

**TIME CLOCK WTC-4328**  
**PROGRAMMING MANUAL & CIRCUITS**

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**Applications:**

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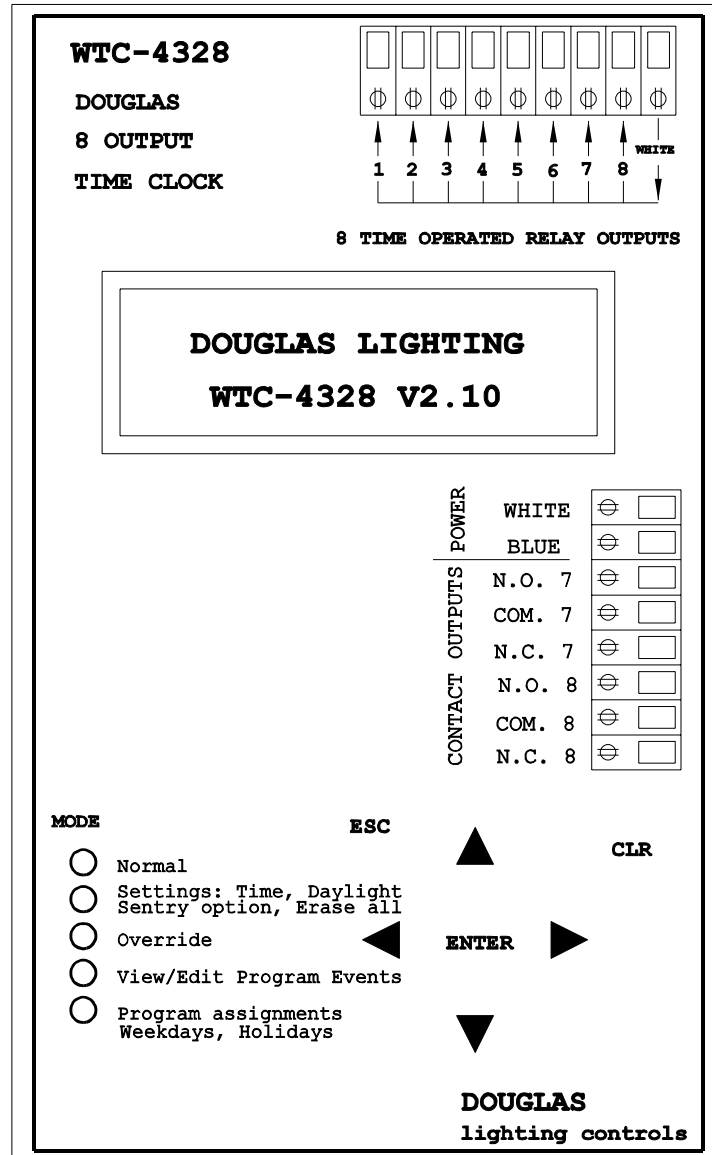
**WTC-328  
8 Output Time Clock**

→  
**LCD Display**

In normal operating mode the LCD display shows the present time.

In all other modes, the LCD display shows various prompts to help guide viewing and altering the time clock's programs.

→  
**Mode LED's**  
Mode LED's are used to select the appropriate program



**Outputs**  
There are 8 outputs that are designed to switch Douglas 2-wire relays or scanners.



**Auxiliary Outputs**

Two maintained auxiliary contacts.

Form C: NO-C-NC

Contacts operate with outputs #7 & #8. Use these outputs for signalling devices other than Douglas relays & scanners.



**Membrane Keypad**

Membrane Keypad is used to set the time clock's time and is used to enter the programs.



**Powering up the Time Clock**

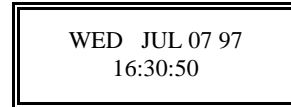
When the time clock is initially powered up, it will display its internal software version # and then show the date and time.



When power is lost, the Date & Time is maintained for 72 hours minimum. All other setup functions are saved indefinitely.

