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8/16 BIT RC855 MULTI-FUNCTION WORKSTATION

RC (UK) LTD 8/16 HARDWARE UPGRADE

INSTALLATION INSTRUCTIONS

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SECTION 1 PURPOSE OF THIS DOCUMENT

1.1 PURPOSE

This Document is intended to enable a Competent and Qualifed Field Engineer to Upgrade an RC855 MFWS System with a 60 Hz Monitor to operate with the RC (UK) Ltd. version of the Intel 8088 Co-Processor Feature supporting 256 K Bytes of Random Access Memory. The Upgrade is based on the use of the RC (UK) Co-Processor Upgrade Kit which is listed in Section 1.2 below.

1.2 CONTENTS OF THE UPGRADE KIT

You should check carefully that the Upgrade Kit you are proposing to Install contains the following items and that you can identify them all.

1 X Daughter Board (PCBA)
1 X Intel 8088 Processor Board with 256 KB RAM (PCBB) pre-mounted on metal bracket.
1 X Plug Ended 16 Wire Bus Inter-Connect Cable (Bus Cable)
1 X PCBA Power Cable (Power Cable)

SECTION 2 LOCATION OF COMPONENTS

2.1 Location of the Daughter Board (PCBA)

PCBA Plugs into the Socket on the RC855 MFWS Micr-Processor Board (Position 62) after the removal of the Z80A Processor.

2.2 Location of the Co-Processor Board (PCBB)

PCBB is mounted onto the side of the 60 Hz Monitor assembly on the Right Hand Side when the Workstation is viewed from the rear.

2.3 PCBA to PCBB Interconnect

PCBA and PCBB are Interconnected using the BUS Cable.

2.4 Power Supply

Power is supplied to PCBB from the RC855 MFWS PSU via the Power Cable.

SECTION 3 INSTALLATION PROCEDURE

STEP 1 Disconnect and Strip Down RC855 MFWS

Ensure that the Workstation is powered of then Disconnect all power and data cables.

Remove Cover

Disconnect and remove the MIC 50X Main Micro-Processor Board

STEP 2 Install PCBA and Re-install the Z80A Processor

Remove the Z80A Micro-Processor from the MIC 50X Board (position 62) and install it in position U2 on PCBA (Pin 1 to Pin 1).

Install PCBA on the MIC 50X Micro-Processor Board in position 62 (pin 1 to pin 1).

STEP 3 Remove the Monitor Assembly

Disconnect all Power and Data Cables from the Monitor Assembly.

Remove the four (4) Allen Screws, located on the underside of the swivel case which hold the Monitor in place and remove the monitor assembly from the RC855 MFWS Workstation.

STEP 4 Install PCCB on Monitor Assembly

PCBB is mounted on the Right Hand Side of the Monitor Assembly when viewed from the rear.
Slacken off the two (2) screws holding the side plate of the monitor assembly to the assembly base plate.
Mount PCBB onto the side plate with the lip over the top of the side plate, and the slots in the bottom behind the screw heads in the side plate. Tighten these two (2) screws.

STEP 5 Re-Install the Monitor Assembly

Insert the plug on one end of the BUS cable into the socket at position U17 on PCBB (pin 1 to pin 1).

Re-install the Monitor Assembly into the RC855 MFWS using the four (4) Allen screws removed during step 3 above. Check that there is clearance between the PCBB and the outer case of the RC855 MFWS, on some of the terminals it may be necessary to enlarge the holes in the bottom of the casing to achieve this.
Check that it is postioned to allow the Workstation Cover to be refitted.

Re-connect all cables to the monitor assembly.

STEP 6 Check The PCBB Power Supply Lead

Power for PCBB is taken from Connector J4 of the Main Micr-Processor Board (MIC 50X).

+5 V DC is taken from Pin 7 of Connector J4.

0 V DC is taken from Pin 8 of connector J4.

The +5 V DC Lead in the Power cable Supplied with the Upgrade Kit has the **SMALLER** of the two spade connectors.

STEP 7 Re-Mount the Main Processor Board Complete All Connections

Re-mount the Main Processor Board in the Down Position.

Connect the Power Cable Supplied with the Upgrade kit to the pins on Connector J4 of the Main Processor Board. Attach the spade connectors of the Power Lead to PCBB.

Connect the BUS cable Plug (pin 1 to pin 1) to PCCA (now Mounted on the Main Processor Board).

Re-Install the Main Processor Board in the RC855 MFWS.

STEP 8 Pre-Completion Check

Before re-installing the cover attach the Workstation Peripheral Devices (Keyboard, F/Disc Drive and Printer) and check for normal operation under CP/M 2.2.

STEP 9 Post-Completion Check

Re-Install the Workstation Cover and run the TOTEM test pack.

STEP 10 RC (UK) 8/16 Bit Operating System Check

Use the RC (UK) Ltd. CP/M 86 Operating System as described in the User Guide to check that the 8/16 Bit RC855 MFWS is functioning normally.

THE 8/16 BIT RC855 MULTI-FUNCTION WORKSTATION IS READY FOR SERVICE

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CHECK YOUR RC(UK) Ltd. DISTRIBUTION DISK

Power on the Workstation, the F/Disc Drives, and the Printer (if available).

After the Self-Check Cycle the System Load Prompt will appear:

ITT 3290 - Insert diskette

Load your CP/M System Disc into Drive A

The screen message will change briefly to:

ITT 3290 LD

and the CP/M Sign-on Message and Prompt will appear:

ITT 3290 CP/M 56K rel 1.X (or 2.X)

A>_

Your Distribution Disc as delivered contains two files in addition to your package:

CRC .COM
CRCKLIST .CRC

The **CRC.COM** file is a CP/M utility which enables you to rapidly verify that the **Distribution Disc** contains a good copy of your package.

When your **Distribution Disc** was made, the last part of production was to write the file **CRCKLIST.CRC** which contains check values of the data on the disc.

