MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
C-UA-LT19-A-0	A	1	TELETYPE CONTROL (LT19-A)
A-PL-LT19-A-0	A	1	TELETYPE CONTROL (LT19-A)
D-BS-LT19-A-1	A	1	I/O BUS INTERFACE LOGIC
D-BS-LT19-A-2	A	1	I/O BUS INTERFACE
D-MU-LT19-A-3	A	1	MODULE UTILIZATION
A-PL-LT19-A-3	A	1	MODULE UTILIZATION
D-AD-7006040-0-0		1	WIRED ASSY
A-PL-7006040-0-0		1	WIRED ASSY
K-WL-LT19-A-4	B	1	WIRE LIST LT19
A-CP-LT19-A-5		1	EXTERNAL COMPONENT LIST
A-SP-LT19-A-6		17	LT19A,B(C) MULTI-STATION TELETYPE CONTROL AND INTERFACE
D-DI-LT19-A-7		1	DRAWING INDEX LIST LT19

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	9/69	LT19A-01	R.D.
B	10/70	Misc.81	D.V.
C	11/9/71	LT19A-3	J.M.

DRN.	JACKSON	DATE 10/14/
CHK'D.	PFYFFER	DATE 10/22/68
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE 11/6/68
FIRST USED ON	PDP-9	
SCALE		
SHEET	1 OF 1	

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
MULTI-STATION
TELETYPE CONTROL

SIZE	CODE	NUMBER	REV.
A	ML	LT19-A	C

DIST.

DEC FORM NO.
DRA 103

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

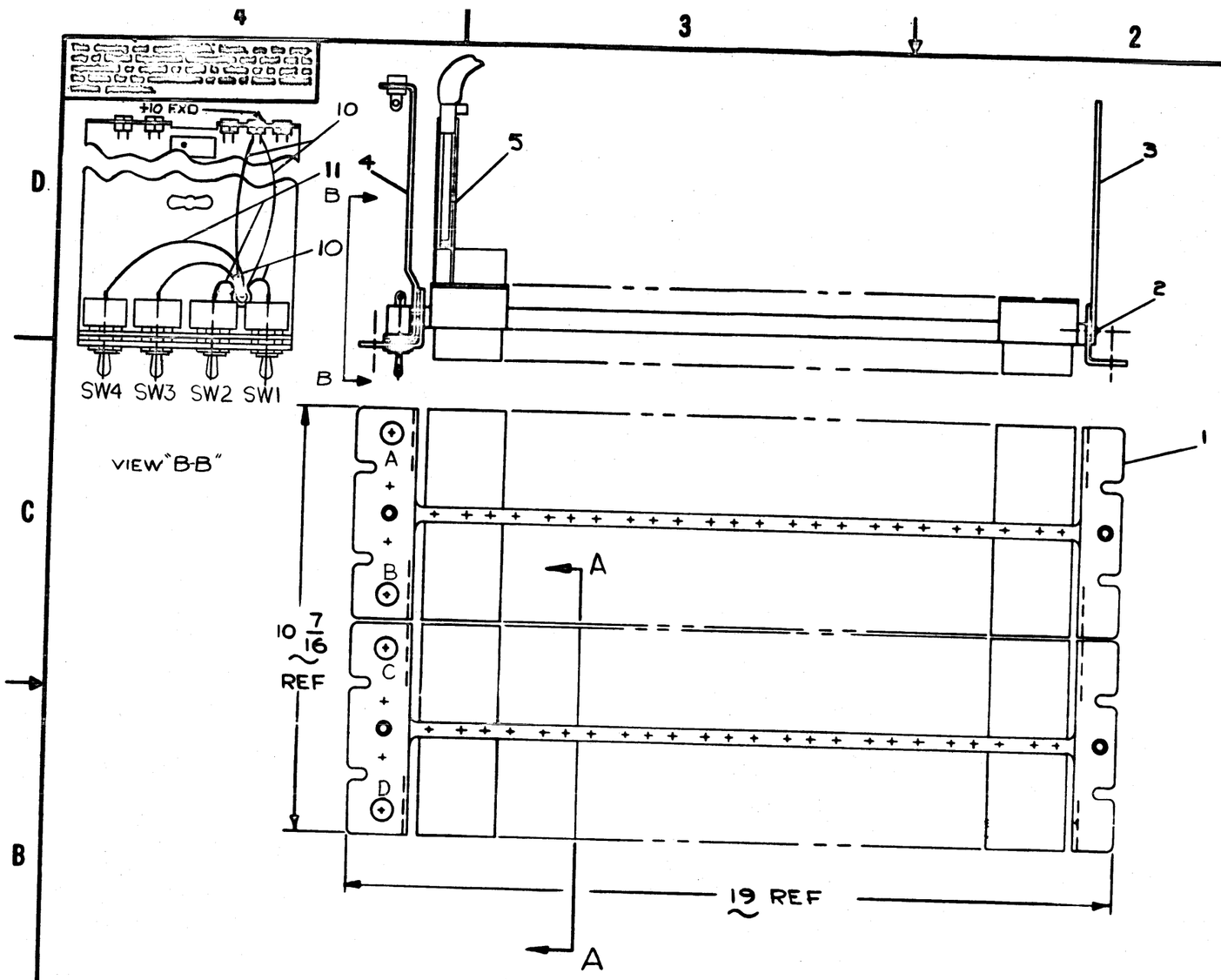
MADE BY W. JACKSON DATE 10/4/68	CHECKED AL PFYFFER DATE 10/21/68	SECTION 1
ENG [illegible] DATE 11-11-68	PROD [illegible] DATE 11/6/68	ISSUED SECT. 1

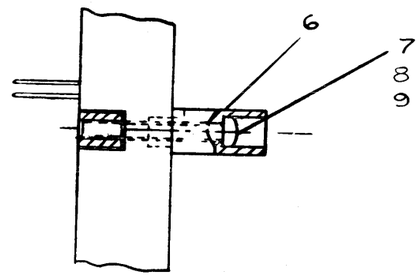
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION											
			LT19-A	LT19-B (1)	LT19-B (2)	LT19-B (3)	LT19-B (4)	LT19-B (5)		LT19-C(1)	LT19-C (2)	LT19-C (3)	LT19-C (4)	LT19-C (5)
1	D-AD-7006040-0-0	WIRED ASSY (LT19-A)	1	1	1	1	1	1		1	1	1	1	1
2	9006460	POP RIVETS #AD43ABS	8	8	8	8	8	8		8	8	8	8	8
3	C-MD-5302486-0-0	PANEL, RIGHT END	2	2	2	2	2	2		2	2	2	2	2
4	D-AD-5402526-0-0	MARGINAL CHECK PANEL ASSY	2	2	2	2	2	2		2	2	2	2	2
5	D-UA-BC09A-0-0	BC09A CABLE ASSY	4	4	4	4	4	4		4	4	4	4	4
6	D-SC-1209850-0-0	RET BLOCK	2	2	2	2	2	2		2	2	2	2	2
7	9006045-1	SCR PHL HD #8-32 x 1½ SST	2	2	2	2	2	2		2	2	2	2	2
8	9006634	WASH INT TOOTH #8	2	2	2	2	2	2		2	2	2	2	2
9		WASH, FLAT #8	2	2	2	2	2	2		2	2	2	2	2
10	9107278-3	#18 TUBING, TEELON, RED	A/R	A/R	A/R	A/R	A/R	A/R		A/R	A/R	A/R	A/R	A/R
11	9107278-7	#18 TUBING, TEFLON, BLU	A/R	A/R	A/R	A/R	A/R	A/R		A/R	A/R	A/R	A/R	A/R
	D-AD-7005288-0-0	4915 TO W070 CABLE		1	1	1	1	1						
	C-IA-7005717-0-0	DATA SET CABLE								1	1	1	1	1
	0913	JUMPER, 4" (RED)								2	2	2	2	2

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
TELETYPE CONTROL (LT19A)	C-UA-LT19-A-0	A	PL	LT19-A-0	A	MISC-00081
	SHEET 1 OF 1	DIST.	G			

DEC FORM NO.
DRA 110

WIRE TABLE				
ITEM NO.	DESCRIPTION AWG	COLOR	CONNECTIONS FROM	TO
10	#18	RED	SW1	A01A
11		BLU	SW2	A01B
10		RED	SW3	B01A
11		BLU	SW4	B01B
		BARE	GND	B01C
10		RED	SW1	C01A
11		BLU	SW2	C01B
10		RED	SW3	D01A
11		BLU	SW4	D01B
		BARE	GND	D01C
10,12		RED	+10 FXD	A03A
10,12		RED	A03A	A11A
10,12		RED	A11A	A19A
10,12		RED	+10 FXD	C14A
10,12	#18	RED	C14A	C22A





SECTION "A-A"
SCALE 1/1

REVISIONS			
CHK	CHANGE NO.	REV.	
	MISC-00081	A	
T.Guilbeau	10-20-70		
VONADA			
D.S.Woods	10-21-70		

DEC FORM NO.

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP-9		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY ✓
REMOVE BURRS AND BREAK SHARP

MATERIAL —
FINISH —

W.E. Jackson Jr. 10/9/68
10-31-68
11-5-68
11-7-68
11-13-68

NEXT HIGHER ASSY

TITLE
CT 1 C7 1

EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TELETYPE CONTROL (LT19A)

CODE IDENT NO. CUA
NUMBER LT19-A-Ø
REV. A
DWG. G

REV. A
CODE IDENT NO. CUA
NUMBER LT19-A-Ø

SKIP RQ

IOT 4001 (1) — IOT 4101 (1) — IOT 4021 (1) — IOT 4121 (1) — IOT 4041 (1) — IOT 4141 (1) — IOT 4061 (1) — IOT 4161 (1) — IOT 4201 (1) — IOT 4301 (1)

S123 C1Ø · R111 C29 · R002 C28

XMTR FLG

XMTR FLG 1 — XMTR FLG 2 — XMTR FLG 3 — XMTR FLG 4 — XMTR FLG 5

S1Ø7 D11 · R111 C29 · R002 C28 · R002 C30

IO BUS 1Ø — IO BUS 11 — IO BUS 12 — IO BUS 13 — IO BUS 14 — IO BUS 15 — IO BUS 16 — IO BUS 17

EF W1Ø7 C09 · EF W1Ø7 D12

IO BUS 1Ø (B) — IO BUS 11 (B) — IO BUS 12 (B) — IO BUS 13 (B) — IO BUS 14 (B) — IO BUS 15 (B) — IO BUS 16 (B) — IO BUS 17 (B)

IO PWR CLR — IO PWR CLR (B)

RECVR FLG

RECVR FLG 1 — RECVR FLG 2 — RECVR FLG 3 — RECVR FLG 4 — RECVR FLG 5

S1Ø7 C11 · R111 C29 · R002 C30

DSØ — DS1 — DS2 — DB 3 — DS 4 — DS 5

DSØ (B) — DS1 (B) — DS 2 (B) — DB 3 (B) — DB 4 (B) — DS 5 (B)

S1Ø7 D11

SDØ — SD1

SDØ (B) — SD 1 (B)

S1Ø7 C11

NOTE: CLAMP LOADS PART OF 1ST OPTIONAL LTØ9 B OR C

WØØ5 D14

R4Ø1 DØ9 XMTR CLK — 1.2K

TCLO — 400 ns

ADJUST PERIOD TO 4.5 MS

FOR LT19C CONTROL UNITS ONLY REMOVE 1.2K RESISTOR AND ADJUST TCLO FREQ TO 2X BAUD RATE.

IO PWR CLR (B) — IO SYNC

S1Ø7 C11

IO PWR CLR +IO SYNC

IOT 4102 (1) — IOT 4122 (1) — IOT 4142 (1) — IOT 4162 (1) — IOT 4302 (1)

S123 C1Ø

RD RQ

ALL UNUSED GATES IN MODULE C1Ø MUST HAVE ONE OF THEIR INPUT PINS GROUNDED.

WITH		GROUNDED
1ST OPTIONAL	LT19-B (1)	C1ØE, K, L, R
2ND OPTIONAL	LT19-B (2)	C1ØK, L, R
3RD OPTIONAL	LT19-B (3)	C1ØL, R
4TH OPTIONAL	LT19-B (4)	C1ØR

IOT CODING ASSIGNMENT LIST

IOT'S 7040--THRU 7047--INCLUDING PRE-WIRED SUB-DEVICE SELECTION CODES MAY BE USED. THIS YIELDS 32 POSSIBLE IOT INSTRUCTIONS ASSIGNED TO MULTI TTY CONTROLS.

IO PWR CLR + IO SYNC — P.A. S6Ø3 D1Ø — CLR IOT 2 CONTROL

IOP 2 — EF W1Ø7 D12

IOP 1 — EF W1Ø7 D12 — P.A. S6Ø3 D1Ø — CLR IOT 1 CONTROL

REVISIONS			
REV.	CHANGE NO.	C'K	
A	LT19A-00001		Added Memco Fuses R. DIETER 9-12-67

DEC FORM NO. DRD 102

FIRST USED ON OPTION/MODEL: PDP-9

QTY.	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30' FINAL SURFACE QUALITY REMOVE BURRS & SHARP EDGES

MATERIAL

FINISH

	NAME	DATE
DRN.	W E Jackson Jr	10/5/68
DES.		
ENG.		7-7-68
MFG.		7-7-68
QA		11-1-68
APP.		11/6/68

NEXT HIGHER ASSY: A-ML-LT19-A

SCALE

SHEET 1 OF 1

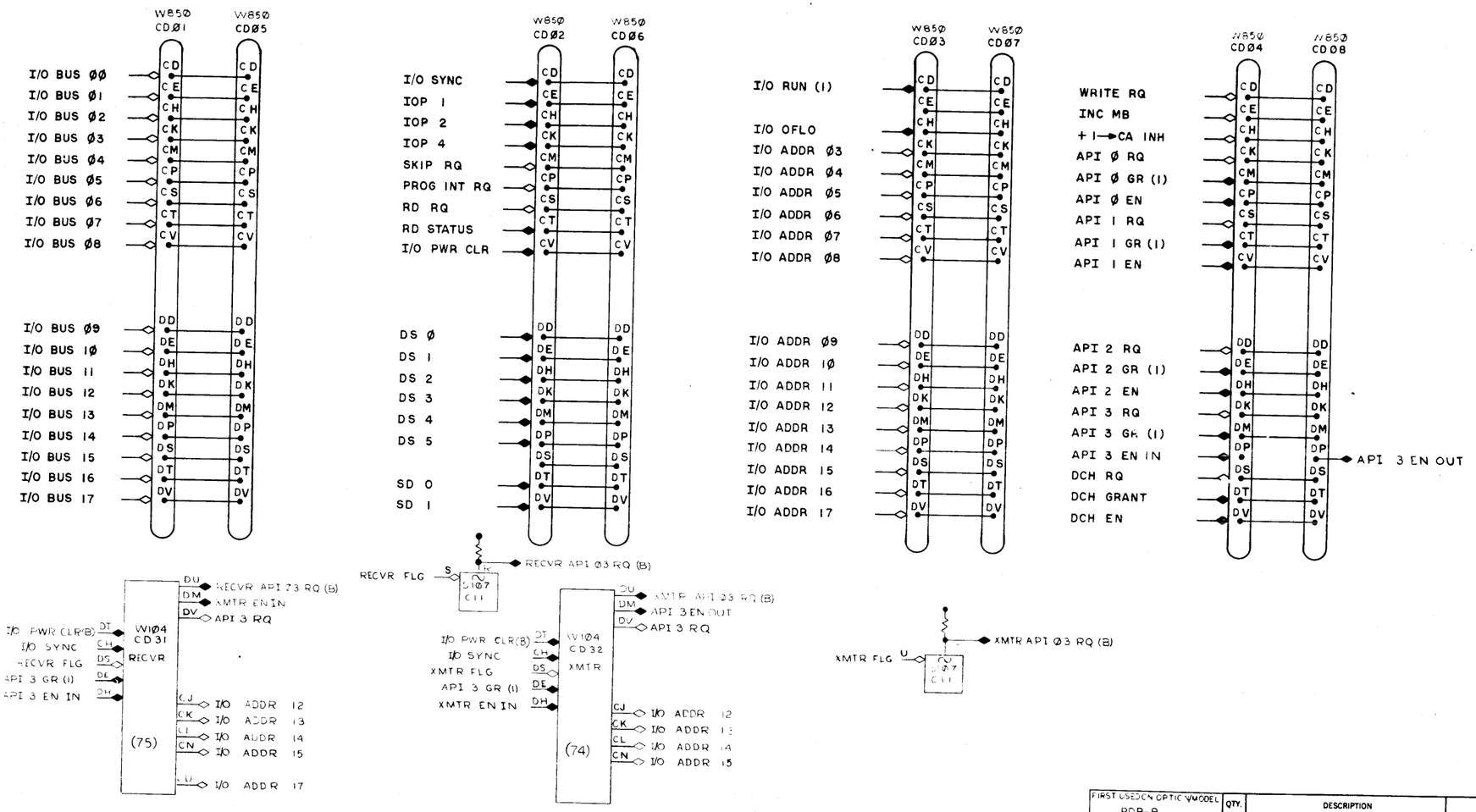
EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: I/O BUS INTERFACE LOGIC

SIZE D · CODE BS · NUMBER LT19-A-1 · REV. A

DIST.

LT19-A-1 REV A



REVISIONS			
CHK	CHANGE NO.	LT19A ØØCØØ1	REV. A

DEC FORM NO ORD 102

FIRST USED ON OPTIC VM MODEL: PDP-9

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY / REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

DRN. W.E. Jackson Jr.	DATE 10/9/68	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D.	DATE	
ENG.	DATE	
PROJ. ENG.	DATE	
PROD.	DATE 11/6/68	

NEXT HIGHER ASSY: A-ML-LT19-A

SCALE

SHEET 1 OF 1

TITLE: I/O BUS INTERFACE

SIZE	CODE	NUMBER	REV.
D	BS	LT19-A-2	A

DIST.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

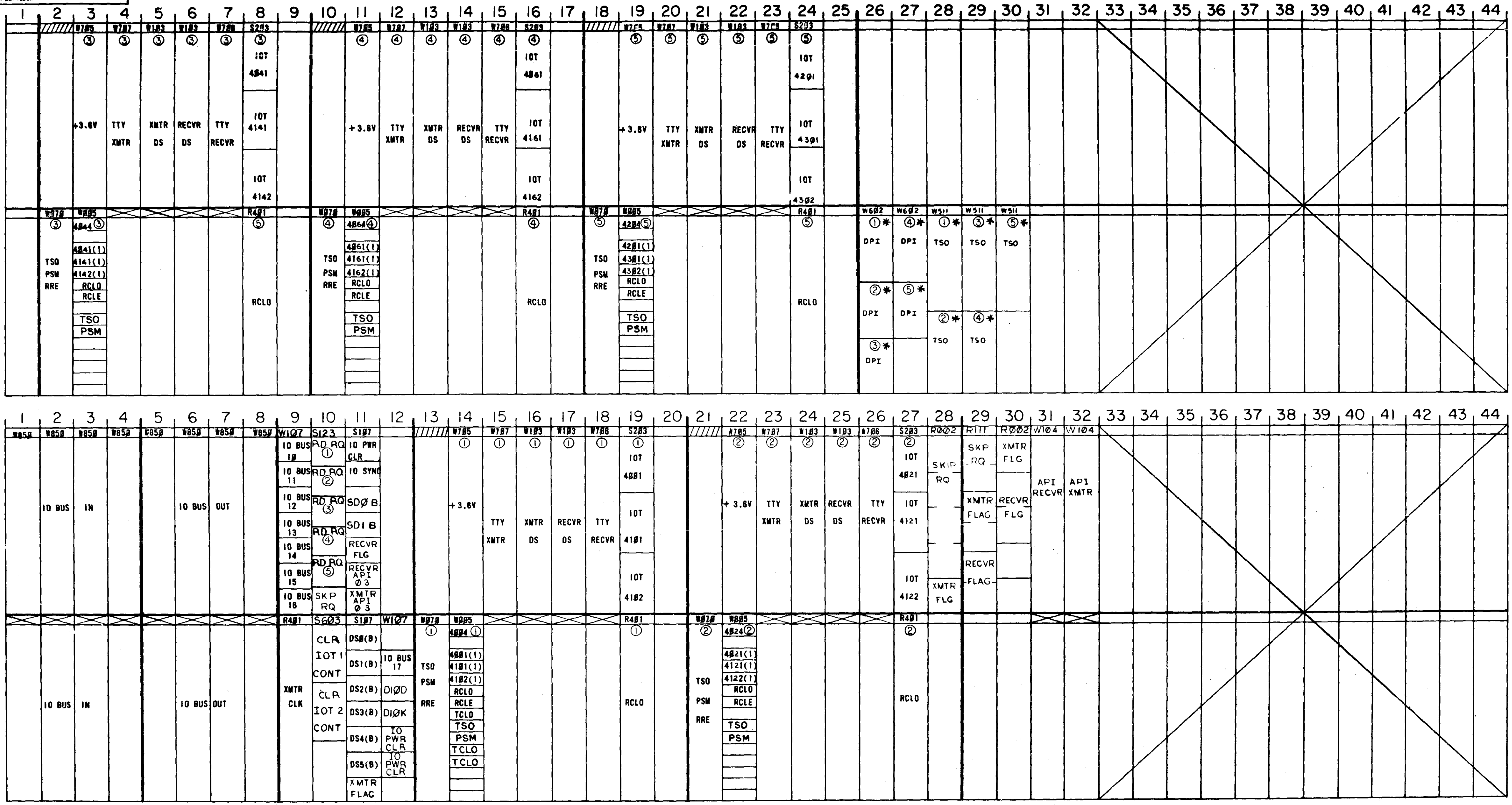
PARTS LIST

MADE BY W. JACKSON	CHECKED AL PFYFFER	SECTION
DATE 10/19/68	DATE 10/22/68	1
ENG [signature]	PROD [signature]	ISSUED SECT.
DATE 11-4-68	DATE 11/6/68	1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION										
			LT19-A	LT19-B (1)	LT19-B (2)	LT19-B (3)	LT19-B (4)	LT19-B (5)		LT19-C (1)	LT19-C (2)	LT19-C (3)	LT19-C (4)	LT19-C (5)
	R401	VARIABLE CLOCK	1	1	1	1	1	1		1	1	1	1	1
	R002	DIODE NETWORK	2											
	R111	NAND GATE	1											
	S107	INVERTER	2											
	S123	INPUT BUS GATE	1											
	S203	TRIPLE FLIP FLOP		1	1	1	1	1		1	1	1	1	1
	S603	PULSE AMPLIFIER	1											
	W005	CLAMPED LOADS		1	1	1	1	1		1	1	1	1	1
	W103	DEVICE SELECTOR		2	2	2	2	2		2	2	2	2	2
	W104	I/O BUS MULTIPLEXER	2											
	W107	I/O BUS RECEIVER CKT	2											
	W511 *	NEG INPUT CONVERTER								1		1		1
	W602 *	BI-POLAR OUTPUT CONVERTER								1			1	
	W705	3.6 VOLT POWER SUPPLY		1	1	1	1	1		1	1	1	1	1
	W706	TELETYPE RECEIVER		1	1	1	1	1		1	1	1	1	1
	W707	TELETYPE TRANSMITTER		1	1	1	1	1		1	1	1	1	1
	*WHEN ASSIGNING CHANNELS, THE LT19C OPTIONS SHALL BE													
	ASSIGNED TO THE LOWEST CHANNEL NUMBERS.													

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
MODULE UTILIZATION	D-MU-LT19-A-3	A	PL	LT19-A-3	A	LT19A-00001
	SHEET 1 OF 1	DIST.				

DEC FORM NO.
DRA 110



NOTE:
① DESIGNATES 1ST OPTIONAL LT09B (1)
② DESIGNATES 2ND OPTIONAL LT09B (2)
③ DESIGNATES 3RD OPTIONAL LT09B (3)
④ DESIGNATES 4TH OPTIONAL LT09B (4)
⑤ DESIGNATES 5TH OPTIONAL LT09B (5)
(B OR C)
* LT19-C ONLY

REVISIONS: REV. A — CHANGE NO. LT19A-00001 — R. DIETER — 9-12-69

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ±.005 FRACTIONS ±1/64 ANGLES ±0°30' FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL — FINISH —

FIRST USED ON OPTION/MODEL: PDP-9

DRN. W.E. Jackson Jr. DATE 10/11/68

NEXT HIGHER ASSY: A-ML-LT19-A

SCALE — SHEET 1 OF 1

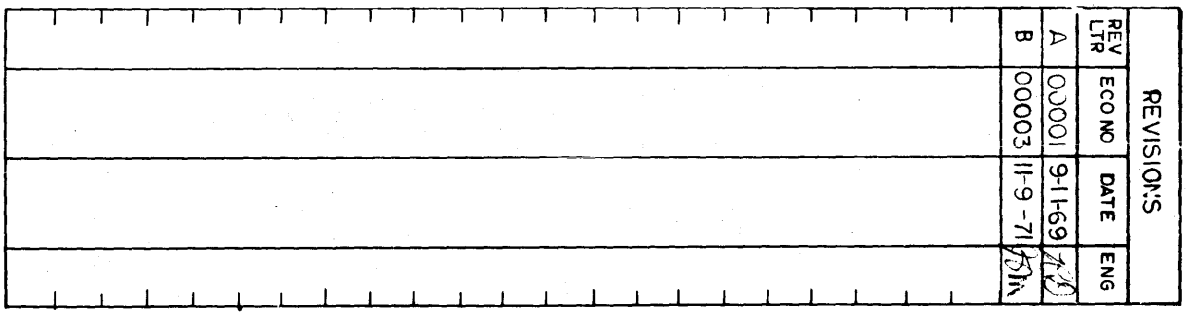
DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: MODULE UTILIZATION

SIZE D CODE MU NUMBER LT19-A-3 REV. A

DEC FORM NO. DRD 105

DRWG NO	REV LTR
K-WL-LT19-A-4	B



REVISIONS

REV LTR	ECO NO	DATE	ENG
B	00003	11-9-71	
A	00001	9-1-69	

DRAWN	W.E. Jackson	DATE	10/14/68
CHECKED		DATE	11-4-68
ENG		DATE	11-7-68
PROJ ENG		DATE	11-8-68
PROD		DATE	11/6/68

digital
EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ASSY NO

SCALE — — SHEET 1 OF 1

TITLE
WIRE LIST
LT19

FOR TAPE* FILE*

SIZE	CODE	DWG. NO.	REV LTR
K	WL	LT19-A-4	B

DIST.