**Selecting Time Clock Modes**

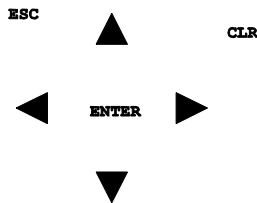
The time clock has several different modes. The present mode that the clock is in is shown by the LED's on the left side of the clock.



The usual mode that the clock should be in is "Normal". Should you forget to return to this mode, the clock will automatically return to this mode if the keypad has not been pressed for 5 minutes.

- 6) Use the "UP & DOWN" buttons to scroll through the mode leds.
- 7) When the desired modeled is on, press "ENTER" to select.

- Normal
- Set Time
- Override
- View/Edit Pgms
- ⚙ Assign Prgms



**Navigating the Displays**

There is several set-up functions that are accessed for a total of four differents sub-menus:



The menus use the top line of the LCD to provide names and headings and the bottom line for settings and program entries.

- 8) The LEFT/RIGHT buttons move the cursor within the display.



- 9) The UP/DOWN buttons scroll through the possible selections.

- 10) The ENTER button saves the display's contents and moves to the next display.

- 11) The ESC button does not save the display and returns the clock to normal mode.

**a) SETTING TIME**

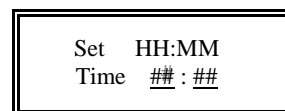
**1) Set Date Menu**

Move the cursor to the desired positions and use the UP/DOWN keys to enter the date and day.



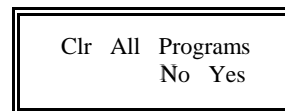
**2) Set Time Menu**

Move the cursor to the desired positions and use the UP/DOWN keys to enter the time.



**3) Clear all Programs?**

Selecting "Yes" will clear all of the programs in the time clock.



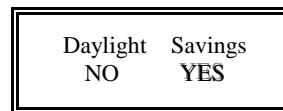
**b) Setting Daylight Saving Time**

Select clock mode "Set Time" as indicated previously

Press "Enter" until you reach the menu & press "Enter"



In order to activate the daylight feature, move your cursor under the "YES" and press "Enter"



A "YES" setting in the previous operation, causes the clock to spring ahead 1 hour in spring and to fall back 1 hour in fall. The 1 hour change occurs at 2:00 hours on Sunday AM.. Now you will have to determine when the time will change during the year. The default in spring is 1<sup>st</sup> Sunday in April and fall is the last Sunday in October.

**Setting Daylight Saving Time**

**Spring Time:** Use the UP/DOWN keys to select the week of the month: 4<sup>th</sup>, 3<sup>rd</sup>, 2<sup>nd</sup> or 1<sup>st</sup>



Then use the LEFT/RIGHT keys to move the cursor under the month. Use the UP/DOWN keys to select the proper month n Apr ( April ) / Mar (March )

**Fall Time:** Using the UP/DOWN arrow select the week of the month: 4<sup>th</sup>, 3<sup>rd</sup>, 2<sup>nd</sup> or 1<sup>st</sup>



Then using the Left or Right arrow move the cursor under the month. Select with the UP/DOWN arrow between OCT ( October ) and NOV ( November )

**Notice:** By pressing ENTER key twice you will be using the factory preset program

c) **Setting Sentry signal**

**What is a Sentry Switch OFF Signal**

Sentry switches are often used in retro-fit applications to provide automated lighting control. Sentry switches control the line voltage current (120V or 277V) to the fixture. When the power is interrupted for longer than 5 seconds, the sentry switch resets itself to OFF. The power is then turned back on but the fixture stays off because the sentry switch has reset to OFF. Occupants can turn lights back ON with the Sentry switch.

If Douglas relays are used to operate line circuits that have Sentry switches installed, use the Sentry Signal sub-menu to set an output so that it issues a Sentry command whenever an OFF signal ( "O" ) is programmed.

