JOHNSON CONTROLS

C-7355 Digital Series 7-Day Time Clocks

The C-7355 Digital Series 7-Day Time Clocks provide an economical control solution for automatic On/Off switching of equipment. Digital time clocks are available in the following types: C-7355-9 (one channel) and C-7355-10 (two channels).

The C-7355-9 uses heavy duty single-pole/double-throw (SPDT) contacts (rated 16 amps at 240 VAC resistive) to switch a high current load. Up to 10 On and 10 Off events can be programmed per day using the C-7355-9.

The C-7355-10 uses two heavy duty SPDT contacts (rated 16 amps at 240 VAC resistive) to switch two high current loads. The two SPDT relays can be programmed to switch one load or two loads simultaneously (double-pole/double-throw DPDT) with each scheduled event. Up to 42 On/Off events can be programmed per day using the C-7355-10.
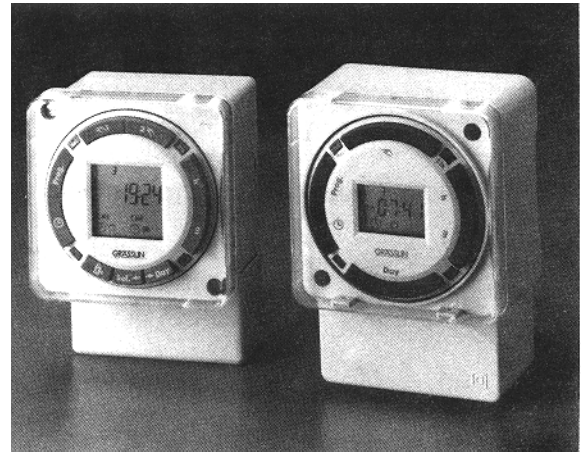

Figure 1: C-7355 Digital Series Time Clocks

Features and Benefits

❑	**Economical Cost**	Makes electronic time-of-day control affordable
❑	**Single-day or Block Programming**	Allows versatility in programming; adapts to a wide range of scheduling needs
❑	**Daylight Saving Time Changeover**	Allows one button daylight saving time changeover
❑	**Holiday Programming**	Allows special holiday (or vacation) programming for one or more days (C-7355-10 only)
❑	**Front-mount Terminal Block**	Reduces wiring and installation time
❑	**Comprehensive Liquid Crystal Display (LCD)**	Allows the time of day, day of week, and program status to be monitored at a glance
❑	**Manual Override**	Allows for temporary or permanent On or Off status
❑	**Reserve Carryover**	Capacitor (C-7355-9) or battery (C-7355-10) reserve retains settings upon loss of power
❑	**Minute-to-minute Programming**	Allows load switching in precise time increments

Introduction

The C-7355 Digital Series 7-Day Time Clocks turn equipment On and Off according to a user-defined, time-of-day schedule. Two choices are available when programming:

- *block* programming, which allows various groups of days (up to seven) to be programmed with the same On and Off times

- *day-to-day* programming, which allows each day to be programmed independently.

The user can choose block programming, day-to-day programming, or a combination of both as long as the On and Off times do not overlap. In addition, the C-7355-10 can be programmed to switch one load or two loads simultaneously with each programmed event.

Up to 20 events can be defined per day when using the C-7355-9. Up to 42 events can be defined per day when using the C-7355-10. An event is a single On or Off time on one day *or* a block of days. Therefore, a maximum of 140 events for the C-7355-9 and 294 events for the C-7355-10 can be programmed per week.

