

TimeView 230 Display Clock

Model 8175



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Time of Day Product

Five Year Warranty



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GENERAL INFORMATION

1.0 INTRODUCTION

The Spectracom® Model 8175 TimeView 230, shown in Figure 1-1, is a synchronized display clock. TimeView 230 features 2.3 inch LED digits which can be viewed from 75 feet away. The clock displays traceable time when connected to a NetClock® Master Clock. The display is configurable for 12- or 24-hour time format and time zone offsets.

TimeView 230 displays may also synchronize to a host computer running a network timekeeping system, or set manually for stand-alone operation.

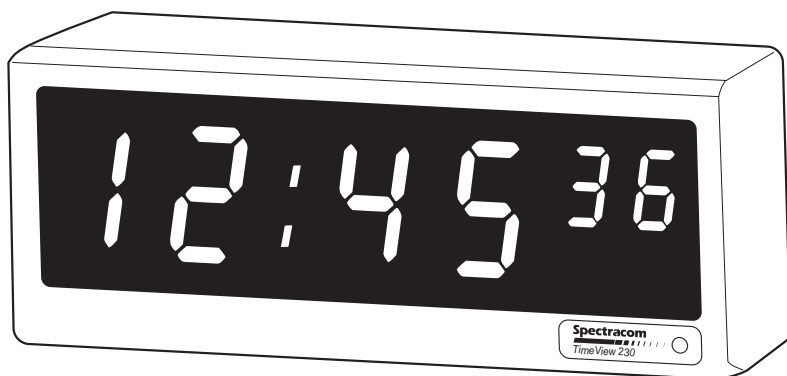


FIGURE 1-1 MODEL 8175 TIMEVIEW 230

1.1 *FEATURES*

The Spectracom TimeView 230 offers these features:

- * Displays traceable time when connected to a NetClock Master Clock. Clocks may also be synchronized from a computer or set manually.
- * Automatic data format and baud rate detection makes set up and installation easy.
- * Configurable display for 12- or 24-hour format and time zone offsets.
- * Large 2.3 inch display digits offer exceptional visibility.

1.2 *WARRANTY INFORMATION AND PRODUCT SUPPORT*

Find warranty information on the inside cover of this manual. Should it become necessary to exercise the warranty, contact Spectracom Corporation to obtain a replacement or service.

Spectracom continuously strives to improve its products and greatly appreciates any customer feedback. Please direct any comments or questions regarding application, operation, or service to Spectracom's Customer Service Department. Customer service is available Monday through Friday from 8:00 AM to 5:00 PM Eastern time at 585-381-4827.

In addition, please contact customer service to obtain a Return Material Authorization Number (RMA#) before returning any device to Spectracom Corporation. Please provide the serial number and failure symptoms.

Transportation to the factory is to be prepaid by the customer.

1.3 *MANUAL ERRATA AND SPECIAL DOCUMENTATION*

Information concerning manual corrections or changes made to the TimeView are found on the errata sheet located at the rear of this manual.

Spectracom will make equipment modifications upon special request. The documentation associated with any special is also located in the back of this manual.

1.4 *UNPACKING*

Upon receipt, carefully examine the carton and its contents. If there is damage to the carton, which results in damage to the unit, contact the carrier immediately so its representative may witness such damage. Failure to report shipping damage immediately may forfeit any claim against the carrier. In addition, notify Spectracom of shipping damage or shortages to obtain a replacement or repair services.

Each Model 8175 is shipped with an instruction manual and an ancillary kit. Table 1-1 lists the items included in the ancillary kit. Check that all items have been received.

Quantity	Part Number	Description
1	T00054	AC Adapter 16.5 VAC
1	P13006	6-position Terminal Block
2	HD0001	Plastic Anchor
2	H100-1000-0016	Screw, #10 x 1", Sheet Metal
1	68008	TimeView Mounting Instructions

TABLE 1-1 ANCILLARY KIT

1.5 SPECIFICATIONS

This section lists the specifications for the Model 8175 TimeView 230.

1.5.1 RS-485 Input

Connector: 6-position removable terminal block (supplied)

Input Signal: RS-485 ASCII data stream in Format 0 or 1 from the NetClock Master Clock or Computer

Baud Rate: 300 to 9600; automatic bit rate detection with NetClock operation. 9600 baud with computer set operation.

Max. Cable Length: 4000 feet (1.2 km) using shielded twisted pair

Input Impedance: Switch Selectable, 120 ohm termination or high impedance.

Transient Protection: Diode protected from spikes exceeding +12 VDC and -7 VDC.

1.5.2 RS-485 Repeater

Output Signal: Regenerated RS-485 signal of applied input data stream

Max Loading: 32 devices

1.5.3 User Selectable Options

TimeView 230 switches and controls select the following options: 12- or 24-hour display format, time zone offsets, display intensity, time set from NetClock Master Clock, computer, or manually entered, and RS-485 termination.

1.5.4 Power

Power Source: UL listed AC power adapter (supplied)

Input: 115 VAC $\pm 10\%$, 60 Hz, 14 watts

Output: 16.5 VAC, 600 mA

Connector: Barrel, 5.5 mm O.D., 2.1 mm I.D.