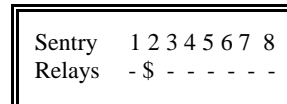
**Enabling the Sentry Command**

Select clock mode " Set Time" as indicated previously until you reach this menu. Press " Enter" key



This operation set sentry feature to relay output

Move the cursor with the LEFT/RIGHT key under the corresponding relay output. Use the UP/DOWN key to select Sentry mode "\$" or normal mode " - "



**Programming a Sentry command**

If an output is set into Sentry mode, the OFF signal (“O”) in the event programming menu will cause that output to switch relays OFF for 5 seconds and the back ON so that the sentry switches are reset.

Douglas Clock S Th 10 17 16:30
-----------------------------------

**Clearing all programs**

Be very careful with this function. Selecting “YES” will clear all of the programmed events in the time clock. There is no recovery. Once cleared, all programs are lost.

Clr All Programs No Yes
----------------------------

The entires made in the varioux setting menus ( Date & Time, Daylight settings and Sentry modes) are not erased. You have to go into each of these menus and make changes as required)

Press “ ENTER “ to exit to the Normal mode

**Override: Manually Switch Outputs**

**1) Override Menu**

Move the cursor to the desired output(s) and select:

- " 1 " for ON Signal
- " 0 " for OFF Signal
- " - " do nothing - No Signal

Relay	1	2	3	4	5	6	7	8
Outputs:	1	-	-	-	1	0	-	-

Press enter to fire the relay outputs as per the setting selected.

**Relay Output List**

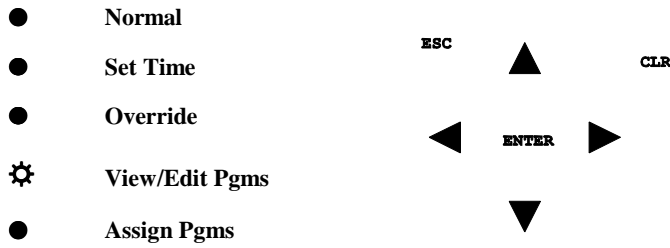
It is recommended that a list similar to that shown below be completed.

When the time clock is connected to the target relay(s) and relay scanner(s), the "Override" menu should be used to verify that the relay outputs of the clock operate what the list below shows. Switch one output at a time ON and then OFF.

Time Clock Relay Outputs							
1	2	3	4	5	6	7	8
1/2 HID Floods	1/2 HID Floods	1/2 Accent Lights	1/2 Accent Lights	Task Area, bakery, etc	Warehouse & receiving	Exterior - PC & TC	Exterior PC Only

2) VIEW / EDIT PROGRAM SCHEDULES

Change mode to select view / edit program mode with the UP and Down arrow as indicated below



The display states the number of programs the time clock has ( 7 ) and the maximum number of events ( 64 ) that each program can have as shown below :

There are seven Programs ABCDEFG

Each Program has up to 64 events

3) Event time menu

To view the events of one of the 7 programs, ABCDEF or G, move the cursor to the program letter and use the UP/DOWN keys to scroll to the program of interest.

View / Edit Prog  
A B C D E F G

Position the cursor at the Event number and use the UP/DOWN arrows to scroll through the events of a program. The time of each event will show on the display.

Event 01 1 2 3 4 5 6 7 8  
05 : 50 1 - 1 - - 1 0 -

If the time shows as “ ??:?? “, then the event does not exist.

Event 05 1 2 3 4 5 6 7 8  
?: ?? - - - - -

Pressing “ ENTER “ saves the time and moves the display to the “ Relay Outputs “ menu.

To exit back to “ Normal Mode “ LED being on, press “ ESC “

**4) Relay Output Menu**

Move the cursor to the desired output(s) and select:

- "1 " for ON
- "0 " for OFF
- "- " do nothing

Press " ENTER" to save and exit back to the eve time menu

**5) Clearing a Single Event**

To clear the event displayed, press " Clr "

The event will cleared and the time will be set to " ??.?? "

**6) Saving Changes**

Altering events and then pressing " ENTER " causes a save operation. A save operation causes the time clock to re-sort all the events chronologically



Saving Memory

**Assign Programs to Days of The Week & Holiday Dates**

1) **Change mode to select “ assign prgms ” with the UP and Down arrow as indicated below and press “ ENTER ”**

- Normal
  - Set Time
  - Override
  - View/Edit Pgms
  - ⚙ Assign Prgms
- ESC      ▲      CLR

◀      ENTER      ▶

▼

- The display states that programs are to be assigned to days of the week.
- The display states that holidays have priority over days of the week.

