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REVISIONS					
REV.	DESCRIPTION	BY	CHKD	APPRVD	DATE
A	Released Per ECO C47173	ONM	RM	BBB	9-14-06
B	Released Per ECO C47185	ONM	BJs	BJs	11-22-06
C	Released Per ECO C47197	ONM	BJs	BJs	12-15-06
D	Released Per ECO C47229 (MFTB VER 1.03)	ONM	SS	SS	08-08-07
E	Released Per ECO C47268 (MFTB VER 1.05)	ONM	SS	SS	11-19-07
F	Released Per ECO C47370 (MFTB VER 1.11)	ONM	SS	SS	05-29-09

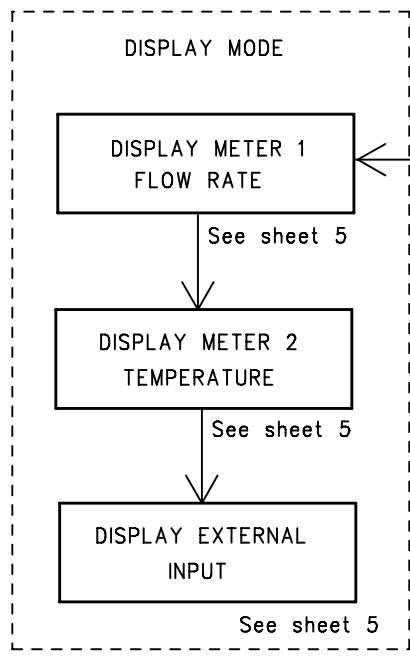
NOTES:

- To see the function details, refer to the sheet number indicated.
- Momentary Screen messages are on sheet 2.
- Alarm Screen messages are on sheet 2.

P	7	8	9	H
⊕	4	5	6	YES ^
L	1	2	3	NO v
E	-	0	.	C

KEYPAD LAYOUT

P = Command to Program Mode, use also to see program data without change.  
 ⊕ = Command to Display Mode, use also to see the display items. This is also a backspace key which is active during data entry.  
 L = Command to Log data to the USB Port.  
 E = Enter, use to update data to the memory. The change in data takes place only if the entered data is followed by the E key.  
 H = Command to Hold the current display.  
 HH = Command for Hep Mode, this is done by pressing the H key twice.  
 C = Clear, It will clear the data entry screen or escape one level up on the menu.  
 CC = Safe escape, this is done by pressing C key twice to escape to the next menu item. This is usually used in the Program Mode.

