

RTU MAINTENANCE

PROBABLE PROBLEMS

- LOSS OF COMMUNICATION / LINK
- COUPLER FAILURE / FAULTY CHANNEL
- CLOCK SYNC FAILURE
- FIP FAULT
- FAULTY FIELD DEVICE
- FAILURE OF TRANSDUCERS / RELAYS ETC.
- LOSS OF POWER SUPPLY
- REMOTE CONTROL NOT FUNCTIONING

RTU MAINTENANCE

TROUBLESHOOTING

- POWER SUPPLY
 - CHECK FOR PROPER VOLTAGES AT RESPECTIVE MCBs - 48VDC / 230VAC 50Hz NOMINAL
 - CHECK FOR GREEN LED 'ON' ON FRONT OF POWER SUPPLY MODULE WHEN SWITCHED 'ON'
 - IF THE LED IS 'OFF' REPEAT AFTER SECURING THE MODULE IN THE RACK
 - IF LED IS STILL 'OFF' , REPLACE THE MODULE

RTU MAINTENANCE

TROUBLESHOOTING

- COUPLER

- IF COUPLER FAULT , RED LED DS2-B ON CPU900 WILL BE 'ON'
- THE COUPLER SHALL BE FAULTY IF GREEN LED ON THE COUPLER IS 'OFF' , MAY BE THE MODULE IS NOT PROPERLY INSERTED. SECURE THE MODULE IN THE RACK.
- CHECK USING VT100 AS OP. CON. WHICH COUPLER IS 'OFF' (FAULTY)
- REPLACE THE COUPLER IF FAULTY

RTU MAINTENANCE

TROUBLESHOOTING

- CLOCK SYNC FAILURE
 - IF CLOCK SYNC FAILURE , RED LED DS4-B ON CPU900 WILL BE 'ON'.
 - REQUEST CONTROL CENTRE OPERATOR TO SEND SYNCHRONISING MESSAGE TO RTU.
 - IF THE LED IS NOT PUT 'OFF' AFTER FEW SECONDS , CHECK GREEN LED ON SAU900 FLASHING - IF NOT REPLACE SAU900.

RTU MAINTENANCE

TROUBLESHOOTING

- CLOCK SYNC FAILURE
 - AFTER REPLACING SAU900 , IF CLOCK SYNC LED IS NOT PUT 'OFF' AFTER FEW SECONDS MAY BE COMMUNICATION PROBLEM.
 - CHECK THE MODEMs.
 - IF COMM. IS OK , REPLACE CPU900 , ASK FOR SYNC. MESSAGE FROM CONTROL CENTRE.

RTU MAINTENANCE

TROUBLESHOOTING

- COMMUNICATION FAILURE- MODEM
 - IF MODEM MD50 IS OK , GREEN LED IS 'OFF' ON SAU900 , CHECK THE CONFIGURATION USING OP. CON.
 - SECURE THE SAU900 MODULE , IF GREEN LED IS STILL 'OFF' , REPLACE THE FAULTY SAU900 MODULE.

RTU MAINTENANCE

TROUBLESHOOTING

- COMMUNICATION FAILURE
 - THE MODEM MD50 SHALL BE FAULTY IF THE YELLOW LED ON MODEM IS EITHER PERMANENTLY 'ON' OR FLASHING 2S / 2S.
 - THE MODEM MD50 IS FAULTY IF THE GREEN LED (RXD) IS FLASHING AND RED LED (INTERNAL FAULT) IS 'ON'.

RTU MAINTENANCE

TROUBLESHOOTING

- COMMUNICATION FAILURE
 - CONNECT VT100 TO MD50 MODEM & CONDUCT BULTIN SELF DIAGNOSTICS & REPORT THE SPECIFIC FAILURE IN PROPER FORM.
 - COMM. FAILURE , RED LED DS3-A ON CPU900 IS NOT APPLICABLE.

RTU MAINTENANCE

TROUBLESHOOTING

- FAULTY CHANNEL / ABNORMAL READING
 - CHECK THE CORRECTNESS OF ANALOG INPUT & DIGITAL INPUT SS / DS STATUS AS APPLICABLE.
 - USING VT100 AS OP. CONSOLE CHECK THE CORRECTNESS OF THE ANALOG READING OR SS/DS STATUS. IF NOT CORRECT REPLACE COUPLER WITH FAULTY CHANNEL.

