

DC-25-OEM

Installation Manual

Includes Operator Manuals



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Introduction

The DC-25-OEM is designed to add dynamic content to static signage. A sign maker or other original equipment manufacturer can stock several identical units and configure each to fill individual roles in signage. There are 8 modes of operation. Here is a list of the 8 modes and some of the applications.

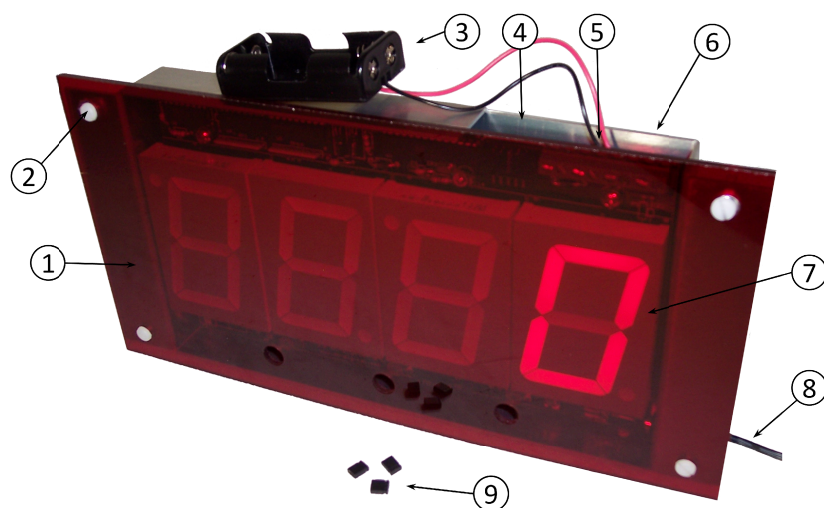
1. Count Up Days Timer
 - a. Safety Scoreboard
 - b. Days Elapsed (Since Reset)
 2. Count Down Days Timer
 - a. Milestone Timer
 - b. Deadline Timer
 - c. Event Timer
 3. Unit Counter/Static Number
 - a. Production Counter
 - b. Scrap/Reject Counter
 - c. Static Number (Changeable Copy)
 - d. Sales Counter
 - e. Goal/Actual Counter (2 Displays)
 - f. "Now Serving"
 4. Time-of-Day Clock
 - a. Promotional Signage
 - b. "Happy Hour" or other Time-of-Day Specials
 - c. Brand Awareness
 5. Count Up (Elapsed Time) Timer
 - a. Pace Timer
 - b. Race Clock
 - c. Wait/Hold Time Timer
 - d. Emergency Response Timer
 6. Count Down (Time Remaining) Minutes & Seconds Timer
 - a. Speaker/Council Meeting Timer
 - b. Wait Time Timer
 - c. Rental Timer
 - d. Process Timer
 7. Count Down (Time Remaining) Hours & Minutes Timer
 - a. Shift Timer
 - b. Marathon Timer
 - c. Military PT Timer
 - d. Athletic Timer
 - e. Segment Timer
 - f. Rental Timer
 8. Add-On Mode*
 - a. RS-232 Serial Display
 - b. Temperature
 - c. Time of Day synchronized to GPS or NTP
 - d. Custom Functions
- * Various add-on modules are available separately for additional functions.*

Description

Country of Origin	Made in the U.S.A.
Environment	Indoor, IP20, NEMA 1
Display	2.3" high, red, 7-segment, 4-digit, LED
Viewing Distance	120 Feet (36.57 Meters)
Function	Configurable as Timer, Counter, Time-of-Day Clock etc.
Power Supply	Display: 8.4 Watts MAX, 12 Volts DC; 700 mA Power Adapter Source: 100-240 Volts AC, 50-60 Hz, 0.4 A Memory Backup: (2) AA 1.5 Volt Alkaline Batteries (not included)
Time Base	Crystal Oscillator ± 2 minutes/year (factory Calibrated)
Control	(3) Momentary Pushbutton Switches, recessed through the front face These switches can be masked and separate switches can be connected to screw terminals. A switch kit, SW-OEM-1, is available separately.
Mounting	(4) #6-32 Mounting holes. (4) #6-32 x 1" paintable non-corrosive nylon pan-head screws are provided.
Housing	Auto-Align Lens Face and Back Box, 10 inches wide x 5 inches high x 1.25 inches deep. Lens is translucent red polycarbonate. Back Box is mill finish aluminum alloy.
Circuit Board	4.25 inches high x 9.69 inches wide x .75 inches deep
Weight	2 lbs. (907.18 grams)







