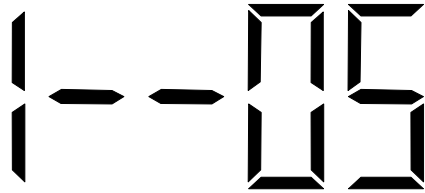




Note: Press both buttons together simultaneously to enter programming mode.

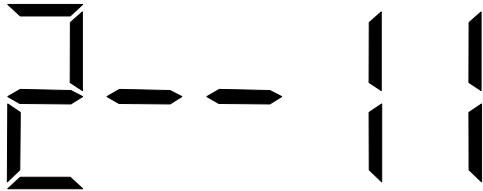
Table of Contents

<u>PROGRAMMING THE DATE</u>	
Programming the Date.....	Page 2
<u>TECHNICAL MODE</u>	
Technical Mode.....	Pages 2 - 3
<u>PROGRAMMABLE RELAY MODE</u>	
Programming the Relay.....	Pages 3 - 4
<u>INTERFACING</u>	
Auxiliary Input Control.....	Pages 4 - 6
<u>DISPLAY MODE</u>	
Clock Information.....	Pages 6 - 7
<u>SELF-TEST MODE</u>	
Self-Testing Mode.....	Pages 7 - 8
<u>DIAGNOSTIC MODE</u>	
Diagnostics to the Slave Clocks.....	Page 9
<u>RELAY SELECTION MODE</u>	
Configure the relay for different outputs.....	Page 10



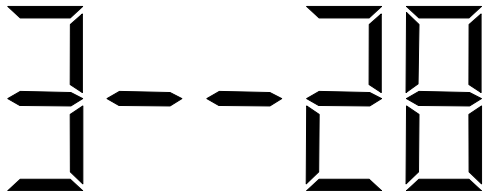
Set the Year

Once programming mode has been entered, the number "01" will appear in the far left position (see diagram). This prompt allows you to set the year. Use the "Set Minute" button to scroll from "00-99" on the display and set the year.



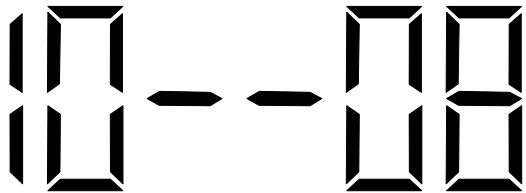
Set the Month

Press the "Set Hour" button to advance to option 2. The number "02" will appear on the left side of the LED display. This prompt allows you to set the month. Use the "Set Minute" button to scroll between "01-12".



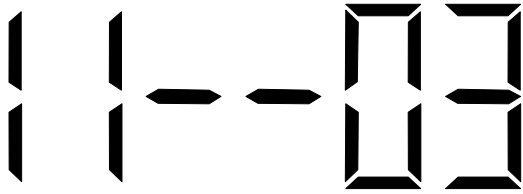
Set the Day

Press the "Set Hour" button to advance to option 3. The number "03" will appear on the left side of the LED display. This prompt allows you to set the day. Use the "Set Minute" button to scroll between "01-31".



Enter Technician Mode

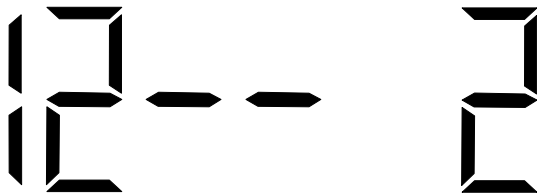
Press the "Set Hour" button to advance to option 10. The number "10" will appear on the left side of the LED display. This prompt allows you to enter into technical mode. If technical mode is desired, press the "Set Minute" to "08" to enter technical mode. The scrolling will scroll through "00-99". Any other character will go directly to option "20".



Set the RS485 Data Rate

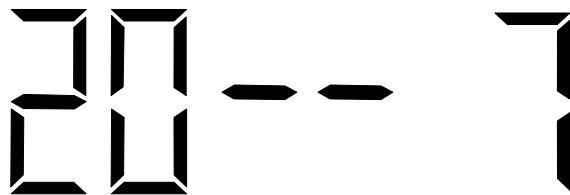
Press the “Set Hour” button to enter technical mode which starts with option 11. The number “11” will appear on the left side of the LED display, if the option was chosen in option 10. This prompt allows you to set the data transmission for the RS485. Press the “Set Minute” button to scroll between “01-12”.

