

**Handbook for the  
Wyvern® 2000N Banknote Operated Timer**



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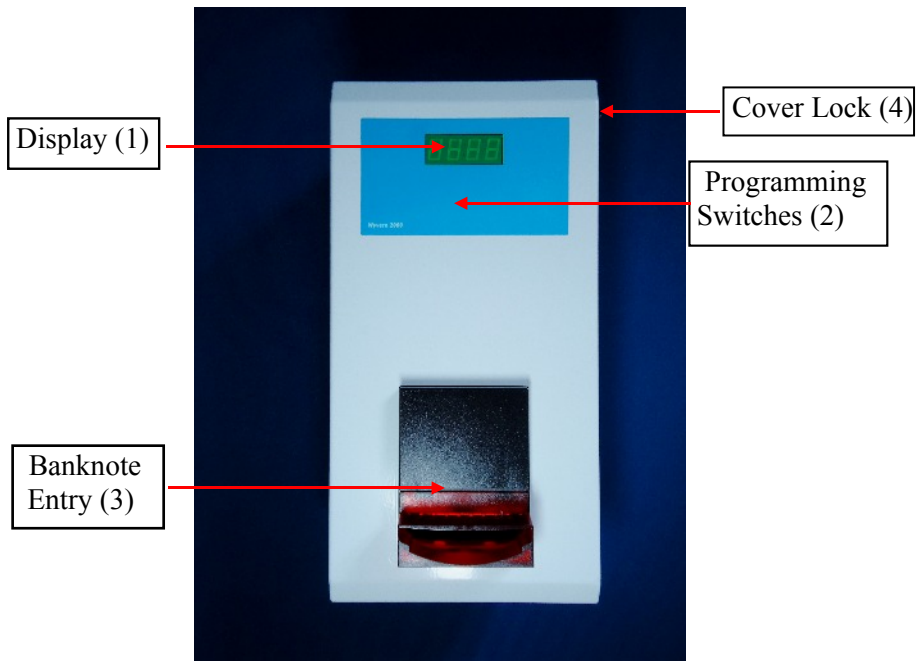
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## Introduction

### Operational Features

The Wyvern® 2000N offers an extensive range of features to suit many banknote timer applications. The Wyvern® 2000N is supplied as a voltage switching device but may be used for voltage free applications by removing a wire link.

Figure 1 shows the main operational features and this manual provides all



1. The 4 digit 7 segment **display** is used to program the Wyvern® 2000N as well as showing time of day and time remaining.
2. **Programming switches**, in conjunction with the display, are used to program the Wyvern® 2000N to user requirements.
3. The **banknote entry** accepts banknotes upto 70mm in width.
4. Access to the cash box is via the **cover lock** situated at the top of the Wyvern® 2000N.

## Installation

### Mechanical Installation

The Wyvern® 2000N timer should be mounted on a smooth vertical wall away from corners so the cover lock can be easily accessed. The timer is 350 mm high by 175 mm wide and has a depth of 140 mm so allow sufficient clearance for the cover to swing down when opened. Take care to mount the case level in both the vertical and horizontal axes; failure to do so may prevent correct operation of the banknote acceptor. Choose an area where an ambient temperature of 40°C is not exceeded, away from any source of moisture, dust or direct heat.

Open the case using the key supplied and position the case on the wall and mark the position of the two upper keyhole slots. Plug the wall and fit two No. 8 or 10 screws of not less than 22 mm in length and hang the timer on these screws. Mark the position of the lower two fixing screws and remove the timer and plug the wall.

Remove the required cable knockouts and fix the timer to the wall.

### Electrical Installation

The timer will require a fused double pole switch for the mains input with a fuse suitable for the load being controlled (maximum 5 amp). Using 20 mm conduit with a male thread adaptor and lock ring, or a 20 mm nylon compression cable gland to provide strain relief, wire the unit as shown in Figures 2 and 3. Use appropriately rated and approved cable relating to the relevant regional standards up to a maximum current of 5 amp. Remove the safety shield before connecting any wiring and replace safety shield after all connections are secured.

It is essential that the safety earth is connected to a known good earth. Unless double insulated the load must be connected to the same bonding point as the main earth to ensure good noise immunity.

The Wyvern® 2000N is supplied as a voltage switching device - that is the switched output is the same as the mains input voltage. In this case the load is connected between pins 3 and 4. If a voltage free output is required (for example to switch a device operating from a different supply) then the black link is removed from between terminal block pins 5 and 6 and the load connected between pins 3 and 5. See Figures 2 and 3.

