

E2A TELEMETRY SWITCHING CONTROL CENTER SYSTEM DESCRIPTION

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1. INTRODUCTION

1.01 This section describes the E2A telemetry equipment associated with the switching control center system (SCCS). Information in this section covers the Number 1 Electronic Switching System (ESS), Number 2B/3 ESS, Number 2 ESS Automatic Intercept System (No. 2 ESS/AIS), and the Traffic Service Position System/Electronic Translator System (TSPS/ETS)

1.02 This section is reissued to include information on the Number 2B/3 ESS, Number 2 ESS/AIS, and TSPS/ETS. Since this reissue is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The SCC is a centrally located control center capable of providing administrative, operational, and maintenance functions for switching system central offices (CO). The E2A equipment, used in SCCS applications, provides a means of transferring control and status information between an SCC and a master control center (MCC) at each CO. The MCC is the primary man-machine interface

for the equipment at the central offices. Each MCC provides the ability to monitor a number of status points (see Table A) of which 16 state the overall condition of the CO. These are known as the critical indicators. These 16 status points are constantly monitored and returned to the SCC via E2A. The remaining status points are monitored only when an alarm condition occurs in the critical indicators. The SCC can also send commands to the CO to control a number of momentary and latching relays in the E2A CO equipment which are used by the CO to perform various operations.

2. PHYSICAL DESCRIPTION

2.01 The E2A equipment in the SCC applications consists of a J92621D critical indicator (CI) central (Fig. 1), a J92621C or -P control and display (C&D) central (Fig. 2 and 3) and a number of remote units (Fig. 4). The types of C&D central and remote units used in each system is explained in Fig. 5. The CI central is contained in a 23- by 6- by 12-inch panel mounted in an SCC equipment cabinet. The C&D central is contained in a 15- by 13- by 12-inch panel mounted inside the SCC C&D console. The E2A remote is contained in a 25- by 6- by 12-inch panel mounted in the MCC bay in the CO.

Note: In the No. 2B/3 ESS applications, a universal console is used in place of the C&D console. The universal console contains no E2A equipment (see Fig. 5).

3. FUNCTIONAL DESCRIPTION

A. General

3.01 Figure 5 is a block diagram of the E2A equipment in typical SCC applications. The E2A equipment consists of the CI and C&D centrals, which are located at the SCC, and an E2A remote

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TABLE A

E2A REMOTE CAPABILITIES

PANEL	SYSTEM	NUMBER OF MONITORED STATUSES	NUMBER OF GROUPS	SCANS PER GROUP				NUMBER OF CONTACT CLOSURES
				1	2	3	4	
J92621 B	No. 1 ESS	224	4	4	4	6	1	48
J92621 AE	No. 2B/No. 3 ESS	160	3	6	4	—	1	32
J92621 AD	No. 2 ESS/AIS	224	4	6	4	4	1	64
J92621 M	TSPS/ETS	288	4	6	4	8	1	80