- | | |
|---|---|
| 01 - Data is transmitted every second | 07 - Data is transmitted every 2 minutes |
| 02 - Data is transmitted every 5 seconds | 08 - Data is transmitted every 5 minutes |
| 03 - Data is transmitted every 10 seconds | 09 - Data is transmitted every 10 minutes |
| 04 - Data is transmitted every 15 seconds | 10 - Data is transmitted every 15 minutes |
| 05 - Data is transmitted every 30 seconds | 11 - Data is transmitted every 30 minutes |
| 06 - Data is transmitted every minute | 12 - Data is transmitted every hour |



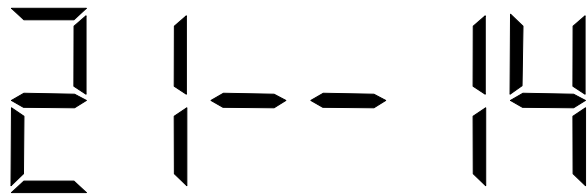
Set Daylight Savings Time

Press the “Set Hour” button to enter option 12. The number “12” will appear on the left side of the LED display. This option allows the user to enable or disable Daylight Savings Time. Press the “Set Minute” button to scroll between “d”, “1”, or “2”. “d” will disable this option. “1” will enable daylight savings pre 2007. “2” will enable daylight savings post 2007.



Set the Programmable Relay

Press the “Set Hour” button to enter option 20. The number “20” will appear on the left side of the LED display. This option allows you to enter a programmable relay output mode. Press the “Set Minute” button to scroll through “d”, “1”, “2”, “3”, “4”, “5”, “6”, “7” & “8”. Please refer to relay selection mode on page 10.



Set the Hour for the Programmable Relay

This option is only available if “7” is selected in option 20. Press the “Set Hour” button to enter option 21. The number “21” will appear on the left side of the LED display. This option allows you to set the hour that the user wishes the relay to close at. Press the “Set Minute” button to scroll through “00-23”.



22 - 30

Set the Minutes for the Programmable Relay

This option is only available if "7" is selected in option 20. Press the "Set Hour" button to enter option 22. The number "22" will appear on the left side of the LED display. This option allows the user to set the minute(s) they want the relay to close at. Press the "Set Minute" button to scroll between "00-59".

23 - 45

Set the Seconds for the Programmable Relay

This option is only available if "7" is selected in option 20. Press the "Set Hour" button to enter option 23. The number "23" will appear on the left side of the LED display. This option allows the user to set the second(s) they want the relay to close at. Press the "Set Minute" button to scroll between "00-59".

24 - 56

Set the Duration for the Programmable Relay

This option is only available if "7" is selected in option 20. Press the "Set Hour" button to enter option 24. The number "24" will appear on the left side of the LED display. This option allows the user to set the duration of the relay closure. Press the "Set Minute" button to scroll between "00-99" (seconds).

30 - E

Enable/Disable an Auxiliary Input

Press the "Set Hour" button to enter option 30. The number "30" will appear on the left side of the LED display. This option allows the user to allow an auxiliary input control. Press the "Set Minute" button to scroll between "E - d". Setting the option to "d" will disable the option and go directly to option 40. Setting the option to "E" will enable the user to enter an input control mode.



31--10

Select the Input

Pressing the “Set Hour” button will go to option 31. The number “31” will appear on the left side of the LED display. This option allows the user select the input. Pressing the “Set Minute” button will allow the user to scroll between “01-07 and 10”.

- | | |
|----------------------------|-----------------------|
| 01 - Internet Connection | 05 - Dukane Digital |
| 02 - 59 Minute Correction | 06 - Rauland Dig. Out |
| 03 - 58 Minute Correction | 07 - Wireless Input |
| 04 - National Time/Rauland | 10 - Once A Day Pulse |

32--06

Set the Positive Offset

Pressing the “Set Hour” button when option 31 is set to “01”, will enter option 32. The number “32” will appear on the left side of the LED display. This option allows the user to set the positive offset of the user’s location when the Internet Connection is selected. Press the “Set Minute” button to scroll through “00-14”. See page 10 for more information.

33--00

Set the Negative Offset

Pressing the “Set Hour” button when option 31 is set to “01”, will enter option 33. The number “33” will appear on the left side of the LED display. This option allows the user to set the negative offset of the user’s location when the Internet Connection is selected. Press the “Set Minute” button to scroll through “00-14”. See page 10 for more information.

34--01

Set the Hour for Once-a-Day Closure

Pressing the “Set Hour” button when option 31 is set to “10”, will enter option 34. The number “34” will appear on the left side of the LED display. **This option allows the user to set the hour they want the time to go to when Once-a-Day Pulse is selected.** Press the “Set Minute” button to scroll through “00-23”.