Before leaving RC (UK) Ltd. your disc was checked, however before transferring the files, it is advisable to run the CRC program to check that no damage has occured after the disc was dispatched to you.

This is accomplished by following the next procedure.

Your workstation should be displaying the CP/M prompt

A>_

Type:B:<RETURN> Key

This changes the CP/M logged drive to disc B
The screen will now look like this:

B>_

Before proceeding to the next step check that your printer is on line and ready:

Type <PRINT> Key

TypeCRC<RETURN> Key

Your screen should look like this example from the TCP package:

```
CRC Ver 5.0
CTL-S pauses, CTL-C aborts
++Searching for CRCKLIST file++ Checking with file - CRCKLIST.CRC

TCP .COM - XX XX "Match"
CRC .COM - XX XX "Match"

DONE
Quantity of file CRC that matched - 2
B>_
```

and your printer will have printed the same

If your screen looks the same as above except that the XX XX will be another HEXADECIMAL number, your Distribution Disc is undamaged and you may use the package.

If your screen looks like this:

```
CRC Ver 5.0
CTL-S pauses, CTL-C aborts
++Searching for CRCKLIST file++ Checking with file - CRCKLIST.CRC

TCP .COM - YY YY <-- is, was --> XX XX
CRC .COM - XX XX "Match"

DONE
Quantity of file CRC that matched - 1
Quantity of file CRC that did not match - 1
B>_
```

Then your Distribution Disc is damaged and should be returned to your Dealer together with a copy of the printout and your dealer will supply a new Distribution Disc.

CRC is in the **Public Domain** and may be copied as required.

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RC (UK) 8/16 BIT OPERATING SYSTEM

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RC 855 MFWS
CP/M 86 OPERATING SYSTEM
RC (UK) LTD. REGISTRATION
Serial No. 809-0000-000206
080484
Copyrights Digital Research Inc.
Software Publishers
RC (UK) Ltd.

This User Registration Card establishes you in the records of RC (UK) Ltd. as the holder of a Licensed Copy of the 8/16 Bit Operating System for the Upgraded RC 855 MFWS supplied by this Company or one of our Appointed Dealers. By completing and mailing this document you will be assured of our full support when you contact us using the information on the Front Page of the User's Guide. You will also be kept informed of improvements to the 8/16 Operating System as these become available.

WORKSTATION

SYSTEM _____
F/DISCS _____
PRINTER _____
SUPPLIED BY _____

OPERATING SYSTEMS

DRI CP/M 2.2 Serial No. _____
DRI CP/M 86 Serial No. _____

YOUR NAME _____

YOUR TITLE _____

YOUR ADDRESS _____
_____
_____
_____
_____

SIGNED _____ **DATED** _____

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by Gary A. Kildall
President

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Form E-2 (10/22/82)

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Filelist for CP/M 2.2 CP/M86 Master Operating System Disc

ASSIGN.COM	080684	RC (DK) Assign Utility
CAT.COM	080684	RC (DK) Directory Utility
CONFI.COM	080684	RC (DK) Workstation Parameter Configuration Utility
PIP.COM	080684	CP/M 2.2 Peripheral Interchange Program
STAT.COM	080684	CP/M 2.2 Stat Utility
SUBMIT.COM	080684	CP/M 2.2 Submit Utility
Z88E.COM	080684	Switch from CP/M 2.2 Operating System to CP/M86
XSUB.COM	080684	CP/M 2.2 Xsub Utility
MDRV.SYS	080684	8088 M Drive for CP/M 2.2
MD.COM	080684	M Drive Initilisation Utility for CP/M 2.2
Z80.CMD	080684	Switch from CP/M86 Operating System to CP/M 2.2
STAT.CMD	080684	CP/M86 Stat Utility
SUBMIT.CMD	080684	CP/M86 Submit Utility
UKASN.COM	080684	RC (UK) High Productivity Assign
UKCFV.COM	080684	RC (UK) High Productivity Format/Verify (4 Drives)
UKFV.COM	080684	RC (UK) High Productivity Format/Verify (2 Drives)
UKCOPY.COM	080684	RC (UK) High Productivity Disc Copy Utility
UKVER.COM	080684	RC (UK) High Productivity Verify Utility
CPM.SYS	080684	Cbios for CP/M 86
INITRAM.COM	080684	Ramdisk for CP/M 2.2 as drive A with empty directory
RAM.COM	080684	Ramdisk for CP/M 2.2 as drive A with previous directory and contents
CRC.COM	080684	Public Domain CRC Utility
CRCKLIST.CRC	080684	Check Data File for CRC Utility

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8/16 BIT RC855 MULTI-FUNCTION WORKSTATION

RC (UK) LTD 8/16 BIT OPERATING SYSTEM

USER GUIDE

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INDEX TO SECTIONS

SECTION 1 INTRODUCTION

1.1 Associated Documents

This User Guide is intended to be used in conjunction with the User Guide to your RC855 MFWS System which covers the basic operation of the Workstation in the 8 Bit CP/M 2.2 Mode.

This User Guide covers the extension to the facilities of your Workstation which the Hardware and Software Upgrade provides.

1.2 Contents of this User Guide

This User Guide describes the way in which your RC855 MFWS has been upgraded both in hardware and software terms and explains how to use both the much more powerful system and the new Utility Programs introduced by RC (UK) Ltd.

1.3 Application of the System

The RC855 MFWS System will continue to function in its CP/M 2.2 and RC 3270 Terminal Modes in exactly the same way as before. The Intel 8088 Processor and its Associated Memory are only brought into operation when the simple instructions in this User Guide are followed. The Co-Processor can be switched off equally easily. All the Application Software which already operates on your Workstation continues to Function. RC (UK) Software Support is confined to Application Software Packages supplied by this company to operate in either 8 Bit or 16 Bit configuration with CP/M Operating System Software supplied or approved by RC (UK) Ltd.