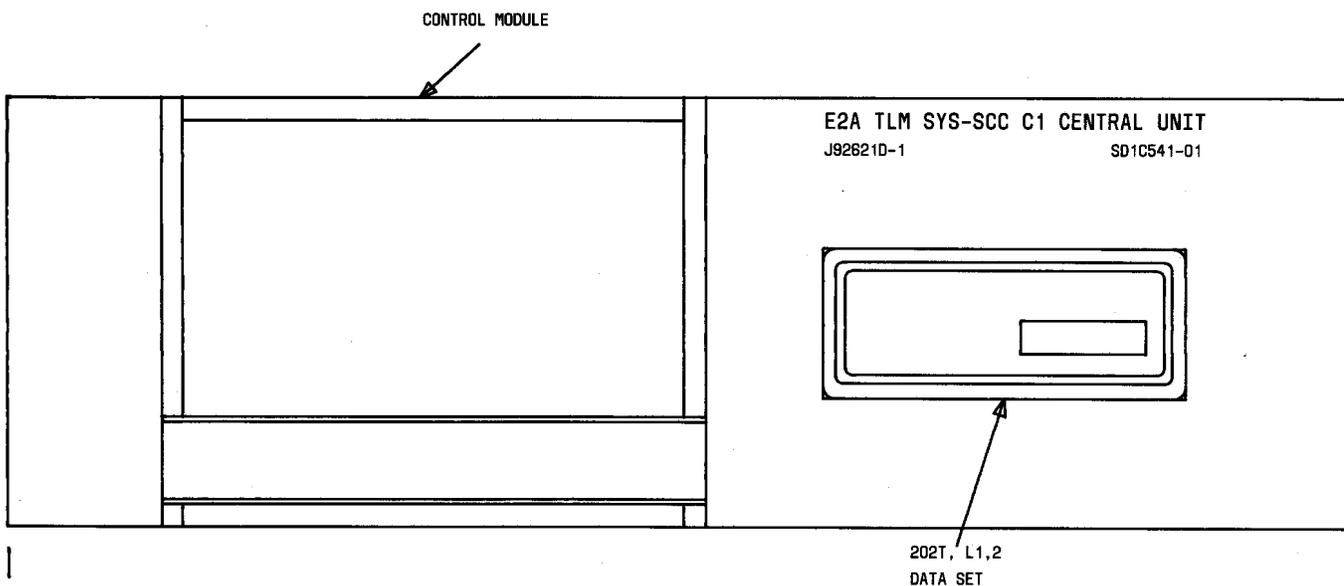


Fig. 1—J92621D CI Central

located at each CO served by the SCC. Up to 16 COs can be connected to each CI central. Power for the E2A equipment is supplied by the associated SCC and MCC equipment.

3.02 Communication between the centrals and remotes is accomplished through the use of 202T data sets and 4-wire voice frequency (VF) data facilities meeting 3002 specifications. The 202T data sets operate at 1200 bits per second, and are located at the SCC and each CO. In the transmit mode, the data set receives information in the form of positive and negative pulses (conforming to EIA Standard RS-232C) from the

E2A equipment and converts them to frequency-shift-keyed (FSK) signals which are transmitted over the data network. In the receive mode, the above process is reversed.

3.03 The E2A equipment transmits and receives information in the E2A word format as shown in Fig. 6. This format provides a word-start sequence for synchronization of the E2A remotes on the data facility, a 17-bit information field, and a parity field for the detection of errors in the information field. Communication is established between a central and a remote when a central sends a GROUP REPORT or a RELAY OUTPUT command to the respective remote. A GROUP

