size 10.00” W x 7.00”H x 3.00”D Display Visible 8.00” W x 2.00”H Overall size 12.00” W x 7.35”H x 2.5”D

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