

**LINE LINK PULSING TRANSLATOR FRAME  
EQUIPMENT DESIGN REQUIREMENTS  
NO. 1 CROSSBAR SYSTEM**

**1. GENERAL**

**Scope**

**1.01** This specification, together with the supplementary information listed herein, covers the equipment design requirements for the framework, equipment, and circuits to be used in the engineering, manufacture, and installation of the line link pulsing translator frame used in the No. 1 Crossbar System.

**1.02** This specification is issued to provide a line link pulsing (LLP) translator frame in accordance with Issue 1 of SD-27754-01, SD-27755-01, SD-27756-01, and SD-27818-01. One of these frames is required when the line link pulsing feature is provided in No. 1 crossbar offices for direct indialing to step-by-step and crossbar PBXs.

**Capacity**

**1.03** The capacity of one LLP translator frame is as follows:

**LLP Translator Frame**

LLP Translator (0,1)	2
LLP Translator Connectors	2
Terminating Markers in each LLP Translator	10
Route Relay Units	4

**LLP Translator**

<b>Inputs From Terminating Marker</b>	
DID Office Number Series Code Marks (2-6)	5
4 Digit Station Numbers TH, H, T, U	10,000
<b>Outputs to Terminating Marker</b>	
Office Indications (OFF A or OFF B)	2
4 Digit Numbers	10,000

Directory Number	DIR
Station Number	STA
Changed Number	CHG
Blank Number	BLK
Delete and Outpulse Digits	DL0-4,DL4A
PBX Customers (Route Relays 00-59)	60
Grouping Points	
Hundreds (HG00-56)	57
Twenties (TWG000-115)	116

**Route Relay Unit**

Route Relays (PBX Customers)	20
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**Description of Operation**

**1.04** On a direct indialled call to a PBX the terminating marker receives a distinctive office code and a four digit station number from the terminating sender. The marker transfers the office indication and the station number to a LLP translator through the LLP translator connector. In the LLP translator, by means of a relay tree and grouping point cross-connections, this results in the operation of a route relay representing all the stations for one PBX customer. The route relay contacts are cross-connected to produce a new four digit number and an office code (office A or office B). This information is registered in the terminating marker and represents the number group address of the group of trunks to the PBX.

**1.05** The number of station numbers assigned to a PBX may be 1,000 as a maximum, 20 as a minimum and may be any multiple of twenty numbers within these limits. For a full thousand numbers the cross-connection is direct from the thousands point (TH-) to the route relay winding (RR-). For numbers assigned by hundreds, the thousands point (TH-) is cross-connected to a hundreds grouping point (HG-) and each corresponding hundreds point (H-) is

cross-connected to a route relay winding. For numbers assigned by twenties the thousands point (TH-) is cross-connected to a hundreds grouping (HG-) point and each corresponding hundreds point (H-) which requires translation in sets of twenty, is cross-connected to a twenties grouping point (TWG-). The five corresponding twenties points (TW 0,2,4,6,8) may be cross-connected to route relay windings.

**1.06** The LLP translator will also indicate to the marker whether a blank or a changed number has been dialed, whether the number dialed was the directory number of the PBX, and the number of digits to be outpulsed and deleted. On calls to numbers not allocated to any customer, intercept is provided in the marker group. On calls to unassigned numbers within a customer number series, intercept is provided by the customer.

**1.07** A test facility is provided on the translator frame for inserting input information by means of rotary switches and for checking corresponding output information by means of lamps.

#### Equipment Arrangement

**1.08** The LLP translator frame is a conventional 11 feet 6 inches high double bay bulb-angle frame for 23 inch mounting plates as shown in Fig. 1. The translator frame is wired and equipped for two translator circuits, each of which operates independently of the other. The frame contains multicontact and general purpose wire-spring-relays, cross connection terminal strips and frame terminal strips. One route relay unit containing route relays 00-19 is always provided in each translator. Additional units are provided when required as loose wired units on the frame or as relay rack mounted equipment (see note 5.01). A common test unit serves both translators. Trouble conditions are indicated by alarms and lamps in the No. 1 crossbar office, as well as on the translator test unit on the frame.