1.4 The Hardware Upgrade

An Intel 8088 16 Bit Co-Processor with 256 K Bytes of Random Access Memory and the Logical Components to interface to the Zylog Z80A 8 Bit Processor has been added to your RC855 MFWS System. The Co-Processor uses the Z80A Processor to operate the Workstation so that almost all (240 K Bytes) of the new Memory and Processing Power is available to execute your application program when you are operating in 16 Bit Mode.

1.5 The Software Upgrade

RC (UK) Ltd. have provided a Software Regime for the RC855 MFWS designed to avoid the need to learn a whole new Operating System. The Workstation's Housekeeping Utility Programs, which you already know, continue to operate in exactly the same way. We have taken the opportunity to introduce some new Utility Programs which will help your personal productivity and these are fully explained in this User guide.

If you wish to move fully into the CP/M 86 Operating System RC (UK) Ltd. can supply the full DRI Documentation and the CP/M 86 regime will run in a completely DRI Standardised way when your Co-Processor is on line.

SECTION 2 THE RC (UK) LTD 8/16 BIT RC855 OPERATING SYSTEM

2.1 Contents of the Distribution Package

The RC (UK) Ltd. Distribution Package for the 8/16 Bit RC855 MFWS contains the following items:

This User Guide

The DRI CP/M 86 Master Reference Disc

This Disc contains the full DRI CP/M 86 Program Set and will normally only be required if you decide to move your Workstation wholly into the CP/M 86 Operating System. A list of the Files and Programs supplied is included with the Disc. It is advisable to Purchase and Study the full DRI CP/M 86 Documentation before taking that step.

The RC (UK) 8/16 Bit RC855 MFWS System Conversion Disc

This Disc contains everything that is needed to establish the RC (UK) Ltd. 8/16 Bit RC855 Operating System on your Dual Processor System using the simple instructions in this User Guide. A list of the Files and programs supplied is included with the Disc.

8/16 Bit Master Disc Labels

These will be used to LABEL your 8/16 Bit RC855 Operating System Master Discs when you have created them using the instructions which appear in Section 2.2 below.

The RC (UK) Ltd. User Registration Card

2.2 Create New 8/16 Bit Operating System Master Disc

STEP 1

Create a New RC855 MFWS CP/M 2.2 Workdisc in the usual way (e.g Use the BACKUP or COPYSYS Utilities to transfer the System Tracks and the your preferred Utility Programs onto a Newly Formatted and Verified Double Sided Double Density Disc).

STEP 2

Load your newly created Disc into Drive A:

Type:**<CTRL>C** To reset the Workstation

Type:**ERA A:*.*<RETURN>** Key

This will eliminate everything except the Data on the System Tracks from your Disc after you answer **Y** to the confirmation message which your Workstation displays.

STEP 3

Load into Drive B: the:

The RC (UK) 8/16 Bit ITT 3290 ITWS System Conversion Disc

Type:**<CTRL>C** To reset the Workstation

Type:**B:<RETURN>** Key To make B the logged on Drive.

Type:**PIP A:=B:*.*[V]<RETURN>** Key

This will tranfer all the Files and Programs on your Distribution Disc to the Newly Created Disc in Drive A:

STEP 4

Remove the:

The RC (UK) 8/16 Bit RC855 MFWST System Conversion Disc

from Drive B: and store it in a safe place together with the:

The DRI CP/M 86 Master Reference Disc

These will not normally be required for 8/16 Bit RC855 MFWS Sytem Operations.

Complete the User Registration Card Included with the Distribution Package and mail it to RC (UK) Ltd. This will ensure that you receive Operating System Support, news of Further Productivity Upgrades and news of the availability of Pre-Configured Applications Software Packages from RC (UK) Ltd.

STEP 5

Use your Standard CP/M Utility (e.g. DIR or STAT) to inspect the Directory of the Disc in Drive A: and if you feel the need for additional Utility Programs add them to the Disc in the usual way (e.g. use CP/M 2.2 PIP.COM).

STEP 6

Remove the Disc from Drive A: fix one of the MASTER LABELS from the Distribution Package Label Set to it. Enter the Serial Number of your Licensed Copy of your RC855 MFWS CP/M 2.2 Operating System and the Serial Number of your Licensed Copy of CP/M 86 onto the Label.

The Process of Creating your 8/16 Bit RC855 Operating System Master Disc is now complete.

Section 3 of this User Guide explains the use the High Productivity Utility Programs Supplied by RC (UK) Ltd. to create Workdiscs for use with your 8/16 Bit RC855 MFWS.

SECTION 3 CREATE 8/16 BIT RC855 MFWS WORKDISCS

This Section of the User Guide Introduces the RC (UK) Ltd. High Productivity Utility Programs by using them to create 8/16 Bit Operating System Workdiscs for you RC855 MFWS Workstation. You may, if you prefer, use the Utility Programs you already know to achieve the same results (albeit more slowly).

3.1 Format/Verify New Discs

Start up your Workstation with the 8/16 Bit Operating System Master Disc in Drive A:

Type:**<CTRL>C** To reset the Workstation

Type:**CDFV<RETURN>** Key

The FORMAT/VERIFY Utility will be loaded and the message displayed will be:

RC (UK) DISK FORMAT/VERIFY UTILITY Ver CD X:1

This Utility will FORMAT and VERIFY a disk in the specified drive

***** ALL PREVIOUS DATA ON THAT DISK WILL BE LOST *****

FORMAT DISK IN DRIVE ? <A or B>

or

<CTRL-C> TO RETURN TO CP/M

OPEN THE DOOR OF DRIVE A: TO PROTECT AGAINST ACCIDENTAL ERASURE OF THE DATA ON YOUR MASTER DISC

Type:**B**

The Workstation will display the message:

Type <RETURN> to start FORMAT/VERIFY, or <CTRL-C> to ABORT

Type:<**RETURN**> Key

The Workstation will display the message:

***** DRIVE NOT READY, DRIVE B: INSERT DISK NOW *****

Load a new Double Sided Double Density Disc (equipped with a Write Permit Tab if necessary) into Drive B: and close the door of Drive B:.