Theory of Operation

The C-7355 Digital Series Time Clocks use heavy duty relay contacts to turn equipment On and Off. During a programmed Off event, the NO and COM terminals are open and the Off symbol ○ appears on the LCD display. During a programmed On event, the NO and COM terminals are switched closed and the On symbol ◉ appears on the LCD display.
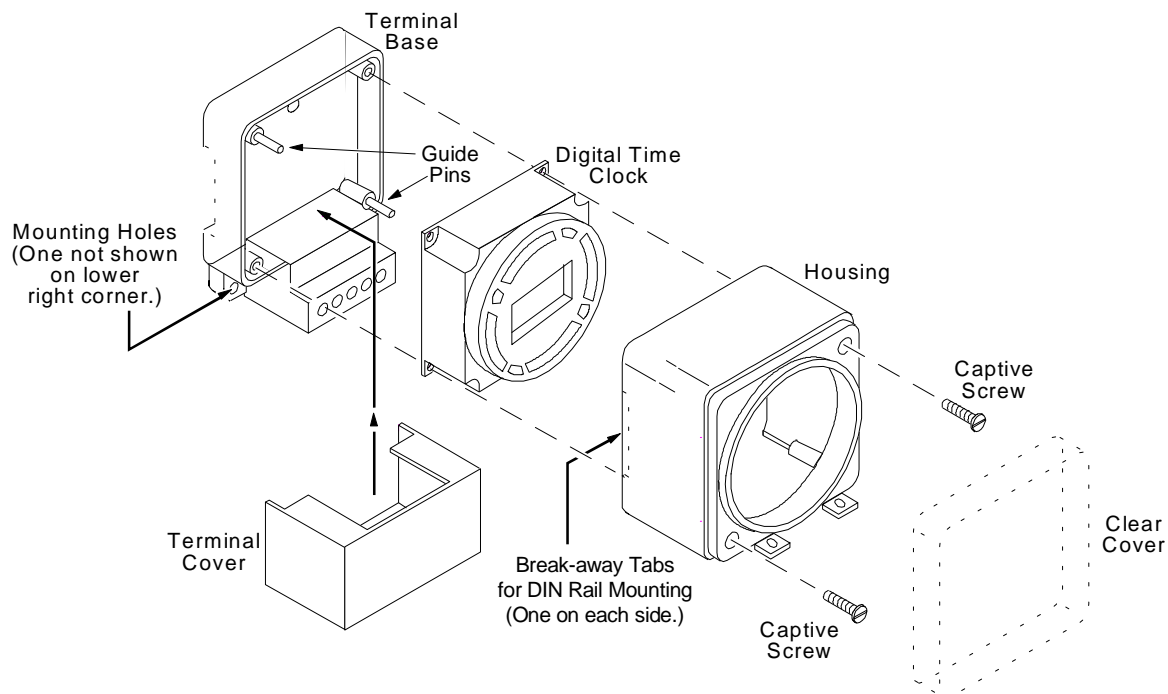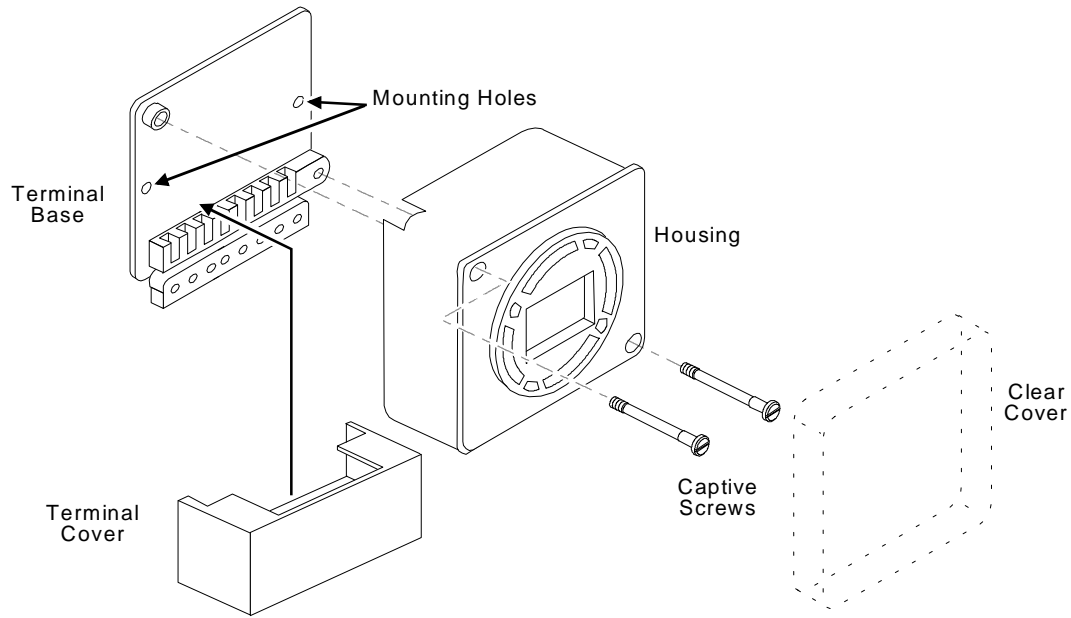

Figure 2: C-7355-9 Time Clock

Figure 3: C-7355-10 Time Clock

Supplies Needed

- drill

- 3/16 in. (5 mm) drill bit

- screwdriver

- blunt-nose pliers

- marking pencil

- wire stripper

Location Considerations

Use the following considerations when locating the C-7355 time clock.

