

AMANO®

Electronic Time Recorder

PIX-3000x

Options Manual



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We recommend that this document be read in its entirety before any attempt is made to operate the equipment.

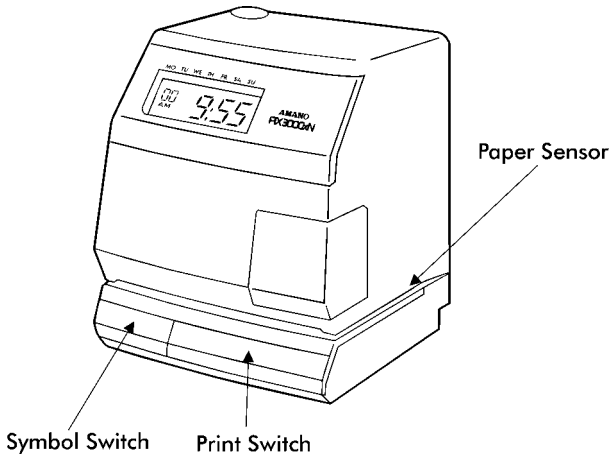
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Chapter 1: Introduction

This manual is a collection of instructions on the operation of the Signal Output, Master and Slave, and Programming options, and an overview of PIXCOMW Synchronization. For detailed instructions on the use of PIXCOMW software, please refer to the PIXCOMW Software and Installation and Configuration Guide.

External View

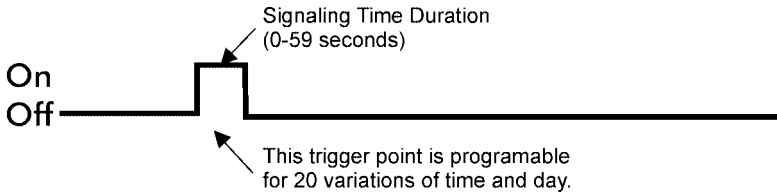


Materials Required

- Small flat screwdriver for inserting wires into the options terminal block
- Philips #2 screwdriver for the installation of options PCB
- This Options Manual
- The PIX-3000x Operations Manual
- PIXCOMW Software and Installation and Configuration Guide (If applicable)

About Signal Output

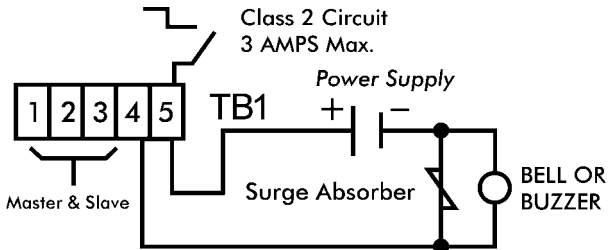
A Signal Output is achieved by means of a dry contact relay. The PIX-3000x can be programmed to generate up to 20 signals that may be set for different days and times (See Chapter 3). However, the duration of the contact (signal) is also a programmable option that is set once.



Installation

Disconnect AC power before connecting. See Page 8 for Options PCB Installation and Page 7 for Terminal Block Wiring.

Terminal Block Connection:



Note: To protect the machine from noise or surge, please connect the surge absorber (example: ESA-100010, S-1205) with a load as shown above. It is recommended that you use a 12, 18, 24 or 30-volt signal device. If this is not available, an external relay should be used for 110V signals.

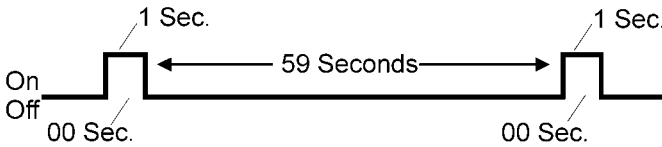
Chapter 3: Master and Slave Function

The Master and Slave function of the PIX-3000x synchronizes the PIX's connected to each other (up to 6). The Master & Slave functions of the PIX-3000x consists of one (1) Master clock and a maximum of five (5) Slave units. The PIX does not have an hourly correction of minutes.