1.5.5 Physical and Environmental

Digit Size: 2.3" hours and minutes
1" seconds

Overall Size: 5" H x 12"W x 2.9" D

Wall Mount: 8" centers

Weight: 2.2 lbs.

Temperature: 0° to 50° C operating range

INSTALLATION

2.0 INTRODUCTION

This section describes the TimeView 230 mounting, switch set-up, connection to a NetClock or computer synchronization source and manual set operation.

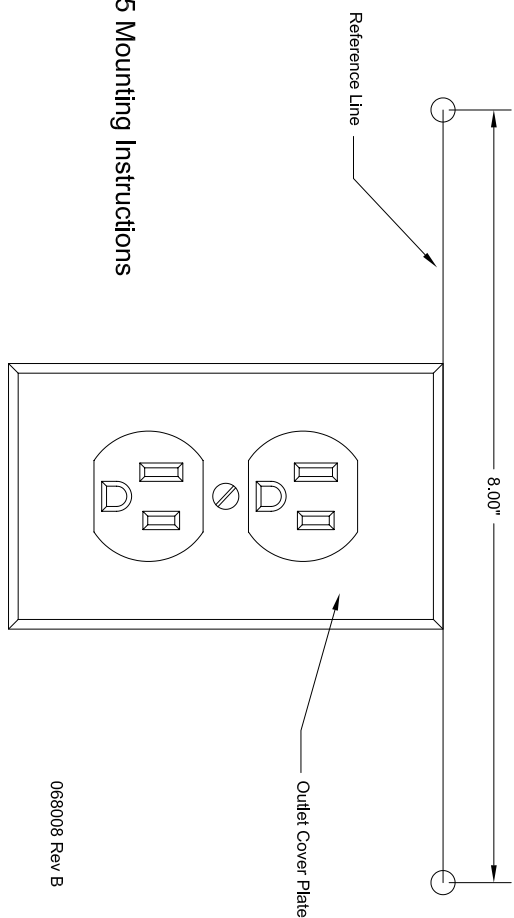
2.1 MOUNTING INSTRUCTIONS

The ancillary kit includes screws and plastic anchors for wall mounting the clock. Tools needed for mounting are a Phillips screwdriver and a 1/4" drill.

TimeView is designed to mount over a duplex outlet to conceal the power adapter and data cables. For installations where this is not possible, notches are provided along the top and bottom edges for routing power and data cables.

To install TimeView over a duplex outlet, lay a reference line over the cover plate as shown in Figure 2-1. Drill two 1/4" holes, eight inches apart, centered over the outlet.

8175 Mounting Instructions



068008 Rev B

1. Lay a level reference line across the top of the duplex cover plate. Drill two $\frac{1}{4}$ " diameter holes in the wall as shown below.
2. Install the anchors and screws.
3. Install the AC adapter in the top outlet with the cord down.
4. Connect power and data to the clock.

FIGURE 2-1 DUPLEX MOUNTING HOLES

NOTE: When hanging the clock, use the top two cover screws as a guide for locating the mounting holes.

2.2 *PREPARATION FOR USE*

This section describes the configuration selections for the Model 8175 TimeView 230. The rear panel 10-position DIP switch selects the clock options. The TimeView 230 is factory-shipped for 24-hour display; no time zone offsets, NetClock synchronization, and RS-485 termination off.

2.2.1 *Time Zone Offset*

The time zone offset feature allows clocks synchronized to a NetClock or computer to display time in alternate time zones. The selected time zone offset value is subtracted from the applied input data stream. DIP switches 1 through 5 enter the binary equivalent of the offset value of 0 to 23. Table 2-1 lists common offset values from a Greenwich Mean Time (GMT) or Coordinated Universal Time (UTC) source during periods of Standard time and Daylight Saving Time. Table 2-2 lists the DIP switch settings for the offset values shown in Table 2-1. See Section 3.2.4 for a complete list of offset and switch settings.

NOTE: Typically the Spectracom Master Clock is configured to provide local time. This eliminates the need to enter additional time zone offsets into the TimeView 230. Place DIP switches 1 through 5 in the OFF position when time zone offsets are not required.

TIME ZONE	STANDARD TIME (October-April)	DAYLIGHT SAVING TIME (April-October)
Atlantic	4	3
Eastern	5	4
Central	6	5
Mountain	7	6
Pacific	8	7

TABLE 2-1 COMMON OFFSET VALUES

OFFSET VALUE	DIP SWITCH NUMBER / SETTING				
	1	2	3	4	5
0	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF

TABLE 2-2 TIME ZONE SWITCH SETTINGS

NOTE: Place DIP switches 1 through 5 in the OFF position when time zone offsets are not required.

2.2.2 12- or 24-Hour Display

The TimeView 230 can display time in a 12- or 24-hour format. Place DIP switch 6 in the ON position for 12-hour display format and OFF for 24-hour time display.

2.2.3 Synchronization Source

DIP switch number 7 selects the source of the synchronizing data stream. Place switch 7 in the OFF position when the TimeView is connected to a NetClock Master Clock. Place switch 7 in the ON position for computer set applications.