COMPONENT NAME	VALUE	POL.	FROM PIN	TO PIN	POL.
RESISTOR	1.2K OHM ¼W 10%		D09R	D09T	
RESISTOR	10K OHM ¼W 10%		B28E	B28A	
RESISTOR	1.2K OHM ¼W 10%		D19R	D19T	
913 JUMPER *			D14S	D13D	
913 JUMPER *			D14R	D13H	
RESISTOR	10K OHM ¼W 10%		B28N	C28A	
RESISTOR **	1.2K OHM ¼W 10%		D27R	D27T	
913 JUMPER *			D22N	D21D	
913 JUMPER *			D22P	D21H	
RESISTOR	10K OHM ¼W 10%		B29E	B29A	
RESISTOR **	1.2K OHM ¼W 10%		B08R	B08T	
913 JUMPER *			B03N	B02D	
913 JUMPER *			B03P	B02H	
RESISTOR	10K OHM ¼W 10%		B29N	C29A	
RESISTOR **	1.2K OHM ¼W 10%		B16R	B16T	
913 JUMPER *			B11N	B10D	
913 JUMPER *			B11P	B10H	
RESISTOR	10K OHM ¼W 10%		B30E	B30A	
RESISTOR **	1.2K OHM ¼W 10%		B24R	B24T	
913 JUMPER *			B19N	B18D	
913 JUMPER *			B19P	B18H	
NOTE:					
*= LT19-C ONLY (SEE UNIT ASSY PARTS LIST FOR PART NO)					
**=LT19-B ONLY					

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.

DRN.	JACKSON	DATE 10/17/68
CHK'D.	PFYFFER	DATE 10/22/68
ENG.	[signature]	DATE 11-4-68
PROJ. ENG.	[signature]	DATE 11.8.68
PROD.	[signature]	DATE 11/6/68
FIRST USED ON	A-ML-LT19-A	
SCALE	HALF	
SHEET	1 OF 1	

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
EXTERNAL COMPONENT LIST
FOR
LT19-A

SIZE	CODE	NUMBER	REV.
A	CP	LT19-A-5	

DIST.

DEC FORM NO.
DRA 106

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 10/8/68

TITLE LT19A,B(C) Multi-Station Teletype Control and Interface

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
		-	-		-	-

ENG	APPD	SIZE	CODE	NUMBER	REV
		A	SP	LT19-A-6	

DEC FORM NO. DRA 107

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE LT19A,B (C) Multi-Station Teletype Control and Interface

Each LT19A added to a PDP-9 will accommodate up to five teletype control units (LT19B'S). These LT19B control units contain logical elements which are functionally similar to those of the PDP-9 standard teletype control Instructions and programming considerations are,therefore, similar to those of the standard unit.

Optional Teletype Control with Standard EIA Level Converters (Type LT19C)

The LT19C is a group of standard DEC logic modules which, when inserted into the appropriate locations of an LT19A, constitute a single independent teletype control(exactly the same as the LT19B specified above)with standard EIA level converters. Thus the LT19C may be directly connected to input/output devices using standard EIA logic levels, i.e. dataphone.

SIZE	CODE	NUMBER	REV
A	SP	LT19-A-6	

DEC FORM NO DRA 108

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE LT19A,B (C) Multi-Station Teletype Control and Interface

1.0 Multi-Station Teletype Interface (Type LT19A)

Addition of the LT19A option to the PDP-9 expands the machine's teletype facility to accommodate up to five optional teletype control units. The LT19A consists of the following:

a. Two standard 19" DEC Type 1943 mounting panels (completely bussed and prewired for PDP-9 IO Bus interfacing and the insertion of up to five independent teletype controls, LT19B'S or LT19C's defined below).

   All of the logic modules necessary to interface the control units to the standard PDP-9 IO Bus.

Optional Teletype Control (Type LT19B)

The LT19B is a group of standard DEC logic modules which,when inserted into the appropriate locations of an LT19A,constitute a single independent teletyped control with the following specifications:

a. five or eight * bit character codes.

b. one unit start code.

c. 1, 1.5 or 2 * unit stop codes.

d. Full * or half duplex operation.

e. Speed of 110 baud.

f. Maximum signal transmission distance is 2000 feet.

g. LT19B teletype controls may be used with ASR, KSR, RO or SO teletype units.

* Standard unit

SIZE	CODE	NUMBER	REV
A	SP	LT19-A-6	

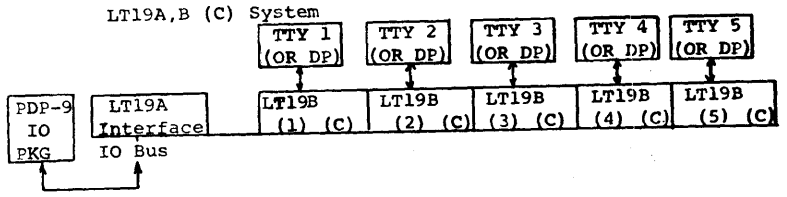
DEC FORM NO DRA 108

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE LT19A,B (C) Multi-Station Teletype Control and Interface

1.1 The LT19A,B (C) system consists of an interface to the processor (LT19A) and up to five teletype control units. (LT19B(C)).

LT19A,B (C) System



One to five optional LT19B(C) teletype control units may be added to each LT19A interface.

1.2 Each of the LT19B(C) control units (up to five may be added) is optional - directly pluggable into the LT19A interface.

1.3 The LT19A is packaged in two standard DEC #1943-19" logic mounting racks. Up to five LT19B (C) control units may be plugged into the LT19A logic racks. (10½" of mounting space is required).

When the LT19A,B (C) options are added to a PDP-9 system,these 1943 logic mounting racks must be added to the system as shown in section 4.0 and all necessary cable connectors and power wiring should then be added.

1.4 The LT19A,B (C) options operate reliably over the temperature and humidity range specified for the processor. Each LT19A,B (C) optional system is powered from one standard DEC #728 Power Supply mounted on the back door of the bay in which the LT19A,B (C) system is mounted. No special power controls or fan assemblies (other than those necessary for the multi-bay system) are necessary.

SIZE	CODE	NUMBER	REV
A	SP	LT19-A-6	

DEC FORM NO DRA 108

1.5 General Performance

A general description of the LT19A,B option is given on page 4-31 of the PDP-9 Users Handbook (F-95)

a. Teletype operational characteristics
(1) five or eight* bit character code.

(2) one* unit start code.

(3) 1, 1.5 or 2* units stop code.

(4) Full duplex operation.

(5) Up to five teletype units per LT19A.

(6) Speed = 10,000 Baud. Maximum

(7) Maximum signal transmission distance- 2000 feet.

*Standard unit

2.0 Vendor-Supplied Equipment Specifications

The LT19A,B (C) system may use standard teletype units (ASR's,KSR's,RO's,SO's)and/or standard EIA level operated input/output devices i.e., dataphone interface. All of the above teletype equipment and EIA level operated equipment are standard DEC peripheral devices which have DEC Purchase Specifications. Therefore, if specifications are required for any standard DEC input/output unit, it may be obtained from the Purchasing Specifications List.

3.0 IOT Instructions

The following device selection codes have been assigned for use with optional teletype units:

Teleprinters	Keyboards
7040--	7041--
7042--	7043--
7044--	7045--
7046--	7047--

In addition to these device selection codes the standard PDP-9 sub device selection lines (SDO,SD1) are also available for assignment. As a result, the device selection codes listed above represent 32 possible device codes.

Teleprinter IOTS

1 Skip on teleprinter flag e.g., 704001

2 Clear teleprinter flag e.g., 704002

4 Load teleprinter buffer and transmit character e.g. 704004

Keyboard IOTS

1 Skip on keyboard flag e.g. 704101

2 Clear keyboard flag and read the keyboard buffer e.g. 704102

4 Not used

3.2 Special Maintenance Instructions

The LT19A,B (C) system uses no special maintenance instructions.

3.3 No special data formats,programming considerations
3.6 operator controls, or indicators are necessary for the LT19A,B (C) system.

3.7 No status bits are assigned to the LT19A,B (C) system.

3.8 Timing diagrams for LT19B(C) teletype control are presented on pages 3-9 (receiver) and 3-7 (transmitter) of the LT19 Instruction Manual

4. Installation Data

The LT19A,B (C) system is packaged in a standard PDP-9 19" optional cabinet. The standard LT19 system operates at very slow frequencies and, therefore, may be located at any place along the standard PDP-9 IO bus.

No special action need be taken (either in shipment or during site installation) to install on LT19 system other than that required for the basic processor and standard teletype units.

General information on the physical locating of noncritical options (when assigned to a PDP-9 system) is contained in Chapter 4 (Mechanical) of the PDP-9 Sales Notebook.

5.0 Interface Specifications

All connections from the LT19A,B (C) system to the basic processor are made through the standard PDP-9 IO Bus. No special cabling is needed for the system. The optional teletype units (or EIA standard level units) are interfaced to LT19A,B (C) system as stated in Section 7 (System Components). The single control cable and its termination module are standard units which are delivered with the optional input/output unit.

6.0 Master Drawing Lists

6.1

LT19A Drawing No.	No. of sheets	Title
A-ML-LT19-A	1	Multi-Station Teletype Control
C-UA-LT19-A-0	1	Teletype Control
A-PL-LT19-A-0	1	Teletype Control
D-BS-LT19-A-1	1	I/O Bus Interface Logic
D-BS-LT19-A-2	1	I/O Bus Interface
D-MU-LT19-A-3	1	Module Utilization
A-PL-LT19-A-3	1	Module Utilization
D-AD-7006040-0-0	1	Wired Assy
A-PL-7006040-0-0	1	Wired Assy
K-WL-LT19-A-4	1	Wire List LT19
A-CP-LT19-A-5	1	External Component List

6.2

LT19B Drawing No.	No. of Sheets	Title
A-ML-LT19-B	1	Teletype Interface LT19-B
D-BS-LT19-B-1	1	Teletype Control Unit Channel 1
D-BS-LT19-B-2	1	Teletype Control Unit Channel 2
D-BS-LT19-B-3	1	Teletype Control Unit Channel 3
D-BS-LT19-B-4	1	Teletype Control Unit Channel 4
D-BS-LT19-B-5	1	Teletype Control Unit Channel 5

6.3

LT19C Drawing No.	No. of Sheets	Title
A-ML-LT19-C	1	Teletype Interface LT19-C
D-BS-LT19-C-1	1	Teletype Control Unit Channel 1
D-BS-LT19-C-2	1	Teletype Control Unit Channel 2
D-BS-LT19-C-3	1	Teletype Control Unit Channel 3
D-BS-LT19-C-4	1	Teletype Control Unit Channel 4
D-BS-LT19-C-5	1	Teletype Control Unit Channel 5

Note: LT19-B(C)-1 1st optional teletype control
LT19-B(C)-2 2nd optional teletype control
LT19-B(C)-3 3rd optional teletype control
LT19-B(C)-4 4th optional teletype control
LT19-B(C)-5 5th optional teletype control

7.0 System Components

Basic system components consist of the LT19A,B(C) control logic (located in an optional bay) and up to 5 teletype units or EIA level operated units for each LT19A control. The optional teletype units or EIA units are located remotely from The PDP-9 system. A single control cable interfaces the remote unit to its control in the PDP-9 system. This control cable is terminated with a standard DEC W070 cable connector module which is inserted in its assigned location in the LT19A mounting panels (see module utilization print D-MU-LT19-A-3).

7.1 Modules needed to implement the multi-teletype control are as follows:

LT19A (PDP-9 interface only)

1 -R401
2 -S107
1 -S123
1 -S603
2 -W107
2 -RØØ2
1 -R111
2 -W104

LT19B (Single teletype control only)

1 -R401
2 -S203
1 -W005
1 -W070 (part of teletype or EIA device)
2 -W103
1 -W705
1 -W706
1 -W707

LT19C (Single EIA level operated device control)

Same as LT19B plus

1 -W511
1 -W602

7.2 No special power controls are necessary due to the addition of an LT19A,B(C) system other than those required for the optional bay configuration. One 728 power supply must be added to the back door of the optional bay for each LT19A,B,C system interfaced to a PDP-9. See table below.

7.3 An LT19A,B(C) system is interfaced to the PDP-9 processor through the IO Bus and to input/output devices through connector cables supplied with the optional unit. As a result, no special cabling is needed for the system.

7.4 As stated in Section 2.0 vendor-supplied equipment whcih interfaces to the LT19A,B(C) system is standard and DEC purchase specifications for all units are available from Drafting.

LT19A With	1-LT19B	2-LT19B	3-LT19B	4-LT19B	5-LT19B
+10V	1.47A	2.88	4.30	5.72	7.14
-15V	1.58A	1.86	2.14	2.42	2.70

LT19C
+10 .075A
-15 .134A } Maximum LT19C Configuration

Maximum Possible Load: +10V-7.2A,-15V-2.8A

8.0 Acceptance Test Procedure

Each LT19A,B(C) unit will be tested using Test Procedure MAINDEC-9A-D8AA-D both under normal operating conditions and under voltage margins as specified below:

Test No.	Aggravation Conditions	Margins +10V			-15V
		+	-	+	-
1	None	-	-	-	-
2	Margin LT19A (Rack A)	6V	6V	2.5	2.5
3	Margin LT19A (Rack B)	6V	6V	2.5	2.5
4	Margin LT19A (Rack C)	6V	6V	2.5	2.5
5	Margin LT19A (Rack D)	6V	6V	2.5	2.5

9.0 Acceptance Test Procedure

The Acceptance Test operator must sucessfully rerun all Checkout Test Procedures as stated in Section 8.

In addition, the following documentation list must be complete before the unit is accepted.

a. MAINDEC-9A-D8CS-PH Program Tape

b MAINDEC-9A-D8CA-D Write-up

9.1 No special test equipment is needed for acceptance of this option.

9.2 Field-installed LT19A,B(C) options should be tested and accepted under the same stipulations stated for in-house installations.

10.0 Spare Parts

Spare modules necessary for the LT19A

1 S123* 1 S107*
1 S603* 1 W107
1 R401* 1 W104

*These modules are already included in the basic processor spare parts list.

Spare modules necessary for the LT19B:

1 R401* 1 W005*
1 S203* 1 W070
1 W103

*These modules are already included in the basic processor spare parts list.

Spare modules mecessary for the LT19C:

Same as LT19B plus:

1 W511

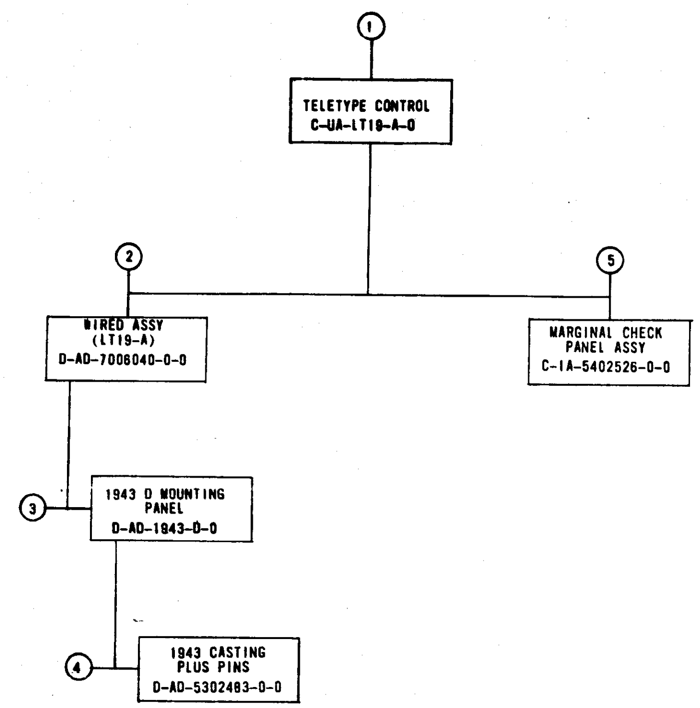
1 W602

10.1 No special component spares are necessary for the LT19A,B(C) system.

10.3 Special mechanical spare parts and tools
10.4 which should be supplied with each optional teletype unit are listed in the PDP-9 Sales Notebook,Section 7.6.

11.0 Preventative Maintenance Procedures

To insure reliable operation of the LT19A,B(C) system,standard processor maintenance procedures (for both logic and the teletype units) must be followed. All additional KSR'S,ASR'S,SO'S, or RO'S which are added to the PDP-9 system must follow standard field service maintenance procedures to insure proper operation.



MECHANICAL

FIND NO	DESCRIPTION	PART NO	DEPT USAGE PROD	CUST	F/C
1	TELETYPE CONTROL	C-UA-LT19-A-0			
	TELETYPE CONTROL P.L.	A-PL-LT19-A-0			
	PANEL, RIGHT END	C-MD-5302488-0-0			
	I/O CABLE ASSY	D-UA-BC08A-0-0			
	RET BLOCK	B-MD-7408047-0-0			
	4915 TO W07B CABLE	D-AD-7005288-0-0			
	DATA SET CABLE	C-IA-7005717-0-0			
2	WIRED ASSY (LT19-A)	D-AD-7008040-0-0			
	WIRED ASSY (LT19-A) P.L.	A-PL-7008040-0-0			
3	1943D MOUNTING PANEL	D-AD-1943-D-0			
	1943D MOUNTING PANEL P.L.	A-PL-1943-D-0			
4	1943 CASTING PLUS PINS	D-AD-5302483-0-0			
	1943 CASTING PLUS PINS P.L.	A-PL-5302483-0-0			
	1943 FRAME CASTING	E-MD-1202885-0-0			
5	MARGINAL CHECK PANEL ASSY	C-IA-5402526-0-0			
	MARGINAL CHECK PANEL (P.L.)	A-PL-5402526-0-0			
	PANEL, MARGINAL CHECK	C-MD-5302484-0-0			
	SCOTCHCALS	SS-C-10801			

ELECTRICAL

FIND NO	DESCRIPTION	PART NO	DEPT USAGE PROD	CUST	F/C
1	MULTI-STATION TELETYPE CONTROL	A-ML-LT19-A			
	I/O BUS INTERFACE LOGIC	D-BS-LT19-A-1			
	I/O BUS INTERFACE	D-BS-LT19-A-2			
	MODULE UTILIZATION	D-MU-LT19-A-3			
	MODULE UTILIZATION P.L.	A-PL-LT19-A-3			
	WIRE LIST LT19	K-WL-LT19-A-4			
	EXTERNAL COMPONENT LIST	A-CP-LT19-A-5			
	LT19 ENGINEERING SPECIFICATION	A-SP-LT19-A-6			
	-OPTIONS-				
	TELETYPE INTERFACE LT19-B	A-ML-LT19-B			
	TELETYPE CONTROL UNIT CHANNEL 1	D-BS-LT19-B-1			
	TELETYPE CONTROL UNIT CHANNEL 2	D-BS-LT19-B-2			
	TELETYPE CONTROL UNIT CHANNEL 3	D-BS-LT19-B-3			
	TELETYPE CONTROL UNIT CHANNEL 4	D-BS-LT19-B-4			
	TELETYPE CONTROL UNIT CHANNEL 5	D-BS-LT19-B-5			
	TELETYPE INTERFACE LT19-C	A-ML-LT19-C			
	TELETYPE CONTROL UNIT CHANNEL 1	D-BS-LT19-C-1			
	TELETYPE CONTROL UNIT CHANNEL 2	D-BS-LT19-C-2			
	TELETYPE CONTROL UNIT CHANNEL 3	D-BS-LT19-C-3			
	TELETYPE CONTROL UNIT CHANNEL 4	D-BS-LT19-C-4			
	TELETYPE CONTROL UNIT CHANNEL 5	D-RS-LT19-C-5			
2	WIRED ASSY (LT19-A)	D-AD-7006040-0-0			
5	MOUNTING PANEL 1943	B-CS-1943-D-1			
	MARGINAL CHECK PANEL ASSY	C-IA-5402526-0-0			

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

FIRST USED ON OPTION/MODEL: PDP-9L

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL: —

FINISH: —

DRN.	[signature]	DATE 10/18/68
CHK'D	[signature]	DATE 11-4-68
ENG.	[signature]	DATE 11-1-68
[illegible]	[signature]	DATE 11-8-68
PROD	[signature]	DATE 11/6/68

NEXT HIGHER ASSY: A-ML-LT19-A

SCALE: NONE
SHEET 1 OF 1

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE: DRAWING INDEX LIST LT19

SIZE: D CODE: DI NUMBER: LT19-A-7 REV.:

DIST. G

REVISIONS: REV. | CHANGE NO. | CHK

DEC FORM NO. DRD 102A

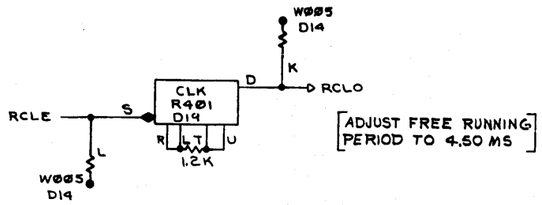
MASTER DRAWING LIST

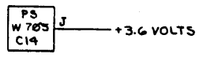
DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
A-ML-LT19-A	REF	1	MULTI-STATION TELETYPE CONTROL
D-BS-LT19-B-1	B	1	TELETYPE CONTROL UNIT CHANNEL 1
D-BS-LT19-B-2	B	1	TELETYPE CONTROL UNIT CHANNEL 2
D-BS-LT19-B-3	B	1	TELETYPE CONTROL UNIT CHANNEL 3
D-BS-LT19-B-4	B	1	TELETYPE CONTROL UNIT CHANNEL 4
D-BS-LT19-B-5	B	1	TELETYPE CONTROL UNTI CHANNEL 5

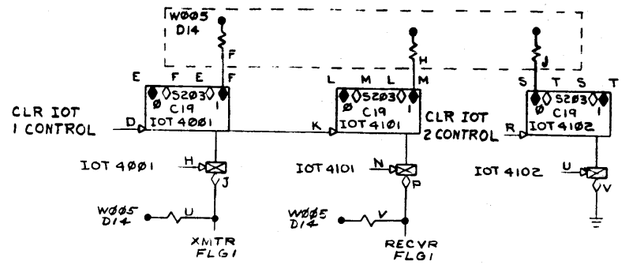
REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	9/11/69	LT19A-1	R.D.
B	11/9/71	LT19A-3	J.M.

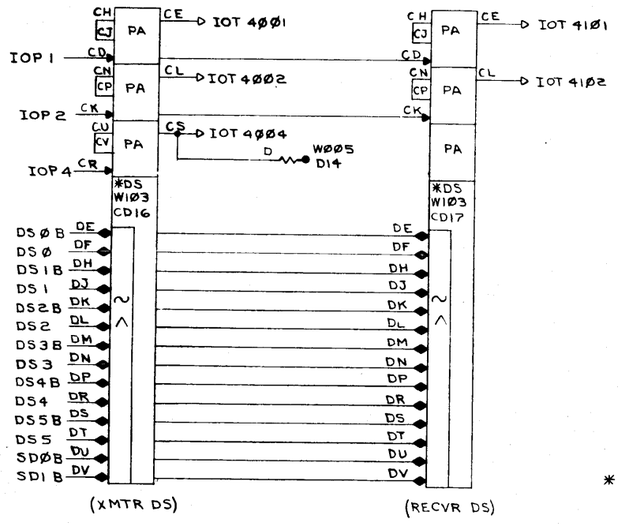
DRN. JACKSON	DATE 10/14/	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D. PFYFFER	DATE 10/22/68	
ENG. [signature]	DATE 11-7-68	TITLE TELETYPE INTERFACE LT19-B
PROJ. ENG. [signature]	DATE 11.8.68	
PROD. [signature]	DATE 11/6/68	
FIRST USED ON LT19-A		SIZE A | CODE ML | NUMBER LT19-B | REV. B
SCALE		
SHEET 1 OF 1		DIST.

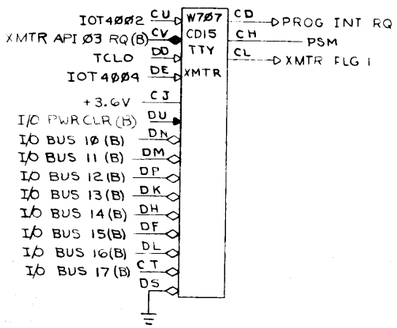
DEC FORM NO. DRA 103

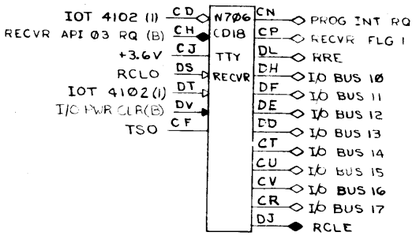


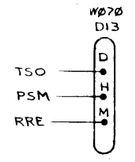












* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

REVISIONS	CHANGE NO.	REV
CHK	LT19A-00001	A
	LT19A-00003	B

R DIETER 11-10-71
J.MILTON 11-16-71

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-A		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN. W.E. Jackson Jr. DATE 10/10/68
CHK'D. DATE 11-16-71
ENG. DATE 11-17-71
PROJ. ENG. DATE 11.9.71
PROD. DATE 11/16/71
NEXT HIGHER ASSY A-ML-LT19-B
SCALE
SHEET 1 OF 1

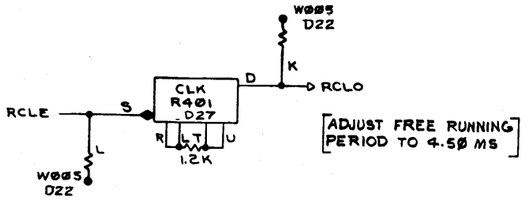
EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

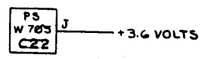
TITLE
TTY CONTROL
UNIT
CHANNEL 1

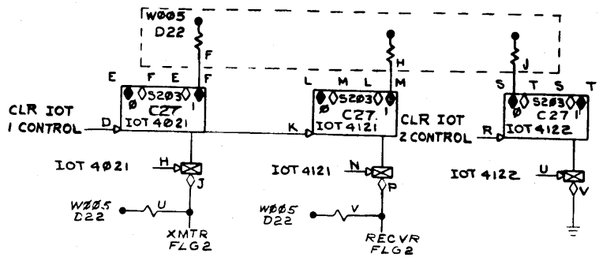
SIZE	CODE	NUMBER	REV.
D	BS	LT19-B-1	B

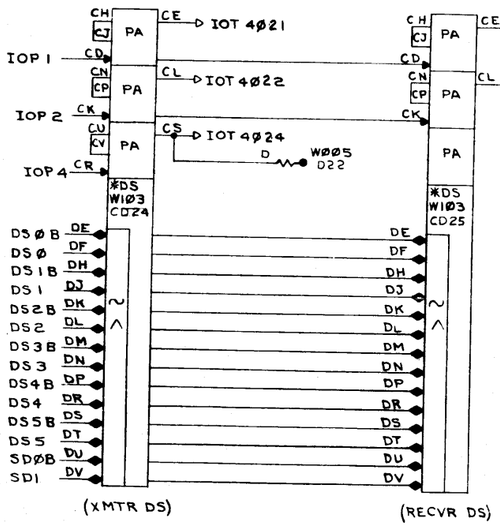
DIST.