- In **high-vibration locations**, the surface mounting procedure is recommended.

- If possible, power to the time clock should be supplied from a voltage source that does not supply other switching devices or inductive loads.

*P*roduct Dimensions

C-7355-9

2.94
75

4.25
108
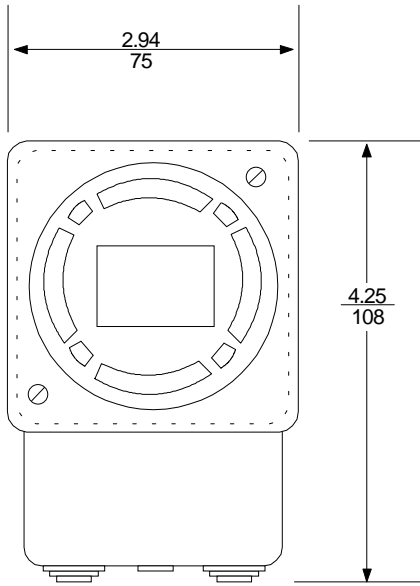
Figure 4: C-7355-9 Front View (in./mm)

2.06
52

4.25
108

Figure 5: C-7355-9 Side View (in./mm)

C-7355-10

2.84
72

3.94
100

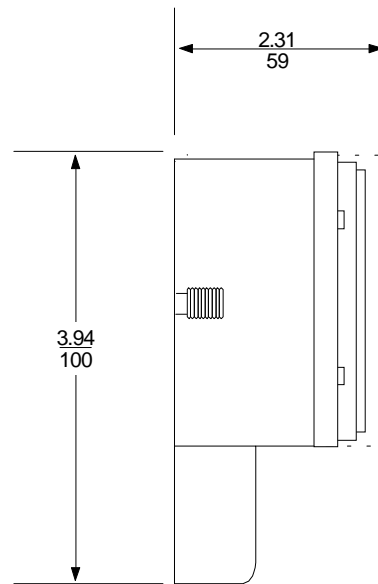**Figure 6: C-7355-10 Front View (in./mm)**

2.31
59

3.94
100

Figure 7: C-7355-10 Side View (in./mm)

Installation and Wiring

DIN Rail Mounting

Use the following instructions to mount the C-7355-9 time clock on a standard 35 mm DIN rail.

Note: The C-7355-10 time clock cannot be mounted on a standard 35 mm DIN rail.

1. Remove the clear cover from the front of the time clock.

2. Using a screwdriver, loosen the two captive screws located in the upper right and lower left corners of the housing. See Figure 2.

3. Remove the housing by pulling forward.

4. Using blunt-nose pliers, remove the break-away tabs from the housing. See Figure 8.

5. Remove the terminal cover by pulling forward.

6. Snap the time clock onto the DIN rail.

7. Make wiring connections (refer to *Wiring* section). Remove the appropriate knockouts on the terminal cover for wire entry. See Figure 9.

8. Replace the terminal cover and housing, tighten the captive screws, and replace the clear cover.
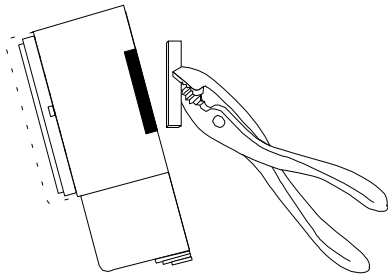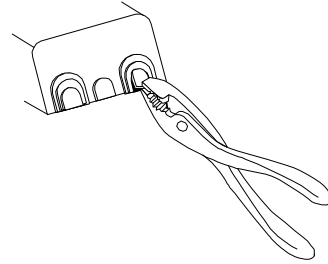

Figure 8: Removing DIN Rail Knockouts

Figure 9: Removing Wire Entry Knockouts

Surface Mounting

Use the following instructions to mount the time clock on a flat surface. The time clock is not position sensitive and can be mounted in any orientation. However, vertical mounting is recommended to aid in programming.