2.2.4 Termination

The ends of an RS-485 transmission line must be terminated to preserve the signal waveform and prevent reflections. The TimeView 230 termination switch, DIP switch 10, terminates the RS-485 data bus into 120 ohms. Place switch 10 in the ON position when the clock is installed at the end of the RS-485 data bus. Otherwise, place this switch in the OFF position. Refer to Section 2.4 for additional information on termination.

2.2.5 Brightness Adjust

The display brightness is adjustable to suit various lighting conditions. The brightness potentiometer is accessed through the hole in the lower right corner of the display. A small flat-bladed screw driver is required.

2.3 SYNCHRONIZATION CONNECTION

The TimeView 230 can be synchronized by the following Spectracom products:

Model 8182, NetClock/2, WWVB Master Clock

Model 8183, NetClock/GPS, GPS Master Clock

Model 8183A, NetClock/GTP, GPS Global Time Provider

Model 8186, TimeBridge, Wireless Time Link

Model 8189, NetClock/NTP, GPS Network Time Provider

The TimeView 230 connects to the RS-485 output port found on the NetClock Master Clocks and TimeBridge. These ports provide a continuous once-per-second time data stream. The TimeView 230 automatically detects the data format and baud rate of the synchronizing data stream.

2.3.1 Connection to NetClock/2

The Model 8182 NetClock/2, provides the RS-485 time data stream on the Remote Output connector. The Remote Output is a DB9 female connector. Refer to Figure 2-2 for connector pin numbering.

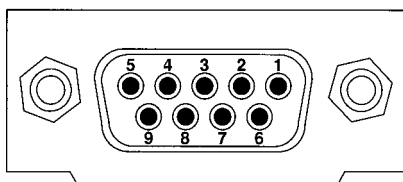


FIGURE 2-2 NETCLOCK/2 REMOTE OUTPUT CONNECTOR

Connect the TimeView 230 to the NetClock/2 RS-485 data bus as shown in Figure 2-3. The mating 6-pin terminal block is furnished in the TimeView 230 ancillary kit.

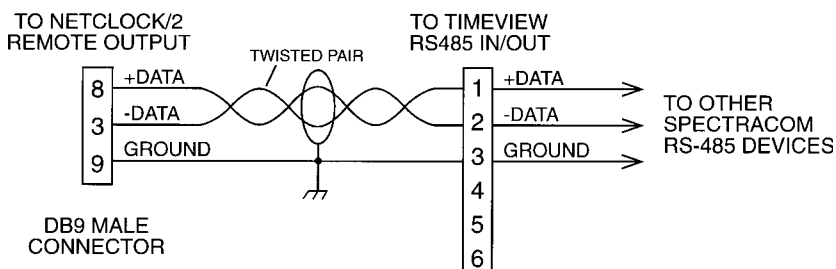


FIGURE 2-3 CONNECTION TO NETCLOCK/2

To simplify installation, Spectracom offers a NetClock/2 RS-485 interface cable. This cable has the mating RS-485 DB9 male connector on one end and prepped leads on the other end. Specify part number CA14xxx, where xxx equals the length in feet.

2.3.2 Connection to GPS Synchronized Clocks or TimeBridge

All Spectracom GPS synchronized clocks and Model 8186 TimeBridge provide the RS-485 synchronizing data stream on a 3-position terminal block. Connect the TimeView 230 to the time source as shown in Figure 2-4.

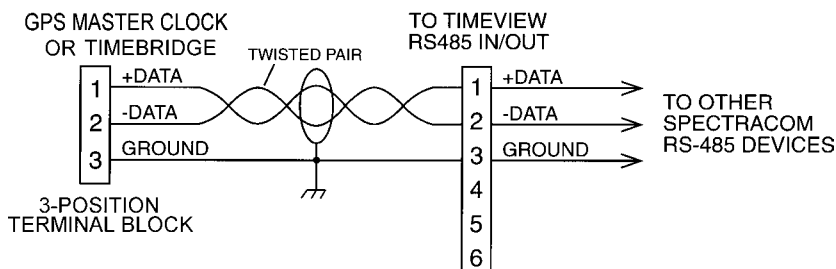


FIGURE 2-4 GPS MASTER CLOCK AND TIMEBRIDGE CONNECTORS

The mating terminal blocks are provided in the equipment ancillary kits.

NOTE: The TimeView 230 accepts only Format 0 or Format 1 data streams. Configure the RS-485 output port on the NetClock or TimeBridge to provide Format 0 or Format 1.

2.4 INTERCONNECTION INFORMATION

Figures 2-5 and 2-6 illustrate typical RS-485 time data bus interconnections. Follow the RS-485 guidelines listed below when constructing the RS-485 time data bus.

2.4.1 RS-485 Guidelines

Background: RS-485 is a balanced differential transmission that offers exceptional noise immunity and cable lengths up to 4000 feet using twisted pair cable.

