Product Manual

TCS Basys Controls®

SL1001a
Two-Channel, 365-Day Time Clock

S U P E R T R O L ™
Communicating Controls

Description

The SL1001a is a 365-day time clock with two indepen-dent control channels. Each channel allows up to two on and two off periods per day and 12 holidays each with a duration of 0-99 days.

Features

- Stand-alone or network operation
- 365-day time clock w/ holiday schedule with automatic leap year and daylight savings correction
- Vanishing holidays option - holidays are cleared from schedule when holiday period ends
- Two independent time clock channels
- No battery backup required
- 32 character LCD display
- Local and remote override capability for each channel
- Access to programming may be locked out or limited with the use of an access code
- Two digital inputs accept signal from photocell or occu-pancy sensor
- And/Or logic allows for unique control situations

Mounting

The SL1001a is mounted using two #10 sheet metal screws.

Prior to mounting, the jumpers should be placed as indi-cated under "SETUP".

Contents

Wiring

The SL1001a uses terminal designations for wiring. See diagram below.

POWERING THE SL1001A

The SL1001a is powered from 24 VAC +/- 20 %.

⚠ **Caution:** Do not connect to 120 VAC.

If wiring for communications, dedicated power must be used to power the SL1001a.

Several "S series controllers may be powered from the same transformer, provided that the transformer has sufficient power (The SL1001a requires 5 VA @ 24VAC).

⚠ **Caution:** When multiple TCS/Basys Controls devices are using a single transformer, the polarity of the power wiring must be maintained because all TCS devices are half-wave rectified.
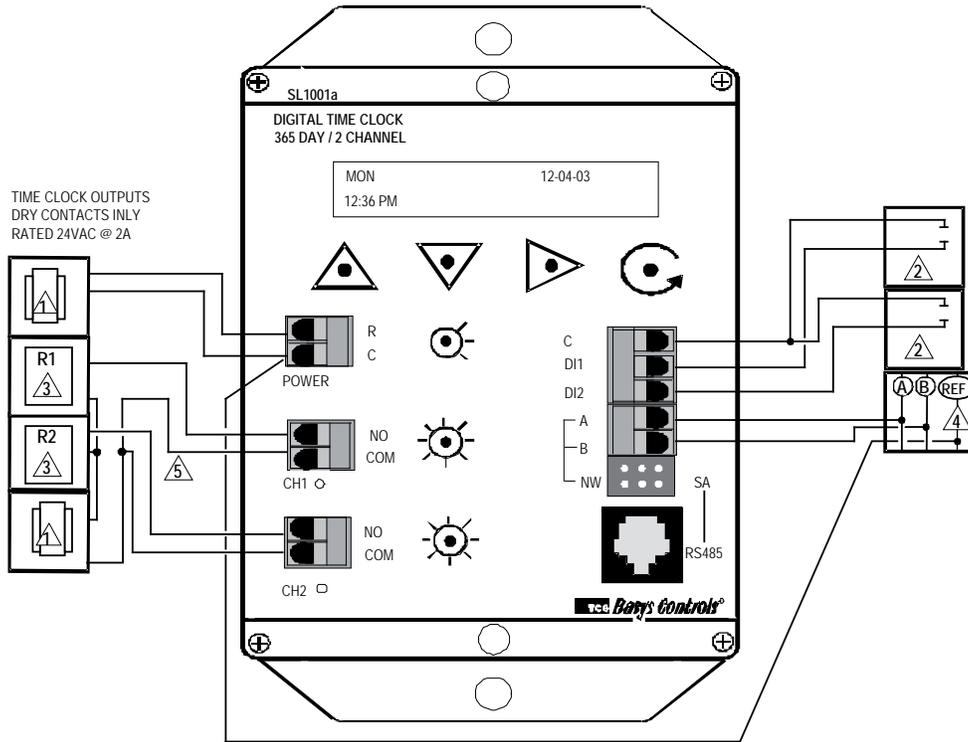
⚠1 24 VAC Transformer. See "Powering the SL1001a".

⚠2 Dry contact. Must NOT be powered.

⚠3 External relay. 24 VAC coil 2A max.

⚠4 For communication wiring, use twisted, shielded 18 AWG. Must be run separatley. "When connecting to a 3 wire bus, run 3rd wire to the "C" Power terminal.