1. Remove the clear cover from the front of the time clock.

2. Using a screwdriver, loosen the two captive screws located in the upper and lower corners of the housing. (See Figure 2 for the C-7355-9 or Figure 3 for the C-7355-10.)

3. Remove the housing by pulling forward.

4. Remove the terminal cover by pulling forward.

5. Place the terminal base against the desired mounting surface and mark the location of the two mounting holes. (See Figure 2 for the C-7355-9 or Figure 3 for the C-7355-10.)

6. Drill two 3/16 in. (5 mm) holes at the marked locations, tap the provided anchors flush with the wall surface, and fasten the terminal base to the wall with the two No. 6 screws provided.

7. Make wiring connections (refer to *Wiring* section). Remove the appropriate knockouts on the terminal cover for wire entry. See Figure 9.

8. Replace the terminal cover and housing, tighten the captive screws, and replace the clear cover.

Enclosure Mounting

If an enclosure is required, see *Table 4: Ordering Information*. Follow the instructions included with the enclosure.

Wiring

⚠️ WARNING: **Shock Hazard**. Disconnect all power supplies before wiring connections are made to avoid electrical shock or possible damage to the equipment.

1. Wire the time clock according to national and/or local electrical codes. Terminals will accept 10 to 24 AWG copper wire. See Figures 10 and 11.

2. Insert the wires in the screw-down terminals in accordance with the terminal designations in Tables 1 and 2.
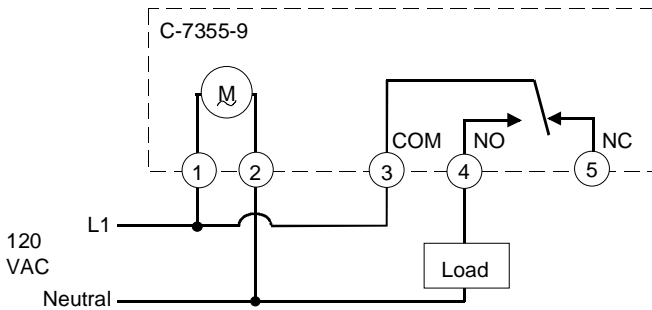
3. Tighten the screw-down terminals to secure the wires.

Figure 10: Typical C-7355-9 Line Voltage Wiring Diagram

Table 1: C-7355-9 Terminal Designations

Terminal Number	Description
1	L1 (120 VAC)
2	Neutral
3	COM (output common)
4	NO (switched output)
5	NC (switched output)

Table 2: C-7355-10 Terminal Designations

Terminal Number	Description
1	L1 (120 VAC)
2	Neutral
3	NO (switched output, Channel 1)
4	COM (output common, Channel 1)
5	NC (switched output, Channel 1)
6	NO (switched output, Channel 2)
7	COM (output common, Channel 2)
8	NC (switched output, Channel 2)

IMPORTANT: The C-7355-9 uses a capacitor for reserve carryover. Therefore, it takes approximately 1-1/2 minutes for the LCD display to become visible once power is initially applied. The LCD display will slowly flash as the capacitor is being charged.

The C-7355-10 uses a Ni-Cad battery backup for reserve carryover. Therefore, the LCD display becomes visible as soon as power is initially applied.
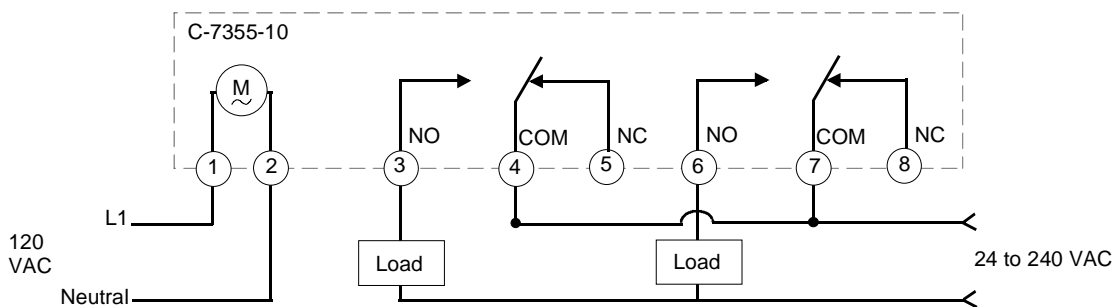
Figure 11: Typical C-7355-10 Wiring Diagram Switching Voltage Other Than 120 VAC