Assign a Program  
a ) Weekdays

Hol. has priority  
over regular day

2) **Assign Weekday Menu**

Position cursor to desired weekday and use UP / DOWN arrows to select program letter.

Reg Day	S M T W T F S
Run Pgm	C A A A A A B

**Program Letter Definition :**      **Program A runs Mon-to-Fri.**  
    **Programs B runs on Sat.**  
    **Programs C runs on Sun.**

When program letters are all entered, press enter to save.

3) **Assign Holiday Menu**

Holiday assignments have priority over week day assignments. Therefore, if program C is assigned to Christmas (12-25) and Christmas day is a Tuesday, program C will run regardless of Tuesday's weekday assignment.

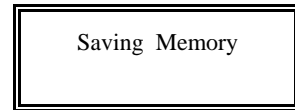
Hol	MM	DD	Pgm
01	12	31	C

Use "Clr" to clear a holiday's date and program assignment.

**Hol :** Holiday #    **MM /DD :** Holiday Date    **Pgm :** Program letter

4) **Saving Changes**

Altering event assignments and then pressing "Enter" causes a save operation. A save operation, causes the time clock to re-sort chronologically all of the assignment data.



**View / Edit Example Time Clock Program Schedules**

It is recommended that a schedule similar to that shown below be completed. This will aid programming considerably.

At the back of this manual are blank schedules. Make photocopies and fill in schedules.

Program	Week day Assignments							Holiday Assignments	Date: MM DD
Schedule	Sun	Mon	Tu	We	TH	FR	SA		
A								none	

**Event Legend:** (-) No Signal (0) OFF signal (1) On Signal

Event 01	1	2	3	4	5	6	7	8
06:45	11	-	-	-	-	10	-	-

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
1/2 HID Floods	1/2 HID Floods	1/2 Accent Lights	1/2 Accent Lights	Task Area, bakery, etc	Warehouse & receiving	Exterior - PC & TC	Exterior PC Only

**Program Schedule “A”**

Comments	Event #	Event	Time	1	2	3	4	5	6	7	8
First employees start at 7:00, Task areas turned on with local switches.  Timer Closes Aux Contact 7 to enable photocell. If dark out lights go on.	A-01	1st half interior ON  PC ON (Enabled)	6:45	1	-	1	-	-	1	0	-
Store open at 9:00 AM	A-02	2nd half interior ON	8:45	-	1	-	1	-	-	-	-
Store closes at 10:00 PM	A-03	1st half interior OFF	22:15	0	-	0	-	-	-	-	-
Store exterior switched ON by photocell and  OFF by Time Clock	A-04	PC/TC 50% OFF	00:15	-	-	-	-	-	-	0	-
Repeat OFF sweeps ensure that lights are switched OFF. Local switches can be used to turn lights back ON	A-05	1st OFF sweep	0.04	0	0	0	0	0	0	-	-
	A-06	2nd OFF sweep	0.125	0	0	0	0	0	0	-	-

Assign Programs Example

Program	Week day Assignments							Holiday Assignments	Date: MM DD
	Sun	Mo n	Tu	We	TH	FR	SA		
C								CHRISTMAS	36518

**Event Legend:** (-) No Signal (0) OFF signal (1) On Signal

Reg Day	S	M	T	W	T	F	S
Run Pgm	C	A	A	A	A	A	B

Hol	MM	DD	Pgm
01	12	25	C

1	2	3	4	5	6	7	8
1/2 HID Floods	1/2 HID Floods	1/2 Accent Lights	1/2 Accent Lights	Task Area, bakery, etc	Warehouse & receiving	Exterior - PC & TC	Exterior PC Only