RTU MAINTENANCE

TROUBLESHOOTING

- FAULTY CHANNEL / ABNORMAL READING
 - TRANSDUCER SHALL BE FAULTY IF NOT RESPONDING OR READING THE DEFAULT VALUE WHEN THE INPUTS ARE ISOLATED FROM THE TRANSDUCERS.
 - THIS PROVIDES THE QUICK CHECK ON THE FUNCTIONING OF THE TRANSDUCERS.

RTU MAINTENANCE

TROUBLESHOOTING

- L / R SWITCH
 - CHECK THE LAMP “RC POL OFF” IS OFF WHEN THE L/R SWITCH IS IN ‘R’ POSITION.
 - CHECK THE LAMP “RC POL OFF” IS ON WHEN THE L/R SWITCH IS IN ‘L’ POSITION.
 - IF NOT OK THEN CHECK WIRING , MCB Q5 & Q1 SHOULD BE ‘ON’.
 - SIMILARLY THE STATUS IS DISPLAYED ON OP. CON. AS ‘CLOSE’
(‘OPEN’)

RTU MAINTENANCE

TRANSDUCER TRANSFER FUNCTION

TRANSDUCER	INPUT RANGE	OUTPUT RANGE/ OP. CON. VALUE	O/P SCALE
P LINE TRANSFORMER TRA 267	110V Ph.-Ph.	4 --- 20 mA + / - 0.5 %	
	0 --- 1A		-190.52 W --- +190.52 W
	0 --- 5A	400 -- <u>1200</u> -- 2000 0% -- 50% -- 100%	-952.6 W --- +952.6 W
P GENERATOR TRA 267	110V Ph.-Ph.	4 --- 20 mA +/- 0.5 %	
	0 --- 1A		0 W --- +190.52 W
	0 --- 5A	<u>400</u> -- 1200 -- 2000 0% -- 50% -- 100%	0 W --- +952.6 W

RTU MAINTENANCE

TRANSDUCER TRANSFER FUNCTION

TRANSDUCER	INPUT RANGE	OUTPUT RANGE	O/P SCALE
Q TRA 268	110V Ph.-Ph.	4 — 20 mA +/- 0.5 %	
	0 — 1A		-190.52 W — +190.52 W
	0 — 5A	400 — <u>1200</u> — 2000 0% — 50% — 100%	-952.6 W — +952.6 W
V TRA 124	110V Ph.-Ph.	4 — 20 mA +/- 0.5 %	
	0 — 1.2* 110V		0 — 1.2 * U_N
	(132VAC)	<u>400</u> — 1200 — 2000 0% — 50% — 100%	U_N TO BE MONITORED

RTU MAINTENANCE

TRANSDUCER TRANSFER FUNCTION

TRANSDUCER	INPUT RANGE	OUTPUT RANGE	O/P SCALE
I TRA 170	110V Ph.-Ph. 0 --- 1.2*1A 0 --- 1.2*5A	4 --- 20 mA + / - 0.5 % <u>400</u> -- 1200 -- 2000 0% -- 50% -- 100%	0 --- 1.2 * I_N I_N TO BE MONITORED
F TRA 202	110V Ph.-Ph. 45 -- 55 Hz	4 --- 20 mA +/- 0.5 % <u>400</u> -- 1200 -- 2000 0% -- 50% -- 100%	45 -- 55 Hz

RTU MAINTENANCE

TRANSDUCER TRANSFER FUNCTION

TRANSDUCER	INPUT RANGE	OUTPUT RANGE	O/P SCALE
OLTC TRA 511	0 -- 200 ohm step 200/N ohm	4 --- 20 mA + / - 0.5 % <u>400</u> -- 1200 -- 2000 0% -- 50% -- 100%	TAP POSN. 1 -- N N = 17 TAPS TYP.
OIL/WDG. TEMP. TRA 530 (FOR PT100)	100 ohm to 137.8 ohm	4 --- 20 mA +/- 0.5 % <u>400</u> -- 1200 -- 2000 0% -- 50% -- 100%	0 -- 100 °C

RTU MAINTENANCE

VISUAL INDICATIONS

ALL S900 MODULES

MAINTENANCE LED - 'GREEN' ON FRONT
FACIA.

