

MEI633

Troubleshooting & Maintenance

Manual

Doc_ID: MEI633_TMM-1_1

**Medha Servo Drives (P) Ltd.
P-4/5, IDA Nacharam,
Hyderabad. -76**

Copyright ©

This document is protected by copyright and all information contained therein is confidential. The contents of this document must not be copied and the information therein must not be used, or disclosed except with the permission of and in the manner permitted by Medha Servo Drive Pvt. Ltd.

Approval Details

	Prepared by	Reviewed by	Approved by
Signature			
Name	Obula Krishna B/ Venu D	Srikanth P	Arunachalam A
Designation	Sr. Design Engineer/ Programmer	Technical Architect	Sr. Manager (D&D)

Version History

Author	Date	Title or brief description of change	Version
Obula Krishna B	22-Sep-2008	Initial Version	0.1
Obula Krishna B	18-April-2009	Release Version	1.0
Obula Krishna B	15-July-2010	Baselined Version	1.1

Revision History

Reference document: **MEI633_TMM-1_0**

Section	Description of change
Section 3.6, 3.8	Front facia LED's description modified.
Section 4.1.4	Counter Box details added.
Section 7	Maintenance Terminal section updated.

Table of Contents

1	Scope of the document	6
2	Sub System Components	6
2.1	Central Interlocking Unit Rack – MCI (Bottom Bin).....	6
2.2	Central Interlocking Unit Rack – MCI (Top Bin)	6
2.3	Object Controller Rack – MOC (Bottom Bin)	6
2.4	Object Controller Rack – MOC (Top Bin)	7
2.5	Panel Processor Rack – MPP (Bottom Bin).....	7
2.6	Panel Processor Rack – MPP (Top Bin)	7
3	System Controls and Indications.....	8
3.1	VIC card.....	8
3.2	COMP card.....	8
3.3	CIF card.....	9
3.4	CVH card	9
3.5	IOCOM card.....	10
3.6	OVH card	11
3.7	OCI card.....	12
3.8	OCO card	12
3.9	ORD card	12
3.10	OVC card	13
3.11	PCC card	13
3.12	PVH card.....	14
3.13	PIP card.....	15
3.14	POP card	15
3.15	PSA card	15
3.16	PSB card.....	16
3.17	PSC card.....	16
3.18	RS485-OFC Bi-directional converter card	16
4	Start up Details.....	18
4.1	Initial Checks.....	18
4.1.1	CIU.....	18
4.1.2	OCM.....	18
4.1.3	PP / CCIP.....	18
4.1.4	COUNTER BOX	18
4.2	MEI633 Power ON	19
4.3	Indications	19
4.3.1	CIU.....	19
4.3.2	OC	20
4.3.3	PP/ CCIP.....	20
4.3.4	COUNTER BOX	20
5	Command Cum Indication Panel (CCIP)	23
5.1	Panel blank	23

5.2	Link Status Indication	23
6	Video Display Unit (VDU).....	25
7	MEI633 Maintenance tools program.....	26
7.1	File Menu	29
7.1.1	Online	29
7.1.2	Offline	30
7.1.3	View History Data	30
7.1.4	Exit	30
7.2	View Menu	30
7.2.1	VDU Yard Status Online.....	31
7.2.2	VDU Yard Status Offline	32
7.2.3	Status Bar	33
7.3	Channel-A Menu	34
7.3.1	View Event Log/Fault Log Online	34
7.3.2	View Event Graph Online	34
7.4	Channel-B Menu	35
7.4.1	View Event Log/Fault Log Online	35
7.4.2	View Event Graph Online	35
7.5	Tools Menu	35
7.5.1	Application Download	36
7.5.2	Application Upload	37
7.5.3	Set Date/Time	38
7.5.4	PC Config	39
7.6	Help Menu.....	40
7.7	Tool Buttons	41
7.8	Online Mode Event and Fault Display	43
7.8.1	Title Bar Description.....	44
7.8.2	State Description.....	45
7.8.3	Event Log /Fault log	46
7.8.4	Online Mode Button Operations.....	47
7.8.5	Event log Graphical View	49
7.9	View History Data.....	51
7.9.1	Event log.....	57
7.9.2	Event Log Graphical view.....	62
7.9.3	Fault Log:	67
7.10	Yard Status Display	72
7.10.1	VDU Yard Status Display - Online	72
7.10.2	VDU Yard Status Display - Offline	73
7.11	Application Data Operation	79
7.11.1	Application Download	79
7.11.2	Application Upload.....	84
7.12	Checksum Report Display	85
8	MEI633 System Configuration	87
9	MEI633 System Acceptance Testing	88
10	System Troubleshooting and Recovery	89
10.1	Trouble shooting serial communication link problems	89

10.1.1	Serial link to MT	89
10.1.2	Serial link to Front panel display	89
10.1.3	Serial link to VDU	89
10.2	Trouble shooting each module	90
10.2.1	Supervisory Processor Troubleshooting.....	90
10.2.2	Vital Processor Troubleshooting	93
10.2.3	Communication Processor Troubleshooting	98
10.2.4	Panel Processor Troubleshooting.....	102
10.2.5	IOCOM Processor Troubleshooting	104
10.2.6	Input and Output WFP Troubleshooting	108
11	System maintenance	114

1 Scope of the document

This document intends to provide information to field personnel who are responsible for the startup and configuration of the MEI633 system. This manual also contains detailed information on troubleshooting system malfunctions and for maintaining the system in a safe and operable state.

2 Sub System Components

MEI633 consists of various sub-systems that can be housed in standard racks. Each sub-system / bin is designed to house individual PCBs pertaining to a logical sub-system of the MEI633. The following tables list the PCBs housed in the individual bins

2.1 Central Interlocking Unit Rack – MCI (Bottom Bin)

PCB Name	MEI633 Part No.	Qty
CIU Bottom Backplane	M633CBBP-01	1
Communication Processor card (COMP card)	M633CCC-01	2
Communication Interface card (CIF card)	M633CIF-01	2
Vital Interlocking Computer card (VIC card)	M633CVC-01	2
CIU Voltage and Health Monitoring card (CVH card)	M633CVH-01	2

2.2 Central Interlocking Unit Rack – MCI (Top Bin)

PCB Name	MEI633 Part No.	Qty
CIU Top Backplane	M633CTBP-01	1
Power Supply Type B	M633PSB-01	4

2.3 Object Controller Rack – MOC (Bottom Bin)

PCB Name	MEI633 Part No.	Qty
OC Bottom Backplane	M633OBPP-01	1
Input Wayside Function Module CPU Card (OCI Card)	M633OCI-01	5 (max)
Output Wayside Function Module Output Card (OCO Card)	M633OCO-01	3 (max)
WFM Relay Driver Card (ORD Card)	M633ORLD-01	3 (max)

Vital Cut-off Card (OVC Card)	M633OVC-01	1
-------------------------------	------------	---

2.4 Object Controller Rack – MOC (Top Bin)

PCB Name	MEI633 Part No.	Qty
OC Top Backplane	M633OTBP-01	1
IO Communication Processor card (IOCOM card)	M633OIC-01	2
Power Supply Type B	M633PSB-01	2
Power Supply Type C	M633PSC-01	2
OC Voltage and Health Monitoring card (OVH card)	M633OVH-01	2

2.5 Panel Processor Rack – MPP (Bottom Bin)

PCB Name	MEI633 Part No.	Qty
PP CPU Backplane	M633PCBP-01	1
PP CPU card	M633PCC-01	2
Power Supply Type B	M633PSB-01	2
PP Extender Driver Card	M633PExD-01	2 (max)
PP Voltage and Health Monitoring card (PVH card)	M633PVH-01	2

2.6 Panel Processor Rack – MPP (Top Bin) Max 4 Racks

PCB Name	MEI633 Part No.	Qty
PP IO Backplane	M633PBP-01	1
PP Receiver Card	M633PExR-01	1
PP Input Card	M633PIP-01	3 (max)
PP Output Card	M633POP-01	10 (max)
Power Supply Type A	M633PSA-01	2

3 System Controls and Indications

Before set up and configuration of MEI633 system, we need to know front panel controls and indications associated with MEI633 system printed circuit boards. The front facia of all the cards are provided with LED indications. These indications assist the operator to know the status of the card at any point of time. The following tables provide detailed information about the indications and other components provided on the facia of each card.

3.1 VIC card

Nameplate: CVC-A and CVC-B

Indication/Interface	Description
LED (POWER)	Availability of input power to the card
LED (CYC)	Cyclic activity status of SVP. Toggled every cycle
LED (ACT)	VIC is in active mode
LED (STD BY)	VIC is in standby mode
LED (MRST)	Provided for future use
LEDs (COM A and COM B)	Active status of COMP A and COMP B respectively
9 Pin D-Female Connector (RS232)	Used for Data Logger, Maintenance Terminal and Front Panel Display communication during normal operation and for Application Data download during offline mode.

3.2 COMP card

Nameplate: CCC-A and CCC-B

Indication/Interface	Description
LED (POWER)	Availability of input power to the card
LED (CYC)	Cyclic activity status of COMP. Toggled every cycle
LEDs (VIC A and VIC B)	Active status of VIC A and VIC B respectively
9 pin Female connector (RS 232)	Used for Debug port & Application data download during offline mode

3.3 CIF card

Nameplate: CIF-A and CIF-B

Indication/Interface	Description
LED (POWER)	Availability of input power to the card
Two 50 pin D type connectors	Provides full duplex RS485 interface with communication processor card

3.4 CVH card

Nameplate: CVHM-A and CVHM-B

Indication/Interface	Description
LED (POWER)	Availability of input power to the CVH card
LED (VIC VS)	Glows Green: VIC card voltages monitored by the Power Manager are within predefined limits Glows Red: VIC card voltages monitored by the Power Manager has gone beyond limits
LED (VIC HS)	Glows Green and starts blinking: VIC CPU Health OK Glows Red: VIC CPU Health Not OK
LED (VIC CO)	Glows Green: CPU is operating normally Glows Red: CPU Power is cut-off by the VHM card
LED (COM VS)	Glows Green: COMP voltages monitored by the Power Manager are within predefined limits Glows Red:

	Any of the COMP voltages monitored by the Power Manager has gone beyond limits
LED (COM HS)	Glow Green and starts blinking: COMP Health OK Glow Red: COMP Health Not OK
LED (COM CO)	Glow Green: CPU is operating normally Glow Red: CPU Power is cut-off by the VHM card
Push button (VIC SD)	When pressed power manager turns OFF the Power supply to VIC card
Push button (VIC ON)	When pressed power manager turns ON the Power supply to VIC and continues to function normally.
Push button (COM SD)	When pressed power manager turns OFF the Power supply to COMP
Push button (COM ON)	When pressed power manager turns ON the Power supply to COMP and continues to function normally

3.5 IOCOM card

Nameplate: OICC-A and OICC-B

Indication/Interface	Description
LED (POWER)	Availability of input power to the card
Dual digit 7 segment display	Visual indication of fault-codes
LEDs (WFP TX and WFP RX)	Transmission and reception of data from WFP's respectively
LED (CYC)	Status of cyclic activity of the CPU.

LEDs (COM TX and COM RX)	Transmission and reception of data from COMP card respectively
15 Pin Male Connector (RS485)	Provides serial communication between the OIC card and COMP card.

3.6 OVH card

Nameplate: OVH-A and OVH-B

Indication/Interface	Description
LED (POWER)	Availability of power to the OVH card
LED (V. STS)	Glows Green: All the monitoring voltages are within predefined limits Glows Red: Any of the monitoring voltage has gone beyond limit
LED (H. STS)	Glows Green: IOCOM CPU Health OK Glows Red: IOCOM CPU Health Not OK
LED (CUT. OFF)	Glows Green: Card is operating normally Glows Red: IOCOM CPU power is cut off by OVH card
Push button (RESET)	When pressed, OVH card turns ON the Power to the OIC card when it is in OFF condition.

3.7 OCI card

Nameplate: OCCI-1

Indication/Interface	Description
LED (POWER)	Availability of input power to the card
LEDs (B TX1 and B TX0)	Slave CPU status of communication with ICOM-B CPU and ICOM-A CPU respectively
LED (B STS)	Status of cyclic activity of the Slave CPU
LED (A STS)	Status of cyclic activity of the Master CPU
LEDs (A TX1 and A TX0)	Master CPU status of communication with ICOM-B CPU and ICOM-A CPU respectively
LEDs (IP1 to IP8)	Input Relay State (Picked Up/Dropped)

3.8 OCO card

Nameplate: OCCO-1

Indication/Interface	Description
LED (POWER)	Availability of input power to the card
LEDs (B TX1 and B TX0)	Slave CPU status of communication with ICOM-B CPU and ICOM-A CPU respectively
LED (B STS)	Status of cyclic activity of the Slave CPU
LED (A STS)	Status of cyclic activity of the Master CPU
LEDs (A TX1 and A TX0)	Master CPU status of communication with ICOM-B CPU and ICOM-A CPU respectively.

3.9 ORD card

Nameplate: ORLD-1

Indication/Interface	Description
LED (POWER)	Availability of vital power to the relays

LEDs (OP1 - OP8)	<p>Drive status of the eight relays</p> <p>Glows Orange:</p> <p>Relay connected to that particular section is driven</p> <p>Glows Red:</p> <p>Drive signal is present but the relay is not driven as the fuse is blown due to over load condition</p> <p>Glows Green:</p> <p>External feed to the Relay during the fuse blown out condition</p>
---------------------------	--

3.10 OVC card

Nameplate: OVCO

Indication/Interface	Description
LED (POWER)	Availability of input power to the Vital Cut-off card
LED (VCOR)	Vital Cut-off relay is being driven by the CPLDs
LED (STS A)	<p>Starts Blinking:</p> <p>All the ‘A’ CPUs sends correct status pattern and the status of all the ‘A’ CPUs is OK</p>
LED (STS B)	<p>Starts Blinking:</p> <p>All the ‘B’ CPUs sends correct status pattern and the status of all the ‘B’ CPUs is OK</p>
LEDs (OP1 to OP3)	They are driven by CPLD B and represent the connect status of Output WFM card 1, 2 and 3
LED (VCOR POWER)	VCOR drive power is available to OVC card

3.11 PCC card

Nameplate: PPCC-A and PPCC-B

Indication/Interface	Description

LED (POWER)	Availability of the power to the card
Dual digit 7-segment display	Visual indication of fault codes
LED (CYC)	Status of cyclic activity of the CPU
LED (OE)	Reception of Password from the COMP for driving the output cards
LEDs (COM Rx and COM Tx)	Status of communication with COMP
15 pin Female connector (RS232)	Used for Debug port & Application data download during offline mode
15 pin Male connector (RS485)	Provides serial communication between the PCC card and COMP card.

3.12 PVH card

Nameplate: PPVH-A and PPVH-B

Indication/Interface	Description
LED (POWER)	Availability of input power to the PVH card
LED (V.STS)	Glows Green: All the voltages monitored by the Power Manager are within limits Glows Red: Any of the voltage monitored by the Power Manager has gone beyond limit.
Third LED (H.STS)	Glows Green: PP CPU Health OK Glows Red: PP CPU Health Not OK

Fourth LED (Cutt.Off)	Glows Green: CPU is operating normally Glows Red: CPU Power is cut-off by the VHM card
Push-button switch (RESET)	When pressed, VHM card restarts the PP CPU card when it is in Power OFF condition

3.13 PIP card

Nameplate: PPIP-1

Indication/Interface	Description
LED (POWER)	Availability of the power to the card
Two 37 pin D-Male Connectors	Provides external communication interfaces for 64 inputs coming from the CCIP

3.14 POP card

Nameplate: PPOP-1

Indication/Interface	Description
LED (POWER)	Availability of the power to the card
Two 37 pin D-Female Connectors	Provides external communication interfaces to drive 64 outputs on CCIP

3.15 PSA card

Nameplate: PPSA-A and PPSA-B

Indication/Interface	Description
LED (24 V)	Availability of power to the card
LED (ERROR)	Power supply Input out of limits

LED (4.5V)	4.5V Output voltage OK
------------	------------------------

3.16 PSB card

Nameplate: CCPSB-A, CCPSB-B, CVPSB-A, CVPSB-B, OPSB-A, OPSB-B, PPSB-A and PPSB-B

Indication/Interface	Description
LED (POWER)	Availability of power to the card
LED (ERROR)	Power supply Input out of limits
LED (4.5 V)	4.5V Output voltage OK

3.17 PSC card

Nameplate: OPSC-1

Indication/Interface	Description
LED (POWER)	Availability of power to the card
LED (ERROR)	Power supply Input out of limits
LED (5.8 V)	5.8V Output OK
LED (4.5 V)	4.5V Output OK

3.18 RS485-OFC Bi-directional converter card

Indication/Interface	Description
LED (POWER)	Availability of input power to CPLD / OFC section of the card
LED (POWER)	Availability of input power to RS485 section of the card
LED (PTX)	Data transmitting through primary channel
LED (PRX)	Data receiving on primary channel
LED (STX)	Data transmitting through secondary channel

LED (SRX)	Data receiving on secondary channel
LED (M/S)	ON - The Card is programmed for Master OFF - The Card is programmed for Slave
LED (P/S)	ON - The Card is using primary channel for communication. OFF - The Card is using secondary channel for communication.
15 pin Female connector (RS 485)	RS485 interface to corresponding CPU cards.

4 Start up Details

After configuring and installing MEI633, the next step in the startup process is to apply power to the system, and then verify that the internal functions of the MEI633 system is working properly.

4.1 Initial Checks

The following checks should be made before switching ON the system:

4.1.1 CIU

When the front door of the CIU rack is opened, there will be a glass door with lock through which the sub-systems that are housed inside, can be observed.

- The glass door should be in locked position.
- No loose wires are hanging from any of the PCBs.
- Indications on the facias of all the PCBs are in OFF condition
- No PCB is projecting outside. The fixing screws for all the PCBs are fixed properly.
- The RS485 cable connections and OFC connections to the RS485-OFC Bi-directional converters are fixed properly.

4.1.2 OCM

When the front door of the OC rack is opened, there will be a glass door with lock through which the boards housed inside, can be observed.

- The glass door should be in locked position.
- The cables on the D-type connectors on the front facia of OIC card are fixed properly
- No PCB is projecting outside. The fixing screws for all the PCBs are fixed properly.
- The RS485 cable connections and OFC connections to the RS485-OFC Bi-directional converters are fixed properly.

4.1.3 PP / CCIP

The entire PP module related PCBs are housed in two racks and will be enclosed on the rear side of the Control-Cum-Indication-Panel (CCIP).

- On the CCIP, the Panel/PC key should be present and should be in “Panel” position. If the particular yard is provided with VDU also, the key can be in any position.
- No indication on the CCIP should be ON.

4.1.4 COUNTER BOX

- The Counter Box should also be checked before the system is switched ON.
- The cables on the D-type connector on the front facia of PP CPU card is fixed properly
- No loose wires are hanging from any of the PCBs.
- All the indications on the facias of all the PCBs are in OFF condition

- No PCB is projecting outside. The fixing screws for all the PCBs are fixed properly.
- The OFC connections on the RS485-OFC converter are fixed properly.

4.2 MEI633 Power ON

The following Switch-ON sequence should be followed for starting up the MEI633.

- 110V Mains Switch ON (in the IPS room) for powering the Central Cabin modules
- 110V Mains Switch ON (in the IPS room) for powering the End Cabin A
- 110 Mains Switch ON (in the IPS room) for powering the End Cabin B

4.3 Indications

The following text gives information about the indications on each of the MEI633 sub-systems at the time of Power ON.

4.3.1 CIU

1. The Power ON LEDs on all the Power supply cards, Front Panel Displays and VHM cards will be ON. Status LEDs on FPDs will be ON and the name of the Yard will be displayed on both the FPDs.
2. The VIC A, VIC B, COMP A and COMP B cards will be ON in sequence.
3. Messages start to be displayed on the FPDs and the LSTS LED will be OFF on the FPDs. The following messages will be displayed on FPD.

FPD A – **RDSO Test Yard**, Link Failed, COMP A:001D Post OK, COMP B: 001D Post OK, SVP A:0014 Post OK.

FPD B – **RDSO Test Yard**, Link Failed, COMP A:001D Post OK, COMP B: 001D Post OK, SVP B:0014 Post OK.

Note: The specific yard name will be displayed in place of **RDSO Test Yard** for the actual installation.

4. The POST activities will take place inside the VIC and COMP CPUs. The POST OK code for COMP will be displayed on the 7-segment display of the COMP cards. The VIC card displays the temperature after displaying the character 't' on the 7-segment display. Next, the POST OK code is displayed on the VIC cards. For COMP, the POST OK code is “1d” and for VIC, it is “14”.
5. The POST OK messages for each of the CPUs of channel A and B will scroll on the corresponding FPDs. POST OK messages for COMP and SVP are displayed in sequence.

4.3.2 OC

1. The Power ON LEDs on all the Power supply cards, VHM, OCI, OCO and RS485-OFC Bi-directional converter cards will be ON.
2. After a small delay, the OIC card will be ON. The 7-segment display on the front facia of the OIC card will display '00'.
3. The Health Status LED on the VHM cards will start to blink indicating that the ICOM cards are healthy.
4. VCOR picks up and the corresponding LED on the OVC card will be ON.
5. When VCOR picks up, all the available ORD cards will become ON
6. After around 1.5 minutes, the character 't' followed by the actual temperature are displayed on the 7-segment display of the OIC card.

4.3.3 PP/ CCIP

1. Either of PANEL or PC LEDs will be ON depending upon PANEL/PC key position.
2. System Health LEDs for Ch-A and Ch-B will start to blink indicating that the System is healthy.
3. Link Status LEDs (RED) for Ch-A and Ch-B will indicate that the PP link with COMP is FAULTY. Also, an audio alarm will be ON which indicates the Link Faulty condition. Pressing the corresponding ACK button will stop the audio alarm but the visual indication will be intact.
4. After the communication with COMP CPU is established, the Link Status LEDs (AMBER) for Ch-A and Ch-B will start to blink, indicating that the PP serial link with COMP is OK. The audio alarm will also stop now.
5. The indications on the CCIP will reflect the actual field conditions – Signals, Points, Track Circuits etc.

4.3.4 COUNTER BOX

Indication is provided to the Operator for the following Critical faults on the Counter Box Front Facia:

1. Wrong Side failure Detection by the System:

This is indicated by a Red LED accompanied with a Fault Alarm on the Counter Box Front Facia.

CIU SHDN (CIU Shutdown) – If the Wrong side failure is detected by CIU
OC SHDN (OC Shutdown) – If the Wrong Side failure is detected by OC

The Fault Alarm and Indication will persist till the Fault is acknowledged by pressing the WSF ACK Button provided on the Counter Box Front Facia.

2. Change in the CVC Status:

Each CVC (CVC-A and CVC-B) Status is indicated as follows:

- | | |
|--------------------|--------------|
| ACT (Active) | – Green LED |
| STBY (Standby) | – Yellow LED |
| NA (Not Available) | – Red LED |

When any change in the CVC status occurs, it is indicated by an Alarm to the Operator.

The Fault Alarm will persist till the Fault is acknowledged by pressing the CO ACK Button provided on the Counter Box Front Facia.

3. Panel Blank:

When the CCIP becomes blank and no Route / Signal indication is shown, it may be due to either of the following conditions:

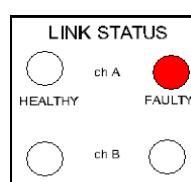
- Panel Power Supply is faulty
- Communication from CIU is faulty from both the channels

If all the indications on the CCIP are OFF, it indicates that the Panel Power supply is faulty.

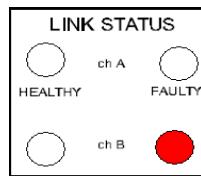
If the Link Status Faulty indication is displayed for both the channels, it indicates that both the communication channels are faulty.

4. Link Status Indication:

When Channel A or Channel B link is faulty, corresponding red indication will be flashing continuously.



Channel –A Link Status is Faulty



Channel –B Link Status is Faulty

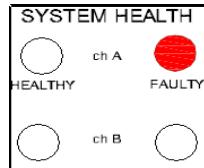
Buzzer and Acknowledgement:

When Channel A link or Channel B Link fails, a Buzzer is turned on to alert the operator. To acknowledge the fault, Press the Acknowledge button. The Buzzer stops when the fault is acknowledged by the Operator.

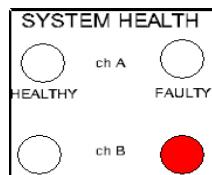
The Maintenance engineer should be informed so that appropriate action will be taken to rectify the fault.

5. Health Status Indication:

When Channel A or Channel B health is faulty, corresponding red indication will be flashing continuously.



Channel – A Health Status is Faulty



Channel – B Health Status is Faulty

Buzzer and Acknowledgement:

When Channel A Health or Channel B Health is failed, a Buzzer is turned on to alert the operator. To acknowledge the fault, Press the Acknowledge button. The Buzzer stops when the fault is acknowledged by the Operator.

5 Command Cum Indication Panel (CCIP)

The CCIP is a part of Electronic Interlocking System MEI633. This is used to give Commands to the System and to view the current Yard status. The commands are given through push buttons. In an EIS System, both Panel Processor along with CCIP and a VDU CT can be connected, or any one can be connected as Operator Interface, as per the user railway requirement.

To use CCIP as Active Command Panel, execute the following steps:

1. Key In SM Key and SE Key in CCIP.
2. Change CCIP to Command mode using Panel/PC Key Control. Change the Panel/PC key to PANEL Position.

Refer **User Manual for Command cum Indication Panel of MEI633 Version 1.0 (MEI633-CCIP-UM-1_0)** for operator commands and indications.

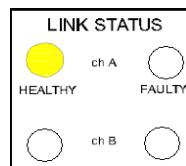
5.1 Panel blank

- When the CCIP becomes blank and no Route / Signal indication is shown, it may be due to either of the following conditions:
 - i. Panel Power Supply is faulty
 - ii. Communication from CIU is faulty from both the channels
- If all the indications on the CCIP are OFF, it indicates that the Panel Power supply is faulty.
- If the Link Status Faulty indication is displayed for both the channels, it indicates that both the communication channels are faulty.

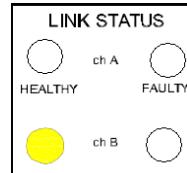
In either of the above cases, the System Maintainer should be informed so that appropriate action could be taken to rectify the fault.

5.2 Link Status Indication

- When Channel A or Channel B link is healthy, corresponding yellow indication will be flashing continuously.

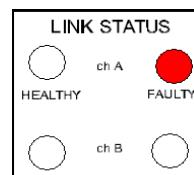


Channel –A Link Status is Healthy

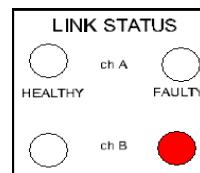


Channel – B Link Status is Healthy.

- When Channel A or Channel B link is faulty, corresponding red indication will be flashing continuously.



Channel –A Link Status is Faulty



Channel –B Link Status is Faulty

Buzzer and Acknowledgement:

When Channel A link or Channel B Link fails, a Buzzer is turned on to alert the operator. To acknowledge the fault, Press the Acknowledge button. The Buzzer stops when the fault is acknowledged by the Operator.

6 Video Display Unit (VDU)

The VDU CT (PC based Operator's Command Cum Indication Panel) is a part of Electronic Interlocking System MEI633. It is used by the System Operator to give Commands to the System and to view the current Yard status. The VDU CT is equivalent in functionality to the conventional Domino type Control Panel. Instead of Domino type CCIP, the operator can use the VDU to give commands to the EIS. Instead of knobs and buttons as in a Domino type CCIP, the commands are given through mouse by selecting the appropriate commands from the drop down menus.

In an EIS System, both Panel Processor along with CCIP and a VDU CT can be connected, or any one can be connected as Operator Interface, as per the user railway requirement.

To run VDU CT application, please ensure that following two points are met and also in sequence i.e. first point must be completed and then second point.

1. Yard specific database to be present in Database folder (this ‘database’ folder is present in application installed folder).
2. And also at least one user account exists(SM key User or SE key User).

For Example:

If application is installed in “C:\Program Files\PCCIP“ then place Yard specific database Ex: RDSO.mdb (database file for RDSO yard) in “C:\Program Files\PCCIP\Database”.

Steps to Start the PCCIP Application

1. Click on Start → Programs →PCCIP→ PCCIP
2. Login window will be shown. In this enter any valid Username and password, i.e. User Account created in User Accounts application. And click **OK** Button.
3. Next PCCIP Initialization Window will be shown. Enter the Configuration Parameters and Click OK Button.
4. Yard shall be displayed and it shows progress bar.
5. Finally Yard is displayed .It consists of tracks and panel buttons and other miscellaneous elements in the yard. Now required operation in the yard can be performed.

Refer **User manual for VDU Control terminal of MEI633 Version 1.0 (DOCID- MEI633- VDU_CT-UM-1_0)** for operator commands and indications.

7 MEI633 Maintenance tools program

This section provides an overview of the MEI633 Maintenance Tools program. Maintenance engineers and application engineers use MEI633 Maintenance Terminal (MT) to view and monitor Events/Relay status and MEI633 system faults. MT provide wide range of options:

- Viewing the current status (On line data) of the MEI633 system.
- Reviewing stored system event and error data (Off line data).
- Cautions when any fault occurs in the system so as to take necessary action.
- Shows faults and critical faults in both Channel-A and Channel-B

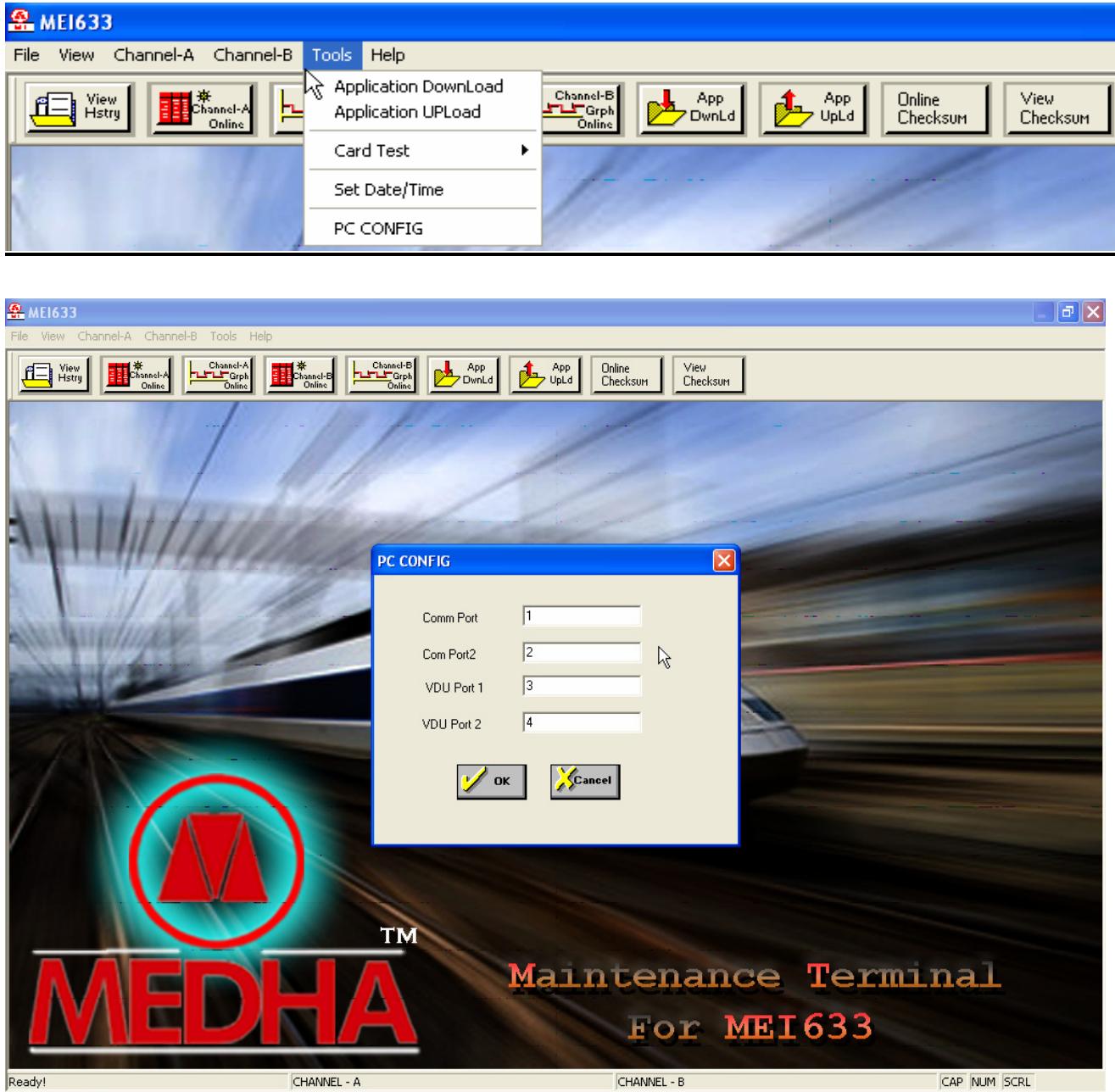
The following procedure describes loading the application software

1. Connect a serial cable between CVC card and MT personnel computer.
2. Power up the MT personnel computer and allow the Microsoft Windows program to load.
3. Double click on the **Maintenance Terminal For MEI633** icon on the Windows desktop to start up the Maintenance Tools program. Once the program has loaded, the Maintenance Tools main menu (shown below) will be displayed on the computer screen.