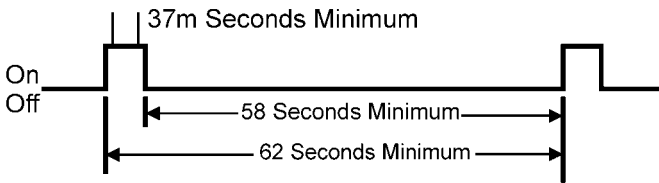
PIX Master Output

Typical Connection:

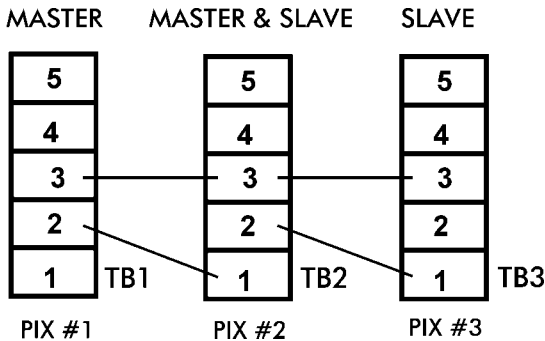
PIX Master Output:



PIX Slave Input:

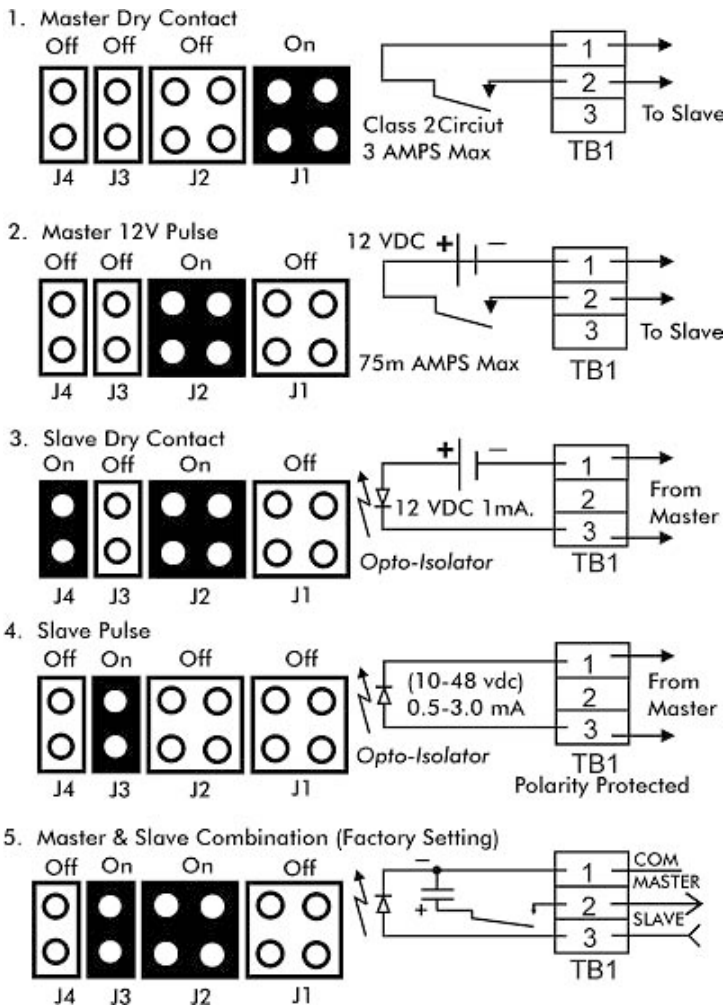


DUTY CYCLE NOT IMPORTANT



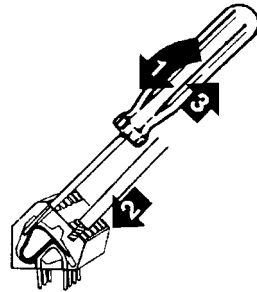
Jumpers and Connections

- Disconnect AC power before connection.
- Maximum wire distance in one direction is 2000ft. at 22 AWG.

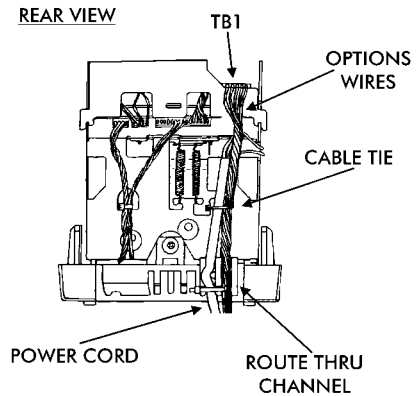


Terminal Block Wiring

1. Remove the cover case.
2. Remove wall mount plate.
Refer to the Wall Mounting and Cover Removal sections of the PIX-3000x Operations manual.
3. Use flat screwdriver to open TB1 as indicated.