NOTE. The Wyvern® 2000N accepts mains voltages in the range 110V - 240V 50/60 Hz.

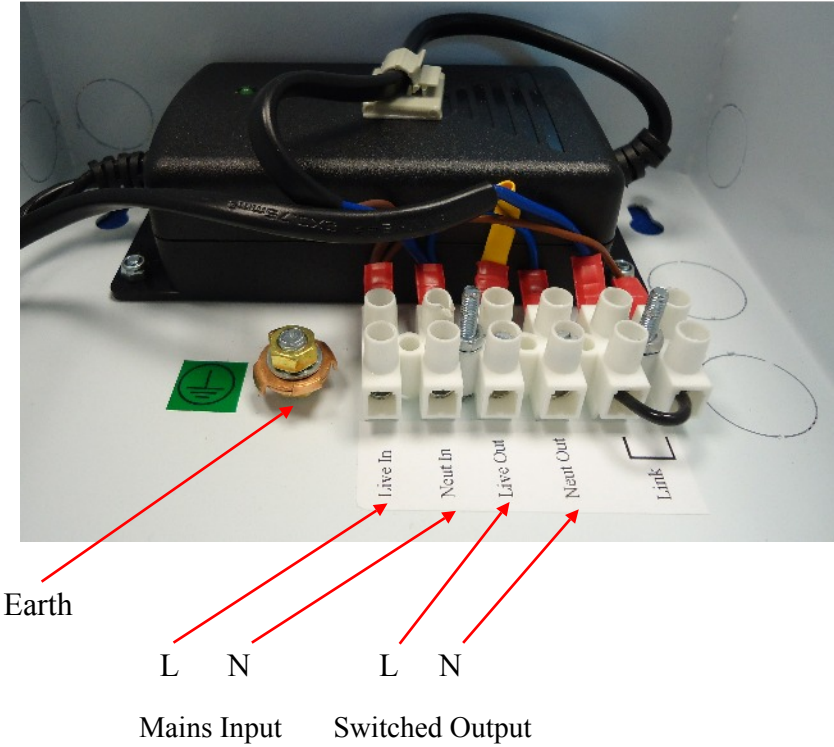


Figure 2 - Mains Wiring

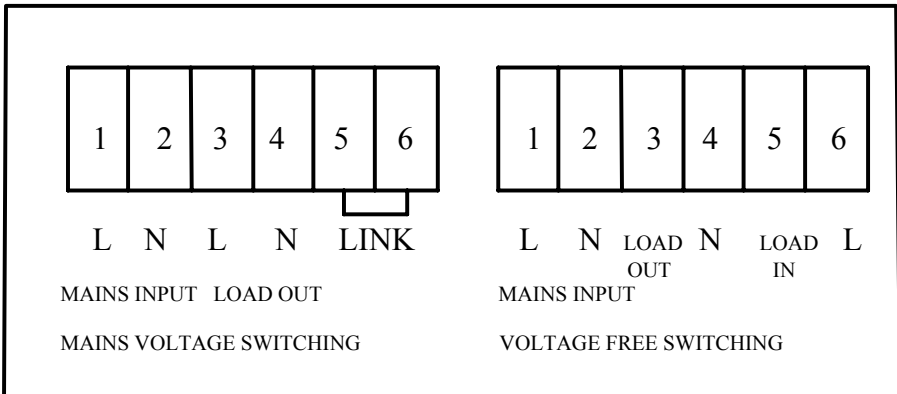


Figure 3 - Output Switching Options

## Programming

To control the operation of the timer it needs to be programmed. This consists of entering numbers (or options) into memory locations by using the programming switches and the display (see Figures 1 and 4)