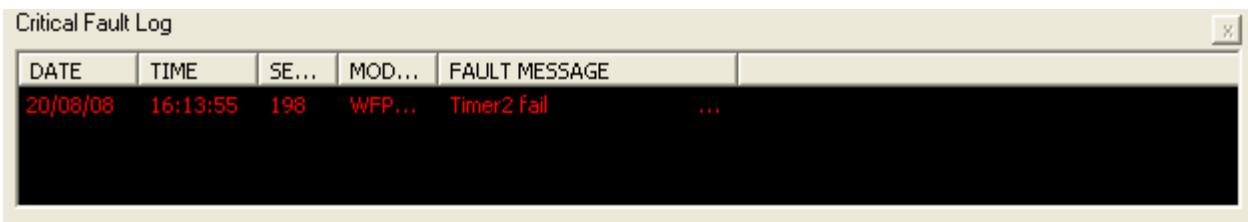
4. Configuring PC for communication is done through PC CONFIG option provided in Tools menu. You can Change the Port Numbers used for Serial communication between CIU and MT.

Below is the Screen used to perform this operation.

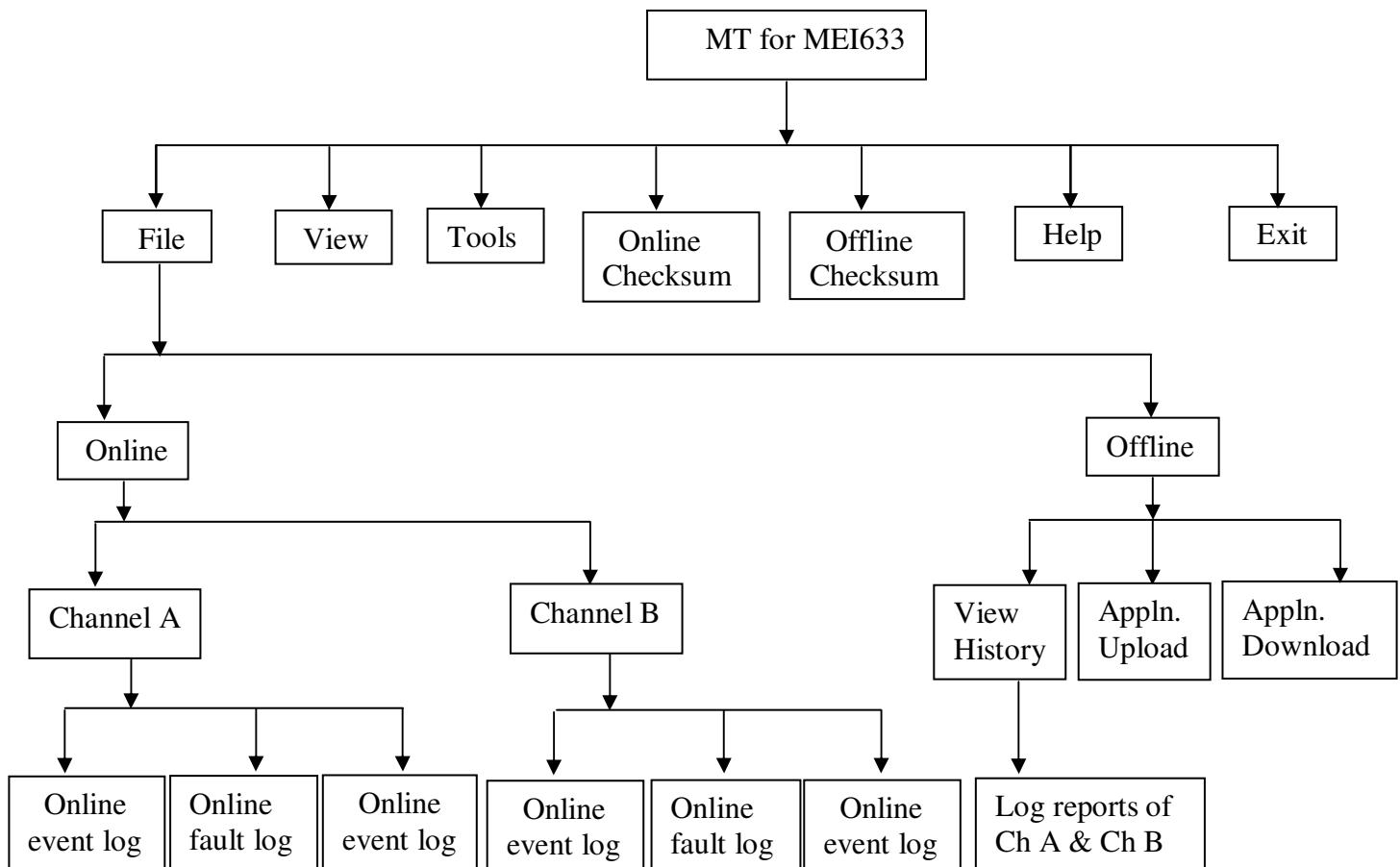


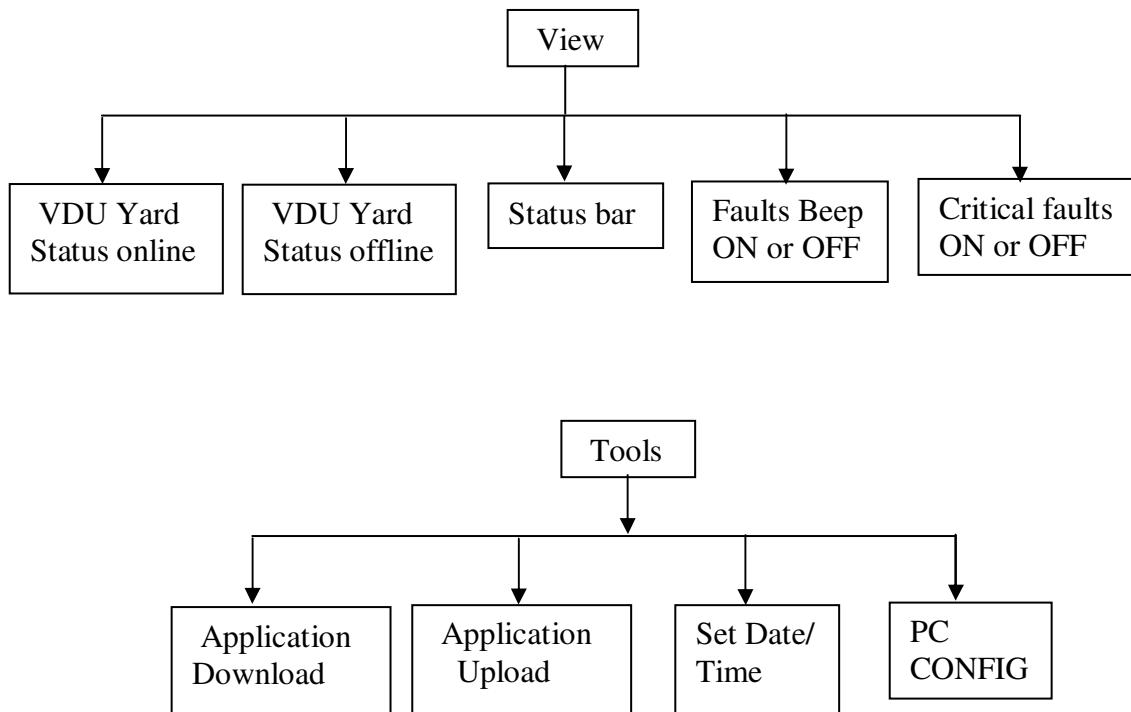
5. Press Channel A online button Channel B online button to view online data.
6. As soon as Channel A and Channel B window opens we will be able to see events pertaining to Channel A and Channel B. If no error message is seen in these windows it indicates that system is functioning well.

7. If any critical fault occurs it will be displayed in critical fault log shown below



MT Application Software block diagram





7.1 File Menu

In this menu you have the following options:

- Online
- Offline
- View History Data
- Exit

MT operates in two modes namely:

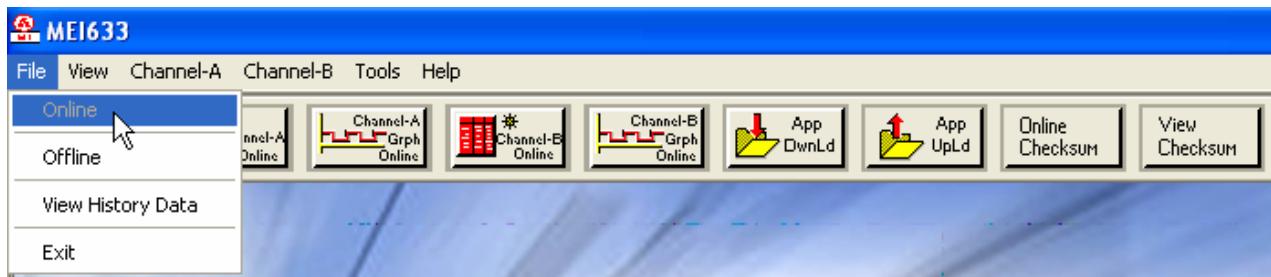
- Online Mode
- Offline Mode

7.1.1 Online

This option is used to communicate with Central Interlocking Unit. Maintenance Terminal receives data from the system through two Serial Ports, and its status is shown in separate windows simultaneously for Channel-A and Channel-B. These windows can be activated through Channel-A and Channel-B menu items and by selecting "View Event Log/Fault Log Online" option.

Graphical View of Online Events of both the Channels can be selected through "View Event Graph Online" option.

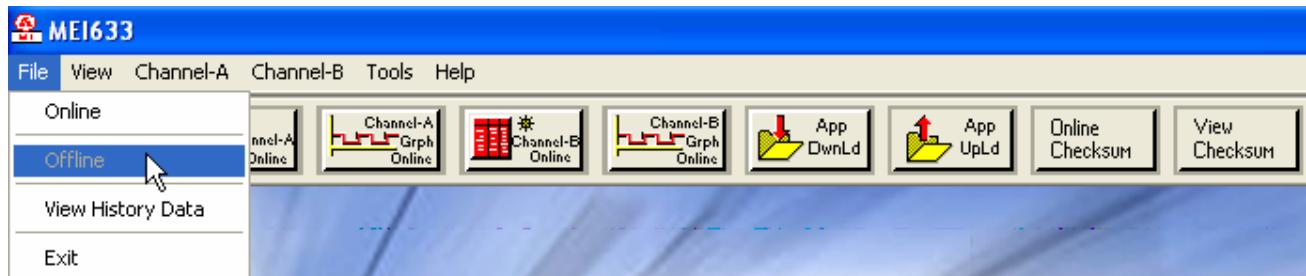
The following is the Menu option:



When you connect to the CIU, Online option in the File Menu is disabled and the Offline Option is enabled. The Application Download and Upload tool buttons are disabled, since application Upload and Download options cannot be done when MT is in Online Mode.

7.1.2 Offline

This option is used to Disconnect from the CIU, The following is the Menu option:



When you disconnect from the system online option in the File Menu is enabled and the Offline (Disconnect from System) Option is disabled. The Application Download and Upload options are unavailable in online mode. Application Upload and Download options can be performed only when MT is in Offline Mode.

7.1.3 View History Data

View history data option is used to view the log reports of Channel-A and Channel-B.

You can view Event Log in tabular form and in Graphical view. You can view a part of log with in the specified Date and time, and also depending up on the Relay Types. There are filters where you will be able to view the desired records.

You can view Fault Log between specified Date and Time in tabular view, MT provides a filtering option through which you can view the log Module wise. Also, you can view all the Critical Faults occurred during that time. This option is unavailable in online mode.

7.1.4 Exit

This Menu option is used to close or Exit from Maintenance Terminal.

7.2 View Menu

- VDU Yard Status Online

- VDU Yard Status Offline
- Status Bar
- Faults Beep ON/OFF
- Critical Faults Beep ON/OFF

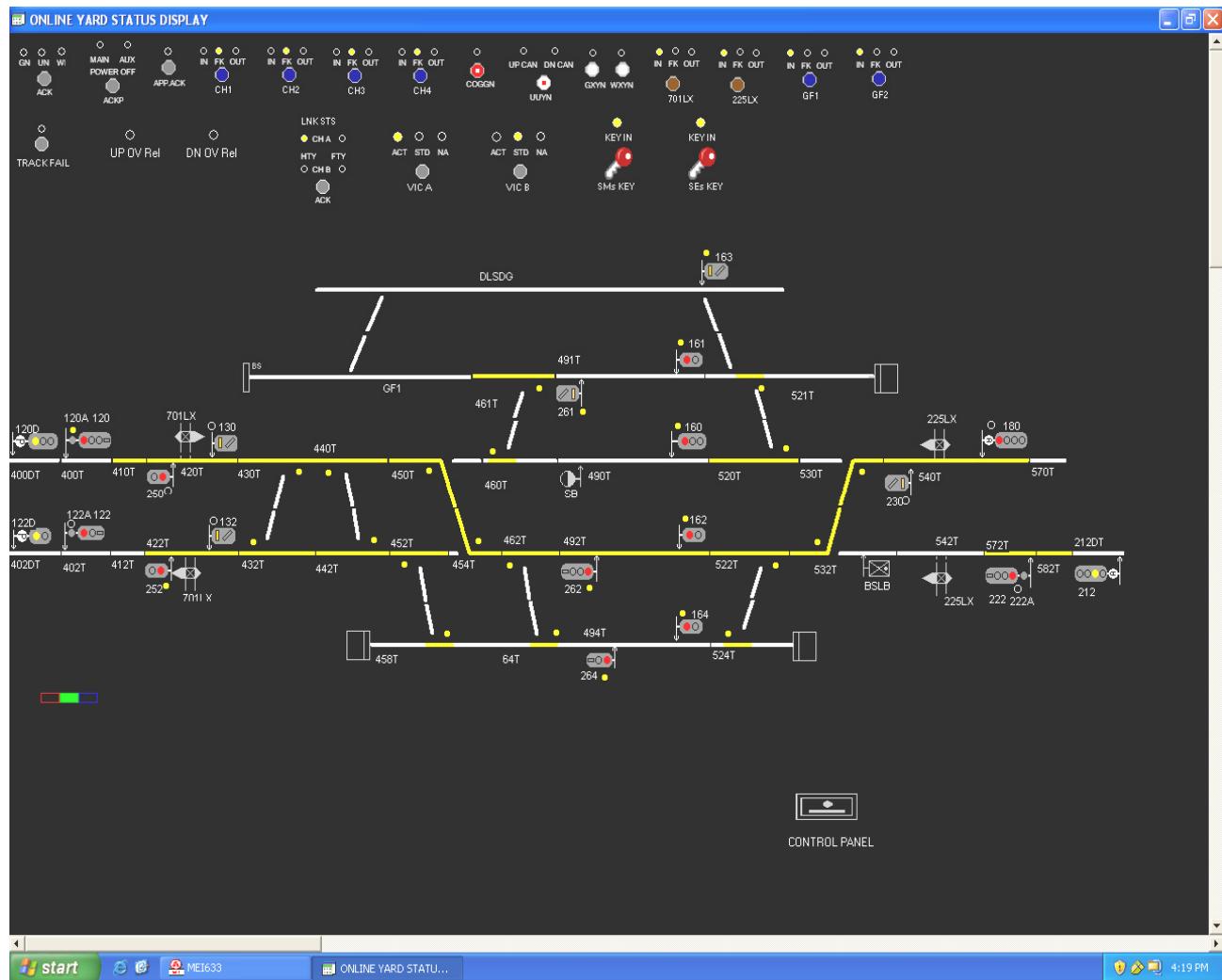


If MT is in Offline mode VDU Offline option is available. When MT is in Online Mode, VDU Online option is available and VDU Offline status is unavailable.

When MT is in online mode "VDU Yard Status Offline" option is unavailable.

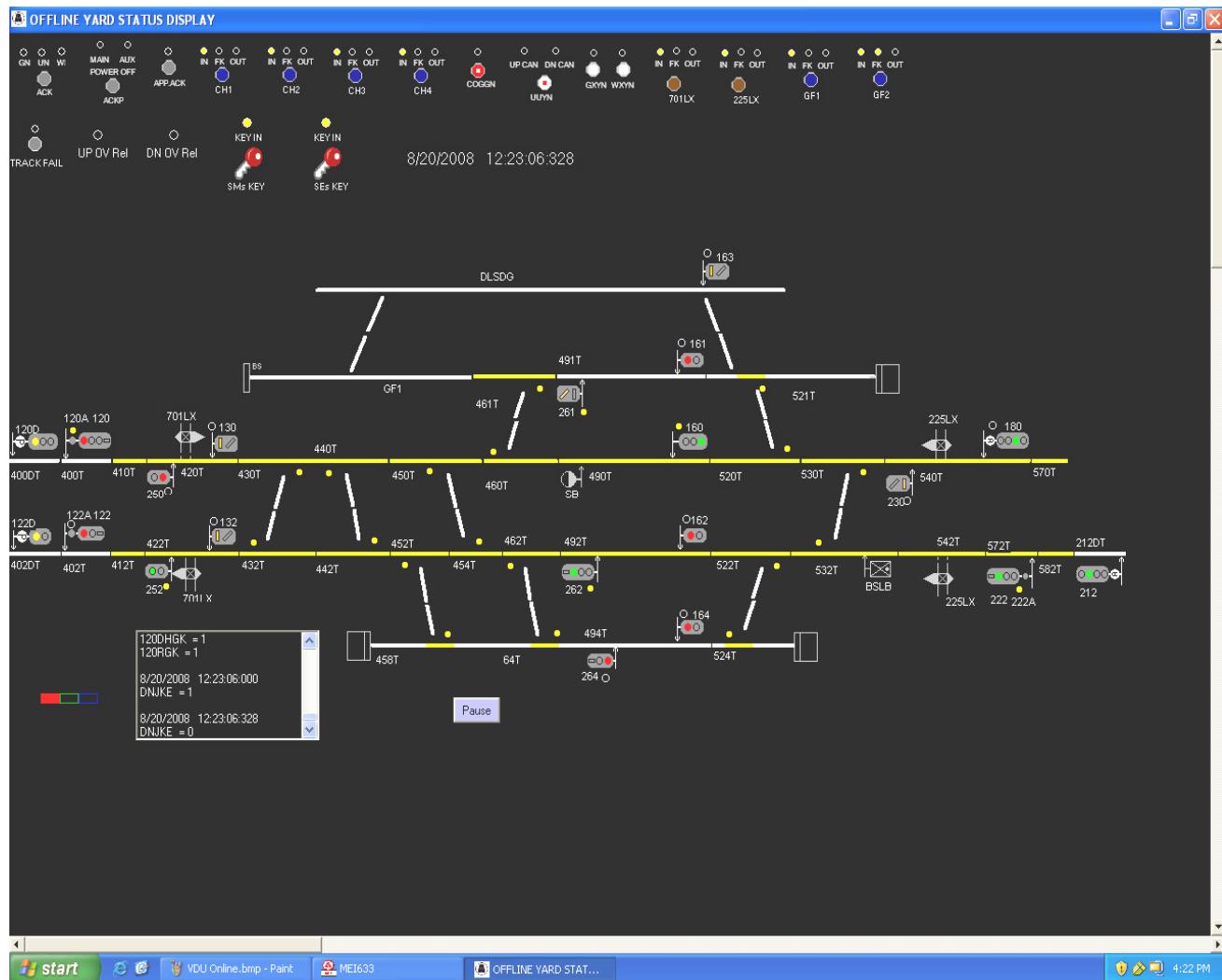
7.2.1 VDU Yard Status Online

VDU Yard Status Online option allows you to view the online yard status in a separate window.



7.2.2 VDU Yard Status Offline

"VDU Yard Status Offline" option allows you to view the Offline yard status, you can view the status of the yard at a defined period of time in this option.



7.2.3 Status Bar

This option is used to show or hide the status bar. A typical MT Status Bar is as shown here.

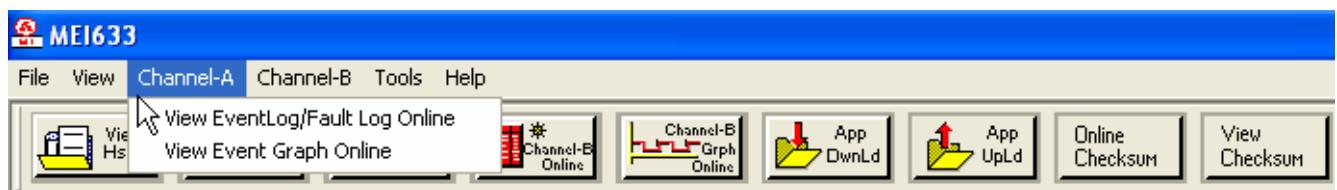


The Status Bar in MT gives you a bunch of information.

- The second left pane where "CHANNEL-A" is shown gives you information on Channel-A's status. It gives you brief information on the communication between CIU and MTs Channel-A.

- The third left pane where "CHANNEL-B" is shown gives you information on Channel-B's status. It gives you brief information on the communication between CIU and MT.
- The fourth left pane tells you if the Caps Lock is on,
- The fifth left pane tells you if the NUM Lock is on,
- The last pane tells you if the Scroll Lock is on.

7.3 Channel-A Menu



Channel-A menu option has the following Sub-Menus:

- View Event Log/Fault Log Online
- View Event Graph Online

7.3.1 View Event Log/Fault Log Online

This option gives you a detailed status like Date and time of current Events and the current Faults, their current status, their sequence number etc; in the CIU. Further options in this Window are:

Printing Online Event log reports and Printing Online Fault log reports.

Setting Date and Time of the MT.

Clearing data in both the lists

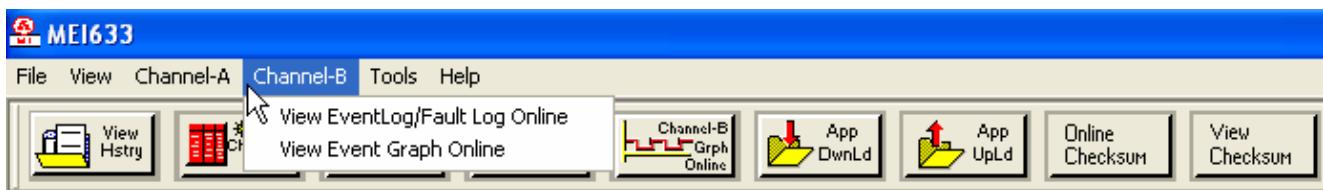
Freezing display from the CIU while communicating continues with CIU in background.

7.3.2 View Event Graph Online

This option allows you to view the status of the current Events in Graphical view.

You can view the current status of the desired Events through a selection dialog, where you can select the desired Events and then View the Graphical representation of Relay Status in Graph.

7.4 Channel-B Menu



Channel-B menu option has the following Sub-Menus:

- View Event Log/Fault Log Online
- View Event Graph Online

7.4.1 View Event Log/Fault Log Online

This option gives you a detailed status like Date and time of current Events and the current Faults, their current status, their sequence number etc; in the CIU.

Further options in this Window are:

Printing Online Event log reports and Printing Online Fault log reports.

Setting Date and Time of MT (PC).

Clearing data in both the lists

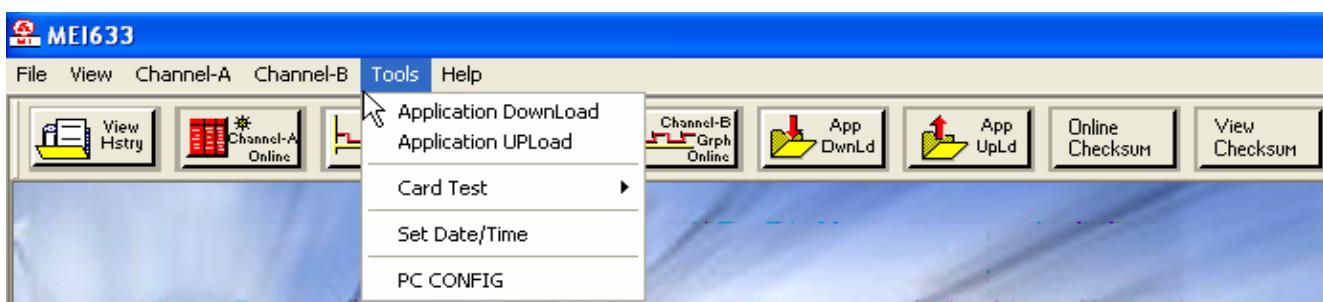
Freezing display from the CIU but communicating in background.

7.4.2 View Event Graph Online

This option allows you to view the status of the current Events in Graphical view.

You can view the current status of the desired Events through a selection dialog, where you can select the desired Events and then View the Graphical representation of Up and Down Status in Graph.

7.5 Tools Menu

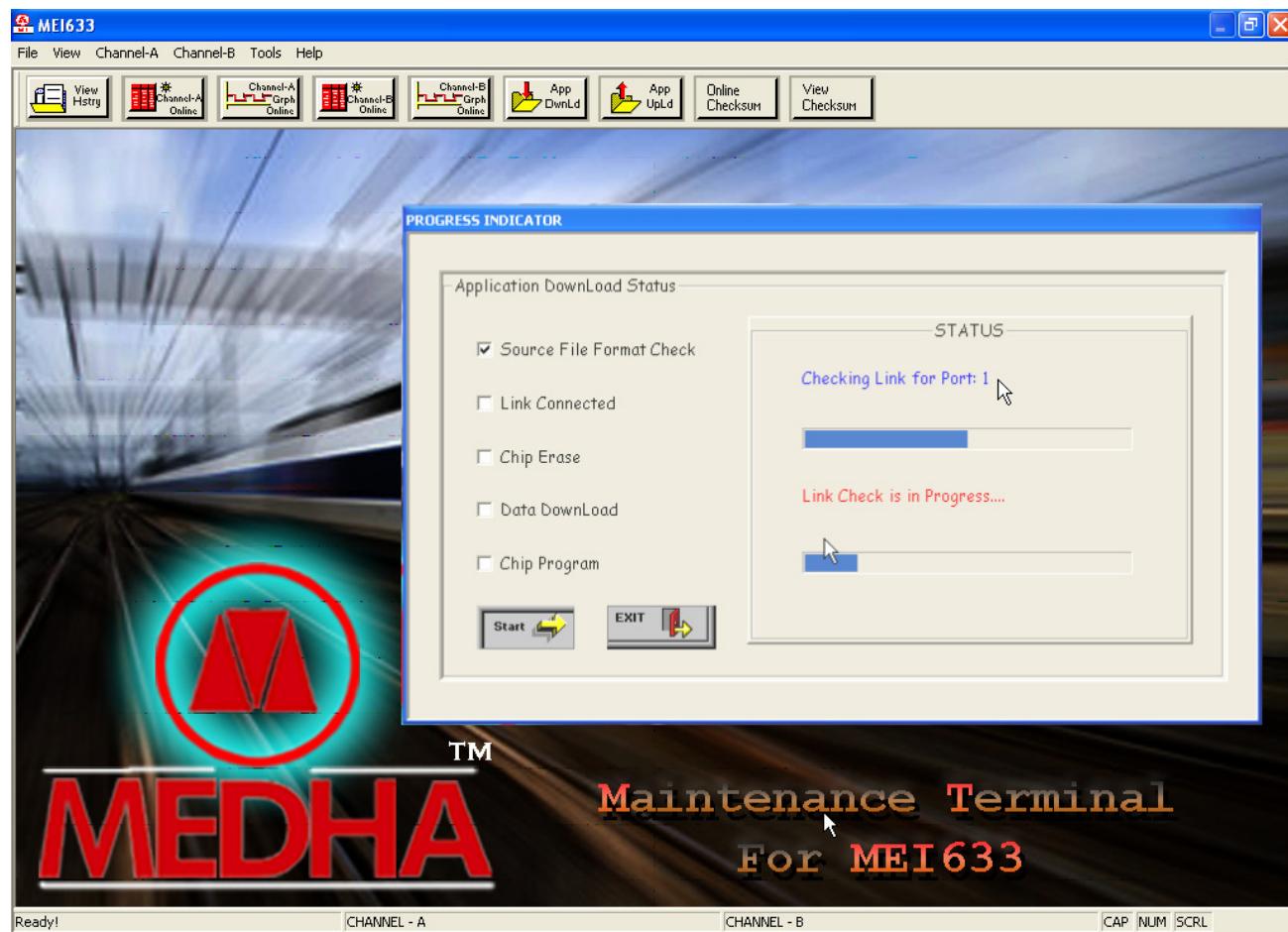


This Menu has the following options:

- Application Download
- Application Upload
- Set Date / Time
- PC Config

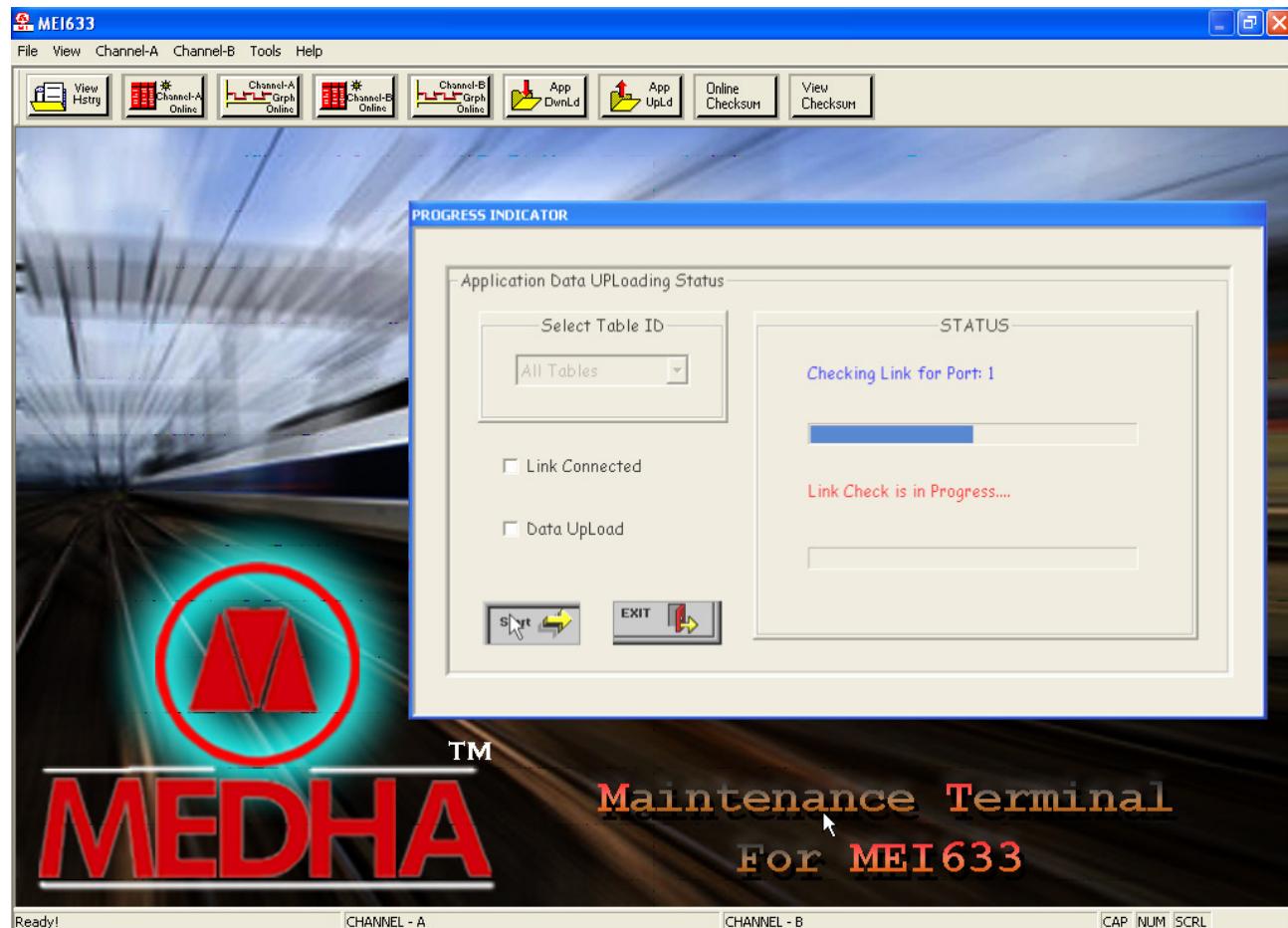
7.5.1 Application Download

Application Download operation is performed through this menu option. Data is downloaded from MT to CIU. The Screen used for this operation is as shown below:



7.5.2 Application Upload

Application Upload operation is performed through this menu option. Data is uploaded from System to MT. The Screen used for this operation is as shown below:



7.5.3 Set Date/Time

Setting the Date and Time of PC can be done through this option.