*P*rogramming

Overview

IMPORTANT: The **Res.** button must be pressed before beginning any programming. Use the point of a pen or pencil to press and release the **Res.** button. Failure to press this button may cause the unit to incorrectly store programmed events.

The programming keys of the time clock are positioned to provide a circular path for programming. To program an event, refer to the programming instructions provided on the following pages.

A programmed event consists of an On or Off function, an hour and minute, and a day or multiple days on which the event should occur.

If an event parameter is missing or incomplete, the missing items will flash when the ⊕ or **Prog.** button is pressed. For example, if an On or Off function is not selected, the On symbol ◉ will flash. The missing parameter must be completed before you can continue programming.

Note: Pressing the **h**, **m**, **Day**, or **Sel.** key longer than 2 seconds will cause a rapid roll of the parameter.

Figures 12 and 13 illustrate the buttons of the C-7355-9 and C-7355-10 used for programming.

Choosing 24-Hour or 12-Hour Time

The C-7355 digital time clocks have the ability to be programmed using 24-hour or 12-hour time. To switch between the two types of time, press and hold the **h** button and using a pen or pencil press the **±h** button. An AM or PM is displayed only when 12-hour time is selected.

Note: The type of time factory set for the time clock is 24-hour time.

Used to select an On or Off function for an event while programming, and used for manual override.

Used to reset the time and all programmed events.

Used to enter the programming mode.

Used to return to the time and day display.

Used to adjust the time for daylight saving time.

Used to set the hour.

Used to set the minute.

Used to set the day(s).
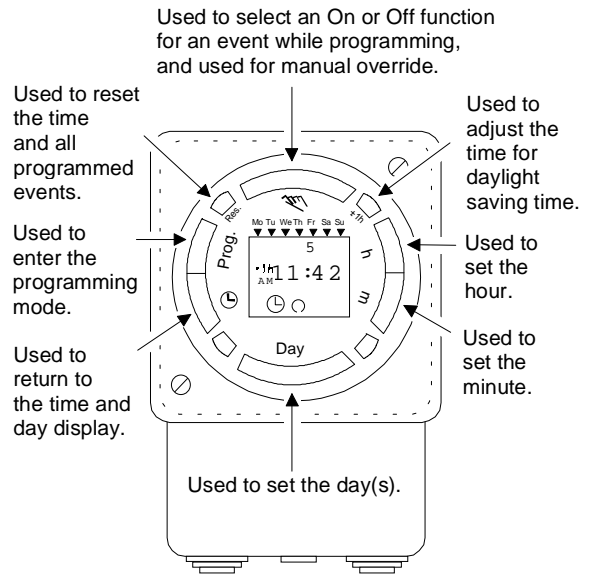
Figure 12: C-7355-9 Buttons

Used to select an On or Off function for an event while programming Channel 1 and/or Channel 2, and used for manual override of Channel 1 and/or Channel 2.

Used to reset the time and all programmed events.

Used to enter the programming mode.

Used to return to the time and day display.

Used to set holiday event.

Used to adjust the time for daylight saving time.

Used to set the hour.

Used to set the minute.

Used to select the day(s).

Figure 13: C-7355-10 Buttons

Setting the Current Time and Day

To set the current day and time:
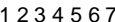
1. Press and hold the ⊕ button.

2. If setting the clock during daylight saving time, use the point of a pen or pencil to press the **±1h** button. +1h appears in the display.

3. Press the **h** button to set the hour.

4. Press the **m** button to set the minutes.

5. Press the **Day** button repeatedly to set the day of the week. Monday is 1 and Sunday is 7.

6. Release the ⊕ button.
   The time and day set appear in the display. The " : " between the hour and minutes flashes to show that the time and day have been set.