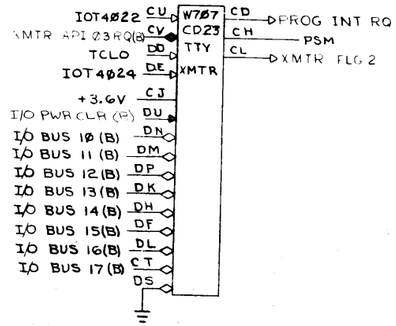
DEC FORM NO DNU 1u2

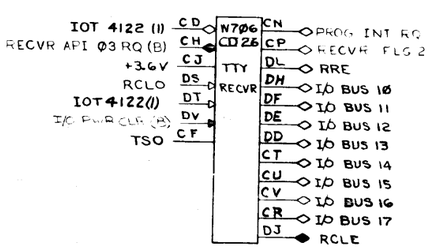


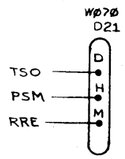












* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

REVISIONS			
CHK	CHANGE NO	REV	
DWG	LT19A-00001	A	R. DIETER 11-16-71
DWG	LT19A-00003	B	J. MILTON 11-16-71

FIRST USED ON OPTION/MODEL: LT19-A

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS: FRACTIONS: ANGLES
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

DRN	W.E. Jackson Jr	DATE 10/10/68
CHK'D		DATE 11-7-68
		DATE 11-7-68
		DATE 11-7-68
		DATE 11/16/68

NEXT HIGHER ASSY: A-ML-LT19-B

SCALE

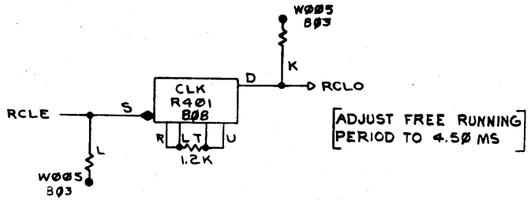
SHEET 1 OF 1

EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

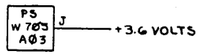
TITLE: TTY CONTROL UNIT CHANNEL 2

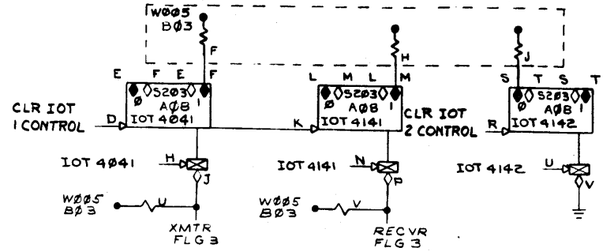
SIZE	CODE	NUMBER	REV.
D	DBS	LT19-B-2	B

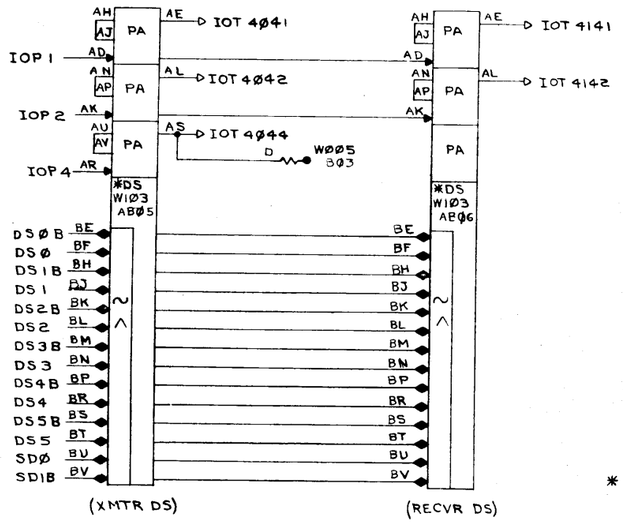
DIST.

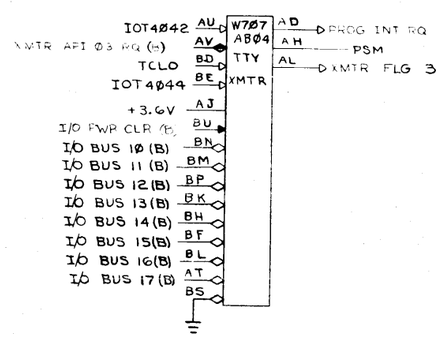


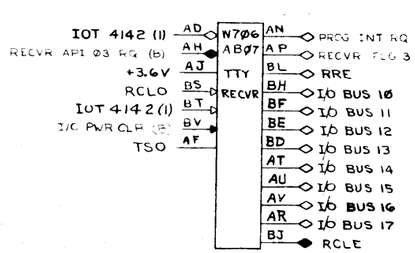
ADJUST FREE RUNNING PERIOD TO 4.50 MS

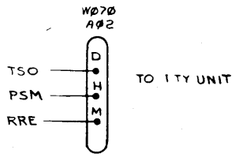












TO TTY UNIT

* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

REVISIONS			
CHG	CHANGE NO	REV	
1826	LT19A-00001	A	R. DIETER 11-10-71
	LT19A-00003	B	J. MILTON 11/16/71

FIRST USED ON	DESCRIPTION/MODEL	QTY	DESCRIPTION	PART NO.	ITEM NO.
	LT19-A		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DWN	W. E. Jackson Jr.	DATE 10/4/68
CHK'D		DATE
ENG		DATE
PROJ		DATE
APVD		DATE

NEXT HIGHER ASSY
A-ML-LT19-B

SCALE

SHEET OF 1

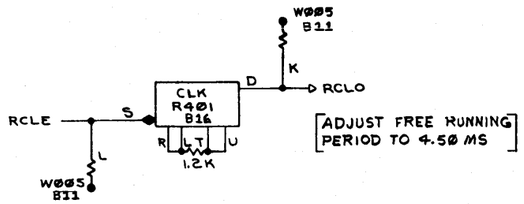
EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

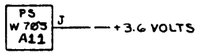
TITLE
TTY CONTROL UNIT CHANNEL 3

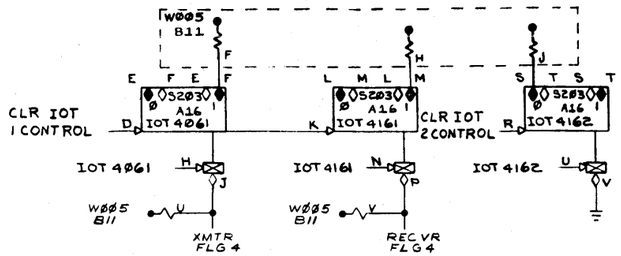
SIZE	CODE	NUMBER	REV.
D	DBS	LT19-B-3	B

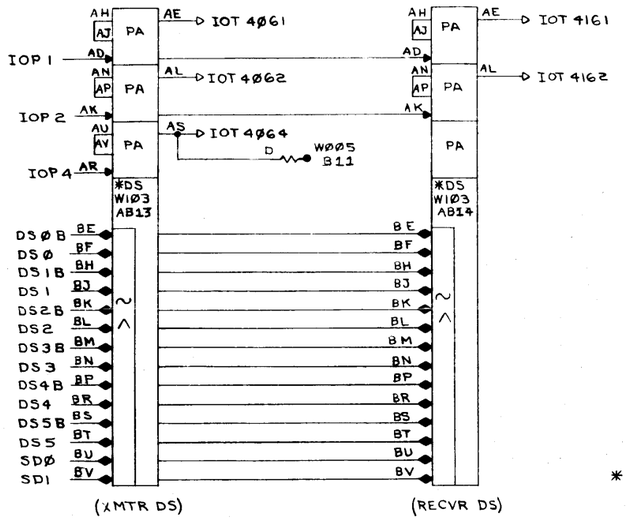
DIST

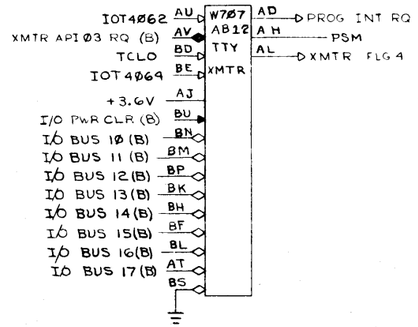
SIZE D CODE DBS NUMBER LT19-B-3 REV B

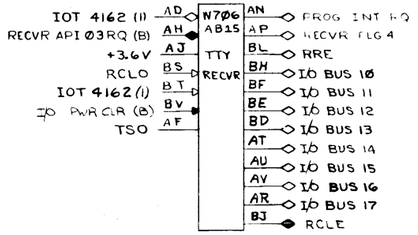


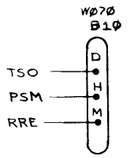












* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

REVISIONS	CHANGE NO	REV
CHK	LT19A-00001	A
CHK	LT19A-0C003	B

R. DILLER 11-10-71
J. MILTON 11-16-71

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-A		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS
MATERIAL
FINISH

DRN.	W.E. JACKSON JR.	DATE 10/10/68
CHK'D.		DATE
ENG.		DATE
PROJ. ENG.		DATE 11/7/68
QUAL.		DATE 11/14/68

NEXT HIGHER ASSY. A-ML-LT19-B
SCALE
SHEET 1 OF 1

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: TTY CONTROL UNIT CHANNEL 4

SIZE	CODE	NUMBER	REV.
D	BS	LT19-B-4	B

DIST.

DEC FORM NO DRO 102

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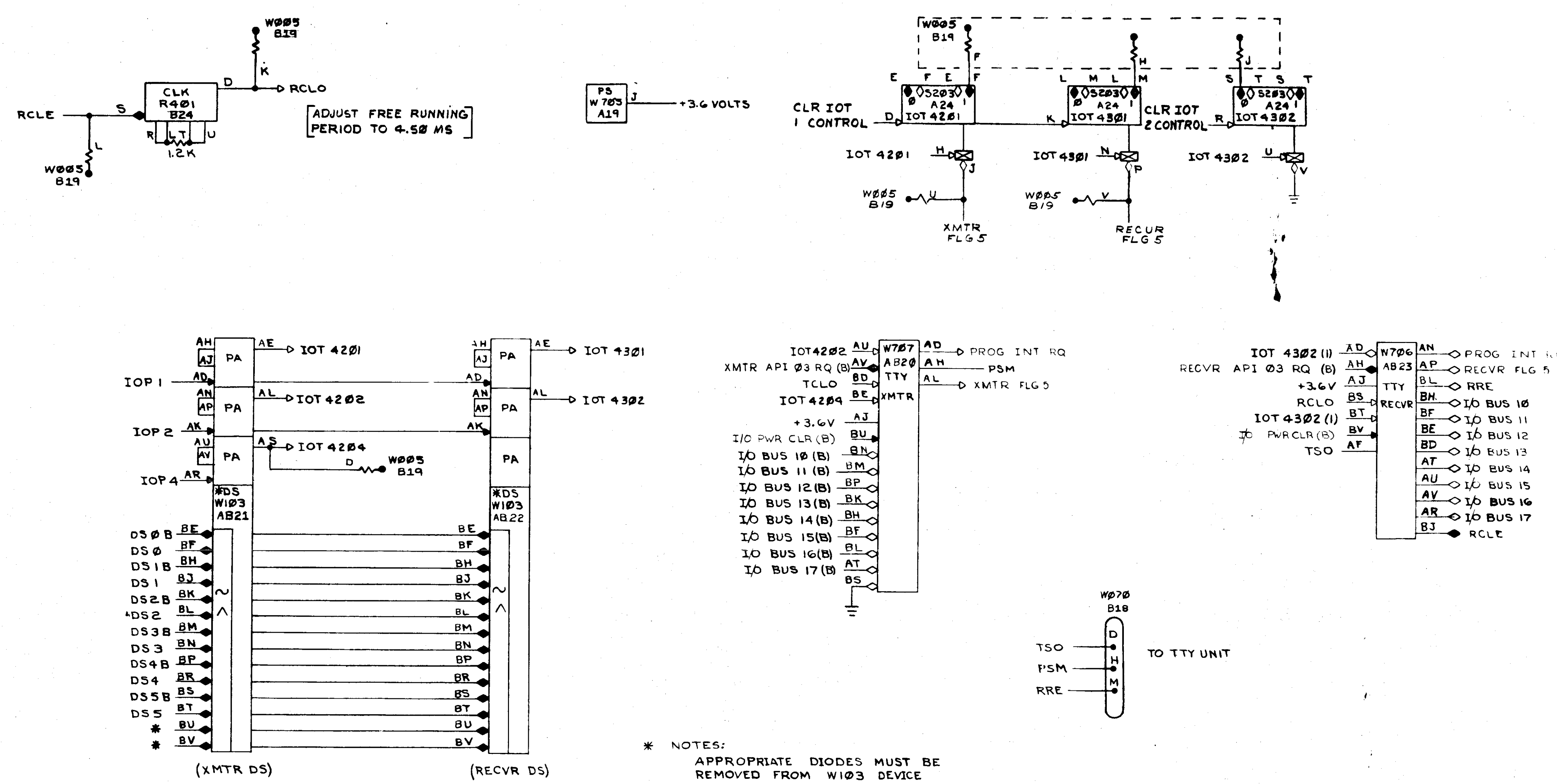


* NOTES:

APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES. IOT DEVICE SELECTION CODES ARE OPTIONALLY ASSIGNABLE FROM STANDARD PDP-9 DESIGNATION LIST. (SEE LT19-A FOR ASSIGNABLE LISTING)

SUB DEVICE SELECTION CODE IS NOT ASSIGNED TO THIS UNIT AND MUST BE JUMPERED IN IF REQUIRED.

REV	CHANGE NO	CHK
A	LT19A-00001	
B	LT19A-00003 11-10-71	J. MILTON 11-16-71

FIRST USED ON OPTION/MODEL: LT19-A

PARTS LIST: QTY. | DESCRIPTION | PART NO. | ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ±.005 FRACTIONS ±1/64 ANGLES ±0°30' FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS

DRN. W.E. JACKSON Jr.

NEXT HIGHER ASSY: A-ML-LT19-B

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: TTY CONTROL UNIT CHANNEL 5

SIZE D CODE BS NUMBER LT19-B-5 REV. B

SHEET 1 OF 1

DEC FORM NO DPD 102

MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
A-ML-LT19-A	REF	1	MULTI-STATION TELETYPE CONTROL
D-BS-LT19-C-1	B	1	TELETYPE CONTROL UNIT CHANNEL 1
D-BS-LT19-C-2	B	1	TELETYPE CONTROL UNIT CHANNEL 2
D-BS-LT19-C-3	B	1	TELETYPE CONTROL UNIT CHANNEL 3
D-BS-LT19-C-4	B	1	TELETYPE CONTROL UNIT CHANNEL 4
D-BS-LT19-C-5	B	1	TELETYPE CONTROL UNIT CHANNEL 5

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	9/11/69	LT19A-1	R.D.
B	11/9/71	LT19A-3	J.M.

DRN.	JACKSON	DATE 10/14/
CHK'D.	PFYFFER	DATE 10/22/68
ENG.	K. Dietz	DATE 11-4-68
PROJ. ENG.	D. Stamets	DATE 11-8-68
PROD.	D Gall	DATE 11/6/68
FIRST USED ON	LT19-A	
SCALE		
SHEET	1 OF 1	

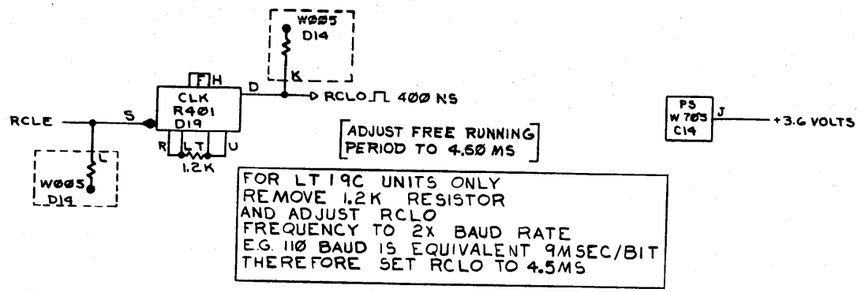
digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

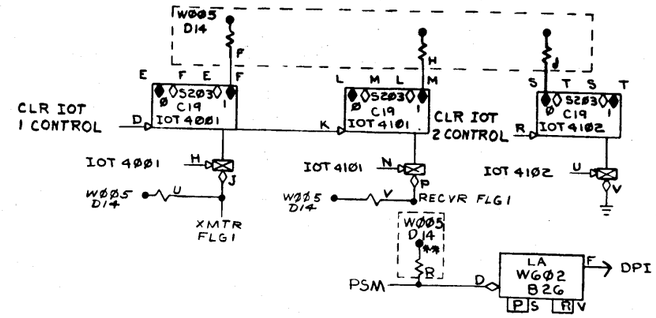
TITLE
TELETYPE INTERFACE
LT19-C

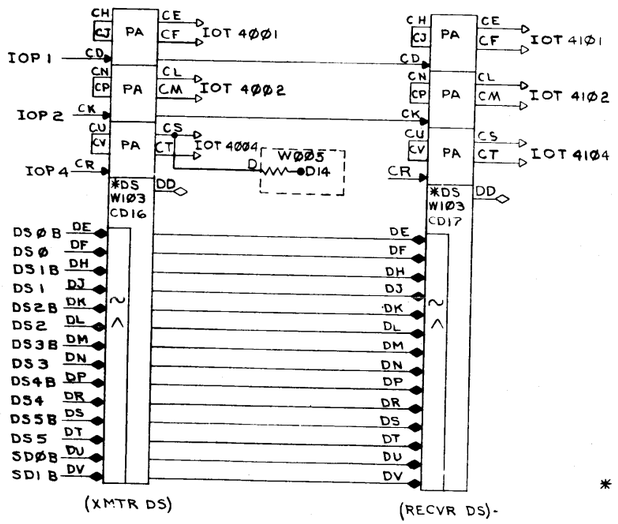
SIZE	CODE	NUMBER	REV.
A	ML	LT19-C	B

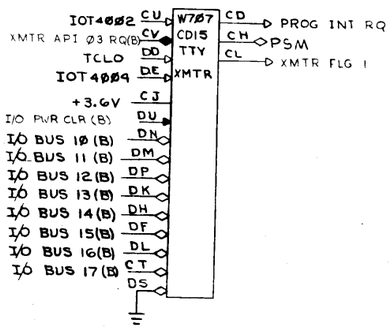
DIST.

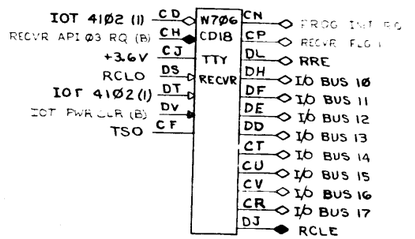
DEC FORM NO.
DRA 103

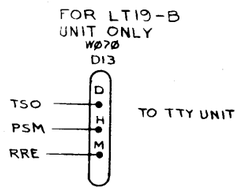


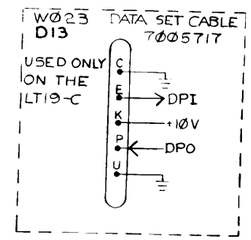


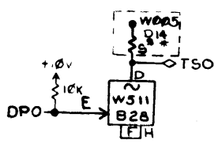












* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

** THESE CLAMPED LOADS ARE JUMPERED IN FOR 'C' UNITS ONLY NOT WIRE WRAPPED

REVISIONS			
CHK	CHANGE NO	REV	
RD	LT19A-00001	A	11-10-71
RD	LT19A-00003	B	11-16-71

DEC FORM NO. DRD 102

FIRST USED ON OPTION MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-A		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN.	W.E. JACKSON JR	DATE 7/68
CHK'D		DATE
ENGR.		DATE
PROJECT		DATE
PROD.		DATE 11/6/68

NEXT HIGHER ASSY: A-ML-LT19-C

SCALE

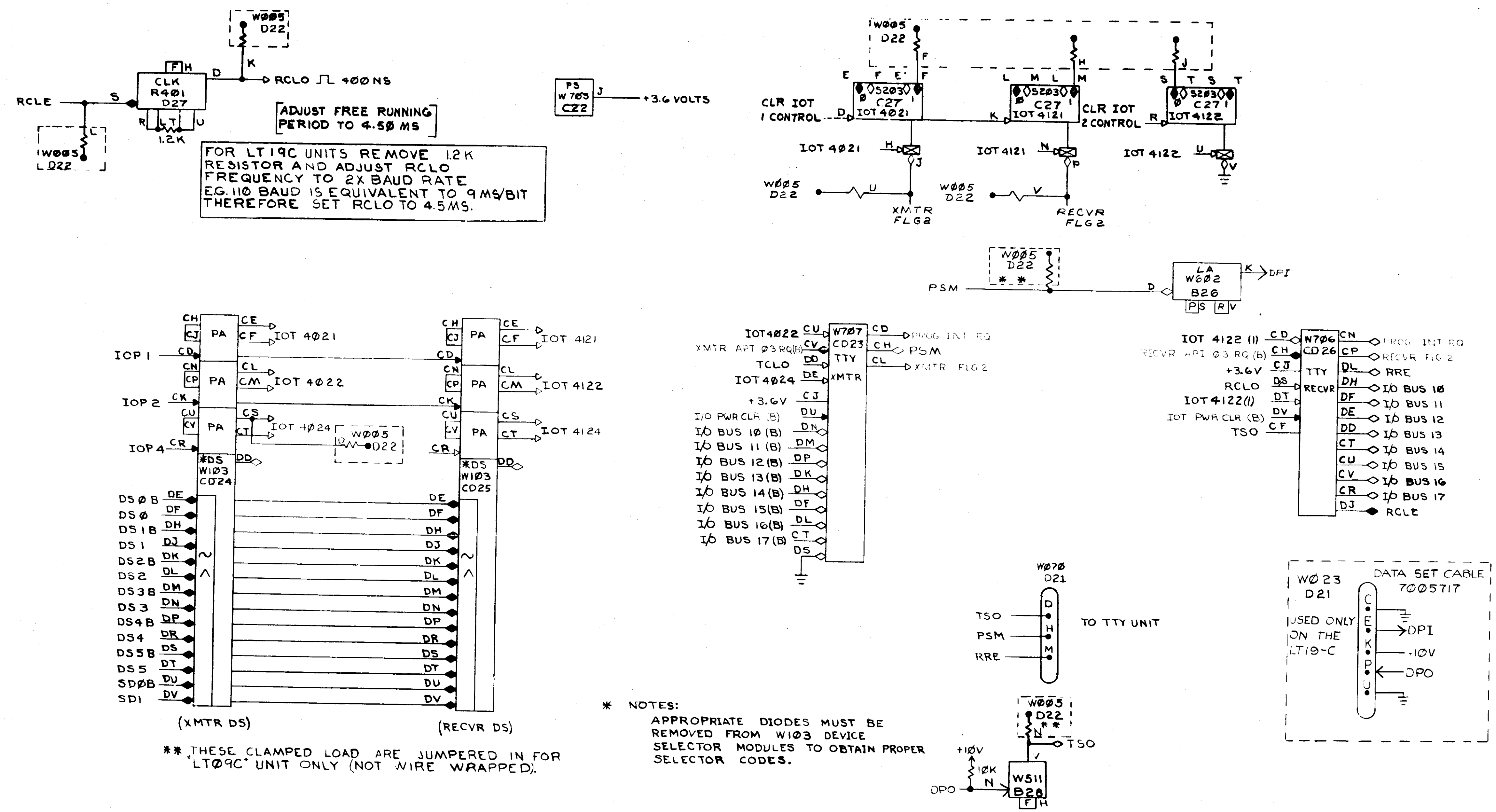
SHEET 1 OF 1

EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE: TTY CONTROL UNIT CHANNEL 1

SIZE/CODE D BS | NUMBER LT19-C-1 | REV. B

DIST.