202T, L1/2
DATA SET

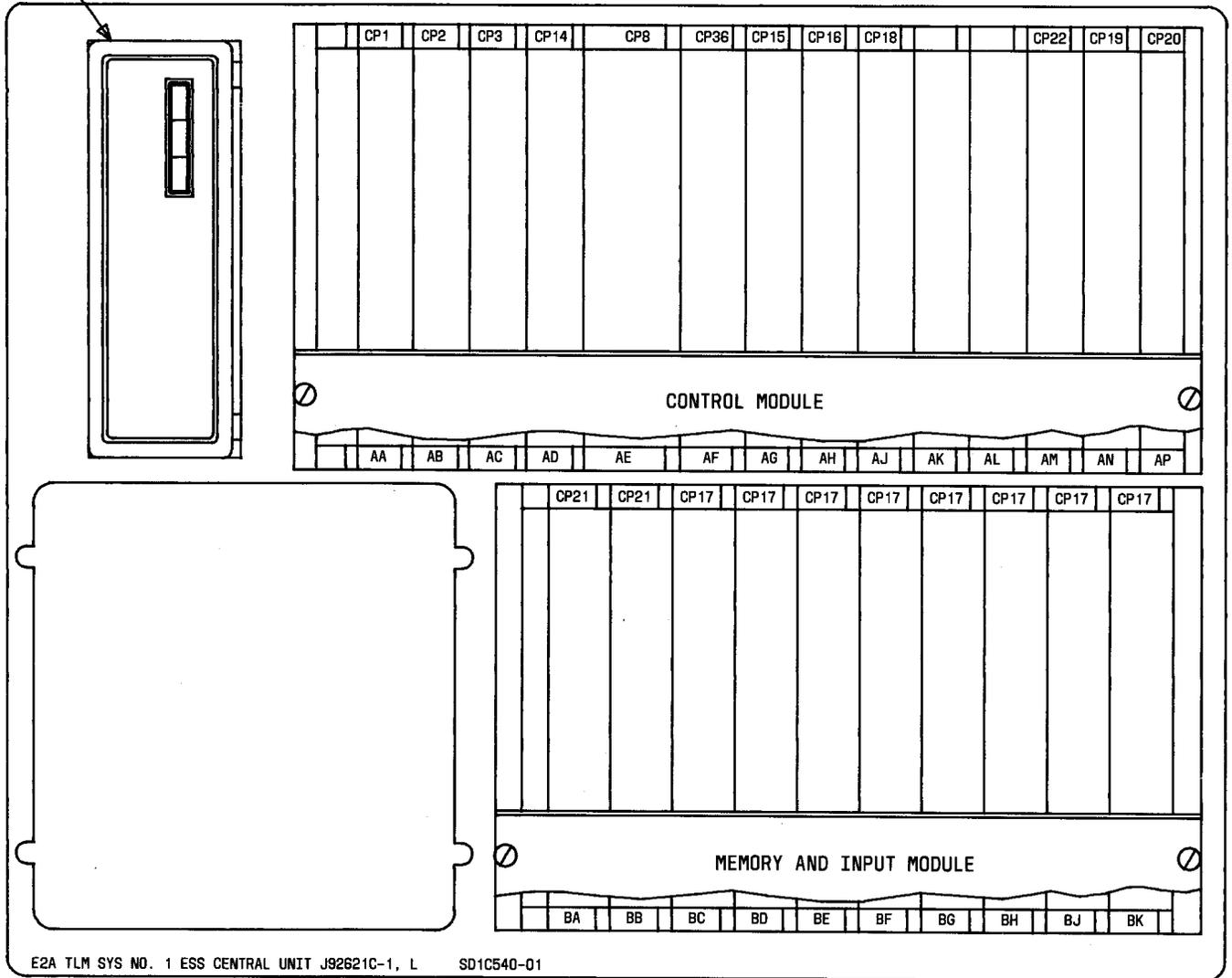


Fig. 2—J92621C C & D Central

REPORT is a one-word command, sent by either the CI or C&D central, which instructs the remote to transmit to the central from 1 to 8 STATUS REPLY words. Each of the status reply words contains 16 status bits representing the condition, or a portion of the condition, of the CO. A RELAY OUTPUT is a three-word command which can only be executed from the C&D central, and which instructs the remote to operate a latching or nonlatching relay in the E2A remote unit. Its outputs are used to control some portion of the

CO equipment. If all three words are received by the E2A remote without error, the remote will return a QUICK REPLY to the central. This reply indicates to the central that the remote received the command error-free, not that the relay operated or that the desired event happened in the CO. This must be verified by the status group report.

3.04 Figures 7 and 8 show the format for the information bits of the group report and relay output commands and their respective replies.