Below is the Screen used to perform this operation.



7.5.4 PC Config

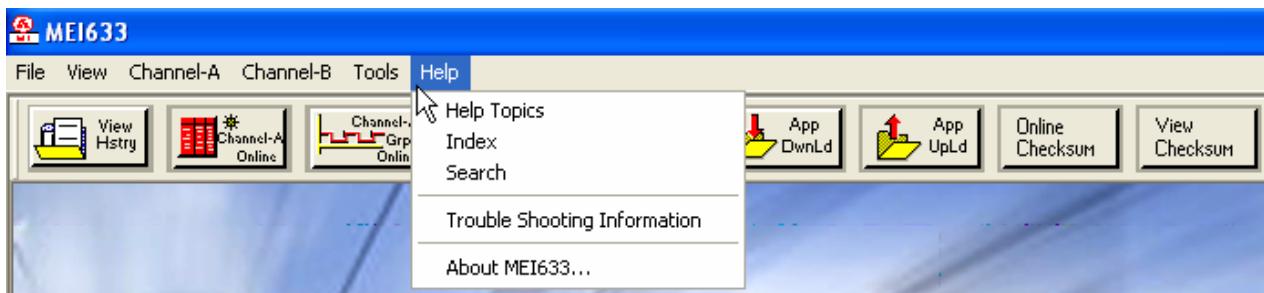
Configuring PC for communication is done through this option provided in MT. You can Change the Port Numbers used for Serial communication between CIU and MT.

Below is the Screen used to perform this operation.



7.6 Help Menu

The following is the Menu option for Maintenance Terminal's Help and Trouble Shooting Information.

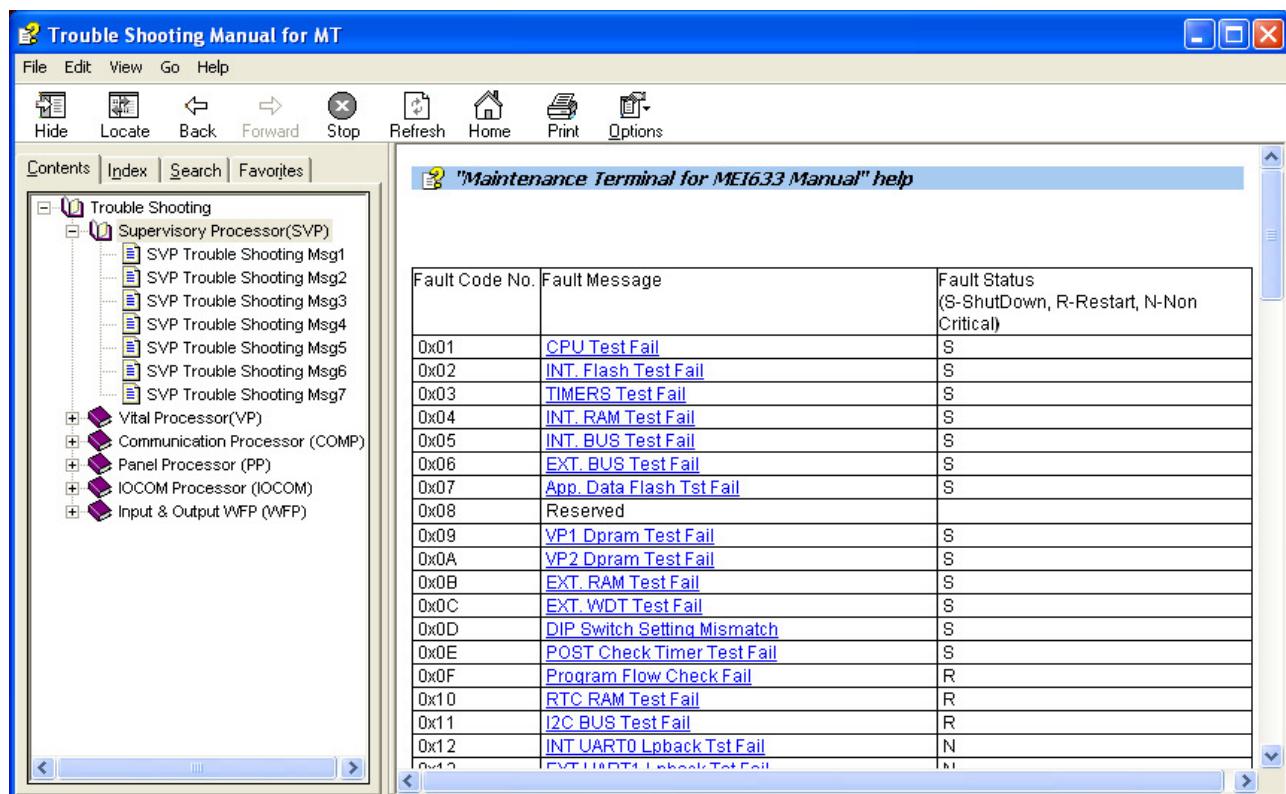


Help Menu provides you a classified and detailed Help, which allows you to use Maintenance Terminal, all its features and all options easily.

Help Topics Menu option is used to open the help Manual's Contents, Index Menu option is used to open the help Manual's Index, and through Search Menu option you can open the Help Manual's

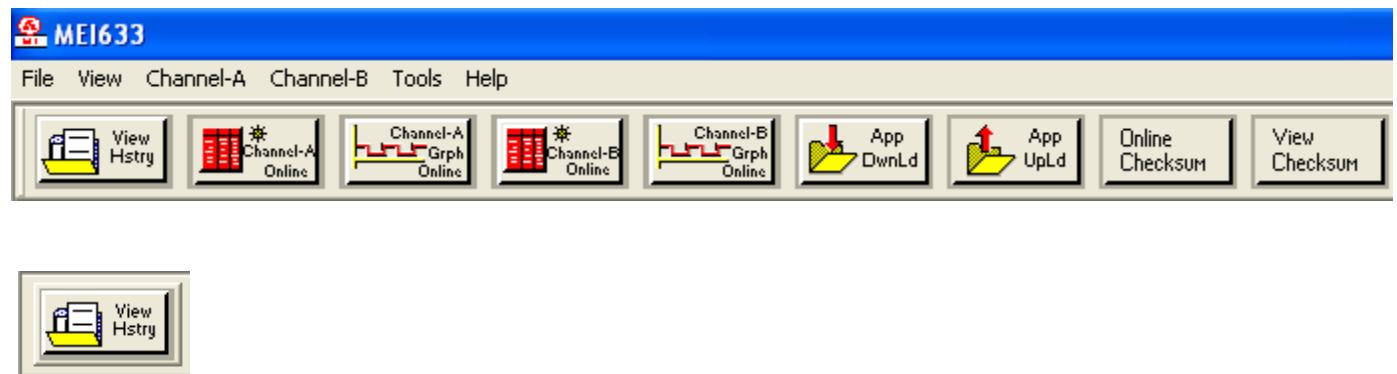
Search tab directly, these are shortcuts provided with MT. You can also navigate in the Help Manual directly.

Maintenance Terminal provides a complete Trouble Shooting Manual, where you can find necessary action to be performed when a Fault or a Critical Fault occurs. You can open the Trouble Shooting Manual using the "**Trouble Shooting Information**" option in "Help" menu. Below is a screen of Trouble Shooting Manual.



7.7 Tool Buttons

The shortcut Tool Bar provided by MT is as shown below:



View Hstry: This tool button is a shortcut for viewing History Data. When you click this tool button a selection window is displayed, where you can select the log you want to view. This window allows you to view the history data of the system, data of Channel-A's Event log, Fault log, Event log graphical view, Channel-B's Event log, Fault log, Event log graphical view.



Channel-A Online: This button opens the online window of Channel-A.



Channel-A Graph Online: This button opens the online graph window of Channel-A



Channel-B Online: This button opens the online window of Channel-B.



Channel-B Graph Online: This button opens the online graph window of Channel-B



App DwnLd: This button opens the Application Download Window, initially LOGIN window is opened. After logging in, Application Download window opens.



App UpLd: This button opens the Application Upload Window.



Online Checksum: This button used for shows the Checksum report of the cards in online mode.



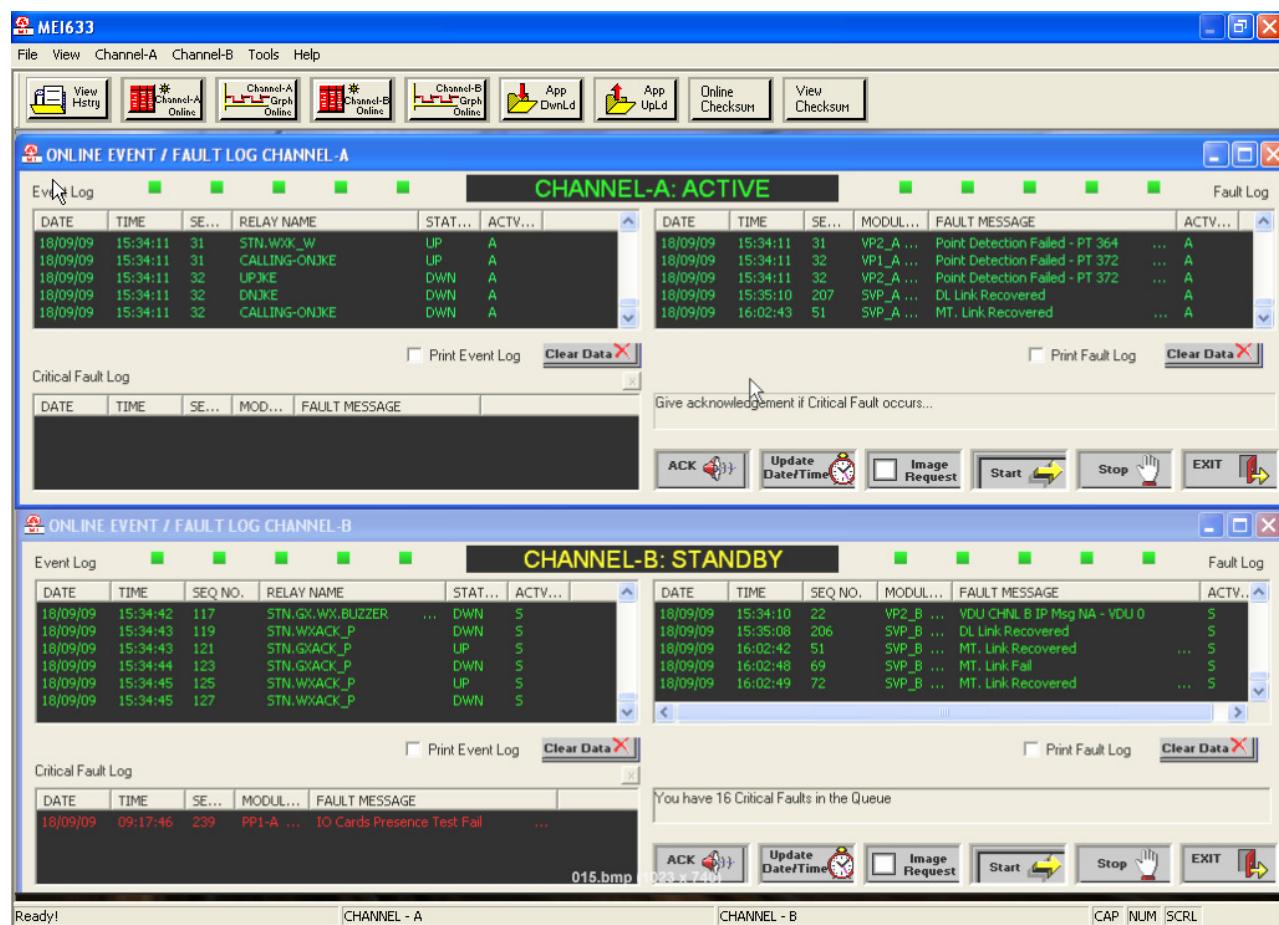
Offline Checksum: This button used for opens the previous Checksum report of the cards.

7.8 Online Mode Event and Fault Display

In Online Mode MT establishes communication between the system and receives the data, this received data is shown in Online window.

Online window for Channel-A and Channel-B are same, therefore any description of this window is applicable for both Channel-A and Channel-B.

Online windows for Channel-A and Channel-B are Identical as shown below:



7.8.1 Title Bar Description

Top pane indicates the Title Bar of the window, Information about the Window is shown in the Title Bar.



Application's Title Bar



Online Window of Channel-A



Online Window of Channel-A when Display is Freezed



Online Event Log Graphical View



Online Window of Channel-B



Online Window of Channel-B with Freezed Display



Online Event log Graphical



Events Selection box



Security



Application Upload Download



PC configuration

MAINTANENCE TERMINAL FOR MEI633 - OFFLINE

Offline Window

7.8.2 State Description

State of Channels like Active / Stand By are also shown on the top center pane of the window.



Indicates Channel-A is Active



Indicates Channel-A Stand By



Indicates Channel-A Link Break



Indicates Channel-B Active

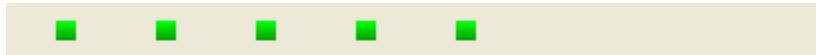


Indicates Channel-B Stand By

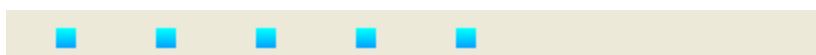


Indicates Channel-B Link Break.

There are some Indicators at the top Left and Top Right pane of the window, as shown below;



Indicates Channel-A/Channel-B's Status are shown in the list controls and all data is being received from the System



Indicates Channel-A/Channel-B display is Freezed from data. And no data is being shown, but System and MT are both communicating in the Background.

7.8.3 Event Log /Fault log

Event Log							CHANNEL-
DATE	TIME	SE...	RELAY NAME	STAT...	ACTV...		▲
18/09/09	15:34:11	30	DNJK_E	DWN	A		
18/09/09	15:34:11	30	CALLING-ONJKE	DWN	A		
18/09/09	15:34:11	31	STN.WX_BUZZER	UP	A		
18/09/09	15:34:11	31	STN.WXNJP_R	UP	A		
18/09/09	15:34:11	31	STN.GX.WX.BUZZER	...	UP	A	
18/09/09	15:34:11	31	UPJKE	UP	A		
18/09/09	15:34:11	31	DNJK_E	UP	A		
18/09/09	15:34:11	31	STN.WXK_W	UP	A		
18/09/09	15:34:11	31	CALLING-ONJKE	UP	A		
18/09/09	15:34:11	32	UPJKE	DWN	A		
18/09/09	15:34:11	32	DNJK_E	DWN	A		
18/09/09	15:34:11	32	CALLING-ONJKE	DWN	A		

Print Event Log

Left Pane shows all the Events logged in the system,

-A: ACTIVE							Fault Log
DATE	TIME	SE...	MODULE N...	FAULT MESSAGE	ACTV...		▲
18/09/09	15:34:11	31	VP1_A	... Point Detection Failed - PT 330	...	A	
18/09/09	15:34:11	31	VP2_A	... Point Detection Failed - PT 330	...	A	
18/09/09	15:34:11	31	VP1_A	... Point Detection Failed - PT 333	...	A	
18/09/09	15:34:11	31	VP2_A	... Point Detection Failed - PT 333	...	A	
18/09/09	15:34:11	31	VP1_A	... Point Detection Failed - PT 361	...	A	
18/09/09	15:34:11	31	VP2_A	... Point Detection Failed - PT 361	...	A	
18/09/09	15:34:11	31	VP1_A	... Point Detection Failed - PT 364	...	A	
18/09/09	15:34:11	31	VP2_A	... Point Detection Failed - PT 364	...	A	
18/09/09	15:34:11	32	VP1_A	... Point Detection Failed - PT 372	...	A	
18/09/09	15:34:11	32	VP2_A	... Point Detection Failed - PT 372	...	A	
18/09/09	15:35:10	207	SVP_A	... DL Link Recovered		A	

Print Fault Log

Right pane shows all faults logged in the system.

All Events and Faults are logged with very detailed information like Date and Time of the Events, Sequence number of the Events, Events/Faults name, Status of Events and Module of Faults etc;

Print Event Log

This is the option used to print the Event Log in the Online, this option prints all the Events in the Online List Control, and after the List contains a buffer of 28 Events a full page is printed.

Similarly for Printing Fault log the same kind of option is provided by MT, where you can check the option and can receive online prints.



This button allows you to clear the List control data that is clearing the Event log or Fault log for Channel-A and Channel-B, and starts afresh.

Below is the Critical Faults Window.

Critical Fault Log				
DATE	TIME	SE...	MOD...	FAULT MESSAGE
20/08/08	16:13:55	198	WFP...	Timer2 fail ...

Critical Faults Window consists of the following.

A Header, which is similar to the Fault log, MT provides you with detailed information on Critical Faults. A Date, Time, Sequence Number, then the Module in which the Fault occurs, and Finally the Fault Message.

In this List only one Critical Fault Message can be shown. To View all the Critical Faults you must click the Ack button so that you will be able to view all the critical Faults.

MT can store only 25 Critical Faults at a time. MT produces buzzers for Critical Faults and for Faults as well.

7.8.4 Online Mode Button Operations

MT Provides the following Online Buttons.

Ack

This button allows you to see all the critical Faults listed.

Image Request

This button sends a request for the Image to the system, Therefore MT receives Image Data Pack in the next packet.

Update Date/Time.

This button allows you to update the set Date and Time from System to MT.

Start

Start button by default is checked, this button indicates data display is being done, and you can see the green small LEDs at the top pane of the window on both the left and right sides of the window.

Stop

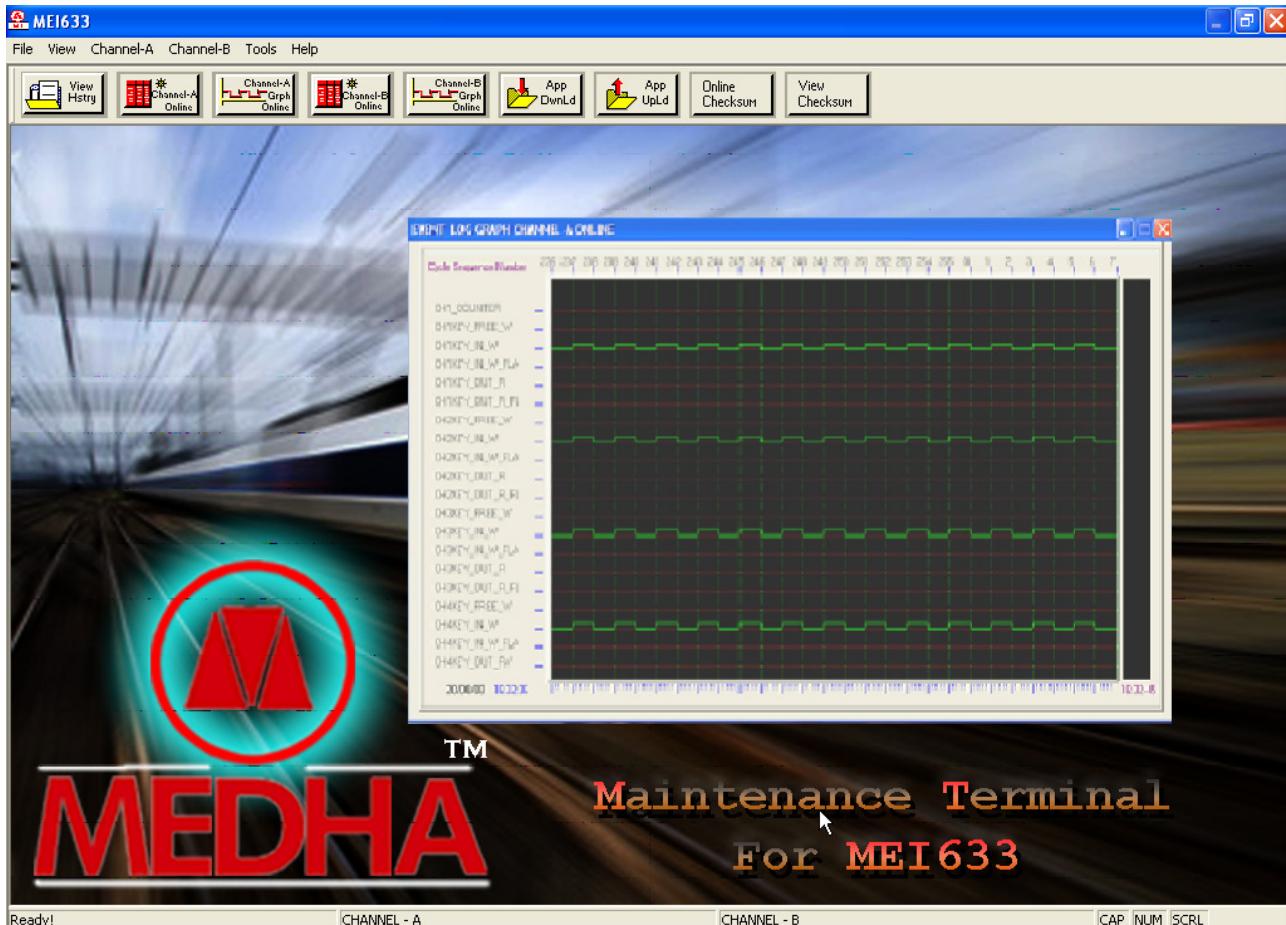
This button should be clicked when you want to Freeze the display from the received data display. When you click this button you can see blue LEDs on the top pane of the window on both the left and right panes of the window.

Exit

This button is used to close the display window. When you click this button MT asks for a confirmation "Are you sure you want to Exit? ", click "YES" if you want to close, and click "NO" if you want to restore it back.

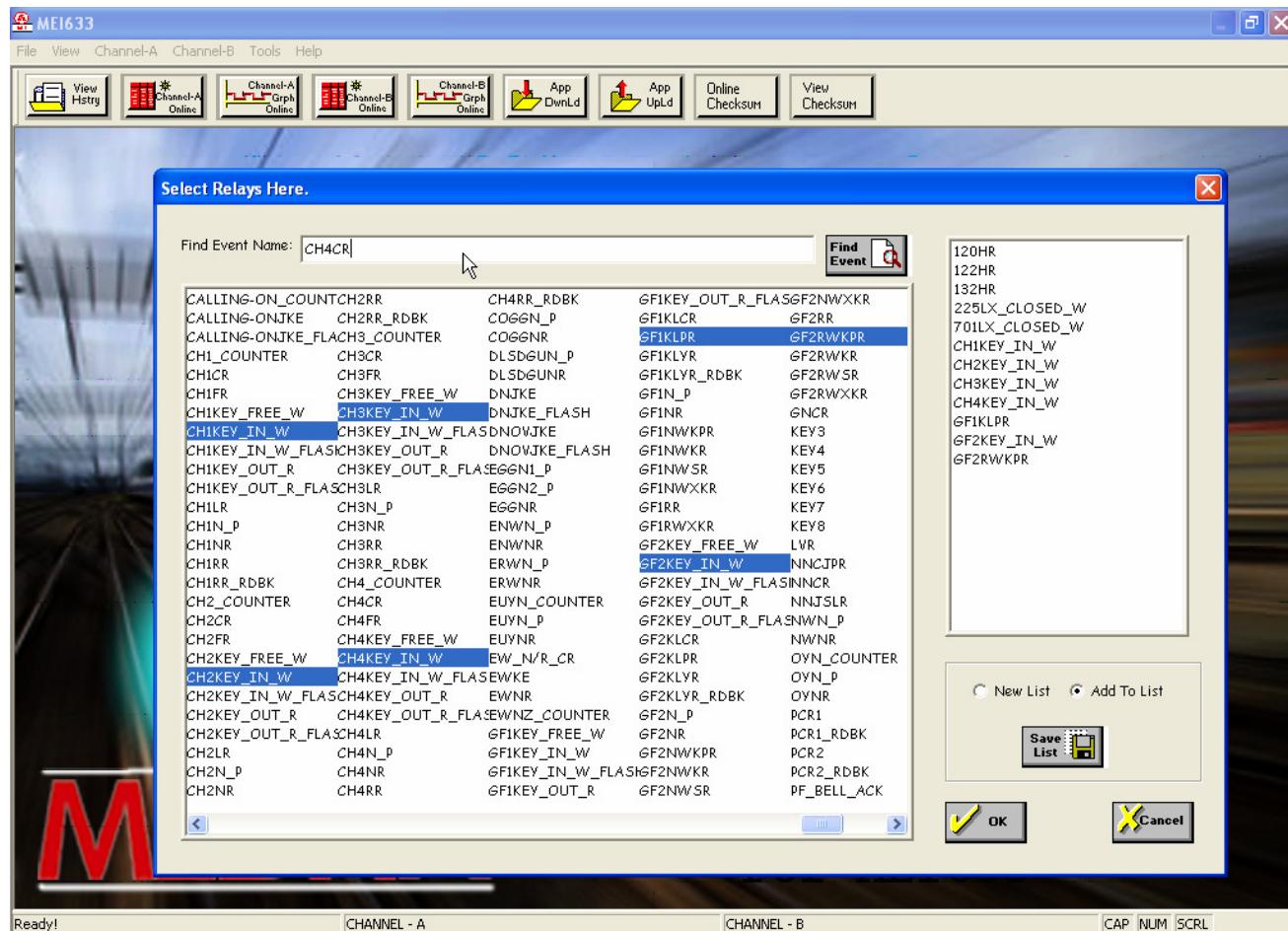
7.8.5 Event log Graphical View

MT also provides a Graphical view of the Events, as shown below.



Graphical views for Channel-A Event log and Channel-B are also identical therefore any description for Channel-A or Channel-B are applicable for both and vice versa.

In the Graphical view of the Event log for both the Channels the left pane has the Events name, which are result of a flexible selection. This selection can be done in the following window:



This window opens when you click the Graphical view option in the Main Menu or from the Tool Bar Buttons. After the selection of Events MT opens the Graphical view with these selected Events Status.

In the above window the left pane consists of a selection box where you can select the required events. When you select the Events they will be listed in the Event List Box at the right side. All the selected Events can be seen in that List Box.

This List can be saved for further use using the "Save List" button below the Event List Box.

To have a New List that is clearing the old list and destroying its content you can use the New List selection option above the Save List button.

Otherwise if you want to add up some Events with old Events then you can select the "Add to List" option.

Finally all these Events get saved. Note that the Events in the Events List Box at the right side of the pane are saved finally.

MT provides an easy way to search the Events, it provides a search option where you can type the event you want to select and click "Find" button at the top right side of the window. This will search the Event and Select it and add in the Event List Box.

7.9 View History Data

View history data option is used to view the log reports of Channel-A and Channel-B.

You can view Event Log in tabular form and in Graphical view. You can view a part of log with in the specified time, and also depending up on the Relay Types there are filters where you will be able to view the desired records.

You can view Fault Log in tabular view, where you can view the log between a specified time, you can view log module wise, and also you can view the critical fault log in a particular time.

View History offers you to view all the reports/Logs of Channel-A and Channel-B,

There are 6 different kinds of reports that MT can display, they are:

- Event log list view of Channel-A
- Event log Graphical view of Channel-A
- Fault log list view of Channel-A
- Event log list view of Channel-B
- Event log Graphical view of Channel-B
- Fault log list view of Channel-B



You can select any log file to view its contents.

The file name contains the date and time the File has been modified last, i.e. the last time when MT was in Offline mode or the time when MT has been closed, with "MT_" as a prefix. The extensions used for the Files are:

“.RL1” is the extension used for Event log for Channel-A

“.FL1” is the extension used for Fault log for Channel-A

“.RL2” is the extension used for Event log for Channel-B

“.FL2” is the extension used for Fault log for Channel-B

For example, in "MT_020408161446.RL1" file name:

"MT_" is the prefix.

02/04/08 is the date and 16:14:46 hrs is the last time when MT was in Offline Mode.

This file contains data from Date: 14/03/08, Time:04:09:02 to Date: 01/04/08, Time 09:57:27.

If the Date/Time is changed back in data logger, then the data will be stored in the respective files. These files will be saved with the extension as shown below:

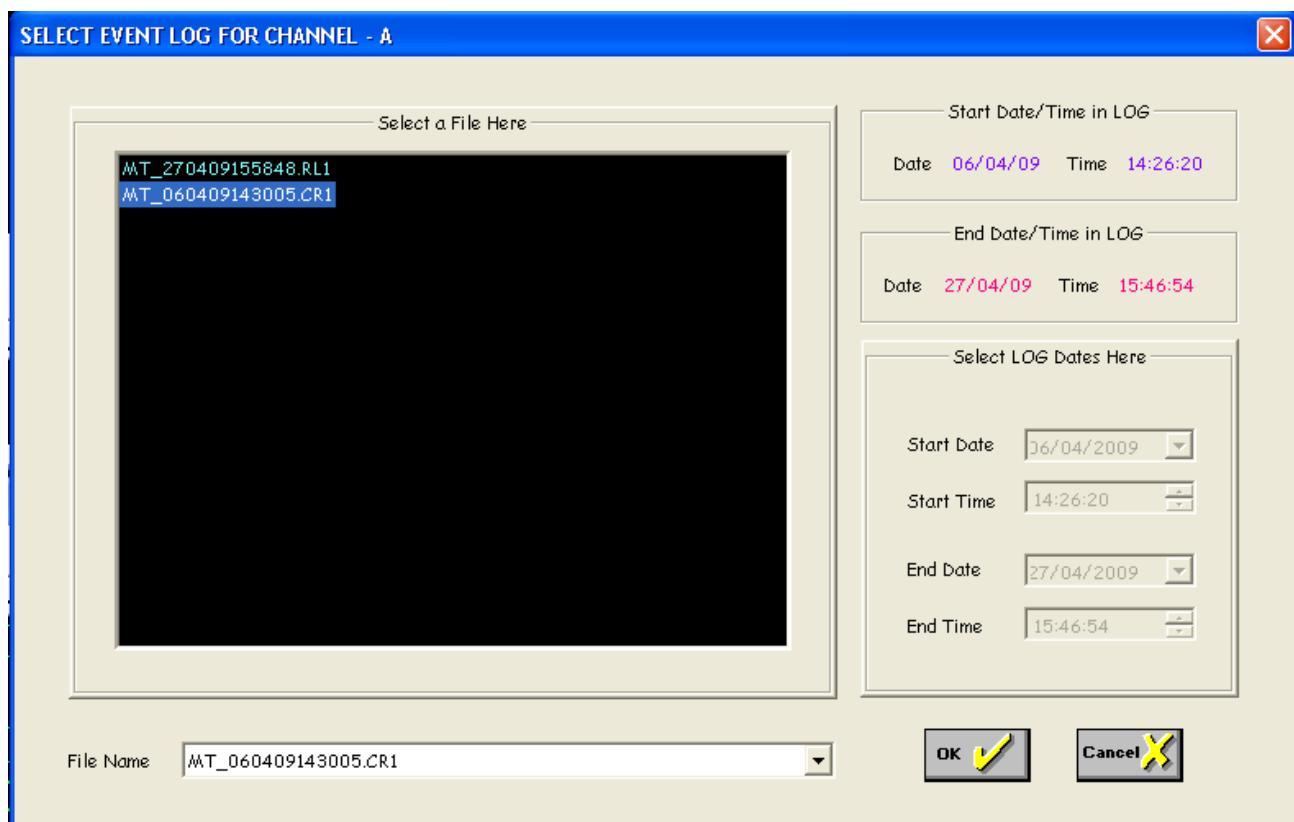
“.CR1” extension file is used for storing the Date/Time Changed back Event log of Channel-A.

“.CF1” extension file is used for storing the Date/Time Changed back Fault log of Channel-A.