Adjusting for Daylight Saving

When a time change due to daylight saving time is required, use the point of a pen or pencil to press and release the **±1h** button. The current time will automatically advance or set back the time by one hour. If daylight saving is on, a "+1h" appears in the display (see Figures 12 and 13). Previously programmed events are not affected by the daylight saving change.

Viewing Number of Available Events

Events are programmed for both On and Off functions. Up to 10 On and 10 Off events per day can be programmed with the C-7355-9. Up to 42 On/Off events per day can be programmed with the C-7355-10.

An event is available (or free) for programming if it
1 2 3 4 5 6 7
appears as --:-- in the display when the **Prog.** button is pressed. To view the total number of available events, press the **Prog.** button until "Fr" followed by a number appears in the display. The number after the "Fr" represents the number of available events. For example, twenty events are available when the display shows "Fr 20". Press the ⊕ button to return to the current time and day display.

Setting Events Using the C-7355-9

To program an event:

1. Press the **Prog.** button until an available event is displayed.
   1 2 3 4 5 6 7
    --:-- appears in the display.

2. Press the ✎ button to select an On or Off function for the event.
   The On symbol ◉ appears at the bottom of the display. Pressing the ✎ button again toggles to the Off symbol ○. Select an On or Off function for the event.

3. Press the **h** button to set the hour for the event.

4. Press the **m** button to set the minute for the event.

5. Do you wish to have the event occur **every day**?

   - *If yes*, press the **Prog.** button. Go to Step 8.
     1 2 3 4 5 6 7
      --:-- appears in the display allowing you to program the next event.

   - *If no*, go to Step 6.

6. Press the **Day** button to select the desired day or days of the week for the event. Repeated pressing of the **Day** button displays the following day(s):

   - 1 2 3 4 5 6 (Monday through Saturday)

   - 1 2 3 4 5 (Monday through Friday)

   - 6 7 (Saturday and Sunday)

   - Individual days

   Note: Repeated pressing of the **Day** button will cycle through the blocks of days and days listed above.

7 Press the **Prog.** button to save the event.
   1 2 3 4 5 6 7
    --:-- appears in the display allowing you to program the next event.

8. Repeat Steps 2 through 7 for each event to be programmed.

9. Press the ⊕ button to return to the current time and day display.

## Setting Events Using the C-7355-10

To program an event:

1. Press the **Prog.** button until an available event is displayed.
   1 2 3 4 5 6 7
   - - : - - appears in the display.

2. Select an On or Off function for the event.

   Note: An On and Off function can be selected for one or both channels. One channel can switch On or Off while the other channel does not switch for the event. Both channels can switch On or Off for the same event, or one channel can switch On and the other channel can switch Off for the same event.

   Press the ⚡1 button to select an On or Off function for Channel 1 and/or press the 2⚡ button to select an On or Off function for Channel 2. The On symbol ◉ appears at the bottom of the display below "CH1" or "CH2". Pressing the ⚡1 or 2⚡ button again toggles to the Off symbol ○. Pressing the ⚡1 or 2⚡ button a third time removes the channel from the event.

3. Press the **h** button to set the hour for the event.

4. Press the **m** button to set the minute for the event.

5. Do you wish to have the event occur **every day**?

   - *If yes*, press the **Prog.** button. Go to Step 10.
     1 2 3 4 5 6 7
     - - : - - appears in the display allowing you to program the next event.

   - *If no*, press the **Day** button. Go to Step 6.
     A flashing underline appears under the 1 in the display.

6. Press the **Day** button to move the underline to a day of the week to be omitted from the programmed event. (Number 1 represents Monday and Number 7 represents Sunday.)

7. Press the **Sel.** button.
   The selected day flashes on the display.

8. Continue to press the **Day** and **Sel.** buttons until all of the desired days to be omitted are removed from the display.

9. Press the **Prog.** button to save the event.
   1 2 3 4 5 6 7
   - - : - - appears in the display allowing you to program the next event.

10. Repeat Steps 2 through 9 for each event to be programmed.

11. Press the ⏰ button to return to the current time and day display.

Presetting Holiday Events (C-7355-10 Only)

Multiple events (more than one On and Off event) can be preset to function on holidays or vacation times. A typical holiday event is Off at 12:01 a.m. to have the loads turned Off during the holiday.