THIS LED WHEN 'ON' & FLASHING
INDICATES THE MODULE IS HEALTHY &
THE RESPECTIVE I/O CHANNELS ARE
BEING SCANNED.

THIS LED WHEN 'OFF' INDICATES THE
RESPECTIVE MODULE IS FAULTY OR THE
MODULE IS NOT SCANNED OR MODULE
NOT ALLOCATED IN DB.

RTU MAINTENANCE

VISUAL INDICATIONS

CPU S900 MODULE (FRONT FACIA LEDs)

WATCHDOG

DS1

**EXPANSION RACK
FAULT**

DS2-A

DS2-B

**COUPLER
FAULT**

COMM. FAULT
(Not applicable in
IEC)

DS3-A

DS3-B

FIP FAULT

**PERIPHERAL
FAULT**

DS4-A

DS4-B

**CLOCK
FAULT**

**REMOTE RACK
FAULT**

DS5-A

DS5-B

DB DOWNLOADING

RTU MAINTENANCE

CPU S900 MODULE (FRONT FACIA LEDs)

DS1 GREEN LED , NORMALLY 'ON' , 'OFF' INDICATES WATCHDOG FAULT. IT SHALL DISABLE ANY RC O/P.

DS2B RED LED , NORMALLY 'OFF' , 'ON' INDICATES ONE OF THE COUPLER IS OUT ie. EITHER FAULTY , NOT CONNECTED OR NOT DEFINED IN DB.

DS3B RED LED , NORMALLY 'OFF' , 'ON' INDICATES FIP FAULT , CAN'T ESTABLISH FIP COMMUNICATIOS.

DS4B RED LED , NORMALLY 'OFF' , 'ON' INDICATES CLOCK FAULT. THE BASE RACK IS OUT OF SYNC. FROM MASTER OR EXPN. RACK W.R.T.

RTU MAINTENANCE

VISUAL INDICATIONS

CPU S900 MODULE (FRONT FACIA LEDs)

DS5B RED LED , NORMALLY 'OFF' , 'ON' INDICATES DB DOWNLOADING IS IN PROGRESS ON BASE RACK OR ONTO EXPN. RACK FROM BASE RACK.

DS5A RED LED , NORMALLY 'OFF' , 'ON' INDICATES THE REMOTE RACK IS DISCONNECTED. THE BASE / EXPN. RACK DISCONNECTED.

THESE LEDS ARE APPLICABLE ON BOTH BASE AND EXPN. RACK.

RTU MAINTENANCE

VISUAL INDICATIONS

CPU S900 MODULE (FRONT FACIA LEDs)

DS2A RED LED , NORMALLY 'OFF' , 'ON' INDICATES EXPN. RACK FAULT , ONE / MORE EXPN. RACKS DISCONNECTED.

DS3A RED LED , NORMALLY 'OFF' , 'ON' INDICATES THE COMM. FAULT , LOSS OF COMM. WITH MASTER.

DS4A RED LED , NORMALLY 'OFF' , 'ON' INDICATES THE PERIPHERAL FAULT , ONE OF THE PERIPHERALS DISCONNECTED FROM RTU.

THESE LEDS ARE APPLICABLE ONLY ON BASE RACK.

RTU MAINTENANCE

OPERATOR CONSOLE

OP. CON. (VT100) IS CONNECTED TO PORT J5 OF SAU900 MODULE. IT PROVIDES USER FRIENDLY MENU FOR MAINTENANCE / DIAGNOSTICS.

NOTE 'SELECT' THE FUNCTION & ENTER 'RETURN' TO ENDORSE THE FUNCTION.

THE FACILITY IS PROVIDED EITHER TO FOLLOW MENU OR ENTER DIRECT COMMAND AT THE COMMAND LINE WHICH IS ACCESSIBLE BY PRESSING 'F4' (= CHGWD). IN BOTH CASES ENTER 'Y' TO EXECUTE THE COMMAND.