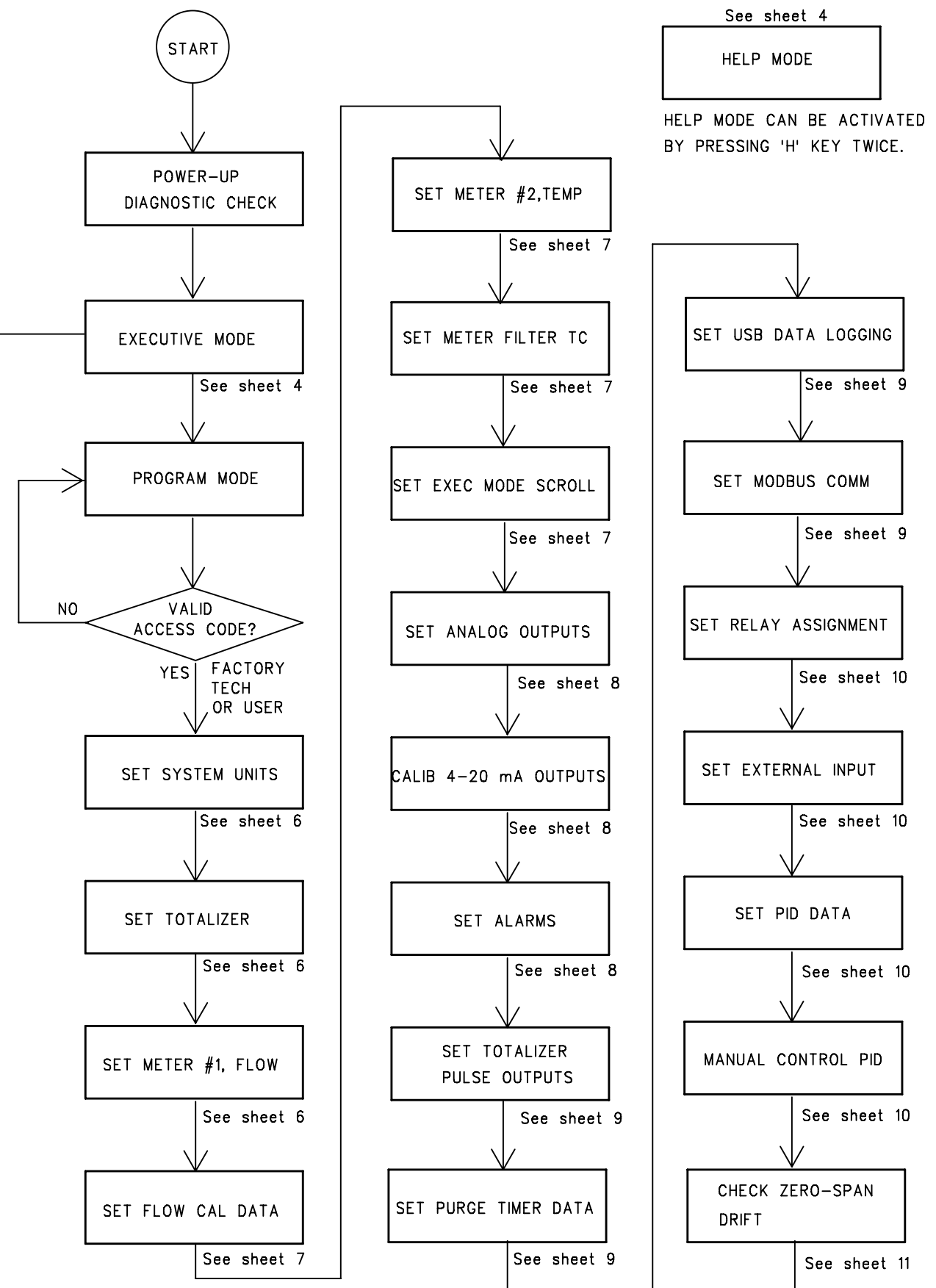


ACCESS LEVELS:

USER - View Only (123456)

TECH - Limited Read and Write

FACTORY: Full Access



See sheet 4

HELP MODE

HELP MODE CAN BE ACTIVATED BY PRESSING 'H' KEY TWICE.

NOTE: SHEETS #13,14 & 15 ARE FOR FACTORY USE ONLY AND ARE PROPRIETARY.

MFT-B SCREEN FUNCTION BLOCK DIAGRAM

APPROVALS		KURZ INSTRUMENTS, INC.		
DRAWN BY O. N. Morla	DATE 9-14-06	TITLE MFT-B VER 1.1x LCD SCREENS		
CHECKED BY R. Martinez	DATE 9-14-06	DWG. SIZE <b>B</b>	DWG. NO. 342042-1.1	REV. F
APPROVED B. B. Burton	DATE 9-14-06	SCALE	SHEET 1 OF 15	

## MOMENTARY SCREEN MESSAGES

INVALID CODE	This momentary message shows in the event when access code was entered incorrectly. It appears only during access code entry on Program Mode.
TOTALIZER IS RESET	This momentary message shows in the event when the totalizer is reset. It appears only on the RESET TOTALIZER menu.
HOLD IS ACTIVATED	This momentary message shows in the event when the hold feature is activated by pressing the 'H' key on the keypad or 'h' key on the terminal.
HOLD IS CLEARED	This momentary message shows in the event when the hold feature is cleared by pressing the 'C' key on the keypad 'c' key on the terminal after the hold feature was activated.
NEW VALUE ACCEPTED	This momentary message shows in the event when a new entry is entered. It maybe number, text or selection.
ENTRY NOT IN VALID RANGE	This momentary message shows in the event when a new entry is out of the limits.
TERMINAL ECHO IS STARTED	This momentary message shows in the event when the terminal echo is enabled by sending an '+' character from the terminal.
TERMINAL ECHO IS STOPPED	This momentary message shows in the event when the terminal echo is disabled by sending an '+' character from the terminal.
WAIT....LOADING DATA FROM EEPROM	This momentary message shows in the event when data from EEPROM is being loaded to the RAM.
WAIT....SAVING DATA TO EEPROM	This momentary message shows in the event when data from the RAM is being save to the EEPROM.
OUTPUT UPDATE IS RESUMED...	This momentary message shows in the event when exiting the SET FLOW CAL DATA and METER DATA.

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## ALARM SCREEN MESSAGES

ALARM n METER KICKOUT	LOW ALARM n VELOCITY
ALARM n GLOBAL EVENT	HIGH ALARM n VELOCITY
LOW ALARM n FLOW RATE	LOW ALARM n TEMPERATURE
HIGH ALARM n FLOW RATE	HIGH ALARM n TEMPERATURE

n = 1 or 2

## WARNING SCREEN MESSAGES

PID FUNCTION IS NOT AVAILABLE!!	DATA LOGGING IS NOT AVAILABLE!!
PID STATE IS OFF NOT ACTIVE	NO ASSIGNED OUTPUT RELAY
PID IS AUTOMATIC SET MANUAL MODE	RELAY IS ASSIGND TO OTHER TASK!!
ALARM FUNCTION IS NOT AVAILABLE	RELAY ASSIGNMENT IS NOT VALID
PULSE OUTPUT IS NOT AVAILABLE!!	4-20mA OUTPUT IS NOT AVAILABLE!!
PURGE FUNCTION IS NOT AVAILABLE	EXT. INPUT IS CURRENTLY USED
NEW SENSOR TYPE OVERWRITE? NO	FD SENSOR TYPE ARE YOU SURE? NO

## KEY PRESS

C C --> Pressing "C" key twice  
 E P --> Pressing "E" or "P" key  
 C --> Pressing "C" key  
 P --> Pressing "P" key  
 D --> Pressing "D" key  
 H --> Pressing "H" key  
 H H --> Pressing "H" key twice  
 E D --> Pressing "E" or "D" key  
 ^ --> Pressing ^ key  
 v --> Pressing v key

**KURZ INSTRUMENTS, INC.**

TITLE

MFT-B VER 1.1x LCD SCREENS

DWG. SIZE

**B**

DWG. NO.

**342042-1.1**

REV.