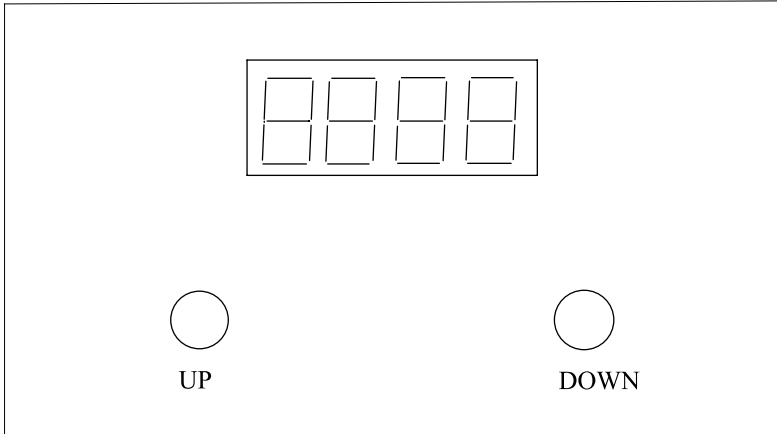
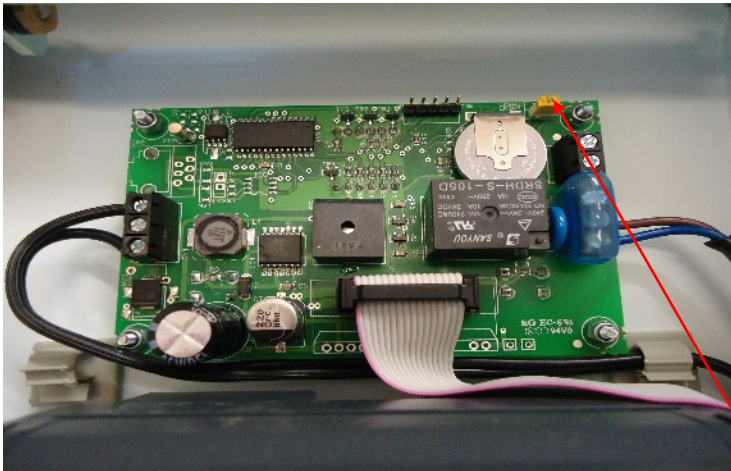


Figure 4 - Programming Template

Initially the Wyvern®2000N needs to be placed into the programming mode by moving the programming switch LKSW1 to the ON position. This is a yellow switch located on the printed circuit board just below the locking bar see Figure 5.



LKSW1

Figure 5 - Position of LKSW1

With LKSW1 in the ON position press and hold both programming buttons for approximately 5 seconds to enter the programming menu. Press and release the UP button to access the option number required. To alter the program settings hold the UP button for about 4 seconds until the option number flashes and use the UP and DOWN buttons to change the value. Wait for approximately 10 seconds and a “beep” for this value to be stored. To leave programming mode press and hold both programming buttons for approximately 5 seconds. Return LKSW1 to the OFF position for all settings to take effect.

### Setting the Time of Day

A real-time clock is fitted to the Wyvern® 2000N. Time is set using program code d-. Once program code d- is selected, pressing the UP button will start to flash the first two digits of the 4-digit display. The UP and DOWN buttons can be used to set the first 2 digits to the required hours. Press and hold both programming buttons for approximately 5 seconds until the last 2 digits flash when the UP and DOWN buttons can be used to set these digits to the required minutes. The clock is set by holding both programming buttons for approximately 5 seconds. The display then shows Hr: and by using the UP or DOWN button can be toggled between 12 and 24 to allow selection of a 12 or 24 hour clock. Hold both programming buttons for approximately 5 seconds to exit this option. If the real-time clock is not required set the time to 00:00. This will not change the count-down operation of the display, but once zero time has been reached the display will permanently display 00:00.

Program Code	Description	Maximum Value	Value Used
d-	Setting the real-time clock	–	

### Session Time Per Note (STPN)

Program code 7 allows a period of time to be allocated to a particular note value. Remember, these options must match the note order of the note value in option b.

Access the options menu as described earlier and using the UP and DOWN buttons move to option 7. Hold the UP button until the first digit flashes and the display shows 71:xx where xx is the time per note. The display will alternate between minutes and seconds setting. Using the UP and DOWN buttons select the STPN program

code required. Hold the UP button down until the first two digits flash. Use the UP and DOWN buttons to select the minutes required per note. After a short period a “beep” occurs allowing seconds required to be programmed. After approximately 10 seconds this value is stored and the first digit flashes allowing another STPN program code to be selected. Press and hold DOWN button until the display shows 7-. Press and hold both programming buttons for approximately 5 seconds to exit the options menu.

Program Code	Description	Maximum Value	Value Used
71	Note 1 time in minutes and seconds	99m 59s	
72	Note 2 time in minutes and seconds	99m 59s	
73	Note 3 time in minutes and seconds	99m 59s	
74	Note 4 time in minutes and seconds	99m 59s	
75	Note 5 time in minutes and seconds	99m 59s	
76	Note 6 time in minutes and seconds	99m 59s	
77	Note 7 time in minutes and seconds	99m 59s	
78	Note 8 time in minutes and seconds	99m 59s	
79	Note 9 time in minutes and seconds	99m 59s	

### Currency Value Per Note (CVPN)

Program code b allows a value to be allocated to a particular note. Remember, these options must match the note order of the note time period in option 7. The note acceptor is factory pre-programmed so that each channel is assigned to a particular note. When programming CVPN ensure the correct channel is allocated.