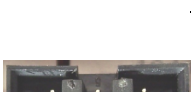
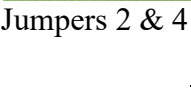
Legend

1) Lens Face
2) Mounting Screws
3) Battery Box
4) Configuration Pins
5) Screw Terminals
6) Back Box
7) LED Display Circuit Board
8) Power Adapter (PS-12-700)
9) Configuration Jumpers



Configuration

The DC-25-OEM can operate in 1 of 8 modes. The operating mode is selected by placing 0, 1, 2 or 3 jumpers on pins that are accessible from the top of the back box. The jumper settings for the 8 modes and a brief description of operation are outlined below. See the individual operation manuals for further details on operating in each mode.

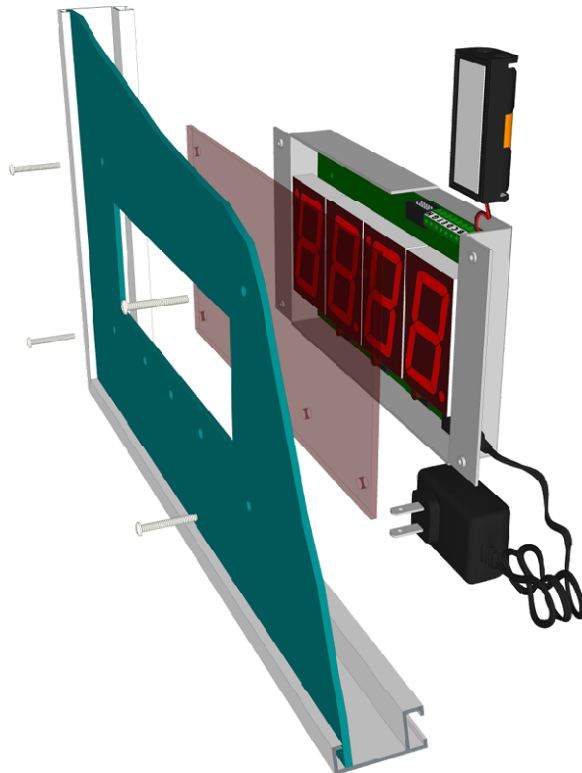
 No Jumpers	Count Up Days Timer	The timer will count up by one once every 24 hours from reset or a set start value. The buttons will set a start value or reset the timer to 0. The timer starts when the last button pressed is released.
 Jumper 1	Count Down Days Timer	The timer will count down by one from a set start value once every 24 hours. The timer will stop at 0. The buttons will set the start value or reset to 0. The timer starts when the last button pressed is released.
 Jumper 2	Number or Unit Counter	The counter will increment by one or decrement by one with each button pressed. Pressing a third button will reset the count to 0. The number will remain unchanged if no button is pressed.
 Jumpers 1 & 2	Time of Day Clock	The clock will display the hours and minutes of the current time-of-day in 12-hour or 24-hour format. The buttons will set the time and switch between formats.
 Jumper 4	Count Up Timer	The timer will display the elapsed time, shifting resolution to the most significant value from seconds and hundredths to minutes and seconds to hours and minutes. The buttons will start, pause, and reset the timer.
 Jumpers 1 & 4	Count Down Timer MM:SS	The timer will display the time remaining from a set start value, shifting resolution to the most significant value from minutes and seconds to seconds and hundredths. The buttons will set the start value in minutes and seconds as well as start, pause and reset the timer.
 Jumpers 2 & 4	Count Down Timer HH:MM	The timer will display the time remaining from a set start value, shifting resolution to the most significant value from hours and minutes to minutes and seconds to seconds and hundredths. The buttons will set the start value in hours and minutes as well as start, pause and reset the timer.
 Jumpers 1, 2 & 4	Add-On Mode	Add-On Mode requires one of various add-on modules to drive the display, available separately. Add-on modules can be attached to the screw terminals, accessible from the top of the back box. These add-on modules extend the displays utility indefinitely.