**1.09** At the bottom of each bay is a number series and a translator control unit followed upwards by the translator cross-connec-

tion field and the first route relay unit for twenty PBX customers. Translator 0 is in the left bay and translator 1 is in the right bay. The translator 0 bay continues with a test unit which is common for both translators. The route relay cross detection resistors above the test unit serve both translators and have the capability for serving 40 route relays. The second route relay unit for translator 0 is above the resistors with the remainder of the translator bay containing the multicontact relays which are the H- and TW-grouping relays associated with both translators. On the right bay above the first route relay unit and serving both translators is the connector preference control unit and the time out units. The connector preference unit is provided on a 2 marker per unit basis. Five units provide a capability for 10 terminating markers. The plug-in timing circuit on the time out unit is provided on a per marker basis. Immediately above the connector preference units is the second route relay unit for translator 1. Above this is the frame terminal strips and the connector relays for both translators and the connector terminal strips. Separate fuse panels are at the top of the left bay. Each fuse panel serves a translator and connector as well as even markers and odd markers in the preference units to insure continuity of service should the buffer fuse blow on one fuse panel.

**1.10** Three cross-connection fields are provided in each circuit. Two frame fields consist of 6 rows of 251 and 256 type terminal strips. These are the directory number match and the station assignment to the route relays which contains the grouping point field. The route relay output field is provided on the route relay unit to provide the new four digit number and office code.

**1.11** The number series relay unit is required when office B is not used for DID station calls.

**1.12** A preferred location for the translator frame is near the TM LLP frames to facilitate cabling between frames.

**Subdivision of Equipment and Detailed Index**

WECO J drawings should be ordered by referring to the prefix and base number and requesting the current dash (—) number.

EQUIPMENT CODE	RATING OF UNIT	TITLE	EQUIPMENT DRAWING	CIRCUIT DRAWING	CKTS PER UNIT	MTG PLTS PER UNIT
ED-94823-( )	AT&TCo Std	Molded Comp Assys	ED-94823-( )	—	—	—
ED-94859-( )	AT&TCo Std	Time Delay Control Ckt	ED-94859-( )	SD-94820-01	—	—
J22475A	AT&TCo Std	LLP Trnsl Fr	J22475A-( )	SD-27754-01 SD-27755-01 SD-27756-01 SD-27818-01	1 — — 1	— — — 1
J22475AA	AT&TCo Std	Number Series Unit	J22475AA-( )	SD-27754-01	1	1
J22475AB	AT&TCo Std	Trnsl Cont Unit	J22475AB-( )	SD-27754-01	1	3
J22475AC	AT&TCo Std	Route Relay Unit	J22475AC-( )	SD-27754-01	1	Space of 10 plts
J22475AD	AT&TCo Std	Trnsl Test Unit	J22475AD-( )	SD-27754-01	1	3
J22475AE	AT&TCo Std	Fuse Panel	J22475AE-( )	SD-27818-01	1	1
J22475AF	AT&TCo Std	Route Relay Aux Cross Det Unit	J22475AF-( )	SD-27754-01	2	1
J22475BA	AT&TCo Std	Conn Busy & Make Busy Unit	J22475BA-( )	SD-27756-01	2	1
J22475BB	AT&TCo Std	Transfer Time Out Unit	J22475BB-( )	SD-27756-01	10	1
J22475BC	AT&TCo Std	Conn Pref Unit	J22475BC-( )	SD-27756-01	2	1

**Circuit Schematic Index**

CIRCUIT DRAWING	J22475 EQUIPMENT CODE
SD-27754-01	A, AA, AB, AC, AD, AF ED-94823-( )
SD-27755-01	A
SD-27756-01	BA, BB, BC
SD-27818-01	AE
SD-94820-01	ED-94859-( ), G1

**2. SUPPLEMENTARY INFORMATION**

816-000-000 — No. 1 Crossbar System Index  
Floor Plan Data — Section 9.1 Sheet 83

**3. DRAWINGS**

For additional drawings forming a part of this specification, see listings under Subdivisions of Equipment and Detailed Index.

**Keysheets**

SD-25000-01 — Crossbar System No. 1

**Circuits**

SD-27754-01 — Translator Circuit  
 SD-27755-01 — Translator Connector Circuit  
 SD-27756-01 — Translator Preference Control Circuit  
 SD-27818-01 — Miscellaneous Circuit for Translator Frame  
 SD-94820-01 — Time Delay Control Circuit

**Framework**

ED-91710-80 — Common Systems Double Bay Frame  
 ED-25020-01 — Misc. Details and Mounting Brackets  
 ED-25021-01 — Jack, Key, and Lamp Panels  
 ED-25022-01 — Multicontact Relay Mounting Unit Assy.  
 ED-91210-01 — Jack, Key, and Lamp Panels  
 ED-27511-01 — Fuse Panel  
 ED-95131-01 — Fuse Panel

