DIMENSION® PBX
ENERGY COMMUNICATION SERVICE (ECS)
CONNECTIONS

CONTENTS

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1. GENERAL

1.1 The building staff is responsible for arranging the wiring of any and all building ckts (i.e. load control ckts, power relays, power meter pulsing relays) to the Bell System-provided connection cables. The building staff is responsible for any and all electrical or energy-related engineering required.

1.2 Refer to section 10T of Installation Handbook 281 for ckt pack option settings on the LC16B, LC34B, and LC366 packs. The Power Meter Interface uses option YW on the LC16B. The CRT and printer use the low speed option on the LC34B and LC366 packs.

1.3 Refer to section 250.28 for printer connection.

1.4 Power Meter Interface is an optional feature in ECS.

1.5 MAAP is required to install and test ECS.

2. DOCUMENTATION

2.1 Customer Order Document (COD) is required.

2.2 Helpful references include:

A) Peripheral Equipment Maintenance Manual (#500-997)
B) ECS - An Enlightened Approach to Energy Cost Reduction (#999-200-218)
C) ECSU (BSP #554-010-103)
D) ECS Feature (BSP #554-191-129)

Printed in U.S.A.

3. CRT TERMINAL CONNECTION

3.1 Consult building management to determine desired CRT terminal location.

3.2 Determine the cross-connect field location of the slow speed data channel used by the energy control CRT. To do this, find the CAR/SLOT/CKT location by either MAAP PROC 253 or by the COD section Dual Data Channel Assignments, then use the Control Carrier and Growth Control Carrier tables in section 250.32 of this handbook to pinpoint the four x-conn terminals used for the CRT.

3.3 Connect CRT to PBX (see Fig. 6):

A) If total distance between CRT and PBX is greater than 1050 feet, data channel repeater(s) is required. See section 250.20 for repeater connection.
B) Connect PIC to PBX. See section 250.32 for PIC connection.
C) Connect CRT to PIC using a M25B cable and the EIA and SX02 connectors on the CRT and PIC, respectively. Maximum PIC to CRT distance is 50 feet. The AUX connector on the CRT is not used.

3.4 Verify that the 16 rocker switches on the rear side of the CRT are correctly positioned. See Table A for the proper switch positions. A switch is "ON" when pushed down and "OFF" when pushed up. Note that the Regent 100 and Regent 40 CRTs have different switch configurations.

FUNCTION	REGENT 100				REGENT 40			
	SELECTED OPTION	SWITCH NO.	SWITCH POSITION	1/0	SELECTED OPTION	SWITCH NO.	SWITCH POSITION	1/0
LINE MODE	FULL	A1	DOWN	1	FULL	A2	DOWN	1
SELF ECHO	OFF	A2	UP	0	-	-	-	-
PARITY	EVEN	A3	DOWN	1	EVEN	A3	UP	0
		A4	DOWN	1		A4	DOWN	1
BAUD RATE	2400	A5	DOWN	1	2400	A6	DOWN	1
		A6	DOWN	1		A7	UP	0
		A7	DOWN	1		A8	DOWN	1
		A8	UP	0				
TERMINATION CHARACTER	CR	B1	UP	0	CR	B1	UP	0
		B2	UP	0		B2	UP	0
AUTO LINE FEED	OFF	B3	UP	0	OFF	B3	UP	0
AUTO SCROLL	OFF	B4	UP	0	OFF	B4	UP	0
EIA/CL	RS232	B5	UP	0	RS232	B5	UP	0
CHAR. DISPLAY	WHITE	B6	DOWN	1	WHITE	B6	DOWN	1
CASE SELECT	UP	B7	DOWN	1	UP	B7	DOWN	1
		B8	DOWN	1		B8	UP	0
CURSOR DISPLAY	-	-	-	-	RECT.BLK.	A1	UP	0
CURSOR BLINK	-	-	-	-	BLINKING	A5	UP	0

TABLE A - CRT Switch Positions

3. CRT TERMINAL CONNECTION (Cont'd)

3.5 Connect either 120 Vac or 250 VA (UPS) power to the PIC and CRT (and to repeaters, if they are used). This power must be from independent circuits (e.g. the CRT and a Coke machine cannot be on the same ckt). Place a KS-22453 tag (plastic red tag that reads "Telephone Power") on each of the PIC and CRT power cords.