** THESE CLAMPED LOAD ARE JUMPERED IN FOR "LT09C" UNIT ONLY (NOT WIRE WRAPPED).

* NOTES:

APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

REV	CHANGE NO	CHK
A	LT19A 00001 R. DIETER	
B	LT19A-00003 J. MILTON 11-10-71	11-16-71

FIRST USED ON OPTION/MODEL: LT19-A

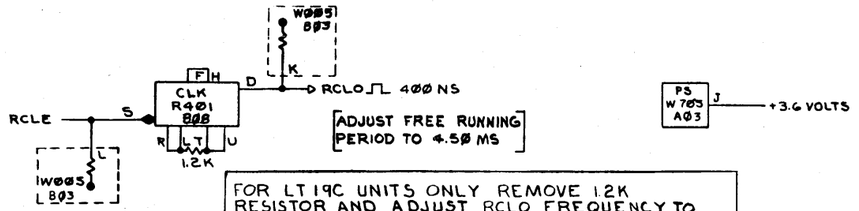
DRN W.F. JACKSON

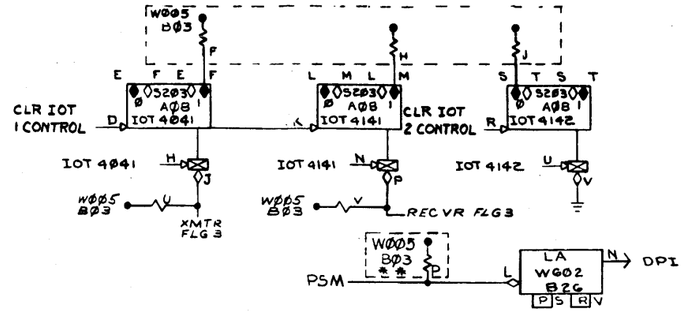
NEXT HIGHER ASSY A-ML-LT19-C

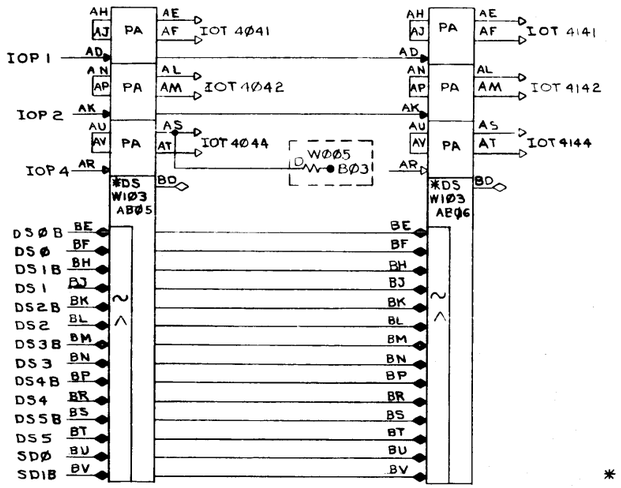
DIGITAL EQUIPMENT CORPORATION, MAYNARD MASSACHUSETTS

TITLE: TTY CONTROL UNIT CHANNEL 2

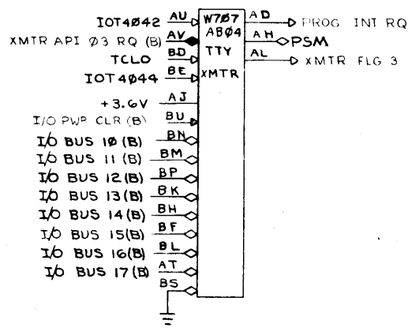
SIZE D CODE BS NUMBER LT19-C-2 REV. B

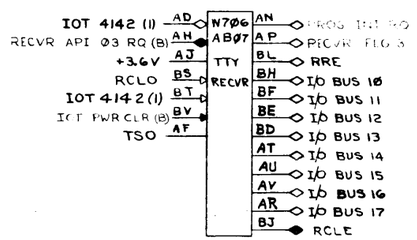


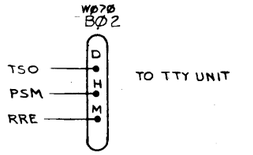


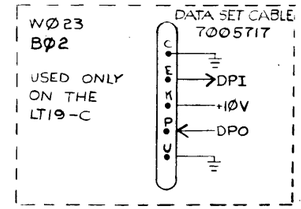


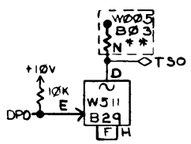
** THESE CLAMPED LOAD ARE JUMPERED IN FOR 'C' UNITS ONLY (NOT WIRE WRAPPED).











* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

REVISIONS			
CHK	CHANGE NO	REV	
	LT19A-00001	A	
R. DIETER			
	LT19A-00003	B	
M. Gaines	11-11-71		
J. MILTON	11-16-71		

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-A		PARTS LIST		

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN.	W.E. JACKSON JR.	DATE 10/7/68
CHKD		DATE
ENG		DATE 11/7-68
ENG		DATE 11/7/68
PROD		DATE 11/16/68

NEXT HIGHER ASSY
A-ML-LT19-C

SCALE

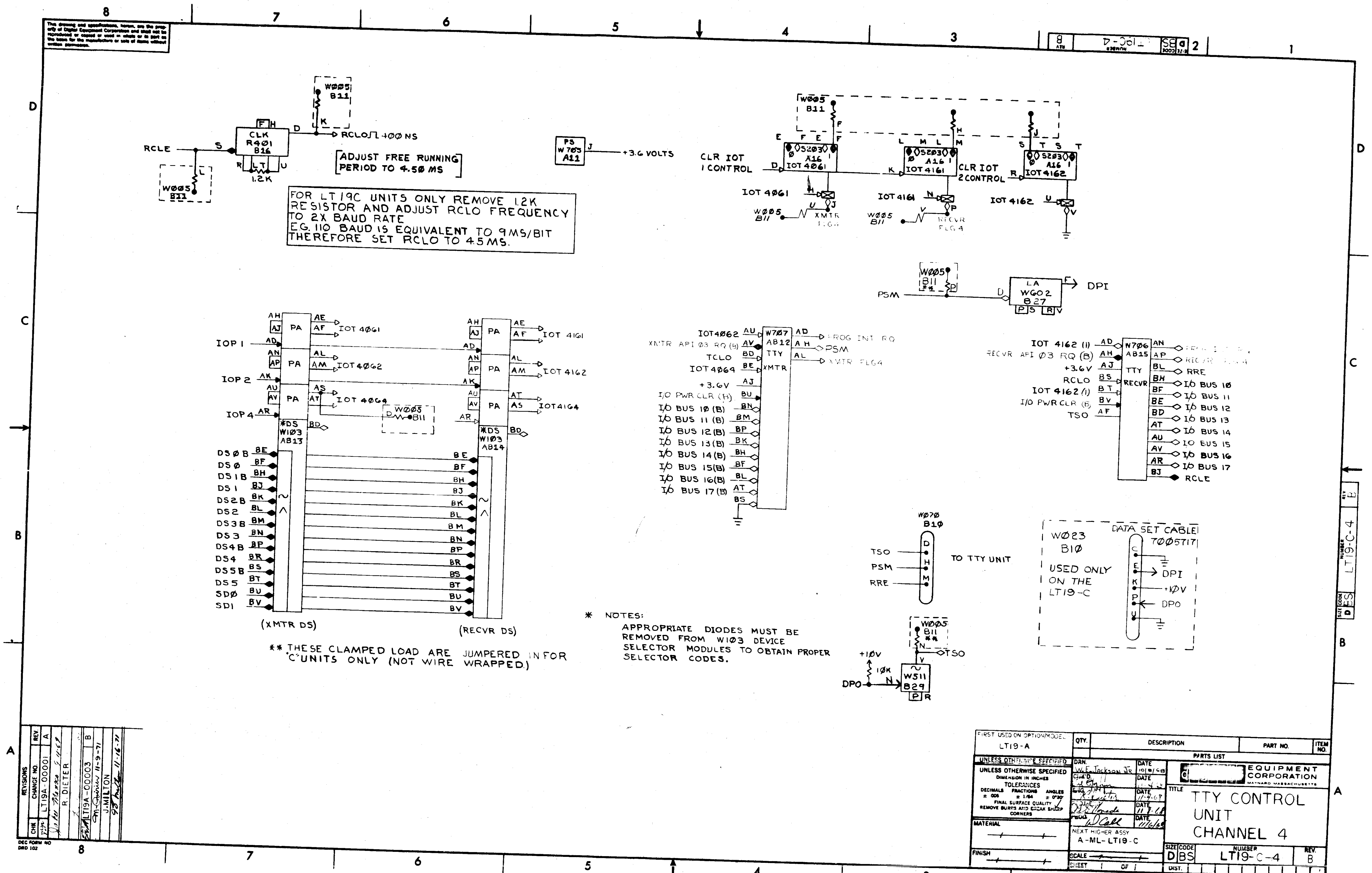
SHEET 1 OF 1

EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

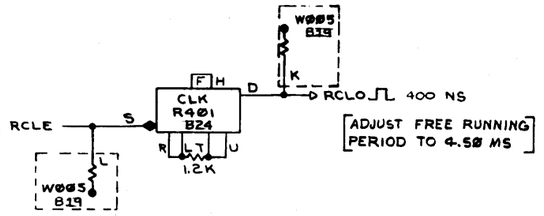
TITLE
TTY CONTROL UNIT CHANNEL 3

SIZE	CODE	NUMBER	REV.
D	BS	LT19-C-3	B

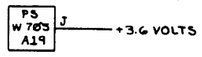
DIST.

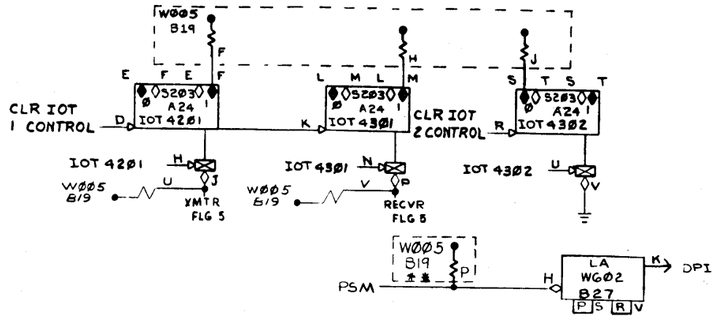


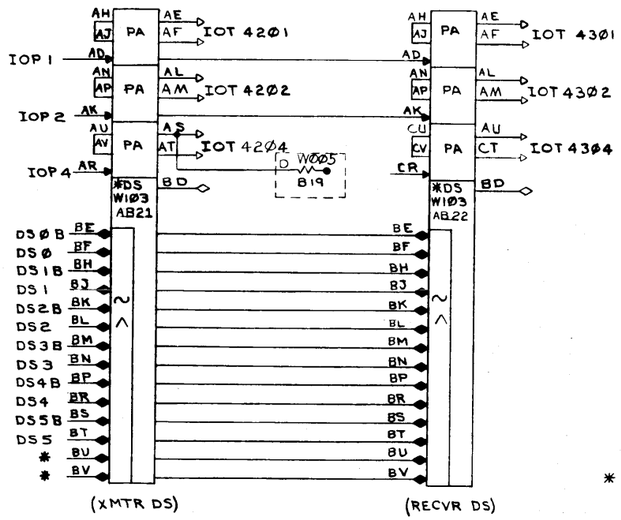
CLK R401 B16
RCLE
RCLO 400 NS
W005 B11
1.2K
ADJUST FREE RUNNING PERIOD TO 4.50 MS
P5 W705 A11
+3.6 VOLTS
FOR LT19C UNITS ONLY REMOVE 1.2K RESISTOR AND ADJUST RCLO FREQUENCY TO 2X BAUD RATE
E.G. 110 BAUD IS EQUIVALENT TO 9MS/BIT THEREFORE SET RCLO TO 4.5MS.
CLR IOT 1 CONTROL
CLR IOT 2 CONTROL
S203 A16 IOT 4061
S203 A16 IOT 4161
S203 A16 IOT 4162
IOT 4061
IOT 4161
IOT 4162
XMTR FLG
RECVR FLG
PSM
LA W602 B27
DPI
IOP 1
IOP 2
IOP 4
IOT 4061
IOT 4062
IOT 4064
IOT 4161
IOT 4162
IOT 4164
W103 AB13
W103 AB14
DS0B
DS0
DS1B
DS1
DS2B
DS2
DS3B
DS3
DS4B
DS4
DS5B
DS5
SD0
SD1
(XMTR DS)
(RECVR DS)
** THESE CLAMPED LOAD ARE JUMPERED IN FOR "C" UNITS ONLY (NOT WIRE WRAPPED)
W707 AB12 TTY XMTR
TCLO
+3.6V
I/O PWR CLR
I/O BUS 10 (B)
I/O BUS 11 (B)
I/O BUS 12 (B)
I/O BUS 13 (B)
I/O BUS 14 (B)
I/O BUS 15 (B)
I/O BUS 16 (B)
I/O BUS 17 (B)
PROG INT RQ
XMTR API 03 RQ
XMTR FLG
N706 AB15 TTY RECVR
RECVR API 03 RQ (B)
RCLO
TSO
RRE
I/O BUS 10
I/O BUS 11
I/O BUS 12
I/O BUS 13
I/O BUS 14
I/O BUS 15
I/O BUS 16
I/O BUS 17
RCLE
W070 B10
TO TTY UNIT
W023 B10
USED ONLY ON THE LT19-C
DATA SET CABLE T005717
+10V
DPO
W511 B29
* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.
REVISIONS
LT19A-00001 R. DIETER
LT19A-00003 J. MILTON
FIRST USED ON OPTION/MODEL LT19-A
NEXT HIGHER ASSY A-ML-LT19-C
DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
TTY CONTROL UNIT CHANNEL 4
D BS LT19-C-4 B



FOR LT19 C UNITS ONLY REMOVE 1.2K RESISTOR AND ADJUST RCLO FREQUENCY TO 2X BAUD RATE.
E.G. 110 BAUD IS EQUIVALENT TO 9MS/BIT THEREFORE SET RCLO TO 4.5 MS.







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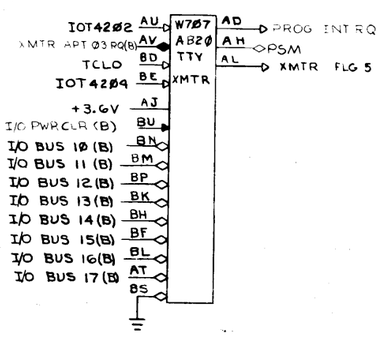
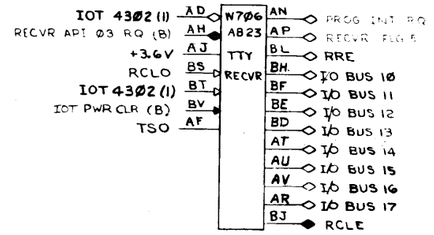
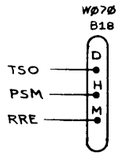
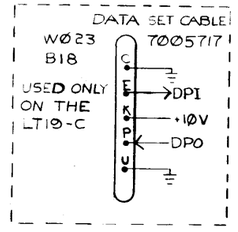
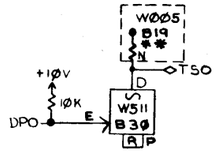










* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES. IOT DEVICE SELECTION CODES ARE OPTIONALLY ASSIGNABLE FROM STANDARD PDP-9 DESIGNATION LIST. (SEE LT19-A FOR ASSIGNABLE LISTING)
SUB DEVICE SELECTION CODE IS NOT ASSIGNED TO THIS UNIT AND MUST BE JUMPERED IN IF REQUIRED.

REVISIONS	CHANGE NO.	REV.	CHK
	LT19A-00001	A	R.DIETER
	LT19A-00003	B	J.MILTON

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-A		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS
MATERIAL
FINISH

DRN W.E. JACKSON JR. DATE 10/7/68
CHK'D DATE 11-4-68
ENG. DATE 11-7-68
PROJ. ENGR. DATE 11-9-68
PROD. DATE 11/16/68
NEXT HIGHER ASSY A-ML-LT19-C
SCALE
SHEET 1 OF 1

EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: TTY CONTROL UNIT CHANNEL 5

SIZE D | CODE BS | NUMBER LT19-C-5 | REV. B

DIST.

DEC FORM 36 DPD 102

REV. E | NUMBER LT19-C-5 | SIZE CODE D BS | B

MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
C-UA-LT19-D-0	C	1	TELETYPE CONTROL (LT19-D)
A-PL-LT19-D-0	C	1	TELETYPE CONTROL (LT19-D)
D-BS-LT19-D-1	B	1	I/O BUS INTERFACE LOGIC
D-BS-LT19-D-2		1	I/O BUS INTERFACE
D-MU-LT19-D-3	C	1	MODULE UTILIZATION
A-PL-LT19-D-3	C	1	MODULE UTILIZATION
D-AD-7006452-[illegible]-0		1	WIRED ASSY
A-PL-7006452-[illegible]-0		1	WIRED ASSY
K-WL-LT19-D-4	C	1	WIRE LIST LT19
A-CP-LT19-D-5	A	1	EXTERNAL COMPONENT LIST
A-SP-LT19-D-6	B	19	LT19 D,E,F,H MULTI-STATION TELETYPE CONTROL AND INTERFACE
D-DI-LT19-D-7	A	1	DRAWING INDEX LIST LT19
A-CP-LT19-D-8		1	BAUD RATE TABLE
A-SP-LT19-D-9		6	ACCEPTANCE PROCEDURE

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	12/30/69	00001	R.D.
B	7/70	00002	R.D.
C	10/70	MISC.81	D.F.
D	10/70	00003	R.D.
E	3/71	00004	R.D.

DRN. J. FERGUSON	DATE 8/6/69	
CHK'D. PFYFFER	DATE 8/11/69	
ENG.	DATE	
PROJ. ENG.	DATE	
PROD. [illegible]	DATE 9/11/69	
FIRST USED ON PDP-9		
SCALE		
SHEET 1 OF 1		

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
MULTI-STATION
TELETYPE CONTROL

SIZE	CODE	NUMBER	REV.
A	ML	LT19-D	E

DIST.

DEC FORM NO. DRA 103

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

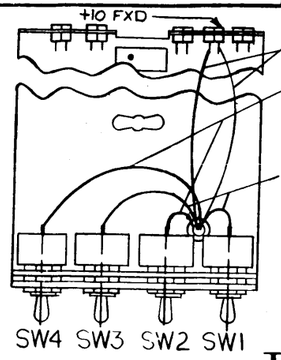
PARTS LIST

MADE BY	J. FERGUSON	CHECKED PFYFFER	SECTION
DATE	8/6/69	DATE 8/12/69	1
ENG		PROD	ISSUED SECT.
DATE		DATE 9/11/69	1

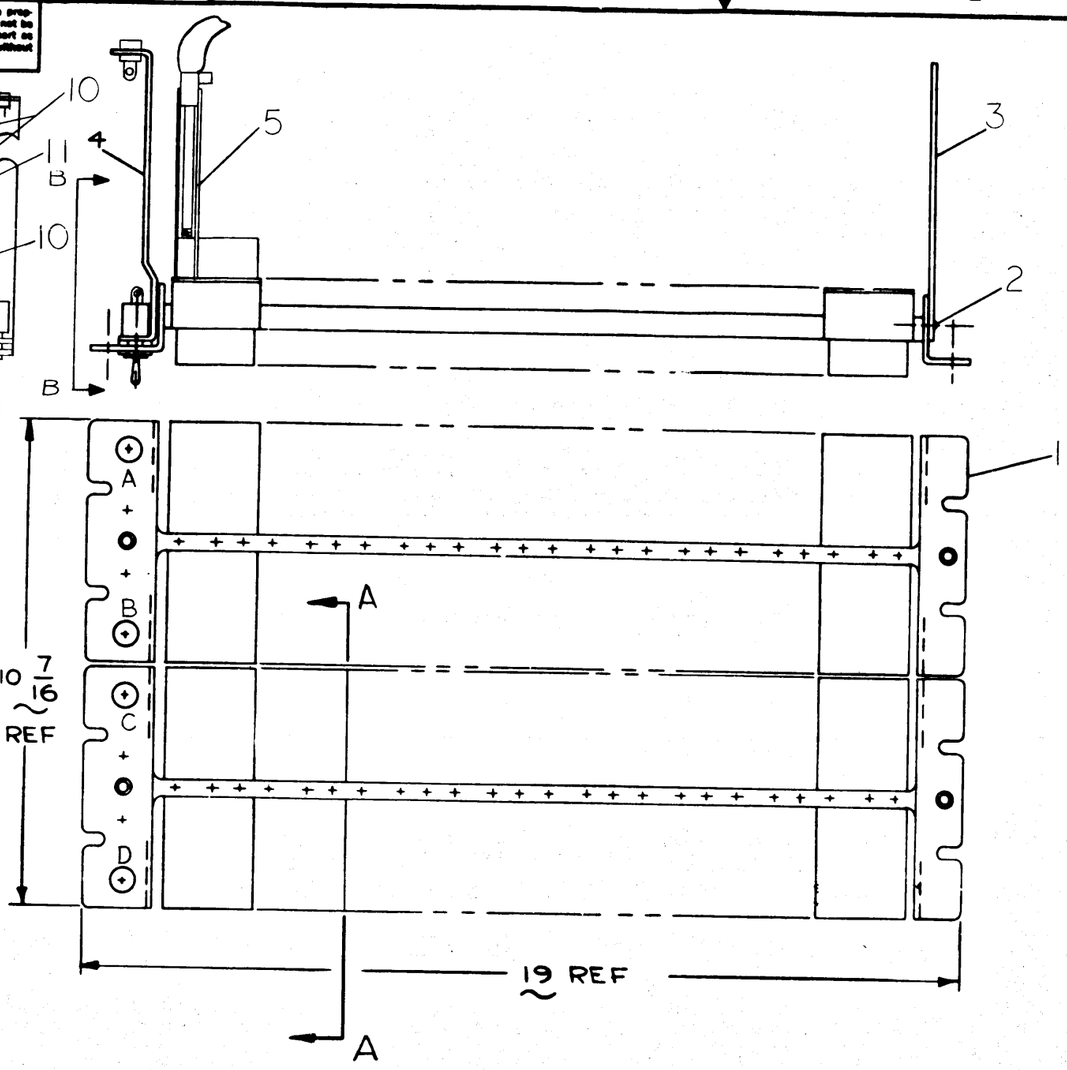
ITEM NO.	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION										
			LT19-D	LT19-E (1)	LT19-E (2)	LT19-E (3)	LT19-E (4)	LT19-E (5)		LT19-F (1)	LT19-F (2)	LT19-F (3)	LT19-F (4)	LT19-F (5)
1	D-AD-7006452-0-0	WIRED ASSY (LT19-D)	1											
2	9006460	POP RIVETS #AD43ABS	8											
3	C-MD-5302486-0-0	PANEL, RIGHT END	2											
4	D-AD-5302525-0-0	MARGINAL CHECK PANEL ASSY	2											
5	D-UA-BC09A-0-0	BC09A CABLE ASSY	4											
6	D-SC-1209850-0-0	RET BLOCK	2											
7	9006085-1	SCR PN HD #8-32 x 1½ SST	2											
8	9006634	WASH INT TOOTH #8	2											
9	9006660	WASH, FLAT #8	2											
10	9107278-3	#18 TUBING, TEFLON, RED	A/R											
11	9107278-7	#18 TUBING, TEFLON, BLU	A/R											
	~~D-AD-7005288-0-0~~	~~4915 TO W070 CABLES~~		1	1	1	1	1						
	C-IA-7005717-0-0	DATA SET CABLE								1	1	1	1	1
	0913	JUMPER, 4" (RED)		2	2	2	2	2						

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV	ECO NO.
TELETYPE CONTROL (LT19-D)	C-UA-LT19-D-0	A	PL	LT19-D-0	C	MISC-00081
	SHEET 1 OF 1	DIST.	G			

DEC FORM NO.
DRA 110

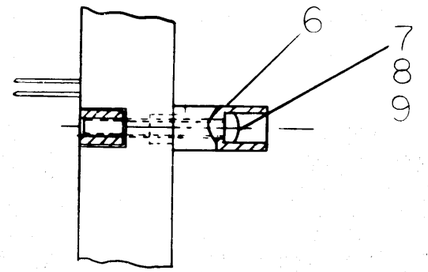


VIEW "B-B"



WIRE TABLE

ITEM NO.	DESCRIPTION AWG	COLOR	CONNECTIONS FROM	TO
10	*18	RED	SW1	A01A
11		BLU	SW2	A01B
10		RED	SW3	B01A
11		BLU	SW4	B01B
		BARE	GND	B01C
10		RED	SW1	C01A
11		BLU	SW2	C01B
10		RED	SW3	D01A
11		BLU	SW4	D01B
		BARE	GND	D01C
10,12		RED	+10 FXD	A03A
10,12		RED	A03A	A11A
10,12		RED	A11A	A19A
10,12		RED	+10 FXD	C14A
10,12	*18	RED	C14A	C22A



SECTION "A-A"
SCALE 1/1

REVISIONS				
CHK	CHANGE NO.	REV.		
	LT19D-00001	A	Austin 12-31-69	DIETER 1-6-70
FV	LT19D-00002	B	T Quinn 8-4-70	DIETER C Cote 8-5-70
T.D	MISC-00081	C	L Austin 10-20-70	VONADA 10-21-70

FIRST USED ON OPTION/MODEL: PDP-9

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY ✓
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL: --

FINISH: --

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

DRN. R T Hellen	DATE 7/10/69	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D	DATE	
ENG.	DATE	
PROJ. ENG.	DATE	
PROG. W Call	DATE 9/11/69	

NEXT HIGHER ASSY

TITLE: TELETYPE CONTROL (LT19D)

SCALE: --

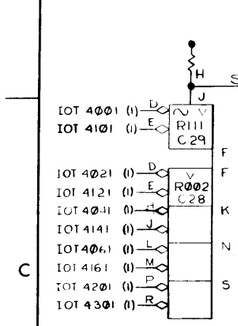
SHEET 1 OF 1

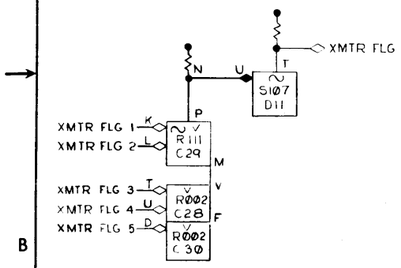
SIZE	CODE	NUMBER	REV.
C	UA	LT19-D-Ø	C

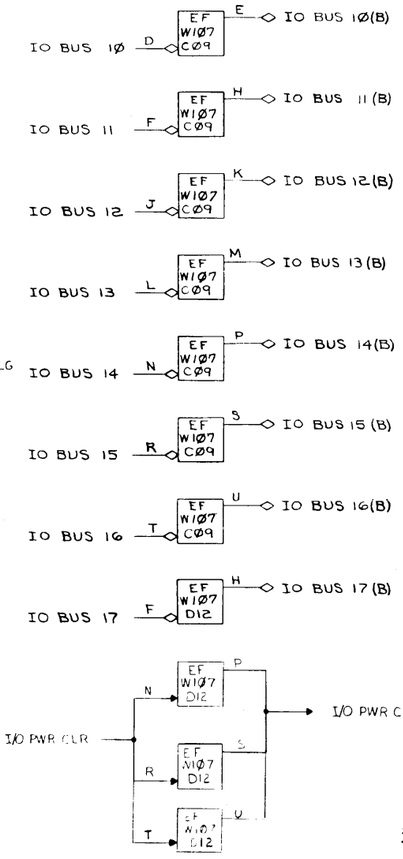
DIST. G

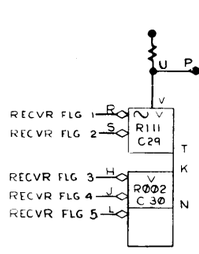
DEC FORM NO. DNE 1185

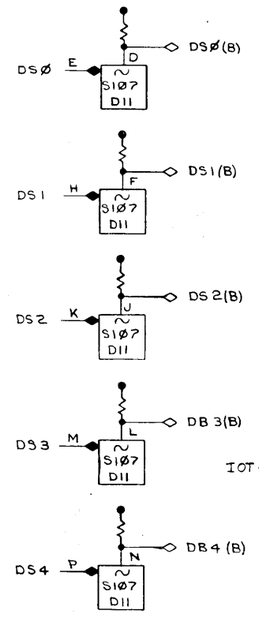
SIZE C CODE UA NUMBER LT19-D-Ø REV. C

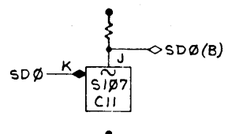


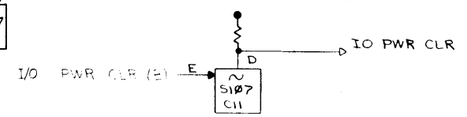


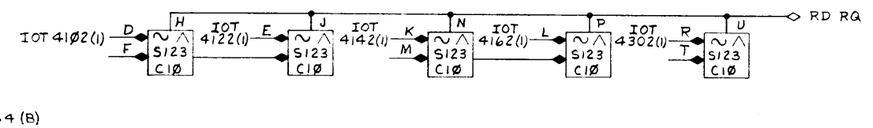


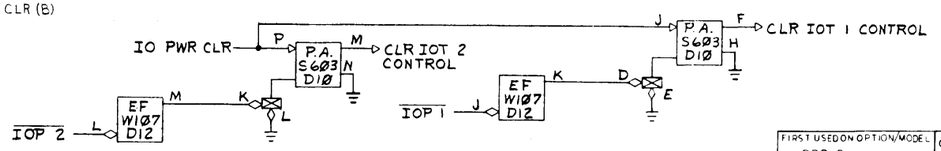












IOT CODING ASSIGNMENT LIST

IOT'S 7040--THRU 7047--INCLUDING PRE-WIRED SUB-DEVICE SELECTION CODES MAY BE USED. THIS YIELDS 32 POSSIBLE IOT INSTRUCTIONS ASSIGNED TO MULTI TTY CONTROLS.

