M. C. N. REQUIRED
THIS PROGRAM REQUIRES MCN(S)
IN ORDER TO WORK PROPERLY

IDENTIFICATION

PRODUCT CODE:	MAINDEC-Ø8-DHKLC-B-D
PRODUCT NAME:	KL8F DOUBLE BUFFERED ASYNCHRONOUS INTERFACE DIAGNOSTIC
DATE REVISED:	MAY 1972
MAINTAINER:	DIAGNOSTIC GROUP
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1,0 ABSTRACT

THIS DIAGNOSTIC FACILITATES THE CHECK-OUT OF THE KL8F DOUBLE BUFFERED ASNYCHRONOUS INTERFACE. THIS IS A CLOSED LOOP TEST, A METHOD TO CONNECT EIA OUTPUT TO EIA INPUT IS REQUIRED, REFER TO TEST PROCEDURE M8652-0-3 FOR CONFIGURATION, ERROR HALTS AND SCOPE LOOPS ARE PROVIDED.

2,0 REQUIREMENTS

2,1 EQUIPMENT

PDP-8E COMPUTER
ASR-33 TELETYPE OR EQUIVALENT DEVICE
M8652 QUAD MODULE
ONE LOOP BACK PLUG #7008517
IF LOOP BACK PLUG IS NOT AVAILABLE, CONNECT PINS E TO M, AND F TO J ON CONNECTOR J1 OF M8652 MODULE.

2,2 STORAGE

THE PROGRAM OCCUPIES MEMORY LOCATIONS 0000 TO 3000.

3,0 LOADING PROCEDURE

LOAD PROGRAM VIA BINARY LOADER.

4,0 STARTING PROCEDURE

4,1 LOAD STARTING ADDRESS 0200-DEPRESS CONTINUE. PROGRAM WILL HLT AT LOCATION 0202.

4,2 FIRST PROGRAM HLT (0202) IS TO ALLOW OPERATOR TO SELECT IOT STRUCTURE, THROUGH THE SWITCHES, FOR WHICH HIS M8652 HAS BEEN JUMPERED TO OPERATE WITH.

SWITCHES	SELECTS
0-5	RECEIVE IOT
6-11	TRANSMIT IOT

FOR EXAMPLE; IF THE NUMBER 0304 WAS PLACED IN THE SWITCHES THE IOT STRUCTURE WOULD BE;

RECEIVE - 603X
TRANSMIT- 604X

WHERE X=0-7
DEPRESS CONTINUE
PROGRAM WILL HALT AT LOCATION 0204.

4,3 THE SECOND PROGRAM HLT (0204) IS TO ALLOW THE OPERATOR TO PLACE IN THE SWITCH REGISTER (S.R.) THE NUMBER OF DATA BITS PER CHARACTER TO BE TRANSMITTED.
THERE ARE FOUR POSSIBLE COMBINATIONS;

S.R.=0037 (5 DATA BITS)
S.R.=0077 (6 DATA BITS)
S.R.=0177 (7 DATA BITS)
S.R.=0377 (8 DATA BITS)

DEPRESS CONTINUE
PROGRAM WILL HALT AT LOCATION 0207.

4,4 THE THIRD PROGRAM HLT (0207) ALLOWS THE OPERATOR TO SELECT THROUGH THE S,R. THE TEST TO BE RUN, BAUD RATE AT WHICH DATA IS TO BE TRANSFERRED, AND THE TOTAL NUMBER OF BITS (INCLUDING START, STOP, PARITY) EACH CHARACTER IS COMPOSED OF. FOR CONTROL SWITCH SETTINGS REFER TO PARA. 5.1
DEPRESS CONTINUE PROGRAM WILL NOW HALT ONLY IF AN ERROR IS ENCOUNTERED.