**F**

SCALE

SHEET 2 OF 15

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# FAULT EVENT MESSAGE

FAULT ERR EVENT

CODE: XXXXXXXX

These messages indicates that there is an abnormality detected in the operation of the flowmeter. It will display the error code of the event that occurred. The event is presented in Hexadecimal form and bitmapped to the following fault events:

MSB													LSB			
Bit #	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Value	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	X

MSB											LSB					
Bit #	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Value	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Bit #	Fault Description	MODBUS 1X REGS
17	Reserve	32
18	Reserve	33
19	Reserve	35
20	Reserve	36
21	Reserve	37
22	Reserve	38
23	Reserve	39
24	Reserve	40
25	Reserve	41
26	Reserve	42
27	Reserve	43
28	Reserve	44
29	Reserve	45
30	Sensor leak warning: S-GND below 100 KOhm.	45
31	Reserve	46
32	Reserve	47

Bit #	Fault Description	MODBUS 1X REGS
1	If the value is set to 1, the Rp resistance is above high limit.	16
2	If the value is set to 1, the Rp resistance is below low limit.	17
3	If the value is set to 1, the Rtc resistance is above high limit.	18
4	If the value is set to 1, the Rtc resistance is below low limit.	19
5	If the value is set to 1, the sensor wire loop resistance is above high limit (5.00 Ohms).	20
6	If the value is set to 1, the sensor RPS is open circuit.	21
7	If the value is set to 1, the sensor sting to ground leakage resistance is below 100 KOhm.	22
8	If the value is set to 1, The flow rate is above the design limit.	23
9	If the value is set to 1, Meter Kick-out high has occurred.	24
10	If the value is set to 1, Meter Kick-out low has occurred.	25
11	If the value is set to 1, the Analog to Digital Converter (ADC) failed to convert data. The system will be reset and the fault code cannot be displayed.	26
12	If the value is set to 1, the sensor control drive circuit stopped responding.	27
13	If the value is set to 1, the sensor control crowbar was engaged.	28
14	If the value is set to 1, connected sensor type does not match with with the configured sensor type.	29
15	If the value is set to 1, abnormal sensor node voltages has detected.	30
16	If the value is set to 1, configuration file is not successfully written to the EEPROM.	31

NOTE: SHEETS #13, 14 & 15 ARE FOR FACTORY USE ONLY AND ARE PROPRIETARY.

<b>KURZ INSTRUMENTS, INC.</b>		
TITLE MFTB VER 1.1x LCD SCREENS		
DWG. SIZE <b>B</b>	DWG. NO. 342042-1.1	REV. F
SCALE		SHEET 3 OF 15

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6

5

4

3

2

1

START

KURZ INSTRUMENTS  
SERIES MFT-B

PRESS H FOR HOLD  
HH FOR HELP

METER #1, FLOW  
ID:XXXXXXXXXX

If Flowrate

XXXXX.XX MUNIT  
XXXXX.XX TOTUNIT

If Velocity

VELOCITY  
XXXXX.XX VUNIT

METER #2, TEMP  
ID:XXXXXXXXXX

XXX.X TUNIT

EXECUTIVE MODE

HELP CAN BE INITIATED IN ANY  
OF THE FOLLOWING MODES:

- EXECUTIVE MODE
- DISPLAY MODE
- PROGRAM MODE
- HELP MODE

HELP MODE

HELP SCREEN FOR  
>MFT-B VER 1.0x<

SENSOR S/N  
XXXXXXX

BOARD BAR CODE  
XXXXXXXXXX

TEL. NUMBER  
800-424-7356

FAX. NUMBER  
831-646-8901

WEBSITE:www.kurz  
instruments.com

PRESS D TO SEE  
METER DATA

P=PROGRAM L=LOG  
E=ENTER C=CLEAR

PRESS H FOR HOLD  
HH FOR HELP

PUSH CC AS A  
SAFE ESCAPE

PRESS C TO CLEAR  
AN ENTRY

PRESS P FOR  
PROGRAMMING

PUSH P TO SEE  
DATA IN P MODE

TO MAKE A CHANGE  
PUSH ^V OR PUSH

DIGIT KEYS AND  
THEN PRESS E

TO ACCEPT A  
DISPLAYED CHOICE

NOTES:

1. VUNIT is a velocity unit. It can be SFPM or SMPS.
2. MUNIT is a flow meter unit. It can be one of the following: SCFM, SCFH, PPM, PPH, SLPM, SCM, KGM or KGH.
3. TOTUNIT is a totalizer unit. It can be one of the following: SCF, LBS, SCM or KGS.
4. TUNIT is a temperature unit. It can be DEGF or DEGC.

NOTE: SHEETS #13,14 & 15 ARE FOR FACTORY USE ONLY AND ARE PROPRIETARY.