The FORMAT/VERIFY process will start automatically as soon as the door is closed. The message displayed will be:

FORMAT/VERIFY STARTED, CURRENT TRACK NN

The CURRENT TRACK COUNTER will advance as the process proceeds. When it has been successfully completed the message displayed will be:

***** FORMAT/VERIFY COMPLETE *****

To REPEAT Format/Verify type <R>
To RETURN to CP/M Type <RETURN>

IF ANY OTHER MESSAGE APPEARS IT NORMALLY MEANS THAT THE DISK HAS A FAULT ON ITS SURFACE AND MUST BE DISCARDED

Repeat the Format/Verify Procedure until you have a sufficient number of Formatted and Verified Discs for your purposes.

When you have finished with the Format/Verify Program and the message displayed is:

***** FORMAT/VERIFY COMPLETE *****

To REPEAT Format/Verify type <R>
To RETURN to CP/M Type <RETURN>

Re-Load your Master Disc in Drive A:, Close the Door and:

Type:<**RETURN**> Key To return to CP/M.

3.2 Create 8/16 Bit Operating System Work Discs

With your Master Disc in Drive A: and one of your Formatted and Verified Discs in Drive B:

Type:**CDCOPY<RETURN>** Key

The RC (UK) Ltd. High Productivity DISC COPY Utility will be loaded and the message displayed will be:

RC (UK) DISK COPY UTILITY Ver CD 2:0

TYPE IN:

<A> TO COPY THE WHOLE DISC

<S> TO COPY THE SYSTEM TRACKS

<D> TO COPY THE DATA TRACKS

***** OR *****

<CTRL-C> TO RETURN TO CP/M. :_

The Workstation will display the message:

COPY ALL DISK <A> TO DISK <B>.

Type:<RETURN> to start copy, or <CTRL-C> to ABORT

Type:**<RETURN>** Key

The Workstation will display the message:

COPY STARTED, CURRENT TRACK NN

An exact copy of the Disc in Drive A: will be made on the Disc in Drive B:. The CURRENT TRACK Counter will advance as the process proceeds and when it is completed the message displayed will be:

***** COPY COMPLETE *****

To REPEAT copy, type <R>
To RETURN to CP/M type <RETURN>

Remove the MASTER DISC from Drive A: and store it with the Distribution Package Discs.

Remove the Disc from Drive B: and attach one of the Labels from your Label Set to it.

The First 8/16 Bit Operating System Disc for your 8/16 Bit RC855 MFWS is now completed. This may be used to create further 8/16 Bit Operating System Discs by following the procedure described in this Section of the User Guide.

Load the disc you have just labeled into Drive A: and proceed to create more 8/16 Bit Operating System Discs (see Section 3.2 above) or Applications Program Workdiscs as described in Section 3.3 below.

3.3 Create 8/16 Bit Application Program Workdiscs

Application Program Workdiscs are created by simply tranferring the Application Program (e.g WORDSTAR$_{tm}$ or SUPERCALC$_{tm}$ 2 etc.), together with its Help and Overlay Files to one of your 8/16 Bit Operating System Workdiscs (using the DRI PIP.COM Utility Program) and labeling it.

There are a few simple rules:

If your Application Program worked correctly before the Upgrade it will continue to operate correctly now.

If your Application Program is supplied by RC (UK) Ltd. to operate on your 8/16 Bit RC855 MFWS it will operate correctly when the Application Program Work Disc is created in this way.

All Workstation Housekeeping Utility Programs work best, and fastest in CP/M 2.2 Mode.

Only Programs whose File Names have the suffix **.CMD** operate under CP/M 86.

Turn to Section 4 of this User Guide to learn how simple it is to Operate your 8/16 Bit RC855 MFWS Workstation under the RC (UK) Software Regime.

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SECTION 4 WORKING WITH THE RC (UK) 8/16 BIT SOFTWARE SYSTEM

4.1 Start Up

Start up your 8/16 Bit RC855 MFWS with an Applications Program Workdisc in Drive A:

The CP/M 2.2 System Prompt will be displayed which looks like this:

```
A>_
```

You may now operate the Workstation in the normal way with your 8 Bit Applications Software Packages and your Utility Programs.

You may also use the **M DRIVE FACILITY** as described in Section 4 of this User Guide to increase the Productivity and Throughput of your Workstation dramatically. Normally 8 Bit Software using the M Drive Facility will operate faster than the same Application running in its 16 Bit format.

4.2 Switch to 16 Bit Operation

To switch your Workstation to 16 Bit Operation you must:

Type:**Z88E<RETURN>** Key

Control will be passed to the Intel 8088 Co-Processor and the RC (UK) 8/16 Bit Operating System Prompt will be displayed, which looks like this:

```
A0_
```

You may now run Applications Programs and Utilities which have the Suffix **.CMD** together with the DRI CP/M 86 Built-In Utilities.

4.3 Switch to 8 Bit Operation

With the RC (UK) 8/16 System Prompt displayed:

A]_

Type:**Z80<RETURN>** Key

Control of the Workstation will be passed back to the Z80A Processor under CP/M 2.2 and the CP/M 2.2 Prompt will be displayed:

A>_

to indicate that the Workstation is ready for 8 Bit operation.

4.4 The M DRIVE Feature

4.4.1 Introduction

When you are Operating in the 8 Bit Mode the Intel 8088 Co-Processor and its Memory can be used by the Z80A Processor as a Virtual High-Speed Disc Drive of capacity 240 K Bytes.