“.CR2” extension file is used for storing the Date/Time Changed back Event log of Channel-B.

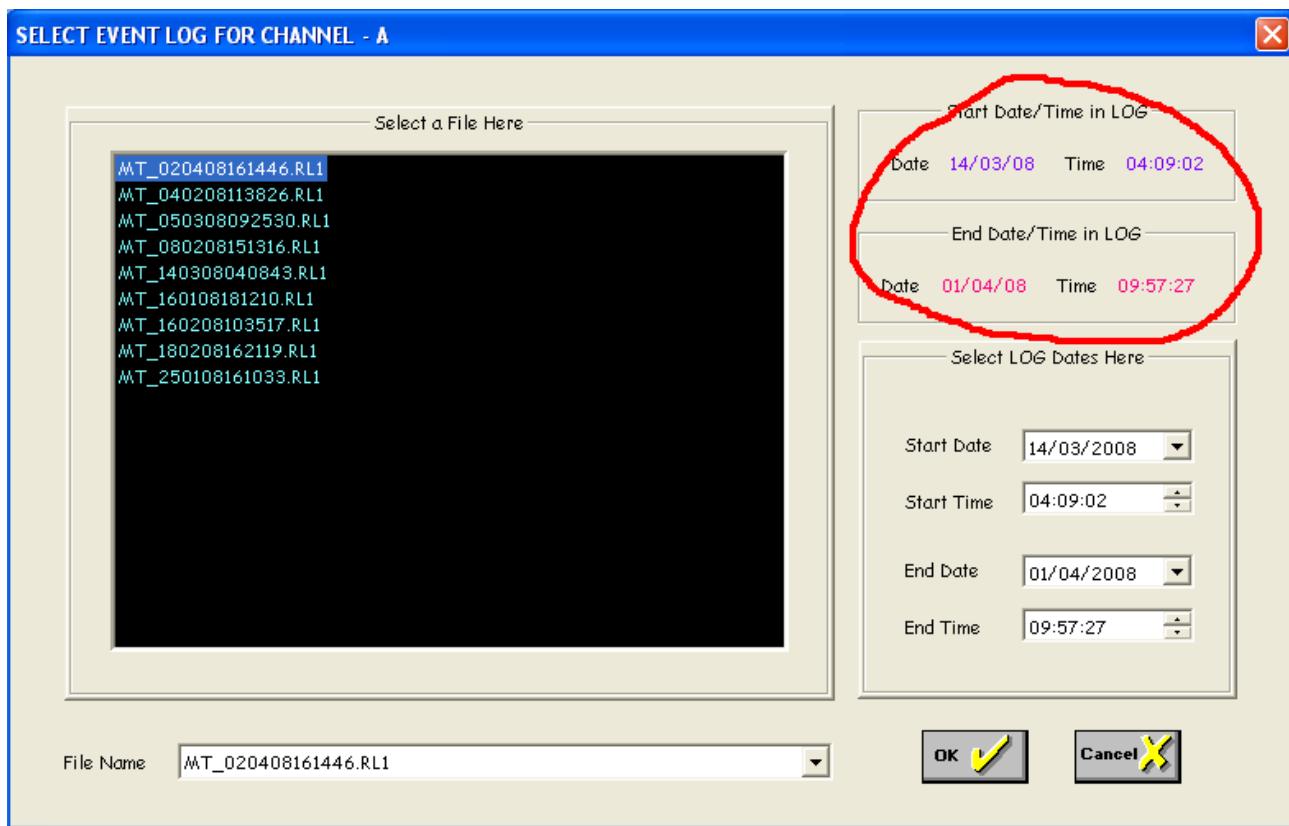
“.CF2” extension file is used for storing the Date/Time Changed back Fault log of Channel-B.

The data storing process continues till the changed back date/time reaches the last record date/time, which was stored in regular “.RL1, .RL2, .FL1, .FL2” extension files. Once it matches with the last record of the regular storing data date/time, then it continues to store the current data in regular files (“.RL1, .RL2, .FL1 and .FL2”)



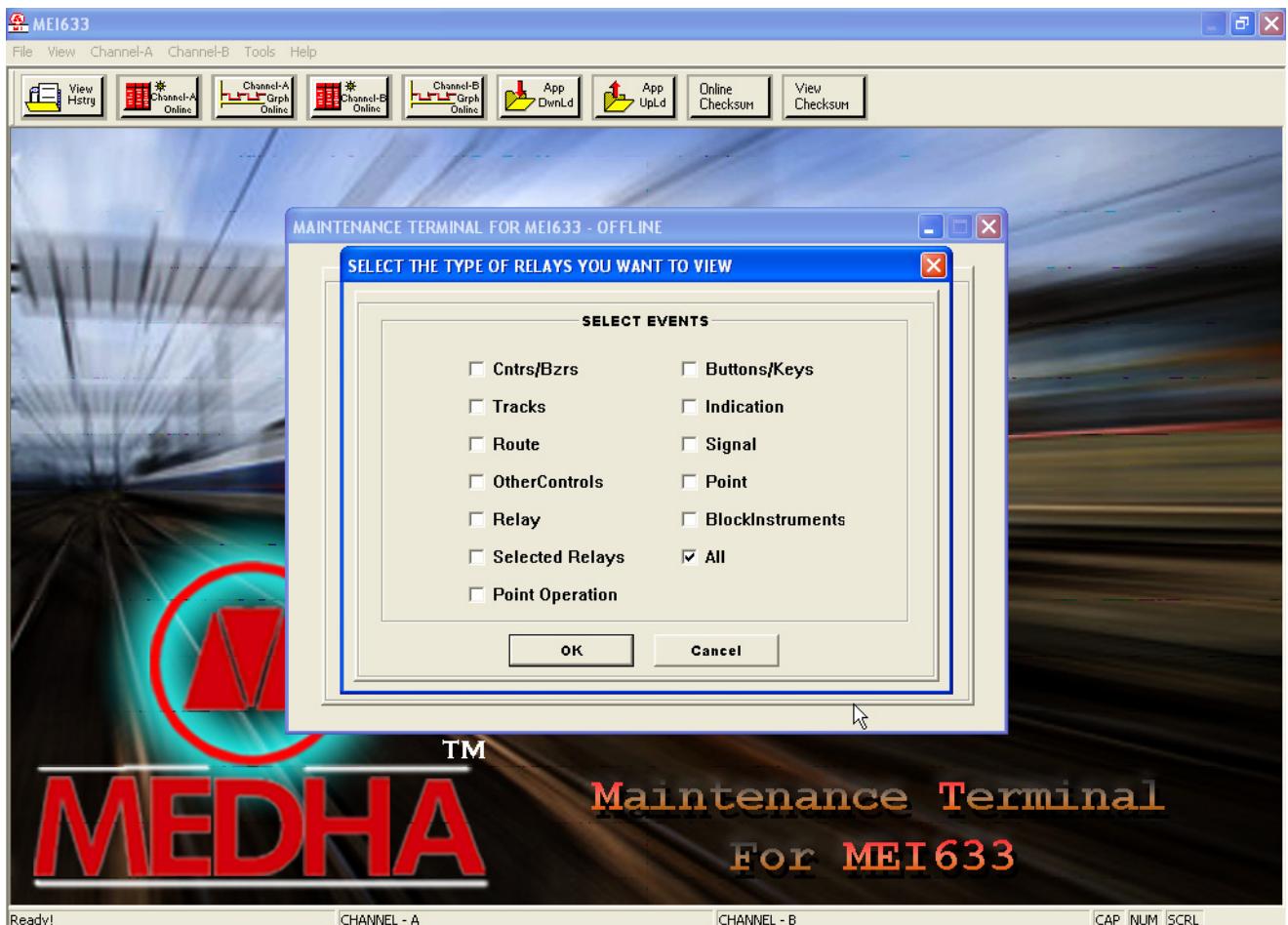
A new file is created when the number of events exceeds 10 lakh. All the available files in the current MT folder can be used to view the Event or Fault log in offline mode. These files can be deleted after taking the required back up in a Secondary storage medium, periodically. If any files have been deleted after taking necessary back-up in Secondary storage medium, and it is required to access any older event or Fault log information, you can copy the required files to the current MT folder and then view the selected Event/Fault log.

MT provides you with a flexible filters where you can select any kind of log, between selected Date and Times as shown in the screen below.

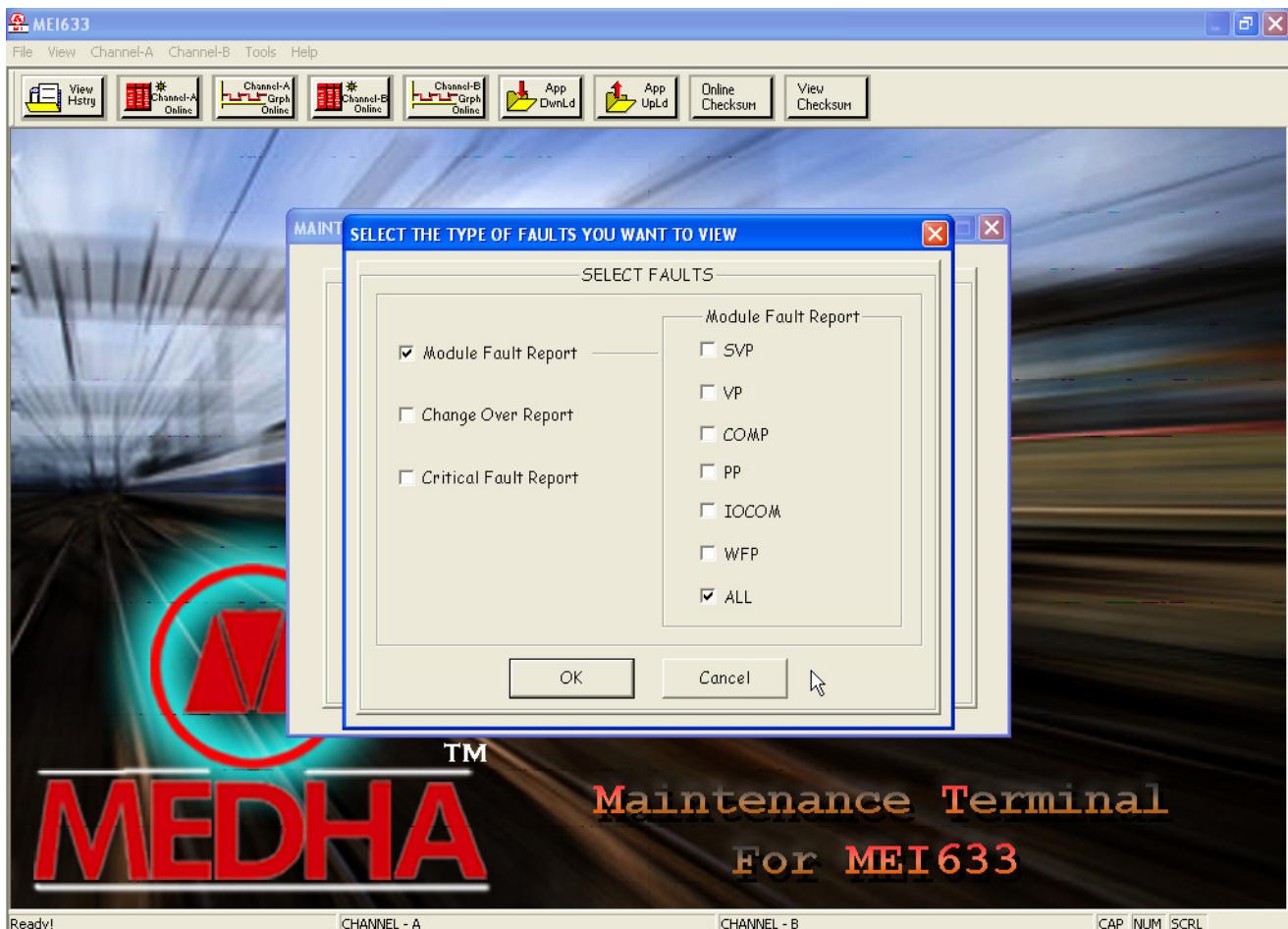


In the above window the selected file's data can be viewed between a selected intervals. This selection can be done at the bottom right block where you can enter the date time of the log you want to view.

Log of a specified Event Type, as shown below:



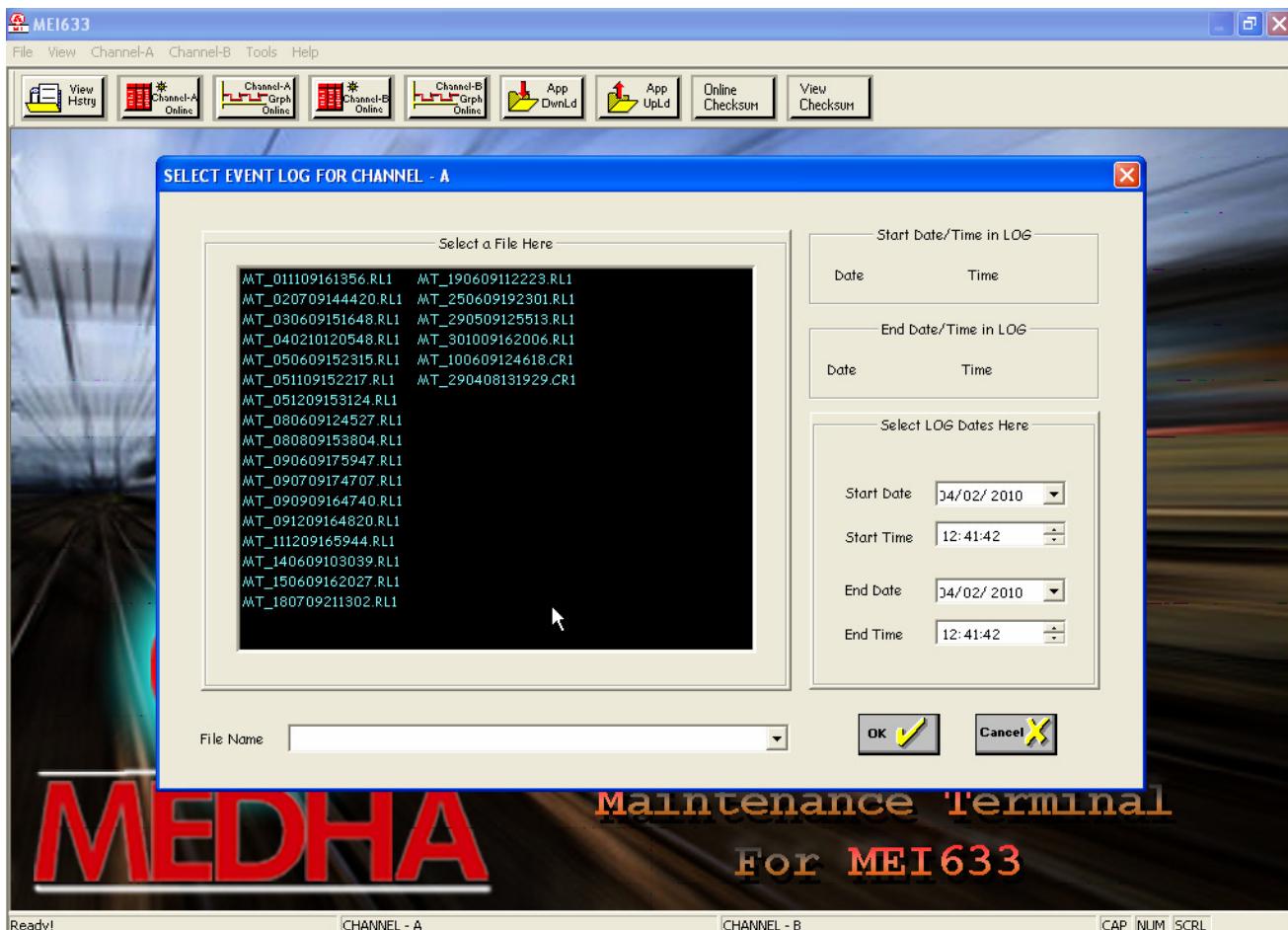
Log of a specified Fault Module, as shown below:



7.9.1 Event log

List View of the Event Log can be opened from the main dialog and selecting the Event log file you want to view from the selection Dialog.

Below is the selection dialog:

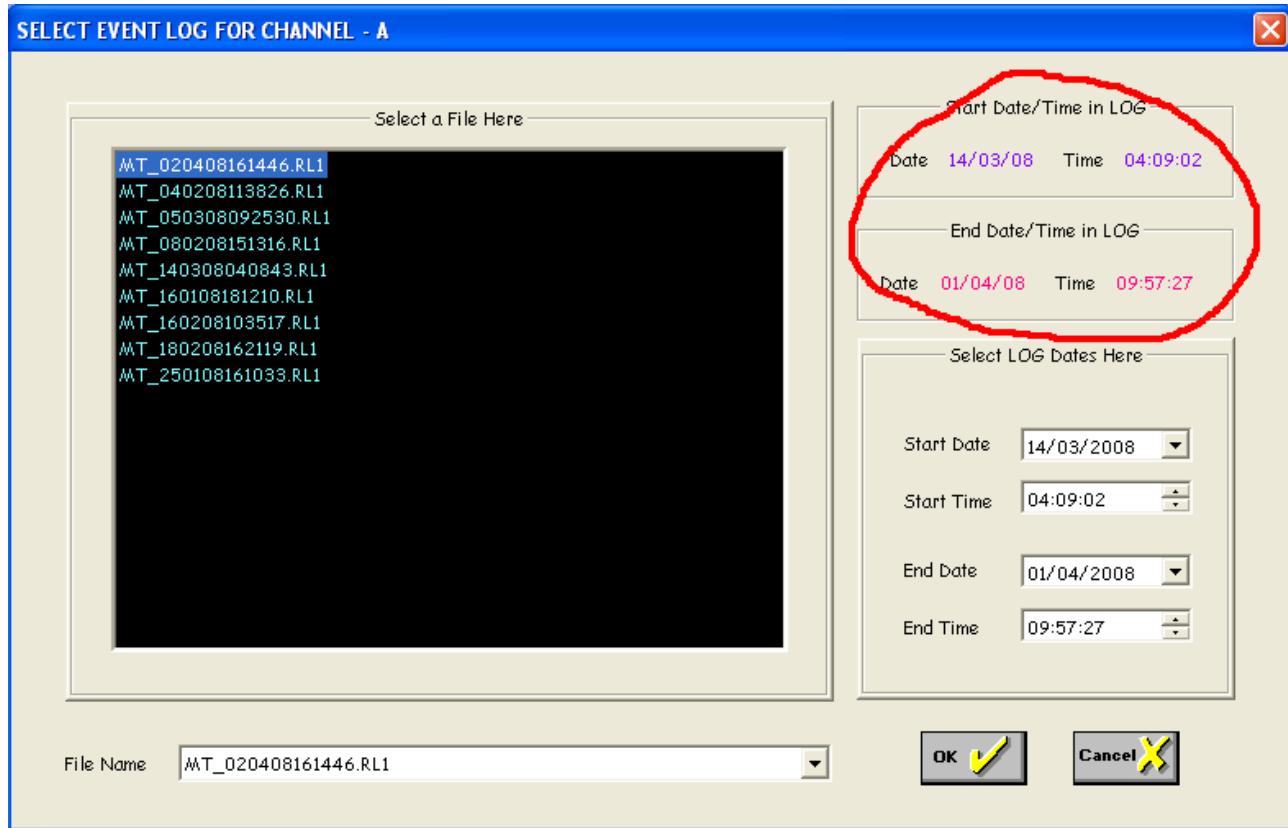


In the above dialog box you can see a pane at the left hand side of the window, which says, select a file here, in this pane you can see a file name in the window.

The above pane in the window consists of all the Event log Files stored in MT, therefore you can select the desired log by clicking on the file name.

When you click on the file MT assumes you have selected that log to view and opens the log when you select the "Ok" button at the bottom-right pane of the window.

After selecting the desired log, at the Top-right pane of the window you can see the Date and Time of the first and last records in the log.



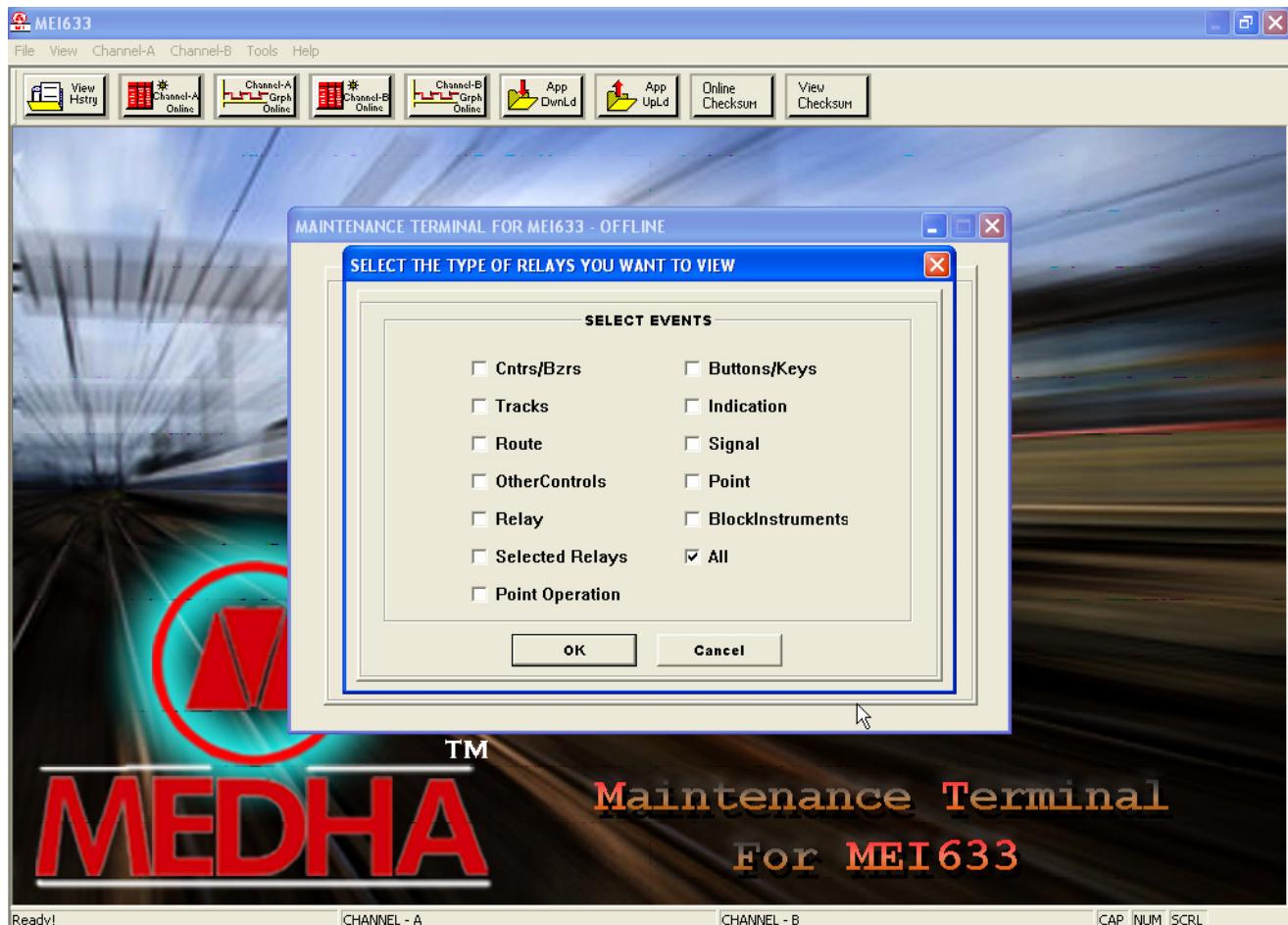
In the above window you can see the marked region, in this pane of the window you can see the "Start Date/Time in log" pane, the date and time shown here is the Date and Time of the first record in the log. In the "End Date/Time in Log" pane the date and time shown are the date and time of the last record in the log, this information implies that the file has the records from the start date and time to the end date and time specified here,

Below this pane you will find a selection pane "Select LOG Dates Here" pane, where you can select start date-time and end date-time you want to view in the log.

Note: User can able to select the data in between start date/time and end date/time only.

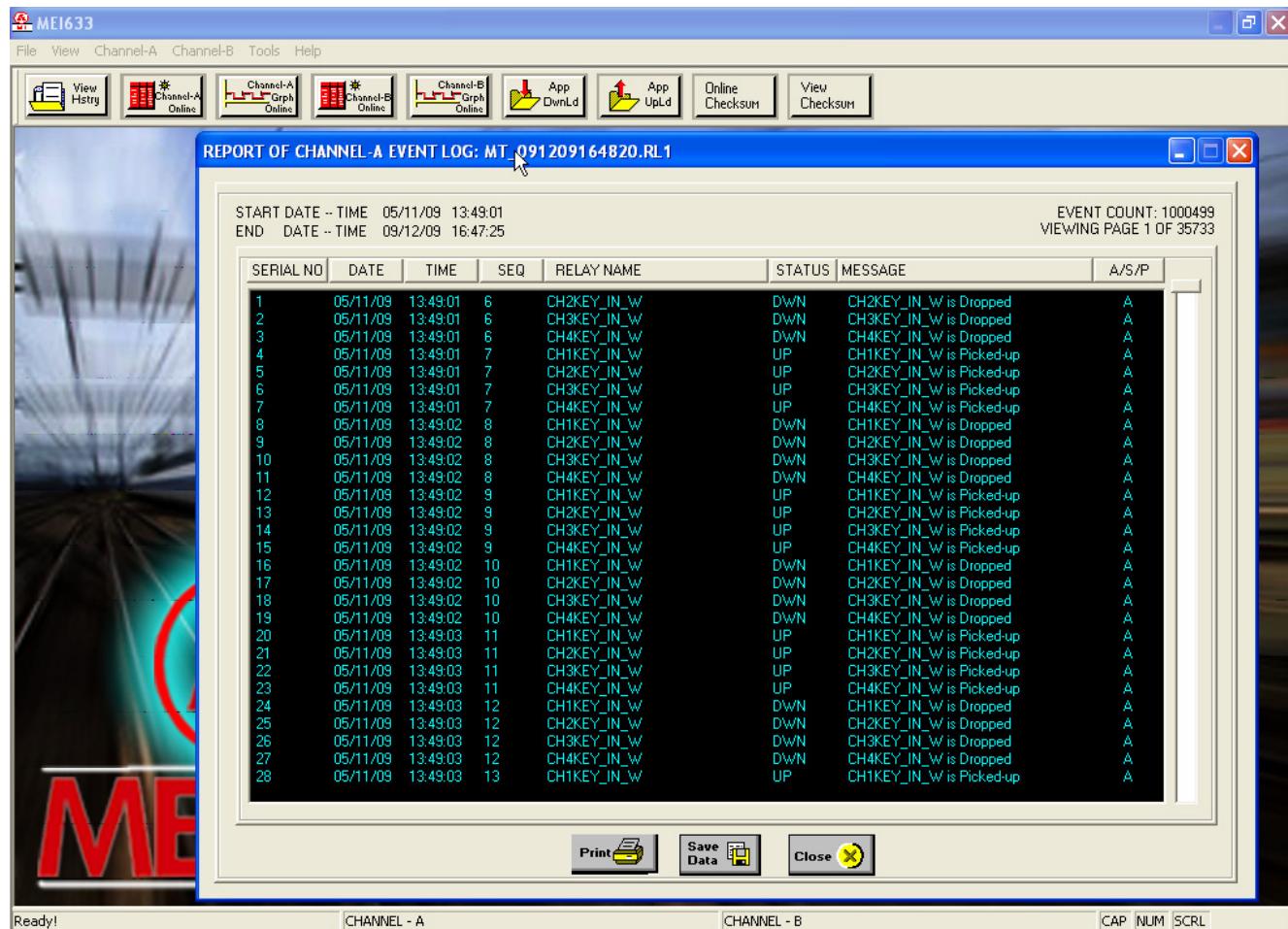
After you have selected a file click on the "OK" button to view the log else click on the "Cancel" button to close without viewing. Now you can have a further filtered log where MT filters the Relay types in the given Log. You can select more than one Relay Types.

Below is the dialog used for filtering the Relay Types:



In this selection you can select any of the relay types, multiple Relays Types can be selected at a time. For "Selected Relays" option you will be provided with Relay selection dialog where you can select any Relays you want to view for a maximum of 25.

And for "All" option you can view all the Events in that specified time. Below are the Event logs of Channel-A and Channel-B with in a specified Time and Date.



In the above windows, the top region consists of the following description about the log.

Start Date and Time of the Log,

End Date and Time of the Log,

Number of Events,

And Total number of pages.

On the right side you can find a scroll bar, which can be used to scroll the data, also using navigation keys you can navigate the log after selecting the scroll bar.

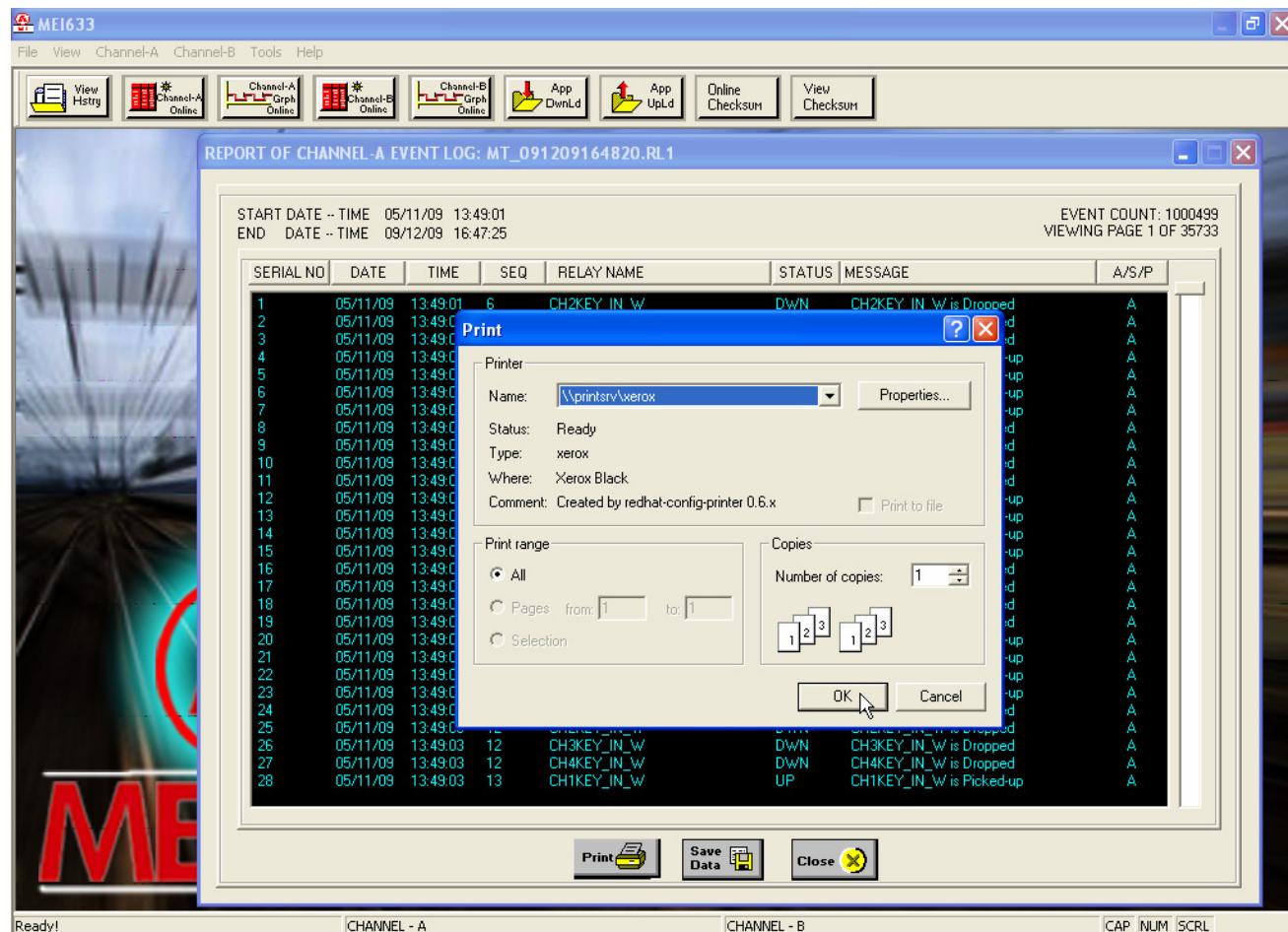
Event log records can be seen in the window with details like Serial No., Date, Time, Sequence number, Relay Name, Status, Message, Active /Standby/Power On status of Channel at that point of time.

