CONTROL UNIT (CTRL:X0316, X7387)
FUNCTIONAL DESCRIPTION

1. GENERAL

1.01 This section is a cover sheet for the NEC America, Inc., Control Unit (CTRL:X0316, X7387) Functional Description. This section is reproduced with permission of NEC America, Inc., and is equivalent to NEC practice NECA 365-407-403, Issue 1.

1.02 Whenever this section is reissued the reason(s) for reissue will be listed in this paragraph.

1.03 This section provides a general description of the Control Unit (CTRL:X0316-→ and X7387-←).

1.04 If corrections are required in the attached document, use Form-3973 as described in Section 000-010-015.

1.05 If equipment design and/or manufacturing problems should occur, refer to Section SW 010-522-906 for procedures on filing an Engineering complaint.

2. ORDERING PROCEDURE

2.01 The Control Unit (CTRL:X0316 and X7387) may be ordered via the Southwestern Inventory Management System (SWIMS).

2.02 To order additional copies of this practice, use NECA 365-407-814SW as the section number.

3. REPAIR/RETURN

3.01 Malfunctioning units may be returned to NEC America, Inc., for repair.

Attachment: NEC America, Inc.
Control Unit (CTRL:X0316, X7387)
Functional Description

NEC PRACTICE

NEC

NECA 365-407-403
Issue 1, December 1986

CONTROL UNIT (CTRL : X0316,X7387)

FUNCTIONAL DESCRIPTION

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◗CONTROL UNIT (CTRL:X0316, X7387)◖

FUNCTIONAL DESCRIPTION

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ILLUSTRATIONS

TABLE

1. GENERAL

1.01 This practice provides a general description of the Control Unit (CTRL: X0316-◆and X7387-◆) and contains the information as listed below.

(1) Description

(2) Function operation

(3) Controls and indicators

(4) Strapping selection

1.02 Whenever this practice is reissued, the reason for reissue will be listed in this paragraph.

2. DESCRIPTION

2.01 This unit consists of one epoxy-glass printed wire board (PWB) and associated circuit components. Printed circuit wiring is etched on both sides of the PWB. On the left side surface (viewed from front) of the PWB, the components are mounted.

2.02 LEDs and switch for controlling and indicating the operational status are located on the front edge of this unit.

2.03 This unit is used only when the system is in redundant configuration and is mounted in the FD-2440A E8980A shelf with back board connectors J13 (Sys 1) and J6 (Sys 2). The unit inputs and outputs are terminated at a connector on the rear of the PWB.

2.04 The unit designation, unit code, manufacturing date and serial No. are printed in the right side surface of the connector.

2.05 The lower front edge of the PWB is burnished with ejectors to facilitate insertion and removal of the unit from the shelf. A CLEI and bar code label is placed on the surface of the ejector. See Figure 4-1.

2.06 Five groups are provided with the CTRL unit. Table 2-1 lists these groups.

Table 2-1

CTRL Unit Group

No.	Group and Unit Code	Power Voltage	Interface	Remarks
1	X0316A	-48 Vdc	Optical (for MUX, DMUX unit of Primary Version)	Primary Version
2	X0316A1	-48 Vdc	Optical (for MUX, DMUX unit of Primary Version)	
3	X0316B	-48 Vdc	Bipolar (for MUX, DMUX unit of Primary Version)	
4	X7387A	-48 Vdc	Optical (for MUX, DMUX unit of New Version or for New MUX, primary DMUX version)	New Version
5	X7387B	-48 Vdc	Bipolar (for MUX, DMUX unit of New Version or for New MUX, primary DMUX version)	

3. FUNCTIONAL OPERATION

3.01 The CPU of the CTRL unit facilitates centralized control for switching the system and monitoring the multiplex functions. Figure 3-1 shows block diagram of the CTRL unit.

A. Monitoring Function

3.02 Monitoring function is a repetition of the checking procedures of Shelf check, Off-line check, On-line XMT check and On-line RCV check. Monitoring flow is shown in Figure 3-2 and routing is shown in Figure 3-3.