⚠5 Up to nominal 28 VAC.

Setup

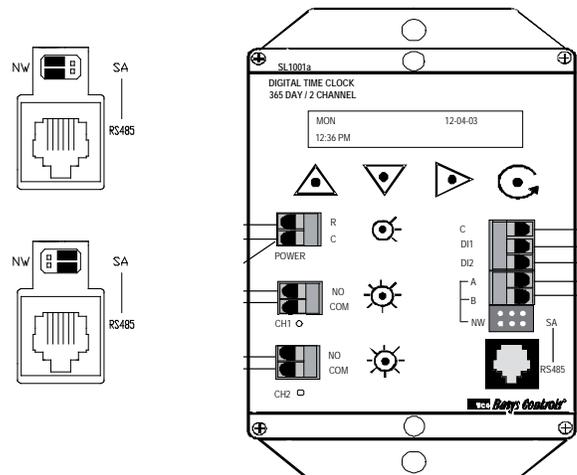### PROGRAMMING ACCESS

The mode of programming must be set by placing two horizontal jumpers in the area shown above.

For network applications where the SL1001a will be accessed through its A and B terminals.

For stand-alone applications where the SL1001a will be preprogrammed through the RJ11 phone jack, or when accessing the SL1001a when it is on a network to isolate it from the network.

Programming

The SL1001a may be programmed through the display and keypad, or with a PC.

If programming with a PC, the following must be set through the keypad prior to programming:

- Address (step #4)
- Baud rate (step #5)

For more information on programming through the PC, consult your TCS software manual.

PROGRAMMING THROUGH THE KEYPAD

To access the programming screens, press both the "Scroll" and "Next" keys simultaneously.

Scroll Key - Used to save any changes to the "current" screen and advance to the next screen while programming. The "Scroll" key is used to enter Programming Mode when pressed with the "Next" key.

Next Key - Used to move to the next field of the "current" screen without advancing to the next screen while programming. The "Next" key is used to enter Programming Mode when pressed with the "Scroll" key.

Increment/Decrement Keys - Used to select the desired value or option.

View Key - Used to view the current input and output status'. When in programming mode, it is used to exit programming mode without saving changes to the "current" screen.

Override Keys - Allows a user to turn the channel ON for a predetermined amount of time when the channel is OFF. Pressing it a second time turns the channel OFF again.
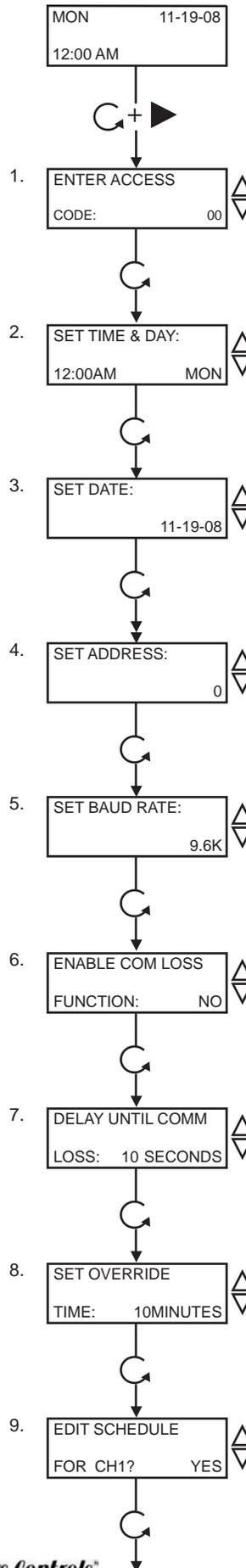
Screen	Description
MON 11-19-08 12:00 AM	**Main Monitoring Screen.** Displays the current time, date and day of the week.
1. ENTER ACCESS CODE: 00	**Access Code Entry Screen.** Used to supply the access code required to enter the programming mode. The default access code is 248. If the wrong code is entered, the program reverts to the main screen.
2. SET TIME & DAY: 12:00AM MON	**Time & Day Screen.** Used to set the hour, minute and day of the week.
3. SET DATE: 11-19-08	**Date Screen.** Used to set the month date and year.
4. SET ADDRESS: 0	**Controller Address Screen.** If using a PC to access the SL1001a, set a unique address from 0 to 255, excluding 248. *All controllers on a network must have a separate and unique communications address.*
5. SET BAUD RATE: 9.6K	**Communication Baud Rate Screen.** If using a PC to access the SL1001a, *all controllers on a network must be set to the same baud rate.* Choose between 2.4K, 4.8K, 9.6K and 19.2K.
6. ENABLE COM LOSS FUNCTION: NO	**Enable Comm. Loss Function.** Choose yes to enable the comm. loss function used in conjunction with all curtailmnet routines.
7. DELAY UNTIL COMM LOSS: 10 SECONDS	**Delay Until Comm. Loss.** Enter the number of seconds (0-255) to allow before the SL1001a reverts to local programmed values rather than using the network's values.
8. SET OVERRIDE TIME: 10MINUTES	**Override Time Screen.** Enter the number of minutes (0-255) the Time Clock will remain on when the override button is pressed.
9. EDIT SCHEDULE FOR CH1? YES	**Edit Channel 1 Schedule Screen.** Choose Yes to program or change the schedule for channel 1. If No is chosen, skip to step 12. *The next three menus are used until the "on" and "off" times are set for all days of the week and holidays for channel 1.*

