

LARSEN & TOUBRO LIMITED MPS Division		DEBUG INSTRUCTIONS	
Product: SFF		WIS No.:4D045365	Rev. No 0
Assy./Operation : Debug Instructions.			Page 1 of 2
Seq.No.	Operation Details		Remarks

1	General Instruction		
1.1	Before soldering on PCA, keep the short link SL1 Open.		
	<i>Table 1</i>		
2.0	Problems	Check Points	
2.1	Not powering ON	1) Check Test point voltage	
		2) Check R40, R37, R41, R43, R42, R22, R23, R24, C44, C21, C17, C19, MCU Pins 73, 74.	
		3) Check R10, R3, C3, MCU Pin 33.	
		4) Check Y1, C30, C31, MCU pins 10 & 11.	
2.2	TP2 Voltage 0	1) Check D5,D3,C22,D2,C9,U2 for short & polarity	
2.3	TP2 Voltage less	1) Check for short U2, C12, D4, and MCU Pins.	
		2) Remove D4 & Check.	
2.4	Backlight Not Glowing	1) Check C10,C18,R20,D1,LED2,R8	
2.5	RTC current High	1) Check programmed properly.	
		2) Check for solder short and component short across C41, C42 & C43.	
		3) Check for Hair line solder shorts on MCU pins 70, 68, 69, 72, 17, R34 & R32.	
		4) If same problem occurred, replace the controller.	
2.6	EEPROM Error	1) Check for proper EEPROM & F/W	
		2) R17, R15, C4, MCU Pins 37, 38, 39.	
2.7	Programming Failure	1) Check for solder short across controller (Pin no 8 & 9)	
		2) Check for short between Vdd and Gnd (b/w pin no 1 & 4 across J1).	
		3) If there is a short, remove R34, R32 & C32, and then check for short.	
		4) If same problem occurred, replace the controller.	
2.8	Communication	1) OPQ, & OPD Direction	
		2) Check R35, R38, R36, R33, MCU Pins 1, 2, 3.	
2.9	LCD	1) Check for in shorts on LCD Pins & MCU Pins.	
		2) Check R6, C20, C41, C42, C43,	
		3) Check MCU Pins 22, 23, 24, 25, 26.	
2.10	Not Pulsing	1) Check R1, LED1.	
		2) Check C8, C11, C14, C15, C16	
2.11	Pulsing Slow/ Not pulsing in Phase	1) Check R47, R48, R26, R25, R27, C26, C24, C23, MCU Pins 75, 76.	
2.12	Pulsing Slow/ Not pulsing in Phase	1) Check R7, R9, R13, R19, R12, R11, C7, C5, C6, MCU pins 66, 67	
2.13	Battery mode not working	1) Check for Batteries, SI1, D6	
2.14	SW1	1) C13, R14, MCU pins 30, 31.	
2.15	S1	1) R31, C33, MCU pins 28, 29.	
Prepared : MHV		Approved : MZ/DG	Date : 16/02/15

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2.16

2.17

2.18

2.19

3.0

3.1

3.2

Initialization

Magnet Sense

Display Blank

CT tamper & anomaly failures

1) R2, C1. MCU pin 34

1) U7,U5,R44,R45,C39, MCU Pins4,6

2) In case of 3D mag sensor R86,R87,C64,U19,MCU pins 19,20,27

1) Check for solder short and component short across C8, C11 , C14, C15, C16, C28, C27, R34, R32, C32, C44,C19,C45,C39,U5,U7 LCD and controller (4 sides).

2) After removing C8, C11, C14, C15 and C16, check for short across each component.

3) If there is a short across any one of the location(C8,C11,C14,C15 and C16), replace the controller(Vcc & Gnd short)

4) Check for one end not soldered and component damages across R40, R37, R41, R43, R42, and R22 & R24

1) Check scrolling switch, magneto sensors, cover open circuit , battery circuit(check battery voltage B1 & B2,D6),crystal, voltage and current circuits

Annexure.

Test point Voltage Limits.

Name	Location	Nominal	Max	Min
Un Regulated	TP2	5.6	5.88	5.32
LDO Out	TP3	3.6	3.78	3.42
MCU VCC	TP4	3.3	3.465	3.135
RTC battery	TP5	3	3.4	3.1
Primary battery	TP6	3	3.4	3.1

Table 2

Current Limits

Test Point	Max. Allowed Current.	Min. Allowed current.
TP7 - TP8	4uA	1.5uA

Table 2

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