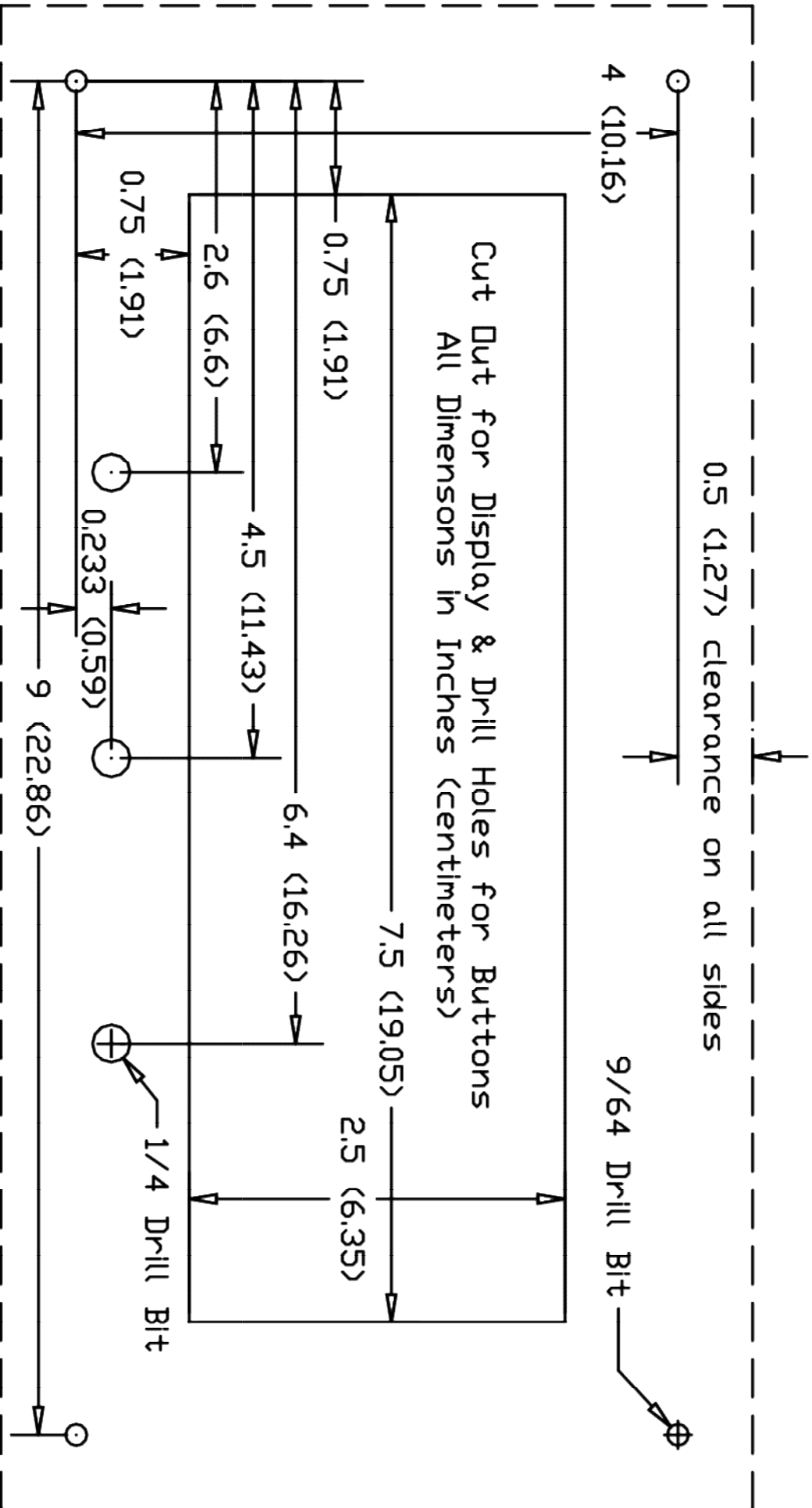
Installation

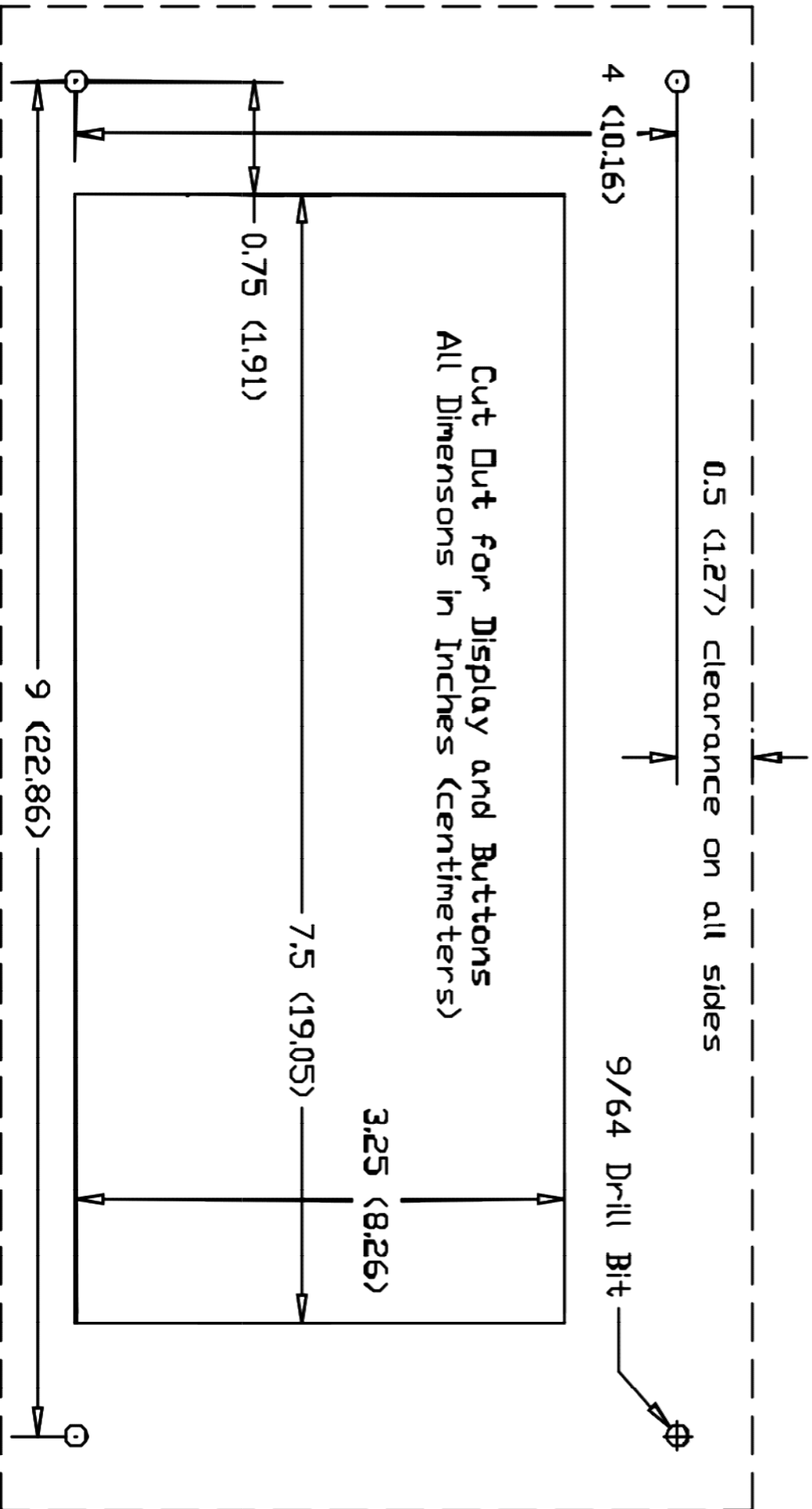
The DC-25-OEM has been designed as a complete unit that can easily be mounted in a sign face without requiring specialized training or electrical knowledge. Depending on application, 1 of 3 cutouts can be made in the sign face. Templates are provided on the following pages for each mounting method