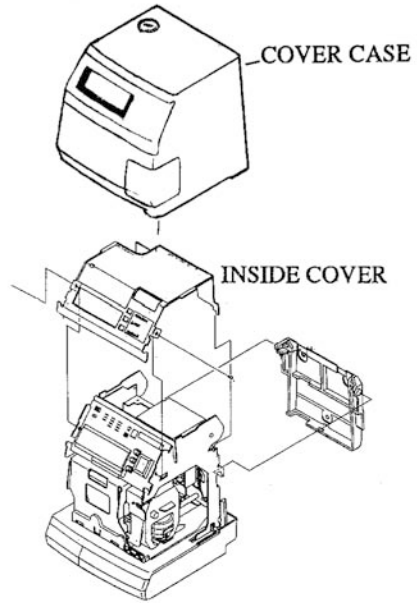
4. Insert option wires into TB1.
5. Route wires down the backside of PIX through the channel as indicated. Use cable tie to secure option wires in place.



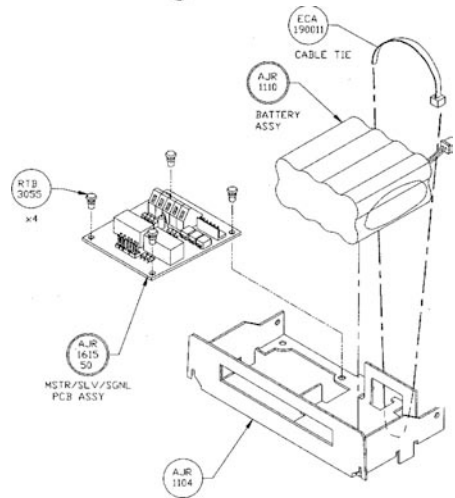
6. Replace wall mount bracket.
7. Replace cover case.

Master/Slave and Signal Output PCB Installation

1. Unplug AC power cord.
2. Use the key to remove the cover case.
3. Disconnect the batteries.
4. Use a Philips screwdriver to remove the two screws holding the inside cover.
5. From the front of the PIX, grasp the two tabs on the right and left side of the inside cover and gently hinge it backwards.
6. Remove the two rivets holding the battery bracket.
7. Remove the battery bracket.

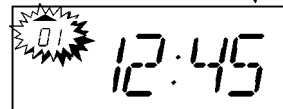
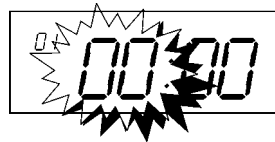
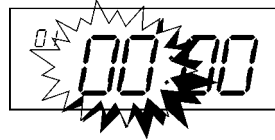


8. Remove the two rivets that secure the shield.
9. Place the board on the battery bracket as shown.
10. Secure the board with four rivets.
11. Reinstall the battery bracket and secure it with two rivets.
12. Plug in the 6-pin connector on the options board to the 6-pin connector on the power board.
13. Reinstall the inside cover, taking care not to damage the programming buttons.



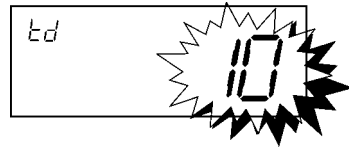
Setting Signal Program

1. The Signal Program screen looks like this. A maximum of 20-programmed signals may be set.
2. Select the correlating signal program number for the data to be edited. Press the CHANGE button to advance the signal program number. Press the ENTER button to edit the signal program data.
3. Set the hour. Press the CHANGE button to advance the hour. Press the ENTER button to save the new data.
4. Set the minute. Press the CHANGE button to advance the minute. Press the ENTER button to save the new data.
5. Select the days for signal to sound. Press the CHANGE button to turn off the day and move to the next day. Press the ENTER button to turn on the day and move to the next day.
6. Final confirmation. All digits will blink. Press the CHANGE button if you do not want to save the signal program data and reprogram the signals you do want.
7. Press ENTER to save and move to next signal program number.



Signaling Time Duration

1. The signaling time duration program screen looks like this.
2. Press the CHANGE button to advance the seconds from 0 to 59.
3. Press the SYMBOL switch to subtract the seconds from 59 to 0.
4. Press the ENTER button to save the seconds.

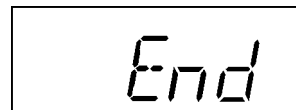
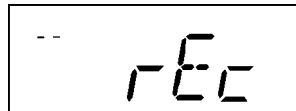
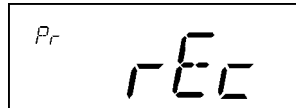


Operation For Symbol Program Data Send And Receive

To SEND and RECEIVE symbol program data requires the connection of the Master Clock and the Slave Clock respectively (See Section 2). By following the steps outlined below, the Master PIX will send Symbol 1 and 2 character code data to the Slave PIX.