**Program Schedule “ A “**

Comments	Event #	Event	Time	1	2	3	4	5	6	7	8
First employees start at 7:00, Task areas turned on with local switches.  Timer Closes Aux Contact 7 to enable photocell. If dark out lights go on.	A-01	1st half interior ON  PC ON (Enabled)	0.281	1	-	1	-	-	1	0	-
Store open at 9:00 AM	A-02	2nd half interior ON	0.75	-	1	-	1	-	-	-	-
Store closes at 10:00 PM	A-03	1st half interior OFF	0.917	0	-	0	-	-	-	-	-
Store exterior switched ON by photocell and  OFF by Time Clock	A-04	PC/TC 50% OFF	0.01	-	-	-	-	-	-	0	-
Repeat OFF sweeps ensure that lights are switched OFF. Local switches can be used to turn lights back ON	A-05	1st OFF sweep	0.04	0	0	0	0	0	0	-	-
	A-06	2nd OFF sweep	0.125	0	0	0	0	0	0	-	-

**View / Edit Example Time Clock Program Schedules**

It is recommended that a schedule similar to that shown below be completed. This will aid programming considerably.

At the back of this manual are blank schedules. Make photocopies and fill in schedules.

**Connections to:****1) Douglas 2-wire Relays**

Determine how the relays are to be grouped and connect them to the time clock. A maximum of 4 relays can be controlled by each time clock output. If larger groups of relays are to be switched, use relay scanners.

If switches for occupant control are required, connect a 2-wire switch in parallel with the timer output to the same relay.

**2) Douglas Relay Scanners**

To switch a large group of relays, a relay scanner is used. The time clock outputs are connected to the relay scanner inputs and signal the scanner to switch relay groups ON or OFF. (Relay scanner inputs are switched the same way as Douglas relays).

If master switch stations are required, connect Douglas 2-wire wall switches in parallel with the time clock outputs to the relay scanner input(s). Additional switch stations can be added to permit control from several locations.

**Flick Warn**

The "Flick Warn" feature is not a function of the WTC-4328 time clock. "Flick Warn" is a feature of WRS-2224 relay scanners. Set the relay scanner input into flick warn mode. Whenever the input is switched OFF, it will perform the flick warn function.

**3) MULTIPLE RELAY PANELS**

Projects that have several panels can be controlled by one time clock.

A simple wiring strategy is to interconnect the relay panels with a multi-conductor bus. All of the clock's outputs are then available in each panel. Connect the appropriate output(s) to the relay scanner(s) installed in the panel.

Up to 20 scanners can be controlled by each time clock output. The maximum wiring distance for controlling relay scanners is 2000 feet.

#### **4) TIME CLOCK & PHOTOCELL COMBINATION**

To properly integrate the time clock with a photocell, use the circuit shown. The time clock connects to the photocell and signals the photocell when to start (enable) and stop (disable).

When the photocell starts (is enabled) it checks the present light level and switches accordingly (lights off if it is bright, lights on if it is dark). When the photocell stops (is disabled) it switches off regardless of the present light level.

Use this circuit for buildings that have some or all exterior lights switched off at late night hours. Typical applications have 2 groups of exterior lights. One group is left on all night (security lighting) and the other group is switched off at late hours to save energy (parking lots, accent lighting, etc.). In this case, only the second group requires time control.

Most models of Douglas photo cells (WPC-5577 shown has 2 banks of inputs/outputs A & B have an enable/disable input. The enable / disable input of the photo controller requires a maintained 24V signal. Use the auxiliary output of the time clock to apply the 24V signal.

#### **5) AUXILIARY OUTPUTS**

The WTC-4328 time clock has 2 auxiliary outputs. The auxiliary outputs operate in parallel with relay outputs 7 & 8.

Operation of the auxiliary outputs is as follows:

- 1) If relay output is switched on, the auxiliary output closes.
- 2) If relay output is switched off, the auxiliary output opens.
- 3) If the time clock loses 24V power, auxiliary outputs open.

**Replace this sheet**

**with**

**WTC-4328 Timer Programming Schedules**

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