SECTION 815-200-170
816-500-170
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AT&TCo Standard

AUXILIARY SENDER EQUIPMENT FOR DIRECT DISTANCE DIALING ENGINEERING INFORMATION NO. 1 CROSSBAR AND PANEL SYSTEMS

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FIGURES

1. GENERAL

A. Scope

1.01 This specification provides engineering information to be used in connection with the planning and ordering of auxiliary senders and associated equipment as applied to decoder panel and non-AMA No. 1 crossbar offices to permit direct distance dialing (DDD). Modifications to allow those No. 1 crossbar offices equipped with local AMA to record 10-digit calls will involve a slightly different subscriber sender modification and will be developed at a later date.

1.02 This specification is being reissued to add a new BSP division number 815-200-170, and to bring it into conformity with the general Plant Series plan.

B. Reference Material

1.03 Section 951-320-100 provides a general description of the auxiliary sender and associated equipment.

1.04 Western Electric Company Questionnaire Forms E-1422 and E-1982 cover panel and No. 1 crossbar dial equipment, respectively, and will be revised to include the auxiliary sender equipment.

2. DESCRIPTION OF AUXILIARY SENDER OPERATION

2.01 The auxiliary sender has been developed to provide DDD facilities for customers served by decoder panel and No. 1 crossbar central offices. This sender supplements the 8-digit capacity of the subscriber sender, allowing customer dialing of 10-digit calls. Outpulsing is done by the auxiliary sender on a multifrequency (MF) basis. An option permitting use of the auxiliary sender for MF outpulsing of 7- or 8-digit home area calls is also provided.

2.02 On 10-digit calls, the subscriber sender recognizes the "zero" or "one" of the X0/1X area code as indicating a call which requires an auxiliary sender. When the seventh digit has been registered, the subscriber sender makes a bid for an auxiliary sender through an auxiliary sender link frame for registration of the ninth and tenth dialed digits. On completion of dialing, the subscriber sender PCI pulses all of its digits in the order dialed into the auxiliary. The auxiliary sender MF outpulses these digits as they are received, followed by the two digits registered in the auxiliary, to a CAMA tandem for charging and subsequent routing of the call.

2.03 On 7- or 8-digit calls requiring the use of the auxiliary sender for MF outpulsing only, the indication that an auxiliary sender will be used comes from the originating marker or decoder after translation of the ABX office code. The auxiliary sender is summoned by the subscriber sender after dialing is completed, and outpulsing proceeds as on a 10-digit call.

3. NEW EQUIPMENT REQUIRED

A. Auxiliary Sender

General

3.01 The auxiliary sender frame has a capacity of four auxiliary senders. There are four to ten auxiliary senders in an auxiliary sender group. The auxiliary senders of a group shall be located on a minimum of two frames. Auxiliary sender groups usually serve subscriber senders in a single sender test frame group or a single central office unit if auxiliary sender traffic is heavy. However, one group may serve an entire building of two or more sender test groups with only a small amount of auxiliary sender traffic.

Cabling

3.02 The auxiliary senders are cabled directly to the auxiliary sender link frame without the use of an intermediate grouping frame.

Options

3.03 The only option to be specified for the auxiliary sender concerns the MF supply. If a building MF source is not available, an optional transistor oscillator MF supply per sender must be specified. However, before selecting this local oscillator arrangement, a cost study should be made to determine whether or not installing a building MF supply is more economical.

B. Auxiliary Sender Link

General

3.04 An auxiliary sender link frame provides a 12-wire connecting path between a maximum of 100 subscriber senders and their associated auxiliary sender groups. This frame accommodates a minimum of 40 subscriber senders. Equipment for additional subscriber senders may be added in groups of 10 up to the frame capacity of 100. One link control circuit per frame is required for each auxiliary sender group. No more than two separate groups of auxiliary senders may be connected to any one link frame.

3.05 It is desirable, from a service protection standpoint, to provide a minimum of two link frames with the subscriber senders associated with each auxiliary sender group spread approximately equally over at least two, but no more than four, link frames.

3.06 The subscriber senders of a group should be assigned to the switches on a link frame in numerical sequence as they appear on consecutively numbered subscriber sender frames. Both decoder panel and No. 1 crossbar senders may be connected to the same link frame but not, however, to the same switch on the frame. These subscriber senders are usually cabled in groups of five or ten directly to the auxiliary sender link frame.

