4-WIRE PRIVATE LINE EQUIPMENT
EQUIPMENT DESIGN REQUIREMENTS
STATION SYSTEMS

1. GENERAL

Scope

1.01 This specification covers the equipment and circuit design requirements for the manufacture for 4-wire private line equipment.

1.02 This specification provides for terminating a 4-wire private line at certain combinations of:

(a) Key equipment No. 102A, or switching system No. 301 or No. 302 positions.

(b) PBX switchboard positions.

(c) Key telephone set stations.

Provisions are made for dial selective signaling (SS1 or 600/1500 cycle), 20-cycle signaling, voice or dc outgoing signaling, or loudspeaker incoming signaling, and for switching of the private line to other private lines by means of a key.

Description

1.03 This circuit provides for:

(a) A 4-wire line circuit termination for Key Equipment No. 102A, or for Switching System No. 301 or No. 302, with an optional multiple appearance at a single station group at 4-wire private line circuit for 2- and 4-wire key telephone sets.

(b) A 4-wire line termination for one to six station groups at 4-wire private line circuit for 2- and 4-wire key telephone sets.

(c) A 4-wire line termination for a PBX, on the same premises and in multiple with one or two station groups at 4-wire private line circuit for 2- and 4-wire key telephone sets.

(d) Outgoing signaling via voice, dc, 20-cycle or dial controlled SS1 or 600/1500-cycle signals.

(e) Incoming signaling via loudspeaker, 20-cycle, or SS1 or 600/1500-cycle selective signaling.

(f) Cutting off the loudspeaker associated with (a) when an attendant at Key Equipment No. 102A, or Switching System No. 301 or No. 302, connects to the line.

(g) Returning audible ringing tone to the distant station when incoming 20-cycle signaling is received at the signaling circuit associated with (a).

(h) Locked-in signals on incoming calls when 20-cycle, SS1, or 600/1500-cycle signaling is used.

(i) Retiring locked-in signal, where incoming 20-cycle signaling is received at the signaling circuit associated with (a):

(1) Only when an attendant at Key Equipment No. 102A, or Switching System No. 301 or No. 302, connects to the line.

(2) Only when a customer at a key telephone set connects to the line.

(3) When the line is connected to by an attendant or by a customer at a key telephone set.

(j) Retiring locked-in signal, where incoming 20-cycle signaling is received at the signaling circuit associated with (b) or (c), when the customer at a key telephone set answers.

(k) A signaling arrangement using two lamps in the No. 102A Key Equipment and also position pilot lamps. By this method of signaling:

(1) An incoming call flashes the line and busy lamps at all positions, and flashes the supervisory lamp and the position pilot lamp at the particular position or group of positions called or assigned answering responsibility.

(2) When the call is answered at one of the positions, the line and busy lamps at all positions are steadily lighted as busy signals, and the position pilot and supervisory lamps are extinguished.

(*l*) A signaling arrangement using two lamps in the Switching System No. 302 and also position pilot lamps. By this method of signaling:

(1) An incoming call flashes the line and busy lamps at all positions, and flashes the supervisory lamp and the position pilot lamp at the particular position or group of positions called or assigned answering responsibility.

(2) When the call is answered at one of the positions, the line and busy lamps at all positions are steadily lighted as busy signals, and the position pilot lamp is extinguished. The supervisory lamp is lighted steadily at those positions where the attendant has connected to the line; at all other positions the supervisory lamp is dark.

(m) A signaling arrangement using one lamp in the Switching System No. 301 and also position pilot lamps or position buzzers. By this method of signaling:

(1) An incoming call flashes the line selection lamp at all positions; and, in addition, flashes the position pilot lamp and intermittently sounds the position buzzer at the particular position or group of positions called or assigned answering responsibility.

(2) When the call is answered, the line selection lamp flutters at those positions where the attendant has connected to the line; at all other positions the line selection lamp is lighted steadily as a busy signal. The position pilot lamp is extinguished, and the position buzzer is retired.

(n) Lighting steadily, as a busy signal, the line and busy lamps at Key Equipment No. 102A or Switching System No. 302, or the line selection lamps at Switching System No. 301, where the line is terminated as in (a), when the customer at the key telephone set connects to the line, unless an incoming call intended for an attendant position is received.

(o) Lighting steadily, as a busy signal, the line and busy lamp in the key telephone sets, where the line is terminated, as in (a), when an attendant at Key Equipment No. 102A or Switching System No. 301 or 302 connects to the line, unless an incoming call intended for the customer at the key telephone set is received.

(p) Elimination of tone signals from a loudspeaker used for monitoring on a line network that includes 600/1500-cycle selective signaling.

(q) Privacy and on-premise dialing features of SS1 selective signaling system for key telephone set station groups associated with (b) or (c).

(r) Idle line terminations for transmit and receive loops, with (a).

(s) Sending an automatic 20-cycle outgoing ring spurt when an attendant connects to the line circuit in (a), and for subsequent manual rering.

(t) Preventing an automatic ring spurt when a call is answered by an attendant.

(u) A cutoff key at a key telephone set location in order to:

(1) Cut off the PBX termination associated with (c).

(2) Light steadily the busy lamp at the PBX as an indication that the line is unavailable.

(3) Transfer from the PBX tie trunk circuit to the 4-wire private line circuit for 2- and 4-wire key telephone sets: the code lead from the selective signaling circuit, or the dc signal responding to the receipt at the PBX tie trunk of incoming 20-cycle signaling.

