Maintenance Device

IBM MAINTENANCE DEVICE (MD) DESCRIPTION

MD is contained in a single portable case 46cm x 33cm x 18cm (18.5" x 13.5" x 7") and weighing approx. 9.0 kilo (20.0 lb). It consists of two units, the base unit and the Keyboard/Display (K/D). The K/D is connected by a cable, 2 meter (6 foot) length, to the base unit.

The base contains:

Processor	Diskette File
Storage (8K ROS/24K RAM)	Control Panel
Keyboard/Display (K/D)	Power Supply
Common interface cable	Product Adapters

- ☐ The Control panel has a power on/off switch, power on indicator and IPL reset switch.
- ☐ The MD will attach to the user product via:

  the common interface cable of the MD directly or by means of three different adapters for attaching RLOOP, SLOOP and EIA/CCITT devices.

The K/D is a small hand-held unit with 80 character LED display and 40 data entry/control keys.

MD code can be divided into three main groups:

1. IPL, Extended IPL and cyclic tests to checkout MD itself.
2. System control code.
3. Application code and data files.

Highlights

- ☐ The MD provides CE a portable processor to assist in fault isolation.
- ☐ MD is planned as a product maintenance tool for use on a number of new IBM products. The MD:
  - provides a common CE interface instead of a variety of complex CE panels.
  - interacts with user product diagnostics.
  - does many of the time consuming Maintenance Analysis Procedures, freeing the CE to concentrate his skills on system problem analysis and definition.
  - reduces system resource to load and run diagnostic programs.
  - avoids repeated manual set up.
  - calls automatically for diagnostic routines when required by the MAP through the use of Map-Diagnostic-Integration (MDI).
  - can assist with the analysis of user product errror log through the use of error data analysis programs.
- ☐ CE controls the process by interactive communication via a hand-held keyboard display.
- ☐ Built in microdiagnostics and diskette resident test programs verify proper function of MD and a comprehensive maintenance package enable CE's to service the failing MD.

IPL and cyclic tests are ROS resident, the remainder of the MD code is loaded from diskettes shipped with the user products.

MD will be used for a variety of applications dependent on the user products. In its basic maintenance role it will assist with FRU isolation through the MDI application.

MDI is a process by which MAPs and Diagnostic tests are integrated into a single package under control of the MDI supervisor. With MDI most of the hardcopy MAP charts will be replaced by softcopy on diskettes enabling faster access to the correct MAP and MAP block. Diagnostic routines will normally be called automatically, reducing the need for slow manual set up.

Highlights

- ☐ The MD provides CE a portable processor to assist in fault isolation.
- ☐ MD is planned as a product maintenance tool for use on a number of new IBM products. The MD:
  - provides a common CE interface instead of a variety of complex CE panels.
  - interacts with user product diagnostics.
  - does many of the time consuming Maintenance Analysis Procedures, freeing the CE to concentrate his skills on system problem analysis and definition.
  - reduces system resource to load and run diagnostic programs.
  - avoids repeated manual set up.
  - calls automatically for diagnostic routines when required by the MAP through the use of Map-Diagnostic-Integration (MDI).
  - can assist with the analysis of user product errror log through the use of error data analysis programs.
- ☐ CE controls the process by interactive communication via a hand-held keyboard display.
- ☐ Built in microdiagnostics and diskette resident test programs verify proper function of MD and a comprehensive maintenance package enable CE's to service the failing MD.

IPL and cyclic tests are ROS resident, the remainder of the MD code is loaded from diskettes shipped with the user products.

MD will be used for a variety of applications dependent on the user products. In its basic maintenance role it will assist with FRU isolation through the MDI application.

MDI is a process by which MAPs and Diagnostic tests are integrated into a single package under control of the MDI supervisor. With MDI most of the hardcopy MAP charts will be replaced by softcopy on diskettes enabling faster access to the correct MAP and MAP block. Diagnostic routines will normally be called automatically, reducing the need for slow manual set up.

The CE maintains communication with the application through the K/D. Its key functions indicate the flexibility available.

- ☐ GLP (General Logic Probe) information can be input through the 4 key group - UP, DOWN, OPEN, PULSING.
- ☐ MAP responses, where necessary, via YES, NO and FWD (Forward) keys.
- ☐ Backtracking through the MAP is possible by the BKWD (Backward) key.
- ☐ In addition to the information displayed, further reference information may be available. This is indicated by the REF (Reference) light, and can be called out by the REF (Reference) key.
- ☐ The RET (Return) key will terminate display of reference data and restore the original display.
- ☐ The PF (Programmed Function) key enables prepared program functions to be called out at one keystroke.
- ☐ Additionally, the data keys can be used to input messages. These will appear on the display for verification before being entered by the ENT (Enter) key.

Maintenance Strategy

MD failures will be detected through the use of:

- ☐ Bring up tests, resident in ROS, which run following power on and IPL/reset
- ☐ Extended IPL tests, resident on user product and MD maintenance diskettes, which run in RAM as part of the IPL sequence
- ☐ ROS resident Cyclic Tests which execute when no other programs are running
- ☐ Additionally the MDI supervisor detects and reports operational errors in user product maintenance code
- ☐ MAP's which will instruct the CE through the K/D, the procedure to follow in the MIM and the parts to be checked or replaced

MD hardware will be serviced in the field using the MD service package. This consists of:

- ☐ Maintenance Diskette - containing Extended IPL tests, additional diagnostic tests, serviceability support supervisor and error report module
- ☐ Maintenance Diskette also contains a self study "handling" program to enable the CE to familiarize himself with use of the device
- ☐ Maintenance Information Manual (MIM) containing MAP's, remove/replace/adjust procedures and parts catalogue
- ☐ Port Wrap Tools enabling external data wrap of all product ports
- ☐ File Test Adapter cable supplying DC Voltages to the file when it is out of the case for service
- ☐ Servicing fixture supporting the unit when out of its case for ease of access

MD will be produced in Raleigh N.C. for World-wide supply.

For IBM internal use only

IBM World Trade Corporation
DP Customer Engineering
EHQ - Paris, France
A/FE - New York, U.S.A.

Printed in Western Germany

G–7902–709