Cabling

3.07 In laying out any initial installation of auxiliary senders, the estimated ultimate requirements of both auxiliary and subscriber senders should be used. These estimates may make it possible to reduce recabling expense in future sender additions through initial provision of enough link frames to meet ultimate requirements. Some typical examples of this are shown in Fig. 3, page 7.

Options

3.08 There are no options to be specified when ordering the auxiliary sender link frame.

C. Outgoing Trunk Circuit

3.09 Certain trunking plans necessitate the installation of an outgoing trunk circuit in decoder panel offices. A block diagram which summarizes the possible trunking arrangements and available digit deletion facilities is shown in Fig. 1.

4. MODIFICATIONS OF EXISTING EQUIPMENT

A. Subscriber Sender

4.01 All decoder panel and non-AMA No. 1 crossbar subscriber sender circuits have been revised to operate with the auxiliary sender. Since unassigned space was not available in decoder panel senders for the relays required to incorporate these changes, the space previously allotted to the cancel coin test (CCT) feature has been used. Also certain class punchings formerly required for 2-digit office code operation have been used. Therefore, neither the CCT nor 2-digit office code features, both of which are now rated "Mfr Disc.", can be in use at the time the DDD modifications are installed.

4.02 An option permits deletion of the area code by the auxiliary senders on instructions from the decoder or originating marker via the subscriber senders for any foreign area call to be switched on a 7-digit basis.

4.03 Options permit the use of the auxiliary sender on certain 7-digit calls for outpulsing purposes only on a signal to the subscriber sender from the decoder or originating marker. If desired, the auxiliary will delete the first two (skip 2) or three (skip 3) digits received from the subscriber sender and outpulse only the last five or four digits when these calls are routed over direct trunks to the distant office. The signal for this deletion comes from the decoder or originating marker via the subscriber sender.