Cable selection: Low capacitance, shielded twisted pair cable is recommended in installations where the RS-485 cable length is expected to exceed 1500 feet. Table 2-3 suggests some manufacturers and part numbers for extended distance cables. These cables are specifically designed for RS-422 or RS-485 applications; they have a braided copper shield, nominal impedance of 120 ohms, and a capacitance of 12 to 16 picofarads per foot.

RS-485 cable may be purchased from Spectracom. Specify part number CW04xxx, where xxx equals the length in feet.

MANUFACTURER	PART NUMBER
Belden Wire and Cable Company 1-800-BELDEN-1	9841
Carol Cable Company 606-572-8000	C0841
National Wire and Cable Corp. 213-225-5611	D-210-1

**TABLE 2-3 CABLE SOURCES FOR RS-485 LINES
OVER 1500 FEET**

For cable runs less than 1500 feet, a lower-cost twisted pair cable may be used. Refer to Table 2-4 for possible sources.

NOTE: CAT5 Network cable may also be used for cable runs less than 1500 feet.

MANUFACTURER	PART NUMBER
Alpha Wire Corporation 1-800-52ALPHA	5471
Belden Wire and Cable Company 1-800-BELDEN-1	9501
Carol Cable Company 606-572-8000	C0600

**TABLE 2-4 CABLE SOURCES FOR RS-485 LINES
UNDER 1500 FEET**

Termination: Terminate the end devices on the RS-485 time data bus. For a one-way bus installation (as shown in Figure 2-5), terminate the last device on the bus. In a split bus installation (Figure 2-6) terminate the devices installed on the extreme ends of the bus.

The TimeView 230 includes a built-in termination switch that places a 120-ohm termination resistor across the RS-485 line. Place DIP switch number 10 in the ON position when the TimeView 400 is located at the end of the time data bus.

Connection method: The RS-485 transmission line must be connected in a daisy-chain configuration as shown in Figures 2-5 and 2-6. A branched or star configuration is not recommended.

Taps into the main transmission line (stubs) should be kept as short as possible. Long stub lengths affect the bus impedance and capacitive loading that could result in reflections and signal distortion.

Loading: Each NetClock or TimeBridge RS-485 output can drive up to 32 RS-485 devices, including the Spectracom products described below:

The Model 8177 TimeView 400, is a display clock with 4.0-inch high green LED digits . The TimeView 400 terminal block input connects directly to the RS-485 data bus.

The Spectracom Model 8179T TimeTap® is an RS-485 to RS-232 converters. The Model 8179T has a DB9 RS-232 interface which receives operational power from the RS-232 flow control pins RTS or DTR. The Model 8179T terminal block input connects directly to the RS-485 data bus.

The Model 8180 TimeTalk™ provides an audio time of day announcement to time stamp voice recorders or for broadcast over radio transmitters. The TimeTalk connects to the RS-485 data bus using DB9 connectors.

The Spectracom Model 8185 TimeBurst™ provides a digital time-of-day data burst to a radio transmitter. The TimeBurst, when used with the Spectracom Model 8186 TimeBridge, provides community-wide time synchronization to a single NetClock Master Clock. The Model 8185 terminal block input connects directly to the RS-485 data bus.

Spectracom Model 8188 NetClock/ETS is an Ethernet Time Server which supports NTP, SNTP and UDP/Time protocols. The Model 8188 accepts Formats 0 or 2, at 9600 Baud. The Model 8188 terminal block input connects directly to the RS-485 data bus.