ALL UNUSED GATES IN MODULE C10 MUST HAVE ONE OF THEIR INPUT PINS GROUNDED.

WITH	GROUNDED
1 ST OPTIONAL LT19-E (1)	C10E, K, L, R
2ND OPTIONAL LT19-E (2)	C10K, L, R
3RD OPTIONAL LT19-E (3)	C10L, R
4TH OPTIONAL LT19-E (4)	C10R

REVISIONS

REV	CHANGE NO	CHK
A		

FIRST USED ON OPTION/MODEL: PDP-9

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

PARTS LIST

QTY	DESCRIPTION	PART NO	ITEM NO

		DATE
DRN		
CHK'D		DATE
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE

NEXT HIGHER ASSY: A-ML-LT19-D

SCALE

SHEET 1 OF 1

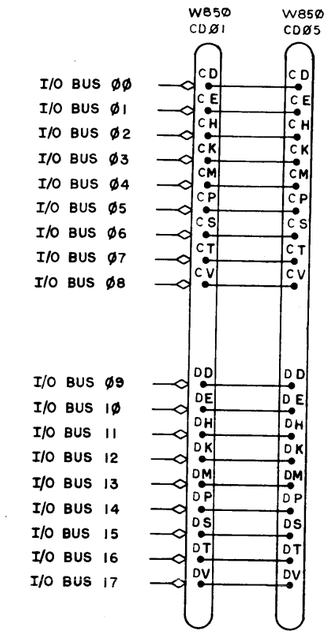
digital EQUIPMENT CORPORATION

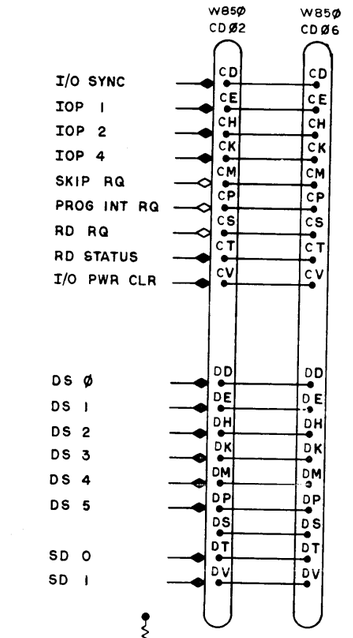
TITLE: I/O BUS INTERFACE LOGIC

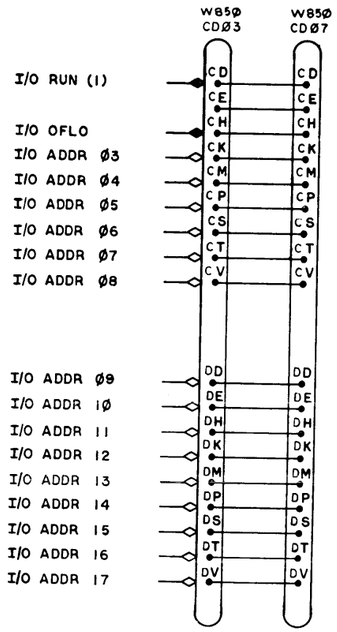
SIZE D | CODE BS | NUMBER LT19-D-1 | REV

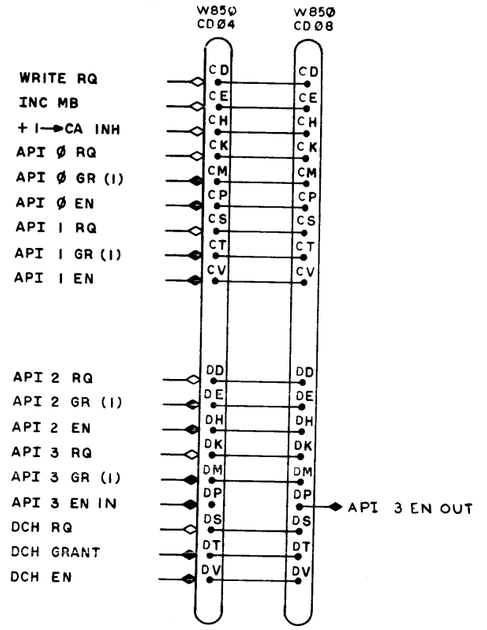
DIST

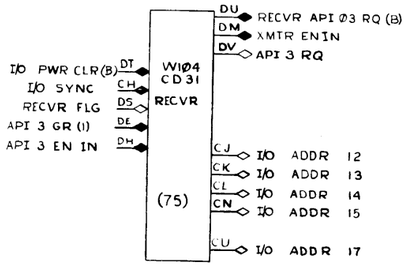
DEC FORM NO DRD 102

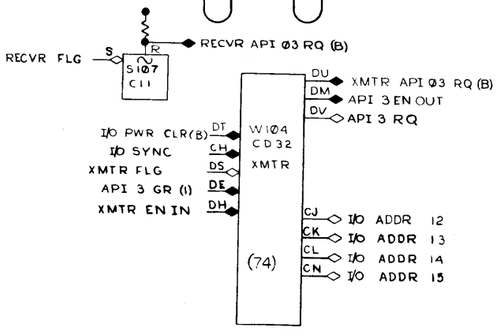


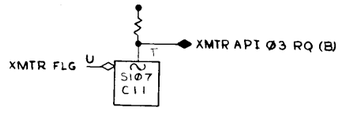












REVISIONS	CHANGE NO.	CHK

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
PDP-9		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN		7/1/69
CHK'D		9-11-69
ENG		
PROJ		DATE
APVD		DATE

NEXT HIGHER ASSY
A-ML-LT19-D

SCALE

SHEET 1 OF 1

EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE
I/O BUS INTERFACE

SIZE	CODE	NUMBER	REV
D	DBS	LT19-D-2	

DIST

DEC FORM NO DRD 102

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

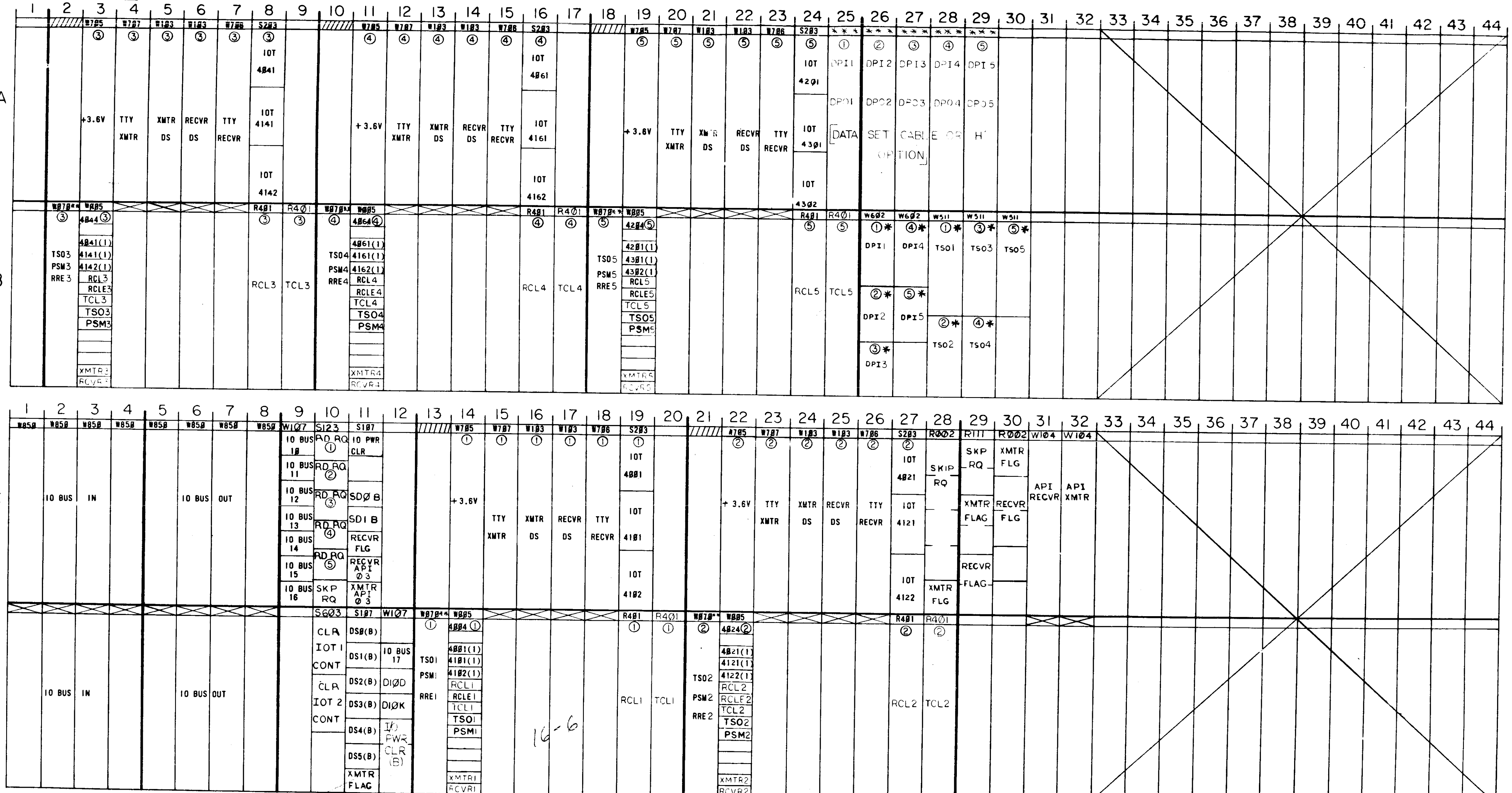
PARTS LIST

MADE BY [illegible] DATE 9-11-69	CHECKED [illegible] DATE	SECTION 1
ENG [illegible] DATE	PROD [illegible] DATE 9/11/69	ISSUED SECT. 1

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION											
			LT19-D	LT19-E (1)	LT19-E (2)	LT19-E (3)	LT19-E (4)	LT19-E (5)		LT19-F (1)	LT19-F (2)	LT19-F (3)	LT19-F (4)	LT19-F (5)
	R401	VARIABLE CLOCK		2	2	2	2	2						
	R002	DIODE NETWORK	2											
	R111	NAND GATE	1											
	S107	INVERTER	2											
	S123	INPUT BUS GATE	1											
	S203	TRIPLE FLIP FLOP		1	1	1	1	1						
	S603	PULSE AMPLIFIER	1											
	W005	CLAMPED LOADS		1	1	1	1	1						
	W103	DEVICE SELECTOR		2	2	2	2	2						
	W104	I/O BUS MULTIPLEXER	2											
	W107	I/O BUS RECEIVER CKT	2											
	W511 *	NEG INPUT CONVERTER								1		1		1
	W602 *	BI-POLAR OUTPUT CONVERTER								1			1	
	W705	3.6 VOLT POWER SUPPLY		1	1	1	1	1						
	W706	TELETYPE RECEIVER		1	1	1	1	1						
	W707	TELETYPE TRANSMITTER		1	1	1	1	1						
	W078	TELETYPE CONNECTOR		1	1	1	1	1						
	*WHEN ASSIGNING CHANNELS, THE LT19F OPTIONS SHALL BE ASSIGNED TO THE LOWEST CHANNEL NUMBERS.													

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO.
MODULE UTILIZATION	D-MU-LT19-D-3	A	PL	LT19-D-3	C	LT19D 00003
	SHEET 1 OF 1	DIST.				

DEC FORM NO.
DRA 110



NOTE:
① DESIGNATES 1ST OPTIONAL LT09E (1)
② DESIGNATES 2ND OPTIONAL LT09E (2)
③ DESIGNATES 3RD OPTIONAL LT09E (3)
④ DESIGNATES 4TH OPTIONAL LT09E (4)
⑤ DESIGNATES 5TH OPTIONAL LT09E (5)
(E OR F)

* LT19-F ONLY
** W070 OR W076D OR W076
*** W023 OR W028

FIRST USED ON OPTION/MODEL	PDP-9
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30' FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS	
MATERIAL	—
FINISH	—
DRN.	DATE 7/30/69
CHK'D	DATE
ENG.	
PROJ. ENG.	DATE
PROD.	DATE 9/11/69
NEXT HIGHER ASSY	A-ML-LT19-D
SCALE	—
SHEET	1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
MODULE UTILIZATION

SIZE	CODE	NUMBER	REV.
D	MU	LT19-D-3	C

DEC FORM NO DRD 105

DRWG NO	REV LTR
K-WL-LT19-D-4	C

REVISIONS

REV LTR	ECO NO	DATE	ENG
A	LT19D-00201	11/30/69	
B	LT19D-00002	8-4-70	
C	LT19D-00003	9/11/69	

DRAWN R. Thellen	DATE 7/31/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	TITLE WIRE LIST LT19
CHECKED	DATE 9-11-69		FOR TAPE* FILE*
ENG	DATE	ASSY NO	SIZE K / CODE WL / DWG.NO. LT19-D-4 / REV LTR C
PROJ ENG	DATE	SCALE — SHEET 1 OF 1	DIST.
PROD	DATE 9/11/69		

COMPONENT NAME	VALUE	POL.	FROM PIN	TO PIN	POL.
RESISTOR	7.5 K 1/4 W 10%		B28E	B28A	
RESISTOR	* * *		D19R	D19T	
RESISTOR	* * *		D20R	D20T	
RESISTOR	7.5 K 1/4 W 10%		B28N	C28A	
RESISTOR	* * *		D27R	D27T	
RESISTOR	* * *		D28R	D28T	
RESISTOR	7.5 K 1/4 W 10%		B29E	B29A	
RESISTOR	* * *		B08R	B08T	
RESISTOR	* * *		B09R	B09T	
RESISTOR	7.5 K 1/4 W 10%		B29N	C29A	
RESISTOR	* * *		B16R	B16T	
RESISTOR	* * *		B17R	B17T	
RESISTOR	7.5 K 1/4 W 10%		B30E	B30A	
RESISTOR	* * *		B24R	B24T	
RESISTOR	* * *		B25R	B25T	

NOTES:

* * * = REFER TO BAUD RATE TABLE FOR RESISTOR VALUE AND PIN LETTERS. (A-CP-LT19-D-8)

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	1-6-70	LT19D-00001	AG

DRN.	G. MARINI	DATE 7-21-69
CHK'D.	AL PFYFFER	DATE 8-12-69
ENG.	R. DIETER	DATE 9-11-69
PROJ. ENG.	R. DIETER	DATE 9-11-69
PROD.	.D.CALL	DATE 9-11-69
FIRST USED ON	A-ML-LT19-D	
SCALE	NONE	
SHEET	1 OF 1	

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
EXTERNAL COMPONENT LIST
FOR
LT19-D

SIZE	CODE	NUMBER	REV.
A	CP	LT19-D-5	A

DIST

DEC FORM NO.
DRA 106

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 7/14/69

TITLE LT19 D, E, F, H Multi-Station Teletype Control and Interface

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	———	LT19D-00001	DIETER	1-6-70	[illegible]	1-6-70
B	———	LT19D-00002	———	8-4-70	[illegible]	8-5-70

ENG	APPD	SIZE	CODE	NUMBER	REV
R. Dieter	[illegible]	A	SP	LT19-D-6	B

DEC FORM NO. DRA 107

SHEET 1 OF 19

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE LT19 D, E, F, H, Multi-Station Teletype Control and Interface

Each LT19D added to a PDP-9 will accommodate up to five teletype control units (LT19E's). These LT19D control units contain logical elements which are functionally similar to those of the PDP-9 standard teletype control. Instructions and programming considerations are, therefore, similar to those of the standard unit.

Optional Teletype Control with Standard EIA Level Converters (Type LT19F)

The LT19F is a group of standard DEC logic modules which, when inserted into the appropriate locations of an LT19D constitute a single independent teletype control (exactly the same as the LT19E specified above) with standard EIA level converters. Thus the LT19F may be directly connected to input/output devices using standard EIA logic levels, i.e. dataphone.

SIZE	CODE	NUMBER	REV
A	SP	LT19-D-6	B

DEC FORM NO DRA 108

SHEET 2 OF 19

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE LT19 D,E,F,H Multi-Station Teletype Control and Interface

1.0 Multi-Station Teletype Interface (Type LT19D)

Addition of the LT19D option to the PDP-9 expands the machine's teletype facility to accommodate up to five optional teletype control units. The LT19D consists of the following:

a. Two standard 19" DEC Type 1943 mounting panels (completely bussed and prewired for PDP-9 IO Bus interfacing and the insertion of up to five independent teletype controls, LT19E's or LT19F's defined below).

All of the logic modules necessary to interface the control units to the standard PDP-9 IO Bus.

Optional Teletype Control (Type LT19E)

The LT19E is a group of standard DEC logic modules which, when inserted into the appropriate locations of an LT19D, constitute a single independent teletype control with the following specifications:

a. five or eight * bit character codes.

b. one unit start code.

c. 1, 1.5 or 2 * unit stop codes.

d. Full duplex operation

e. Speed variable to 30 K baud.

f. Maximum signal transmission distance is 2000 feet with teletype units, 250 feet on LT19F units with LT19H option.

g. LT19E teletype controls may be used with ASR, KSR, RO or SO teletype units.

* Standard unit

SIZE	CODE	NUMBER	REV
A	SP	LT19-D-6	B

DEC FORM NO DRA 108

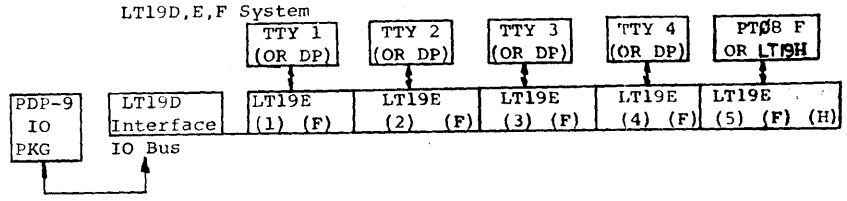
SHEET 3 OF 19

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE LT19 D,E,F,H Multi-Station Teletype Control and Interface

1.1 The LT19 D,E,F system consists of an interface to the processor (LT19 D) and up to five teletype control units. (LT19E,F).

LT19D,E,F System



One to five optional LT19E(F) teletype control units may be added to each LT19D interface.

1.2 Each of the LT19E(F) control units (up to five may be used) is optional - directly pluggable into the LT19D interface.

1.3 The LT19D is packaged in two standard DEC #1943-19" logic mounting racks. Up to five LT19E(F) control units may be plugged into the LT19D logic racks. (10½" of mounting space is required).

When the LT19D, E (F) options are added to a PDP-9 system, these 1943 logic mounting racks must be added to the system as shown in section 4.0 and all necessary cable connectors and power wiring should then be added.

1.4 The LT19D,E,F,H options operate reliably over the temperature and humidity range specified for the processor. Each LT19D,E,F,H optional system is powered from one standard DEC #728 Power Supply mounted on the back door of the bay in which the LT19D,E,F,H system is mounted. No special power controls or fan assemblies (other than those necessary for the multi-bay system) are necessary.

SIZE	CODE	NUMBER	REV
A	SP	LT19-D-[illegible]	B

DEC FORM NO DRA 108

SHEET 4 OF 19

1.5 General Performance

A general description of the LT19D,E option is given on page 4-31 of the PDP-9 Users Handbook (F-95)

a. Teletype operational characteristics
   (1) five or eight* bit character code.

   (2) one* unit start code.

   (3) 1, 1.5 or 2* units stop code.

   (4) Full duplex operation.

   (5) Up to five teletype units per LT19D.

   (6) Speed = 30,000 baud maximum.

   (7) Maximum signal transmission distance- 2000 feet for teletype units, 250 feet for LT19H.

*Standard unit

1.6 Overall Speed

A limitation has been placed on the overall speed of all channels combined so that normal service routines may handle all channels simultaneously. The limit is 30,000 baud for all N channels combined, where N = 1 to 16.

1.7 The highest speed channels should be assigned to the first channels in a system to keep the skip chain short and in a multiple LT19D system, all the high speed channels MUST come first to prevent a low speed channel from locking out a high speed unit.

2.0 Vendor-Supplied Equipment Specifications

The LT19D,E,F,H system may use standard teletype units (ASR's, KSR's, RO's, SO's' and/or standard EIA level operated input/output devices i.e., dataphone interface. All of the above teletype equipment and EIA level operated equipment are standard DEC peripheral devices which have DEC Purchase Specifications. Therefore, if specifications are required for any standard DEC input/output unit, it may be obtained from the Purchasing Specifications List.

3.0 IOT Instructions

The following device selection codes have been assigned for use with optional teletype units:

Teleprinters	Keyboards
7040--	7041--
7042--	7043--
7044--	7045--
7046--	7047--

In addition to these device selection codes the standard PDP-9 sub device selection lines (SD0, SD1) are also available for assignment. As a result, the device selection codes listed above represent 32 possible device codes.

Teleprinter IOTS

1 Skip on teleprinter flag e.g., 704001

2 Clear teleprinter flag e.g., 704002

4 Load teleprinter buffer and transmit character e.g., 704004

Keyboard IOTS

1 Skip on keyboard flag e.g 704101

2 Clear keyboard flag and read the keyboard buffer e.g. 704102

4 Not used

3.2 Special Maintenance Instructions

The LT19 D, E, F, H system uses no special maintenance instructions.

3.3 No special data formats, programming considerations
3.6 operator controls, or indicators are necessary for the LT19 D, E, F, H system.

3.7 No status bits are assigned to the LT19 D, E, F, H system.

3.8 Timing diagrams for LT19 E F teletype control are presented on pages 3-9 (receiver) and 3-7 (transmitter) of the LT19 Instruction Manual (Note that the manual refers to the LT19 A, B & C - The timing is correct for the LT19 D, E & F).

3.9 The LT19-E/F Channel assignments should be made according to the following tables:

TABLE 1: 1 to 5 UNITS; 1 LT19D

	UNIT #	TRANSMITTER CODE	RECEIVER CODE	LOGICAL UNIT#
LT19D #1	1	xx400x	xx410x	1
	2	xx402x	xx412x	2
	3	xx404x	xx414x	3
	4	xx406x	xx416x	4
	5	xx420x	xx430x	5

TABLE 2: 6 to 10 Units; 2 LT19D'S

	UNIT #	TRANSMITTER CODE	RECEIVER CODE	LOGICAL UNIT #
LT19D #1	1	xx400x	xx410x	1
	2	xx402x	xx412x	2
	3	xx404x	xx414x	3
	4	xx406x	xx416x	4
	5	xx440x	xx450x	11
LT19D #2	1	xx420x	xx430x	5
	2	xx422x	xx432x	6
	3	xx424x	xx434x	7
	4	xx426x	xx436x	10
	5	xx442x	xx452x	12

TABLE 3: 11 to 15 UNITS; 3 LT19D'S

	UNIT #	TRANSMITTER CODE	RECEIVER CODE	LOGICAL UNIT #
LT19D #1	1	xx4ØØx	xx41Øx	1
	2	xx4Ø2x	xx412x	2
	3	xx4Ø4x	xx414x	3
	4	xx4Ø6x	xx416x	4
	5	xx46Øx	xx47Øx	15
LT19D #2	1	xx42Øx	xx430x	5
	2	xx422x	xx432x	6
	3	xx424x	xx434x	7
	4	xx426x	xx436x	1Ø
	5	xx462x	xx472x	16
LT19D #3	1	xx44Øx	xx450x	11
	2	xx442x	xx452x	12
	3	xx444x	xx454x	13
	4	xx446x	xx456x	14
	5	xx464x	xx474x	17

TABLE 4: 16 UNITS; 4 LT19D'S

The setup for the first three LT19D'S would be as in TABLE 3.