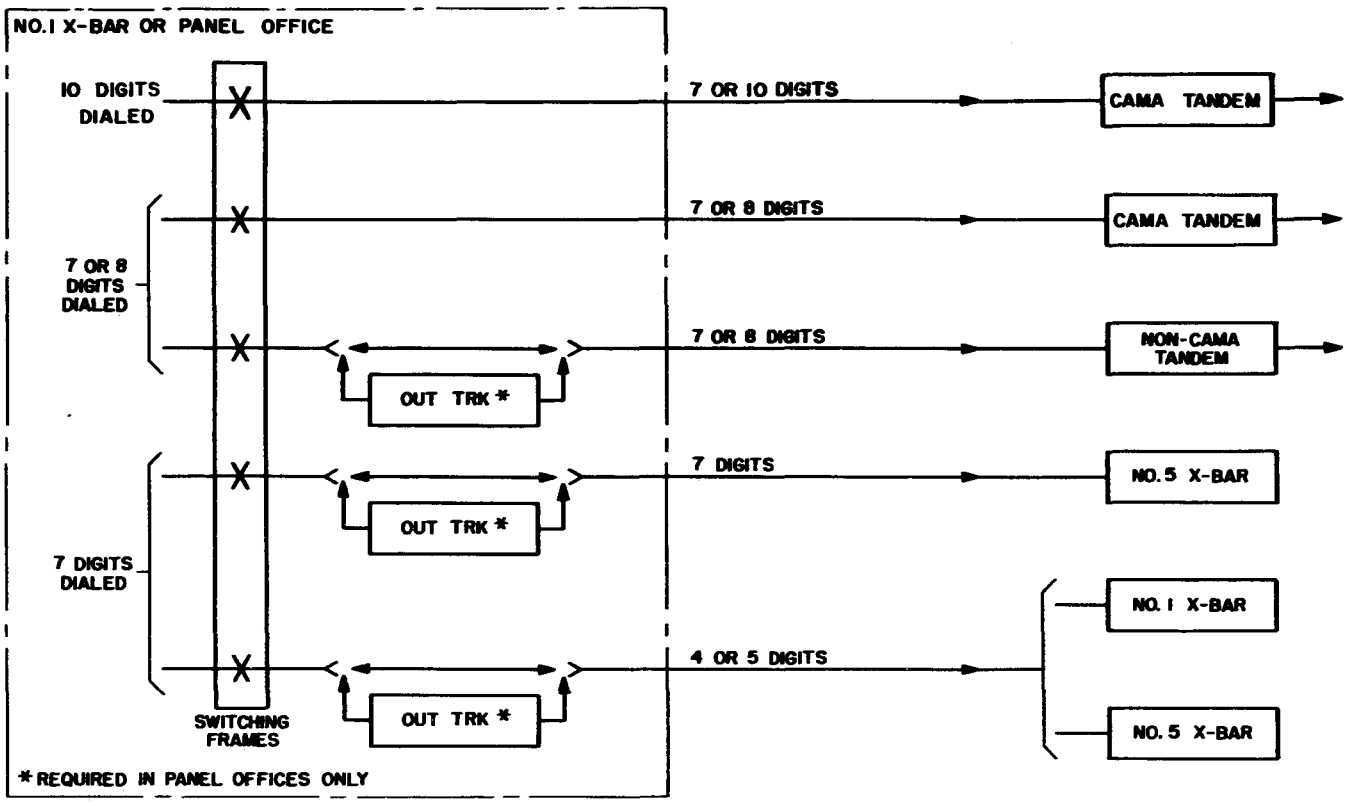


Fig. 1 – Block Diagram of Possible Trunking Arrangements and Digit Deletion Facilities for Auxiliary Sender Handled Traffic

B. Decoders and Originating Markers

4.04 The originating marker circuit in No. 1 crossbar and decoder circuit in panel have been revised for operation with the auxiliary sender. No modification is required unless one of the options in 4.02 and 4.03 is desired. If this is the case, the corresponding option in the originating marker or decoder circuit should be specified.

5. TRAFFIC MEASURING FACILITIES

5.01 The following traffic registers are available:

(a) 10-digit call peg count — One per auxiliary sender group.

(b) 7-digit call peg count — One per auxiliary sender group.

(c) Peg count of starts by subscriber senders for auxiliary senders — One per auxiliary sender link control circuit. (If both panel and No. 1 crossbar subscriber senders are served by the same link circuit, a register is available for each type of sender.)

(d) Peg count of partially dialed auxiliary sender calls of seven, eight, or nine digits — One per auxiliary sender group.

(e) Stuck auxiliary sender — One per auxiliary sender group.

6. TESTING AND MAINTENANCE EQUIPMENT

6.01 Equipment arrangements required for testing and maintaining the auxiliary sender and associated equipment include the following:

(a) Modification of subscriber sender test frames to permit testing of an auxiliary sender with any subscriber sender in the same auxiliary sender group.

(b) Modification of panel OGT testboards to automatically outpulse seven digits MF for testing the incoming MF trunks in the distant office.

(c) Modification of the sender make-busy frame to provide a make-busy jack, a lamp indicating a busy or stuck sender condition, and a cancel timed release key per auxiliary sender.

Note: In buildings where a group of auxiliary senders serves subscriber senders in more than one test frame group, the removal from service of auxiliary senders in this group will be under control of one test center, designated the master test center, which will have the only appearance of the busy jacks and cancel timed release keys associated with these auxiliaries. The auxiliary sender busy lamp will appear in all test centers with access to the particular group of auxiliary senders.

(d) Provision of one stuck auxiliary sender register per group of auxiliaries.

(e) Provision of the following alarms:

(1) A stuck auxiliary sender alarm. This is a single bell tap on a bell mounted at the sender make-busy frame.

(2) A minor load alarm to sound after all auxiliary senders are busy for 15 to 30 seconds.

(3) A link alarm to sound if a subscriber sender does not reach an auxiliary due to a trouble condition.

(4) A minor alarm to sound if an auxiliary sender is held in the stuck condition.

7. POWER SUPPLIES

7.01 The auxiliary sender and auxiliary sender link require a 48-volt power source.

8. FLOOR PLAN

8.01 Due to the close association of the auxiliary senders and auxiliary sender link with the subscriber senders, these equipment items should be located as near to one another as possible. If two or more link frames serve one test frame group of subscriber senders, these frames should be separated on the floor plan and should not be placed back to back if this can be avoided.