TCS *Basys Controls*

10.

```
SCHEDULE ON TIME

CH1              (DAY)
```
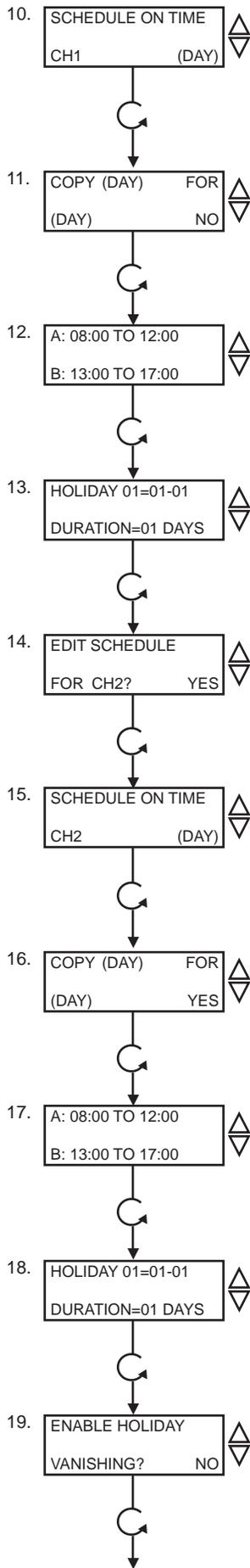
Channel 1 Time Schedule Display Screen. Displays the day of the week (Mon, Tue, Wed, Thu, Fri, Sat, Sun, Holiday) for which the following screens are used to define the active mode.

11.

```
COPY (DAY)      FOR

(DAY)            NO
```

Copy Schedule Screen. Used to copy a previously defined schedule. (Does not appear for Monday.) If yes is chosen, screen 10 is not displayed.

12.

```
A: 08:00 TO 12:00

B: 13:00 TO 17:00
```

Channel 1 On and Off Screen. Used to define two time clock "on" times (in military time) for the day of the week referenced in the previous screen. This screen is not displayed when copying a schedule.

13.

```
HOLIDAY 01=01-01

DURATION=01 DAYS
```

Channel 1 Holiday Define Screen. Used to define the holiday number 1 to 12), the start month and date, and the duration of the holiday for channel 1.

14.

```
EDIT SCHEDULE

FOR  CH2?       YES
```

Edit Channel 2 Schedule Screen. Choose Yes to program or change the schedule for channel 2. If No is chosen, skip to step 17.

The next three menus are used until the "on" and "off" times are set for all days of the week and holidays for channel 2.

15.

```
SCHEDULE ON TIME

CH2             (DAY)
```

Channel 2 Time Schedule Display Screen. Displays the day of the week (Mon, Tue, Wed, Thu, Fri, Sat, Sun, Holiday) for which the following screens are used to define the active mode.

16.

```
COPY (DAY)      FOR

(DAY)           YES
```

Copy Schedule Screen. Used to copy a previously defined schedule. (Does not appear for Monday.) If yes is chosen, screen 15 is not displayed.