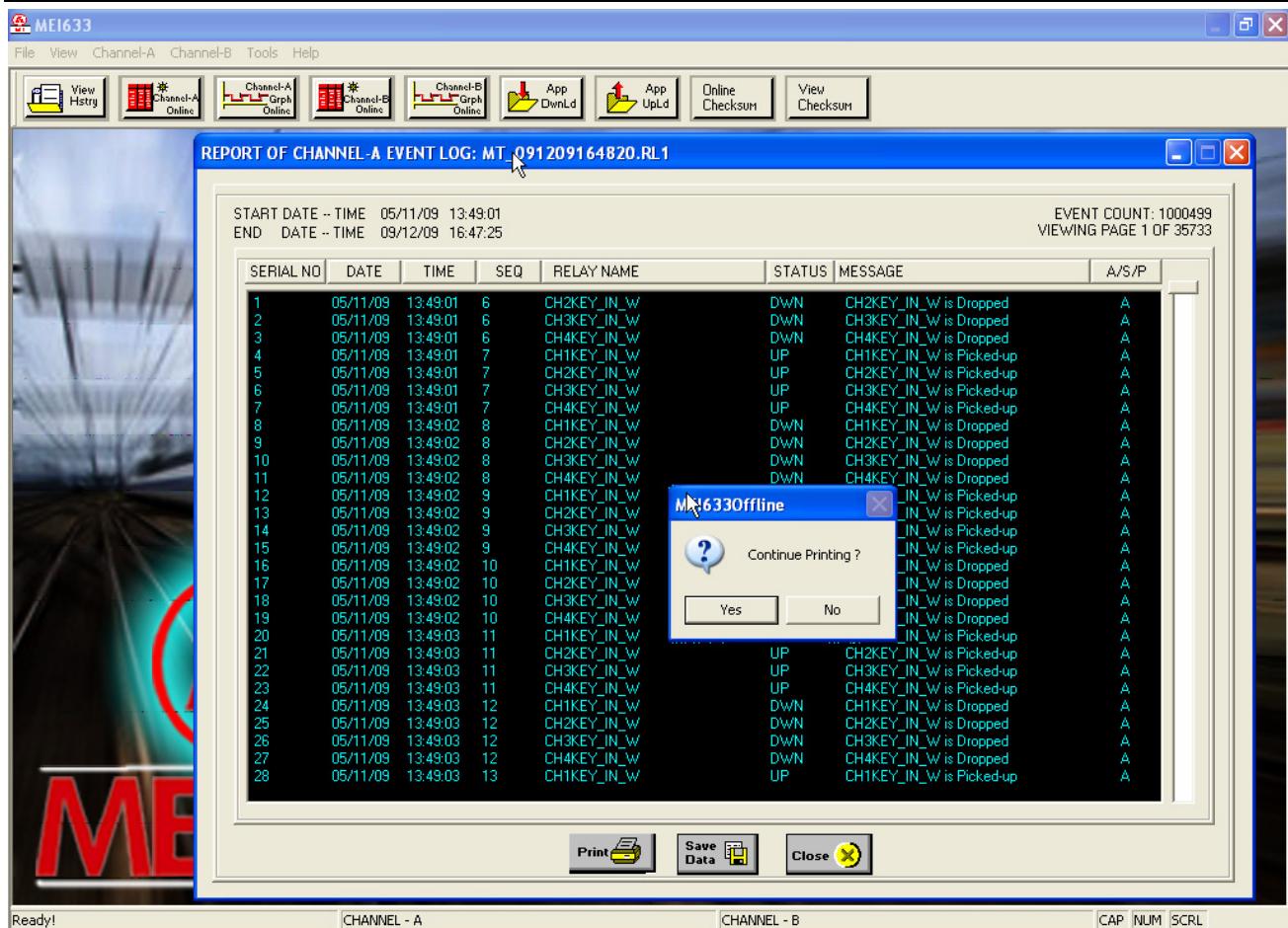
NOTE: All the description in Channel-A and Channel-B are exactly the same, therefore any description for Channel-A is applicable for Channel-B and Vice versa.

There are three buttons at the bottom of the window.

Print, Save and Close

Print option prints the Event log page wise, MT prompts you if you want to continue printing further pages. If you want to print all pages you can select "Yes" every time you are prompted. If you want to stop printing then you can select "No". The Screen where you will be prompted is shown below.





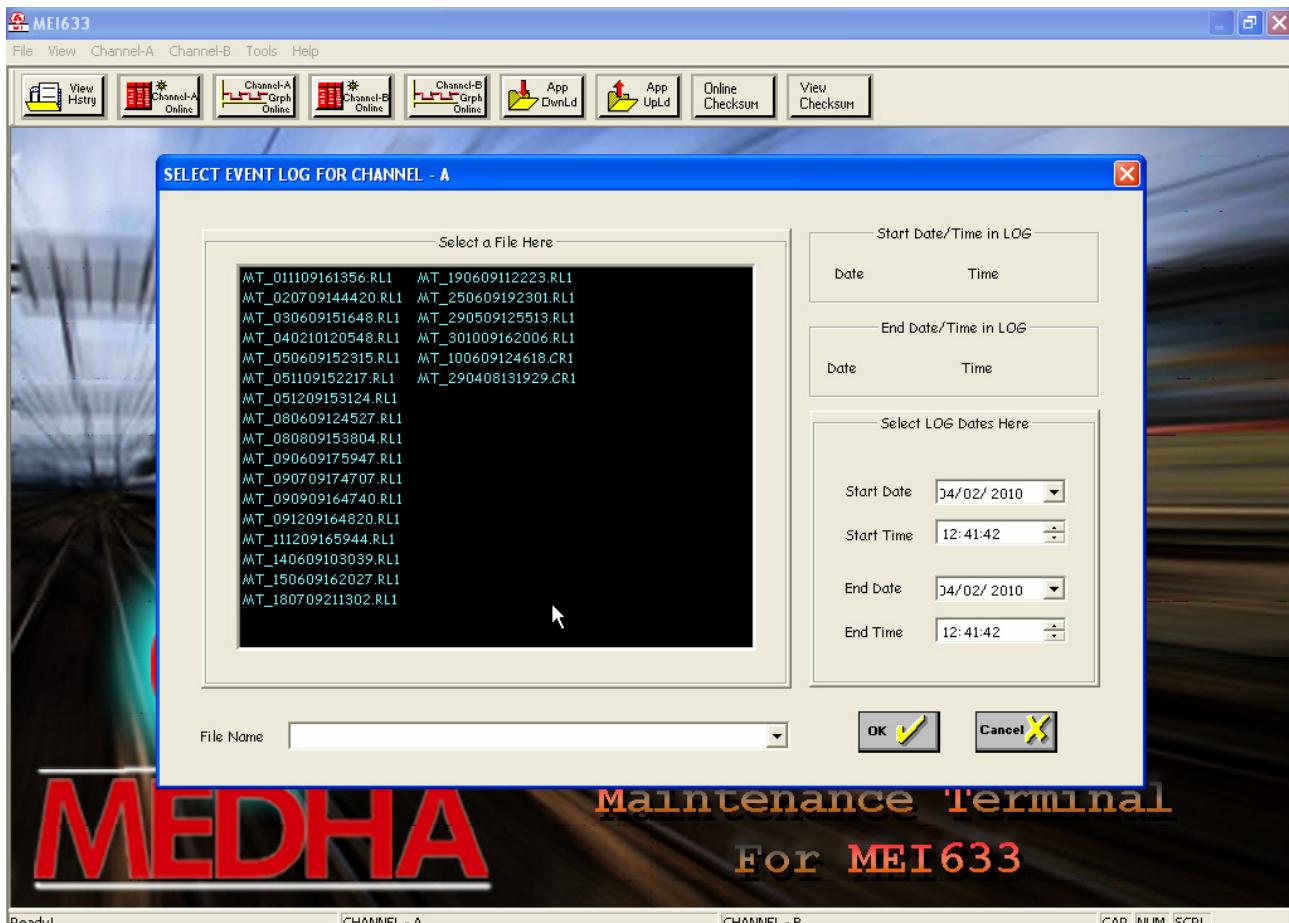
Second button is "Save Data" button. This option allows you to save the log into a text file. When you select the save option you will be prompted to give a name for the File and select a location where you want to save that file into.

Finally, "Close" option allows you to safely close the log window.

7.9.2 Event Log Graphical view

Event Log Graphical view can be opened from the main dialog and selecting the Event log file you want to view from the selection Dialog.

Below is the selection dialog:

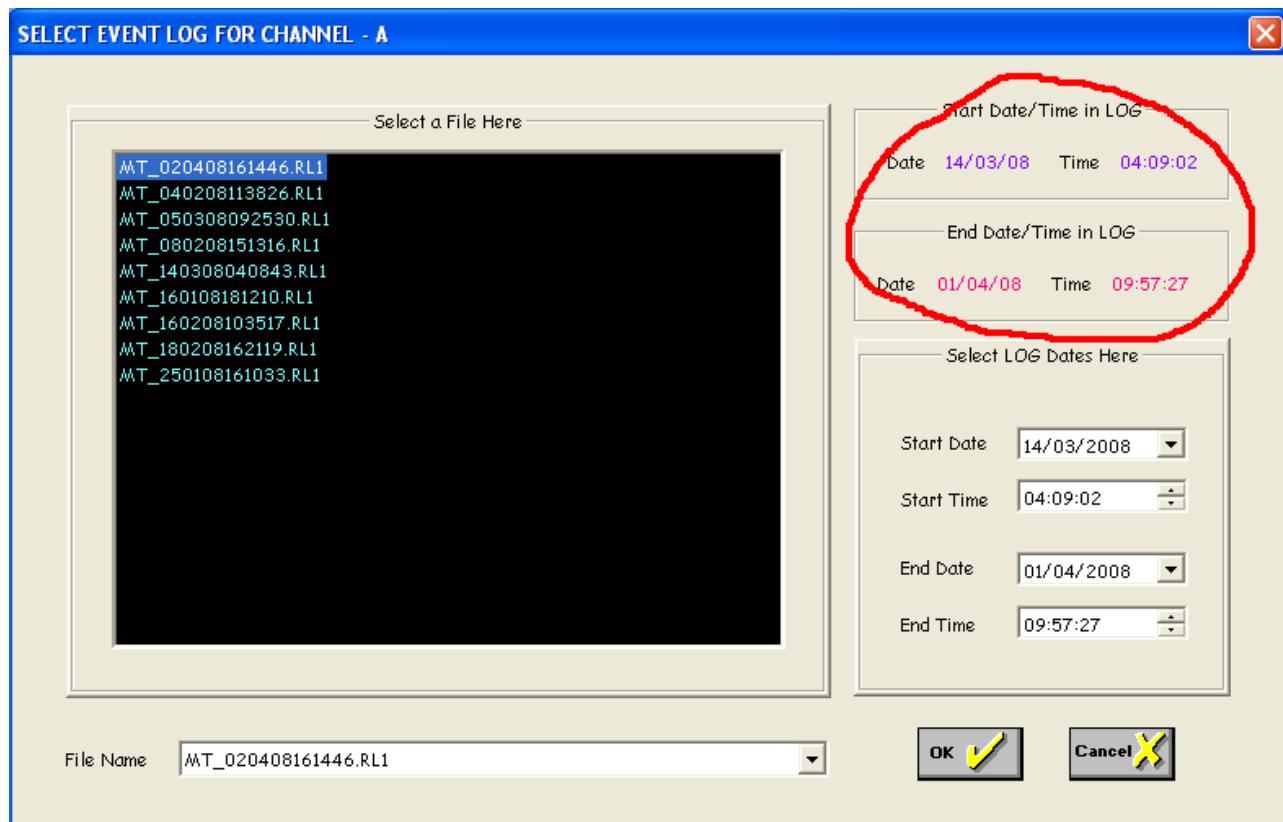


In the above dialog box you can see a pane at the left hand side of the window, which says, select a file here, in this pane you can see a file name in the window.

The above pane in the window consists of all the Event log files stored in MT, therefore you can select the desired log by clicking on the file name.

When you click on the file MT assumes you have selected that log to view and opens the log when you select the "Ok" button at the bottom-right pane of the window.

After selecting the desired log, at the Top-right pane of the window you can see the Date and Time of the first and last records in the log.

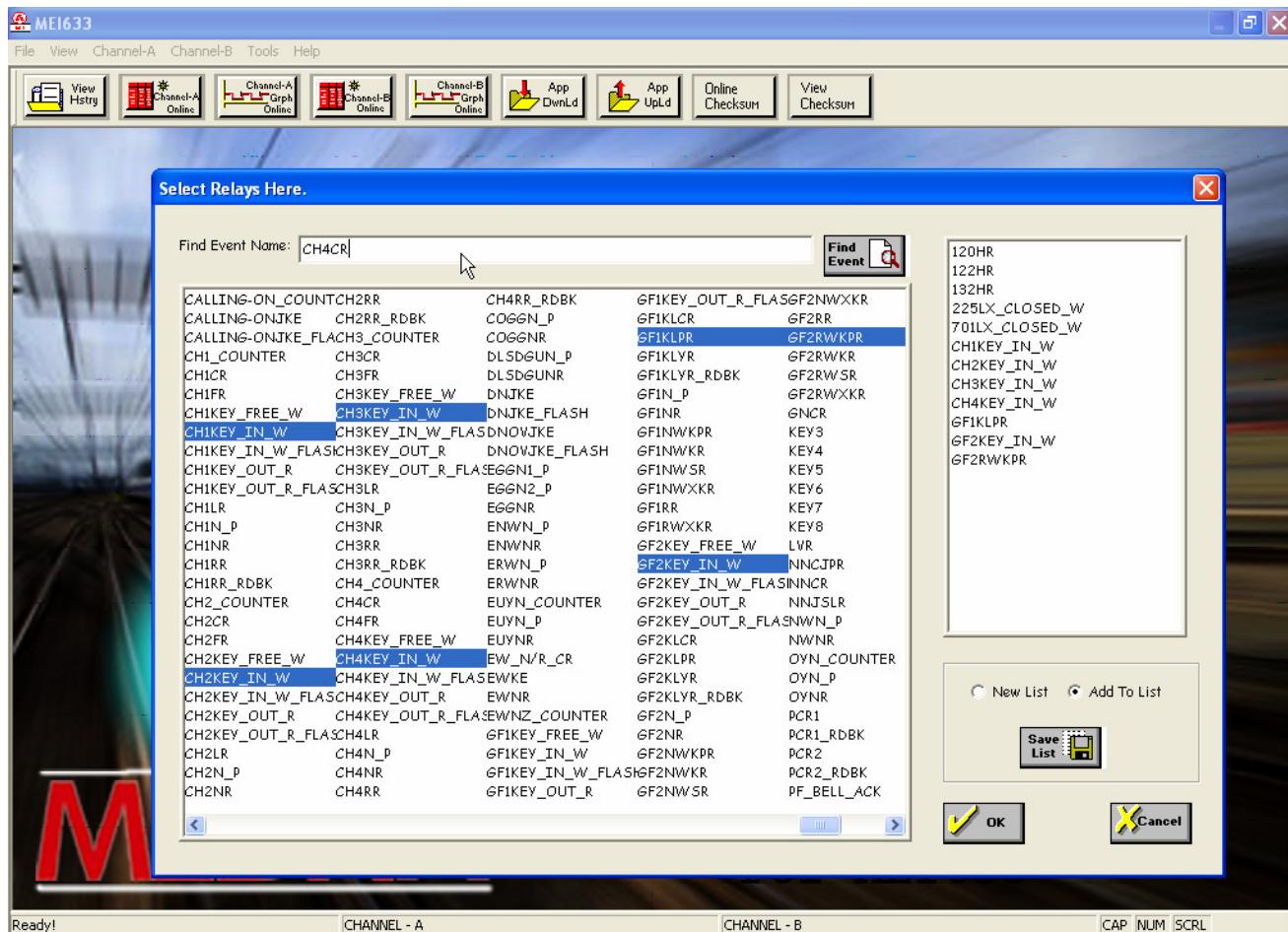


In the above window you can see the marked region, in this pane of the window you can see the "Start Date/Time in log" pane, the date and time shown here is the Date and Time of the first record in the log. In the "End Date/Time in Log" pane the date and time shown are the date and time of the last record in the log, this information implies that the file has the records from the start date and time to the end date and time specified here.

Below this pane you will find a selection pane "Select Log Dates Here" pane, where you can select start date-time and end date-time you want to view in the log.

After you have selected a file click on the "Ok" button to view the log else click on the "Cancel" button to close without viewing.

In the Graphical view of the Event log MT provides a flexible selection of Events. Below is the Selection window.



After the selection of Events in the above window, MT opens the Graphical view with these selected Events Status.

In the above window the left pane consists of a selection box where you can select the required events. When you select the Events they will be listed in the Event List Box at the right side. All the selected Events can be seen in that List Box.

This List can be saved for further use using the "Save List" button below the Event List Box.

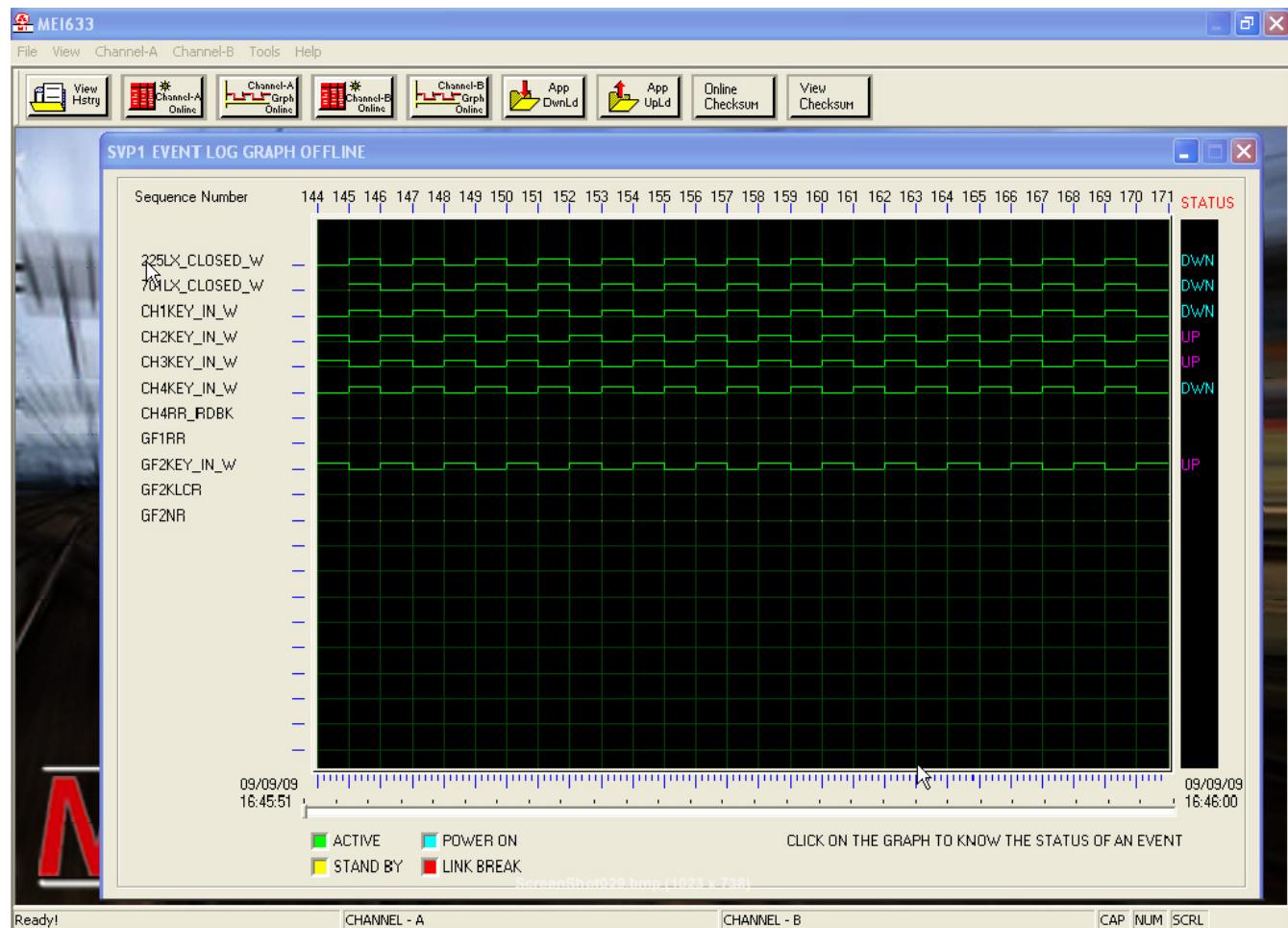
To have a New List that is clearing the old list and destroying its content you can use the New List selection option above the Save List button.

Otherwise if you want to add up some Events with old Events then you can select the "Add to List" option.

Finally all these Events get saved. Note that the Events in the Events List Box at the right side of the pane are saved finally.

MT provides an easy way to search the Events, it provides a search option where you can type the event you want to select and click "Find" button at the top right side of the window. This will search the Event and Select it and add in the Event List Box.

After your list is prepared select "Ok" button to proceed, now you will be able to see the graphical view of the Events logged. Below is the Graphical View of the Events.



In the above window the left pane has the Events name, the top pane contains the sequence numbers of the Events. This Graph is plotted taking the sequence numbers as base. The left pane shows the status of the Event at the current sequence number. At the bottom left of the Window you will find Date and Time followed by a Scrollbar, and again Date and Time.

This indicates the Start Date and Time of the Log, and 28th Event's the Date and time are shown on the bottom right of the window.

You will find a scroll bar between these Date and Times, which is used to scroll through the records.

Green color in the Graph indicates Active State

Yellow color in the Graph indicates Stand By State

Cyan color in the Graph indicates Power On

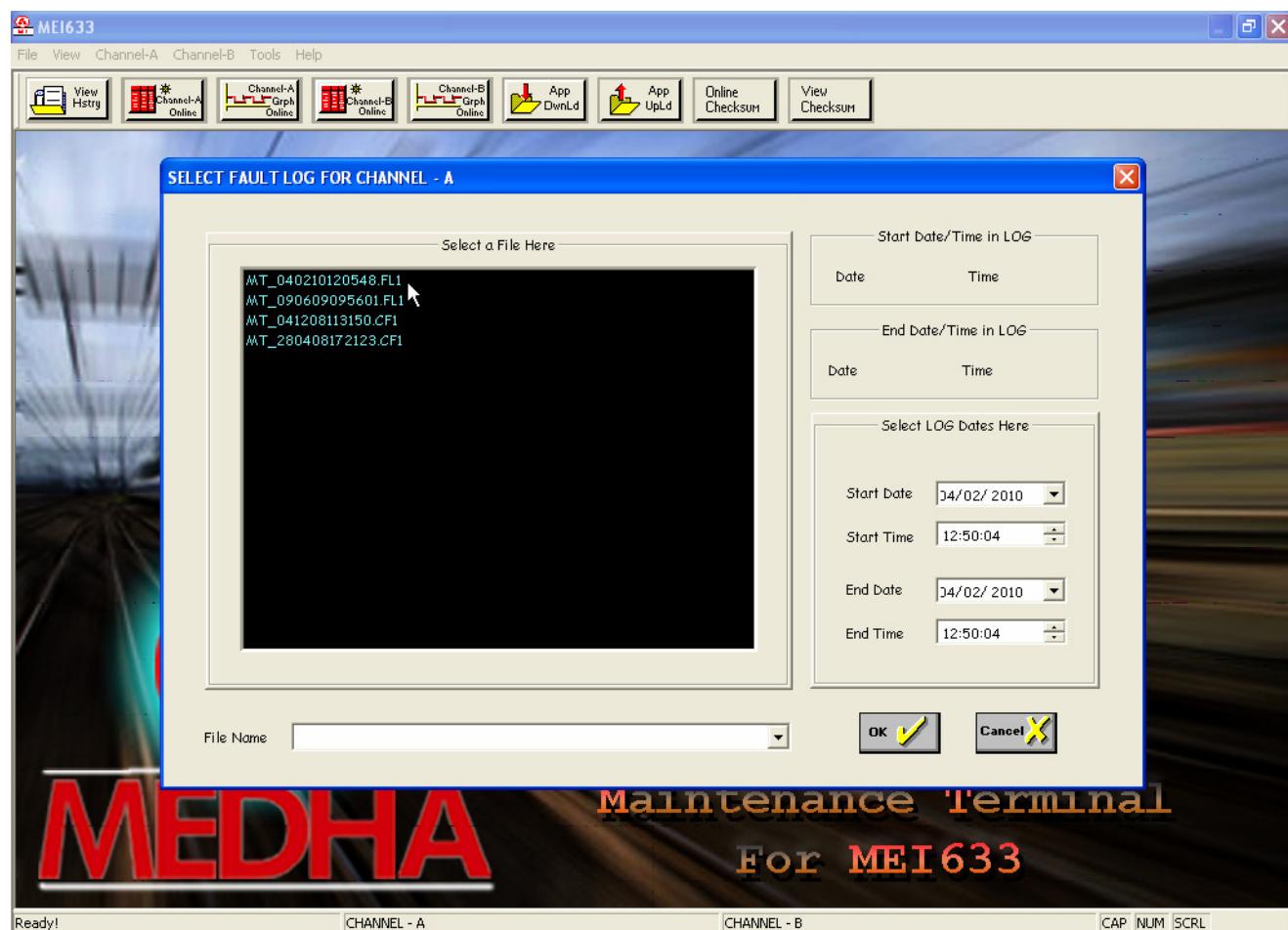
Red color in the Graph indicates Link Break.

MT provides you with an option where you can view all the Details like Date and Time, Sequence Number, Status, Active/Stand By Status etc of any Event by Clicking on the Graph. This information is shown on the Bottom right pane of the window.

7.9.3 Fault Log:

List View of the Fault Log can be opened from the main dialog and then selecting the Fault Log file you want to view from the selection Dialog.

Below is the selection dialog:

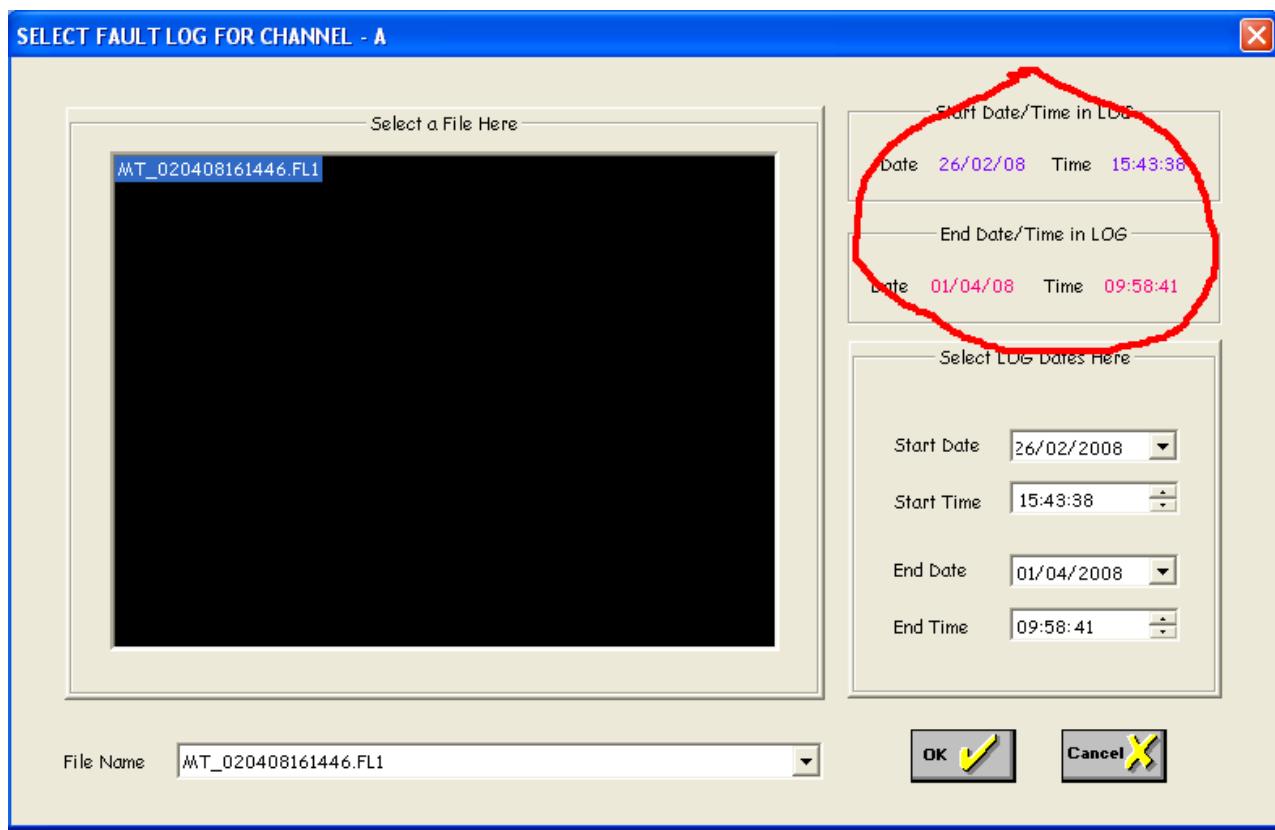


In the above dialog box you can see a pane at the left hand side of the window, which says, select a file here, in this pane you can see a file name in the window.

The above pane in the window consists of all the Fault logs stored in MT, therefore you can select the desired log by clicking on the file name.

When you click on the file MT assumes you have selected that log to view and opens the log when you select "Ok" button at the bottom-right pane of the window.

After selecting the desired log, at the Top-right pane of the window you can see the Date and Time of the first and last records in the log.



In the above window you can see the marked region, in this pane of the window you can see the "Start Date/Time in log" pane, the date and time shown here is the Date and Time of the first record in the log. In the "End Date/Time in Log" pane the date and time shown are the date and time of the last record in the log, this information implies that the file has the records from the start date and time to the end date and time specified here.

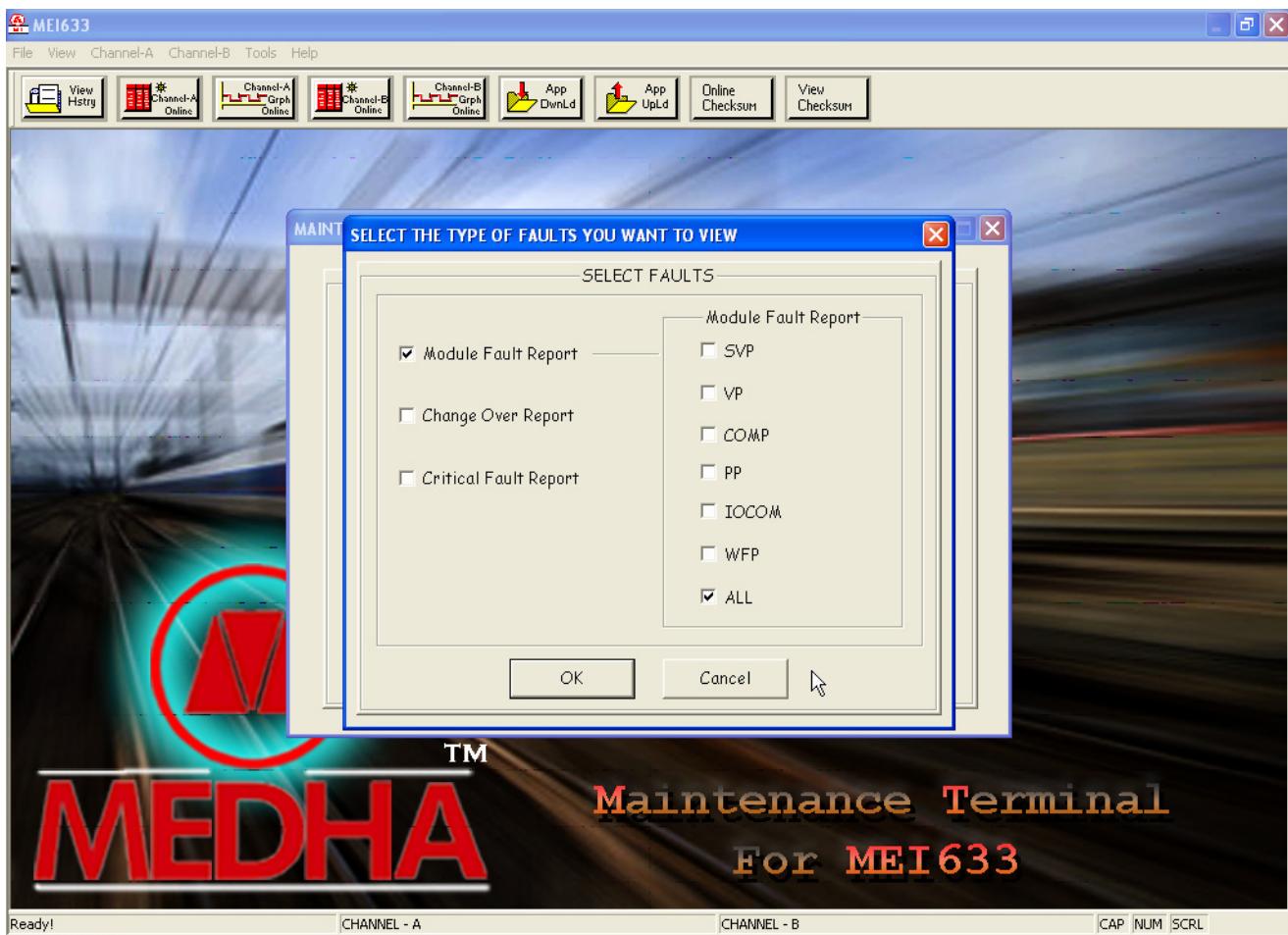
Below this pane you will find a selection pane "Select LOG Dates Here" pane, where you can select start date-time and end date-time you want to view in the log.