3.6 The vertical, horizontal, focus, centering, and brightness should already be properly adjusted. However, if any adjustment is necessary, consult the Peripheral Equipment Maintenance Manual (# 500-997) for instructions.

4. POWER METER INTERFACE CONNECTION

4.1 Consult building engineer to

A) Verify that the electrical power meter(s) are equipped with pulsing relays
B) Obtain the location of the power meter(s).

4.2 Mount the power meter interface connection block (Fig. 1) in a location provided by the building management (should be close to the power meter). If this location is outdoors, the connection block must be sheltered from the weather.

4.3 Determine the cross-connect field location of the LC16B ckt to be used for the power meter interface:

A) Call in PROC 151 on the Maintenance and Administration Panel (MAAP)
B) Enter a "1" in field 1 on MAAP and press
ENTER, DISPLAY, EXECUTE
C) The LC16B ckt location is displayed. Verify that the port is assigned (a "1" in field 3).
D) Using the equipment location information displayed, find the exact x-conn location using the Trunk Port Carrier and the Module Control and Trunk Port Carrier tables given in section 250.23 of this handbook.
E) Any other power meter interface locations can be displayed using the NEXT DATA key.

4.4 Using standard telephone wire (two 24-gauge wires), connect one end to the connecting block and route to the power meter. Do not make the connections to the power meter (building personnel will do this), but leave the two wire ends insulated from each other.

4.5 Connect telephone wire to the two x-conn terminals found in step 4.3 and route to and terminate on connecting block. Note the overall 5000 feet maximum distance limitation (see Fig. 2).