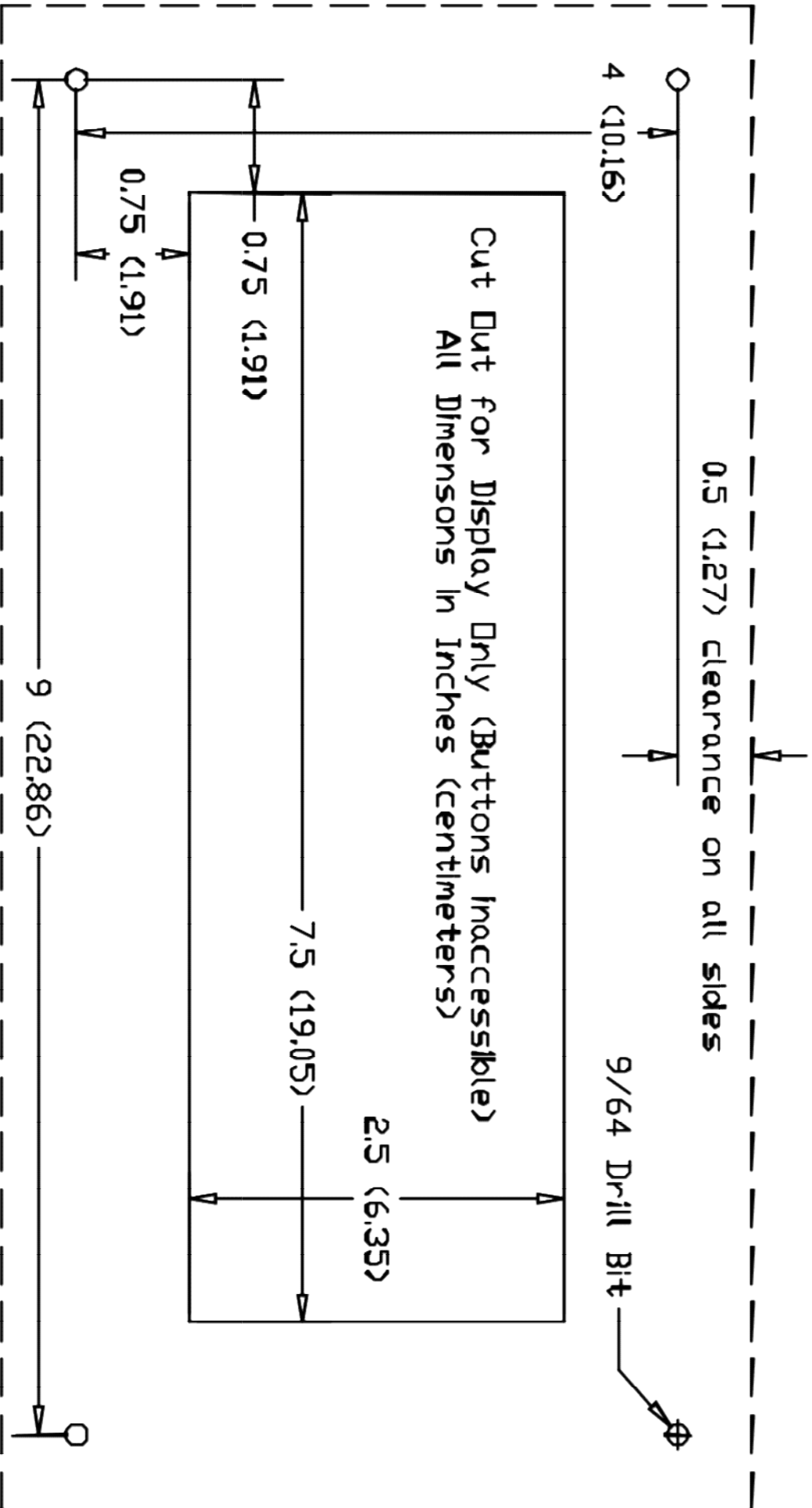
1. **The LED display area is exposed by a cutout and the buttons are exposed by drilled holes.** Use this method for greatest visual appeal, and maximum graphic space.
2. **The LED display area and buttons are exposed in a single cutout.** Use this method for industrial applications requiring less visual appeal or graphic space or where a single cutout is preferred to simplify sign construction. This method exposes more of the printed circuit board.
3. **The LED display area is exposed while the buttons are inaccessible.** Use this method for displays that are controlled by remote switches or an add-on interface, such as serial, networking, RF wireless, temperature etc.

Prepare the sign face panel by making the cutouts and holes according to one of the 3 templates. Then, mount the DC-25-OEM by sandwiching the lens face between the back of the sign face panel and back box. The nuts on the back box should auto-align the lens face to the cutout. The included screws may be replaced with hardware of preference to accommodate unique designs. To mount the display on studs, use #4 studs to pass through the nuts in the back box and affix a nut behind. The battery box may be affixed to any surface with the adhesive backing.





