

## 1A1 KEY TELEPHONE SYSTEM

### CONNECTION DATA

### DESCRIPTION AND USE

#### 1.00 GENERAL

**1.01** This section describes the content, arrangement, and use of Sections C71.355 through C71.411, which provide connection data for the 1A1 key telephone system. It includes reference information and definitions of terms and abbreviations for these sections. It should be read thoroughly and understood completely before using the index and connection tables in Sections C71.355 through C71.441.

**1.02** Before using Sections C71.381 through C71.441, a general knowledge of the following sections is advantageous: C53.151, 1A1 Key Telephone System, Description; C53.152, 1A and 1A1 Key Telephone Systems, Supplies; C53.158, 1A1 Key Telephone System, Installation; C53.159, 1A1 Key Telephone System, Maintenance; and C53.506, Equipment Cabinets, Apparatus Mountings and Boxes, Description and Supplies.

**1.03** The information contained in Sections C71.355 through C71.441 is divided into nine main groups, each consisting of one or more sections.

- Index.
- Connection data—description and use.
- Power wiring.
- Key telephone unit groupings.
- Cutoff and exclusion.
- Key telephone sets—440, 460, 540, 560 series.
- Signal-key and buzzer circuits.
- Separately mounted keys.
- Lamp resistor units.

Each connection data section contains all information, other than power, pertaining to the feature which it covers. Power data for all sections is covered in Section C71.383, 1A1 Key Telephone System, Power Wiring; Section C71.381, 1A1 Key Telephone System, Typical 1A1 Installations, Condensed Connection Charts, contains two typical installations.

**1.04** The connection data in these sections is furnished for a maximum of six pickup lines and/or five pickup and hold lines per station.

**1.05** The connection data covers key and running cable assignments, which are of two basic types.

- **Standard Assignments:** Key and running cable assignments which are covered in these sections and will meet the requirements of the majority of installations using the 1A1 key telephone system.
- **Tailor-made Assignments:** Running cable assignments which must be made especially for a system requiring circuit and feature arrangements rarely used, because of a customer's special requirements.

**1.06** There are a number of features available in the 1A1 key telephone system which are not used in the majority of installations. These features include dial selective intercom lines, signal-key and buzzer circuits, sixth line circuits, exclusion, and manual and automatic cutoff. Connection data has been provided for all these features and is covered in appropriate sections. Because more than one of these features is rarely provided in any one installation and in order to effect an economy in the size of running cables required, the same running cable pairs have been assigned to more than one feature. These assignments are shown in Table 55.01.

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**1.07** When two or more of these features are provided and Table 55.01 indicates that one or more of the same cable pairs are assigned to these features, it will be necessary to prepare connection data and running cable assignments locally.

**2.00 REFERENCES**

**2.01** The following SD drawings were used in compiling connection data for the key telephone units shown in Sections C71.381 through C71.441.

Key Telephone Unit Code No.	Drawing No.	
	Connection	Schematic
201A 201B 202A	SD69203-0125, Fig. 66 SD69203-0128, Fig. 69 SD69203-0117, Fig. 51	SD69203-0116 SD69203-0116 SD69203-0101, Fig. 1
202B 203A 204A	SD69203-0127, Fig. 68 SD69203-0118, Fig. 52 SD69203-0119, Fig. 53	SD69203-0101, Fig. 1 SD69203-0102, Fig. 2 SD69203-0102, Fig. 3
205A 207A 207B	SD69203-0120, Fig. 54 SD69199-0113, Fig. 52 SD69199-0115, Fig. 54	SD69203-0103, Fig. 4 SD69199-0101, Fig. 1 SD69199-0101, Fig. 1
208A 209A 210A	SD69199-0114, Fig. 53 SD69203-0122, Fig. 56 SD69203-0123, Fig. 57	SD69199-0105, Fig. 12 SD69203-0104, Fig. 6 SD69203-0104, Fig. 7
211A 211A 211A	SD69203-0121, Fig. 55 SD69203-0121, Fig. 55 SD69203-0121, Fig. 55	SD69203-0103, Fig. 5 SD69203-0106, Figs. 14, 17 SD69203-0107, Fig. 18
212A 212A 213A	SD69203-0126, Fig. 67 SD69203-0126, Fig. 67 SD69230-01, Fig. 51	SD69203-0101, Fig. 1 SD69203-0104, Fig. 6 SD69230-011, Fig. 1
31A 29A 26B	SD69203-0103, Fig. 21 SD69203-0105, Fig. 11 SD69203-0105, Fig. 12	SD69203-0103, Fig. 21 SD69203-0105, Fig. 11 SD69203-0105, Fig. 12
16A 11A Station Busy Lamp Feature	SD69203-0121, Fig. 55 SD69203-0106, Fig. 22 SD69241-01, Fig. 1	SD69203-0107, Fig. 18 SD69203-0106, Fig. 22 SD69241-01, Fig. 1

**3.00 DEFINITIONS OF TERMS AND ABBREVIATIONS**

**TERMS**

**3.01 Incoming Cable:** The cable through which the central office, private branch exchange, distant station, and power lines enter into the system (or, in some cases, the leads from local power plants or transformers).

**3.02 Key Cable:** The cable through which the cord conductors of the key telephone set are extended to the nearest bridging terminal or directly to the equipment cabinet.

**3.03 Running Cable:** The cable through which the equipment is connected to one or more distributing terminals where key cables (and, in some cases, incoming cables) are connected (see 1.05 through 1.07).

**3.04 Line No. in System:** The number of the line circuit in the equipment cabinet regardless of the type of line (central office, private branch exchange, intercom, etc). The first line in the system should correspond to the first horizontal circuit line on the job work sheet, the second line should correspond to the second horizontal circuit line, etc. The job work sheet is usually issued by the commercial department representative.