D  
C  
B  
A

C  
TO SHEET 5

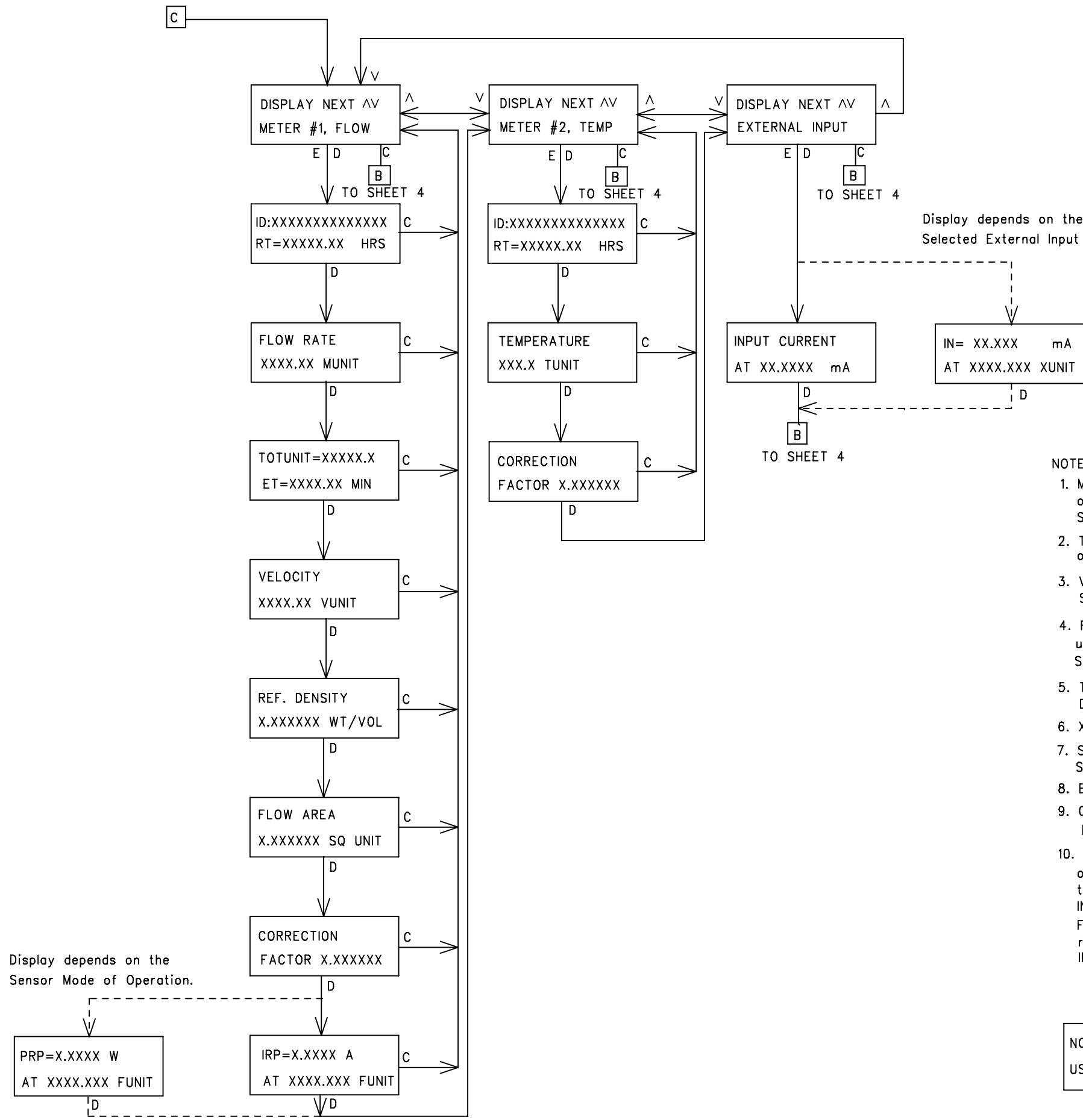
P  
A  
TO SHEET 6

B

<b>KURZ INSTRUMENTS, INC.</b>		
TITLE		
MFT-B VER 1.1x LCD SCREENS		
DWG. SIZE	DWG. NO.	REV.
<b>B</b>	<b>342042-1.1</b>	<b>F</b>
SCALE	SHEET 4 OF 15	

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FROM SHEET 4



Display depends on the Selected External Input Usage.

Display depends on the Sensor Mode of Operation.