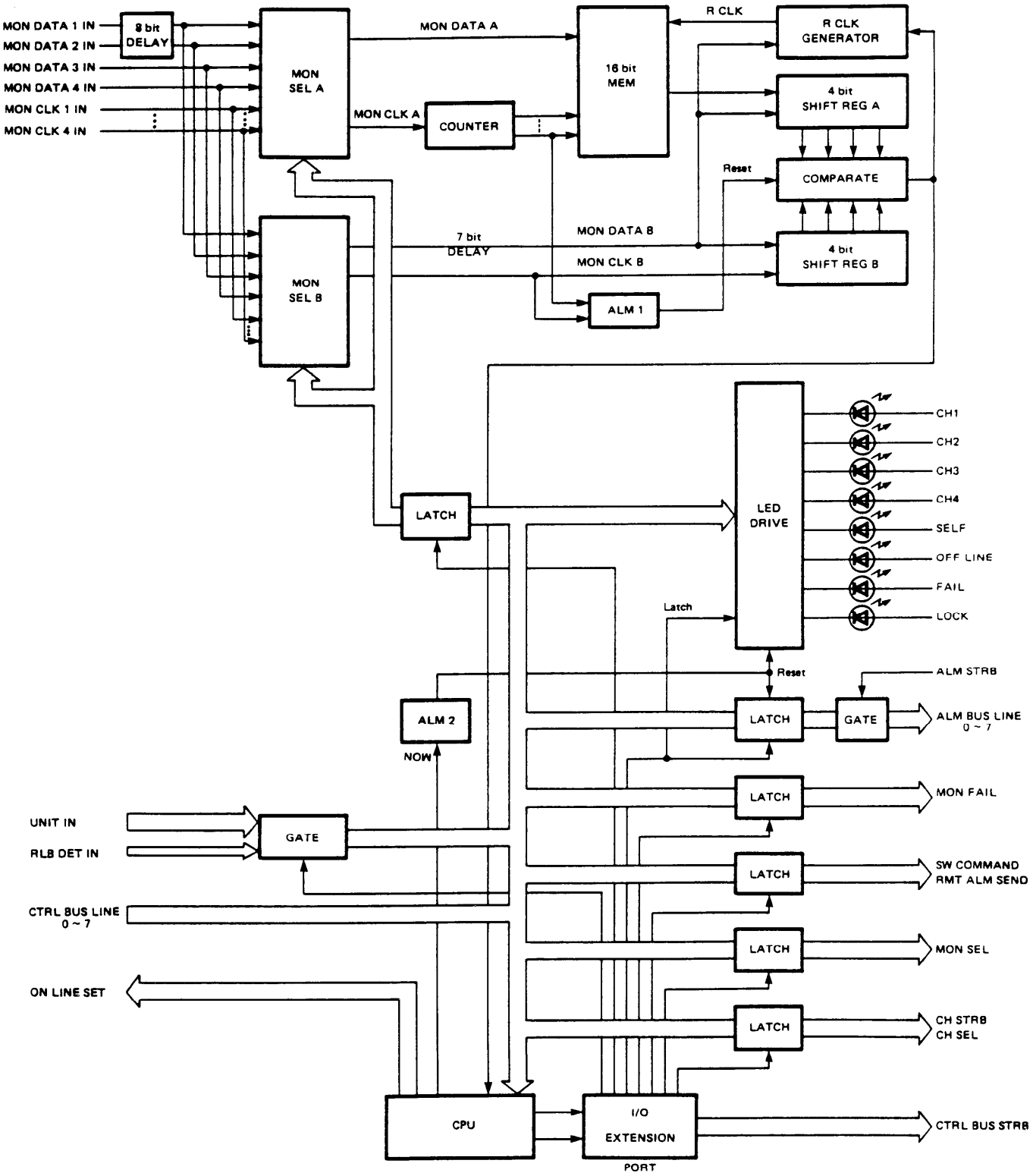


Figure 3-1 Block Diagram of CTRL Unit

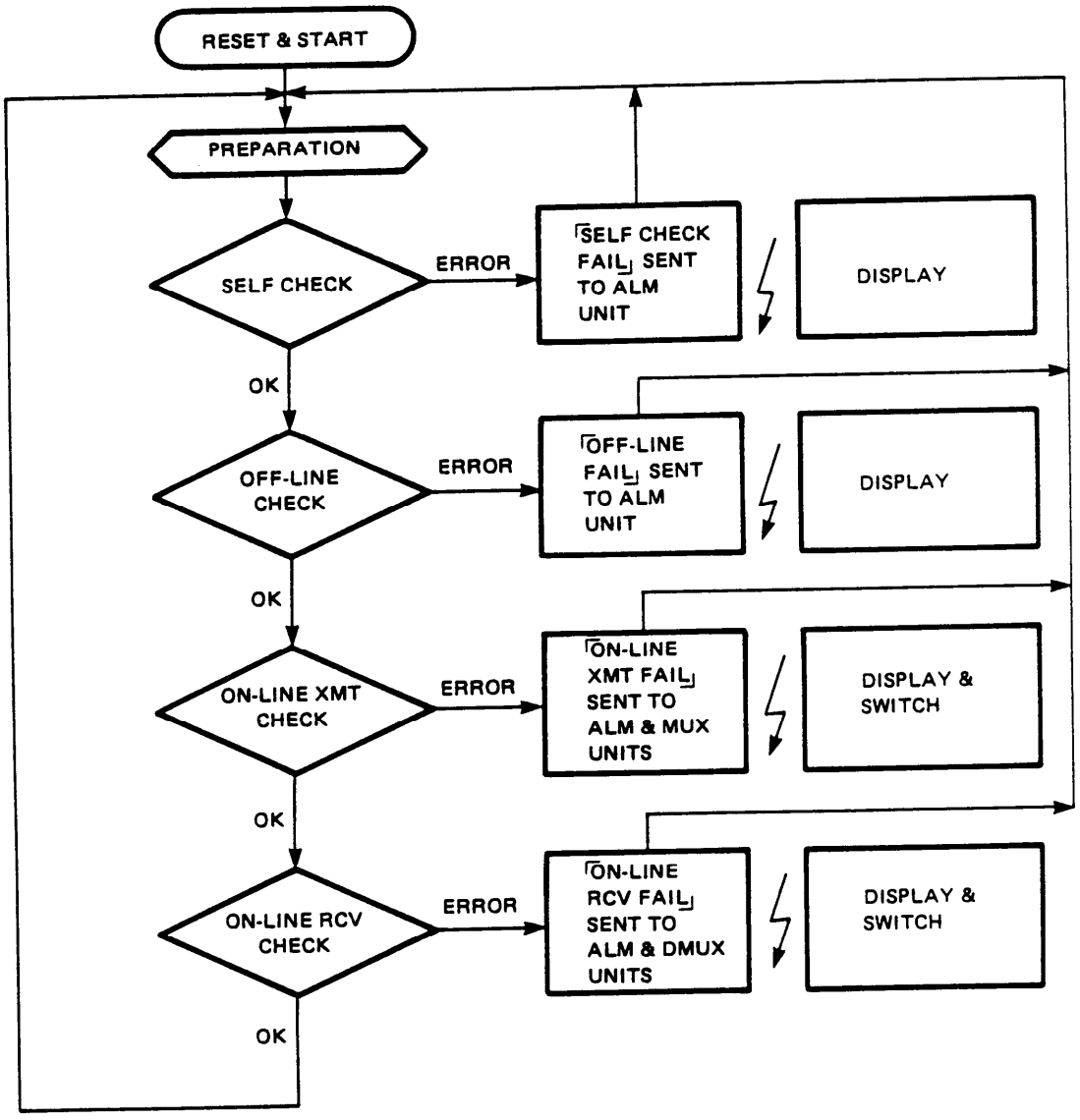


Figure 3-2 Monitoring Flowchart

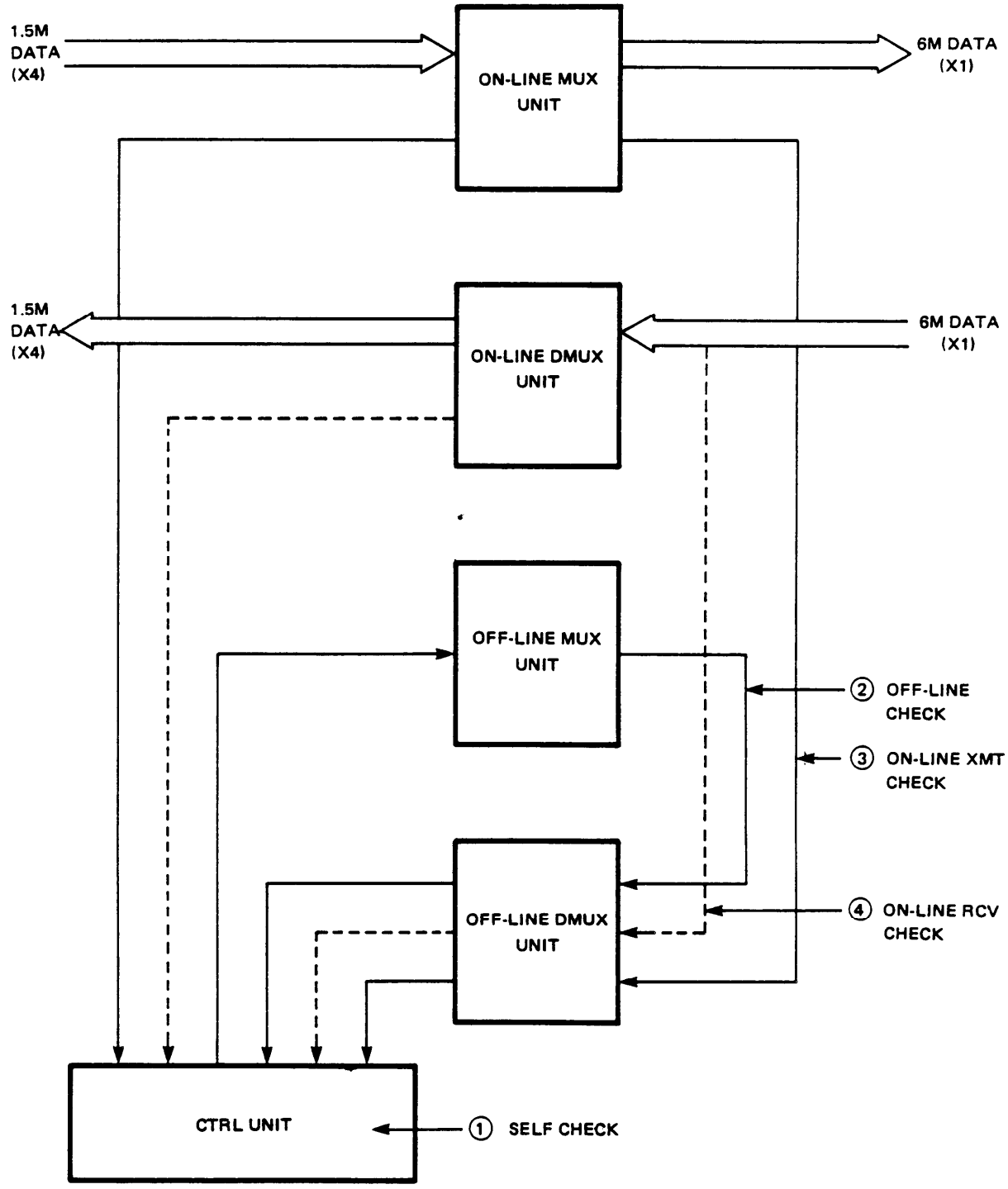


Figure 3-3 Monitoring Route

3.03 According to the checking items, MON DATA 1-4 and MON CLK 1-4 incoming to the CTRL unit are selected by MON IN SEL A and MON IN SEL B selectors. Output data from MON IN SEL B (shown as MON data B in Figure 3-1) and is sent to 4 bit shift register B. Output data from MON IN SEL A (shown as MON data A in Figure 3-1) is stored in Buffer memory (BUFF MEM) and is read out by R CLK, which is synchronized with MON CLK B. At this time, delaying time can be varied from 1 to 16 bit. Data output from BUFF MEM is sent to 4 bit shift register A. Bit comparison is performed between 4 bit shift register A and B and its result is sent to R CLK generator and the CPU. If both data are not in concert with, timing of the data stored in BUFF MEM is delayed (i.e. changes delay bit of DATA A). This operation will be continued until those data will be concerted.

3.04 ALM 1 is monitoring MON CLK A and MON CLK B and if CLK supplying is stopped, resetes bit comparison function.

B. Control of CTRL Signals by CPU and I/O Extension Ports

3.05 In this unit, under control of the CPU and I/O extension ports (hereafter both components are regarded as one part and called CPU), collection of alarm and control data from the units and sending out of the control commands, in response to the collected alarm information, are carried out.

3.06 The CPU always keeps monitoring of facility status of each system and also sending of strobe signals to the units and collecting of ALM, CTRL information from the units.

3.07 The fetched data are processed by the CPU and the CPU sends out, according to the result of processing, ON-LINE signals, MON SEL signals and SW COMMANDS to the units and also sends ALM DATA to the ALM unit through bus line. When an alarm is detected, the corresponding LED is lit.