**Equipment**

J22475A-( ) — LLP Translator Frame

**Wiring and Cabling**

ED-25346-01 — Method of Running Power Feeders  
 ED-25100-01 — General Switchboard Cabling Practices  
 ED-27678-01 — LLP Translator Frame Switchboard Cabling Plans & Details

**4. EQUIPMENT****J22475A (AT&TCo Standard) — LLP Translator Frame**

Equipment — J22475A-( )

**List 1** — Framework, assembly, common equipment, and wiring for one line link pulsing translator frame equipped to serve two translators each having grouping relays for hundreds grouping points 00-28 and each translator arranged but not equipped for 60 route relays; two translator connectors arranged but not equipped for 10 mark-

ers; and a translator preference control unit arranged but not equipped for 10 markers all in accordance with the following. (See note D.)

	FIG.	WIRE	EQUIP.
Translator Ckt, SD-27754-01:			
Translator Control Ckt	1	2	0
Route Relay Ckt (See note C)	2	2	0
Translator Test Ckt	3	1	0
Number Series Relay Ckt	4	2	0
Hundreds Grouping Relay Ckt	5	2	0
Twenties Grouping Relay Ckt	6	2	0
Twenties Grouping Relay Ckt	7	2	0
Twenties Grouping Relay Ckt	8	2	0
Twenties Grouping Relay Ckt	9	2	0
Grouping Relay Ckt	10	2	2
Route Relay Cross Det Ckt	11	4	4
Trnsl Test Conn	12	1	1
Test Frame Ckt	13	2	0
Test Frame Appearance Ckt	14	2	2
Translator Connector Ckt, SD-27755-01:			
Connector Ckt (See note B)	1	20	0
Transfer Start Ckt	2	2	0
Translator Preference Control Ckt, SD-27756-01:			
Preference, Connector Busy and Transfer Start Ckt	1	10	0
Connector Busy and Make Busy Ckt	2	2	0
Timer Resistors	3	1	0
Misc Ckt, SD-27818-01:			
Fuse Alarm Relay Ckt	1	2	0
Fr Test Bat. Ckt	2	1	0
Fuse & Fuse Alm LP Ckt	3	2	0

**List 2** — Assembly and equipment per SD-27754-01, Fig. 5 required in addition to list 1 for additional hundreds grouping relays for hundreds grouping points HG 29 to 57.

**List 3** — Assembly and equipment per SD-27754-01, Fig. 6 required in addition to list 1 for twenties grouping relays for grouping points TWG 000 to 028.

**List 4** — Assembly and equipment per SD-27754-01, Fig. 7 required in addition to list 1 for additional twenties grouping relays for grouping points TWG 029 to 057.

**List 5** — Assembly and equipment per SD-27754-01, Fig. 8 required in addition to list 1 for additional twenties grouping relays for grouping points TWG 058 to 086.

**List 6** — Assembly and equipment per SD-27754-01, Fig. 9 required in addition to list 1 for additional twenties grouping points TWG 087 to 115.

**List 7** — Marker multiple local cable and terminal strips per SD-27755-01, Fig. 1 required in addition to list 1 for each equipped marker position.

**List 8** — Equipment per SD-27755-01, Fig. 1 required in addition to list 1 for each marker position equipped.

**Notes**

- A. Reserved.
- B. List 1 includes the strap-wire multiple for connectors (0) and (1) per SD-27755-01, CADS 1 and 2.
- C. Wiring specified in list 1 is contained in the frame local cable and includes all wiring between units and between units and terminal strips except wiring per SD-27754-01, Fig. 2 and 11 for the second Route Relay Unit (RR20 to 39) which is loose wired to other associated units.
- D. The LLP translator frame shall be equipped with J coded units per Table A.

TABLE A — LLP TRANSLATOR FRAME — J22475A					
Equipment Units Shall be Equipped as Follows					
UNIT			QUANTITY TO BE PROVIDED		TITLE OF UNIT AND DESCRIPTION OF FEATURE OR OPTION
FR POS NO. TRNSL 0-1	J CODE	LIST NO.	ALWAYS	FOR OPTION INDICATED	
1L 1R	J22475AA	1		2	Number Series Unit—for offices where office code B is not used for DID codes
2L 2R	J22475AB	1	2		Translator Control Unit
18+L 18+R	J22475AC	1	2		Route Relay Unit—to serve first 20 PBX Customers (00-19)
32L 35R	J22475AC	1		2	Route Relay Unit—to Serve an additional 20 PBX customers (20-39) (See 5.01)
28L	J22475AD	1	1		Translator Test Unit
60+L 61+L	J22475AE	1	2		Fuse Panel
28 R	J22475BA	1	1		Connector Busy and Make Busy Unit
29 R	J22475BB	1	1		Transfer Time Out Unit—to serve 2 markers
		2		1	Transfer Time Out—apparatus to serve additional markers on a per marker basis
30 R	J22475BC	1	1	1	Connector Preference Unit—to serve 2 markers
31R, 32R 33R, 34R	J22475BC	1		1	Connector Preference Unit—to serve additional markers on a 2 marker basis