	UNIT #	TRANSMITTER CODE	RECEIVER CODE	LOGICAL UNIT #
LT19D #4	1	UNUSED	UNUSED	-
	2	UNUSED	UNUSED	-
	3	UNUSED	UNUSED	-
	4	UNUSED	UNUSED	-
	5	xx466x	xx476x	2Ø

Note: When the system includes an LT15, it becomes logical unit #1.

4. Installation Data

The LT19 D, E, F, H system is packaged in a standard PDP-9 19" optional cabinet. The standard LT19 system operates at very slow frequencies and, therefore, may be located at any place along the standard PDP-9 IO bus.

No special action need be taken (either in shipment or during site installation) to install on LT19 system other than that required for the basic processor and standard teletype units.

General information on the physical locating of noncritical options (when assigned to a PDP-9 system) is contained in Chapter 4 (Mechanical) of the PDP-9 Sales Notebook.

5.0 Interface Specifications

All connections from the LT19 D, E, F, H system to the basic processor are made through the standard PDP-9 IO bus. No special cabling is needed for the system. The optional teletype units (or EIA standard level units) are interfaced to LT19 D, E, F, H system as stated in Section 7 (System Components). The single control cable and its termination module are standard units which are delivered with the optional input/output unit.

6.0 Master Drawing Lists

6.1 LT19D

Drawing No.	No. of sheets	Title
A-ML-LT19-D	1	Multi-Station Teletype Control
C-UA-LT19-D-0	1	Teletype Control
A-PL-LT19-D-0	1	Teletype Control
D-BS-LT19-D-1	1	I/O Bus Interface Logic
D-BS-LT19-D-2	1	I/O Bus Interface
D-MU-LT19-D-3	1	Module Utilization
A-PL-LT19-D-3	1	Module Utilization
D-AD-7006452-0-0	1	Wired Assy
A-PL-7006452-0-0	1	Wired Assy
K-WL-LT19-D-4	1	Wire List LT19
A-CP-LT19-D-5	1	External Component List
A-CP-LT19-D-8	1	Baud Rate Table

6.2 LT19E

Drawing No.	No. of sheets	Title
A-ML-LT19-E	1	Teletype Interface LT19-E
D-BS-LT19-E-1	1	Teletype Control Unit Channel 1
D-BS-LT19-E-2	1	Teletype Control Unit Channel 2
D-BS-LT19-E-3	1	Teletype Control Unit Channel 3
D-BS-LT19-E-4	1	Teletype Control Unit Channel 4
D-BS-LT19-E-5	1	Teletype Control Unit Channel 5

6.3 LT19F

Drawing No.	No. of sheets	Title
A-ML-LT19-F	1	Teletype Interface LT19-F
D-BS-LT19-F-1	1	Teletype Control Unit Channel 1
D-BS-LT19-F-2	1	Teletype Control Unit Channel 2
D-BS-LT19-F-3	1	Teletype Control Unit Channel 3
D-BS-LT19-F-4	1	Teletype Control Unit Channel 4
D-BS-LT19-F-5	1	Teletype Control Unit Channel 5

Note:

LT19-E(F)-1	1st optional teletype control
LT19-E(F)-2	2nd optional teletype control
LT19-E(F)-3	3rd optional teletype control
LT19-E(F)-4	4th optional teletype control
LT19-E(F)-5	5th optional teletype control

6.4 LT19H

Drawing No.	No. of Sheets	Title
A-ML-LT19-H	1	Data Communications Interface
C-IA-7005891-0-0	1	Data Communications Cable

7.0 System Components

Basic system components consist of the LT19 D, E, F, H control logic (located in an optional bay) and up to 5 teletype units or EIA level operated units for each LT19D control. The optional teletype units or EIA units are located remotely from the PDP-9 system. A single control cable interfaces the remote unit to its control in the PDP-9 system. This control cable is terminated with a standard DEC cable connector module which is inserted in its assigned location in the LT19D mounting panels (see module utilization print D-MU-LT19-D-3).

7.1 Modules needed to implement the multi-teletype control are as follows:

LT19D (PDP-9 interface only)

2 -S107
1 -S123
1 -S603
2 -W107
2 -RØØ2
1 -R111
2 -W104

LT19E (Single teletype control only)

2 -R401
2 -S203
1 -W005
1 -W078 or W076D or W028 (part of teletype or EIA device)
2 -W103
1 -W705
1 -W706
1 -W707

LT19F (Single EIA level operated device control)

Same as LT19E plus

1 -W511
1 -W602

LT19H Same as LT19F Plus Inter Unit Cable C-IA-7005891-0-0

7.2 No special power controls are necessary due to the addition of an LT19 D, E, F, H system other than those required for the optional bay configuration. One 728 power supply must be added to the back door of the optional bay for each LT19 system interfaced to a PDP-9. See table below.

7.3 An LT19 D, E, F, H system is interfaced to the PDP-9 processor through the IO Bus and to input/output devices through connector cables supplied with the optional unit.

7.4 As stated in Section 2.0 vendor-supplied equipment which interfaces to the LT19 D, E, F, H system is standard and DEC purchase specifications for all units are available from Drafting.

LT19D With	1-LT19E	2-LT19E	3-LT19E	4-LT19E	5-LT19E
+10V	1.47A	2.88	4.30	5.72	7.14
-15V	1.58A	1.86	2.14	2.42	2.70

LT19F
+10 .075A
-15 .134A
} Maximum LT19 Configuration

Maximum Possible Load: +10V-7.2A, -15V-2.8A

LT19H No Additional Power Req.

8.0 Check out Test Procedure

Each LT19 D, E, F, H unit will be tested using Test Procedure MAINDEC-9A-D8CC-D both under normal operating conditions and under voltage margins as specified below:

Test No.	Aggravation Conditions	Margins +10V		Margins -15V		
1	None	±	±	±	±	
2	Margin LT19D (Rack A)	6V	6V	2.5	2.5	*
3	Margin LT19D (Rack B)	±3V	±3V	2.5	2.5	*
4	Margin LT19D (Rack C)	6V	6V	2.5	2.5	*
5	Margin LT19D (Rack D)	6V	6V	2.5	2.5	*

* -15V Margins for racks A and B, C and D must be run in pairs, i.e., A&B together.

8.1 LT19F Checkout
The "F" option (EIA level converter) is intended to drive a Dataset Cable or an "H" option. To simulate the cable and perform tests, add the following temporary jumpers to slots A25, A26, A27, A28, or A29: S to H and T to V - this simulates the jumpers on the cables. Jumper pin E to pin P to tie output to input. Run appropriate sections of the Diagnostic 09-D8CC

8.2 See LT19H for special Test procedure

9.0 Acceptance Test Procedure

The Acceptance Test operator must sucessfully rerun all Checkout Test Procedures as stated in Section 8.

In addition, the following documentation list must be complete before the unit is accepted.

a. MAINDEC-9A-D8CS-PH Program Tape

b. MAINDEC-9A-D8CC-D Write-up

9.1 No special test equipment is needed for acceptance of this option.

9.2 Field-installed LT19 D, E, F, H options should be tested and accepted under the same stipulations stated for in-house installations.

9.3 See LT19H For Special Acceptance Procedure.

9.4 Performance for Acceptance purposes will be demonstrated at the speed specified on the P.O./Const. Req. Unless otherwise specified this will be 11Ø baud.

10.0 Spare Parts

Spare modules necessary for the LT19D:

1	S123*	1	S107*
1	S603*	1	W107
		1	W104

*These modules are already included in the basic processor spare parts list.

Spare modules necessary for the LT19E:

1	R401*	1	W005*
1	S203*	1	W070
		1	w103

*These modules are already included in the basic processor spare parts list.

Spare modules necessary for the LT19F:

Same as LT19E plus:

1 W511

1 W602

10.1 No Special component spares are necessary for the LT19 D, E, F, H system.

10.3 Special mechanical spare parts and tools
10.4 which should be supplied with each optional teletype unit are listed in the PDP-9 Sales Notebook, Section 7.6.

11.0 Preventative Maintenance Procedures

To insure reliable operation of the LT19 D, E, F, H system, standard processor maintenance procedures (for both logic and the teletype units) must be followed. All additional KSR'S, ASR'S, SO'S, or RO'S which are added to the PDP-9 system must follow standard field service maintenance procedures to insure proper operation.

12.0 Set-Up Procedure

12.1 Set up all 11Ø Baud Teletype channels with the required Machine (KSR 33 or 35) and checkout with the current version of the diagnostic (LTØ919).

12.2 Set up all channels with Level Converter options (LT19F) and run the self checking test as directed in the diagnostic addendum, D8CC-DN.

12.3 LT19H Set up. Refer to the spec. LT19H.

12.4 Recommendations for setting up R4Ø1 clocks for each channel.

a. Set up the Transmit clock first since it is free-running.

b. Remove the W7Ø6 Receiver Module, this will allow the receive clock to free run. Set the scope to ALTERNATE Sweep, INT. Trigger, do NOT trigger on CH1. This will allow the pulses from the receive clock to be matched to the transmit clock.

Additional notes for 11Ø Baud Channels. At 11Ø Baud each data bit is 9.09 MS long, this requires the R4Ø1 clock to be set to 4.545 MS rate. There are 11 bits of 9.09 MS in each character, therefore a character is 1ØØ MS long. Since it would be very difficult to measure a clock interval of 4.545 MS on a scope, set up to measure an entire character (100MS). The scope calibration can be easily checked by putting six (6) complete cycles of 60 cycle waveform in exactly 1ØCM. With the scope calibrated to 1ØØ MS, fine tune the R4Ø1 to give 23 clock pulses in 1ØCM (22 clock pulses plus the first pulse of the next character.)

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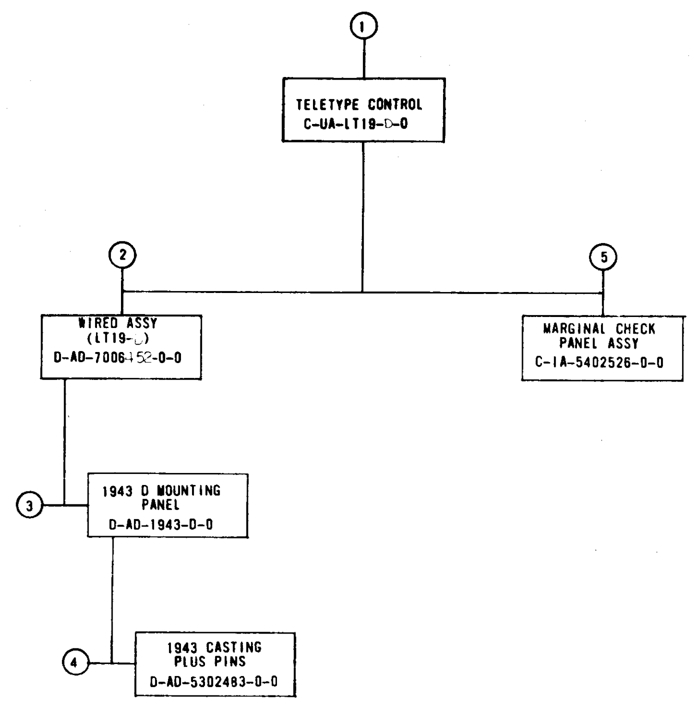


MECHANICAL			DEPT USAGE		
FIND NO	DESCRIPTION	PART NO	PROD	CUST	F/C
1	TELETYPE CONTROL	C-UA-LT19-D-0			
	TELETYPE CONTROL P.L.	A-PL-LT19-D-0			
	PANEL, RIGHT END	C-MD-5302466-0-0			
	I/O CABLE ASSY	D-UA-BC09A-0-0			
	RET BLOCK	B-MD-7406047-0-0			
	4915 TO W07.B CABLE	D-AD-7005286-0-0			
	DATA SET CABLE	C-IA-7005717-0-0			
		A-SP-LT19-D-9			
2	WIRED ASSY (LT19-D)	D-AD-7006452-0-0			
	WIRED ASSY (LT19-D) P.L.	A-PL-7006452-0-0			
3	1943D MOUNTING PANEL	D-AD-1943-D-0			
	1943D MOUNTING PANEL P.L.	A-PL-1943-D-0			
4	1943 CASTING PLUS PINS	D-AD-5302483-0-0			
	1943 CASTING PLUS PINS P.L.	A-PL-5302483-0-0			
	1943 FRAME CASTING	E-MD-1202885-0-0			
5	MARGINAL CHECK PANEL ASSY	C-IA-5402526-0-0			
	MARGINAL CHECK PANEL (P.L.)	A-PL-5402526-0-0			
	PANEL, MARGINAL CHECK	C-MD-5302484-0-0			
	SCOTCHCALS	SS-C-10901			

ELECTRICAL			DEPT USAGE		
FIND NO	DESCRIPTION	PART NO	PROD	CUST	F. C
1	MULTI-STATION TELETYPE CONTROL	A-ML-LT19-D			
	I/O BUS INTERFACE LOGIC	D-BS-LT19-D-1			
	I/O BUS INTERFACE	D-BS-LT19-D-2			
	MODULE UTILIZATION	D-MU-LT19-D-3			
	MODULE UTILIZATION P.L.	A-PL-LT19-D-3			
	WIRE LIST LT19	K-WL-LT19-D-4			
	EXTERNAL COMPONENT LIST	A-CP-LT19-D-5			
	LT19 ENGINEERING SPECIFICATION	A-SP-LT19-D-6			
	-OPTIONS-				
	TELETYPE INTERFACE LT19-E	A-ML-LT19-E			
	TELETYPE CONTROL UNIT CHANNEL 1	D-BS-LT19-E-1			
	TELETYPE CONTROL UNIT CHANNEL 2	D-BS-LT19-E-2			
	TELETYPE CONTROL UNIT CHANNEL 3	D-BS-LT19-E-3			
	TELETYPE CONTROL UNIT CHANNEL 4	D-BS-LT19-E-4			
	TELETYPE CONTROL UNIT CHANNEL 5	D-BS-LT19-E-5			
	TELETYPE INTERFACE LT19-F	A-ML-LT19-F			
	TELETYPE CONTROL UNIT CHANNEL 1	D-BS-LT19-F-1			
	TELETYPE CONTROL UNIT CHANNEL 2	D-BS-LT19-F-2			
	TELETYPE CONTROL UNIT CHANNEL 3	D-BS-LT19-F-3			
	TELETYPE CONTROL UNIT CHANNEL 4	D-BS-LT19-F-4			
	TELETYPE CONTROL UNIT CHANNEL 5	D-BS-LT19-F-5			
	DATA COMMUNICATIONS INTERFACE	A-ML-LT19-H			
	DATA COMMUNICATIONS INTERFACE	A-SP-LT19-H-1			
	DATA COMMUNICATIONS CABLE	C-UA-LT19-H-0			
	ACCEPTANCE PROCEDURE	[illegible]			
2	WIRED ASSY (LT19-D)	D-AD-7006[illegible]-0-0			
5	MOUNTING PANEL 1943	B-CS-1943-0-1			
	MARGINAL CHECK PANEL ASSY	C-IA-5402526-0-0			

REV.	CHANGE NO.	CHK
A	LT19D-00004	

QTY.	DESCRIPTION	PART NO.	ITEM NO.
	PARTS LIST		

FIRST USED ON OPTION/MODEL: PDP-9L

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL —
FINISH —

DRN. R T [illegible] DATE 7/[illegible]/69
CHK'D DATE
ENG. DATE
PROJ ENG. DATE
PROD. D Call DATE 9/11/69

NEXT HIGHER ASSY A-ML-LT19-D

SCALE NONE
SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
DRAWING INDEX LIST LT19

SIZE	CODE	NUMBER	REV
D	DI	LT19-D-7	

DIST. G

DEC FORM NO DRD 102A

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

DATE 7-31-69

TITLE Baud Rate Table

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

Find the BAUD RATE nearest the desired value in the table below. Add the indicated jumper from pin R to pin L,M,N, or P. Add the external resistor (Rx) across pins T and R. Fine tune to the desired frequency by adjusting the internal pot on the R4Ø1.

Note that the table calls out values which give a frequency that is twice the Baud rate, eg., 11Ø Baud uses 1.2K for Rx and pins R to L, which gives a frequency of 22Ø CPS. The double frequency is required by the W7Ø6/W7Ø7 which divides the clock by 2.

Some examples of common Baud rates are:

11Ø Baud - Jumper Pin R to L Rx = 1.2K
2ØØØ Baud - Jumper Pin R to M Rx = 75Ø
24ØØ Baud - Jumper Pin R to M Rx = 47Ø
11ØØØ Baud - Jumper Pin R to N Rx = 3.3K
3ØØØØ Baud - Jumper Pin R to P Rx = open

Values of Rx	Jumper Pin R to one of the following pins on the R4Ø1 Modules (pins L, M, N or P are designated as Pin(X) on the prints)			
	L	M	N	P
470	155 - 151	227Ø-24ØØ	22.7K-24K	
560	146 - 155	215Ø-2265	21.5K-22.6K	
680	137 - 146	2Ø1Ø-215Ø	20.1K-21.5K	
750	133 - 142	191Ø-2Ø84	19.1K-20.84K	
1K	116 - 146	171Ø-191Ø	17.1K-19.1K	
1.2K	1Ø6 - 122	156Ø-1795	15.6K-17.95K	
3.3K	59 - 1Ø6	86Ø-1297	8.6K-12.97K	
Open		159- 86Ø	1.59K-8.6K	18.6K - 98K

Note that the above values are for design center values, with 10% capacitor and resistor tolerances other values of Rx may be required, and may be used. Use the lowest value of Rx which allows adjustment to the required frequency.

ENG	APPD	SIZE	CODE	NUMBER	REV
Ralph Dieter		A	CP	LT19-D-8	

DEC FORM NO. DRA 107A

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 3/23/71

TITLE ACCEPTANCE PROCEDURE FOR THE LT19DE,F,H MULTI STATION TTY CONTROL

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
K. Wiet		A	SP	LT19-D-9	

DEC FORM NO. DRA 107

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE

accepting the LT19D Control and Multi-Station channels in order to insure their quality.

A. Make a visual inspection of the LT19D Control and associated wiring. Insure that:

1. There are no loose connections or wires.
2. All modules are properly seated.
3. All margin switches are in the fixed position (down)
4. There is a device connected properly to each LT19E or F channel.

B. Apply power to the system by turning on the PDP-15.

C. Load the LT19 diagnostic, Maindec-15-D8CB

D. Run the diagnostic in accordance with the instructions found in Maindec 15-D8CB-D. Each channel must be exercised, and the outputs of TTY checked by the operator to insure proper operation.

E. Run the diagnostic under voltage margins. Appendix III contains instructions and required margins for LT19.

F. When margins have been completed, run at least (2) two complete passes of the LT19 Diagnostic, using the Diagnostic Write-ups as a reference. Insure LT19 runs on both API and PI (switch options on LT19 Diagnostic). IF option is add on it must be checked out on a system with API.

IF the LT19H option is included, the following steps shall be performed:

G. Insert one end of LT19H cable (length A,B,C,D, or E) under channel being tested. Insert the other end of cable in unused slot A32.

H. Install jumper between pins A32E and A32F.

I. Run LT09C option Echo Test, as per instruction, in Maindec-15-D8CB-D page 16.

At the completion of this step, the acceptance will be complete except for insuring the LT19 is touched up properly and all paperwork and shipping tags are completed.

Refer to Appendix II for a paper work summary checklist.

	SIZE	CODE	NUMBER	REV
	A	SP	LT19-D-9	

DEC FORM NO 16-1022 DRA 108

SHEET 3 OF 6

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE

I SCOPE:

The following steps will be followed to accept the LT19D Multi-Station Teletype Control, associated LT19E or F channels and the LT19H option.

II PRELIMINARY CHECKS:

The following items will be checked on the LT19D Multi-Station Control and LT19E or F channels before acceptance can begin.

A. Test and inspection record envelope will be with the control

B. The ECO status sheet will be updated and the control will contain the latest ECO's.

C. The QC Inspection Report will be filled out and all calls corrected.

D. A corrected key sheet will contain the serial number of the LT19D.

E. The LT19D Control and LT19E channels will be ready to ship i.e., all cables will be dressed only final touch up will remain to be done.

F. The construction requisition will be checked to insure that the control and channels are the exact configuration ordered by the customer.

III HARDWARE AND SOFTWARE

Refer to appendix I for a complete list of necessary hardware and software.

IV TEST PROCEDURE

A. One PDP-15 with:

1. API
2. [illegible]
3. Bar In Voltage Supply

V TEST SOFTWARE:

A. LT19 Diagnostic Maindec-15-D8CB-PB
Maindec-15-D8CB-D

VI PROCEDURES

The purpose of this section is to give a step by step method of

	SIZE	CODE	NUMBER	REV
	A	SP	LT19-D-9	

DEC FORM NO 16-1022 DRA 108

SHEET 4 OF 6

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE

APPENDIX I

LT19 HARDWARE CHECKLIST

ECO NUMBER_____ LT19 SERIAL NUMBER_____

CUSTOMER NAME:_____

A. (1) One set LT19D prints
B. (1) One set LT19E prints (if required)
C. (1) One set LT19F prints (if required)
D. (1) One LT19 Maintenance Manual
E. (1) One Maindec-15-D8CB-PB
F. (1) One Maindec-15-D8CB-D
G. (2) Two I/O Bus Cable BC08A (70-11818)
H. (1) One Remote Power cord (70-08138)
I. (1) One LT19H cable (if required)

1.	LT19HA	70-09891-1	50' cable
2.	LT19HB	70-09891-2	100' cable
3.	LT19HC	70-09891-3	150' cable
4.	LT19HD	70-09891-4	200' cable
5.	LT19HE	70-09891-5	250' cable

	SIZE	CODE	NUMBER	REV
	A	SP	LT19-D-9	

DEC FORM NO 16-1022 DRA 108

SHEET 5 OF 6

APPENDIX II

SUMMARY CHECKLIST:

A. Q.C. Envelope shall contain:

1. Key Sheets
2. ECO Status Sheets (blue copy)
3. Waiver (yellow copy)
4. Margin Sheets (yellow copy)
5. Construction Requisition
6. Assorted other paperwork

B. Customer Envelope should contain:

1. Copy of Key Sheet
2. Pink copy of ECO Status
3. Pink copy of Margin Sheets
4. Customer Acceptance Forms

C. Attached to Log

1. Key Sheet
2. ECO Status (white copy)
3. Margin Sheets (white copy)

APPENDIX III

LT19 MARGINS

A. Each LT19 D,E,F,H unit will be tested under Marginal Voltage conditions

B. Use Maindec-19-D2CB-PB.

C. Run-15V Margins on rack A and B together. When complete run C and D together. Racks may be run seperately for +10V Margins.

Refer to the chart below for required margins.

TEST #	Aggravation Conditions	+10V	-15V	
1	Margin LT19 Rack A	± 6V	±2.5V	-15V do A + B together
2	Margin LT19 Rack B	± 6V	±2.5V	
3	Margin LT19 Rack C	± 6V	±2.5V	
4.	Margin LT19 Rack D	± 6V	±2.5V	-15V do C + D together

MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
A-ML-LT19-D	REF	1	MULTI-STATION TELETYPE CONTROL
D-BS-LT19-E-1	B	1	TELETYPE CONTROL UNIT CHANNEL 1
D-BS-LT19-E-2	B	1	TELETYPE CONTROL UNIT CHANNEL 2
D-BS-LT19-E-3	B	1	TELETYPE CONTROL UNIT CHANNEL 3
D-BS-LT19-E-4	B	1	TELETYPE CONTROL UNIT CHANNEL 4
D-BS-LT19-E-5	B	1	TELETYPE CONTROL UNIT CHANNEL 5

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	12/69	LT19D-1	R.D.
B	7/70	LT19D-2	R.D.