(v) 20-cycle signaling to and from a PBX over composite legs of transmit or receive loops associated with (c).

(w) A resistive network to provide sidetone at the key telephone sets and to establish transmission levels in conjunction with (c).

(x) Switching two or three private lines by key operation at:

(1) PBX switchboard positions,

(2) Key Equipment No. 102A positions,

(3) Switching System No. 301 or No. 302 positions, or

(4) Key telephone set stations.

(y) Lamp signals at multiple appearances when the private line is switched.

(z) Use of dc controlled relay sets to operate any of the 115-volt ac auxiliary signals, bells, or horns as covered in BSP in response to locked-in signals.

(aa) Cutoff of the locked-in signals in (z).

2. SUPPLEMENTARY INFORMATION

812-000-000 — Station Systems Index
AA128.006 Checking List — General Equipment Requirements
J53009 (812-107-160) 102A Key Equipment
J53032 (812-205-155) 301 Switching System
J53033 (812-205-160) 302 Switching System

3. CURRENT DRAIN DATA

For current drain data see Table A.

TABLE A

FIGURE	RELAY	RES	AMP BAT	TRAFFIC FACTOR	AH/BH	AMP BAT	FACTOR TRAFFIC	AH/BH	GRD AMP	AH/BH
1	A	200	0.120	x0.1	0.012	0.12	x0.55	0.066	–	–
2	FL	210	0.115	x0.05	0.006					
3	RO	210	0.115							
5	R	210	0.115	–						
6	RU	1500	0.016	x0.05	0.001					
7	RA	210	0.115	x0.05	0.006					
8	LB	210	0.115	x0.1	0.012	0.115	x0.55	0.063		0.063
17	SW Lamp	52A	0.030	x0.05	0.002	0.030	x0.55	0.017		0.017
23	SW	210	0.115	x0.05	0.006	0.115	x0.55	0.063		0.063
24	RC	210	0.115							
24	RS	210	0.115	x0.1	0.012	0.115	x0.55	0.063		0.063
24	TA	HTR	0.160							
(52A) 1 Line Lamp			0.030	x0.1	0.003	0.030	x0.55	0.017		–
			Total		***0.060***			***0.289***		***0.206***

Note: Current drain for line circuit includes one line lamp. For each additional line lamp add:

For List 1 Battery 0.003 Ampere

For List 2 Battery 0.017 Ampere

4. EQUIPMENT

J53036A (AT&TCo Std) — 4-Wire Private Line Unit

Equipment — J53036A-( )

List 1 — Assembly, local cable, and equipment for a 4-wire private line circuit per SD-69410-01, Fig. 1 with W option.

List 2 — Equipment required in addition to list 1 for a flash circuit for an incoming signal and/or signal circuit per SD-69410-01, Fig. 2 and 3.

List 3 — Equipment required in addition to list 2 for automatic ring spurt with manual rering per SD-69410-01, Fig. 2, ZH option only.

List 4 — Equipment required in addition to list 1 for a ringing lamp circuit per SD-69410-01, Fig. 4. (One list 4 required for every 4 lists 1.)

List 5 — Equipment required in addition to list 1 for a 20-cycle ringing circuit for incoming signal per SD-69410-01, Fig. 6.

List 6 — Equipment required in addition to list 1 for an incoming ringing auxiliary circut and/or busy indication circuit per SD-69410-01, Fig. 7 and/or 8.

List 7 — Equipment required in addition to list 6 for a busy indication circuit per SD-69410-01, Fig. 8.

List 8 — Equipment required in addition to list 1 when relay circuit for simultaneous switching of three 4-wire private line at location other than PBX is required per SD-69410-01, Fig. 23.

List 9 — Equipment required in addition to list 1 for 20-cycle outgoing ringing control circuit to provide automatic ringing spurt with manual rering is required per SD-69410-01, Fig. 24.

List 10 — Equipment required in addition to list 1 when SS1 selective signal tone equipment at toll office with outgoing loop signal via receiver loop is required per SD-69410-01, Fig. J.

List 11 — Equipment required in addition to list 1 when SS1 selective signal tone equipment at toll office with incoming signal for 1 or 2 codes via transmitter loop is required per SD-69410-01, Fig. L.

List 12 — Equipment required in addition to list 1 when SS1 selective signal tone equipment at toll office with DX signal via received loop is required per SD-69410-01, Fig. S.

J53036B (AT&TCo Std) — Selective Signaling Code Relay Unit

Equipment — J53036B-( )

List 1 — Assembly, local cable, and equipment for a 12-code selective signaling code relay unit equipped for 2 codes per SD-69410-01, Fig. 5.

List 2 — Equipment required in addition to list 1 for 2 additional codes per SD-69410-01, Fig. 5.

J53036C (AT&TCo Std)—Outgoing DC Switching and Signaling on Ground Return Basis Over Composite Legs of Transmit and Receive Loops Unit

Equipment — J53036C-( )

List 1 — Assembly and equipment for an outgoing switching and signaling unit (mounting plate and terminal strip).

List 2 — Equipment and wiring required in addition to list 1 for transmitter loop per SD-69410-01, Fig. U.

List 3 — Equipment and wiring required in addition to list 1 for receiver loop per SD-69410-01, Fig. V.

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