After you have selected a File click on the "OK" button to view the log else click on the "Cancel"

button to close without viewing.

Now you can have a further filtered log where MT filters the Fault types in the given Log i.e.; Module wise faults, Critical Faults, and Change over report.

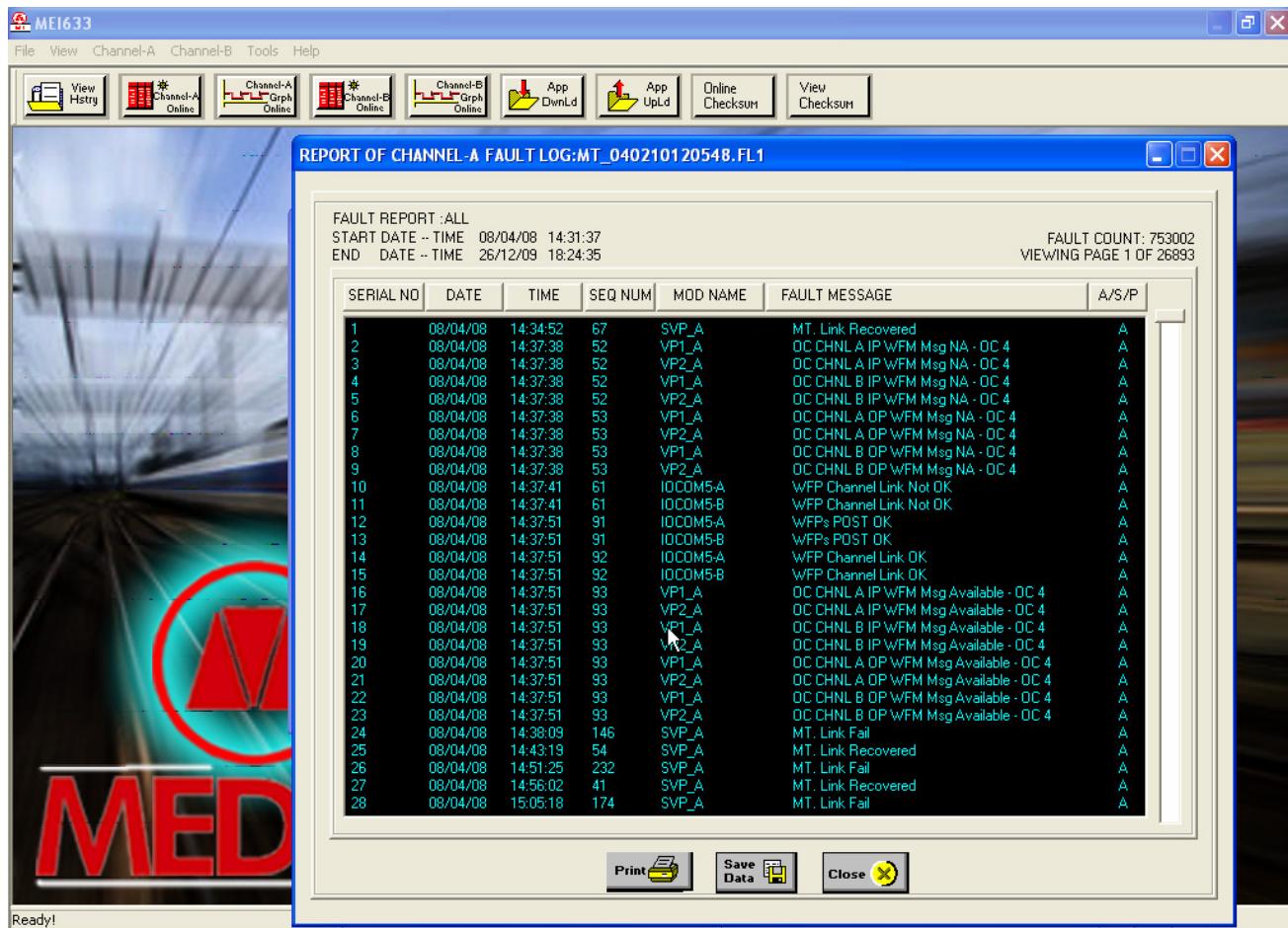
Below is the dialog used for filtering the Fault Types:



In this selection you can select any of the type of Fault report you want to see, when you select Module wise Fault report you can see the Module names at the right side of the window, here you can select the Modules you want to see.

In the Change Over Report, you can see the "Change Over" information as to when the corresponding Channel has changed from Standby to Active State.

In the Critical Faults option you can view all the Critical Faults occurred during that time.



In the above windows, the top region consists of some description about the log.

Start Date and Time of the Log,

End Date and Time of the Log,

Number of Faults,

And Total number of pages.

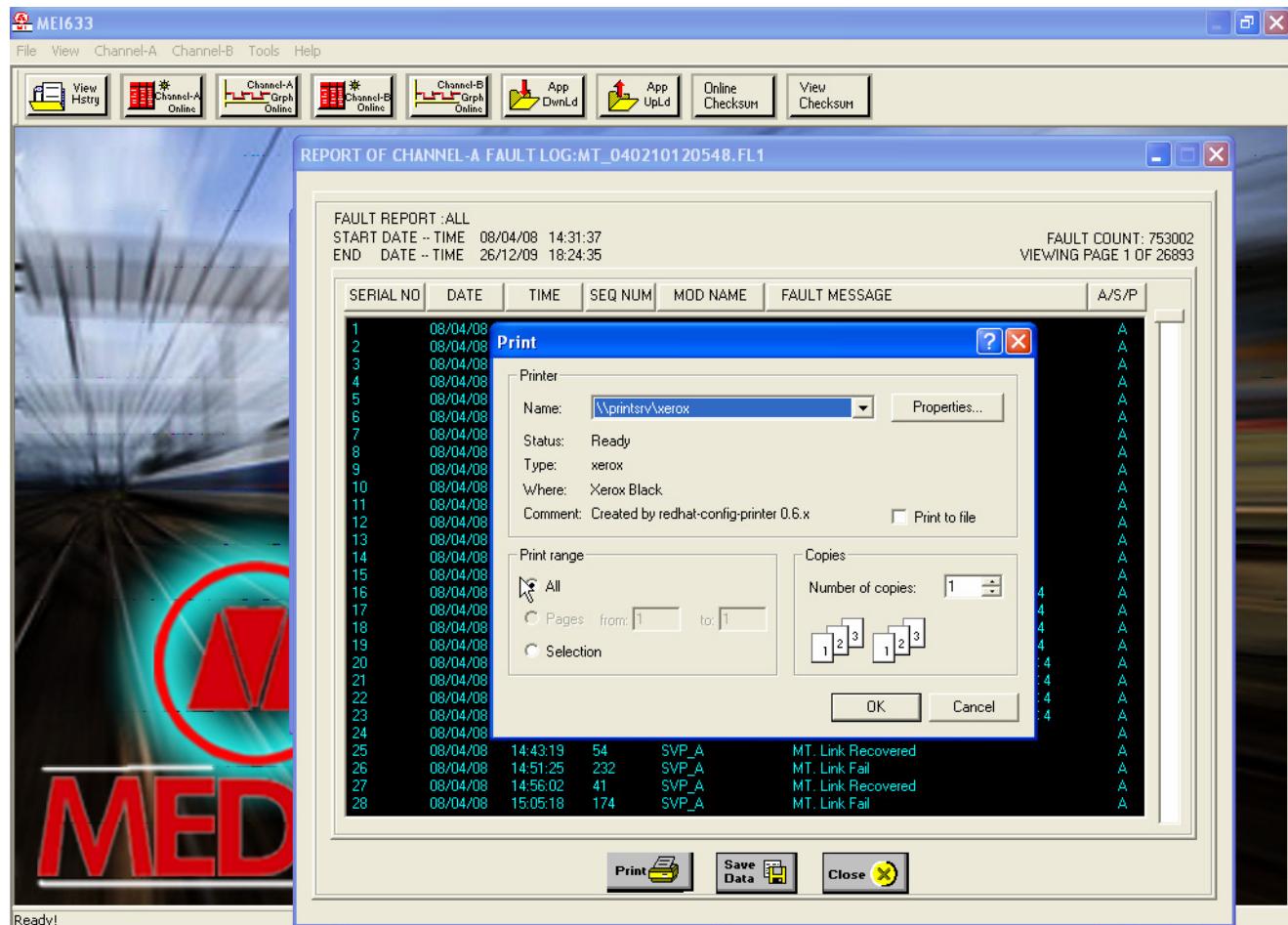
On the right side you can find a scroll bar, which can be used to scroll the data, also using Navigating keys you can navigate the log after selecting the scroll bar.

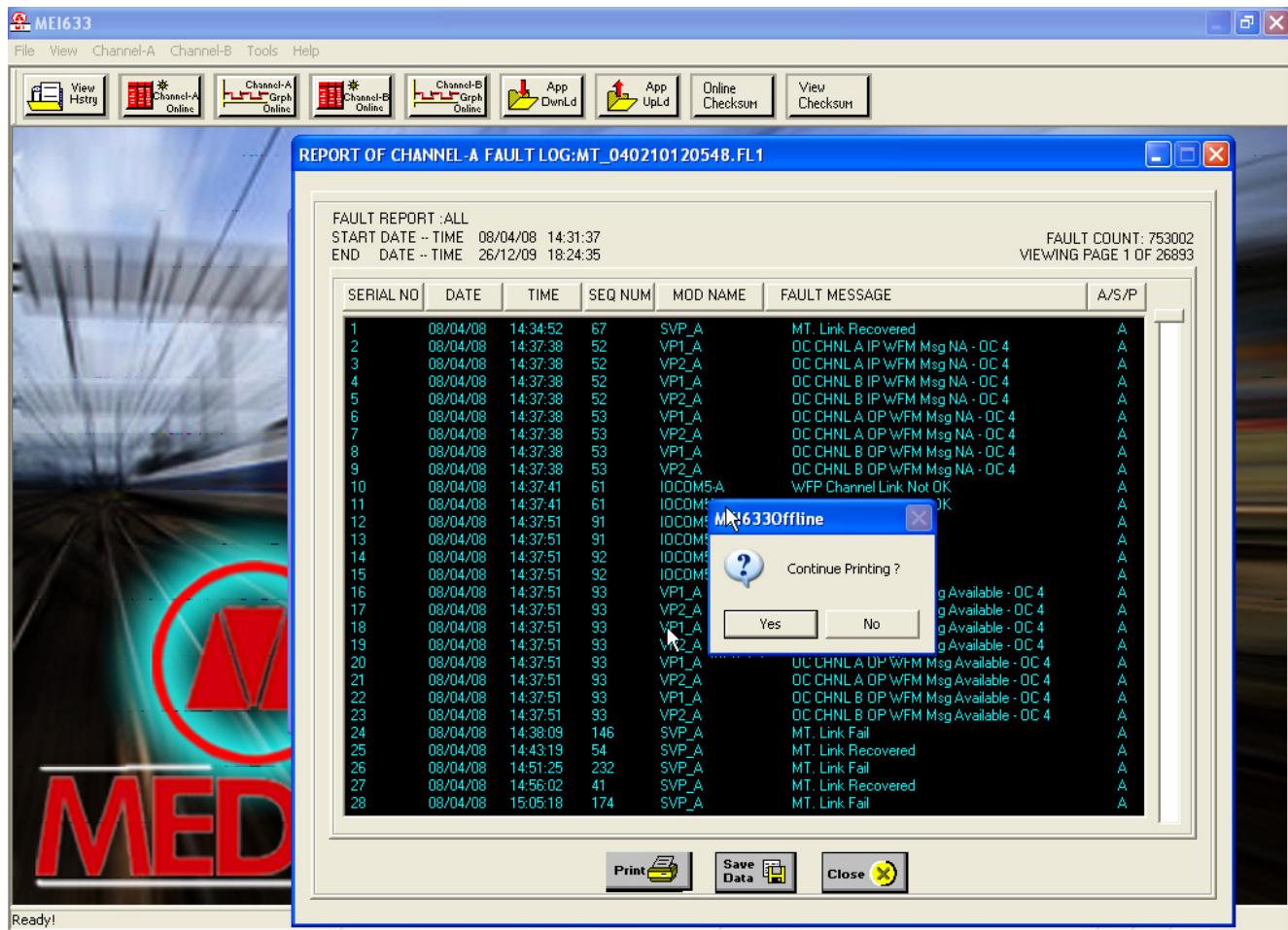
Fault log records can be seen in the window with details like Serial No., Date, Time, Sequence number, Module Name, Fault Message, Active /Standby/Power On status of Channel at that point of time.

There are three buttons at the bottom of the window.

Print, Save and Close

Print option prints the Fault log page wise, MT prompts you if you want to continue printing further pages. If you want to print all pages you can select "Yes" every time you are prompted. If you want to stop printing then you can select "No". The Screen where you will be prompted is shown below.





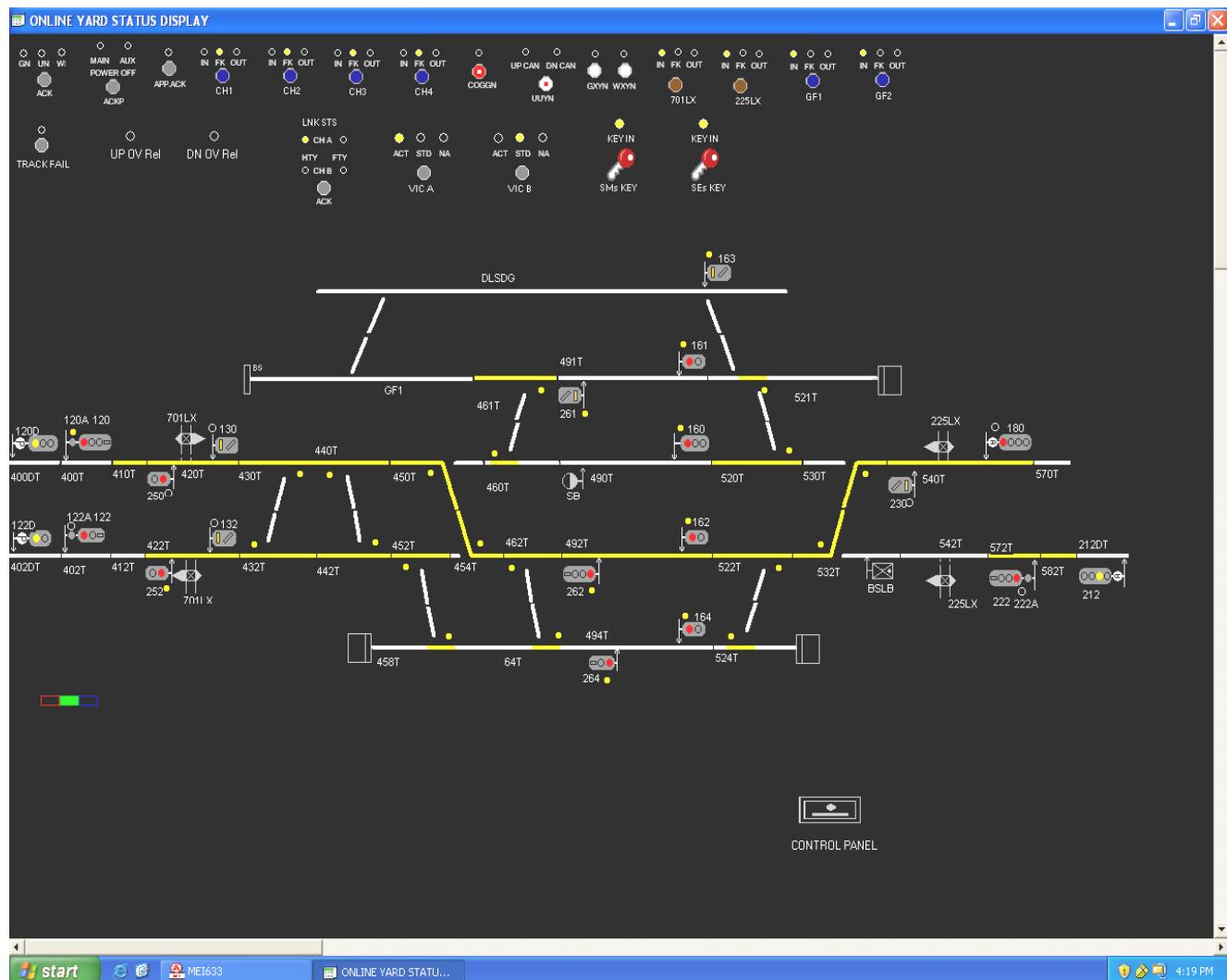
Second button is "Save Data" button. This option allows you to save the log into a text file. When you select the save option you will be prompted to give a name for the File and select a location where you want to save that file into.

Finally, "Close" option allows you to safely close the log window.

7.10 Yard Status Display

7.10.1 VDU Yard Status Display - Online

VDU Yard Status Online option allows you to view the online yard status in a separate window.



You can use the Scrollbars to view the Entire Yard. An RGB Flash Indication to the bottom left corner shows Application Active Status.

Yard Status is saved as .MDB files in the “D:\OnlineYardStatusDisplay” folder.

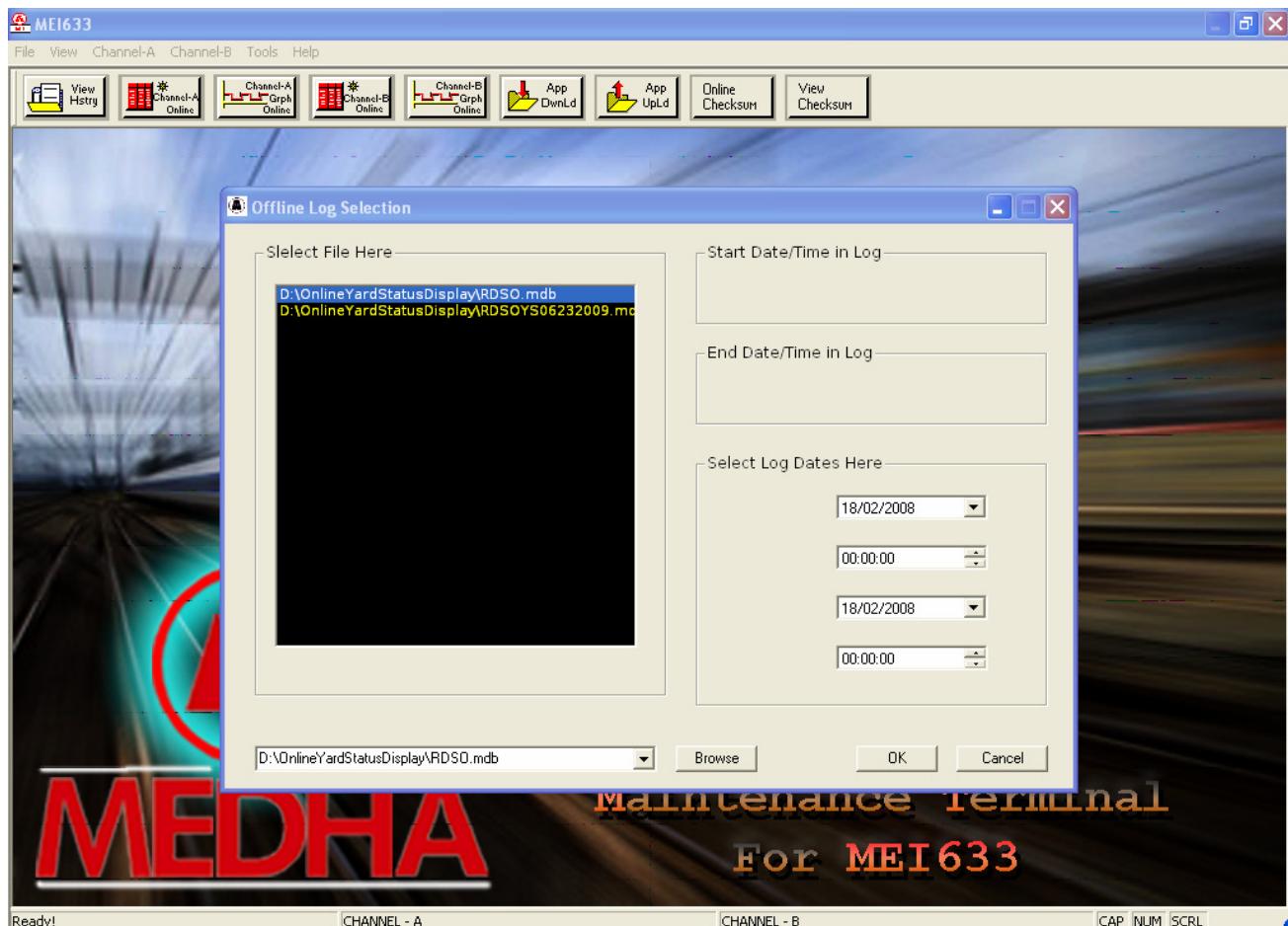
The Format for the .MDB Files is Current Yard Name. mdb

If the current MDB file exceeds 15 lakh events, a new MDB with the file “Current Yard Name + Date + YS .mdb” is created.

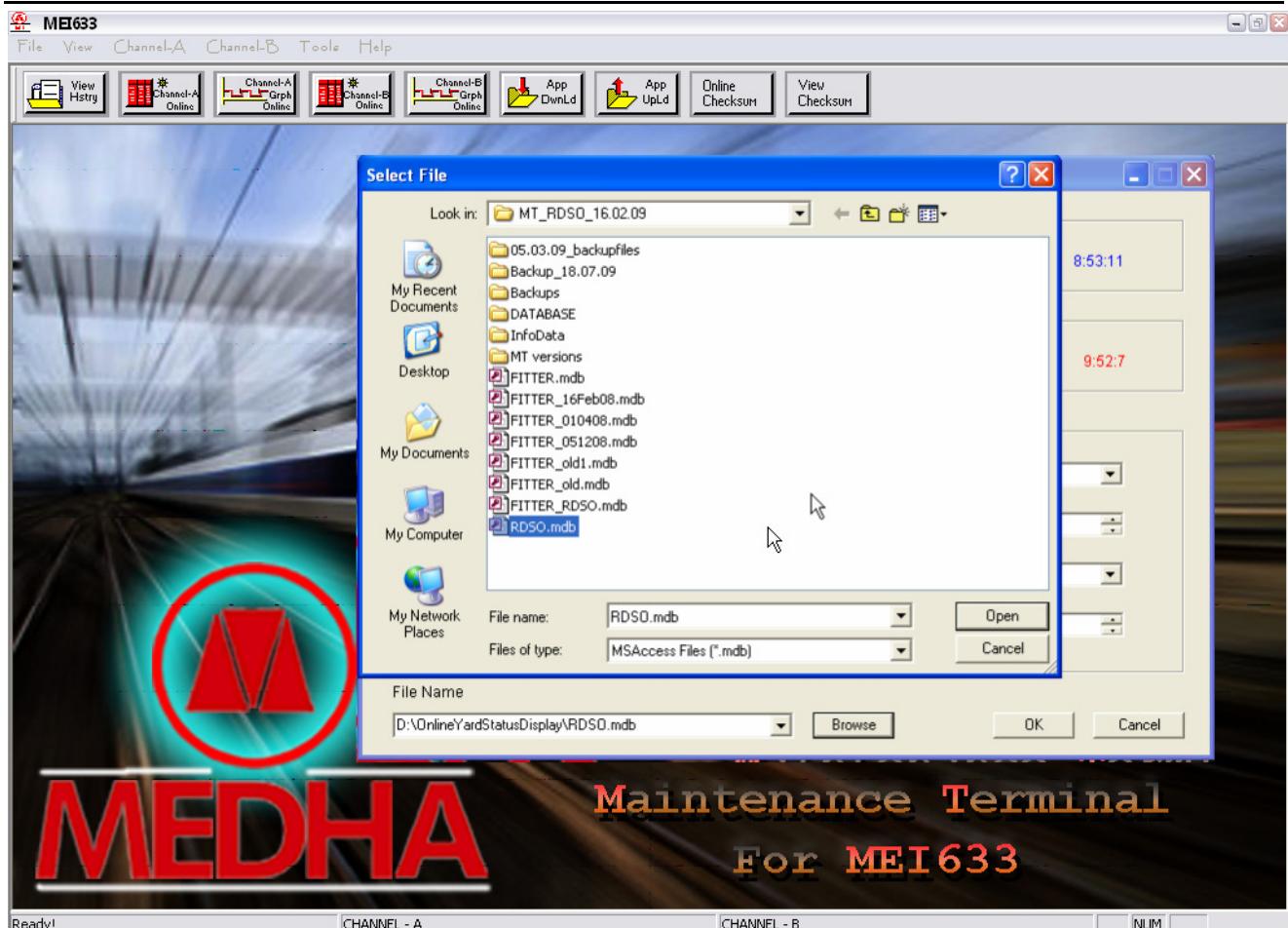
7.10.2 VDU Yard Status Display - Offline

"VDU Yard Status Offline" option allows you to view the offline yard status, you can view the status of the yard at a defined period of time in this option.

This Option opens the following Dialog box:



In the above dialog box, Use Browse button for selecting the Offline .MDB file. Click required .MDB file and Press Open button in Select File dialog. Selected Offline log file will be shown in top-left pane.



Select Start Date

- Start Date in Selected Log File will be shown in Start Date/Time in Log to the top-right pane.
- Start Date Combo box shows Available Start Date in Selected Log file. This can be modified for viewing required Days Log.
- Start Date can be selected from Start Date Calendar or it can be typed. Start Date Format: MM / DD / YYYY
- If Start Date Entered is not Available in Selected Log file, a Message will be displayed showing “Next Available Date from the Entered Start Date” and a Confirmation will be asked from the you to Continue for Start Date. Press OK to Continue or Press Cancel to select another Start Date.

Select Start Time

- Start Time in Selected file will be shown in Start Date/Time in Log to the top-right pane.
- Start Time text box shows Available Start Time in Selected Log file. This can be modified for viewing required Time Log.
- Start Time can be typed or Up/Down arrows can be used for Selecting Start Time. Start Time Format: hh / mm / ss
- If Start Time Entered is not Available in Selected Log file for Selected Start Date, a Message will be displayed showing “Next Available Time from the Entered Start Time in Selected Start Date” and a Confirmation will be asked from you to Continue for Start Time. Press OK to Continue or Press Cancel to select another Start Time.

Select End Date

- End Date in Selected file will be shown in End Date/Time in Log to the Right side.
- End Date Combo box shows Available End Date in Selected Log file. This can be modified for viewing required Days log.
- End Date can be selected from End Date Calendar or it can be typed. End Date Format: MM / DD / YYYY
- If End Date Entered is not Available in Selected Log file, a Message will be displayed showing “Previous Available Date from the entered End Date” and a Confirmation will be asked from you to Continue for End Date. Press OK to Continue or Press Cancel to select another End Date.

Select End Time

- End Time in Selected file will be shown in End Date/Time in Log to the Right side.
- End Time text box shows Available End Time in Selected Log file. This can be modified for viewing required Time Log.
- End Time can be typed or Up/Down arrows can be used for Selecting End Time. End Time Format: hh / mm / ss
- If End Time Entered is not Available in Selected Log file for Selected End Date, a Message Will be displayed showing “Previous Available Time from the Entered End Time in Selected End Date” and a Confirmation will be asked from you to Continue from the End Time. Press OK to Continue or Press Cancel to select another End Time.

You can see a Shorter Time Interval. If Entered Interval is More than its takes a Long Time to Load then a Message will be Displayed saying “It is Recommended that you Enter Shorter Interval”.

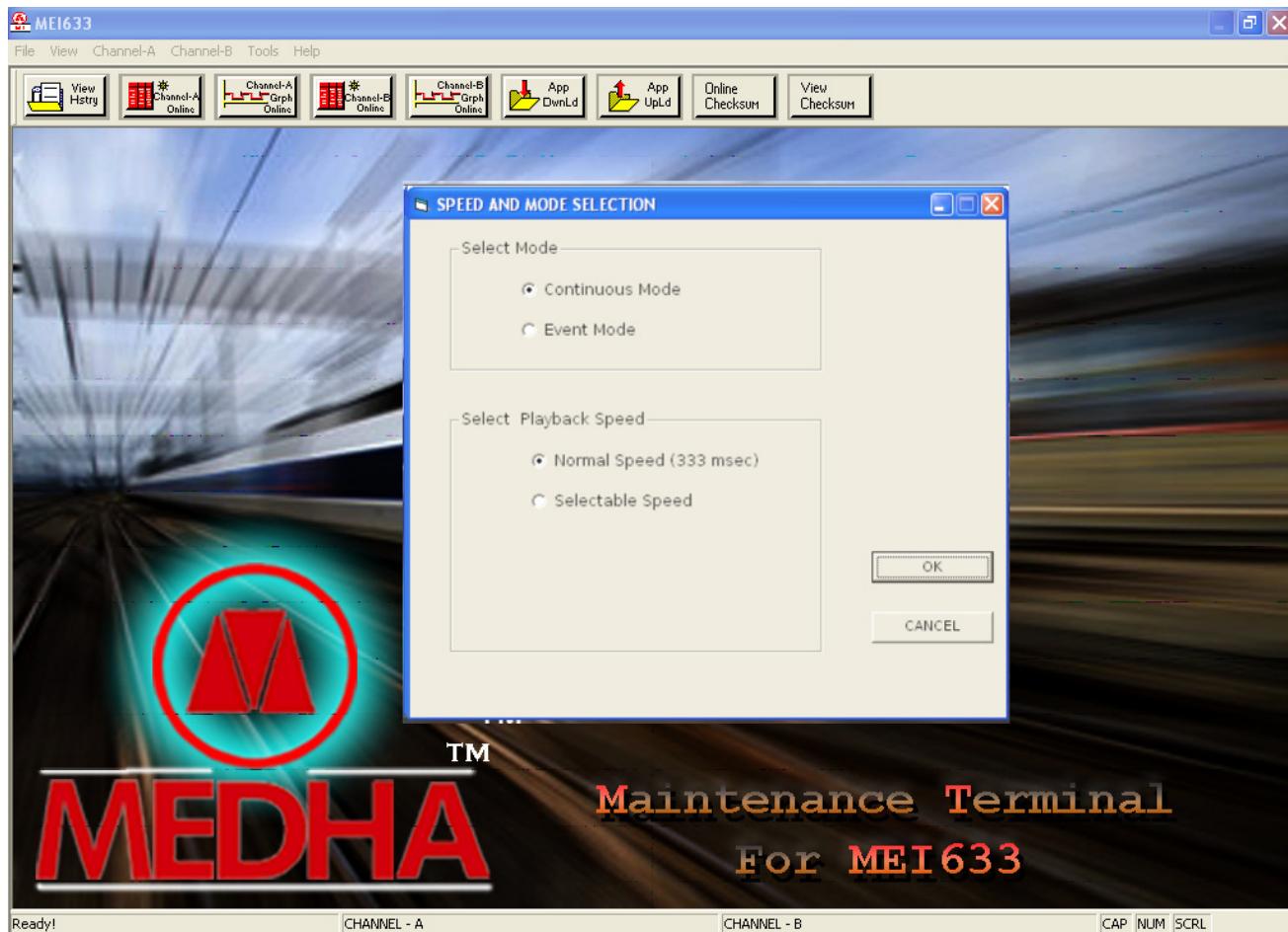
Click OK Button to Continue or Click Cancel Button to Close the Selection Window.