To preset a holiday event:

1. Press the **Prog.** button until an available event is displayed.
   1 2 3 4 5 6 7
   - - : - - appears in the display.

2. Select an On or Off function for the event.

   Note: An On and Off function can be selected for one or both channels. One channel can switch On or Off while the other channel does not switch for the event. Both channels can switch On or Off for the same event, or one channel can switch On and the other channel can switch Off for the same event.

   Press the ⚡1 button to select an On or Off function for Channel 1 and/or press the 2⚡ button to select an On or Off function for Channel 2. The On symbol ◉ appears at the bottom of the display below "CH1" or "CH2". Pressing the ⚡1 or 2⚡ button again toggles to the Off symbol ○. Pressing the ⚡1 or 2⚡ button a third time removes the channel from the event.

3. Press the **h** button to set the hour for the event.

4. Press the **m** button to set the minute for the event.

5. Press the ⛱➜ button to save the holiday event.
   The ⛱➜ appears in the display. The holiday event is now permanently preset to be scheduled for holiday or extended vacation periods.

6. Press the ⏰ button to return to the current time and day display.

Scheduling Preset Holiday Events (C-7355-10 Only)

A preset holiday event can be scheduled at any time up to six days before the event is to begin. It also may be activated on the first day of the holiday. Refer to *Presetting Holiday Events (C-7355-10 Only)* for the procedure on presetting holiday events.

A scheduled holiday event takes priority over regular scheduled events. Once a holiday event begins, the display will show the holiday symbol 🏖 and the number of days the holiday event is to run. The display will count down each day of the holiday event and will revert to the current time and day display when all of the days of the holiday event have elapsed.

To schedule a preset holiday event:

1. Press the 🏖 button. -- : Ho appears in the display.

2. Press the **Day** button to select the day of the week that the holiday event is to begin. Monday is 1 and Sunday is 7.

3. Repeatedly press the **Sel.** button to select the number of days that the holiday event is to run. Up to 99 days can be selected.

4. Press the ⏰ button.
   If the holiday event is scheduled to begin on the current day, the holiday symbol 🏖 and the number of days the holiday event is to run appear in the display indicating that the holiday event has started. If the holiday event is scheduled to begin any other day, the holiday symbol 🏖 and the current time and day appear in the display indicating that a holiday event has been scheduled.

Changing/Canceling Scheduled Holiday Events (C-7355-10 Only)

Scheduled holiday events can be viewed at any time for review, modification, or cancellation by pressing the 🏖 button. The holiday event schedule appears in the display. Event changes can be made by following the procedure listed in the *Scheduling Preset Holiday Events (C-7355-10 Only)* section. The holiday event can be canceled by pressing the 🏖 button twice.

Reviewing/Changing Programmed Events

Programmed events can be viewed at any time for review or modification by pressing and releasing the **Prog.** button once for each event. The programmed events appear in the order that they were entered. After all of the programmed events are displayed, the number of available events is displayed. Event changes can be made by revising the hours, minutes, or day(s) as outlined in the *Setting Events Using C-7355-9*, *Setting Events Using C-7355-10*, and *Presetting Holiday Events (C-7355-10 Only)* sections. Press the ⏰ button to return to the current time and day display.

Deleting Programmed Events

To delete a programmed event:

1. Press the **Prog.** button until the desired event is displayed.

2. Press the **h** button until "--" appears.

3. Press the **m** button until "--" appears.

4. Press the ⏰ button.
   The display flashes ----- for approximately 15 seconds while the programmed event is being deleted and then returns to the current time and day display.

Resetting All Programs

To clear all programs as well as the current time and day, press the **Res.** button.

*M*anual Override

The ✋ button of the C-7355-9 and the ✋1 and 2✋ buttons of the C-7355-10 allow the user to manually override the output of the channel On or Off without affecting the programmed events.

Press the ✋ , ✋1 , or 2✋ button once to override or reverse the relay output temporarily. For example, it will switch a load Off that is On, or switch a load On that is Off. The hand symbol ✋ and On symbol ◉ appear in the display. Automatic control will resume at the next scheduled event.