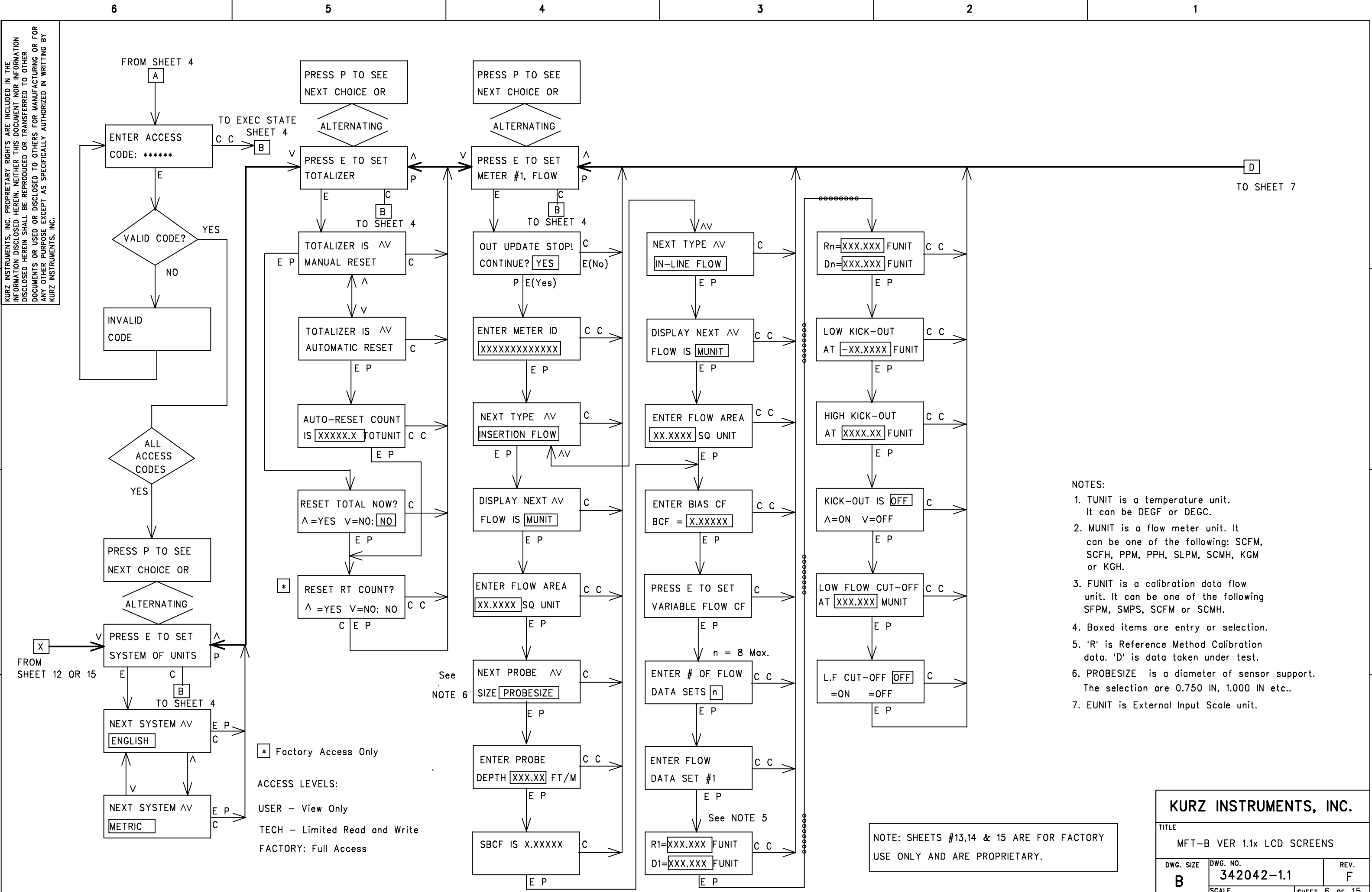
**NOTES:**

1. MUNIT is a flow meter unit. It can be one of the following: SCFM, SCFH, PPM, PPH, SLPM, SCM, KGM or KGH.
2. TOTUNIT is a totalizer unit. It can be one of the following: SCF, LBS, SCM or KGS.
3. VUNIT is a velocity unit. It can be SFPM or SMPS.
4. FUNIT is a calibration data flow unit. It can be one of the following SFPM, SMPS, SCFM or SCMH.
5. TUNIT is a temperature unit. It can be DEGF or DEGC.
6. XUNIT is external input Engineering Units.
7. SQ UNIT is a unit of area. It can be SQFT or SQM.
8. ET is elapsed time in minutes.
9. CORRECTION FACTOR is the product of the BCF times SBCF or BCF times VCF.
10. The corrected FLOW RATE is the product of AREA times the indicated velocity(FUNIT) times BCF times either SBCF or VCF for INSERTION FLOW METERS, The corrected FLOW RATE is the product of indicated flow rate(FUNIT) times BCF times VCF for IN-LINE FLOW METERS.

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DWG. SIZE <b>B</b>	DWG. NO. <b>342042-1.1</b>	REV. <b>F</b>
SCALE		SHEET 5 OF 15

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- NOTES:
- 'TUNIT' is a temperature unit. It can be DEGF or DEGC.
  - MUNIT is a flow meter unit. It can be one of the following: SCFM, SCFH, PPM, PPH, SLP, SCM, KGM or KGH.
  - FUNIT is a calibration data flow unit. It can be one of the following SFPM, SMPS, SCFM or SCM.
  - Boxed items are entry or selection.
  - 'R' is Reference Method Calibration data. 'D' is data taken under test.
  - PROBESIZE is a diameter of sensor support. The selection are 0.750 IN, 1.000 IN etc..
  - EUNIT is External Input Scale unit.