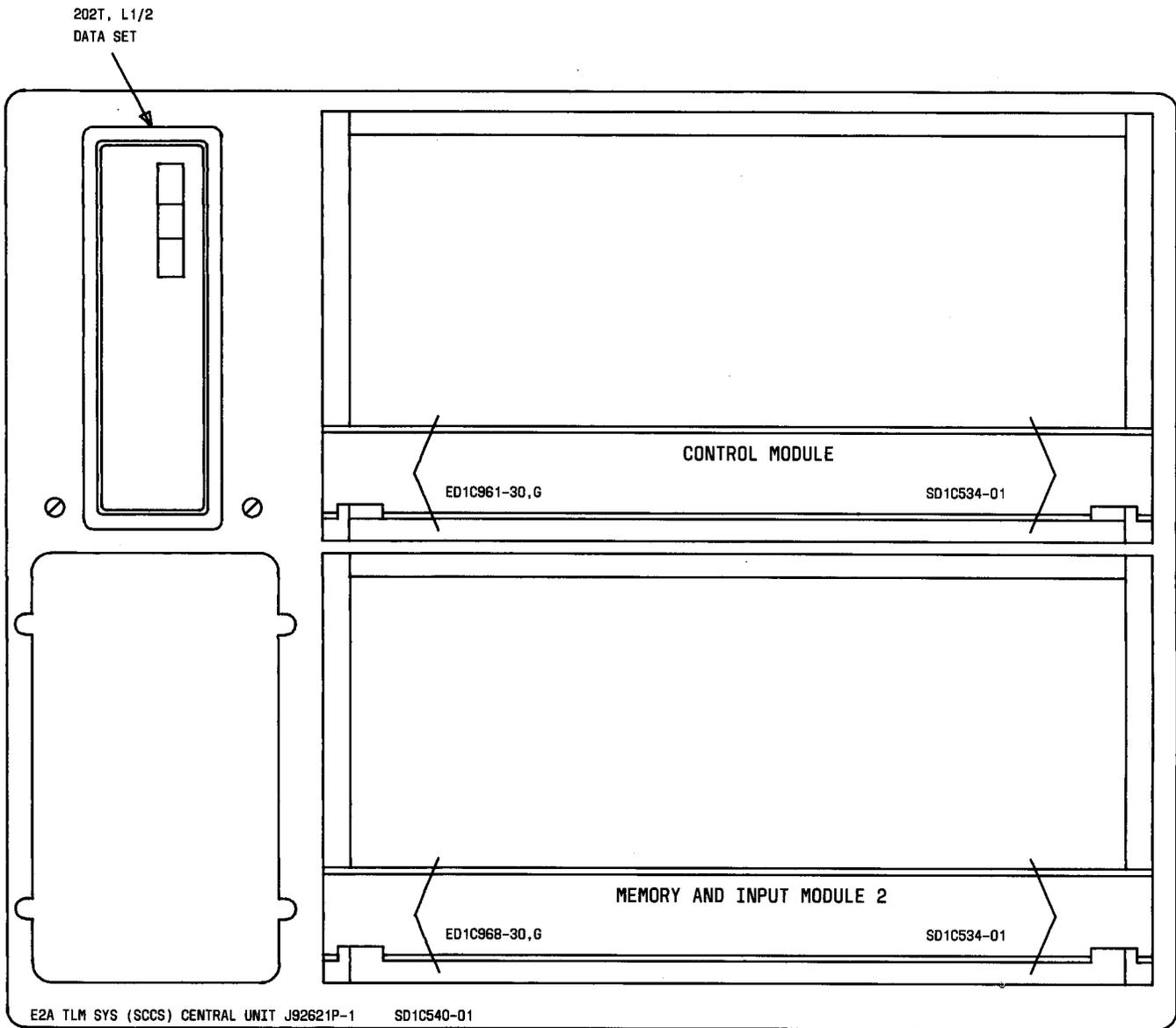


Fig. 3—J92621P C & D Central

Each word is 17 bits in length with the 17 bits segregated into areas which form the station address, group number, etc., as shown in the respective figures.

B. Operation

3.05 In normal operation, the CI central will sequentially and continuously poll the E2A remotes with GROUP REPORT commands. This command contains the remote address and, when sent by the CI central, instructs the addressed

remote to return the statuses of the critical indicators. A GROUP REPORT command from the CI central always requests group 4, which contains the critical indicators.

3.06 Upon reception of this command, the remote will check for errors and, if it is received correctly, will transmit one STATUS REPLY word containing the states of the 16 critical indicators. The CI central will, in turn, receive the remote transmission and, if it is received correctly, display the critical indicators on the wall-mounted critical