8.02 The number of conductors between equipment elements required due to the introduction of the auxiliary sender are shown in Fig. 2. The nature of the class circuit in the auxiliary sender limits the length of the CL leads between the subscriber and auxiliary senders.

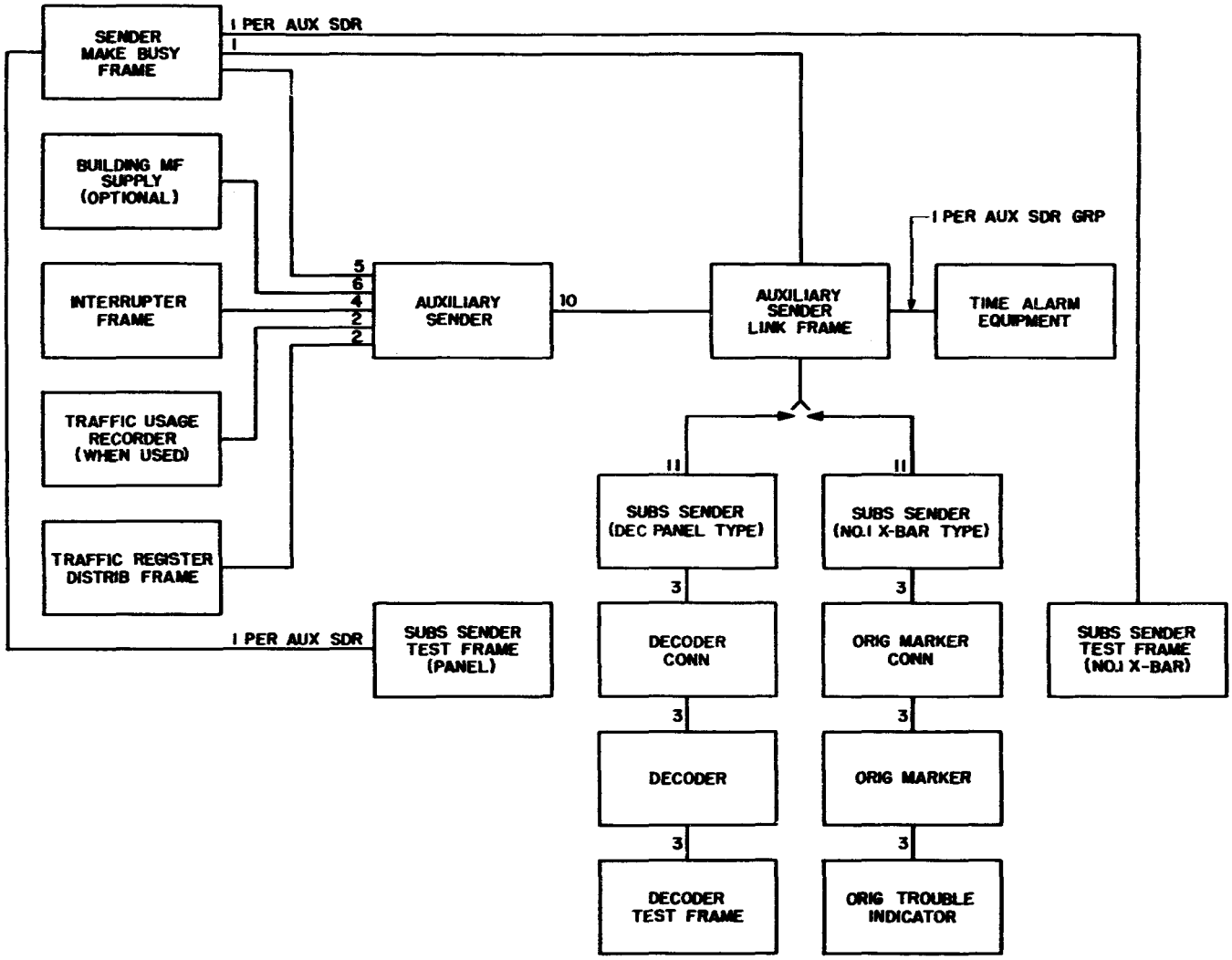


Fig. 2 – Number of Additional Leads Required Between Circuits Due to the Installation of the Auxiliary Sender

This maximum length varies with the size of the wire according to the following table:

SIZE OF WIRE	MAX LENGTH
24	350 feet
22	560 feet
20	925 feet

8.03 The dimensions of the auxiliary sender frame and auxiliary sender link frame are as follows:

(a) Auxiliary sender frame — 11 feet 6 inches high, 2 feet 0-5/8 inches wide.