35 - - 30

Set the Minutes for Once-a-Day Pulse

Pressing the "Set Hour" button will enter option 35. The number "35" will appear on the left side of the LED display. This option allows the user to set the minute they want the time to go to when Once-A-Day Pulse is selected. Press the "Set Minute" button to scroll through "00-59".

36 - - 00

Set the Seconds for Once-a-Day Pulse

Pressing the "Set Hour" button will enter option 34. The number "34" will appear on the left side of the LED display. This option allows the user to set the seconds they want the time to go to when Once A Day Pulse is selected. Press the "Set Minute" button to scroll through "00-59".

40 - - 76

Last Time Clock Received an Input Display

Press the "Set Hour" button to enter option 40. The number "40" will appear on the left side of the LED display. This option displays the last time the clock received an input signal (in hours). The display will be between 00 - 99. This option is read only. It cannot be modified.

41 - - 00

Current Temperature Display

Press the "Set Hour" button to enter option 41. The number "41" will appear on the left side of the LED display. This option displays the current temperature of the clock itself. The temperature will display in ° C. This option is a read-only option.



44--00

Internet Connection Display

Press the "Set Hour" button to enter option 44. The number "44" will appear on the left side of the LED display. This option displays whether the transceiver is receiving an Internet Connection. A "01" will appear on the right side if the master is receiving an Internet Connection. A "00" will appear on the right side if it is not receiving an Internet Connection. This option is a read-only option.

50--15

Self-Test Mode

Press the "Set Hour" button to enter option 50. The number "50" will appear on the left side of the LED display. This option enters the self testing feature. Press the "Set Minute" button to scroll between 00-99. To enter the Self Test mode, press the "Set Minute" button till a "15" is displayed to the right. Any other character will go directly to option 60. After it is set to "15", press the "Set Hour" button to enter the Self Test mode.

51--57

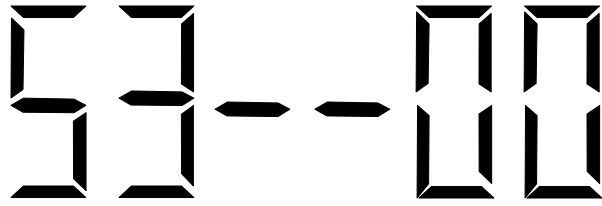
Real-Time Clock Test

Press the "Set Hour" button to enter option 51. The number "51" will appear on the left side of the LED display. This option tests the Real-Time Clock. When the "Set Minute" button is pressed, the display will count up from 57 to 00. If the Real Time Clock is working properly, the transceiver will advance to option 52. If it does not, it will stay at option 51.

52--00

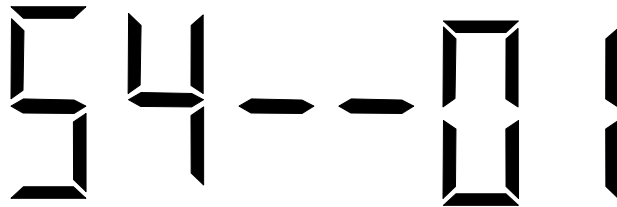
Output Relay Test

Press the "Set Hour" button to enter option 52. The number "52" will appear on the left side of the LED display. This option tests the output relay. When the "Set Minute" button is pressed, the relay will close. When the "Set Hour" button is pushed, the relay will open and advance to the next option.



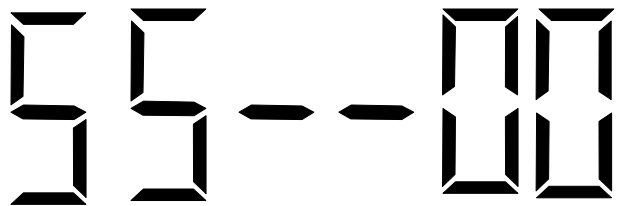
LED Segment Test

Press the “Set Hour” button to enter option 53. The number “53” will appear on the left side of the LED display. This option tests the segments of the LED display. When the “Set Minute” button is pressed, the segments will test one segment of the display. To advance to the next option, press the “Set Hour” button.



Input Recognition Test

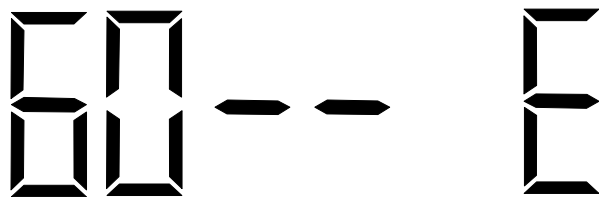
Press the “Set Hour” button to enter option 54. The number “54” will appear on the left side of the LED display. This option tests the transceiver to see if it recognizes an input. If there is no input, the digits to the right will read “00”. If there is an input, the digits to the right will read “01”.