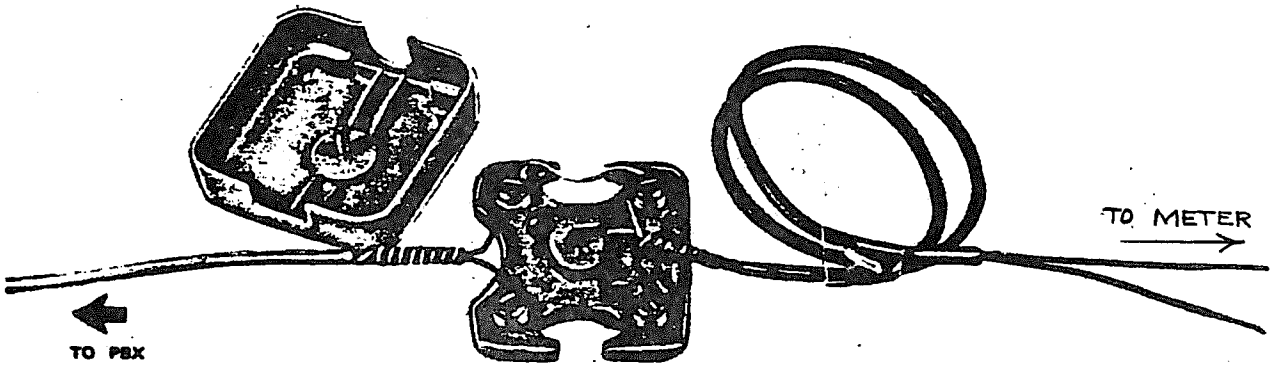

Fig. 1 - Power Meter Interface Connection Block, Cover Removed

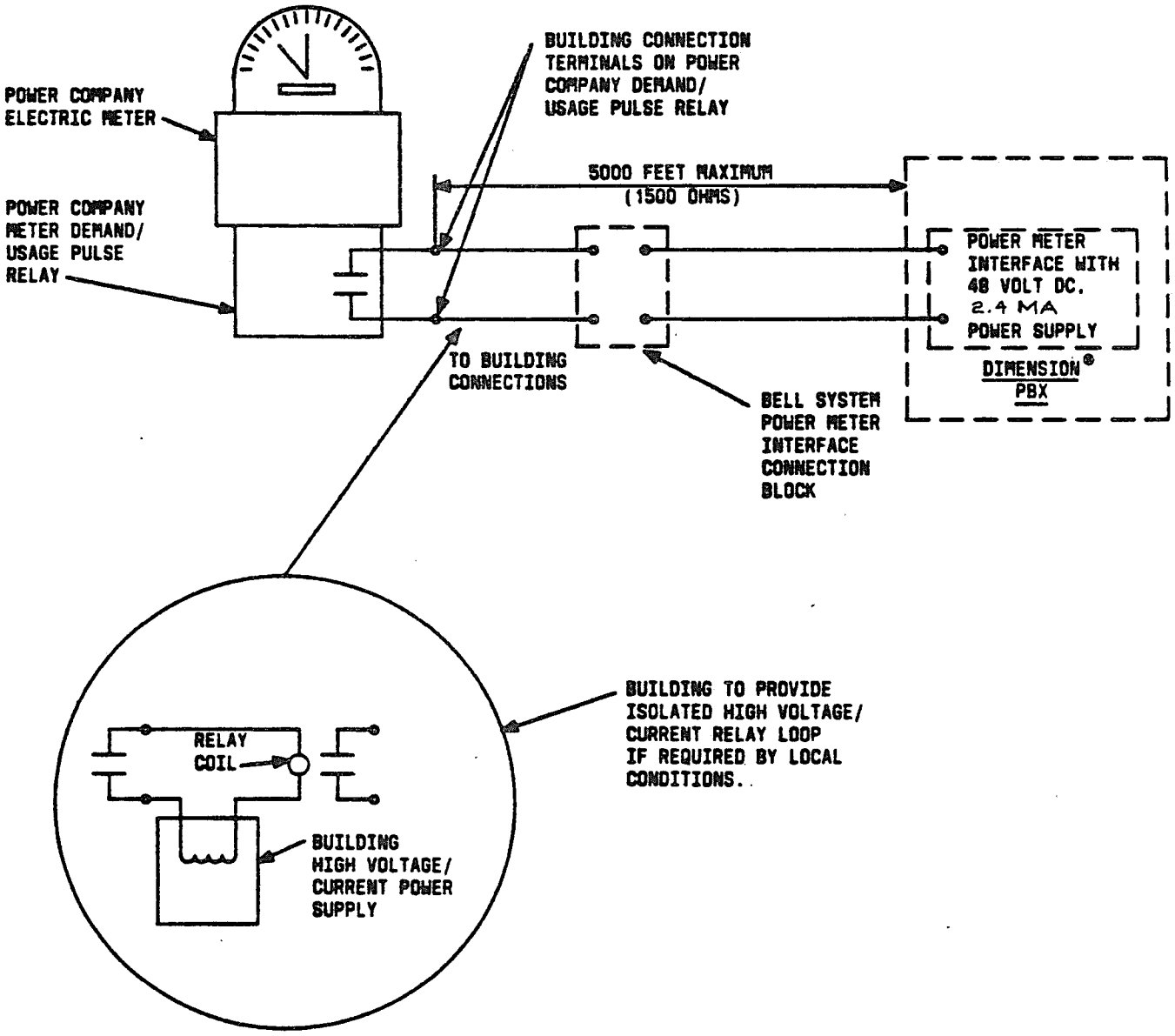

Fig. 2 - Power Meter Interface Circuit

4. POWER METER INTERFACE CONNECTION (Cont'd)

4.6 Obtain the power meter's KWh/pulse factor from the building engineer. This factor must lie in the range 0.001 to 999.999 KWh/pulse. This number must be entered into PBX memory via the System Parameters procedure on the CRT console.

4.7 Repeat steps 4.2 thru 4.6 for any other power meters to be monitored. If more than one power meter is to be monitored, labels showing the unit # should be attached to the meter and connecting block (the unit # can be determined using MAAP PROC 151).

4.8 A maximum of 16 power meter interfaces can be made using two LC16B ckt packs.

5. ECSU CONNECTION

5.1 Obtain the desired ECSU location from building engineer. This location must be within reach of AC power and must be readily accessible to Bell System personnel.

5.2 Obtain the required ECSU contact configuration (wet or dry; normally open or normally closed or normally open and normally closed) from building engineer. Six possible options for ECSU connection to customer control circuit are shown in Table B. Various configurations of the customer's control circuit are possible, provided that:

A) when the WET mode is used and power to the ECSU is provided by a Bell System transformer, the customer's interface relay must be operated by 12.5 Vac and pull no more than 300 mA

B) when the WET mode is used and power to the ECSU is provided by the customer's own 12.5 Vac source, the customer's interface relay must be operated at 12.5 Vac while pulling no more than 2 Amps

C) when the DRY mode is used, the load placed on the ECSU contacts must not exceed 2 Amps and 24 Volts DC or RMS AC.