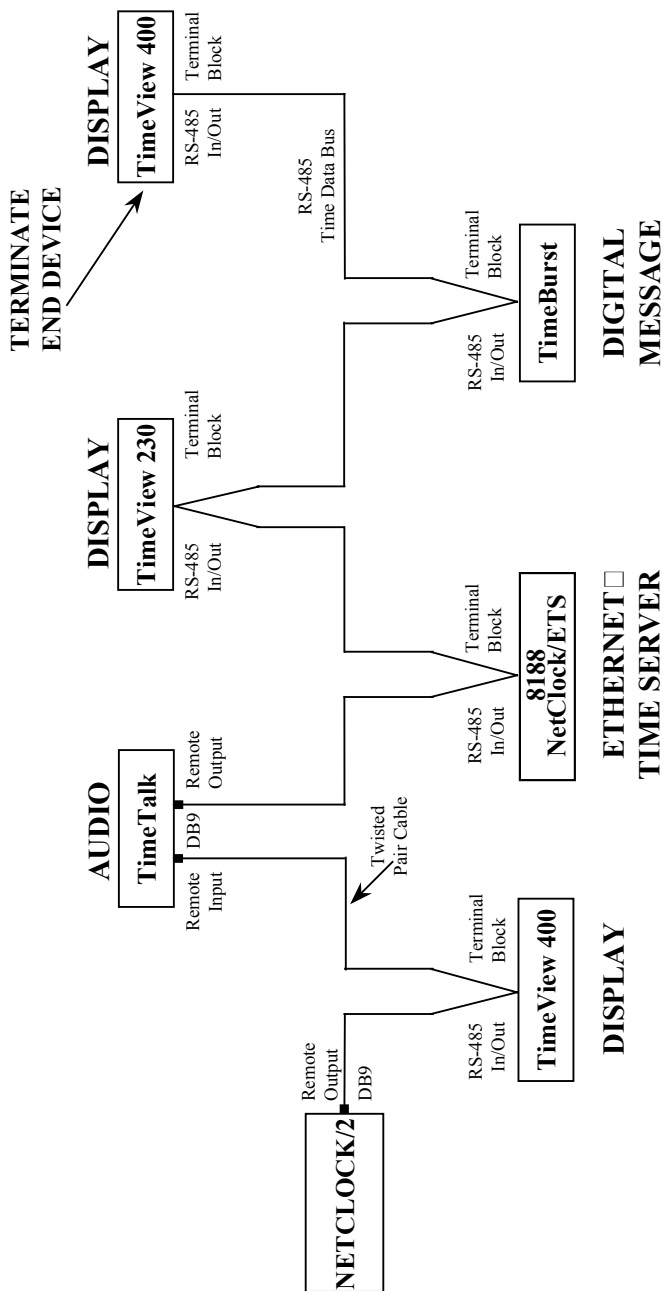


FIGURE 2-5 ONE-WAY BUS INSTALLATION

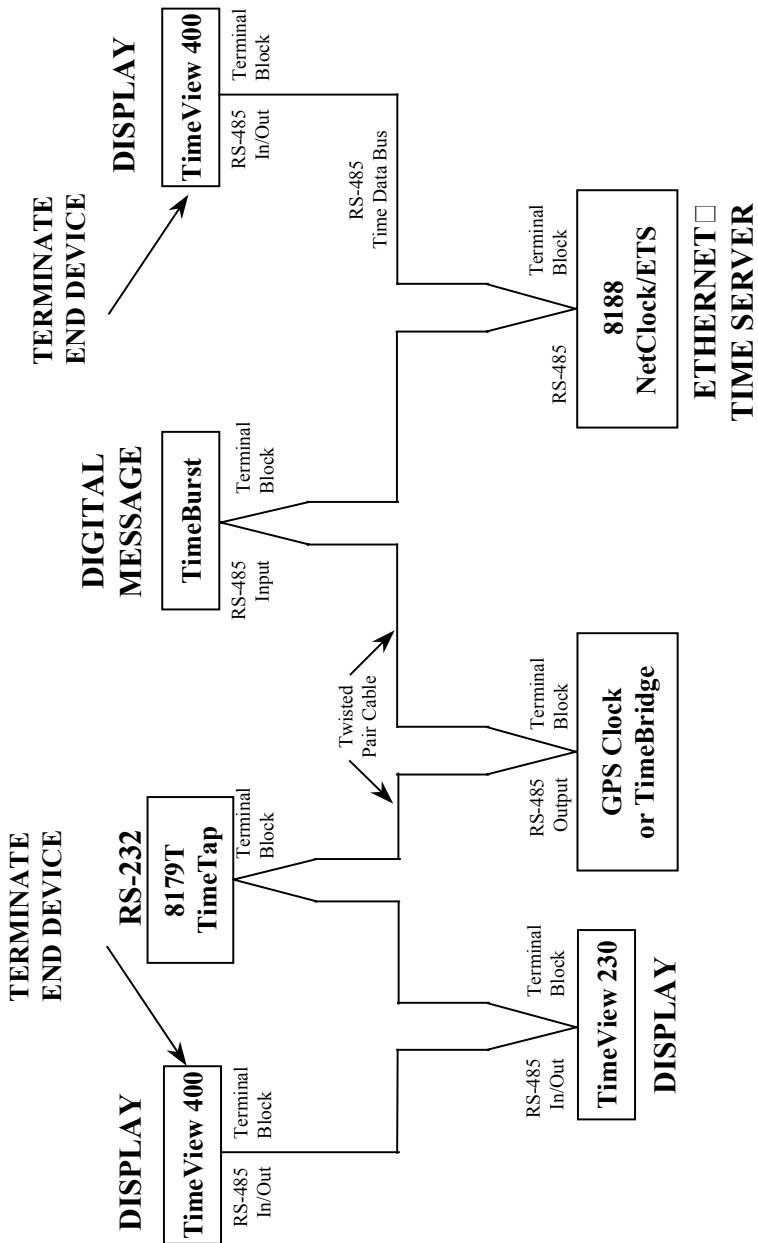


FIGURE 2-6 SPLIT BUS INSTALLATION

2.4.2 *RS-485 Repeater*

As stated in the previous section, RS-485 Guidelines, the NetClock can drive up to 32 devices over a maximum cable length of 4000 feet. The guidelines also recommend the RS-485 transmission line be connected in a continuous daisy-chain configuration. A branched or star configuration is not recommended, as well as long stub lengths to the main transmission line. If these guidelines present an installation problem, the RS-485 Repeater output can be used. The Repeater output regenerates the synchronizing data stream applied to the RS-485 Input/Output terminal block connections. The Repeater output can drive an additional 32 devices over cable lengths up to 4000 feet.

The Repeater output may be used to reduce and simplify cable runs to devices located in different portions of the building. Figure 2-7 shows an installation where the backup dispatch consoles located in the basement requires synchronized time.