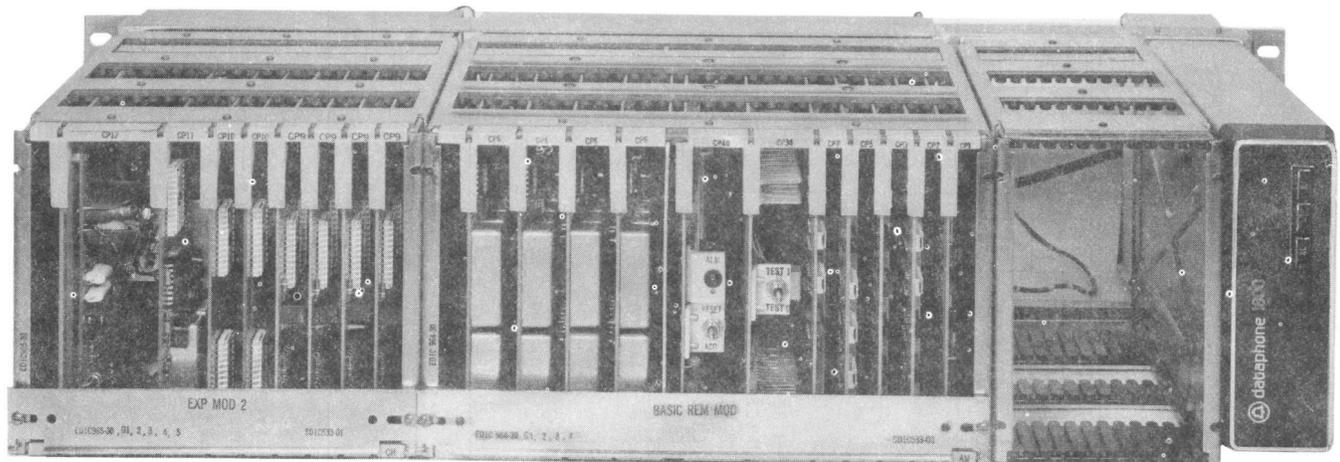


Fig. 4A—J92621B E2A Remote

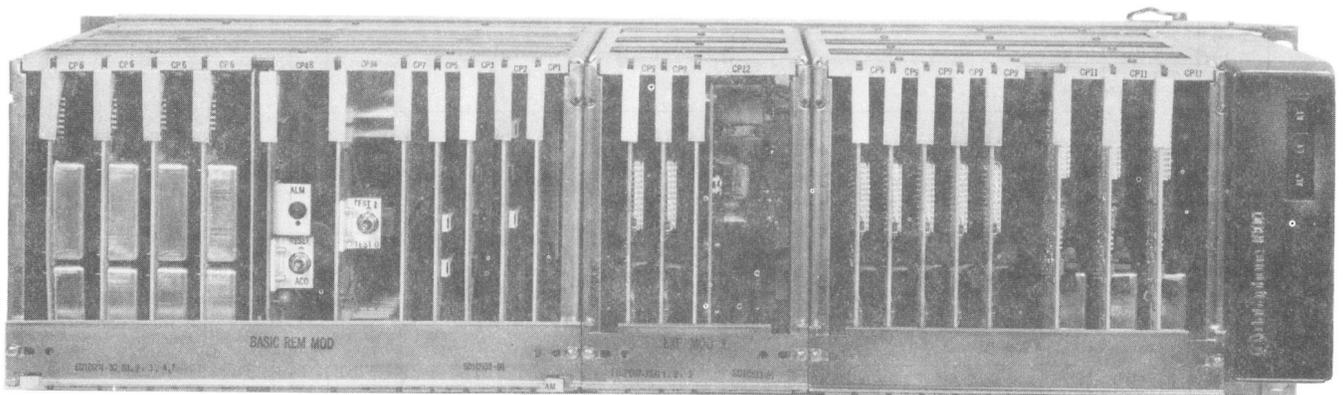


Fig. 4B—J92621M E2A Remote

indicator panel (CIP) for the particular remote. The CI central will then interrogate the next remote in a similar manner until all remotes have been interrogated and will then repeat this process continuously.

3.07 If an alarm condition occurs in the critical indicators, the CI central will cause an alarm to be sounded. A switching arrangement controlled by SCC personnel will then disengage the CO indicating the alarm condition and connect that CO to the C&D or universal console. The purpose of the C&D or universal console is to nurse the alarming CO back to normal operation. An example of this,

using the C&D console, is as follows. The central in the C&D console will transmit to the remote three GROUP REPORT commands requesting the condition of all statuses in groups 1 through 3. The number of scans in each group depends on the particular application (see Table A). These status words or scans contain all the statuses monitored at the CO including the critical indicators. (The critical indicators are contained in group 1, scan 1, and duplicated in group 4, scan 1; therefore, the C&D central does not have to interrogate group 4.) These status conditions are continuously updated by the C&D central and displayed on the SCC C&D console for analysis by the SCC personnel.