CONTACT MODE	CONTACT ARRANGEMENT	ECSU CONTACT TERMINALS	"WET" OPTION STRAP
"Dry"	SPST normally closed	C, NC	Removed
"Dry"	SPST normally open	C, NO	Removed
"Dry"	SPDT transfer	C, NO, NC	Removed
"Wet"	SPST normally closed	WC, NC	C, S
"Wet"	SPST normally open	WC, NO	C, S
"Wet"	SPDT transfer	WC, NO, NC	C, S

Table B - Relay Contact Options

5. ECSU CONNECTION (Cont'd)

5.3 Route tip and ring (T, R) wiring to the ECSU location, if not already done. If a telephone set is sharing the line, the ECSU is simply connected in parallel with the phone (see Fig. 3).

5.4 Mount the ECSU per local instructions. If applicable electrical codes require wiring in conduit, a metallic housing is available instead of the standard plastic housing. The customer may furnish his own enclosure for the ECSU. The ECSU must be vertically surface-mounted (see Fig. 5). due to its mercury relays. It requires 1 inch nominal clearances at the bottom and sides and enough clearance on top to permit access to the terminal connections.

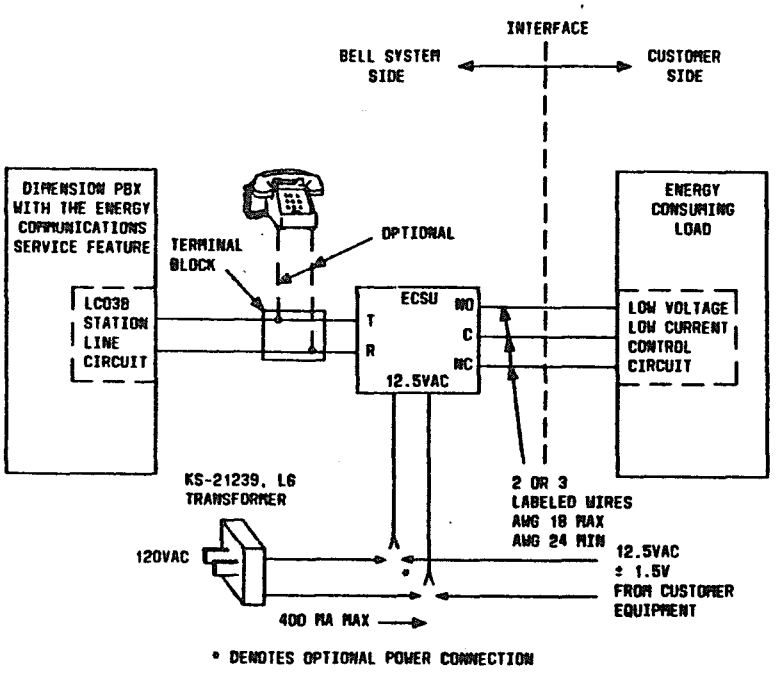

Fig. 3 - ECSU Interfacing

5.5 Connect the tip and ring leads to the T and R terminal screws on ECSU. Polarity is not critical, so the tip and ring wires are interchangeable. Only one ECSU per telephone line is possible.

5.6 If the ECSU is to be powered from a Bell System transformer (KS-21239,L6 120Vac to 12.5Vac), connect the transformer secondary to the two 12.5Vac terminal screws on the ECSU by using a wire size determined by the loop length between the ECSU and transformer:

5. ECSU CONNECTION (Cont'd)

5.6 (Cont'd)

WIRE SIZE	LOOP LENGTH
No. 22	0 to 250 ft.
No. 20	251 to 400 ft.
No. 18	401 to 600 ft.

If the customer is providing his own 12.5 Vac for the ECSU's power needs (i.e. the KS-21239 transformer is not used), use a voltmeter to verify this voltage before connecting to ECSU. After connecting this power to ECSU, check the voltage again to verify you still have 12.5 ± 1.5 Vac. Only 1 ECSU per transformer secondary in all cases.