↑ ↑
Left Digit Right Digit

RS485 and RS232 Test

Press the “Set Hour” button to enter option 55. The number “55” will appear on the left side of the LED display. On the right side of the display, the left digit will be alternating every 200ms between “0” and “1”. The right digit will stay at “0”. This option tests the RS485 and RS232 input and output. To test the RS485, short the input and the output. When this occurs, the right digit will synchronize with the left digit. To test, the RS232, short the input and the output. When this occurs, the right digit will synchronize with the left digit.



Enter Diagnostic Mode

Press the “Set Hour” button to enter option 60. The number “60” will appear on the left side of the LED display. This option allows the user to enter diagnostic mode. Press the “Set Minute” button scroll between “E - d”. Setting the option to “E” will enable the option and will enter diagnostic mode. Setting the option to “d” will disable the option, then pressing the “Set Hour” button will bring the display back to the set time.



A seven-segment LED display showing the number "01-03". The digits are formed by the segments of the display, with a colon between the two numbers.

Send Diagnostics to the Clocks

Press the "Set Hour" button to enter option 43. The number "43" will appear on the left side of the LED display. This option allows the user to send the diagnostic to the slave clocks. Pressing the "Set Minute" button will scroll from "01-05 and 09".

- 01 - Protocol Verification
- 02 - Comprehensive Test
- 03 - Manufacturer's Default
- 04 - Combination of 02 & 03 (button must be pressed on SAM)
- 05 - Combination of 02 & 03 (no need to press button on SAM)
- 09 - Overrides the Previous Diagnostic and Goes Back to the Time

A seven-segment LED display showing the number "02-41". The digits are formed by the segments of the display, with a colon between the two numbers.

Duration the Information is Displayed on the Clock

Pressing the "Set Hour" button will advance to option 62. The number "62" will appear on the left of the LED display. This option allows the user to set how long (in minutes) that the information display from the diagnostic will stay on the clock. Pressing the "Set Minute" button will scroll from "00-99". Pressing the "Set Hour" button will go back to the displayed time.



Time Offsets

	Time in Greenwich	Local Time	Positive Offset	Negative Offset
Philadelphia (Eastern Standard Time)	12:00 p.m. (Noon)	7:00 a.m.	0	5
Chicago (Central Time)	12:00 p.m. (Noon)	6:00 a.m.	0	6
Denver (Mountain Time)	12:00 p.m. (Noon)	5:00 a.m.	0	7
Los Angeles (Pacific Time)	12:00 p.m. (Noon)	4:00 a.m.	0	8

Relay Selection Mode

“d” = Relay is disabled.

“1” = 58th minute - The hourly correction for 55 seconds every hour from XX:58:05 to XX:59:00. The daily correction (5 a.m. & 5 p.m.) is ten correction cycles sent to the relay (each for 95 seconds) beginning at 5:05:00, 5:07:00, 5:09:00, 5:11:00, 5:13:00, 5:15:00, 5:17:00, 5:19:00, 5:21:00, and 5:23:00.

“2” = 58th minute - The hourly correction for 60 seconds every hour from XX:58:00 to XX:59:00. The daily correction (5 a.m. & 5 p.m.) is twelve correction cycles sent to the relay (each for 65 seconds on and 25 seconds off) beginning at 5:05:00 to 5:22:35.

“3” = 58th minute - The hourly correction for 60 seconds every hour from XX:58:00 to XX:59:00. The daily correction (5 a.m. & 5 p.m.) is twelve correction cycles sent to the relay (each for one minute on and two minutes off) beginning at 5:06:00.

“4” = 59th minute - The hourly correction for 8 seconds every hour from XX:57:54 to XX:58:02. The daily correction (5 a.m. & 5 p.m.) is a 14 second pulse from 5:57:54 to 5:58:58.

“5” = National Time & Rauland – There is only hourly corrections (NO DAILY CORRECTIONS) for 25 seconds every hour from XX:00:00 to XX:00:25.

“6” = National Time & Rauland - The hourly correction is for 25 seconds every hour from XX:00:00 to XX:00:25. The daily correction (6 a.m. & 6 p.m.) is 25 seconds on, 35 seconds off every minute for 24 minutes.

“7” = Enable relay for once a day closure.

“8” = Rauland digital out.