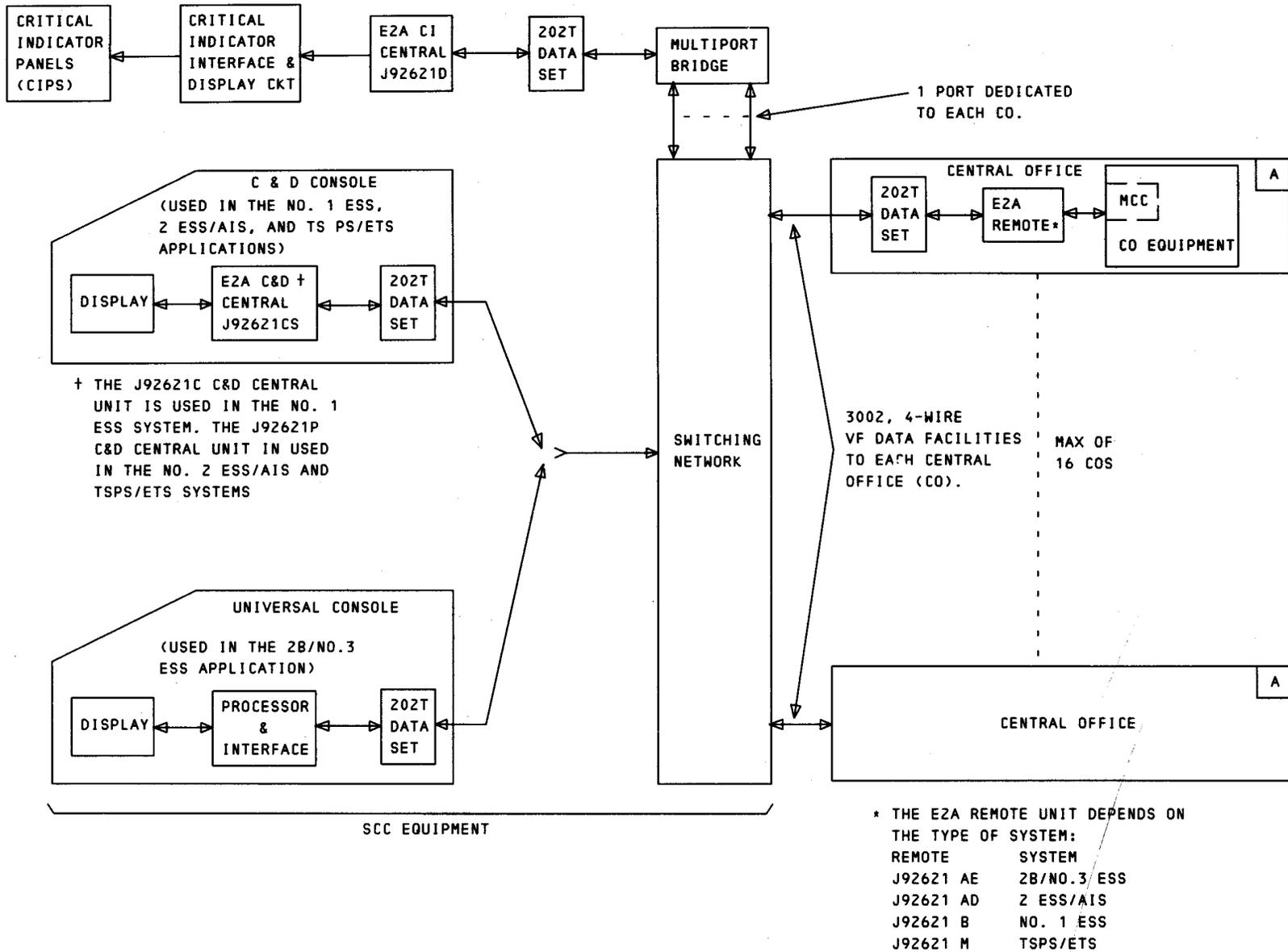


Fig. 5—Block Diagram of the E2A Equipment in SCCS Applications

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If you have these please contact
Sam Etler (etler@cs.wisc.edu)