5.7 Connect one end of a 3-pair color-coded inside wiring cable (18GA. max, 24GA min) to the ECSU as shown below:

WIRE COLOR	ECSU TERMINAL SCREW	
W-BL	WC or C*	
BL-W	NO	
W-O	(not used)	insulate and
O-W	NC	store spare leads
W-GR	12.5 Vac **	
GR-W	12.5 Vac **	

* either WC (wet mode) or C (dry mode) is used, but not both.
** the green/white pair is connected only when the customer is providing the 12.5 Vac required by the ECSU

If the WET mode is used, strap the C terminal to the S terminal and connect the W-BL wire to WC terminal. If the DRY mode is used, leave the WC and S terminals open and connect the W-BL wire to the C terminal. Attach the option label (Fig. 4) to the inside cover of ECSU and circle the option to be used with this particular ECSU.

CIRCLE CORRECT OPTION REQUIRED BY CUSTOMER

ECSU TERM	COLOR CODE	DRY MAKE	DRY BREAK	WET MAKE	WET BREAK	DRY MAKE BREAK	WET MAKE BREAK
NO	BL-W	X		X		X	X
NC	O-W		X		X	X	X
C	W-BL	X	X	X	X	X	X
S				X STRAP	X STRAP		X STRAP
WC	W-BL			X	X		X

- USE 3 PR INSIDE WIRING CABLE FROM ECSU TO CUSTOMER AND TAG.

- TERMINATE LINE FROM PBX ON T & R.
- POWER TO ECSU TERMINATED ON 12.5V TERMINAL CAN BE SUPPLIED BY TELCO USING KS21239 L6 TRANS OR FROM CUSTOMER USING GW/WG PR IN 3 PAIR INSIDE WIRING CABLE.

Fig. 4 - ECSU Label

5. ECSU CONNECTION (Cont'd)

5.8 Label each wire on the customer's end of this 6-wire cable (e.g. the BL-W wire is labeled "NO") and route the cable to the customer's equipment. Do not connect this end of the cable -- it is the customer's responsibility.