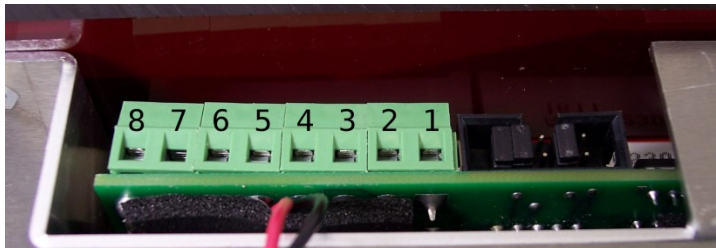






Remote Button Installation

Remote pushbuttons that mirror the functions of the front pushbuttons can be installed elsewhere on the signage and connected to the DC-25-OEM via wires attached at the screw terminals accessible from the top of the back box. There are 3 pushbuttons on the face, SW1 (Left), SW2 (Center) and SW3 (Right). There are 4 screw terminals for attaching the switches, 3 signal terminals and a common. Remote switches should connect the signal path to common when pressed. A switch kit is provided for this purpose, SW-OEM-1. **Do not connect a voltage or signal to the signal terminals or common, such as a +24 volt pulse from a PLC. Doing so will permanently damage the unit. DC-Digital can only provide customer support for remote buttons provided.** The screws for the screw terminals are covered by the lens face, so it is necessary to make these connections prior to mounting the DC-25-OEM on the sign face. Connect the switches as follows:



Connect the common wire from each of 3 switches to terminal 4.

Connect the signal wire for SW1 or LEFT to terminal 1.

Connect the signal wire for SW2 or CENTER to terminal 2.

Connect the signal wire for SW3 or RIGHT to terminal 3.

Power Supply Installation

A Power Supply Adapter is provided, PS-12-700. This is UL Listed and supplied with a US NEMA 1-15P plug for connection to a standard US electrical outlet. The cord on this power supply adapter is 6 feet long. Connect the barrel connector on the end of this power cord to the power socket on the right side of the DC-25-OEM.

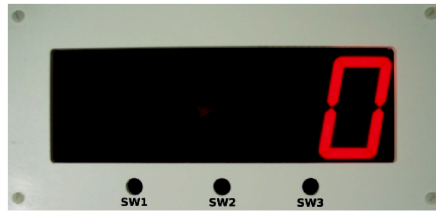




Operator Manuals

Each of the next several pages will contain operating instructions for 7 of the 8 modes of operation. These manuals may be copied and provided to the end user of the signage. In add-on mode, the DC-25-OEM is a display. In this mode, the function and operation will be determined by the add-on that is used. See the manual for the specific add-on for more information.

Days Count Up Timer



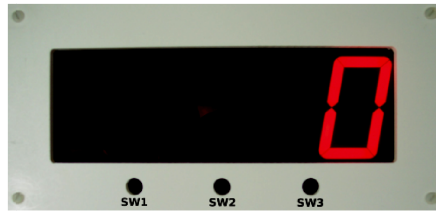
Upon plugging in the Days Count Up Timer, the display will proceed through a power on test for approximately 10 seconds. Once this test is complete, the display should appear as pictured above. The timer is already keeping time and in 24 hours, the display will increment to 1. It will continue to increment at the same time each day, ± 2 minutes/year. The recessed push-buttons will modify this timekeeping behavior as follows:

SW1 (Left)	SW2 (Middle)	SW3 (Right)
<p><u>Press and release</u> will cause the days to increment up by 1 day.</p> <p><u>Press and hold</u> will cause the days to increment up at an increasing rate the longer the button is held down, up to 100 days per second.</p>	<p><u>Press and release</u> will cause the days to decrement down by 1 day.</p> <p><u>Press and hold</u> will cause the days to decrement down at an increasing rate the longer the button is held down, up to 100 days per second.</p>	<p><u>Press and release</u> will cause the days to reset to 0.</p>

Note: The Days Count Up Timer will start timekeeping immediately upon release of any one of the switches. It will increment 1 day every 24 hours from this moment, ± 2 minutes/year.

Example: If you last set or reset the timer at 10:00 A.M. the display will increment by 1 every day at 10:00 A.M.