DRN	J. FERGUSON	DATE 7/30/69
CHK'D	AL PFYFFER	DATE 8/12/69
ENG.		DATE
PROJ. ENG.		DATE
PROD.	R.L. Call	DATE 9/11/69
FIRST USED ON	LT19-D	
SCALE		
SHEET	1 OF 1	

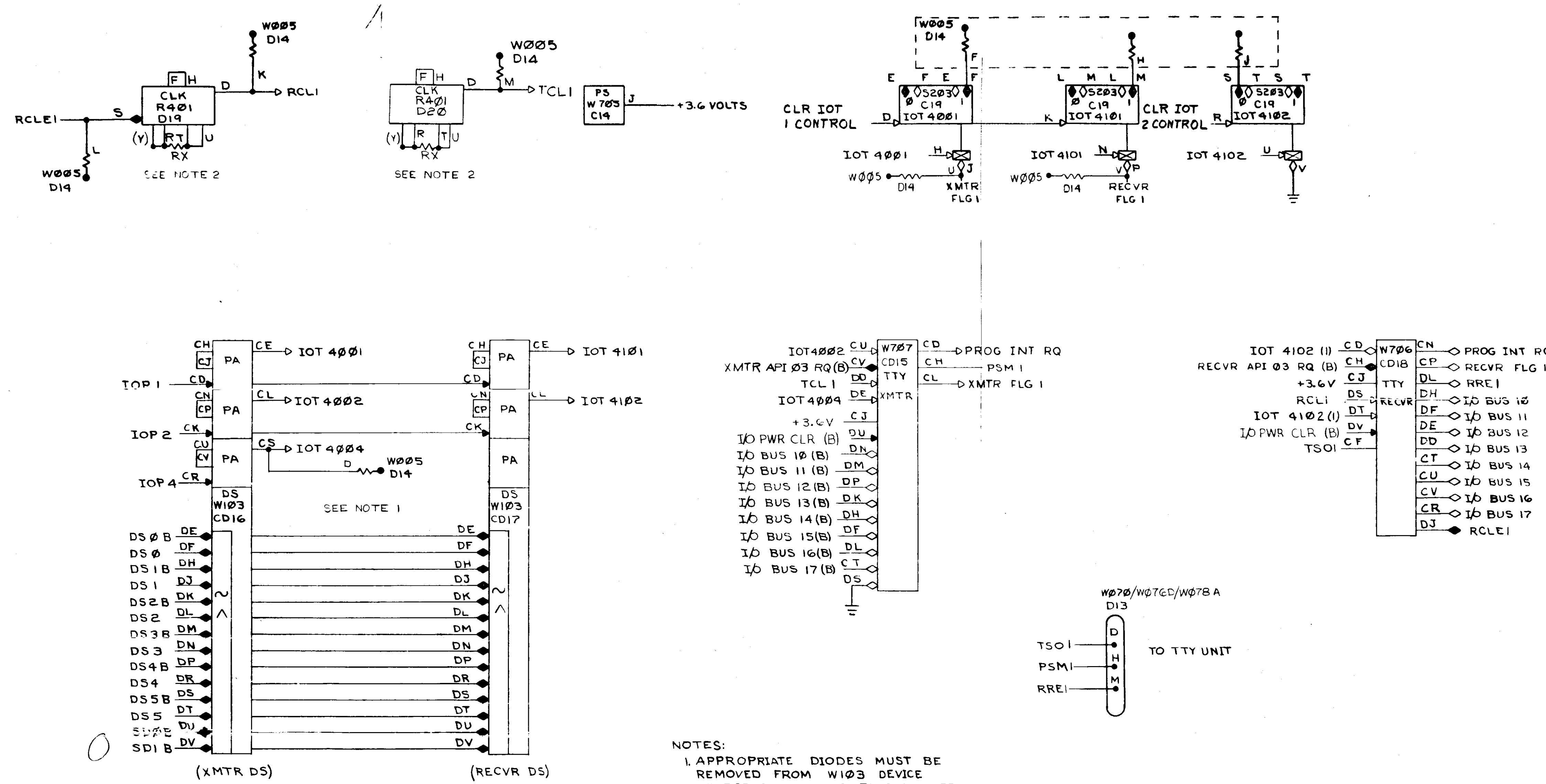
digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE: TELETYPE INTERFACE LT19-E

SIZE	CODE	NUMBER	REV.
A	ML	LT19-E	B

DIST.

DEC FORM NO. DRA 103



NOTES:
1. APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.
2. SEE BAUDRATE TABLE (DWG# A-CP-LT19-D-8) FOR SELECTION OF EXTERNAL RESISTOR (RX) AND TIMING CAPACITOR JUMPER PIN (Y).

FIRST USED ON OPTION/MODEL: LT19-D

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES: DECIMALS ±.005, FRACTIONS ±1/64, ANGLES ±0°30'. FINAL SURFACE QUALITY. REMOVE BURRS AND BREAK SHARP CORNERS.

NEXT HIGHER ASSY: A-ML-LT19-E

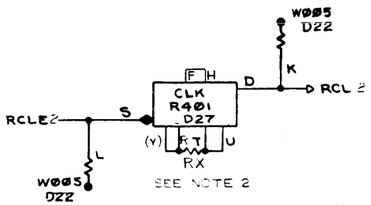
DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

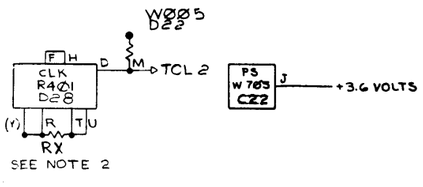
TITLE: TTY CONTROL UNIT CHANNEL 1

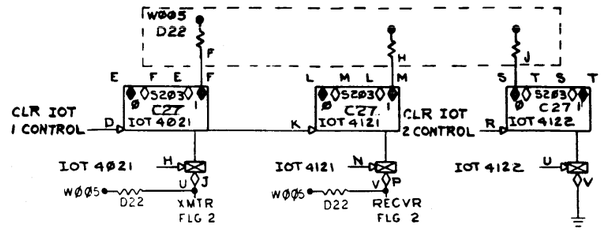
SIZE D, CODE BS, NUMBER LT19-E-1, REV. B

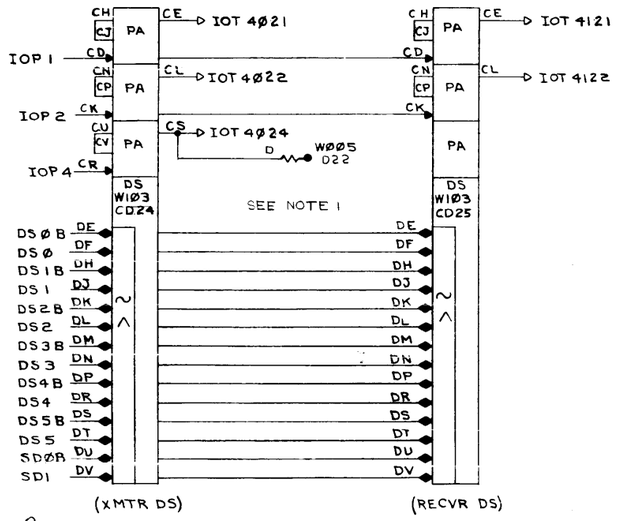
SCALE — SHEET 1 OF 1

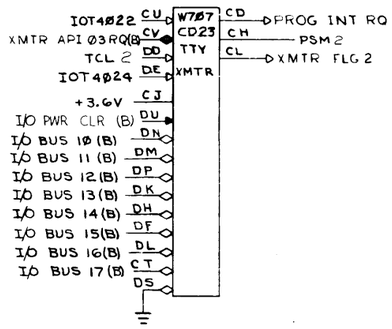
DEC FORM NO DRD 102

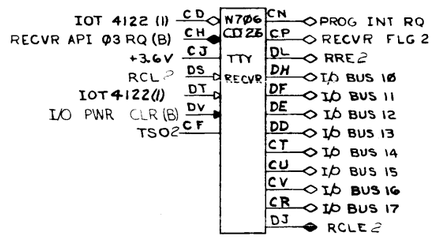


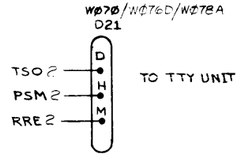












NOTES:
1. APPROPRIATE DIODES MUST BE REMOVED FROM WIØ3 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.
2. SEE BAUD RATE TABLE FOR SELECTION OF EXTERNAL RESISTOR (RX) AND TIMING CAPACITOR JUMPER PIN (Y). (A-CP-LT19-D-8)

REVISIONS			
CHK	CHANGE NO	REV	
RK	[illegible]	A	
FV	LT19D 00002	B	

DRAWN [illegible] DIETER
CHECKED [illegible]
ENGINEER [illegible] DIETER
PROJ. ENG. [illegible]
PROD. [illegible]

FIRST USED ON OPTION/MODEL: LT19-D

PARTS LIST

QTY.	DESCRIPTION	PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY 7
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN. DATE
CHK'D DATE
ENG. DATE
PROJ. ENG. DATE 7-10-67
PROD. [illegible] DATE 8/11/69

NEXT HIGHER ASSY: A-ML-LT19-E

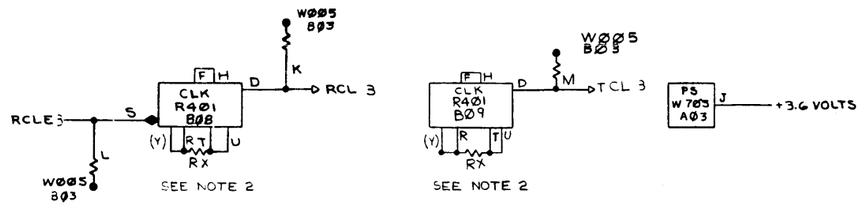
SCALE
SHEET 1 OF 1

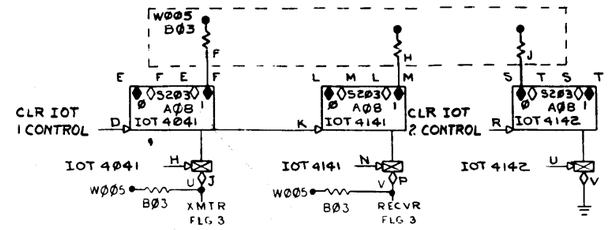
EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

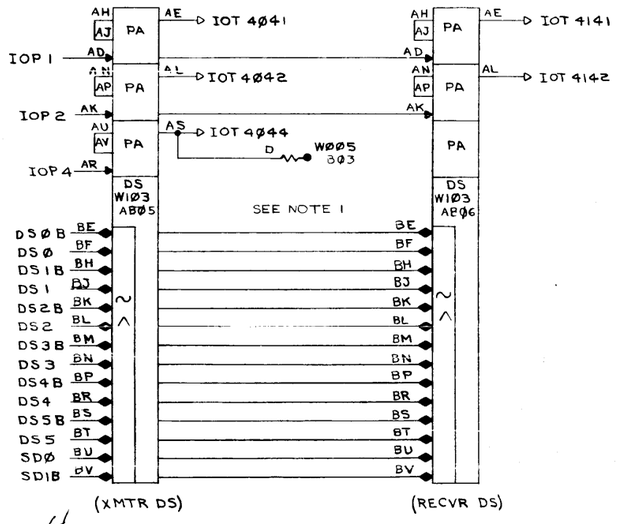
TITLE: TTY CONTROL UNIT CHANNEL 2

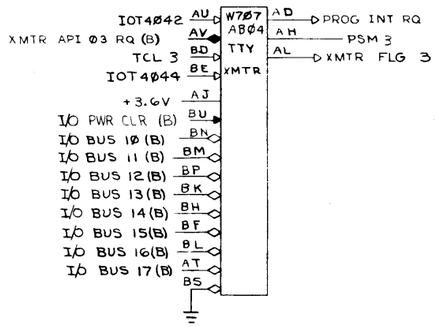
SIZE D | CODE DBS | NUMBER LT19-E-2 | REV. B

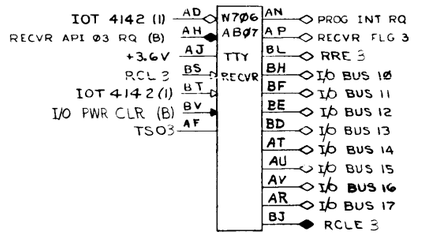
DIST.

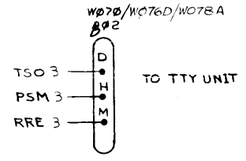












NOTES:
1. APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.
2. SEE BAUDRATE TABLE FOR SELECTION OF EXTERNAL RESISTOR (RX) AND TIMING CAPACITOR, JUMPER, PIN (Y). (A-CP-LT19-D-8)

REVISIONS			
REV	CHANGE NO		CHK
A	LT19D 00001	Dit TLR	
B	LT19D 00002	DIETER	

FIRST USED ON OPTION/MODEL	QTY	DESCRIPTION	PART NO.	ITEM NO.
LT19-D		PARTS LIST		

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN. DATE 2-69
CHK'D DATE
ENG. DATE
PROJ. LDR. DATE
PROD. DATE 7/11/69

NEXT HIGHER ASSY
A-ML-LT19-E

SCALE
SHEET 1 OF 1

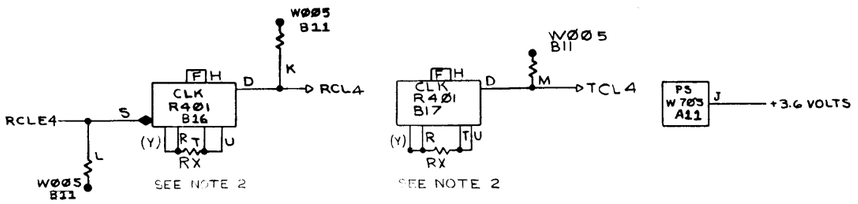
EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

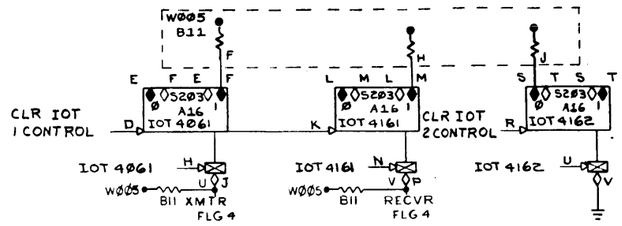
TITLE
TTY CONTROL
UNIT
CHANNEL 3

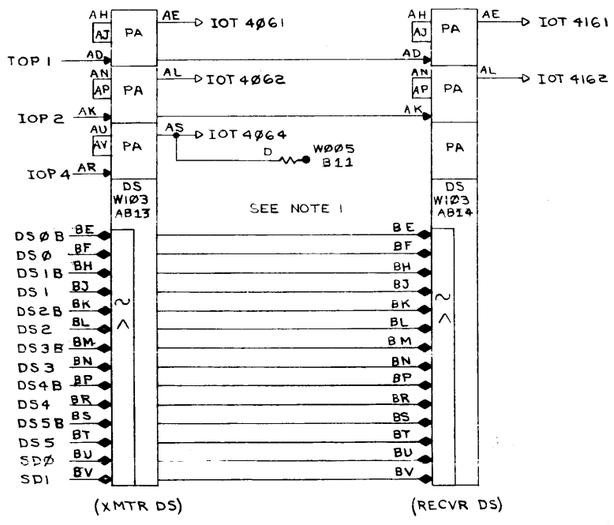
SIZE D | CODE DBS | NUMBER LT19-E-3 | REV. B

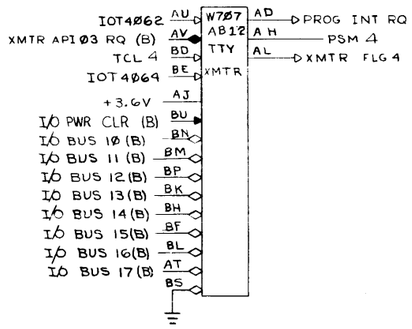
DIST.

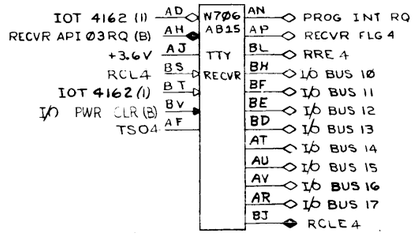
DATE CODE DBS | NUMBER LT19-E-3 | REV B

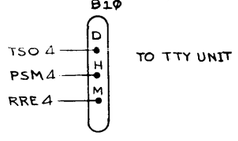












NOTES:
1. APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.
2. SEE BAUD RATE TABLE FOR SELECTION OF EXTERNAL RESISTOR (RX) AND TIMING CAPACITOR JUMPER PIN (Y). (A-CP-LT19-D-8

6

REVISIONS	REV.	CHANGE NO.	CHK
	A		
	B	T90-00002	

DILTER

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-D		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY ✓ REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL
FINISH

		DATE
DRN.		5/5/69
CHK'D.		
ENG.		
PROJ. ENG.		
PROD.	D Hall	5/16/69

NEXT HIGHER ASSY: A-ML-LT19-E
SCALE
SHEET 1 OF 1

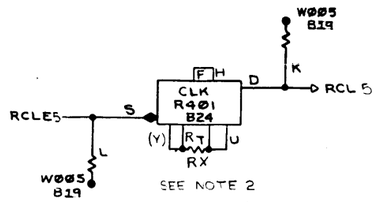
EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

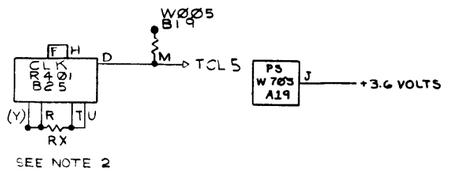
TITLE: TTY CONTROL UNIT CHANNEL 4

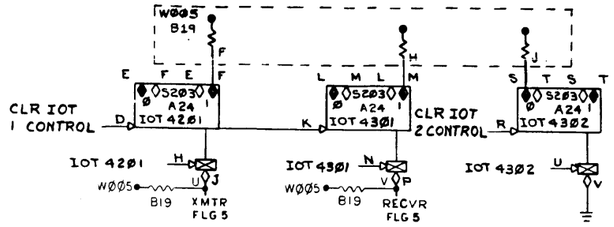
SIZE	CODE	NUMBER	REV.
D	BS	LT19-E-4	B

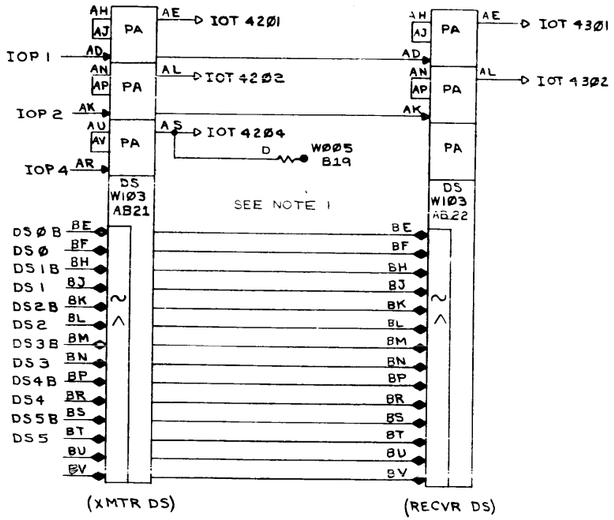
DIST.

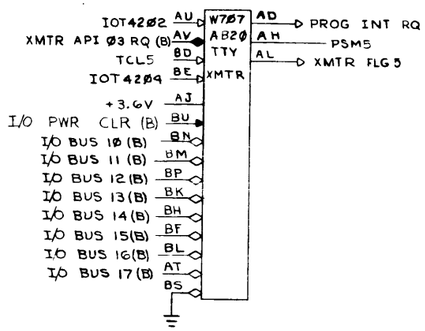
DEC FORM NO BRD 102

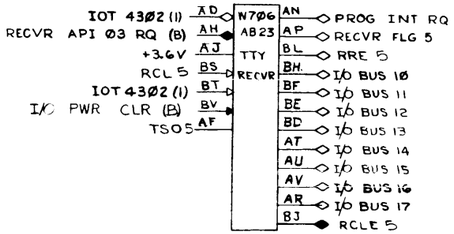


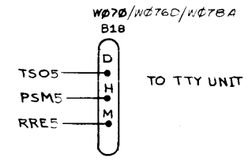












NOTES:

1. APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES. IOT DEVICE SELECTION CODES ARE OPTIONALLY ASSIGNABLE FROM STANDARD PDP-9 DESIGNATION LIST. (SEE LT19-D FOR ASSIGNABLE LISTING)
   SUB DEVICE SELECTION CODE IS NOT ASSIGNED TO THIS UNIT AND MUST BE JUMPERED IN IF REQUIRED.
2. SEE BAUDRATE TABLE FOR SELECTION OF EXTERNAL RESISTOR (RX) AND TIMING CAPACITOR JUMPER PIN (Y) (A-CP-LT19-D-E)

REVISIONS

REV	CHANGE NO.	CHK.
A	LT19 0001	
B	LT19 0002	

DEC FORM NO. DPD 102

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-D		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY ✓
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN.	Ferguson	DATE 7-24-69
CHK'D		DATE
ENG.		DATE
PROJ. ENG.		DATE
PROD.		DATE 9/10/69

NEXT HIGHER ASSY: A-ML-LT19-E

SCALE

SHEET 1 OF 1

EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE: TTY CONTROL UNIT CHANNEL 5

SIZE	CODE	NUMBER	REV.
D	BS	LT19-E-5	E

DIST.

LT19-E-5

MASTER DRAWING LIST

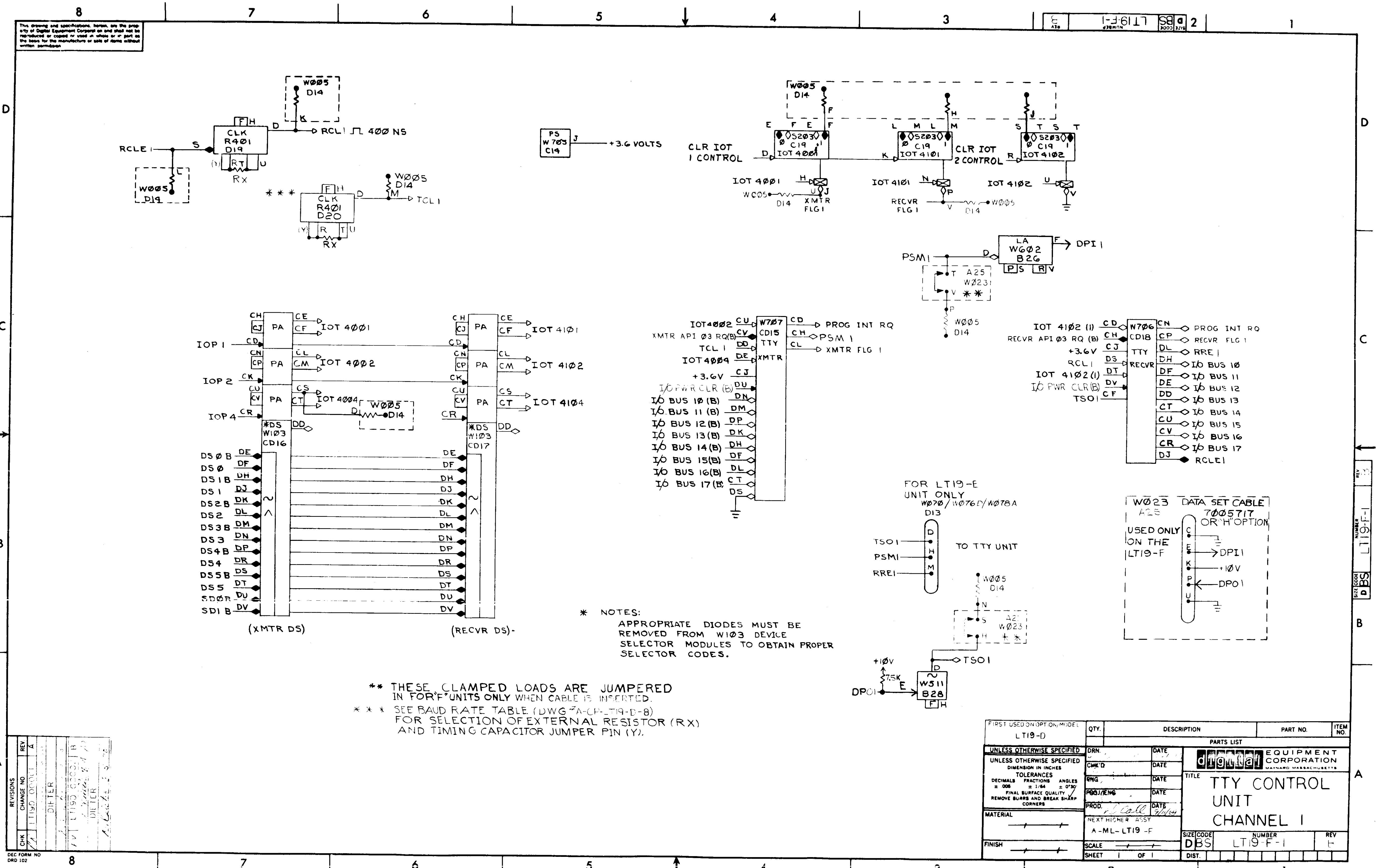
DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
A-ML-LT19-D	REF	1	MULTI-STATION TELETYPE CONTROL
D-BS-LT19-F-1		1	TELETYPE CONTROL UNIT CHANNEL 1
D-BS-LT19-F-2		1	TELETYPE CONTROL UNIT CHANNEL 2
D-BS-LT19-F-3		1	TELETYPE CONTROL UNIT CHANNEL 3
D-BS-LT19-F-4		1	TELETYPE CONTROL UNIT CHANNEL 4
D-BS-LT19-F-5		1	TELETYPE CONTROL UNIT CHANNEL 5

NOT USED

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	12/69	LT19D-1	R.D.
B	7/70	LT19D-2	R.D.

DRN. J. FERGUSON	DATE 8/6/69	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D AL PFYFFER	DATE 8/12/69	
ENG.	DATE	TITLE TELETYPE INTERFACE LT19-F
PROJ. ENG.	DATE	
PROD. L Coll	DATE 9/11/69	
FIRST USED ON LT19-D		SIZE A / CODE MI. / NUMBER LT19-F / REV. B
SCALE		
SHEET 1 OF 1		DIST.