Access the options menu as described earlier and using the UP and DOWN buttons move to option b. Hold the UP button until the first digit flashes and the display shows b1:xx where xx is the value per note. Using the UP and DOWN buttons select the CVPN program code required. Hold the UP button down until the first two digits flash. Use the UP and DOWN buttons to select the value required per note. After approximately 10 second this value is stored and the first two digits flash allowing another CVPN program code to be selected. Press and hold DOWN button until the display shows b-. Press and hold both programming buttons for approximately 5 seconds to exit the options menu.



Program Code	Description	Maximum Value	Channel
b1	Note 1 value	99	
b2	Note 2 value	99	
b3	Note 3 value	99	
b4	Note 4 value	99	
b5	Note 5 value	99	
b6	Note 6 value	99	
b7	Note 7 value	99	
b8	Note 8 value	99	
b9	Note 9 value	99	

### Minimum Start Credit (MSC)

Program code 5 sets the MSC so that sufficient notes must be inserted to meet a specified price before the timer turns ON. For example if the Wyvern® 2000N were programmed with an MSC of \$3, the timer would only start when notes to the value of \$3 are inserted.

Access the options menu as described earlier and using the UP and DOWN buttons move to option 5. Hold the UP button until the first digit flashes and the display shows 5-:xx where xx is the MSC. Hold the UP button down until the first two digits flash. Use the UP and DOWN buttons to select the MSC value required. After approximately 10 second this value is stored.

Program Code	Description	Maximum Value	Value Used
5	Minimum start credit	99	

### Start Delay time or Pre-Time

This is the time between inserting notes into the timer and the timer turning ON. As soon as notes are inserted the display shows the time purchased but the load is not switched on for a time period determined by option 6. Once option 6 times-out the load is switched on. Setting option 6 to zero disables pre-time.

Program Code	Description	Maximum Value	Value Used
6	Start Delay Time or Pre-time	10 mins	

Access the options menu as described earlier and using the UP and DOWN buttons move to option 6. Hold the UP button until the first digit flashes and the display shows 6-:xx where xx is the pre-time. Hold the UP button down until the first two digits flash. Use the UP and DOWN buttons to select the pre-time required. After approximately 10 second this value is stored.

### **Lockout Time**

This safety feature prevents the timer from exceeding a maximum time despite a customer inserting more notes. Lockout time is particularly useful in setting a limit to the exposure of UV radiation in tanning bed applications. Lockout is defined by option 9 and once the lockout time has been exceeded all additional notes are rejected. If program code 9 is set to zero the lockout is not operative.

Access the options menu as described earlier and using the UP and DOWN buttons move to option 9. Hold the UP button until the first digit flashes and the display shows 9-:xx where xx is the lockout time. Hold the UP button down until the first two digits flash. Use the UP and DOWN buttons to select the lockout time required. After approximately 10 second this value is stored.

Program Code	Description	Maximum Value	Value Used
9	Lockout time	99	

### **Cool Down Time**

Option 8 allows a cool down time to be programmed. This prevents notes being inserted until after a time lag has occurred. This is especially useful if high intensity floodlighting is being controlled and the lamps need to cool down before being turned on again. Setting option 8 to zero disables the cool down time option.

Access the options menu as described earlier and using the UP and DOWN buttons move to option 8. Hold the UP button until the first digit flashes and the display shows 8-:xx where xx is the pre-time. Hold the UP button down until the first two digits flash. Use the UP and DOWN buttons to select the cool down time required. After approximately 10 second this value is stored.

Program Code	Description	Maximum Value	Value Used
8	Cool Down Time	10 mins	

## Interrogation Menu

The interrogation menu gives access to various audit functions. To access the interrogation menu press and hold both UP and DOWN buttons for approximately 5 seconds. Press and release the UP button to access the interrogation number required. To leave interrogation mode press and hold both UP and DOWN buttons for approximately 5 seconds. Audit functions are non resettable.

### Sessions - Audit Function 1

Audit function 1 displays the total number of sessions that have been activated since build.

Audit Code	Description	Maximum	Comments
1-	Session	65535	

### Minutes - Audit Function 2

Audit function 2 displays the total number of minutes that the Wyvern® 2000N has counted down - i.e. the total time the load has been operated.