Data Files and Programs (e.g. for a DBASE$_{tm}$ 2 multiple file report generation job) can be moved to the M Drive and the Workstation logged on to Drive M: to execute the task much more quickly.

4.4.2 Starting Up the M DRIVE Feature

To use the M DRIVE Facility you must first ensure that the Workstation is Switched to 8 Bit Mode then:

Type:**MD<RETURN>** Key

The M DRIVE will be initialised by the Operating System and you may use it in the same way as any other Drive:

4.4.3 Using the M DRIVE Feature

You may Transfer Programs and Data Files to DRIVE M: using DRI PIP.COM or RC (UK) SIMPLIFILE$_{tm}$.

You may use STAT.COM, CAT.COM, DIR, ERA etc to deal with Files and Programs on Drive M: in the Normal way.

You may make Drive M: the logged on Drive.

There are a few Simple Rules:

Always make sure that there is enough space on Drive M: to accommodate the Programs and Files you intend to Transfer to it.

It is not a good idea to assign the Drive M: Identity to Data Files being created under your Application Program because it is too easy to forget to transfer the Data to a real Disc. **If you forget you will lose your work.** Always assign a real Disc Identity Pre-Fix (A:, B: etc) to a Data File.

The most sensible way to use Drive M: is as the basis of repetitive tasks which you leave the Workstation to get on with while you do something else.

4.4.4 Moving From M DRIVE Mode to 16 Bit Mode

Because the M DRIVE Feature occupies the Intel 8088 Co-Processor a General Hardware Reset of the Workstation is needed to return to normal CP/M 2.2 Operation and thence to 16 Bit Mode.

CHECK CAREFULLY THAT ALL VITAL DATA FILES HAVE BEEN SAVED ON A REAL DRIVE BEFORE PROCEEDING

Press the small Button Marked RESET on the rear of the Workstation Pedestal. This button is located between the Keyboard Connector and the LINE 2 (Printer) Port.

This will cause a General Hardware Reset of the Workstation followed by a Re-Load of the CP/M 2.2 Operating System from Drive A:

SECTION 5 SUPPORT

RC (UK) Ltd. supplies Fully Supported Software and Systems and as the Registered License Holder of an RC (UK) Ltd. 8/16 Bit Operating System you are entitled to our best attention. Please contact us by telephone, telex or mail using the information which appears on the front cover of this User Guide if you have any problems.

Number of rows on screen: Æ24Å
Number of columns on screen: Æ80Å
Terminal type descriptor: Æ8Å
Terminal initialization sequence: ÆÜLÅ
Terminal termination sequence: ÆÜLÅ
Audible alarm sequence: ÆÜGÅ
Clear screen sequence: ÆÜLÅ
Clear screen delay (% of characters): ÆOÅ
Cursor positioning lead-in sequence: ÆÜFÅ
Column specified before row for cursor positioning: ÆNoÅ
Cursor positioning intermediate sequence: Æ(none)Å
Cursor positioning follow-up sequence: Æ(none)Å
Bias value for rows for cursor positioning: Æ32Å
Bias value for columns for cursor positioning: Æ32Å
Cursor positioning delay (% of characters): ÆOÅ
Half intensity on sequence: Æ(none)Å
Full intensity on sequence: Æ%84Å
Blink initiation sequence: Æ%E4Å
Underline initiation sequence: Æ%81Å
Reverse video initiation sequence: Æ%94Å
Attribute enable sequence: Æ(none)Å
Attribute disable sequence: Æ%80Å
Bias value for attribute bytes: ÆOÅ
BLACK color identifier sequence: Æ(none)Å
BLUE color identifier sequence: Æ(none)Å
GREEN color identifier sequence: Æ(none)Å
CYAN color identifier sequence: Æ(none)Å
RED color identifier sequence: Æ(none)Å
MAGENTA color identifier sequence: Æ(none)Å
BROWN color identifier sequence: Æ(none)Å
WHITE color identifier sequence: Æ(none)Å
Set foreground color sequence: Æ(none)Å
Set background color sequence: Æ(none)Å
Both color sequences needed: ÆNoÅ
Both sequences needed when specifying a color: ÆNoÅ
Background color specified before foreground: ÆNoÅ
Memory mapped terminal: ÆNoÅ
Memory map segmentation address: Æ%0000Å
Memory map offset within segment: Æ%0000Å
Memory map descriptor: ÆOÅ
Ascii cursor position required: ÆOÅ

1. Display known terminal types
2. Select known terminal type
3. Display current terminal characteristics
4. Edit current terminal characteristics
5. Display current function key settings
6. Edit current function key settings

REGNECENTRALEN
(UK) LTD
CAP HOUSE · 9-12 LONG LANE · LONDON EC1 9HA
TELEPHONE: 01-606 3252 TELEX: 892800

INVOICE No.

PRO-FORMA

Customer:	Delivered to:
A/S Regnecentralen af 1979 Lautrubjerg 1 DK2750 Ballerup DENMARK	J. Knudsen

Invoice date:	Terms of payment:	Date shipped:	Shipped by:
9.11.84		9.11.84	
Your ref.:	**Our ref.:**	**Shipped from:**	**Shipped to:**
		Flight No.:	**A.W.B. No.:**
		Gross weight:	**Net weight:**
		Colli:	**Country of origin:**

Quantity	Details	VAT %	Basic Price	VAT	Total Amount
1	8/16 Bit CO-Processor Upgrade Kit for RC855 MFWS Serial No. 809-0000-000224		750.00		750.00
1	DRI CP/M Operating Systems Serial No. 2981		100.00		100.00
		TOTALS			