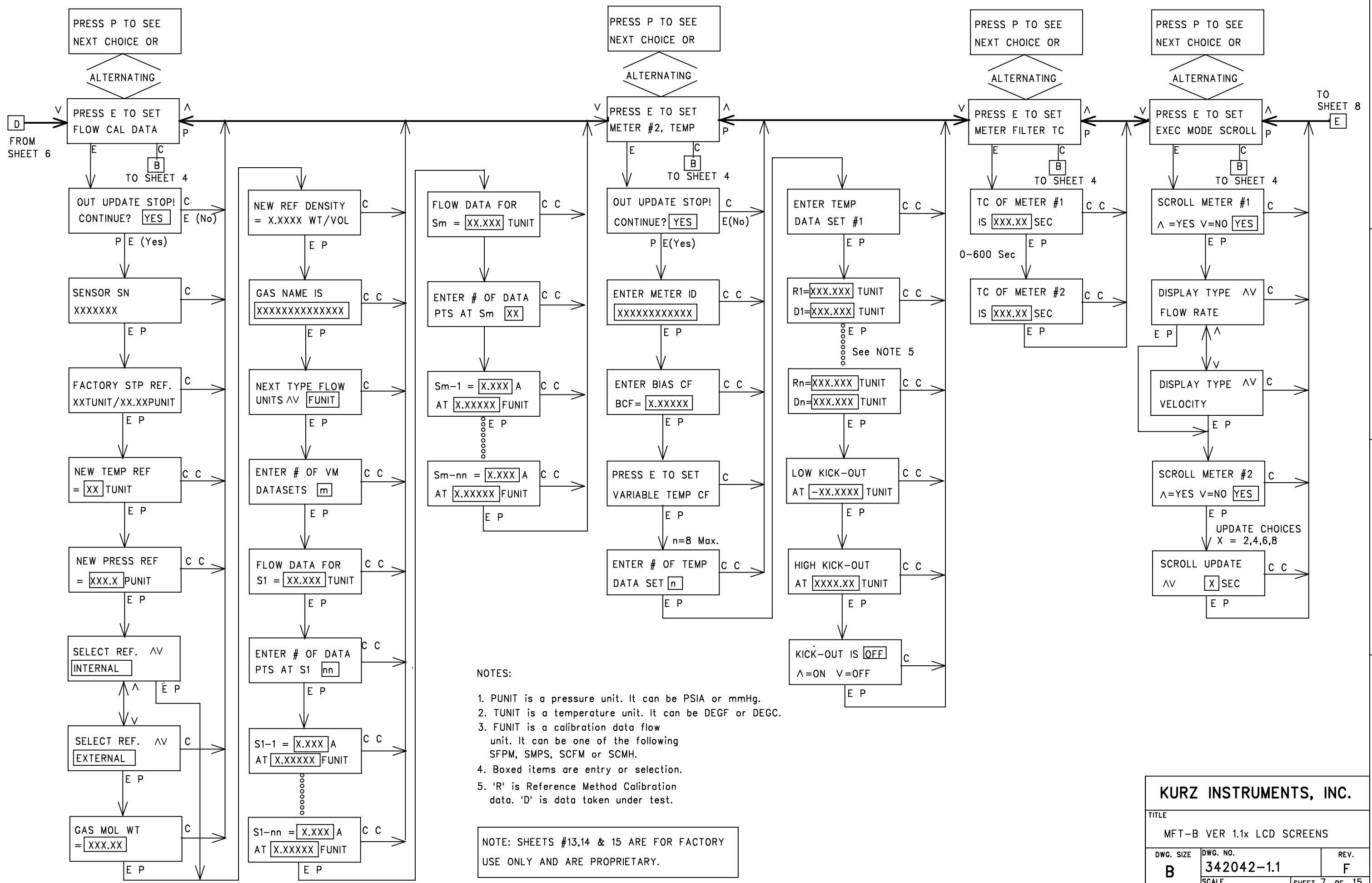
\* Factory Access Only

ACCESS LEVELS:  
 USER - View Only  
 TECH - Limited Read and Write  
 FACTORY: Full Access

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TITLE MFT-B VER 1.1x LCD SCREENS		
DWG. SIZE <b>B</b>	DWG. NO. <b>342042-1.1</b>	REV. <b>F</b>
SCALE		SHEET 6 OF 15

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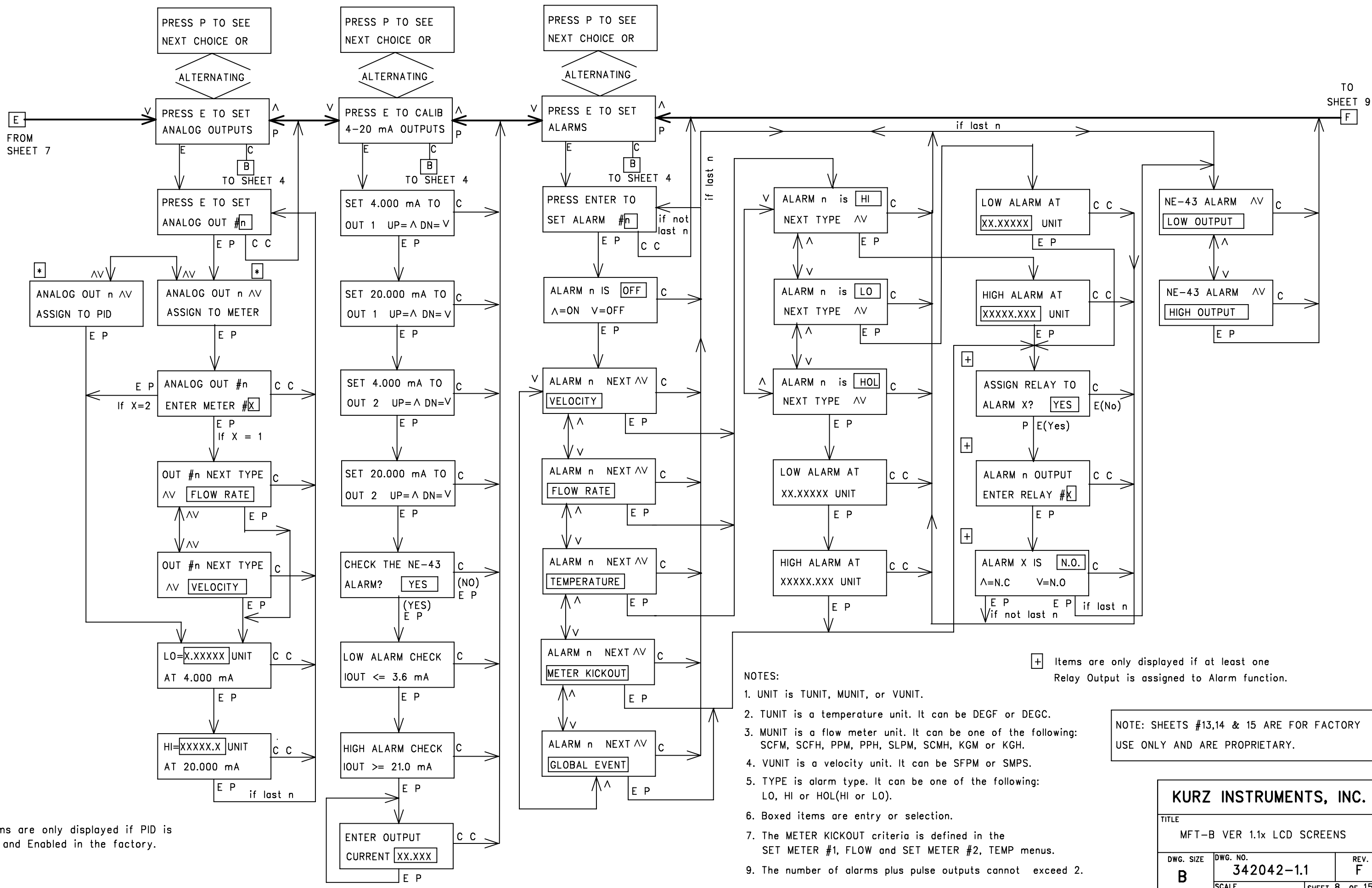