17.

```
A: 08:00 TO 12:00

B: 13:00 TO 17:00
```

Channel 2 On and Off Screen. Used to define two time clock "on" times (in military time) for the day of the week referenced in the previous screen. This screen is not displayed when copying a schedule.

18.

```
HOLIDAY 01=01-01

DURATION=01 DAYS
```

Channel 2 Holiday Define Screen. Used to define the holiday number (1 to 12), the start month and date, and the duration of the holiday for channel 2.

19.

```
ENABLE HOLIDAY

VANISHING?       NO
```

Enable Holiday Vanishing Screen. Choose Yes to enable the holiday vanishing function. Choose No if the holiday vanishing function will not be used.

20.

```
DI1 USED FOR

  NORMAL AND/OR
```
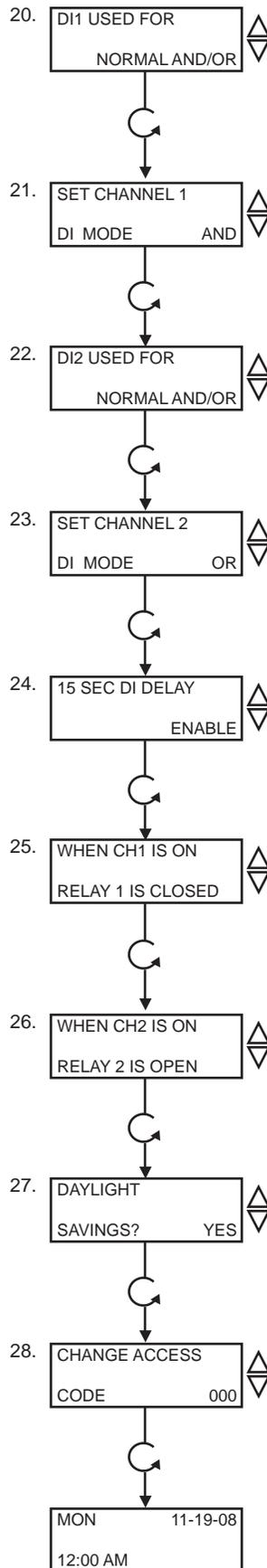
Digital Input 1 Mode Selection Screen. Choose DI1 as NORMAL AND/OR, EXTernal OVERRIDE or TOGGLE MOMENTARY.

21.

```
SET CHANNEL 1

DI  MODE        AND
```

Channel 1 Digital Input Mode. Used to define the functions of DI1 as either a logical "AND" or "OR" function with the channel 1 time clock. (This screen not shown unless NORMAL AND/OR is selected in step 18.)

22.

```
DI2 USED FOR

  NORMAL AND/OR
```

Digital Input 2 Mode Selection Screen. Choose DI2 as NORMAL AND/OR, EXTernal OVERRIDE or TOGGLE MOMENTARY.

23.

```
SET CHANNEL 2

DI  MODE         OR
```

Channel 2 Digital Input Mode. Used to define the functions of DI2 as either a logical "AND" or "OR" function with the channel 2 time clock. (This screen not shown unless NORMAL AND/OR is selected in step 20.)

24.

```
15 SEC DI DELAY

             ENABLE
```

15 Second Delay Screen. Used to indicate whether to apply a 15 second filter to the digital inputs. (This is used only if the DI is chosen to be NORMAL AND/OR.)

25.

```
WHEN CH1 IS ON

RELAY 1 IS CLOSED
```

Channel 1 Output Mode. Used to set the relay output as either "open" or "closed" when channel 1 is "on".

26.

```
WHEN CH2 IS ON

RELAY 2 IS OPEN
```

Channel 2 Output Mode. Used to set the relay output as either "open" or "closed" when channel 2 is "on".

27.

```
DAYLIGHT

SAVINGS?        YES
```

Daylight Savings Screen. Used to select whether or not clock is automatically adjusted for Daylight Savings Time.

28.

```
CHANGE ACCESS

CODE             000
```

Change Access Code Screen. Used to define a custom access code (0 to 255) that may be used in addition to the default access code (248).

```
MON        11-19-08

12:00 AM
```

Main Monitoring Screen.