VAT Registration No. 335 4073 72
Registered in England
Registration No. 1309258

OVERSIGT OVER OPGRADEREDE RC855

RC855 PLACERING	BRUGER	CA. DEN
BAL. 3. SAL	BUDGETAFD HJ	19.11-84
BAL. 1. SAL	EDB-AFD JEKK	01.10.84

Mike Dyer — SW-Manager

8088 → Z80 → I/O CPU

8-bit Quick Co.Ce 200,$
Degraph. 220

Bi STAR

Video 50 → 329,-

WS
Sys C
dansk
Sa

2000 $

20 Stk

CP/M 80
— 86
CCP/M

Mike Dyer, RC(UK) LTD

00944 - 1 606 32 52

IC 855 16bit - mot 1.10.84

A>Z88E

AÅ COMMAND

Skerman clears

:D:BM:N:O:P
:>Print :?Del :@:A:BDelete ":CRename" :DSave :ELoad,
:FRun

Bdos Err On E: Select

AÅ HELP

"dod"

AÅTERAQ KMAN.CMD

Requires Concurrent CP/M-86

AÅ DBASE (forberedt til Rainbow og Poly-88)

:;;:<<:==:>>:??:@@:Aa:Bb:Cc:Dd:I:Q:R:S

ENTER TODAYS DATE OR RETURN FOR NONE
(DD/MM/YY)

MODIFY COMMAND - kan ikke gjennomføres!
Create med etterfølgende input →

AÅRCKALC

Skerman blinker - i loop.

AÅ XDIR

Invalid filespec.

AÅ XTYPE

Requires Concurrent CP/M-86

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INVOICE No. 093

CAP HOUSE · 9-12 LONG LANE · LONDON EC1 9HA
TELEPHONE: 01-606 3252 TELEX: 892800

1. opgr.

Customer:	Delivered to:
A/S Regnecentralen lautrupbjerg 1 DK2750 Ballerup Denmark ATTN: Mr. Ove Nielsen	BALLERUP

Invoice date:	Terms of payment:	Date shipped:	Shipped by:
30.9.84			
Your ref.:	Our ref.:	Shipped from:	Shipped to:
		Flight No.:	A.W.B. No.:
		Gross weight:	Net weight:
		Colli:	Country of origin:

Quantity	Details	VAT %	Basic Price	VAT	Total Amount
			£		£
1	16 bit Co-Processor Upgrade	NIL	600.00	NIL	600.00
	kurs	14,31	= D.Kr.	8 586,-	
		TOTALS	600.00	NIL	600.00

Indkøbs betales bestilt ... [illegible] 3 ... 8/10-84

8/10 84

VAT Registration No. 335 4073 72
Registered in England
Registration No. 1309258

JEKK/vit afd. nr. 12 19. september 1984

Test af RC855 upgrate 8-bit 256 K-ram dBASE II-test

Aktivitet	Drive A (RC762) sec	Drive M sec	Faktor	Bemærkn.
indexering af 500 record a 251 byte, keylgd = 10 byte	210.5	48.5	4.3	
indexering af 500 record a 11 byte, keylgd = 10 byte	129.5	35.5	3.6	
indexering af 1000 record a 100 byte, keylgd = 5 byte	412.0	95.7	4.3	
indexering af 1000 record a 50 byte, keylgd = 5 byte	383.2	89.5	4.3	
do.	95.3	53.7	1.8	ordnet key-værdi

både program- og datafiler var på det pågældende drive.

John Knudsen

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REGNECENTRALEN (UK) LTD
SUPPLIERS OF FULLY SUPPORTED SYSTEMS

RC (UK) 8/16 BIT OPERATING SYSTEM

USER REGISTRATION CARD

RC 855 MFWS
CP/M 86 OPERATING SYSTEM
RC (UK) LTD. REGISTRATION
Serial No. 809-0000-000206
080484
Copyrights Digital Research Inc.
Software Publishers
RC (UK) Ltd.

This User Registration Card establishes you in the records of RC (UK) Ltd. as the holder of a Licensed Copy of the 8/16 Bit Operating System for the Upgraded RC 855 MFWS supplied by this Company or one of our Appointed Dealers. By completing and mailing this document you will be assured of our full support when you contact us using the information on the Front Page of the User's Guide. You will also be kept informed of improvements to the 8/16 Operating System as these become available.

WORKSTATION

SYSTEM _____
F/DISCS _____
PRINTER _____
SUPPLIED BY _____

OPERATING SYSTEMS

DRI CP/M 2.2 Serial No. _____
DRI CP/M 86 Serial No. _____

YOUR NAME _____

YOUR TITLE _____

YOUR ADDRESS _____

_____

_____

_____

_____

SIGNED _____ **DATED** _____

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Filelist for CP/M 2.2 CP/M86 Master Operating System Disc

ASSIGN.COM	080684	RC (DK) Assign Utility
CAT.COM	080684	RC (DK) Directory Utility
CONFI.COM	080684	RC (DK) Workstation Parameter Configuration Utility
PIP.COM	080684	CP/M 2.2 Peripheral Interchange Program
STAT.COM	080684	CP/M 2.2 Stat Utility
SUBMIT.COM	080684	CP/M 2.2 Submit Utility
Z88E.COM	080684	Switch from CP/M 2.2 Operating System to CP/M86
XSUB.COM	080684	CP/M 2.2 Xsub Utility
MDRV.SYS	080684	8088 M Drive for CP/M 2.2
MD.COM	080684	M Drive Initilisation Utility for CP/M 2.2
Z80.CMD	080684	Switch from CP/M86 Operating System to CP/M 2.2
STAT.CMD	080684	CP/M86 Stat Utility
SUBMIT.CMD	080684	CP/M86 Submit Utility
UKASN.COM	080684	RC (UK) High Productivity Assign
UKCFV.COM	080684	RC (UK) High Productivity Format/Verify (4 Drives)
UKFV.COM	080684	RC (UK) High Productivity Format/Verify (2 Drives)
UKCOPY.COM	080684	RC (UK) High Productivity Disc Copy Utility
UKVER.COM	080684	RC (UK) High Productivity Verify Utility
CPM.SYS	080684	Cbios for CP/M 86
INITRAM.COM	080684	Ramdisk for CP/M 2.2 as drive A with empty directory
RAM.COM	080684	Ramdisk for CP/M 2.2 as drive A with previous directory and contents
CRC.COM	080684	Public Domain CRC Utility
CRCKLIST.CRC	080684	Check Data File for CRC Utility