If OK button is clicked, another Window for Speed and Mode Selection will be opened.

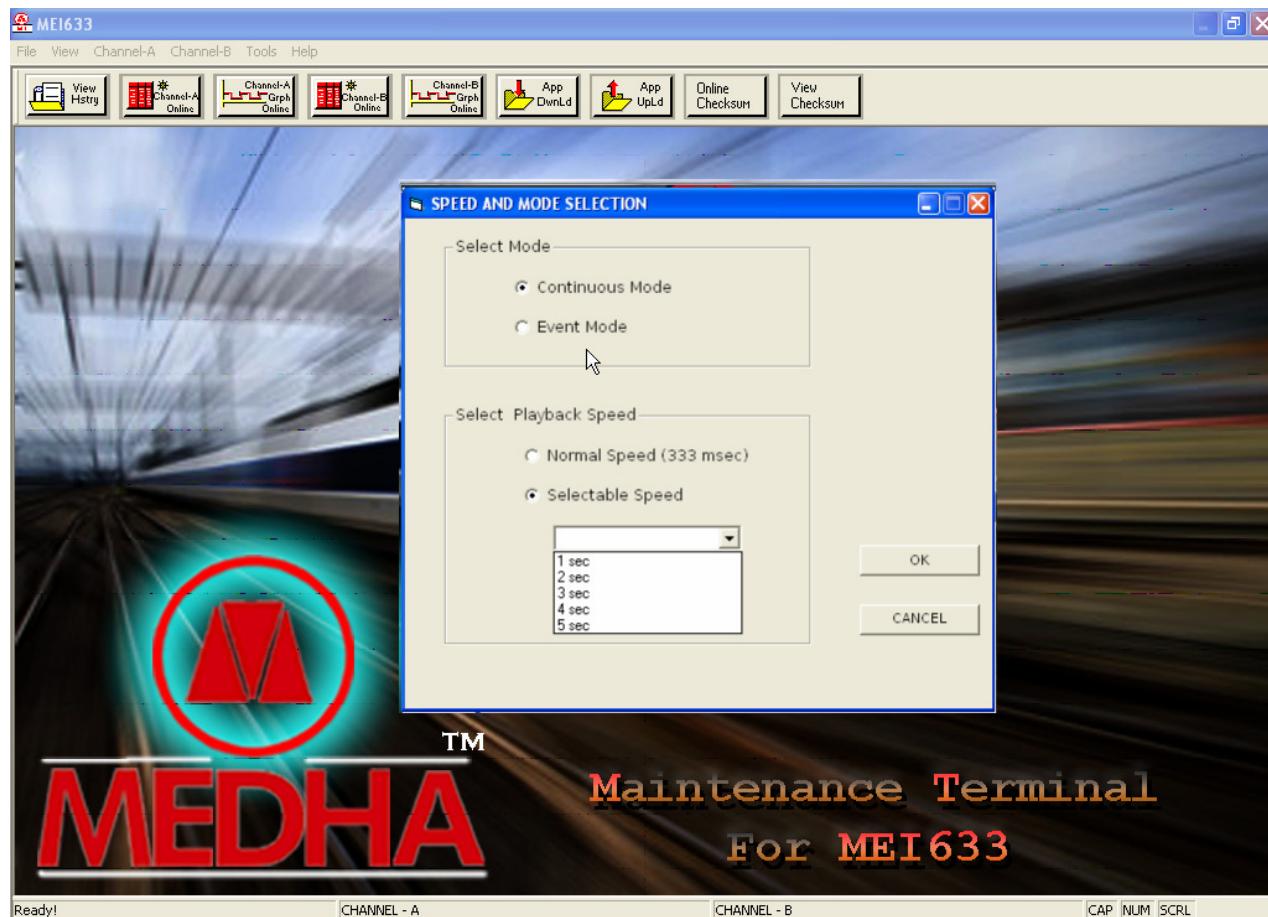
Speed Selection

Speed is the Rate at which Indications will be displayed. Any of the Following Speeds can be selected.

Normal Speed (333 m sec): Normal Speed is default Speed. This Option opens the following Dialog box:



Selectable Speed: You can select any of the following speeds. 1 sec, 2 sec, 3 sec, 4 sec and 5 sec this window is shown below



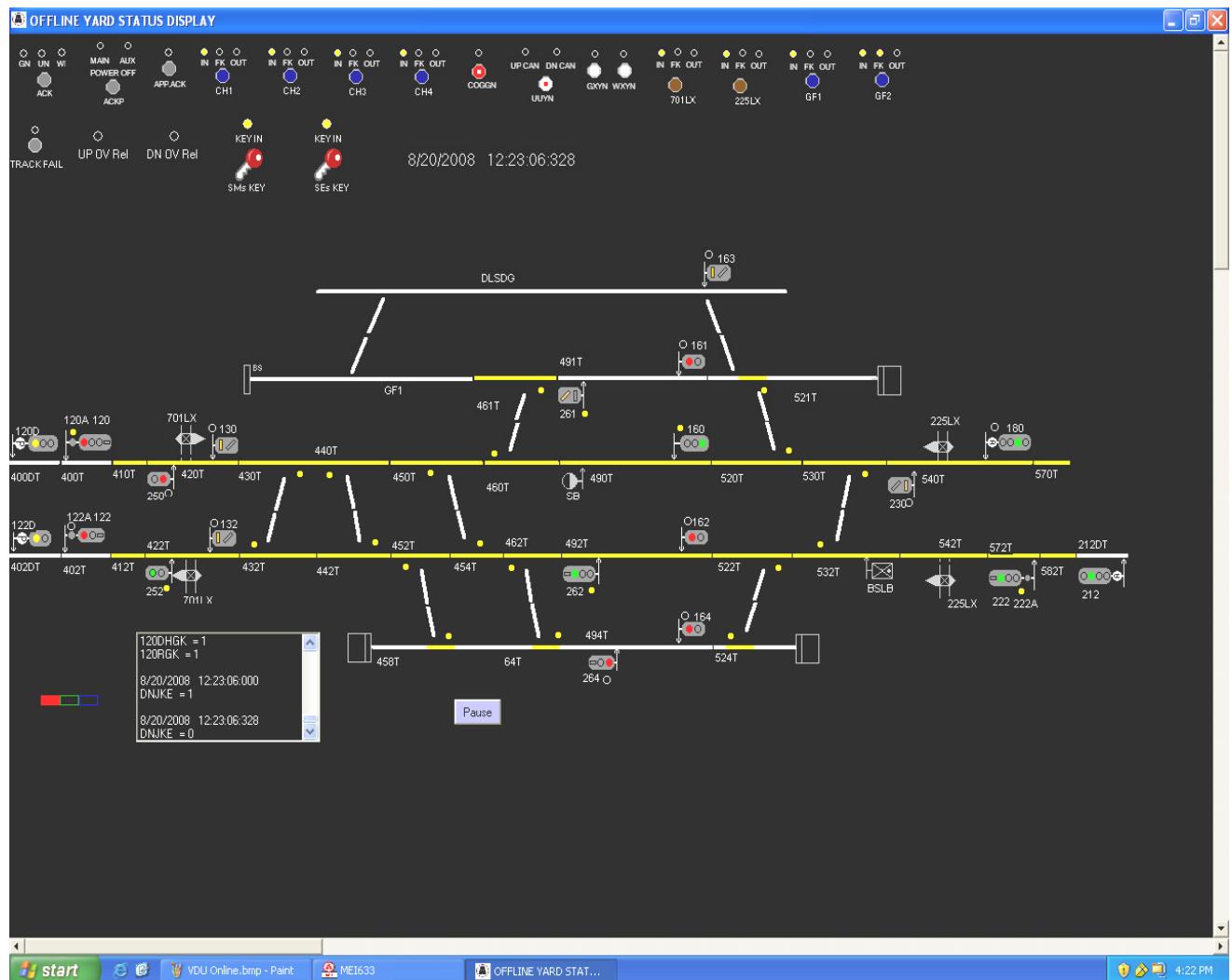
Speed Selection

You can select any of the Following Modes

Continuous Mode: Displays Indications continuously Event by Event.

Event Mode: Displays one Event at a time. You have to Press Continue to Proceed to next Event.

After Selecting Speed and Mode, Press OK button to Proceed or Press Cancel button to Exit the Application. This Option opens the following Dialog box:



Date and Time with Milliseconds will be shown for Every Event. A List Displays all the Relays Changed for Every Event. Both Relay Name and Relay Value will be shown. During Offline yard Status Display is running, you can Press Pause to Stop and after that Resume to start again. Click Continue to play button in Event Mode to Display Next Even. An RGB Flash Indication to the bottom left corner shows Application Active Status.

7.11 Application Data Operation

7.11.1 Application Download

Application Download operation is performed through this menu option. Data is downloaded from MT to System

Application Download Option is used to download the Application Data from the system.

This is a protected/secured operation, to perform this operation you will have to enter the User ID and Password, which only an Administrator can do.

You have to enter the User ID and the Password to perform Application operation.

You have an option to change the password, clicking the Change Password button can do this.

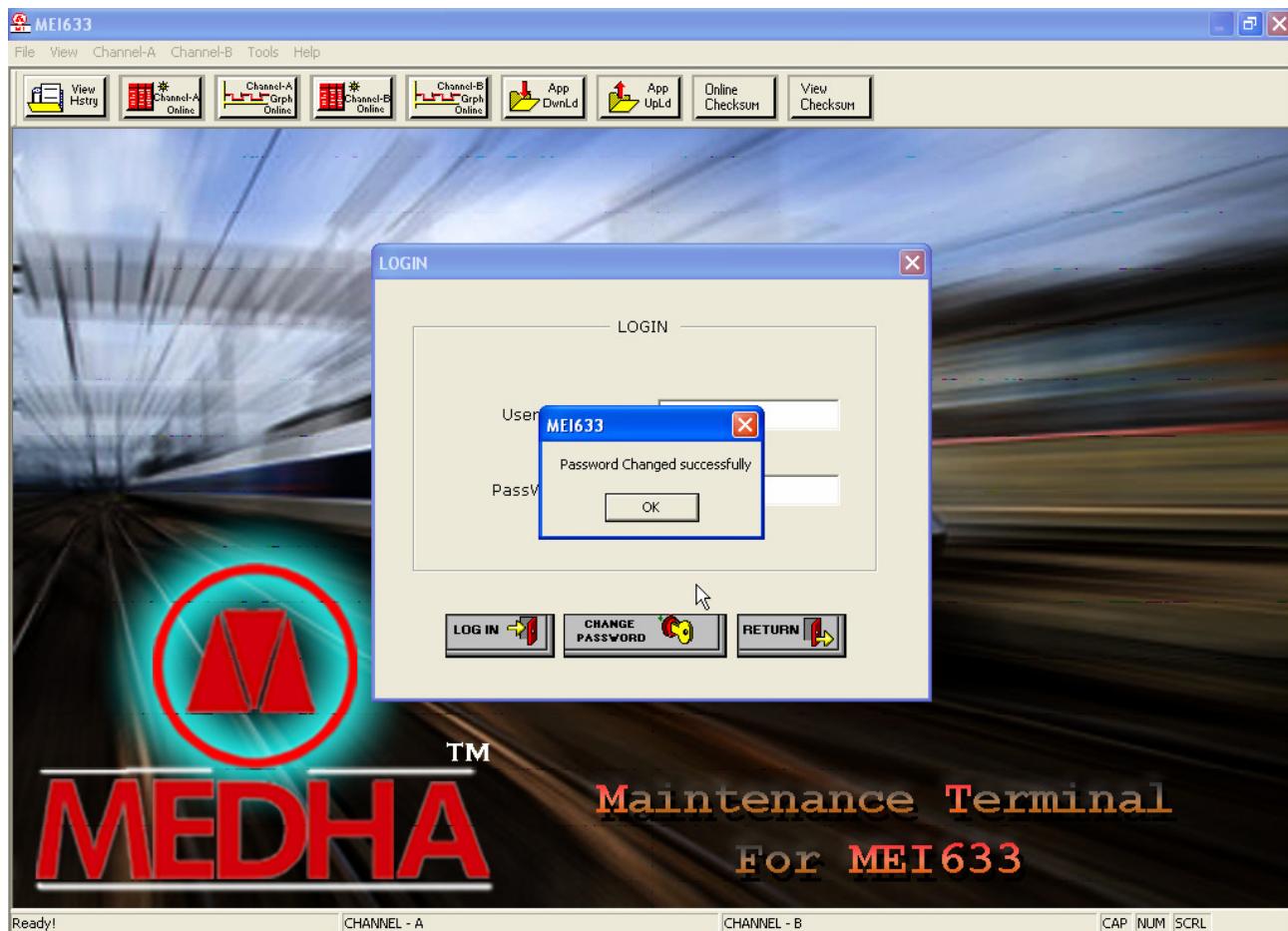
The following is the screen for changing the Password.



Here you will have to enter your User ID and Old Password, New Password and reenter the new password for Verification and click the Save Password option.

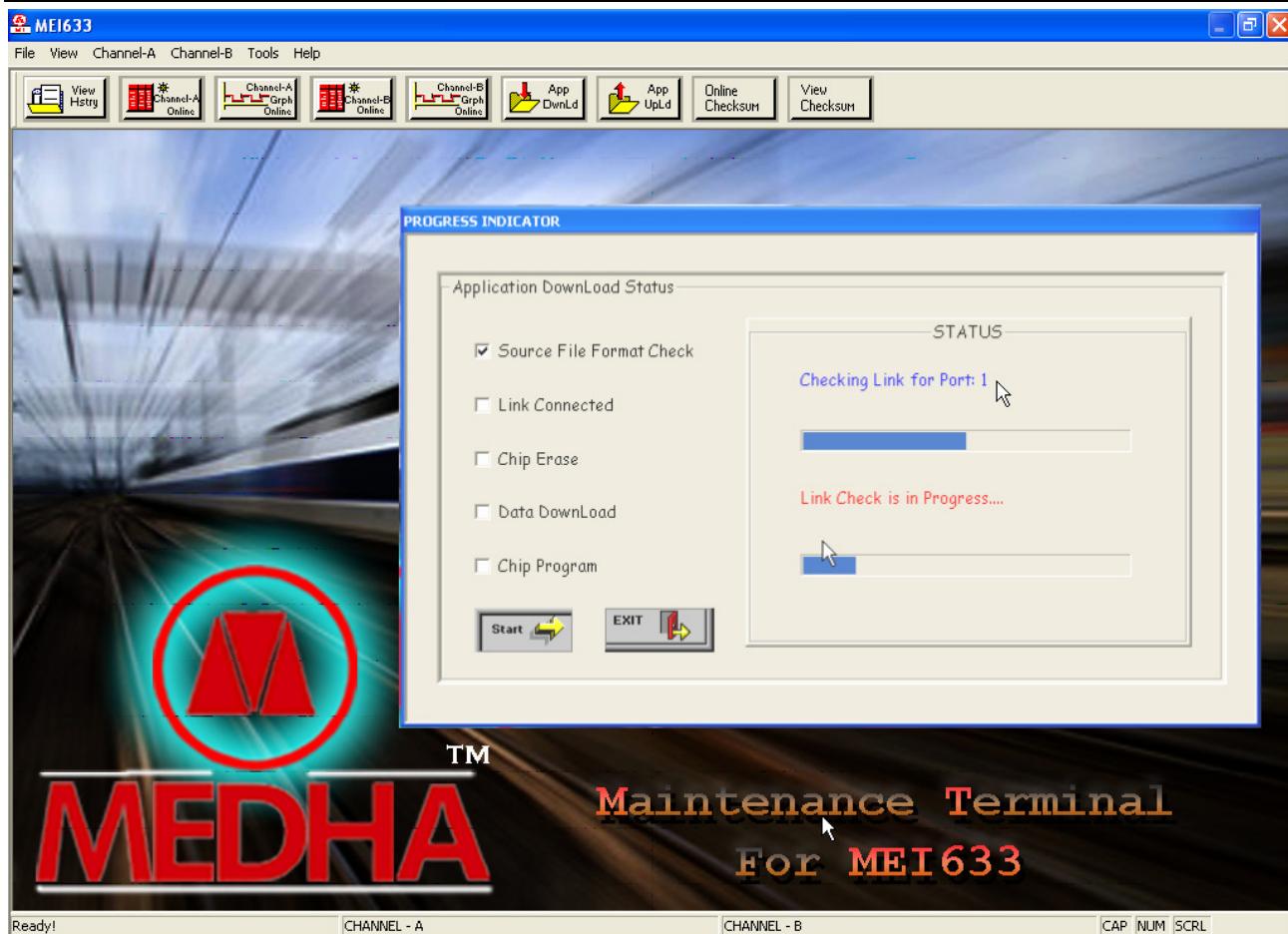
This new changed Password is saved in the database and when saved you will get a confirmation that your Password has been successfully changed.

The following is the screen that confirms Password change is successful.



Now you will have to Login with your new User ID and Password.

After Logging in you will be shown the following screen where Application Download operation is performed.



Here, there are a few parameters to understand, these are segments in the Application Download operation.

- Start
- Status Block.
- Source File Format check,
- Link Connected,
- Chip Erase,
- Data Download,
- Chip Program,
- Exit

Start

Start button initializes the process of Application Download.

The Port with which Channel-A is communicating Application Download and Upload operations sets it as their default port.

Status Block

This Block shows the status of the Application Download Operation.

Each Segments status is shown in this block. The first Progress indicator indicates the Sub-Status of the Segment, and the second Progress indicator indicates the Status of each Segment. Initially the operation begins with "**Source File Format check**".

Source File Format check

This option indicates the "**Source File Format Check**" segment, the existing File in the Database is checked for the File Format, i.e.; the data in the File should be in a specified format, and if data in the File is not in that format then the operation breaks. If the File is not in the specified format then the sub-status indicator gives a message saying "Invalid Source File Format" and the operation breaks. If the Source File Format is found to be correct then the option gets checked and the process proceeds to the Link Connected Segment.

Link Connected

This segment indicates the status of the Link between the system and MT. If the Link is established the option is checked and proceeds further for the Chip Erase option.

Chip Erase

Chip Erase segment erases the existing Application data on the system frame wise. After erasing the Application data successfully, the option is automatically checked and the Application Download Starts.

Data Download

After the erase operation is successful MT sends a data download request to the system. Then Data Download segment begins, and downloads the application data to the system, this is done frame wise and table wise. If any error occurs the relevant information is shown in the status block. After the Data Download operation is successfully completed the Chip Programming starts.

Chip Program

MT sends a program query message to program the chip. In this segment Chip is programmed with the downloaded data. If the Chip is programmed successfully the Application Data Download operation is successfully completed. If any error occurs during the communication the Data Download operation breaks and can be exited or restarted.

During the communication, if the link breaks or of any reason the system is unable to communicate with MT then MT sets a retry count, where MT restarts the operation from Link Connected segment, this is done for a maximum of 2 retries. If still System is not responding then MT terminates the operation.

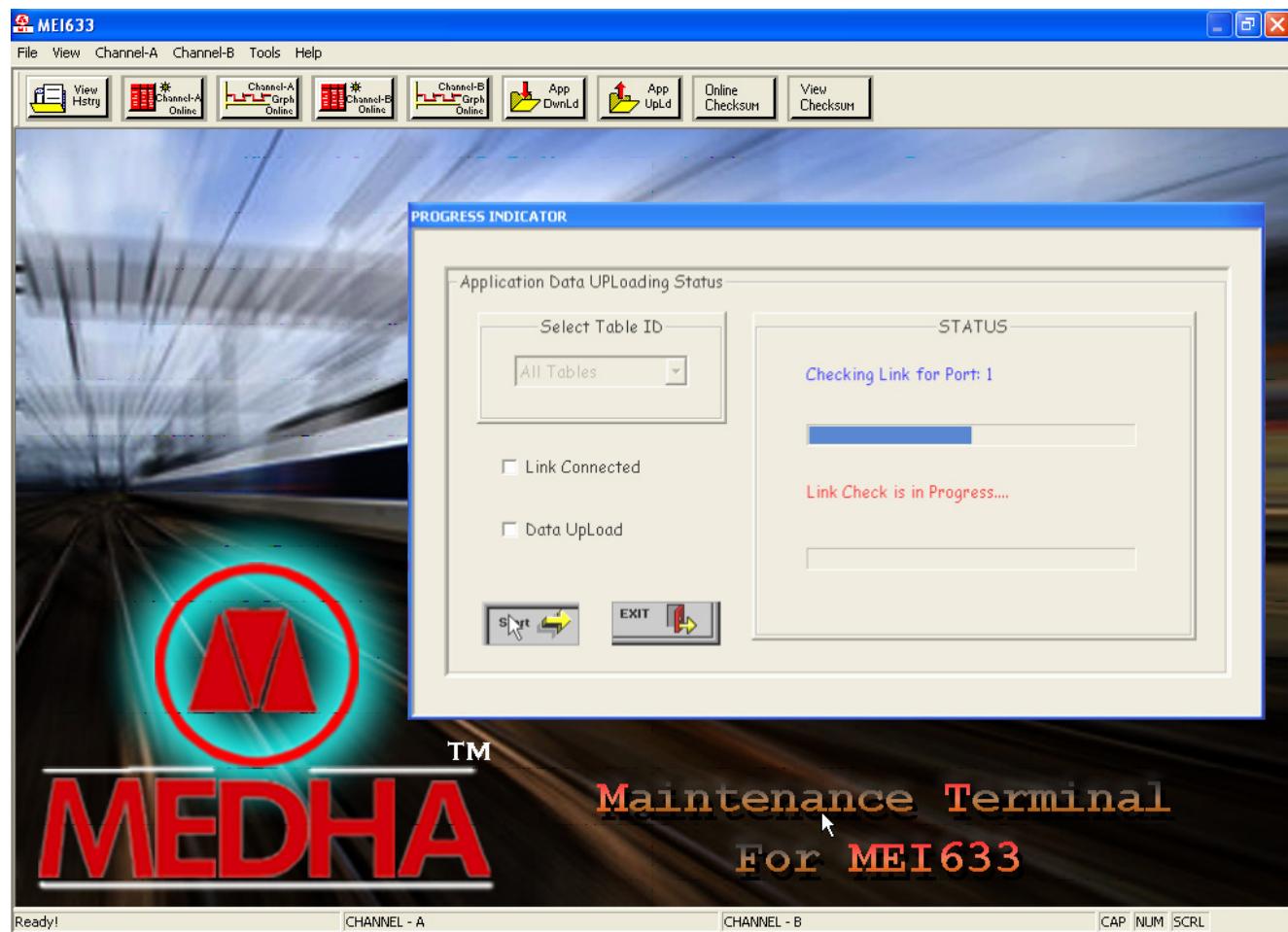
Exit

This option exits or terminates the Application Download operation and closes the Application Download window.

7.11.2 Application Upload

Application Upload operation is performed through this menu option. Data is uploaded from System to MT.

The following is the screen for Application Upload operation.



Here, like Application Download operation, Application Upload operation has two segments.

- Link Connected
- Data Upload

Link Connected

This segment indicates the status of the Link between the system and MT. If the Link is established the option is checked this indicates that the link has been successfully established.

After the link is connected the data Upload operation starts. Status can be seen in status block.

Data Upload

Here unlike Application download operation, Application Upload operation is performed depending on your selection.

In Application Download operation the system continuously requests and receives all tables and its frames in sequence one after the other, but in Application Upload option you have an opportunity to select the table data you want to download and perform the operation. If the operation is successful a status message is shown in the status block. If any error occurs during communication, MT starts to re communicate, MT sets a count for a maximum of 2 retries. If during this process also if system is unable to respond then, MT breaks the operation and clicking the Exit button can terminate this.

7.12 Checksum Report Display

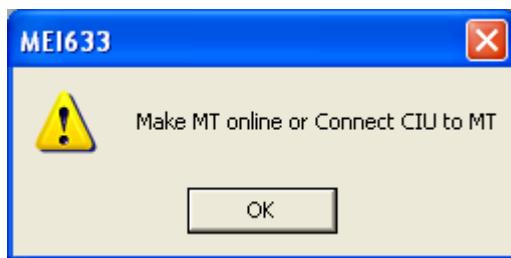
A feature is provided in MT to view the Checksum Report.

Once the user clicks on the Online Checksum button provided on the toolbar of MT home page, then the Checksum Report will be displayed within few seconds. The Online Checksum button will be disabled until the report is displayed. Checksum Report will be displayed in the prescribed format.

When ever the user clicks on the Online Checksum button, the displayed Check sum Report will be saved in the background. If there is any previously saved Checksum Report then it will be overwritten by the current Checksum report.

Whenever there is a data communication between MT and CIU, if the user clicks on the Online Checksum button, then the Checksum Report will be displayed.

If there no data communication between MT and CIU, if the user clicks on the Online Checksum button then a message box will be displayed as shown below:



Another feature is provided to view the last viewed Checksum Report by clicking on the View Checksum button provided adjacent to the Online Checksum button. Last saved Checksum Report will be displayed with or without data communication between MT and CIU.

The Checksum Report format will be as shown below:

8 MEI633 System Configuration

The configuration process involves checking and adjusting system and printed circuit board settings using hardware jumper adjustments.

The configuration process begins with Maintenance terminal PC connected to CVC card of MEI633 and assumes the following conditions:

- Application Software Maintenance terminal has been loaded in accordance with section of this manual.
- MEI633 system is running in Online mode.
- Maintenance terminal for MEI633 tools program is running

Configuration of printed circuit board settings in accordance with System manual.

9 MEI633 System Acceptance Testing

After complete configuration process has been completed, the entire MEI633 system installation should be tested to verify proper operation as per the ATP of specific yard.

10 System Troubleshooting and Recovery

Troubleshooting the MEI633 system involves careful analysis of observable fault codes displayed on Maintenance Terminal tool program and front panel display, and the ability to perform standard electrical and electronic troubleshooting operations.

System event log information associated with different modules of MEI633 are captured in Maintenance terminal tool program contain great deal of historical information regarding the performance of MEI633. These event logs are useful while troubleshooting. The information placed in the event logs contain Fault Codes, which are categorized into Critical and Non Critical Faults.

The Critical Faults are the Faults, which may cause Restart or Shutdown of the Faulty module, or they indicate a serious error, which needs immediate attention.

The Maintainer is alerted about the Critical Fault by a Fault Buzzer in the Front Panel Display and also in the Maintenance Terminal, if it is connected to the System.

Non Critical Faults are the faults, which do not cause the System to restart, or shutdown, but the System may continue to operate through the other redundant channel or in a de-graded mode of operation.

10.1 Trouble shooting serial communication link problems

10.1.1 Serial link to MT

When no event logs are displayed on the MT then check the serial cable connecting MT to CVC card of MEI633. Insert the cable properly on either end of the cable. If cable ends are properly inserted even logs will be displayed in MT. Even after inserting the cable properly if event logs are not displayed then replace the cable.

10.1.2 Serial link to Front panel display

When Link Failed message is displayed on front panel, check for serial cable connecting ISO232 card. If the cable is found faulty replace the cable. When status is not displayed check for power supply LED on the front panel display. If power supply LED doesn't glow then check power supply connection cable and take necessary action.

10.1.3 Serial link to VDU

When Yard is not displayed on VDU PC check for serial cable connecting RS232-OFC card. If the cable is found faulty replace the cable.

After the cause of the malfunction has been isolated to either the serial communication link problem or a single line replaceable hardware item, the next step is to make corrective repairs and restore the system to normal operation.

If the malfunction has been traced to a hardware component, replace the card and make the necessary repairs as per section troubleshooting of each module of MEI633 given below in following tables.

If the malfunction appears to be related to the application program, review the program listing carefully, make any necessary corrections, recompile the program, and then reload the program as per Service manual System manual covering the application programming of the MEI633 system. After the application software has been reloaded, check the configuration of the affected portion of the system per section 8 configuration of this manual. Then retest the affected system functions to verify proper operation.

The following Tables indicate the Fault Codes for the Individual Modules in MEI633 System when the corresponding Fault Codes are observed on System Front Panel Display or on the Maintainer's Terminal.

The Fault types are indicated as below in the Fault Code Tables:

N- Non-Critical,

C (S)- Critical Faults, which cause the Module to shutdown

C(R) – Critical, which cause the Module to Restart

C (P) – Critical, which requires power recycling after recovery

10.2 Trouble shooting each module

This section provides the troubleshooting actions to be taken for the fault codes observed on each Module.