4. CONTROLS AND INDICATORS

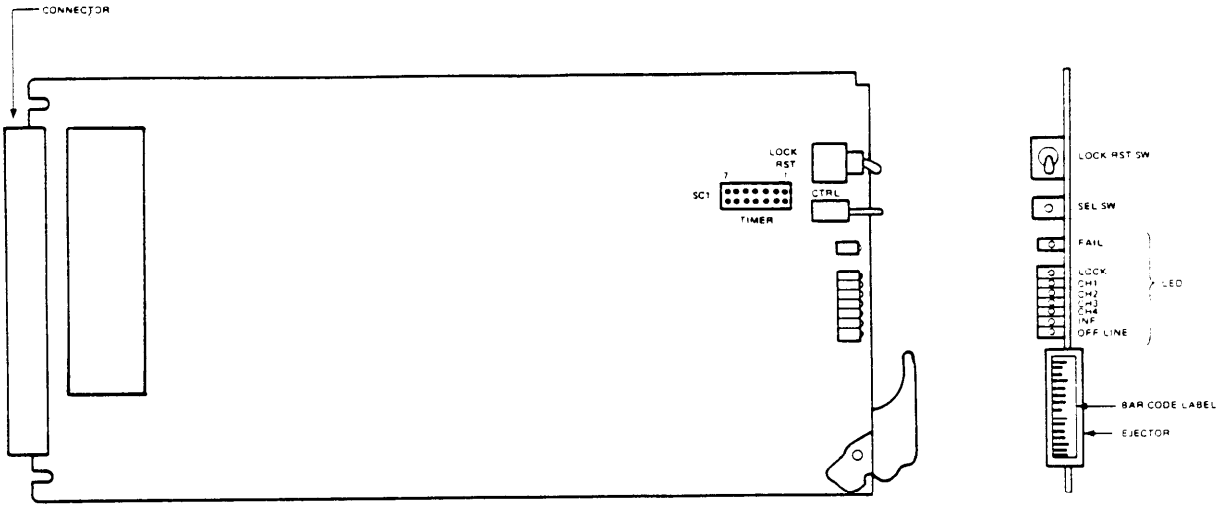
4.01 Table 4-1 and Figure 4-1 show controls and LED indicators on the CTRL unit. The physical location of them are given in Figure 4-1.