Audit Code	Description	Maximum	Comments
2-	Minutes	65535	

### Total - Audit Function 3

Audit function 3 displays the total number of minutes that the Wyvern® 2000N has been active. This includes total pre-time and cool down time as well as count down time. If pre-time and cool down time options have been set to zero then audit functions 2 and 3 will be identical

Audit Code	Description	Maximum	Comments
3-	Total	65535	

### Currency Total - Audit Function 4

Audit function 4 is selected with audit code c- and shows the total currency accumulated for accepted notes. When trailing zeros have been removed when programming currency values (for example \$500 note programmed as 50) then the currency total must be multiplied by the correct factor. Selecting this function clears “Err4” (page 10).

Audit Code	Description	Maximum	Comments
c-	Currency Total (CT)	999999	

## Operating Instructions

When a note is entered either “St:xx”, “Pr:xx” or “ti:xx” will be displayed depending if the used note exceeds the minimum start credit set in option 5. Until the required minimum is reached “St:xx” will remain displayed. Once the minimum is reached the load is activated and timing will begin unless a pre-time has been programmed. If a pre-time has been set then this will count first. If the UP button is pressed during pre-time any remaining pre-time is cancelled, the load activated and timing commences. Notes can be inserted while in pre-time or main time up to any lockout time programmed. When the lockout time is reached subsequent notes will be rejected. A session can be ended early by pressing the DOWN button. This will cancel timing, turn off the load and reset the Wyvern® 2000N for reuse.

Error messages give feedback to the user as shown in table 1. All error messages will show for 10 seconds on the display before returning to the current task, however if the cashbox was detected as full or jammed then the display will show “Err4” for 1 second every 5 seconds no matter what task is occurring until it is cleared this by viewing option c. While the cashbox is jammed or full the note reader will be inoperative and about every 5 minutes will try to stack the notes. When this is achieved, or the cashbox emptied, the note reader will return online and provided “Err4” has been cleared full operation can be continued.

### NOTES.

If the Wyvern® 2000N displays “Err4” on screen before the minimum start credit value has been reached the operation must be cancelled by pressing the DOWN button, clearing the jam or emptying the cash box and resetting “Err4” by entering interrogation option c.

Error	Description
Err0	Note not recognised
Err1	Note acceptor running slow
Err2	Strimming attempted
Err3	CH5 note rejected (fraud channel)
Err4	Stacker full or jammed
Err5	Abort during escrow (incorrect channel for CVPN)
Err6	Note may have been taken to clear jam
Err9	RS232 error - unknown data

Table 1

### Summary of Program Codes

Program Code	Description	See Page Number	Value Used
4	Factory pre-set and cannot be changed	N/A	
5	MSC. Sets the minimum amount before timing starts	7	
6	Pre-time. Set to zero if not required	7, 8	
71-79	STPN. Session time per note. Set to 00 if not required	5, 6	
8	Cool down after session time. Set to 00 if not required	8	
9	Lockout (max session time). Set to 00 if not required	8	
A	Not used	N/A	
b1-b9	CVPN. Currency value per note. Set to 00 if not required	6, 7	
d	Real time 12 or 24 hour clock. Set to 00:00 to turn clock off	5	

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**Summary of Interrogation Codes.**

Selection Code	Description	Page	Maximum
1-	Total sessions activated	12	65535
2-	Total hours load has been on	12	65535
3-	Total hours used including pre and cool down time	12	65535
c-	Total currency value for accepted notes	12	999999

## Specifications

Input Voltage: 110 to 240V 50Hz/60Hz 7A  
Switching capacity: 1kVA (3.15A resistive)  
Power consumption: Less than 10W in standby, no output load active  
Colour: White  
Time intervals: Programmable minutes (99 minutes 59 seconds max)  
Display: 0.6 inch high green LED  
Dimensions: H 350mm W 175mm D 140mm  
Weight: 4.5kgm  
Case: 18swg mild steel epoxy polyester powder coated  
Lock: Radial 8 pin with two keys  
Note stacker capacity: 300 street grade notes

**IMPORTANT** The Wyvern® 2000N Timer is designed for indoor use only.

### Service Information

The Wyvern® 2000N Timer 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 note stacker unit.

### WARNING

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

### Technical Support

Before contacting technical support visit the FAQ section of Leisure Controls International's web site at [www.lci.gb.com/technical\\_support.phtml](http://www.lci.gb.com/technical_support.phtml) where many answers to questions may be found.

Alternatively contact technical support with the appropriate country distributor or by contacting one of the following (support only in English):-

E-mail: [support@lcigb.com](mailto:support@lcigb.com)

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