Days Count Down Timer



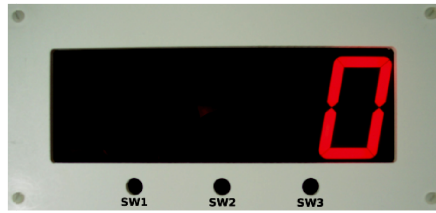
Upon plugging in the Days Count Down Timer, the display will proceed through a power on test for approximately 10 seconds. Once this test is complete, the display should appear as pictured above. As this display counts down from a set value to 0, it will rest at 0 until set to a start value. The recessed push-buttons will set a start value and modify timekeeping behavior as follows:

SW1 (Left)	SW2 (Middle)	SW3 (Right)
<p><u>Press and release</u> will cause the days to increment up by 1 day.</p> <p><u>Press and hold</u> will cause the days to increment up at an increasing rate the longer the button is held down, up to 100 days per second.</p>	<p><u>Press and release</u> will cause the days to decrement down by 1 day.</p> <p><u>Press and hold</u> will cause the days to decrement down at an increasing rate the longer the button is held down, up to 100 days per second.</p>	<p><u>Press and release</u> will cause the days to reset to 0.</p>

Note: The Days Count Down Timer will start timekeeping immediately upon release of any one of the switches. It will decrement down by 1 day every 24 hours from this moment, ± 2 minutes/year until it reaches 0 days. It will rest at 0 days until set to a new start value.

Example: If you last set or reset the timer at 10:00 A.M. the display will decrement down by 1 every day at 10:00 A.M. until it reaches 0 days.

Static Number Display/ Units Counter



Upon plugging in the Static Number Display/ Units Counter, the display will proceed through a power on test for approximately 10 seconds. Once this test is complete, the display should appear as pictured above. The display will rest on this number indefinitely. The recessed push-buttons will modify this behavior as follows:

SW1 (Left)	SW2 (Middle)	SW3 (Right)
<p><u>Press and release</u> will cause the count to increment up by 1.</p> <p><u>Press and hold</u> will cause the count to increment up at an increasing rate the longer the button is held down, up to 100 per second.</p>	<p><u>Press and release</u> will cause the count to decrement down by 1.</p> <p><u>Press and hold</u> will cause the count to decrement down at an increasing rate the longer the button is held down, up to 100 per second.</p>	<p><u>Press and release</u> will cause the count to reset to 0.</p>

Note: The Static Number Display/ Units Counter will remain at the set value indefinitely.

Time-Of-Day Clock



Upon plugging in the Time-Of-Day Clock, the display will proceed through a power on test for approximately 10 seconds. Once this test is complete, the display should appear as pictured above. The clock is already keeping time and in 1 minute, the display will increment to 12:01. It will continue to increment each minute, ± 2 minutes/year. The recessed push-buttons will modify this timekeeping behavior as follows:

SW1 (Left)	SW2 (Middle)	SW3 (Right)
<p><u>Press and release</u> will cause the hours to increment up by 1 hour.</p>	<p><u>Press and release</u> will cause the minutes to increment by 1 minute. <u>Press and hold</u> will cause the minutes to increment quickly.</p>	<p><u>Press and release</u> will cause the clock to set the counted seconds to 0. Time will advance 1 minute after releasing this button. <u>Press and hold</u> will cause the hour format to switch between 12-hour and 24-hour format.</p>

Note: The Time-Of-Day Clock starts keeping time immediately upon power up or release of SW3. It will increment 1 hour every 60 minutes and 1 minute every 60 seconds from this moment, ± 2 minutes/year.

Count Up (Elapsed Time) Timer



Upon plugging in the Count Up (Elapsed Time) Timer, the display will proceed through a power on test for approximately 10 seconds. Once this test is complete, the display should appear as pictured above. The timer will rest at 00:00. The recessed push-buttons will modify this timekeeping behavior as follows:

SW1 (Left)	SW2 (Middle)	SW3 (Right)
<p><u>Press and release</u> will start, pause or resume counting elapsed time.</p> <p><u>Press and hold</u> will start or resume counting elapsed time and pause on release, if not counting. If the timer is actively counting, it will pause counting elapsed time and resume on release.</p>	<p><u>Press and release</u> has no effect.</p> <p><u>Press and hold</u> has no effect.</p>	<p><u>Press and release</u> will reset the time to 00:00 only if the timer is not actively counting.</p>

Note: Once started, the timer will display time as it elapses. The timer will shift resolution of time to the most significant value:

- For the 1st minute, the timer will show seconds & hundredths.
- After the 1st minute, for the first hour, the timer will show minutes & seconds
- After the 1st hour, the timer will show hours & minutes, up to 99 hours and 59 minutes.
- At 100 hours, the timer will roll over and continue counting up from 00:00.