**J22475AA (AT&TCo Std) — Number Series Unit**

Equipment — J22475AA-( )

**List 1** — Assembly, wiring, and equipment per SD-27754-01, Fig. 4 for one number series relay unit.

**J22475AB (AT&TCo Std)—Translator Control Unit**

Equipment — J22475AB-( )

**List 1** — Assembly, wiring, and equipment per SD-27754-01, Fig. 1 and 13 and SD-27818-01, Fig. 1 for one translator control unit.

**J22475AC (AT&TCo Std) — Route Relay Unit**

Equipment — J22475AC-( )

**List 1** — Assembly, wiring, and equipment per SD-27754-01, Fig. 2 for one route relay unit equipped with (20) relays and associated apparatus.

**Notes**

- A. Reserved.
- B. The route relay unit (RR20 to 39) is mounted on the LLP translator frame and loose wired to associated units to permit its removal to a relay rack frame if frame space is required in the future for translator equipment.
- C. Two units (RR00 to 19) (RR20 to 39) per translator are mounted on each LLP translator frame; the additional unit (RR40 to 59) is mounted on a relay rack frame and cabled to the LLP translator frame. (See 5.01.)
- D. All route relay units are identical except for stamping information.

**J22475AD (AT&TCo Std) — Translator Test Unit**

Equipment — J22475AD-( )

**List 1** — Assembly, wiring, and equipment per SD-22754-01, Fig. 3 and SD-27818-01, Fig. 2 for one translator test unit for two translators.

**J22475AE (AT&TCo Std) — Fuse Panel**

Equipment — J22475AE-( )

**List 1** — Assembly, equipment, and wiring per SD-27818-01, Fig. 3 for one fuse panel required for one translator, one translator connector, and the translator preference control units and panel containing 46 circuit fuses.

**Notes**

- A. Reserved.
- B. Fusing for 48 volt battery circuits for both translator 0 and 1 and translator connector 0 and 1 shall be obtained from fuse panels 0 and 1, respectively, at top of frame. Both fuse panels may be fed from same battery feeder drop.
- C. Fusing for pref. control ckts shall be obtained from translator 0 fuse panel for even markers and translator 1 fuse panel for odd markers.
- D. Ground for both translator 0 and 1 and translator connector 0 and 1 shall be obtained from the same frame ground feeder.

**J22475AF (AT&TCo Std) — Route Relay Auxiliary Cross Detection Unit**

Equipment — J22475AF-( )

**List 1** — Assembly, equipment, and wiring per SD-27754-01, Fig. 11 for one route relay resistor unit serving two translators for route relays 40 to 59. (See note C.)

**Notes**

- A. Reserved.
- B. The route relay auxiliary unit is a one plate unit and should be mounted adjacent to the route relay unit (RR40 to 59) on a relay rack frame whenever the office must serve more than 40 PBX customers.
- C. Equipment per SD-27754-01, Fig. 11 for route relays 00 to 39 is furnished as part of frame list 1.

**J22475BA (AT&TCo Std) — Connector Busy and Make Busy Unit**

Equipment — J22475BA-( )

**List 1** — Assembly, equipment, and wiring per SD-27756-01, Fig. 2 for one connector busy and make busy unit for one marker group.

**J22475BB (AT&TCo Std)—Transfer Time Out Unit**

Equipment — J22475BB-( )

**List 1** — Assembly, equipment, and wiring per SD-27756-01, Fig. 1 and 3 for one transfer time out unit arranged for 10 markers and equipped for 2 markers.

**List 2** — Apparatus and wiring per SD-27756-01, Fig. 1 required in addition to list 1 for each additional marker position equipped.

**J22475BC (AT&TCo Std) — Connector Preference Unit**

Equipment — J22475BC-( )

**List 1** — Assembly, equipment, and wiring per SD-27756-01, Fig. 1 for one connector preference unit for 2 markers.

**5. GENERAL NOTES**

**5.01** The capacity provided on the translator frame (40 route relays) is expected to meet the requirements of a large percentage of DID jobs. For those offices which require additional route relay units, provision is made for relay rack mounting of the route relay and the route relay auxiliary cross detection unit. It is recommended that the relay rack mounted units be placed as close as possible to the translator frame to reduce the switchboard cable runs.