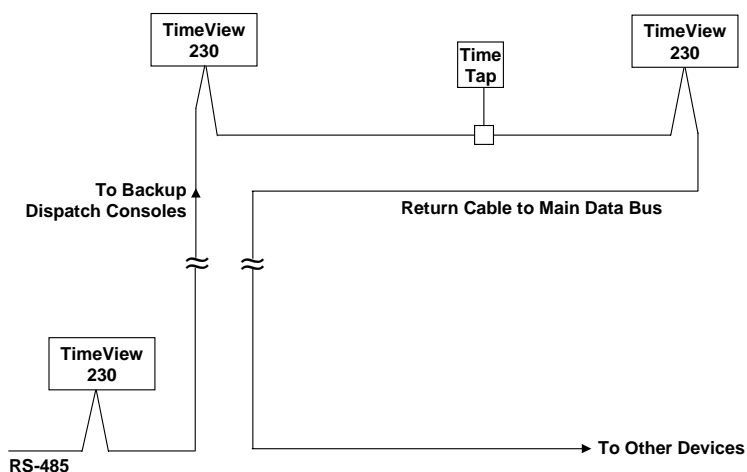


FIGURE 2-7 INSTALLATION NOT USING REPEATER OUTPUT

Figure 2-8 shows the same installation using the Repeater output. Note that the return cable to the main data bus is eliminated.

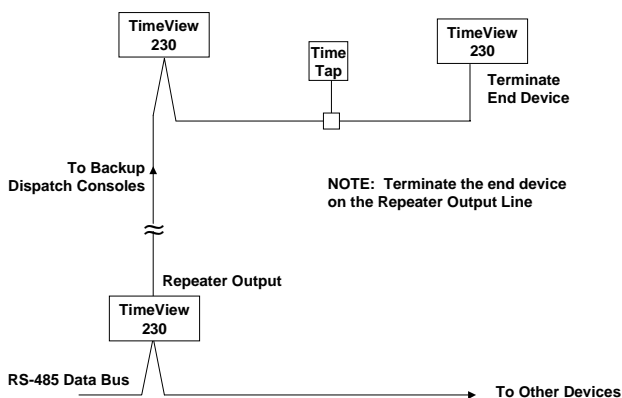


FIGURE 2-8 REPEATER OUTPUT USAGE

2.5 CONNECTION TO A COMPUTER

The TimeView 230 is configurable for computer set operation. The computer must have an RS-422/485 interface card installed, or an external RS-232 to RS-422/485 adapter to communicate with the clock. The computer can resynchronize the display as often as every second or a minimum of every four hours. Refer to Section 3.4 for more information on computer setting the TimeView 230.

To enable computer set operation, place DIP switch number 7 in the ON position. Connect the clock terminal block to the RS-485 adapter or interface board as shown in Figure 2-9. If only one clock is connected to the computer terminal, terminate the RS-485 data bus by placing DIP switch 10 in the ON position.

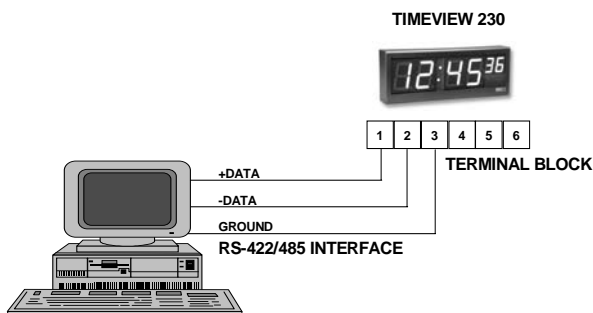


FIGURE 2-9 COMPUTER CONNECTION

Multiple TimeView 230 clocks can be synchronized by a single computer when connected as shown in Figure 2-10. Terminate the last clock in the line by placing DIP switch 10 in the ON position.

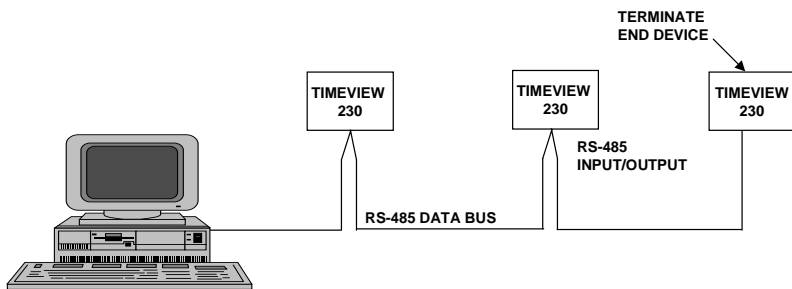


FIGURE 2-10 MULTIPLE CLOCK CONNECTION

The computer can synchronize up to 32 clocks over a total cable length of 4000 feet.

2.6 *MANUAL SET PROCEDURE*

The TimeView 230 can be manually set for operation as a stand-alone display clock. Time is entered using the rear panel MODE and SET switches. The MODE switch advances the clock through the setting process and the SET switch selects the time variables. Depressing and releasing the SET switch causes the clock to increment through the time variables. Depressing and holding this button causes the display to scroll through the time variables. The setting process sets the hours and minutes. Seconds are reset to zero at the end of the setting process.