Count Down (Time Remaining) Minutes & Seconds Timer



Upon plugging in the Count Down (Time Remaining) Minutes & Seconds Timer, the display will proceed through a power on test for approximately 10 seconds. Once this test is complete, the display should appear as pictured above. The timer will rest at 00:00. Although the timer is currently in run mode, a start value must be set before the timer can count down. The recessed push-buttons will switch to set mode to set a start value and modify timekeeping behavior in run mode as follows:

SW1 (Left)	SW2 (Middle)	SW3 (Right)
Run Mode (display does not flash)		
<p><u>Press and release</u> will start, pause or resume counting elapsed time.</p> <p><u>Press and hold</u> will start or resume counting elapsed time and pause on release, if not counting. If the timer is actively counting, it will pause counting elapsed time and resume on release.</p>	<p><u>Press and release</u> has no effect.</p> <p><u>Press and hold</u> has no effect.</p>	<p><u>Press and release</u> will reset the start value to the previous set value, only if the timer is not actively counting.</p> <p><u>Press and hold</u> will reset the start value to 00:00 and enter set mode.</p>
Set Mode (display flashes)		
<p><u>Press and release</u> will cause the minutes to increment up by 1 minute.</p>	<p><u>Press and release</u> will cause the seconds to increment by 1 minute.</p> <p><u>Press and hold</u> will cause the seconds to increment quickly.</p>	<p><u>Press and release</u> will set the start value and enter run mode.</p> <p><u>Press and hold</u> will reset the start value to 00:00 and return to set mode.</p>

Note: Once started, the timer will count down the remaining time to zero (00:00). The timer will shift resolution of time to the most significant value:

- From 59 minutes and 59 seconds, until the last minute, the timer will show minutes and seconds.
- During the last minute, the timer will show seconds & hundredths.
- Once the timer has counted down to zero, it will rest at 00:00.

Count Down (Time Remaining) Hours & Minutes Timer



Upon plugging in the Count Down (Time Remaining) Hours & Minutes Timer, the display will proceed through a power on test for approximately 10 seconds. Once this test is complete, the display should appear as pictured above. The timer will rest at 00:00. Although the timer is currently in run mode, a start value must be set before the timer can count down. The recessed push-buttons will switch to set mode to set a start value and modify timekeeping behavior in run mode as follows:

SW1 (Left)	SW2 (Middle)	SW3 (Right)
Run Mode (display does not flash)		
<p><u>Press and release</u> will start, pause or resume counting elapsed time.</p> <p><u>Press and hold</u> will start or resume counting elapsed time and pause on release, if not counting. If the timer is actively counting, it will pause counting elapsed time and resume on release.</p>	<p><u>Press and release</u> has no effect.</p> <p><u>Press and hold</u> has no effect.</p>	<p><u>Press and release</u> will reset the start value to the previous set value, only if the timer is not actively counting.</p> <p><u>Press and hold</u> will reset the start value to 00:00 and enter set mode.</p>
Set Mode (display flashes)		
<p><u>Press and release</u> will cause the hours to increment up by 1 hour.</p>	<p><u>Press and release</u> will cause the minutes to increment by 1 minute.</p> <p><u>Press and hold</u> will cause the minutes to increment quickly.</p>	<p><u>Press and release</u> will set the start value and enter run mode.</p> <p><u>Press and hold</u> will reset the start value to 00:00 and return to set mode.</p>

Note: Once started, the timer will count down the remaining time to zero (00:00). The timer will shift resolution of time to the most significant value:

- From 99 hours and 59 minutes, until the final hour, the timer will show hours & minutes.
- During the last hour, until the final minute, the timer will show minutes & seconds.
- During the final minute, the timer will show seconds & hundredths.
- Once the timer has counted down to zero, it will rest at 00:00.



For further questions please contact Industrial Electronic Service D.B.A. DC-Digital @ 937-746-9750 or visit us @ www.dc-digital.com.