Troubleshooting of all cards not mentioned (OVH,CVH)

10.2.1 Supervisory Processor Troubleshooting

Fault Code.	Fault Message	Troubleshooting Action
0X01	CPU Test Fail	
0X02	INT. Flash Test Fail	
0X03	TIMERS Test Fail	
0X04	INT. RAM Test Fail	
0X05	INT. BUS Test Fail	
0X06	EXT. BUS Test Fail	

- Switch ON the power input to the corresponding CVC card, through the pushbutton switch on the CVHM card, and check.
- If the problem persists, replace the CVC

0X07	App. Data Flash Test Fail	Card (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X08	VP1 DPRAM Test Fail	
0X09	VP2 DPRAM Test Fail	
0X0A	EXT. WDT Test Fail	
0X0B	DIP Switch Setting Mismatch	
0X0C	POST Timer Test Fail	
0X13	PSC Timeout	
0X15	POST Time Out	
0X16	System Installation Id Mismatch	
0X17	Yard Data Ver Id Mismatch	
0X24	SVP status conflict	
0X4B	WFM Output Data Compare Fail	
0X4C	IND. Data Compare Fail	
0X4D	INT. Relay Data Compare Fail	
0X4E	Timer Relay Data Compare Fail	
0X50	WFM Output Message Verification Fail	
0X51	IND. Message1 Verification Fail	
0X52	IND. Message2 Verification Fail	
0X53	IND. Message3 Verification Fail	
0X54	PP Request Message Verification Fail	
0X55	VDU Request Message Verification Fail	
0X5F	Random Error	
0X0D	Program Flow Check Fail	
0X0E	RTC RAM Test Fail	
0X0F	I2C BUS Test Fail	
0X18	Cyc Timer Overflow	
0X1B	CY. Interrupt In Fail	
0X1C	SVP Seq. Number. Mismatch	
0X22	VP1 Health Fail	
0X23	VP2 Health Fail	

0X25	Unresolved status	
0X26	COMP active cyclic interrupt NA	<ul style="list-style-type: none"> If the problem persists, replace the CVC Card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X27	Power On Synch Fail	<ul style="list-style-type: none"> If the problem still persists, call Service Engineer.
0X29	Both COMPS Not Available	
0X2A	Synchronization Fail	
0X56	Exception Fault	
0X57	Data Read From RTC Fail	
0X58	I2C Bus Access Fail	
0X59	Data Log Flash read pointer Mismatch	
0X5A	Data Log Flash Write pointer Mismatch	
0X5B	Data Log Flash Operation Timeout	
0X5C	Data Log Flash Block Erase Fail	
0X5E	DPRAM CRC Fail	
0X1D	Invalid Pulse Received	<ul style="list-style-type: none"> Indicates that Pulse Width of the Cyclic Interrupt Input is not ok. Check the other CVC Card.
0X1E	COMPA Mode Invalid	<ul style="list-style-type: none"> If the same Fault code is observed in both CVC cards, check corresponding Communication Processor.
0X1F	COMPB Mode Invalid	<ul style="list-style-type: none"> If the Fault is observed only in this CVC, Switch ON the power input to the corresponding CVC card, through the pushbutton switch on the CVHM card, and check.
0X20	COMPA Health Fail	<ul style="list-style-type: none"> If the problem persists, replace the CVC Card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X21	COMPB Health Fail	<ul style="list-style-type: none"> If the problem still persists, call Service Engineer
0X31	MT. Link Fail	
0X33	MT. Channel Noisy	<ul style="list-style-type: none"> Check the Cable connections between SVP

0X34	DL. Link Fail	and MT or DL or FP.
0X36	DL. Channel Noisy	<ul style="list-style-type: none"> • Switch OFF and switch ON the power input to the corresponding CVC and check.
0X37	FP. Link Fail	
0X39	FP. Channel Noisy	
0X10	INT UART0 Lpback Tst Fail	<ul style="list-style-type: none"> • If the problem persists, replace the CVC Card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X11	EXT UART CH A Lpback Tst Fail	<ul style="list-style-type: none"> • If the problem still persists, call Service Engineer
0X12	EXT UART CH B Lpback Tst Fail	
0X44	VP1 DPRAM Semaphore Lock Fail	<ul style="list-style-type: none"> • If any data comparison result or message verification checks are caused due to this fault, switch OFF and switch ON the power input to the corresponding CVC and check.
0X45	VP1 DPRAM Semaphore Release Fail	<ul style="list-style-type: none"> • If the problem persists, replace the CVC Card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X46	VP2 DPRAM Semaphore Lock Fail	<ul style="list-style-type: none"> • If the problem still persists, call Service Engineer.
0X47	VP2 DPRAM Semaphore Release Fail	
0X48	WFM Input Data Compare Fail	
0X49	PP Input Data Compare Fail	<ul style="list-style-type: none"> • This fault may be due to non-availability of data from the corresponding module. If the corresponding module is available, switch OFF and switch ON the power input to the CVC and check.
0X4A	VDU Input Data Compare Fail	<ul style="list-style-type: none"> • If the problem persists, replace the CVC Card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>) • If the problem still persists, call Service Engineer

10.2.2 Vital Processor Troubleshooting

Fault Code No.	Fault Message	Troubleshooting Action
0X01	POST Check Timer Test Fail	
0X02	CPU Test Fail	
0X03	RAM Test Fail	
0X04	INT Flash Test Fail	
0X05	Timers Test Fail	<ul style="list-style-type: none"> Switch ON the power input to the corresponding CVC card, through the pushbutton on the CVHM card, and check.
0X06	SVP DPRAM Test Fail	<ul style="list-style-type: none"> If the problem persists, replace the CVC Card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X07	Application Data Flash Test Fail	
0X09	POST Perform Fault	
0X0A	POST Timeout	
0X0D	COMP A and B DPRAM Tests Fail	<ul style="list-style-type: none"> If the problem still persists, call Service Engineer.
0X1A	Invalid VP Channel No.	
0X1B	Invalid VIC No.	
0X1E	Cyclic Interrupt Timeout	
0X23	SVP Cyclic Intr. Sts Conflict	
0X0B	Program Flow Check Fail	
0X0C	PSC Timeout	
0X1F	Power On Sync Fail	<ul style="list-style-type: none"> After restart, if the system continues to function normally, ignore the fault.
0X20	Invalid SVP Sequence No.	
0X21	Cyclic Synchronization Fail	
0X22	Invalid Pulse Width	
0X24	SVP DHS Fail	
0X25	Cyclic Activity Timeout	
0X26	Sync. Mode Change Fail	
0X2E	Invalid Relay No.	
0X2F	Invalid Relay State	
0X30	Invalid Logical Operator	
0X31	Illegal Equation Offset	
0X32	END EQN Not Found	
0X35	IND Data CMP Fail	
0X36	IND Msg1 Verf Rslts Fail	
0X37	IND Msg2 Verf Rslts Fail	
0X38	IND Msg3 Verf Rslts Fail	
0X3E	Activity Variable Corrupted	
0X3F	Exception Occurred	
0X40	Variable Corruption	
0X67	WFM OP Data CMP Rslts Fail - WFM	

0X68	WFM OP Msg VERF Rslts Fail - WFM	
0X7C	PP Req Msg VERF Rslts Fail - PP	
0X90	VDU Req Msg VERF Rslts Fail - VDU	
0X0F	COMP A DPRAM Test Fail	
0X10	COMP B DPRAM Test Fail	
0X11	SVP DPR Data CRC Check Fail	<ul style="list-style-type: none"> • If the Fault is observed only in this CVC, Switch ON the power input to the corresponding CVC card, through the pushbutton on the CVHM card, and check. • If the problem persists, replace the CVC Card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>) • If the problem still persists, call Service Engineer.
0X12	COMP A DPR Data CRC Check Fail	
0X13	COMP B DPR Data CRC Check Fail	
0X42	SVP DPR SEM ACQ Fail - SEM	
0X43	COMP A DPR SEM ACQ Fail- SEM	
0X44	COMP B DPR SEM ACQ Fail - SEM	
0X45	SVP DPR SEM RLSE Fail - SEM	
0X46	COMP A DPR SEM RLSE Fail - SEM	
0X47	COMP B DPR SEM RLSE Fail - SEM	
0X27	COMP A DHS Fail	
0X28	COMP B DHS Fail	
0X4E	OC CHNL A IP WFM Msg NA - OC	
0X4F	OC CHNL B IP WFM Msg NA - OC	
0X50	OC CHNL A OP WFM Msg NA - OC	
0X51	OC CHNL B OP WFM Msg NA - OC	
0X5A	WFM CHNL A OP RB Msg NA - WFM	
0X5B	WFM CHNL B OP RB Msg NA - WFM	

0X58	WFM CHNL A IP Msg NA - WFM	<i>Installation and Commissioning Manual)</i>	<ul style="list-style-type: none"> • If the problem still persists, call Service Engineer.
0X59	WFM CHNL B IP Msg NA- WFM		
0X71	PP CHNL A IP Msg NA- PP		
0X72	PP CHNL B IP Msg NA- PP		
0X85	VDU CHNL A IP Msg NA - VDU		
0X86	VDU CHNL B IP Msg NA - VDU		
0X56	WFM CHNL A IP/RB Msg DHS Fail - WFM	<ul style="list-style-type: none"> • Indicates that the corresponding module may not be OK. 	<ul style="list-style-type: none"> • If the corresponding WFM/ PP/ VDU is healthy, Switch OFF and switch ON the CVC and check.
0X57	WFM CHNL B IP/RB Msg DHS Fail - WFM		
0X5C	WFM CHNL A IP/RB Msg Intg Fail - WFM		
0X5D	WFM CHNL B IP/RB Msg Intg Fail - WFM		
0X66	WFM IP/RB Data CMP Rslts Fail - WFM		
0X6F	PP CHNL A IP Msg DHS Fail - PP		
0X70	PP CHNL B IP Msg DHS Fail - PP		
0X73	PP CHNL A IP Msg Intg Fail - PP		
0X74	PP CHNL B IP Msg Intg Fail - PP		
0X7B	PP Input Data CMP Rslts Fail - PP		
0X83	VDU CHNL A IP Msg DHS Fail - VDU		
0X84	VDU CHNL B IP Msg DHS Fail - VDU		
0X87	VDU CHNL A IP Msg Intg Fail - VDU		
0X88	VDU CHNL B IP Msg Intg Fail - VDU		
0X8F	VDU Input Data CMP Rslts Fail - VDU	<ul style="list-style-type: none"> • Set any one of PP /VDU to Indication Mode which is not used for Route setting 	<ul style="list-style-type: none"> • If the problem still persists, call Service Engineer.
0X91	Invalid Panel Setting		
0X92	No Command Panel Available		<ul style="list-style-type: none"> • Switch ON the PP/VDU

0X93	Both PP and VDU are Indication Panels	<ul style="list-style-type: none"> • Switch-on the PP/VDU Module or both Modules • After restart, if the system continues to function normally, ignore the fault. • If the problem persists, replace the CVC Card. • If the problem still persists, call Service Engineer.
0X9C	Invalid Lamp Aspect - SIG	<ul style="list-style-type: none"> • Check corresponding Signal or the Input WFM.
0X9D	Signal Blank - SIG	
0X9E	HR Relay Drive Fail - SIG	
0X9F	DR Relay Drive Fail - SIG	
0XA0	HHR Relay Drive Fail - SIG	
0XAB	Point Detection Failed - PT	
0XA7	Invalid Point Detection - PT	<ul style="list-style-type: none"> • Check corresponding Input WFM or the Point.
0X98	HR Wrong Side Fail - SIG	<ul style="list-style-type: none"> • If the problem persists, replace the CVC card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X99	DR Wrong Side Fail - SIG	
0X9A	HHR Wrong Side Fail - SIG	<ul style="list-style-type: none"> • If the problem still persists, call Service Engineer.

10.2.3 Communication Processor Troubleshooting

Fault Code No.	Fault Message	Troubleshooting Action
0X01	CPU Test Fail	
0X02	TIMERS Test Fail	
0X03	INT. Flash Test Fail	
0X04	INT. RAM Test Fail	
0X05	POST Timer Test Fail	
0X06	EXT. WDT Test Fail	
0X07	VP1A DPRAM Test Fail	
0X08	VP2A DPRAM Test Fail	
0X09	VP1B DPRAM Test Fail	
0X0A	VP2B DPRAM Test Fail	
0X0B	INT. BUS Test Fail	
0X0C	EXT. BUS Test Fail	
0X0D	EXT. Flash Test Fail	
0X0E	DIP Switch Setting Mismatch	
0X0F	POST Timeout	
0X1E	System Installation Id Mismatch	
0X1F	Yard Data Version Id Mismatch	
0X28	CY. Interrupt A Received In Wrong Time	
0X29	CY. Interrupt B Received In Wrong Time	
0X31	VIC Act Stby status Conflict	
0X6E	Random Error	
0X10	Program Flow Check Fail	
0X24	Cyc Interrupt Timeout	
0X25	Active VIC CY. Interrupt Not Available	
0X26	Active VIC Not Available	
0X27	Both VICs Not Available	
0X2A	VICs Seq. Number. Mismatch	
0X36	Both VICs Health Fail	
0X37	CY. Timer Overflow	
0X3A	First CY. Interrupt Received in Wrong Time	

0X3B	Both CY. Interrupts Not Available	<i>(Refer MEI-633 Installation and Commissioning Manual)</i>
0X49	PSC Timeout	<ul style="list-style-type: none"> If the problem still persists, call Service Engineer.
0X55	Exception Fault	
0X2B	VICA Health Fail	
0X2C	VICB Health Fail	
0X2D	VICA Mode Invalid	
0X2E	VICB Mode Invalid	
0X2F	Invalid Pulse received from Channel0	<ul style="list-style-type: none"> If the same Fault code is observed in both CCC cards, check corresponding CVC Card.
0X30	Invalid Pulse received from Channel1	<ul style="list-style-type: none"> If the Fault is observed only in this COMP, Switch OFF and Switch ON the power input to the corresponding CCC card, through the pushbutton switch on the CVHM card, and check.
0X32	VP1A SYNC. Data Not Written	
0X33	VP1B SYNC. Data Not Written	
0X34	VP2A SYNC. Data Not Written	<ul style="list-style-type: none"> If the problem persists, replace the CCC Card. . (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X35	VP2B SYNC. Data Not Written	<ul style="list-style-type: none"> If the problem still persists, call Service Engineer.
0X11	EXT. UART0 Loopback Test Fail	
0X12	EXT. UART1 Loopback Test Fail	
0X13	EXT. UART2 Loopback Test Fail	<ul style="list-style-type: none"> Check whether all the connectors between CIU and OCM/PP-VDU are firmly fixed.
0X14	EXT. UART3 Loopback Test Fail	
0X15	EXT. UART4 Loopback Test Fail	
0X16	EXT. UART5 Loopback Test Fail	
0X17	EXT. UART6 Loopback Test Fail	<ul style="list-style-type: none"> Switch OFF and switch ON the system and check.
0X18	EXT. UART7 Loopback Test Fail	
0X19	EXT. UART8 Loopback Test Fail	
0X1A	EXT. UART9 Loopback Test Fail	
0X1B	EXT. UART10 Loopback Test Fail	
0X1C	EXT. UART11 Loopback Test Fail	
0X3E	IOCOM Port0 Fail	
0X3F	IOCOM Port1 Fail	
0X40	IOCOM Port2 Fail	
0X41	IOCOM Port3 Fail	
0X42	IOCOM Port4 Fail	

0X43	IOCOM Port5 Fail	
0X44	IOCOM Port6 Fail	
0X45	IOCOM Port7 Fail	
0X46	PP/VDU Port Fail	
0X70	Link Fail - ICOM	
0X71	Channel Noisy - ICOM	
0X7A	Link Fail - PP	
0X7B	Channel Noisy - PP	
0X84	Link Fail - VDU	
0X85	Channel Noisy – VDU	
0X56	VP1A DPRAM Semaphore Lock Fail	<ul style="list-style-type: none"> • If no other fault code is observed in corresponding VP, it may be transient fault.
0X57	VP1B DPRAM Semaphore Lock Fail	
0X58	VP2A DPRAM Semaphore Lock Fail	<ul style="list-style-type: none"> • If the fault code is observed frequently, replace the corresponding CVC Card. . (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X59	VP2B DPRAM Semaphore Lock Fail	
0X5A	VP1A DPRAM Semaphore Release Fail	<ul style="list-style-type: none"> • If the problem still persists, call Service Engineer.
0X5B	VP1B DPRAM Semaphore Release Fail	
0X5C	VP2A DPRAM Semaphore Release Fail	
0X5D	VP2B DPRAM Semaphore Release Fail	
0X5E	VP1A DPRAM CRC Comparison Fail	
0X5F	VP1B DPRAM CRC Comparison Fail	
0X60	VP2A DPRAM CRC Comparison Fail	
0X61	VP2B DPRAM CRC Comparison Fail	
0X62	VP1A Output Message Not Available	<ul style="list-style-type: none"> • Check the corresponding CVC Card. If the CVC is healthy, Switch OFF and switch ON the power input to the corresponding CCC card, through the pushbutton switch on the
0X63	VP2A Output Message Not Available	
0X64	VP1B Output Message Not Available	

0X65	VP2B Output Message Not Available	CVHM card, and check. <ul style="list-style-type: none"> • If the problem persists, replace the CCC card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>) • If the problem still persists, call Service Engineer.
0X66	VP1A IND. Message1 Not Available	
0X67	VP1A IND. Message2 Not Available	
0X68	VP1A IND. Message3 Not Available	
0X69	VP1B IND. Message1 Not Available	
0X6A	VP1B IND. Message2 Not Available	
0X6B	VP1B IND. Message3 Not Available	
0X6C	VP1A PP/VDU Req. Message Not Available	
0X6D	VP1B PP/VDU Req. Message Not Available	
0X72	PSC Fail - ICOM	<ul style="list-style-type: none"> • Check the corresponding ICOM Module. • If the problem still persists, call Service Engineer.
0X75	WFM Config. Mismatch – ICOM	<ul style="list-style-type: none"> • Check the DIP Switch Settings in the corresponding ICOM. • If the problem still persists, call Service Engineer.
0X7C	PSC Fail - PP	<ul style="list-style-type: none"> • Check the corresponding PP Module. • If the problem still persists, call Service Engineer.

10.2.4 Panel Processor Troubleshooting

Fault Code No.	Fault Message	Troubleshooting Action
0X01	CPU Test Fail	
0X02	Program memory Test Fail	
0X03	Internal Data memory Test Fail	
0X04	Application Data memory Test Fail	
0X05	External Buses Test Fail	
0X06	Timers Test Fail	
0X07	External UART Test Fail	
0X0A	External WDT Test Fail	
0X0B	POST Time Out	
0X0C	Configuration Test Fail	
0X0D	PSC Time Out	
0X0E	Program Flow Sequence Fail	
0X0F	Variable Corruption Error	
0X08	IO Cards Presence Test Fail	<ul style="list-style-type: none"> • Check the power input to the IO Backplane. Atleast one of the Power supplies (PSA) should be ON. • Check whether all the Input (PIP) and Output (POP) cards are ON and the Extender Receiver card (PPRC) is ON (the power LED on the facia of the cards should be ON). If the power to any card is NOT OK, switch OFF the system and replace the faulty card with a new one. • Check whether the connecting cables between the PP IO backplane and the CPU backplane are OK. • Check whether the power input to the Extender driver card (PPDR) is OK (the power LED on the facia of

		<p>the card should be ON).</p> <ul style="list-style-type: none"> • Switch OFF and switch ON the system. • If the problem still persists, call Service Engineer.
0X1C	COMP Link Fail	
0X1D	COMP Receive Fail	
0X1E	COMP Channel Noisy	
0X1F	Indication Message Integrity Fail	
0X20	Request Message Integrity Fail	
0X21	COMP Message Receive Time	
0X22	Command Acknowledge Fail	
0X23	Message Transmission Time Out	
0X24	Message Receive Time Out	
0X25	Invalid Message ID	
0X1A	Power On Synchronization Fail	
0X1B	Cycle Synchronization Fail	
0X35	No Output Enable Active	
0X44	Button Stuck	<ul style="list-style-type: none"> • Check whether the D-type connectors on the facia of the Input cards are firmly fixed. • Continuously operate the corresponding button on the CCIP. • If the problem persists, switch OFF and switch ON the system and check. • If the problem still persists, call Service Engineer.
0X45	Button Stuck	
0X46	Button Stuck	
0X09	Application Data Version Mismatch OR System Installation ID Mismatch	<ul style="list-style-type: none"> • Switch OFF and switch ON

0X10	Both Output Enables Active	<p>the system and check.</p> <ul style="list-style-type: none"> • If the problem persists, call Service Engineer.
------	----------------------------	--

10.2.5 ICOM Processor Troubleshooting

Fault Code No.	Fault Message	Troubleshooting Action
0X01	POST Check Timer Test Fail	<ul style="list-style-type: none"> • Switch OFF and switch ON the power input to the OICC card and check.
0X02	CPU Test Fail	<ul style="list-style-type: none"> • If the problem persists, replace the OICC card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X03	RAM Test Fail	<ul style="list-style-type: none"> • If the problem still persists, call Service Engineer.
0X04	INT. Flash Test Fail	
0X06	EXT. WDT Test Fail	
0X07	Timers Test Fail	
0X08	COMP UART Test Fail	
0X09	WFP UART Test Fail	
0X0A	WFP Configuration Test Fail	
0X0C	POST Timeout	
0X0D	PSC Timeout	
0X0E	Program Flow Check Word Fail	
0X0F	ICOM Activity Corrupted	
0X10	ICOM Mode Corrupted	
0X11	ICOM POST Fail	
0XBA	ICOM Random Error	
0XBB	ICOM Processor Exception	
0xBC	Invalid WFP Connections	
0XBE	Power On Synch Activity Time out	
0XBF	Initialization Mode Time out	
0X1D	WFP Port Fail	<ul style="list-style-type: none"> • Check the RS485 cable connection between the Top and Bottom OCM backplanes.
0X1E	WFP Channel Noisy	<ul style="list-style-type: none"> • Switch OFF and switch ON the power input to the corresponding OCM and check.
0X1F	WFP Message Transmission Fail	
0X20	WFP Message Receive Timeout	
0X99	WFPS Channel A Noisy	
0X9C	WFP CHNL. A MSGS. TX Timeout	
0XA6	WFPS Channel B Noisy	

0XA9	WFP CHNL. B MSGS. TX Timeout	<ul style="list-style-type: none"> If the problem persists, replace the OICC card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>) If the problem still persists, call Service Engineer.
0X13	IOCOM Sync Fail	<ul style="list-style-type: none"> Check whether all the OFC connectors between Ring Modems, RS-485 connectors at both COMP and ICOM end are firmly fixed. Switch OFF and switch ON the system and check.
0X15	COMP Message Receive Time Invalid	<ul style="list-style-type: none"> If the problem persists, replace the OICC card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>) If the problem still persists, call Service Engineer.
0X16	COMP Message Receive Timeout	
0X18	No Output Telegram Received	
0X19	No Input Telegram Request Received	
0X1A	No Output RDBK. REQ. Message Received	
0XB8	COMP Channel Noisy	
0XC0	COMP Repeated Query messages	
0X22	WFP1 Connectivity Status Not OK	<ul style="list-style-type: none"> Switch OFF and switch ON the power input to the corresponding OCM and check.
0X23	WFP2 Connectivity Status Not OK	<ul style="list-style-type: none"> Check the RS485 cable connection between the Top and Bottom OCM backplanes.
0X24	WFP3 Connectivity Status Not OK	
0X25	WFP4 Connectivity Status Not OK	
0X26	WFP5 Connectivity Status Not OK	
0X27	WFP6 Connectivity Status Not OK	
0X28	WFP7 Connectivity Status Not OK	
0X29	WFP8 Connectivity Status Not OK	
0X2A	WFP9 Connectivity Status Not OK	
0X2B	WFP10 Connectivity Status Not OK	
0X2C	WFP11 Connectivity Status Not OK	
0X2D	WFP12 Connectivity Status Not OK	
0X2E	WFP13 Connectivity Status Not OK	

0X2F	WFP14 Connectivity Status Not OK	
0X30	WFP15 Connectivity Status Not OK	
0X31	WFP16 Connectivity Status Not OK	
0X32	WFP1 Link Fail	
0X33	WFP2 Link Fail	
0X34	WFP3 Link Fail	
0X35	WFP4 Link Fail	
0X36	WFP5 Link Fail	
0X37	WFP6 Link Fail	
0X38	WFP7 Link Fail	
0X39	WFP8 Link Fail	
0X3A	WFP9 Link Fail	
0X3B	WFP10 Link Fail	
0X3C	WFP11 Link Fail	
0X3D	WFP12 Link Fail	
0X3E	WFP13 Link Fail	
0X3F	WFP14 Link Fail	
0X40	WFP15 Link Fail	
0X41	WFP16 Link Fail	
0X42	WFP1 Communication Not OK	
0X43	WFP2 Communication Not OK	
0X44	WFP3 Communication Not OK	
0X45	WFP4 Communication Not OK	
0X46	WFP5 Communication Not OK	
0X47	WFP6 Communication Not OK	
0X48	WFP7 Communication Not OK	
0X49	WFP8 Communication Not OK	
0X4A	WFP9 Communication Not OK	
0X4B	WFP10 Communication Not OK	
0X4C	WFP11 Communication Not OK	
0X4D	WFP12 Communication Not OK	
0X4E	WFP13 Communication Not OK	
0X4F	WFP14 Communication Not OK	
0X50	WFP15 Communication Not OK	
0X51	WFP16 Communication Not OK	

0X62	WFP1 HS Fail	
0X63	WFP2 HS Fail	
0X64	WFP3 HS Fail	
0X65	WFP4 HS Fail	
0X66	WFP5 HS Fail	
0X67	WFP6 HS Fail	
0X68	WFP7 HS Fail	
0X69	WFP8 HS Fail	
0X6A	WFP9 HS Fail	
0X6B	WFP10 HS Fail	
0X6C	WFP11 HS Fail	
0X6D	WFP12 HS Fail	
0X6E	WFP13 HS Fail	
0X6F	WFP14 HS Fail	
0X70	WFP15 HS Fail	
0X71	WFP16 HS Fail	
0X93	WFPs Inter WFP Communication Mismatch	
0X94	WFPs Inter WFP Communication fail	
0X95	WFPs UART2 Channel Noisy	
0X9A	WFPs CHNL. A Cycle Start INTG. Fail	
0X9B	WFP CHNL. A MSGS. Wrong Time Receive	
0X9D	WFP CHNL. A OP. MSGS. INTG. Fail	
0XA7	WFPs CHNL. B Cycle Start INTG. Fail	
0XA8	WFP CHNL. B MSGS. Wrong Time Receive	
0XAA	WFP CHNL. B OP. MSGS. INTG. Fail	
0XBC	Invalid WFP Connections	<ul style="list-style-type: none"> • Problem may be due to DIP Switch settings in OICC.
0X14	WFM Configuration Mismatch	<ul style="list-style-type: none"> • Switch OFF and Switch ON the OC and check

10.2.6 Input and Output WFP Troubleshooting

Fault Code No.	Fault Message	Troubleshooting Action
0X01	Timer2 Fail	
0X02	Timer1 Fail	
0X03	Timer0 Fail	
0X04	Cpu Test Fail	
0X05	Internal RAM Faulty	
0X06	Internal Flash Faulty	
0X07	DipSwitch Config Fail	
0X08	Uart0 Loopback Fail	
0X09	Uart1 Loopback Fail	
0X0A	External Bus Fail	
0X0B	Watchdog Timer Fail	
0X0C	Excess Time for Self Test	
0X10	Ch 0 Toggle Test Failed	
0X11	Ch 1 Toggle Test Failed	
0X12	Ch 2 Toggle Test Failed	
0X13	Ch 3 Toggle Test Failed	
0X14	Ch 4 Toggle Test Failed	
0X15	Ch 5 Toggle Test Failed	
0X16	Ch 6 Toggle Test Failed	
0X17	Ch 7 Toggle Test Failed	
0X19	Unwanted Fault Mode Entry	
0X1A	Program flow sequence fail	
0X1B	Activity time out	
0X1F	Variable corruption	
0X20	Invalid Relay Drive	
0X21	Scan Timer Faulty	
0X22	WFP activity variable corruption	
0X23	Power On Sync flag corruption	
0X5B	Cycle Sync Fail	
0X5C	Inter WFP Exchg Mismatch	
0X5D	Inter WFP Communication fail	
0X5E	UART2 channel noisy	

0X0D	RLD Card Not Available	<ul style="list-style-type: none"> • Switch OFF and switch ON the power input to the corresponding OCM and check. • If the problem persists, switch OFF the power to the OCM, remove the ORLD card from the backplane, re-insert the card and check. • If the problem persists, replace the corresponding ORLD card with a new one. (<i>Refer MEI-633 Installation and Commissioning Manual</i>) • If the problem persists, replace the Output CPU card (OCCO) with a new one. (<i>Refer MEI-633 Installation and Commissioning Manual</i>) • If the problem still persists, call Service Engineer.
0X0E	Intermediate Read Back Not ok	
0X2C	Relay 0 Intermediate Readback WSF	
0X2D	Relay 1 Intermediate Readback WSF	
0X2E	Relay 2 Intermediate Readback WSF	
0X2F	Relay 3 Intermediate Readback WSF	
0X30	Relay 4 Intermediate Readback WSF	
0X31	Relay 5 Intermediate Readback WSF	
0X32	Relay 6 Intermediate Readback WSF	
0X33	Relay 7 Intermediate Readback WSF	
0X46	Relay 0 Intermediate Readback SSF	
0X47	Relay 1 Intermediate Readback SSF	
0X48	Relay 2 Intermediate Readback SSF	
0X49	Relay 3 Intermediate Readback SSF	

0X4A	Relay 4 Intermediate Readback SSF	
0X4B	Relay 5 Intermediate Readback SSF	
0X4C	Relay 6 Intermediate Readback SSF	
0X4D	Relay 7 Intermediate Readback SSF	
0X0F	Relay State Read Back Not Ok	<ul style="list-style-type: none"> • Check the Relay wiring and rectify the fault, if any. • Check the Relay and visually ensure the correct state. • Check the Relay connections in the OCM and rectify any loose/open contacts or shorts. • If the problem persists, replace the corresponding Output CPU card (OCCO) with a new one. (<i>Refer MEI-633 Installation and Commissioning Manual</i>) • If the problem still persists, call Service Engineer.
0X1C	VCOR WS Drive Op Detected	<ul style="list-style-type: none"> • Switch OFF and switch ON the power input to the corresponding OCM and check. • If the problem persists, replace the Vital cut-off card (OVCO) with a new one. (<i>Refer MEI-633</i>)

0X3C	VCOR Drive Op Fail	<p><i>Installation and Commissioning Manual)</i></p> <ul style="list-style-type: none"> • If the problem still persists, call Service Engineer.
0X1D	VCOR Wrongside Failure	<ul style="list-style-type: none"> • Check wiring to the VCOR for any shorts and rectify the fault, if any. • Check the VCOR and visually ensure the correct state.
0X1E	VCOR NO-NC mismatch	<ul style="list-style-type: none"> • Switch OFF and switch ON the power input to the corresponding OCM and check. • If the problem persists, replace the OVCO with a new one. <i>(Refer MEI-633 Installation and Commissioning Manual)</i>
0X3D	VCOR Safeside Failure	<ul style="list-style-type: none"> • If the problem persists, replace the corresponding Output CPU card (OCCO) with a new one. <i>(Refer MEI-633 Installation and Commissioning Manual)</i> • If the problem still persists, call Service Engineer.
0X24	Relay 0 Wrong side failure	<ul style="list-style-type: none"> • Check the Relay wiring and rectify the fault, if any. • Check the Relay and visually ensure the correct state. • Check the Relay connections in the OCM and rectify any loose/open contacts or shorts.
0X25	Relay 1 Wrong side failure	
0X26	Relay 2 Wrong side failure	
0X27	Relay 3 Wrong side failure	
0X28	Relay 4 Wrong side failure	
0X29	Relay 5 Wrong side failure	

0X2A	Relay 6 Wrong side failure	<ul style="list-style-type: none"> • Check the Relay drive indication LED on the facia of the ORLD card. If wrong indication is shown, replace the corresponding ORLD card . <i>(Refer MEI-633 Installation and Commissioning Manual)</i> • If the problem persists, replace the corresponding Output CPU card (OCCO). <i>(Refer MEI-633 Installation and Commissioning Manual)</i> • If the problem still persists, call Service Engineer.
0X2B	Relay 7 Wrong side failure	
0X3E	Relay 0 Safe side failure	
0X3F	Relay 1 Safe side failure	
0X40	Relay 2 Safe side failure	
0X41	Relay 3 Safe side failure	
0X42	Relay 4 Safe side failure	
0X43	Relay 5 Safe side failure	
0X44	Relay 6 Safe side failure	
0X45	Relay 7 Safe side failure	
0X34	Output Relay 0 NO-NC mismatch	<ul style="list-style-type: none"> • Check the Relay wiring and rectify the fault, if any. • Check the Relay and visually ensure the correct state. • Check the Relay connections in the OCM and rectify any loose/open contacts or shorts. • If the problem persists, Switch OFF and switch ON the OCM and check. If the problem persists, replace the corresponding OCCO card. <i>(Refer MEI-633 Installation and Commissioning Manual)</i> • If the problem still persists, call Service Engineer.
0X35	Output Relay 1 NO-NC mismatch	
0X36	Output Relay 2 NO-NC mismatch	
0X37	Output Relay 3 NO-NC mismatch	
0X38	Output Relay 4 NO-NC mismatch	
0X39	Output Relay 5 NO-NC mismatch	
0X3A	Output Relay 6 NO-NC mismatch	
0X3B	Output Relay 7 NO-NC mismatch	<ul style="list-style-type: none"> • Check the RS485 cable connection between the Top
0X62	Chnl-A Noisy	
0X63	Chnl-A Cycle Start Integrity Fail	

0X64	Chnl-A Msg Wrong time Receive	and Bottom OCM backplanes.
0X65	Chnl-A Msg Tx Timeout	<ul style="list-style-type: none"> • Switch OFF and switch ON the power input to the corresponding OCM and check.
0X66	Chnl-A OpMsg Integrity Fail	<ul style="list-style-type: none"> • If the problem persists, replace the corresponding WFP CPU card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X6F	Channel-B Noisy	<ul style="list-style-type: none"> • If the problem still persists, call Service Engineer.
0X70	Chnl-B Cycle Start Integrity Fail	
0X71	Chnl-B Msg Wrong time Receive	
0X72	Chnl-B Msg Tx Timeout	
0X73	Chnl-B OpMsg Integrity Fail	
0X4E	Input Relay 0 Readback mismatch	<ul style="list-style-type: none"> • Check the Relay wiring and rectify the fault, if any.
0X4F	Input Relay 1 Readback mismatch	<ul style="list-style-type: none"> • Check the Relay and visually ensure the correct state.
0X50	Input Relay 2 Readback mismatch	<ul style="list-style-type: none"> • Check the Relay connections in the OCM and rectify any loose/open contacts or shorts.
0X51	Input Relay 3 Readback mismatch	<ul style="list-style-type: none"> • If the problem persists, Switch OFF and switch ON the OCM and check. If the problem persists, replace the Input CPU card. (<i>Refer MEI-633 Installation and Commissioning Manual</i>)
0X52	Input Relay 4 Readback mismatch	<ul style="list-style-type: none"> • If the problem still persists, call Service Engineer.
0X53	Input Relay 5 Readback mismatch	
0X54	Input Relay 6 Readback mismatch	
0X55	Input Relay 7 Readback mismatch	

11 System maintenance

This chapter provides instructions for performing a scheduled maintenance routine that is designed to detect early symptoms of equipment degradation, which, if left unattended, may eventually result in a system malfunction.

Maintenance personnel must be familiar with the recommended methods for operating, testing, and repairing the MEI633 system equipment.

Electrostatic protection

1. Always stand on an approved conductive floor mat when touching or handling printed circuit boards.
2. Always wear a wrist strap-grounding device. The wrist strap should have a 1.0 megohm current limiting resistor. Connect the wrist strap grounding connector to suitable ground connection.
3. Periodically check each wrist strap for continuity using an approved tester. Continuity readings must be between 500k ohms and 10 megohms. Discard any wrist strap that does not meet this criterion.
4. Always handle printed circuit boards by the edges. Do not touch board components.
5. Keep the work area clean and free of junk.
6. Once removed from the bin, immediately place printed circuit boards into a conductive-shielded bag. Wrap the bag in conductive foam to protect the circuit board during transport and shipment.