TimeView 230 cannot be manually set when connected to the NetClock Master Clock Remote Output. The presence of the RS-485 data stream disables the MODE and SET switches.

2.6.1 *Manual Set Procedure*

To prepare the clock for Manual Set operation, place the termination switch, Switch 10, in the ON position. Switch 7 may be placed in either the COMPUTER SET position ON, or OFF for the NetClock SET mode. Apply power to the clock. Observe that the hours, minutes, and seconds digits light up sequentially.

2.6.1.1 *Set Hours*

Hours are entered in a 24-hour format, even if the 12-hour display format is selected. For example, when setting the TimeView 230 for 2:00 PM, enter 14 for the hours value. To set hours, depress and release the MODE switch. The hours digits blink and show the current hours value. If the displayed value is appropriate, depress the MODE switch to advance to the Set Minutes routine. To change the hours value, depress and release or hold down the SET button to advance through the hours variables. When the desired hour value is displayed, release the SET button and depress the MODE button to advance to the Set Minutes routine.

2.6.1.2 *Set Minutes*

The minutes digits blink and display the current minutes value. If the value is appropriate, depress the MODE switch to advance to the Set Seconds routine. To change the minutes value, depress and release or hold down the SET button to advance through the minutes variables. When the desired minutes value is displayed, release the SET button and depress the MODE button to advance to the Set Seconds routine.

2.6.1.3 *Set Seconds*

The seconds digits blink and display the current seconds value. If the value is appropriate, depress the MODE switch to exit from the Manual Set procedure. Seconds are not selected like the hours and minutes values. Depressing the SET button resets the seconds to "00" and exits the clock from the Manual Set procedure.

The clock will now run on its internal crystal timebase. Typical accuracy is within ± 3 seconds per day.

OPERATION

3.0 INTRODUCTION

This section describes the TimeView 230 display, rear panel functions, and computer setting information.

3.1 DISPLAY

TimeView 230 Display, shown in Figure 3-1, features green 2.3 inch digits for the hours and minutes, and 1.0 inch digits for the seconds. Display brightness is adjustable to suit various lighting conditions. The brightness potentiometer is accessed through the hole located on the lower right corner of the clock. A small, flat-bladed screwdriver is required.

The time displayed can be derived from a NetClock Master Clock, computer, or manually set. The display is configurable for 12- or 24-hour time format and time zone offsets. Refer to Section 3.2.4 for switch configuration information.



FIGURE 3-1 MODEL 8175 DISPLAY

3.1.1 *Fault Indications*

The display communicates faults by flashing the seconds digits or sequentially flashing hours, minutes and seconds digits. This alerts the user that the time display is either not synchronized or not connected to its time source.

NetClock and TimeBridge Fault Indications

The TimeView 230 seconds flash when the NetClock Master Clock or TimeBridge TIME SYNC lamp is red. This failure could be due to a power failure, or the time source is unable to receive its synchronization signal. The seconds will remain flashing until the time source reacquires time synchronization.

Sequentially flashing hours, minutes and seconds indicate that the TimeView 230 is no longer receiving the synchronizing data stream from the NetClock or TimeBridge. This condition could be caused by a broken or loose RS-485 connection or RS-485 driver/receiver failure. The display will continue to flash until the data stream is restored.

Computer Fault Indications

The display seconds flash when the TimeView 230 has not received a synchronizing data stream from the computer within four hours. The seconds remain flashing until the computer updates the clock.

3.2 *REAR PANEL FUNCTIONS*

Refer to Figure 3-2, Model 8175 Rear Panel, and the following paragraphs for information on the TimeView 230 rear panel functions.