Operation

BASIC FUNCTION

The SL1001a is a two-channel 365-day time clock. Each channel is completely independent and has its own relay output, override button and digital input. Relay 1, Digital Input 1 and Override 1 are only used with Channel 1, while Relay 2, Digital Input 2 and Override 2 are only used with Channel 2.

Up to two ON periods per day (MONDAY thru SUNDAY), as well as a day called HOLIDAY, can be programmed for _each_ channel. Twelve holiday dates, along with the number of days per holiday, can be programmed. All holiday dates will follow the schedule set for the HOLIDAY day type.

Each channel is either ON or OFF. The relay output can be programmed to be OPEN or CLOSED when the channel is ON. The override button, digital input and time schedule are all used to determine when the channel is ON. In its most basic function, the channel ON and OFF times follow the programmed schedule.

OVERRIDE

A timed override for each channel is available on the keypad. The amount of time the channel will be overridden is set from 0 to 255 minutes as determined in programming setup. This override only operates when the SL1001a channel is OFF. If the channel is ON, the override button has no effect. Through the monitoring screens (and the software) the status of the override (ON or OFF) as well as the time remaining of the override can be viewed. If the override is ON and the button is pressed again, the channel reverts back to the OFF state.

HOLIDAY VANISHING

Holidays are entered by date and number of days. If holiday vanishing is not enabled, when the holiday expires, the holiday will still be in effect when that date occurs the next year. If holiday vanishing is enabled, when the holiday expires, the holiday number of days is set to zero and therefore the holiday will not occur the next year unless the holiday is reprogrammed before that time.

Note: If holiday vanishing is chosen, it is in effect for both channels.

DIGITAL INPUT - MODES

For each channel, its corresponding digital input can be programmed to one of three modes: Normal And/Or, External Override or Toggle Momentary.

NORMAL AND/OR MODE

With this mode, the digital input is used in conjunction with the programmed schedule in determining when the channel should be ON. If the digital input mode is chosen to be OR, then either the digital input being CLOSED or the schedule being ON will have the channel ON. If the digital input mode is chosen to be AND, then the digital input must be CLOSED and the schedule must be ON to have the channel be ON.

EXTERNAL OVERRIDE MODE

With this mode, the digital input acts the same as the Override button on the keypad. The digital input used with this mode must be a momentary N.O. switch. See the description for "OVERRIDE" for more details follows program override time.

TOGGLE MOMENTARY MODE

With this mode, the digital input acts like a toggle switch. The digital input used with this mode must be a momentary N.O. switch. If the channel is ON, momentarily closing the digital input will turn the channel OFF. If the channel is OFF, momentarily closing the digital input will turn the channel ON. This state will remain in effect until the next scheduled OFF or ON time.

Checkout & Troubleshooting

CHECKOUT

You may verify the status of various stages monitoring screens, which are accessed by pressing the "View" key.

1. Verify all wiring prior to powering the time clock.

2. Turn power on. The time clock will display a momentary screen with the model number and version number.Then the main monitoring screen is displayed.
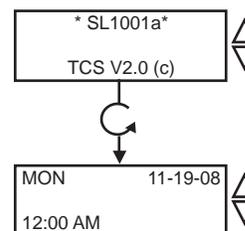
TROUBLESHOOTING

No Display

Check for 24 VAC on terminals "R" and "C".

Relay Outputs Do Not Come On

Check the schedule for this day and the digital input mode. Check whether the digital output should be ON or OFF when the channel is ON. To check for a mechanical relay failure:

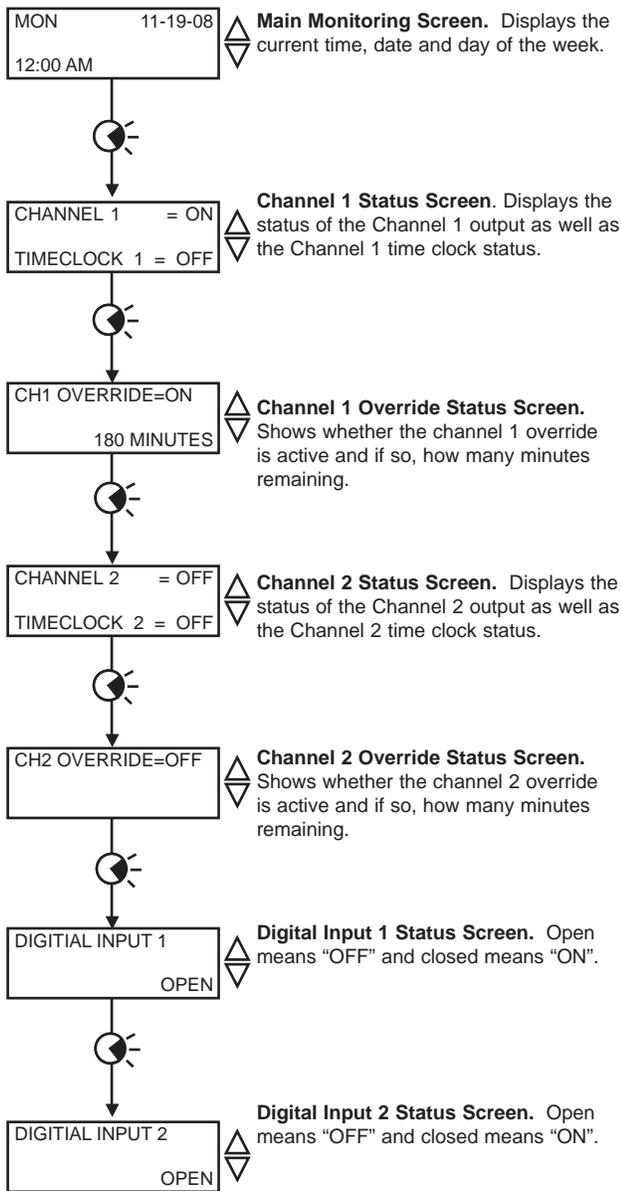1. Bypass digital output one by shorting "COM" to "N.O." for channel 1.

2. Bypass digital output two by shorting "COM" to "N.O." for channel 2 .

Outputs Will Not Shut Off

First determine whether the output should be ON. Also, check the monitoring menus to verify that the digital outputs are on. Pulling the terminal with the "R" and "C" wires off, will instantly turn all outputs off and reset the controller.

MONITORING SCREENS

Continually pressing the "View" button allows more extensive monitoring. The screens are shown below.

```
┌──────────────────────┐
│ MON          11-19-08│  △   **Main Monitoring Screen.** Displays the
│                      │  ▽   current time, date and day of the week.
│ 12:00 AM             │
└──────────────────────┘
```

```
┌──────────────────────┐
│ CHANNEL 1      = ON  │  △   **Channel 1 Status Screen**. Displays the
│                      │  ▽   status of the Channel 1 output as well as
│ TIMECLOCK  1 = OFF   │      the Channel 1 time clock status.
└──────────────────────┘
```

```
┌──────────────────────┐
│ CH1 OVERRIDE=ON      │  △   **Channel 1 Override Status Screen.**
│                      │  ▽   Shows whether the channel 1 override
│          180 MINUTES │      is active and if so, how many minutes
└──────────────────────┘      remaining.
```

```
┌──────────────────────┐
│ CHANNEL 2     = OFF  │  △   **Channel 2 Status Screen.** Displays the
│                      │  ▽   status of the Channel 2 output as well as
│ TIMECLOCK  2 = OFF   │      the Channel 2 time clock status.
└──────────────────────┘
```

```
┌──────────────────────┐
│ CH2 OVERRIDE=OFF     │  △   **Channel 2 Override Status Screen.**
│                      │  ▽   Shows whether the channel 2 override
│                      │      is active and if so, how many minutes
└──────────────────────┘      remaining.
```

```
┌──────────────────────┐
│ DIGITIAL INPUT 1     │  △   **Digital Input 1 Status Screen.** Open
│                      │  ▽   means "OFF" and closed means "ON".
│                 OPEN │
└──────────────────────┘
```

```
┌──────────────────────┐
│ DIGITIAL INPUT 2     │  △   **Digital Input 2 Status Screen.** Open
│                      │  ▽   means "OFF" and closed means "ON".
│                 OPEN │
└──────────────────────┘
```

LED Description

CH1/CH2

These LEDs will be lit when the time clock channel is ON.