5,0 OPERATING PROCEDURE

5,1 CONTROL SWITCH SETTINGS

	S,R. BIT(S)	SET AS	ACTION ON PROGRAM
	0	0	STAY IN SCOPE LOOP
		1	EXIT SCOPE LOOP
	1,2,3	0	RUN ALL TESTS
		1	TEST ONE ONLY
		2	TEST TWO ONLY
		3	TEST THREE ONLY
		4	TEST FOUR ONLY
		5	TEST FIVE ONLY
		6	TEST SIX ONLY
		7	TEST SEVEN ONLY
	4,5	NOT USED	
(A)	6,7,8	0	7 BITS PER CHARACTER
		1	8 BITS PER CHARACTER
		2	9 BITS PER CHARACTER
		3	10 BITS PER CHARACTER
		4	11 BITS PER CHARACTER
		5	12 BITS PER CHARACTER
		6	NOT USED
		7	NOT USED
(B)	9,10,11	0	110 BAUD
		1	134.5 BAUD
		2	150 BAUD
		3	300 BAUD
		4	600 BAUD
		5	1200 BAUD
		6	1800 BAUD
		7	2400 BAUD

NOTE(A): USED TO SELECT TOTAL NUMBER OF BITS PER CHARACTER, INCLUDING: DATA (5,6,7 OR 8), START (1), STOP (1 OR 2), PARITY (0,1).

NOTE(B): USED TO SELECT BAUD RATE AT WHICH DATA IS TRANSFERRED.

5,2 THE OPERATOR HAS THE OPTION OF RUNNING ALL TESTS OR ANY ONE TEST, THROUGH THE SETTING OF THE CONTROL SWITCHES, REFER TO PARA 5,1.

5,3 AS AN INDICATION THAT A TEST HAS RUN SUCCESSFULLY THE M,Q, REGISTER IS LOADED WITH THE TEST NUMBER (1,2,3,4,5,6,7) AFTER IT HAS MADE A COMPLETE PASS.

6,0 ERRORS

UPON DETECTION OF AN ERROR DURING ANY TEST THE PROGRAM WILL HALT. FOR A DESCRIPTION OF EACH ERROR REFER TO THE PROGRAM LISTING.

6,1 SCOPE LOOPS - ERROR RECOVERY

SCOPE LOOPS ARE PROVIDED FOR ALL ERRORS. TO ENTER SCOPE LOOP AFTER ENCOUNTERING AN ERROR HALT, DEPRESS KEY CONTINUE. ALL SCOPE LOOPS MAY BE EXITED BY PUTTING S,R, Ø TO A ONE.

DUE TO TIMING CONSIDERATIONS TWO DIFFERENT TYPES OF SCOPE LOOP ARE USED. ALL TIMING AND CONTROL TESTS (TST1, TST2, TST3, TST4, TST5, AND TST7A) SCOPE LOOPS WHEN EXITED (SWØ=Ø) WILL GO TO THE NEXT TEST OR SUBTEST IN SEQUENCE. FOR EXAMPLE, WHEN EXITING A SCOPE LOOP IN TST3A, THE PROGRAM WOULD THEN CONTINUE ON TO TST3B.

ON THE OTHER HAND ALL DATA PATTERN TEST (TST6, TST7B) SCOPE LOOPS WHEN EXITED WILL RETURN TO THE HLT (Ø2Ø7) WHICH REQUIRES THE OPERATOR TO PLACE IN THE S,R, THE CONTROL SWITCH SETTING. AT THIS TIME HE MAY SELECT ANOTHER TEST AND CONTINUE.

7,Ø RESTRICTIONS

STARTING RESTRICTIONS

THE OPERATOR HAS THE CHOICE OF THREE RESTART LOCATIONS. RESTARTING AT Ø2ØØ WILL NECESSITATE SELECTING IOT STRUCTURE, NUMBER OF DATA BITS PER CHARACTER, AND CONTROL SWITCH SETTINGS. THE SECOND RESTART ADDRESS WOULD BE LOCATION Ø2Ø3, THE OPERATOR WOULD LOAD ADDRESS Ø2Ø3 AND THEN SETUP THE NUMBER OF DATA BITS PER CHARACTER BEFORE DEPRESSING CONTINUE, THE PROGRAM WOULD THEN HALT FOR CONTROL SSWITCH SETTINGS, THE THIRD RESTART LOCATION WOULD BE ADDRESS Ø21Ø. THE OPERATOR WOULD LOAD ADDRESS Ø21Ø AND THEN SETUP THE CONTROL SWITCH SETTINGS BEFORE DEPRESSING CONTINUE.

8,Ø PROGRAM DESCRIPTION

THE FIRST FUNCTION PERFORMED BY THE PROGRAM IS TO DETERMINE, THROUGH THE USE OF THE THREE PROGRAM HALTS PREVIOUSLY DESCRIBED (REFER TO PARA 4,Ø), THE CONFIGURATION OF THE M8652 MODULE REGARDING, IOT STRUCTURE, BIT CONFIGURATION AND BAUD RATE.