- NOTES:
1. PUNIT is a pressure unit. It can be PSIA or mmHg.
  2. TUNIT is a temperature unit. It can be DEGF or DEGC.
  3. FUNIT is a calibration data flow unit. It can be one of the following SFPM, SMPS, SCFM or SCMH.
  4. Boxed items are entry or selection.
  5. 'R' is Reference Method Calibration data. 'D' is data taken under test.

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TITLE		
MFT-B VER 1.1x LCD SCREENS		
DWG. SIZE	DWG. NO.	REV.
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SCALE	SHEET 7 OF 15	

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\* Items are only displayed if PID is ON and Enabled in the factory.

**NOTES:**

1. UNIT is TUNIT, MUNIT, or VUNIT.
2. TUNIT is a temperature unit. It can be DEGF or DEGC.
3. MUNIT is a flow meter unit. It can be one of the following: SCFM, SCFH, PPM, PPH, SLP, SCM, KGM or KGH.
4. VUNIT is a velocity unit. It can be SFPM or SMPS.
5. TYPE is alarm type. It can be one of the following: LO, HI or HOL(HI or LO).
6. Boxed items are entry or selection.
7. The METER KICKOUT criteria is defined in the SET METER #1, FLOW and SET METER #2, TEMP menus.
9. The number of alarms plus pulse outputs cannot exceed 2.

+ Items are only displayed if at least one Relay Output is assigned to Alarm function.

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TITLE MFT-B VER 1.1x LCD SCREENS		
DWG. SIZE <b>B</b>	DWG. NO. <b>342042-1.1</b>	REV. <b>F</b>
SCALE		SHEET 8 OF 15