**3.05 Pickup Key Position:** This represents the key which must be depressed in order to use a line. The term is used in the connection tables instead of key position because of possible confusion with the hold button position in the pickup and hold sets. The first pickup key position will be the first line circuit in the set and the second pickup key the second line circuit in the set, etc.

**3.06 Tel Set Term.** is the terminal strip designation in the key telephone set.

**4.00 TABLE DESCRIPTION AND USE**

**4.01** Key telephone units are shown by code number in table headings. When more than one unit is shown in a table heading or when two or more units are shown in the same column of a table heading, use only the key telephone unit or units applicable to the installation. For example, 202B and 212A key telephone units in the sample table are to be used for a specific installation. The 211A and 213A units are shown in the same table heading and they should be ignored.

**4.02** Key telephone unit terminal strips are designated A, B, and/or C when a unit contains more than one strip. These will be shown in table headings as 209A(A,B), 212A(A,B,C), 213A(A), etc. These will be shown as prefixes to terminal numbers in tabular information.

**4.03** Key telephone unit terminal numbers are shown in columns under key telephone unit table headings. Numbers in the same column which are separated by commas (2, 12, 22) are groups of terminals which have been factory-strapped, making a multiple connection available. Terminals which must be strapped by the installer are shown by numbers joined by a short straight line (26—36).

**4.04** Terminal numbers having a prefix such as (A)1, (B)2, (A,B)3 are on specific terminal strips of a unit. When more than one key telephone unit and its terminal strip designations are shown in a column of a table heading, the terminal numbers will not show the terminal strip prefix. These numbers apply to all the terminal strips shown in the table heading for the particular column.

**4.05** After selecting the key telephone unit or units applicable to an installation, strap together all terminals reading horizontally across the terminal number columns.

**4.06** All connection data is arranged in tabular form according to the pattern shown below (read columns vertically).

Typical Table Heading—Read Horizontally	Line No. in System, Pickup Key Position, Buzzer Ckt No.	Lead Desig	Key or Running Cable—C- and D-type Inside Wiring, Conductor Color, and Pair No.			Key Telephone Unit Code No., Term. Strip, and Term. No.		
Typical Tabular Information—Read Horizontally	Line numbers 1 thru 6 pickup key positions 1 thru 6 buzzer ckt numbers 1 thru 12	Letter designation given to each lead connected to KTUs	Cable pair numbers and conductor color combinations			KTU terminal numbers to which the cables and/or strap wires are connected and terminal strip letters in parentheses.		
Sample—Typical Table	Line No. in System	Lead Desig	Key Cable			202B, 213A(A)	212A (A,B,C)	211A
			Pair No.	C Type	D Type			
	Color							
	Common straps 1 thru 6	ST CO				26—36 28	36 (A)18	1 36
1	R T	1	BL W	BL W	2, 12, 22 1, 11, 21	(A)2 (A)1		
2	R T	2	O W	O W	2, 12, 22 1, 11, 21	(A)2 (A)1		

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### 5.00 POWER WIRING

**5.01** Connections for power leads and power strapping for the installation of a 1A1 key telephone system are covered in Section C71.383. Power connections will not be found in any other section.

**5.02** Feeder fuse unit and circuit fuse unit connections are covered in Section C71.383 in order to be consistent with existing SD drawings (see Figs. 1 and 2 of Section C71.383). Fuses, as shown in these figures, have been given the designations A, B, C, and D and are assigned to key telephone units as they are shown on the SD drawing associated with the particular circuit. The definitions generally accepted for these designations are as follows:

- A—Talking battery and operation of talking circuit relays.
- B—Relay operation only.
- C—Relay operation and lamp supply.
- D—Relay operation, audible signal, and/or buzzers.

**5.03** When a common source of dc supply is used for the talking circuit and for the operation of audible signals, a noise suppression circuit is necessary. A 23A key telephone unit or 211A key telephone unit may be used.

### 6.00 SIGNAL-KEY AND BUZZER CIRCUITS

**6.01** Tables for the connection of signal-key and buzzer circuits show a full cable pair for the signal key and a full cable pair for the buzzer. If it is desired to use a single-wire buzzer circuit, the installation becomes tailor-made. Single-wire circuits are not covered in the following sections.

#### CODE OR SELECTIVE SIGNALING BUZZER SYSTEMS

**6.02** A selective signaling system is an arrangement of buzzers and associated signal keys in which only the buzzer associated with the depressed key will operate for the purpose of signaling a particular person or station when the key is depressed.

**6.03** A code signaling system is an arrangement of buzzers and associated signal keys in which it is necessary to use a series of interrupted signals to attract the attention of a particular person or station when a signal key is depressed.

#### CODE AND SELECTIVE SIGNALING BUZZER SYSTEMS

**6.04** A code and selective signaling system is one in which all of the buzzers are operated simultaneously when a particular signal key is depressed. Each of these buzzers is operated individually when the signal key associated with a particular buzzer is depressed. The functioning of the group buzzer arrangement is accomplished with the use of the 3A key telephone unit.

Running Cable Assignments for  
Rarely Used Features and Circuits

Cable Pairs Assigned	Features or Circuits to Be Provided in System										Cable Pairs Assigned
	6th Line in System	Signal Key and Buzzer Ckts 1 through 11	Exclusion	Manual Cutoff	Automatic Cutoff	Dial Selective Intercom Lines			Incoming Power Ckts from CO or Local Supply	Incoming Lines from CO or Distant Terminal of Tie and/or Station Lines	
						Line Lamps and Control Circuits		Flashing Line Lamps Provided—Automatic Cutoff Not Provided			
						Station and Sig Ckts Stations 2 through 0	Automatic Cutoff				
					Not Provided	Provided					
22											22
23											23
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