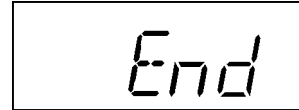
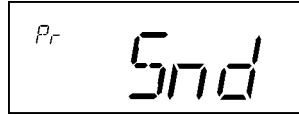
To Receive Data

1. To receive symbol program data select the indicated screen.
2. Press the ENTER button to wait for the reception of data from the Master PIX.
3. When the data has been successfully received, the PIX will display "End".



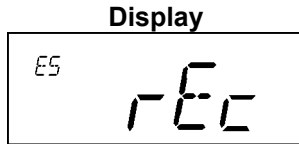
To Send Data

1. To send symbol program data, select the indicated screen.
2. Press ENTER to send data to Slave Clock.
3. After all data is sent, the PIX will display "End".

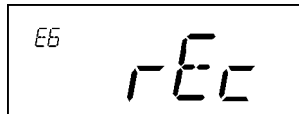


Error Codes

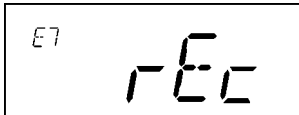
Error Code
Parity Error



Check Sum Error



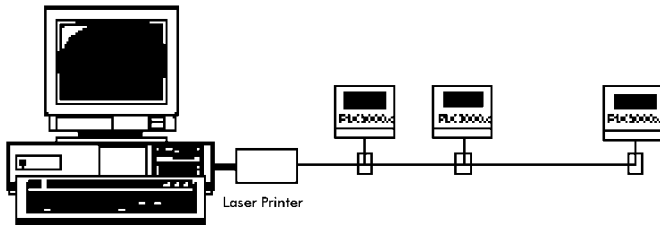
2-Minute Time Out



Introduction

PIXCOMW is a software and hardware option that synchronizes the date and time for the PIX-3000x Series Electronic Time Recorder. This software requires an IBM (or compatible PC) running DOS version 3.3 or higher, EGA or better display, two serial ports and a modem. An asynchronous multi-point line driver is needed to interface the computer with the PIX-3000x's (Recommended: LD485A-MP). PIXCOMW allows time/date information obtained from either the user or ACTS* to be sent out from up to 4 serial ports. When communicating to the PIX-3000x's, each unit will be disabled from performing other functions for a period ranging from one to three seconds.

Network Topology



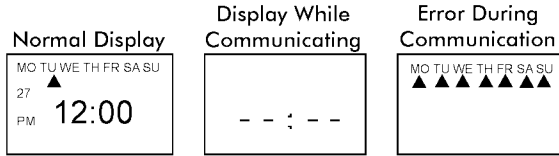
Communication Parameters		Data Sent
Baud	1200 (Max.)	Month
Parity	Even	Hour
Data Bits	8	Day
Stop Bits	2	Minute
		Year
		Second**

**Accuracy = 0.25 sec.

* The Automated Computer Time Service (ACTS) is a service operated by the Time and Frequency Division of the National Institute of Standards and Technology, which provides direct access to the NIST cesium clock atomic time via commercial dial-up telephone lines.

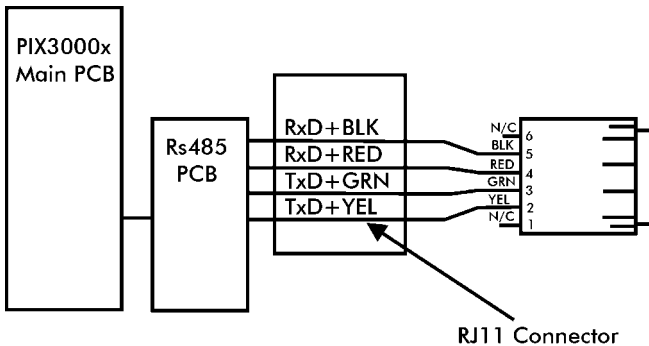
PIX Operation

When the PIX receives data from a PC, the liquid crystal display will go blank and dashes will appear across the display until communications with the PC are complete. If an error occurs during transmission, the top row of day indicators will flash. During this error condition, all functions of the PIX-3000x will continue to operate normally. If an error occurs during communications, two actions can be taken to reset the display: Pressing the reset button or using the PC to resend the time and date to the PIX machines. A good transmission will clear the display.