Press the ✋ , ✋1 , or 2✋ button a second time to switch the load On permanently. ◉ appears in the display. Permanently On overrides all scheduled events.

Press the ✋ , ✋1 , or 2✋ button a third time to switch the load Off permanently. ◯ appears in the display. Permanently Off overrides all scheduled events.

Press the ⚡, ⚡1, or 2⚡ button a fourth time to return to automatic control. The clock symbol 🕐 appears in the display.

*P*ower Failures

In the event of a power loss, the time clock outputs are disabled but clock operation and programmed events are maintained for up to 24 hours (C-7355-9) or 7 days (C-7355-10).

The C-7355-9 uses a charged capacitor to maintain voltage for program retention. The C-7355-10 uses a Ni-Cad battery to maintain reserve voltage.

The C-7355-10 must be powered for 8 to 10 hours for the battery to be fully charged.

*R*epair Information

Field repairs must not be made. For a replacement time clock, contact the nearest Johnson Controls representative.

*T*roubleshooting

Table 3: Troubleshooting

Symptom	Possible Cause(s)	Corrective Action
No display/faint display…	C-7355-9 model is powered up less than 1.5 minutes.	This is normal operation. Allow the 120 VAC supply to be connected at least 1.5 minutes.
	Supply voltage is incorrect.	Use a voltmeter to check the voltage between terminals 1 and 2. The voltage should be between 102 and 132 VAC. If voltage is less than 102 VAC, check the power supply.
Flashing display…	Battery is low.	Check the 120 VAC power supply to the time clock.
Time clock does not switch load…	Permanent On or Off manual override is enabled.	Press the ⚡, ⚡1, or 2⚡ button until the unit is under automatic control (the 🕐 appears in the display).
	The On or Off setting for the event is programmed incorrectly.	Refer to *Reviewing/Changing Programmed Events* to verify programmed events.
	The On or Off setting for the event is programmed to start before the current time. The time clock does not switch until the start of the programmed event is encountered by the current time.	Press the ⚡, ⚡1, or 2⚡ button once to place the unit in temporary override (the ⚡ symbol appears in the display). Automatic control will resume at the next scheduled event.
LCD shows missing or extra segments…	LCD failure.	Replace the unit.

*O*rdering Information

Table 4: Ordering Information

Item	Product Code Number
Digital Time Clock, 1 Channel, 20 Events	C-7355-9
Digital Time Clock, 2 Channels, 42 Events	C-7355-10
Metal Indoor Enclosure	BOX-7355-1

Specifications

Product	C-7355-9 Digital Time Clock, 1 Channel, 20 Events per Day
	C-7355-10 Digital Time Clock, 2 Channels, 42 Events per Day
Power Requirements	120 VAC +10% -15%, 50/60 Hz
Switching Capacity	Maximum: 16 amps @ 240 VAC resistive
	Minimum: 100 mA @ 20 VAC
Output Type	C-7355-9: SPDT contacts
	C-7355-10: Two SPDT contacts (with the ability to be programmed as one DPDT)
Power Consumption	4 VA
Clock Accuracy	±4 minutes per year
Reserve Carryover	C-7355-9: Capacitor Reserve: 24 hours; after 5 years, backup is 5 hours
	C-7355-10: Battery Reserve: 7 days
Shortest Switching Time	1 minute
Wire Gauge	10 to 24 AWG
Mounting	Surface, 35 mm DIN rail, or Enclosure
Ambient Operating Temperature	0 to 140°F (-18 to 60°C)
Ambient Storage Temperature	-20 to 150°F (-29 to 66°C)
Ambient Humidity	0 to 95% RH, non-condensing; 85°F (29°C) maximum dew point
UL Recognized	C-7355-9: Grasslin File E83486
	C-7355-10: Pending
Canadian UL Recognized	C-7355-9: Grasslin File E83486
	C-7355-10: Pending
FCC Compliance	Complies with the requirements for a Class A computing device in FCC Rules Part 15, Subpart J.
Dimensions (H x W x D)	C-7355-9: 4.25 x 2.94 x 2.06 in. (108 x 75 x 52 mm)
	C-7355-10: 3.94 x 2.84 x 2.31 in. (100 x 72 x 59 mm)
Shipping Weight	0.47 lb (0.21 kg)

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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