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8/16 BIT RC855 MULTI-FUNCTION WORKSTATION

RC (UK) LTD 8/16 BIT OPERATING SYSTEM

USER GUIDE

Distributed by: REGNECENTRALEN (UK) Ltd.
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LONDON, EC1 9HA,
ENGLAND.
Telephone: 01-606-3252
Telex: 892800

Prepared by: J.R.Mumford

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INDEX TO SECTIONS

SECTION 1 INTRODUCTION

1.1 Associated Documents

This User Guide is intended to be used in conjunction with the User Guide to your RC855 MFWS System which covers the basic operation of the Workstation in the 8 Bit CP/M 2.2 Mode.

This User Guide covers the extension to the facilities of your Workstation which the Hardware and Software Upgrade provides.

1.2 Contents of this User Guide

This User Guide describes the way in which your RC855 MFWS has been upgraded both in hardware and software terms and explains how to use both the much more powerful system and the new Utility Programs introduced by RC (UK) Ltd.

1.3 Application of the System

The RC855 MFWS System will continue to function in its CP/M 2.2 and RC 3270 Terminal Modes in exactly the same way as before. The Intel 8088 Processor and its Associated Memory are only brought into operation when the simple instructions in this User Guide are followed. The Co-Processor can be switched off equally easily. All the Application Software which already operates on your Workstation continues to Function. RC (UK) Software Support is confined to Application Software Packages supplied by this company to operate in either 8 Bit or 16 Bit configuration with CP/M Operating System Software supplied or approved by RC (UK) Ltd.

1.4 The Hardware Upgrade

An Intel 8088 16 Bit Co-Processor with 256 K Bytes of Random Access Memory and the Logical Components to interface to the Zylog Z80A 8 Bit Processor has been added to your RC855 MFWS System. The Co-Processor uses the Z80A Processor to operate the Workstation so that almost all (240 K Bytes) of the new Memory and Processing Power is available to execute your application program when you are operating in 16 Bit Mode.

1.5 The Software Upgrade

RC (UK) Ltd. have provided a Software Regime for the RC855 MFWS designed to avoid the need to learn a whole new Operating System. The Workstation's Housekeeping Utility Programs, which you already know, continue to operate in exactly the same way. We have taken the opportunity to introduce some new Utility Programs which will help your personal productivity and these are fully explained in this User guide.

If you wish to move fully into the CP/M 86 Operating System RC (UK) Ltd. can supply the full DRI Documentation and the CP/M 86 regime will run in a completely DRI Standardised way when your Co-Processor is on line.

SECTION 2 THE RC (UK) LTD 8/16 BIT RC855 OPERATING SYSTEM

2.1 Contents of the Distribution Package

The RC (UK) Ltd. Distribution Package for the 8/16 Bit RC855 MFWS contains the following items:

This User Guide

The DRI CP/M 86 Master Reference Disc

This Disc contains the full DRI CP/M 86 Program Set and will normally only be required if you decide to move your Workstation wholly into the CP/M 86 Operating System. A list of the Files and Programs supplied is included with the Disc. It is advisable to Purchase and Study the full DRI CP/M 86 Documentation before taking that step.

The RC (UK) 8/16 Bit RC855 MFWS System Conversion Disc

This Disc contains everything that is needed to establish the RC (UK) Ltd. 8/16 Bit RC855 Operating System on your Dual Processor System using the simple instructions in this User Guide. A list of the Files and programs supplied is included with the Disc.

8/16 Bit Master Disc Labels

These will be used to LABEL your 8/16 Bit RC855 Operating System Master Discs when you have created them using the instructions which appear in Section 2.2 below.

The RC (UK) Ltd. User Registration Card

2.2 Create New 8/16 Bit Operating System Master Disc

STEP 1

Create a New RC855 MFWS CP/M 2.2 Workdisc in the usual way (e.g Use the BACKUP or COPYSYS Utilities to transfer the System Tracks and the your preferred Utility Programs onto a Newly Formatted and Verified Double Sided Double Density Disc).

STEP 2

Load your newly created Disc into Drive A:

Type:**<CTRL>C** To reset the Workstation

Type:**ERA A:*.*<RETURN>** Key

This will eliminate everything except the Data on the System Tracks from your Disc after you answer **Y** to the confirmation message which your Workstation displays.

STEP 3

Load into Drive B: the:

The RC (UK) 8/16 Bit ITT 3290 ITWS System Conversion Disc

Type:**<CTRL>C** To reset the Workstation

Type:**B:<RETURN>** Key To make B the logged on Drive.

Type:**PIP A:=B:*.*[V]<RETURN>** Key

This will tranfer all the Files and Programs on your Distribution Disc to the Newly Created Disc in Drive A:

STEP 4

Remove the:

The RC (UK) 8/16 Bit RC855 MFWST System Conversion Disc

from Drive B: and store it in a safe place together with the:

The DRI CP/M 86 Master Reference Disc

These will not normally be required for 8/16 Bit RC855 MFWS Sytem Operations.

Complete the User Registration Card Included with the Distribution Package and mail it to RC (UK) Ltd. This will ensure that you receive Operating System Support, news of Further Productivity Upgrades and news of the availability of Pre-Configured Applications Software Packages from RC (UK) Ltd.

STEP 5

Use your Standard CP/M Utility (e.g. DIR or STAT) to inspect the Directory of the Disc in Drive A: and if you feel the need for additional Utility Programs add them to the Disc in the usual way (e.g. use CP/M 2.2 PIP.COM).