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6

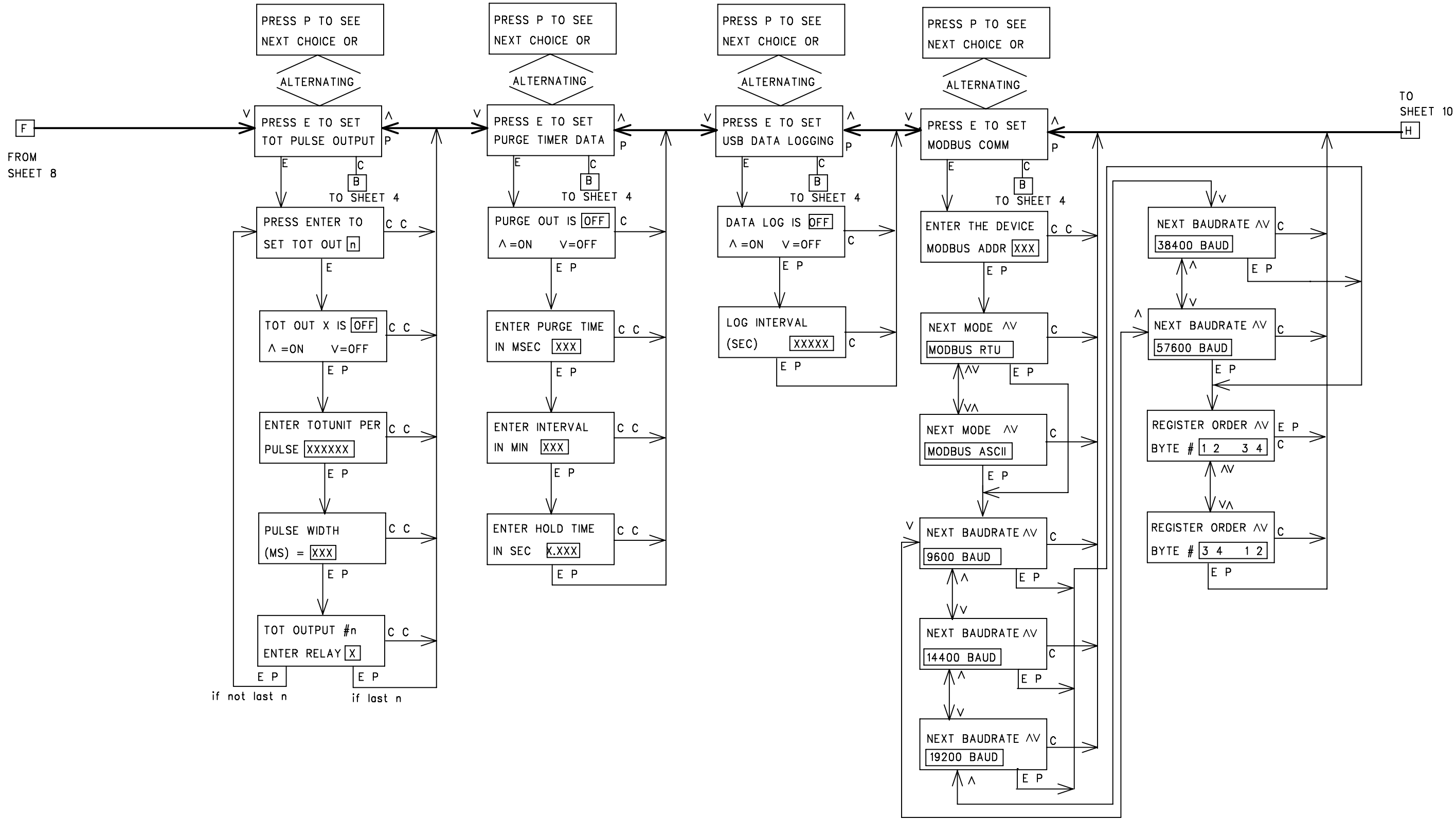
5

4

3

2

1



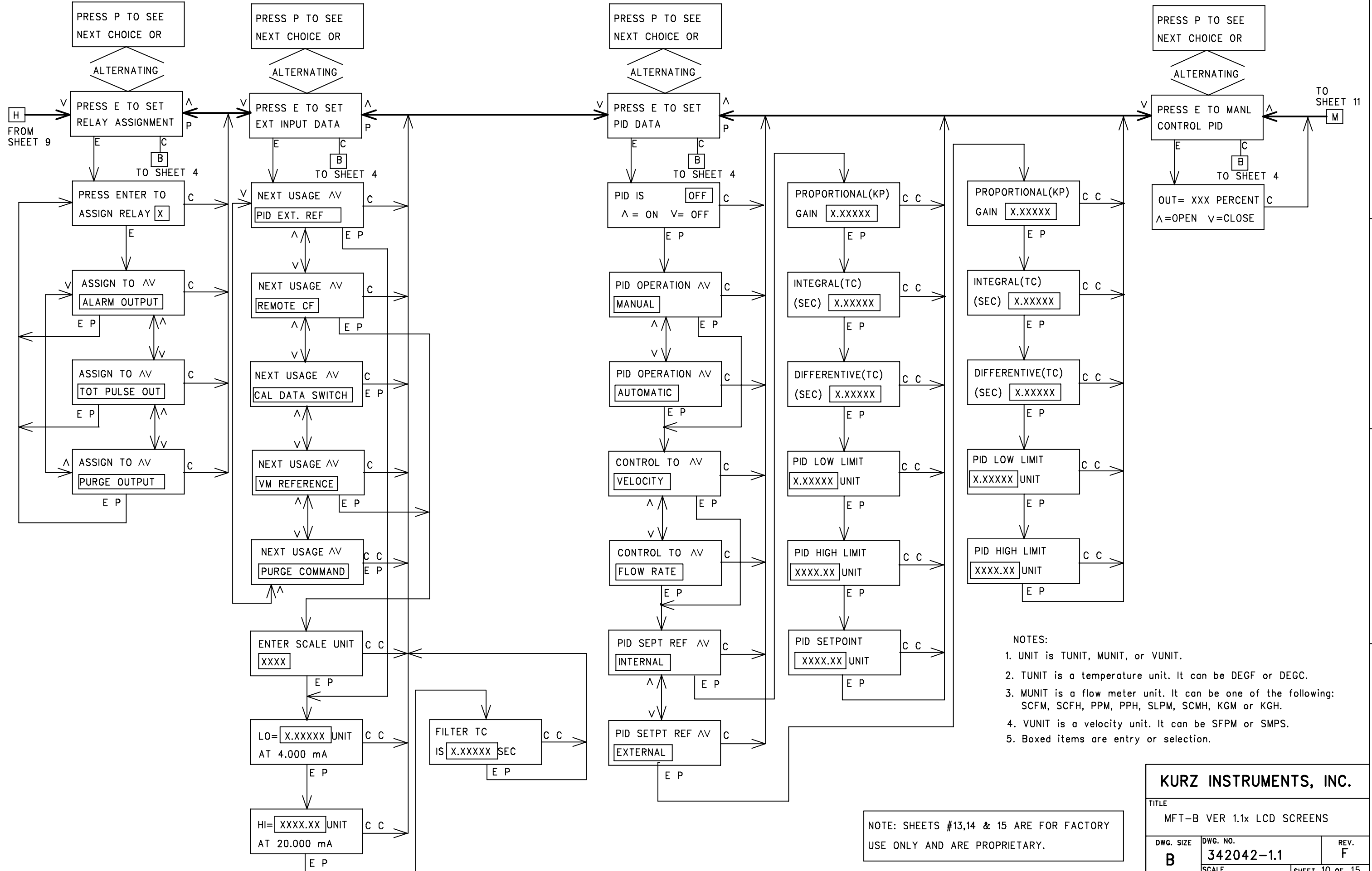
NOTES:

1. Boxed items are entry or selection.

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DWG. SIZE <b>B</b>	DWG. NO. <b>342042-1.1</b>	REV. <b>F</b>
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  2. TUNIT is a temperature unit. It can be DEGF or DEGC.
  3. MUNIT is a flow meter unit. It can be one of the following: SCFM, SCFH, PPM, PPH, SLPM, SCM, KGM or KGH.
  4. VUNIT is a velocity unit. It can be SFPM or SMPS.
  5. Boxed items are entry or selection.

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TITLE MFT-B VER 1.1x LCD SCREENS		
DWG. SIZE <b>B</b>	DWG. NO. 342042-1.1	REV. F
SCALE		SHEET 10 OF 15

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