DEC FORM NO. DRA 103



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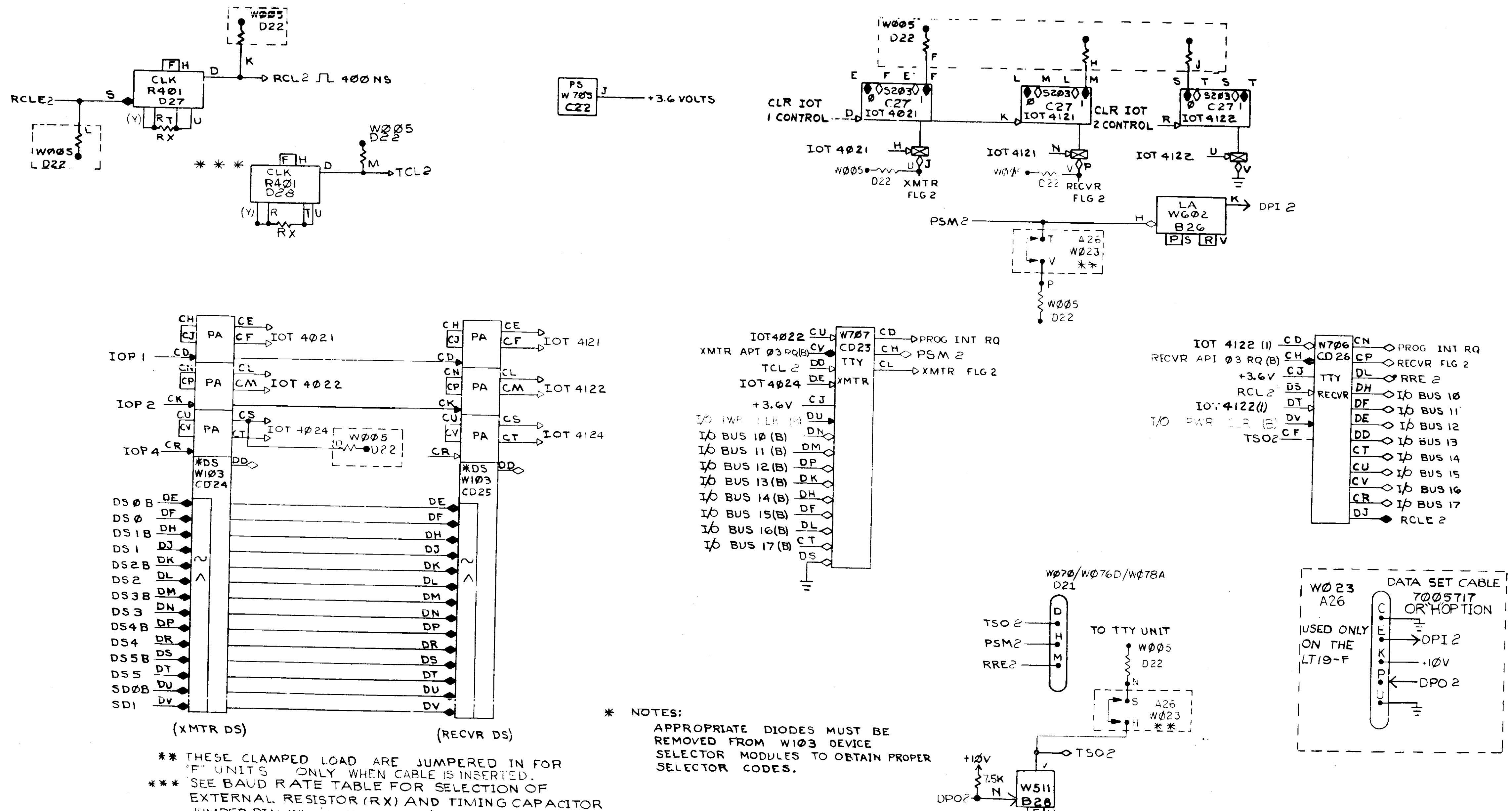
RCLE 1
CLK R401 D19
RCL1 400 NS
W005 D14
W005 D19
Rx
* * *
CLK R401 D20
TCL 1
PS W705 C14
+3.6 VOLTS
CLR IOT 1 CONTROL
S203 C19 IOT 4001
S203 C19 IOT 4101
CLR IOT 2 CONTROL
S203 C19 IOT 4102
IOT 4001
XMTR FLG 1
IOT 4101
RECVR FLG 1
IOT 4102
LA W602 B26
DPI 1
PSM 1
A25 W023 **
IOP 1
IOP 2
IOP 4
IOT 4001
IOT 4002
IOT 4004
IOT 4101
IOT 4102
IOT 4104
*DS W103 CD16
*DS W103 CD17
DS0 B
DS0
DS1 B
DS1
DS2 B
DS2
DS3 B
DS3
DS4 B
DS4
DS5 B
DS5
SD0R
SD1 B
(XMTR DS)
(RECVR DS)
W707 CD15 TTY XMTR
IOT 4002
XMTR API 03 RQ(B)
TCL 1
IOT 4004
+3.6V
I/O PWR CLR (B)
I/O BUS 10 (B)
I/O BUS 11 (B)
I/O BUS 12 (B)
I/O BUS 13 (B)
I/O BUS 14 (B)
I/O BUS 15 (B)
I/O BUS 16 (B)
I/O BUS 17 (B)
PROG INT RQ
PSM 1
XMTR FLG 1
W706 CD18 TTY RECVR
IOT 4102 (1)
RECVR API 03 RQ (B)
+3.6V
RCL 1
IOT 4102 (1)
I/O PWR CLR (B)
TSO 1
PROG INT RQ
RECVR FLG 1
RRE 1
I/O BUS 10
I/O BUS 11
I/O BUS 12
I/O BUS 13
I/O BUS 14
I/O BUS 15
I/O BUS 16
I/O BUS 17
RCLE 1
FOR LT19-E UNIT ONLY
W070 / W076Y/ W078A D13
TSO 1
PSM 1
RRE 1
TO TTY UNIT
W023 A25
DATA SET CABLE 7005717 OR "H" OPTION
USED ONLY ON THE LT19-F
DPI 1
+10V
DPO 1
A25 W023
TSO 1
+10V
7.5K
DPO 1
W511 B28
* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.
** THESE CLAMPED LOADS ARE JUMPERED IN FOR "F" UNITS ONLY WHEN CABLE IS INSERTED.
* * * SEE BAUD RATE TABLE (DWG # A-CP-LT19-D-8) FOR SELECTION OF EXTERNAL RESISTOR (RX) AND TIMING CAPACITOR JUMPER PIN (Y).
FIRST USED ON OPTION/MODEL LT19-D
QTY. DESCRIPTION PART NO. ITEM NO.
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS ±.005 FRACTIONS ±1/64 ANGLES ±0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS
MATERIAL
FINISH
DRN. DATE
CHK'D DATE
ENG DATE
PROJ/ENG DATE
PROD. DATE
NEXT HIGHER ASSY A-ML-LT19-F
SCALE
SHEET 1 OF 1
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
TITLE TTY CONTROL UNIT CHANNEL 1
SIZE D CODE BS NUMBER LT19-F-1 REV
DIST.
REVISIONS
REV CHANGE NO CHK
LT19D OPTION
DIFFER
DEC FORM NO DRD 102



* NOTES:

APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

** THESE CLAMPED LOAD ARE JUMPERED IN FOR "F" UNITS ONLY WHEN CABLE IS INSERTED.

*** SEE BAUD RATE TABLE FOR SELECTION OF EXTERNAL RESISTOR (RX) AND TIMING CAPACITOR JUMPER PIN (Y). (A-CP-LT19-D-8)

FIRST USED ON OPTION/MODEL: LT19-D

NEXT HIGHER ASSY: A-ML-LT19-F

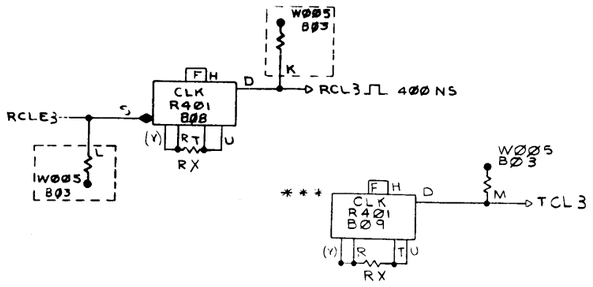
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES: DECIMALS ±.005, FRACTIONS ±1/64, ANGLES ±0°30'. FINAL SURFACE QUALITY. REMOVE BURRS AND BREAK SHARP CORNERS.

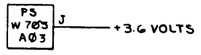
DIGITAL EQUIPMENT CORPORATION, MAYNARD MASSACHUSETTS

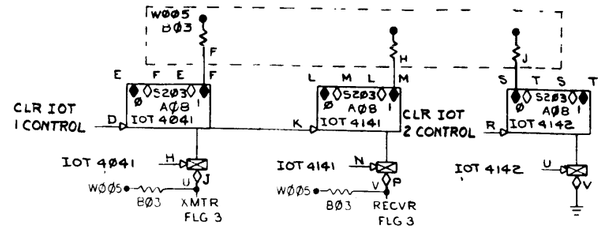
TITLE: TTY CONTROL UNIT CHANNEL 2

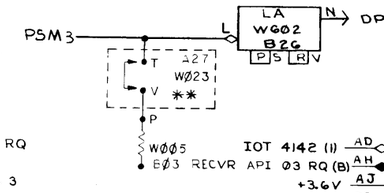
SIZE: D CODE: BS NUMBER: LT19-F-2

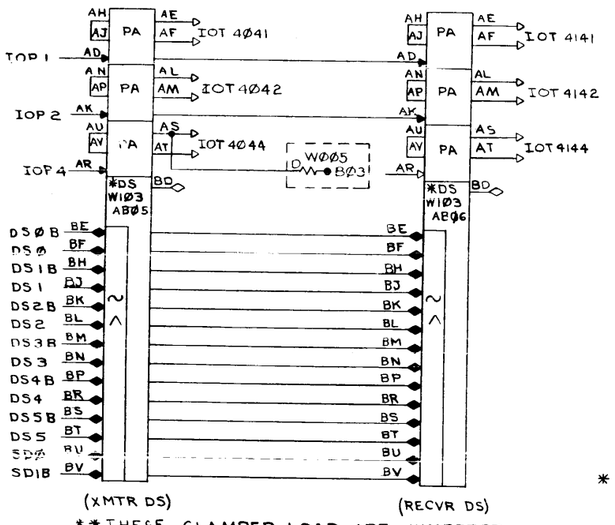
SHEET 1 OF 1





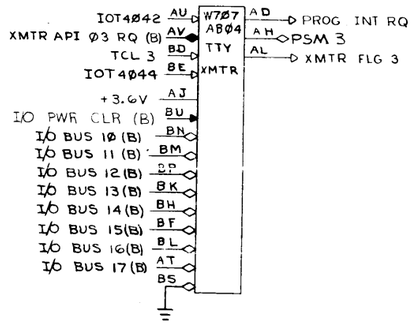


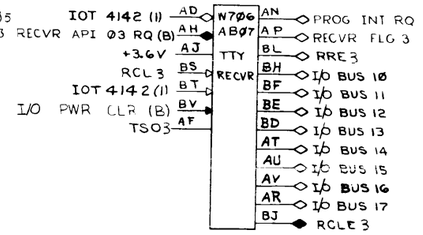


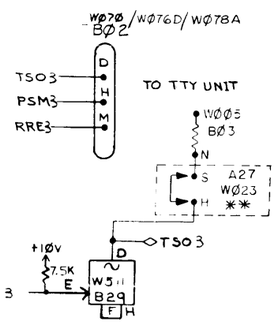


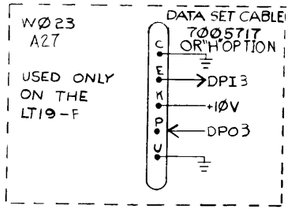
** THESE CLAMPED LOAD ARE JUMPERED IN FOR "F" UNITS ONLY WHEN CABLE IS INSERTED.

*** SEE BAUD RATE TABLE FOR SELECTION OF EXTERNAL RESISTOR (RX) AND TIMING CAPACITOR, JUMPER, PIN (Y). (A-CP-LT19-D-B)









* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

REVISIONS			
CHK	CHANGE NO	REV	
	LT19-0001	A	
	LT19-0002	B	

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-D		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY / REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN. DATE
CHK'D DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE 9/1/69

NEXT HIGHER ASSY A-ML-LT19-F

SCALE

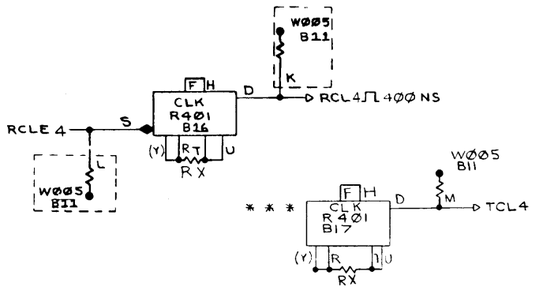
SHEET 1 OF 1

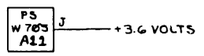
EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

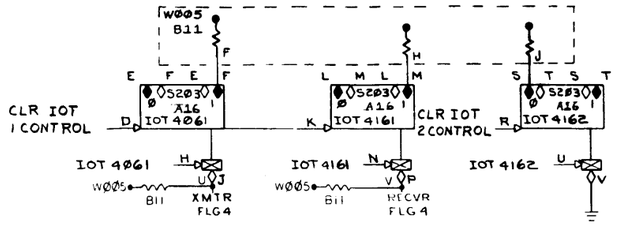
TITLE TTY CONTROL UNIT CHANNEL 3

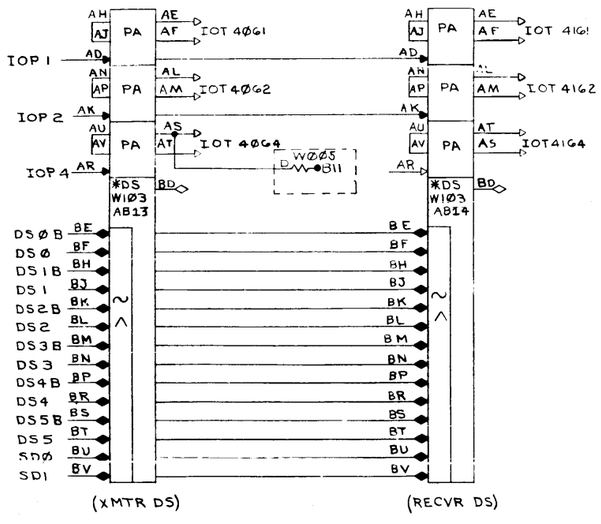
SIZE CODE D BS | NUMBER LT19-F-3 | REV. B

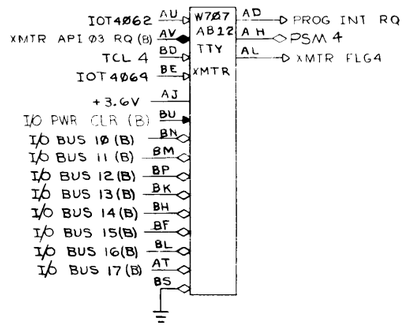
DIST.

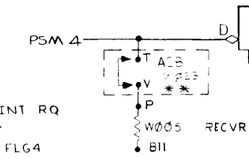


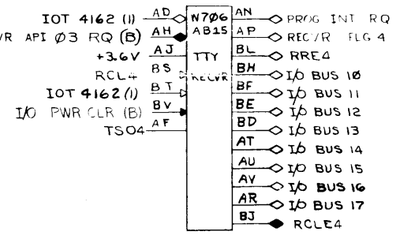


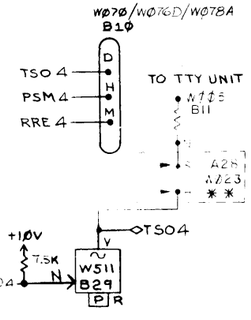


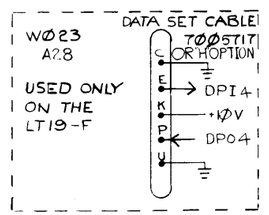












* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES.

** THESE CLAMPED LOAD ARE JUMPERED IN FOR 'F' UNITS ONLY WHEN CARD IS INSERTED.

*** SEE BAUD RATE TABLE FOR SELECTION OF EXTERNAL RESISTOR (RX) AND TIMING CAPACITOR, JUMPER, PIN (Y). A-CP-LT19-D-8)

REVISIONS	REV
CHANGE NO	
CHK	

DEC FORM NO DRD 102

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-D		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY / REMOVE BURRS AND BREAK SHARP CORNERS
MATERIAL
FINISH

DRN.	DATE
CHK'D	DATE
ENG.	DATE
PHO./ENG.	DATE
PROD. L. Cole	DATE 9/11/69
NEXT HIGHER ASSY	A-ML-LT19-F
SCALE	
SHEET 1 OF 1	

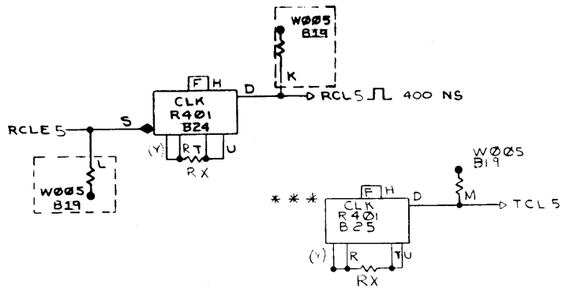
DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

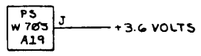
TITLE: TTY CONTROL UNIT CHANNEL 4

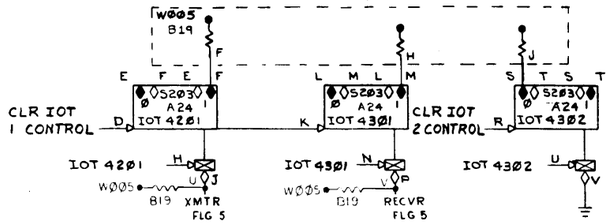
SIZE	CODE	NUMBER	REV.
D	BS	LT19-F-4	F

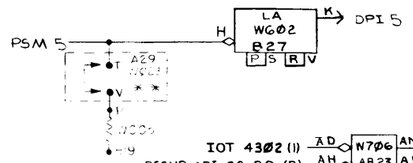
DIST.

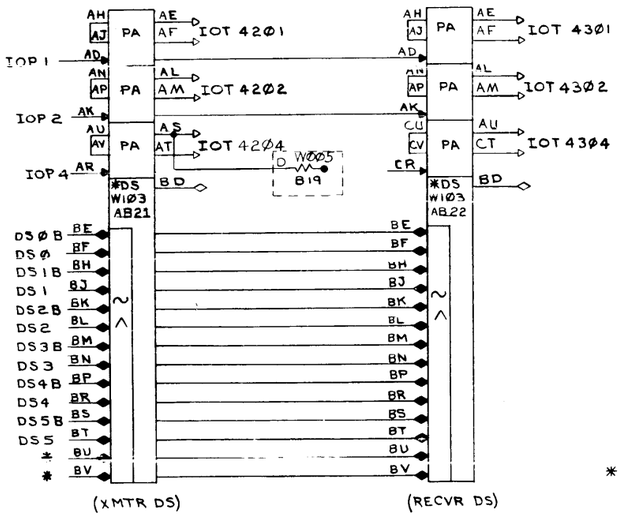
LT19-F-4

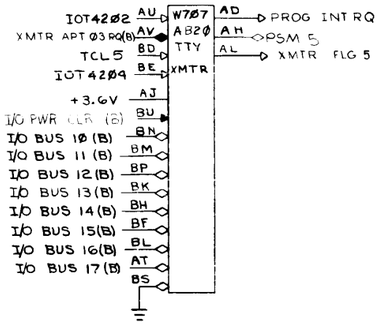


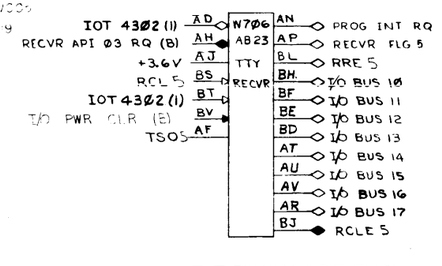


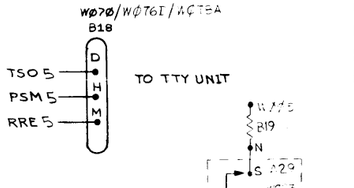


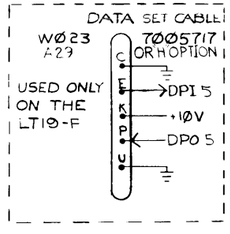












* NOTES:
APPROPRIATE DIODES MUST BE REMOVED FROM W103 DEVICE SELECTOR MODULES TO OBTAIN PROPER SELECTOR CODES. IOT DEVICE SELECTION CODES ARE OPTIONALLY ASSIGNABLE FROM STANDARD PDP-9 DESIGNATION LIST. (SEE LT19-D FOR ASSIGNABLE LISTING)
SUB DEVICE SELECTION CODE IS NOT ASSIGNED TO THIS UNIT AND MUST BE JUMPERED IN IF REQUIRED.

** THESE CLAMPED LOAD ARE JUMPERED IN FOR 'F UNIT ONLY WHEN [illegible]

*** SEE BAUD RATE TABLE FOR SELECTION OF EXTERNAL RESISTOR(RX) AND TIMING CAPACITOR, JUMPER, PIN(Y). (A-CP-LT19-D-8)

REVISIONS	REV.	CHANGE NO	CHK
[illegible]	1	1	

FIRST USED ON OPT ON/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
LT19-D		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY √
REMOVE BURRS AND BREAK SHARP CORNERS
MATERIAL
FINISH

DRN		DATE
CHK'D		DATE
ENG		DATE
PROJ MGR		DATE
PROD	[illegible]	DATE 5/11/65
NEXT HIGHER ASSY	A-ML-LT19-F	
SCALE		
SHEET	1 OF 1	

EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE: TTY CONTROL UNIT CHANNEL 5

SIZE	CODE	NUMBER	REV.
D	BS	LT19-F-5	

DIST.

DEC FORM NO. D9D 102

REV 11 | NUMBER LT19-F-5 | SIZE CODE D BS | B

MASTER DRAWING LIST

DWG. NO.	REV. LET.	NO. OF SHEETS	TITLE
C-IA-7005891-0-0	B	1	DATA COMMUNICATIONS CABLE
A-SP-LT19-H-1	B	4	DATA COMMUNICATIONS INTERFACE LT19H

REVISIONS			
REV.	DATE	CHG. NO.	APP'D.
A	12/69	LT19D-1	R.D.
B	12/69	LT19H-1	R.D.
C	7/70	LT19D-2	R.D.
D	6/71	00002	R.D.

DRN.	FERGUSON	DATE 8/5/69
CHK'D.	PFYFFER	DATE 8/12/69
ENG.		DATE 9-11-69
PROJ. ENG.		DATE 9/6/69
PROD		DATE 9/11/69
FIRST USED ON	LT19-D	
SCALE	3/4	
SHEET	1 OF 1	

digital EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE

DATA COMMUNICATIONS INTERFACE

SIZE	CODE	NUMBER	REV.
A	ML	LT19-H	D

DIST.

DEC FORM NO. DRA 103

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 9-3-69

TITLE Data Communications Interface - LT19H

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	———	LT19D-00001	———	1-6-70	DIETER	1-6-70
B	———	LT19D-00002	———	8-4-70	KO	8-5-70

The LT19H consists of a special cable and a method of providing low-cost data communications between a PDP-9 and a PDP-8 or another PDP-9

ENG	APPD	SIZE	CODE	NUMBER	REV
R. DIETER	K. Dieter	A	SP	LT19-H-1	B

DEC FORM NO
DRA 108

SHEET 1 OF 4

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE Data Communications Interface - LT19H

1.0 LT19 Data Communications (Type LT19H)
The LT19H is primarily a special cable which, when added to the LT19F (Level Converter option), provides communications capability with another LT19H (for PDP-9) or PTØ8F (for PDP-8).

1.1 The timing and operational characteristics for the LT19E and F also apply to the LT19H.

1.2 The option designation suffix letter defines the data communications cable length:

7005891-1	=	LT19-HA	50' Cable
" " -2	=	LT19-HB	100' Cable
" " -3	=	LT19-HC	150' Cable
" " -4	=	LT19-HD	200' Cable
7005891-5	=	LT19-HE	250' Cable

1.3 In operation the LT19H appears to its control to be an EIA level device, e.g. a DataPhone.

1.4 The LT19H plugs into slots in the LT19D and has as prerequisites, the LT19E and F. The specifications for the LT19 D, E, & F also apply to the LT19H.

1.5 There are two independent communications channels in each LT19H. In each link the transmitt and receive Baud rates must be identical.

	SIZE	CODE	NUMBER	REV
	A	SP	LT19-H-1	B

DEC FORM NO
DRA 108

SHEET 2 OF 4

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE Data Communications Interface - LT19H

2.0 There is no vendor supplied equipment for the LT19H

3.0
7.0 Same as specfication for LT19D

8.0 Checkout Test Procedure

The LT19H will be checked out in two parts. Part one is to check each channel as an LT19F (EIA Level Converter) with output jumpered to input and program run according to procedures in Maindec - 09-D8CC-DN (Addendum to LTØ9/LT19 Diagnostic). See LT19D Eng. Spec. Section 8.0. Part two is to insert one end of the LT19H Cable (length A, B, C, D, or E) in appropriate output slot for the channel being tested then insert the other end into the matched slot at A32. Remove the output to input jumper used in part one and install between pins A32E and A32P, rerun tests as in part one.
Perform parts one and two for each LT19H channel using the Baud rates called for in the purchase order.Const. Req.

9.0 Acceptance Test Procedure
The Acceptance Test operator must successfully rerun the Checkout Test Procedures stated in Section 8.
The following documents and tapes are required for acceptance:

a. Maindec-9A-D8CS-PH Program Tape
b. Maindec-9A-D8CC-D Write-up
c. Maindec-Ø9-D8CC-DN Addendum

9.1 The purpose of the LT19H is to send/receive data to another LT19H or PTØ8F, since the other device (LT19H or PTØ8F) will rarely be available at the time of checkout the Acceptance of the LT19H must be performed on a "stand alone" basis.

	SIZE	CODE	NUMBER	REV
	A	SP	LT19-H-1	B

DEC FORM NO
DRA 108

SHEET 3 OF 4

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE Data Communications Interface - LT19H

10.0 System Verification

To verify system operation in the field, the following information may be used.

a. Insure that the channel works both directions as outlined in section 8.0

b. Insure that the channel on the "otherend" also works, this should be another LT19H or PT08-F (use maindec -08-D8PA).

c. Verify that the baud rates for both ends are identical.

d. Plug the LT19-H Cable into each end of the communications link.

e. Load the latest version of the LT09/19 Diagnostic into the PDP-8/15 and prepare to check the channel as described in section 8.0. To add the output to input "Jumper", a "Turnaround Program" will be required in the "otherend". Samples of "Turnaround Programs" for the PDP-8 and PDP-9/15 are given below:

PDP - 8		PDP - 9/15	
20/6401	Skip on R Flag	200/704101	Skip on R Flag
21/5020	Jmp. - 1	201/600200	Jmp. - 1
22/6406	Read	202/704112	Read
23/3040	DCA 40	203/740000	NOP
24/1040	TAD 40	204/704006	XMIT
25/7000	NOP	205/600200	JMP 200
26/6416	XMIT		
27/5020	JMP 20		

Both programs assume channel 1, adjust IOT codes as required by channel used.

	SIZE	CODE	NUMBER	REV
	A	SP	LT19-H-1	B

DEC FORM NO
DRA 108

SHEET 4 OF 4