**5.02** Wire gauge and insulation shall be in accordance with Section 610.003 General Equipment Requirements — Gauge and Insulation of Wire.

**5.03** No. 24 gauge insulated wire shall be used for all strapping.

**5.04** Codes J22475AG through J22475AY are unassigned.

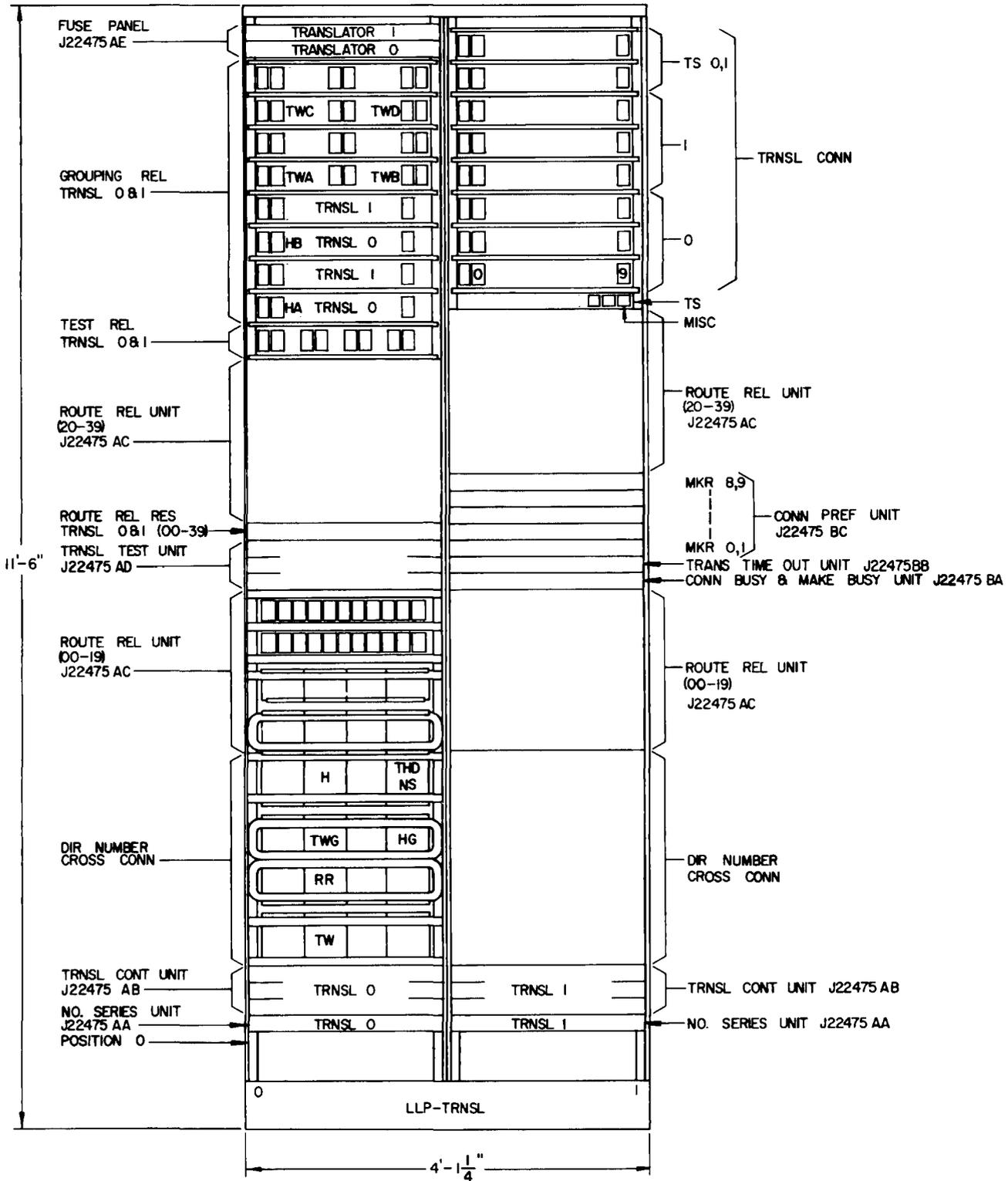


Fig. 1 - Line Link Pulsing Translator Frame