5.9 Repeat steps 5.1 thru 5.8 for each ECSU to be installed.

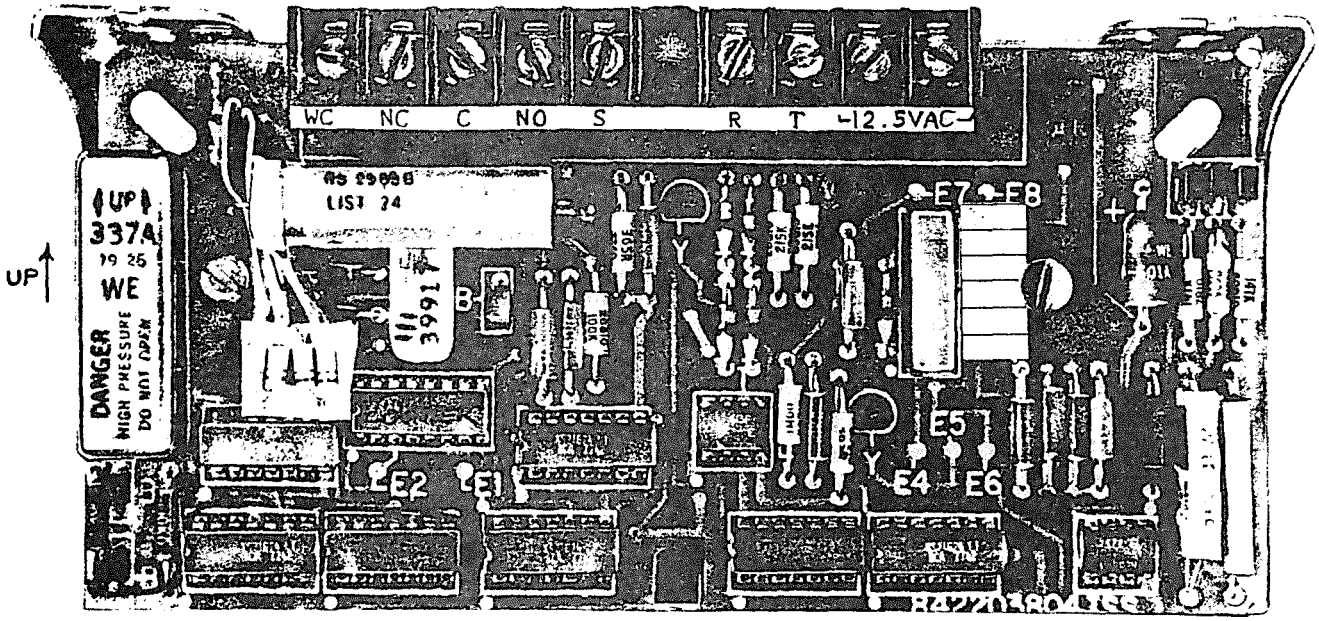

Fig. 5 - ECSU With Cover Removed

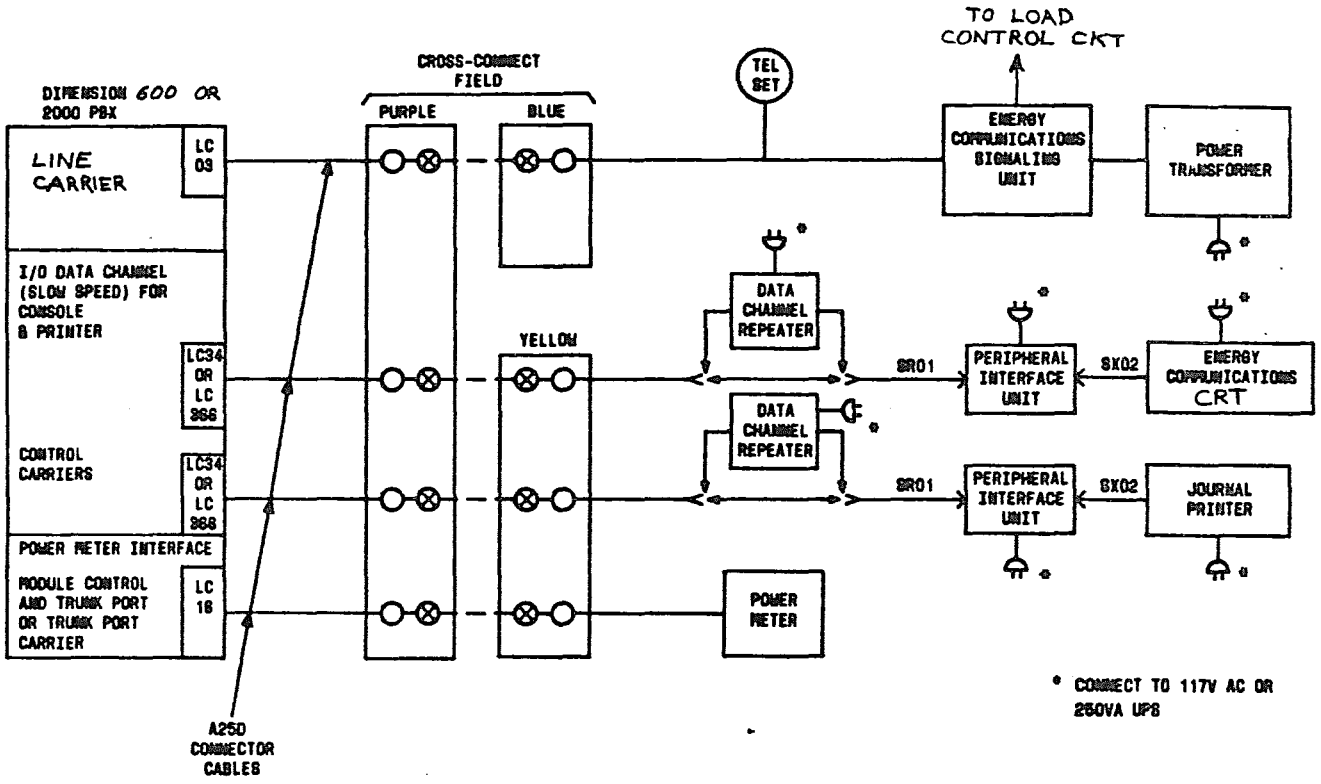

Fig. 6 - ECS Cross Connections

Reason for issue:
New Section

Manager, Denver PBX PECC