(b) Auxiliary sender link frame — 11 feet 6 inches high, 3 feet 0-1/4 inches wide.

9. LIST OF RELATED SECTIONS OF BELL SYSTEM PRACTICES

Auxiliary Sender	(815-200-151, 816-500-150) J95103
Auxiliary Sender Link	(815-200-152, 816-425-150) J95104

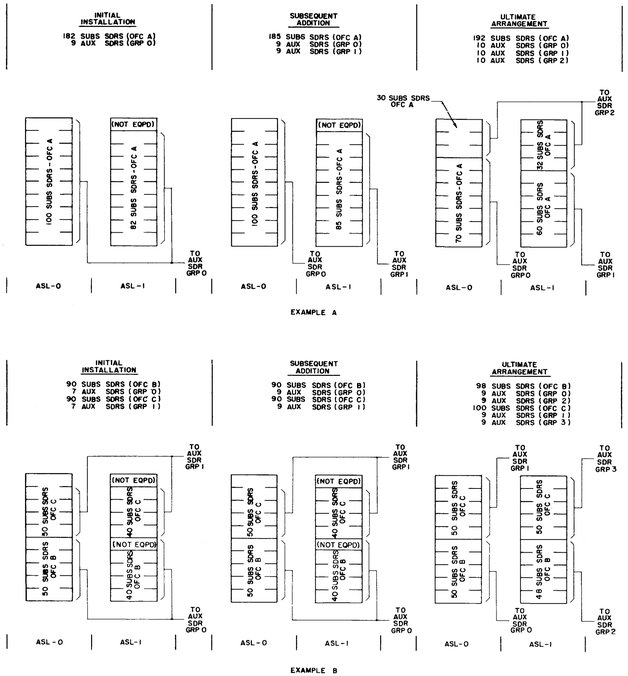
Decoder Panel System

Subscriber Sender	(815-200-150) J27901
Decoder Connector	(815-212-150) J28101
Decoder	(815-210-150) J28703
Translator Subscriber Senders Modified for Use With Decoders	(815-006-153) J27906
Sender Make Busy Frame	(815-036-150) J21801

Trouble Indicator Frame	(815-405-150) J23202
Decoder Test Frame	(815-406-150) J23205
Subscriber Sender Test Frame	(815-407-150) J23306
Outgoing Trunk Testboard	(815-411-150) J28502

No. 1 Crossbar System

Originating Marker Connector	(816-302-150) J28750
Sender Make Busy Frame	(816-503-150) J27950
Originating Sender Frame	(816-502-150) J27951
Originating Marker	(816-350-150) J28751
Incoming Trunk Test Frame	(816-601-150) J27753
Originating Sender Test Frame	(816-603-150) J27952
Outgoing Trunk Test Frame	(816-604-150) J28550
Originating Trouble Indicator Frame	(816-621-150) J28752



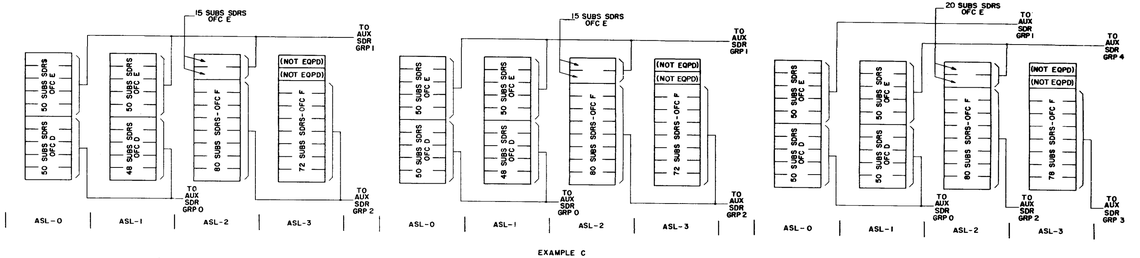


Fig. 3 – Typical Examples of Auxiliary Sender Link Frame Cabling Patterns