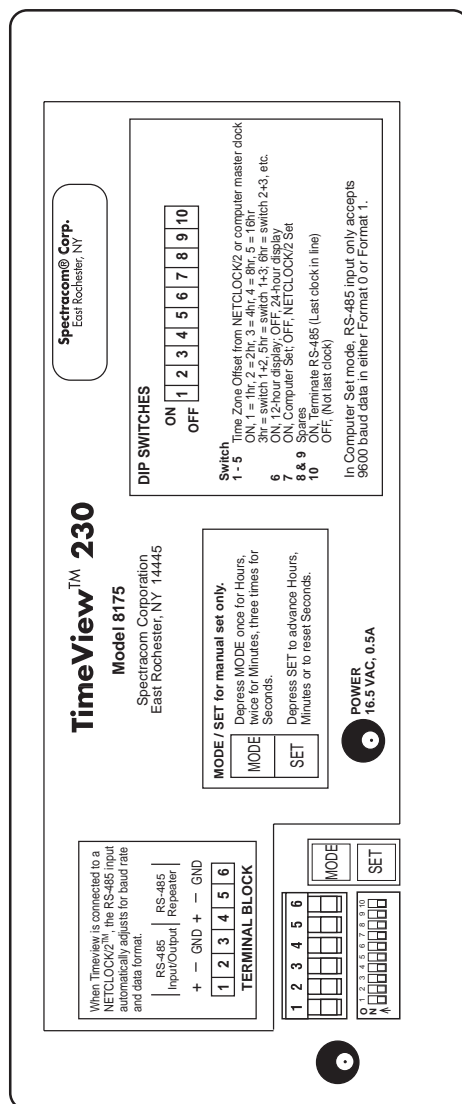


FIGURE 3-2 MODEL 8175 REAR PANEL

3.2.1 RS-485 Interface

The RS-485 interface connector, shown in Figure 3-3, is a removeable six-position terminal strip. The RS-485 data stream from a NetClock or computer are connected to Pins 1, 2 and 3 of the terminal block. Connect the non-inverted RS-485 data line to Pin 1, the inverted data line to Pin 2, and the cable shield to Pin 3. TimeView 230 accepts either Data Format 0 or 1 at baud rates from 300 to 9600 from a NetClock or 9600 baud from a computer. Refer to Section 2.3 for NetClock connection information and Section 2.5 for computer connection information.

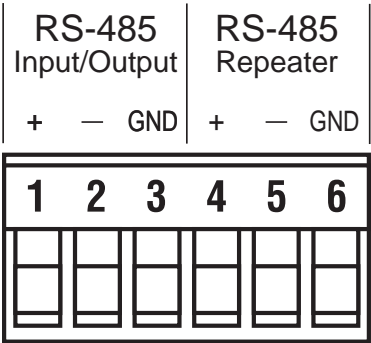


FIGURE 3-3 RS-485 TERMINAL BLOCK

The Repeater output regenerates the synchronizing data stream applied to the RS-485 Input/Output connections. The Repeater output may prove useful in simplifying and reducing cable routing. Refer to Section 2.4.2 for additional information on the Repeater output usage.

3.2.2 *Manual Set Switches*

The MODE and SET switches, shown in Figure 3-4, manually set the TimeView 230 for operation as a stand-alone display clock. The MODE switch advances the clock through the setting process, and the SET switch selects the time variables. Refer to Section 2.6 for the Manual Set Procedure.

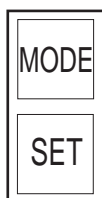


FIGURE 3-4 MANUAL SET SWITCHES

NOTE: The TimeView cannot be manually set when connected to a NetClock Master Clock. The presence of the RS-485 data stream disables the MODE and SET switches.

3.2.3 *Power*

The TimeView 230 is powered by the supplied 115 VAC to 16.5 VAC power adapter. The power jack accepts a barrel-type plug with a 5.5 mm O.D. and a 2.1 mm I.D. Replacement adapters are available from Spectracom. Specify Part Number T00054.

3.2.4 *Configuration Switches*

The TimeView 230 user-configurable options are selected using the 10-position DIP switch. The DIP Switch, shown in Figure 3-5, selects the display format, time zone offset, RS-485 termination, and synchronization source.

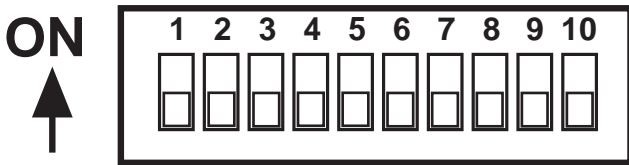


FIGURE 3-5 CONFIGURATION DIP SWITCH

The switches are continuously monitored and do not require power cycling the clock after changing switch settings. The following paragraphs describe the functions of the 10-position switch.

Switches 1 through 5 Time Zone Offset

The TimeView 230 can offset the time received from a NetClock or computer to display time in other time zones. DIP switches 1 through 5 enter the binary equivalent of the offset value between 0 and 23. The selected time zone offset value is subtracted from the hours value received. Table 3-1 lists all possible offset values and their corresponding switch settings.

NOTE: Typically the Spectracom Master Clock is configured to provide local time. This eliminates the need to enter additional time zone offsets into the TimeView 230. Place DIP switches 1 through 5 in the OFF position when time zone offsets are not required.

NOTE: To assure proper operational only the time zone switch settings listed in Table 3-1 may be utilized.

OFFSET HOURS VALUE	DIP SWITCH NUMBER / SETTING				
	1	2	3	4	5
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF
13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON
23	ON	ON	ON	OFF	ON

TABLE 3-1 TIME ZONE OFFSETS

Switch 6 12 or 24-hour Display

This switch configures the TimeView 230 display for 12- or 24-hour time format. To display time in a 12-hour format, place this switch in the ON position.

Placing this switch in the OFF position configures the display for 24-hour time format.

Switch 7 Synchronization Source

This switch configures the clock for operation from a NetClock Master Clock or computer synchronization source. Place this switch in the OFF position when the clock is connected to the NetClock.

For computer set applications, place this switch in the ON position.

Switch 8 and 9 Reserved

DIP switches 8 and 9 are reserved for test functions. To ensure proper operation, place these switches in the OFF position.

Switch 10 Termination

This switch terminates the RS-485 data bus into 120 ohms. Place this switch in the ON position when the clock is installed at the end of the RS-485 data bus. Otherwise, place this switch in the OFF position.