Table 4-1

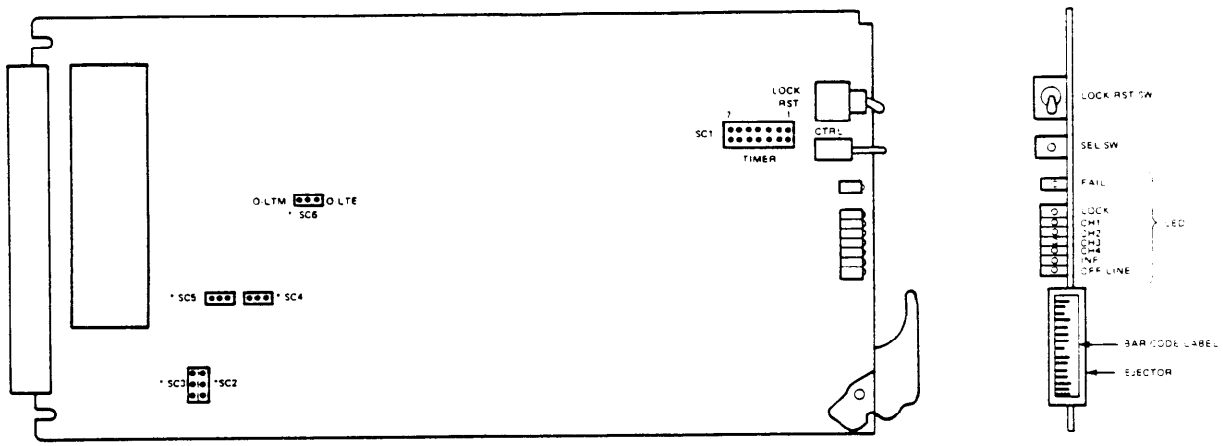
CTRL Unit Control and Indicators

Feature	Type	Control/ Indicator	Function
Alarm	Red LED	FAIL	Lights when this unit is faulty.
Status	Red LED	LOCK	Lights when on-line system is automatically locked.
Alarm	Red LED	CH 1 CH 2 CH 3 CH 4	Lights when error bit failure occurs while monitoring each channel.
		SELF	Lights when failure occurs in monitoring circuit of this unit.
		OFF LINE	Lights when error bit failure occurs during off line monitoring.
Operation	Momentary toggle switch	LOCK RST	By placing this switch in ON, locked system is automatically released (This switch is vaild only when high speed side is DS2 INF.) and reset the CPU.
Operation	Momentary toggle switch	SEL	System 1 is locked in on line, when this switch is set to position 1 (left). System 2 is locked by setting to position 2 (right). When in neutral position (normal setting position), automatic switching is provided.

NOTE: LOCK RST and SEL switch should be operated after MAINT switch on the ALM unit is set to ON.



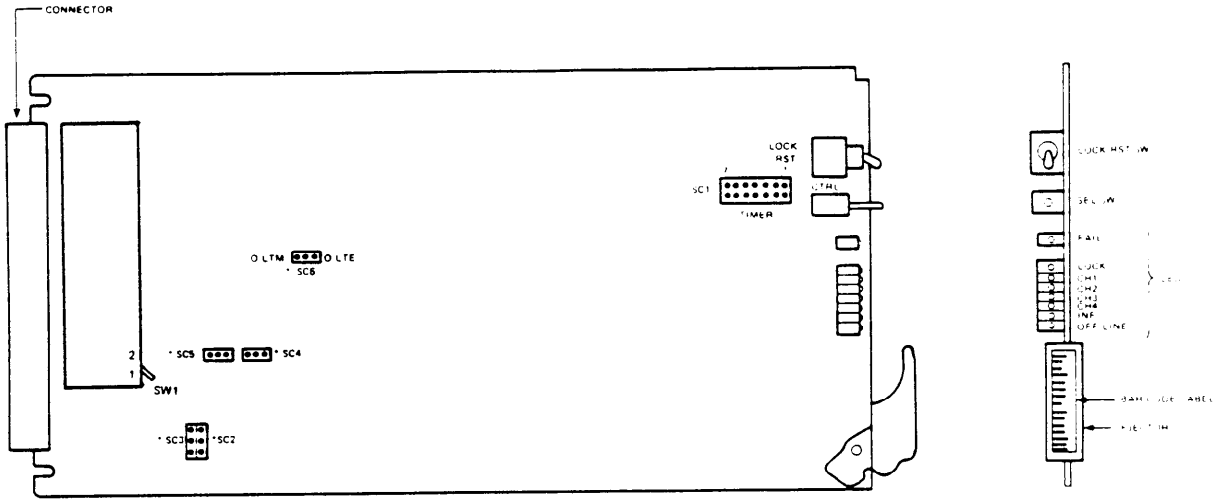
◆(A) CTRL (X0316, Grp: 0A00) Unit◆



* Factory adjustment

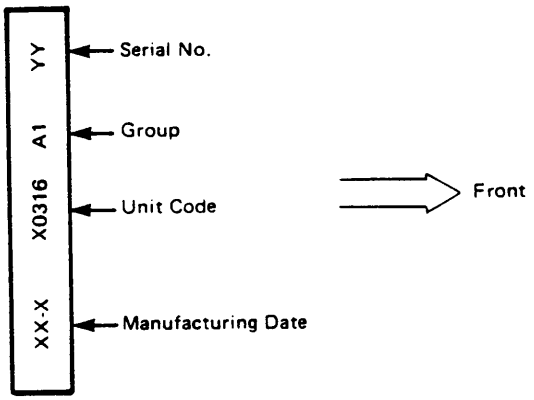
◆(B) CTRL (X0316, Grp: 0A01) Unit◆

◆Figure 4-1 CTRL Unit Controls and Indicators (Sheet 1 of 2)◆



* Factory adjustment

◗(C) CTRL (X7387, Grp: 0A00,0800) Unit◖



◗ Figure 4-1 CTRL Unit Controls and Indicators (Sheet 2 of 2) ◖

5. STRAPPING SELECTION

5.01 ◗As shown in Figure 4-1, there are one strapping location on the X0316 (Grp, 0A00) unit and six strapping locations on the X0316 (Grp, 0A01) unit and six strapping locations and one switch on the X7387 (Grp, 0A00, 0B00) unit.◖ Detailed strapping selections are described in NEC practice NECA 365-407-203.