PIX RS485 Hardware Specifications

The communication board is connected to the PIX using an 8 Pin connector wire harness. The communication board itself is equipped with an RJ11 (4C6P) connector that is used for the multi-drop system. Connecting a single PIX or several PIX's to a system is done by using a junction box and a line driver.



PIXCOMW Communication Specifications

Parameters

The PIXCOMW software requires a fixed set of communication parameters to be entered to allow the PIX and PC to communicate and receive the TIME/DATE information. These are:

Baud	1200
Parity	Even
Data Bits	8
Stop Bits	2

Time Offset

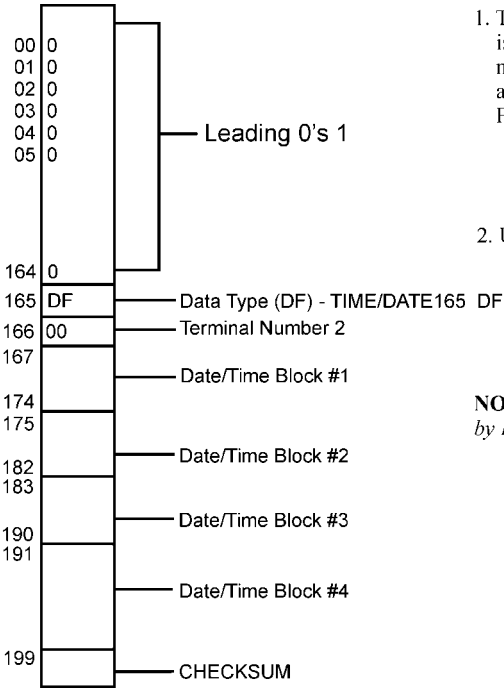
When transmitting the time to the PIX-3000x, the application will add two seconds to compensate for transmission time. The time offset occurs immediately before the time is sent out. The offset is determined by using the following equation:

$$\text{Transmission Time} = (1/1200)(12\text{bits})(200\text{characters}) = 2 \text{ seconds}$$

This equation takes into account the baud rate, number of bits used for each character, and the number of characters that are sent to the PIX-3000x.

Data Format

When the data is sent to the PIX-3000x, all the data is represented by the hex equivalent of the ASCII values. The transmission string contains 200 characters, 165 leading 0's, data type [DF], terminal number [00], (4) Date/Time blocks and an overall checksum.



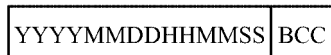
1. The purpose of the leading 0's is to give the PIX a wake-up signal. The duration of 0's must be at least 600ms to initialize the PIX.

2. Used for future enhancements.

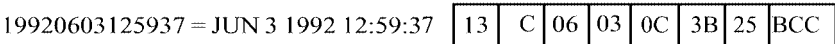
NOTE: All information is presented by HEX values of ASCII characters.

Date/Time Block

Each Date/Time block contains the following information:



Example:



Checksum (BCC)

Each transmission block will have 2 separate checksums associated with it.

The first checksum is for the Date/Time block. Each Date/Time block will have its own checksum. The checksum for the Date/Time block will be calculated from the first byte of the year and go through the last byte of the seconds.

The second checksum is for the entire transmission block; this includes the leading 0's, data type, terminal number and all (4) Date/Time blocks. The checksum is inclusive from the first byte through the last byte of the 4th Date/Time block. The checksum is a cyclic redundancy check formed by using exclusive OR logic to combine all elements in the transmission block.

$$\text{BCC} = \text{data1} \wedge \text{data2} \wedge \text{data3} \wedge \dots \wedge \text{dataN}$$

Error Detection

The transmission format is sent in such a way that makes it possible to receive the correct time and date even when an error appears in the transmission. Error detection is accomplished by using the two types of checksums that are included in the transmission block. If an error is detected by using the final checksum (located at the end of the transmission block), the PIX checks each Date/Time block to determine the correct one. Determining the correct block is done by comparing the checksums of each block until two match. If two checksums are identical, it is assumed that the blocks of data are correct. One of these blocks is chosen as the Date/Time information. If the PIX-3000x is unable to set the Date/Time, an error message will be displayed on the PIX. The only way to remove this message is to reset the PIX or to retransmit the Date/Time correctly. This theory relies on the fact that only one or two blocks of Date/Time data can be corrupted. If three or more blocks are corrupted, the correct Date/Time cannot be found.

Software Operation

Refer to the PIXCOMW Installation and Configuration Guide for the configuration and operation of PIXCOMW software.

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