STEP 6

Remove the Disc from Drive A: fix one of the MASTER LABELS from the Distribution Package Label Set to it. Enter the Serial Number of your Licensed Copy of your RC855 MFWS CP/M 2.2 Operating System and the Serial Number of your Licensed Copy of CP/M 86 onto the Label.

The Process of Creating your 8/16 Bit RC855 Operating System Master Disc is now complete.

Section 3 of this User Guide explains the use the High Productivity Utility Programs Supplied by RC (UK) Ltd. to create Workdiscs for use with your 8/16 Bit RC855 MFWS.

SECTION 3 CREATE 8/16 BIT RC855 MFWS WORKDISCS

This Section of the User Guide Introduces the RC (UK) Ltd. High Productivity Utility Programs by using them to create 8/16 Bit Operating System Workdiscs for you RC855 MFWS Workstation. You may, if you prefer, use the Utility Programs you already know to achieve the same results (albeit more slowly).

3.1 Format/Verify New Discs

Start up your Workstation with the 8/16 Bit Operating System Master Disc in Drive A:

Type:**<CTRL>C** To reset the Workstation

Type:**CDFV<RETURN>** Key

The FORMAT/VERIFY Utility will be loaded and the message displayed will be:

RC (UK) DISK FORMAT/VERIFY UTILITY Ver CD X:1

This Utility will FORMAT and VERIFY a disk in the specified drive

***** ALL PREVIOUS DATA ON THAT DISK WILL BE LOST *****

FORMAT DISK IN DRIVE ? <A or B>

or

<CTRL-C> TO RETURN TO CP/M

OPEN THE DOOR OF DRIVE A: TO PROTECT AGAINST ACCIDENTAL ERASURE OF THE DATA ON YOUR MASTER DISC

Type:**B**

The Workstation will display the message:

Type <RETURN> to start FORMAT/VERIFY, or <CTRL-C> to ABORT

Type:<**RETURN**> Key

The Workstation will display the message:

***** DRIVE NOT READY, DRIVE B: INSERT DISK NOW *****

Load a new Double Sided Double Density Disc (equipped with a Write Permit Tab if necessary) into Drive B: and close the door of Drive B:.

The FORMAT/VERIFY process will start automatically as soon as the door is closed. The message displayed will be:

FORMAT/VERIFY STARTED, CURRENT TRACK NN

The CURRENT TRACK COUNTER will advance as the process proceeds. When it has been successfully completed the message displayed will be:

***** FORMAT/VERIFY COMPLETE *****

To REPEAT Format/Verify type <R>
To RETURN to CP/M Type <RETURN>

IF ANY OTHER MESSAGE APPEARS IT NORMALLY MEANS THAT THE DISK HAS A FAULT ON ITS SURFACE AND MUST BE DISCARDED

Repeat the Format/Verify Procedure until you have a sufficient number of Formatted and Verified Discs for your purposes.

When you have finished with the Format/Verify Program and the message displayed is:

***** FORMAT/VERIFY COMPLETE *****

To REPEAT Format/Verify type <R>
To RETURN to CP/M Type <RETURN>

Re-Load your Master Disc in Drive A:, Close the Door and:

Type:<**RETURN**> Key To return to CP/M.

3.2 Create 8/16 Bit Operating System Work Discs

With your Master Disc in Drive A: and one of your Formatted and Verified Discs in Drive B:

Type:**CDCOPY<RETURN>** Key

The RC (UK) Ltd. High Productivity DISC COPY Utility will be loaded and the message displayed will be:

RC (UK) DISK COPY UTILITY Ver CD 2:0

TYPE IN:

<A> TO COPY THE WHOLE DISC

<S> TO COPY THE SYSTEM TRACKS

<D> TO COPY THE DATA TRACKS

***** OR *****

<CTRL-C> TO RETURN TO CP/M. :_

The Workstation will display the message:

COPY ALL DISK <A> TO DISK <B>.

Type:<RETURN> to start copy, or <CTRL-C> to ABORT

Type:**<RETURN>** Key

The Workstation will display the message:

COPY STARTED, CURRENT TRACK NN

An exact copy of the Disc in Drive A: will be made on the Disc in Drive B:. The CURRENT TRACK Counter will advance as the process proceeds and when it is completed the message displayed will be:

***** COPY COMPLETE *****

To REPEAT copy, type <R>
To RETURN to CP/M type <RETURN>

Remove the MASTER DISC from Drive A: and store it with the Distribution Package Discs.

Remove the Disc from Drive B: and attach one of the Labels from your Label Set to it.

The First 8/16 Bit Operating System Disc for your 8/16 Bit RC855 MFWS is now completed. This may be used to create further 8/16 Bit Operating System Discs by following the procedure described in this Section of the User Guide.

Load the disc you have just labeled into Drive A: and proceed to create more 8/16 Bit Operating System Discs (see Section 3.2 above) or Applications Program Workdiscs as described in Section 3.3 below.

3.3 Create 8/16 Bit Application Program Workdiscs

Application Program Workdiscs are created by simply tranferring the Application Program (e.g WORDSTAR™ or SUPERCALC™ 2 etc.), together with its Help and Overlay Files to one of your 8/16 Bit Operating System Workdiscs (using the DRI PIP.COM Utility Program) and labeling it.

There are a few simple rules:

If your Application Program worked correctly before the Upgrade it will continue to operate correctly now.

If your Application Program is supplied by RC (UK) Ltd. to operate on your 8/16 Bit RC855 MFWS it will operate correctly when the Application Program Work Disc is created in this way.

All Workstation Housekeeping Utility Programs work best, and fastest in CP/M 2.2 Mode.

Only Programs whose File Names have the suffix **.CMD** operate under CP/M 86.

Turn to Section 4 of this User Guide to learn how simple it is to Operate your 8/16 Bit RC855 MFWS Workstation under the RC (UK) Software Regime.

SECTION 4 WORKING WITH THE RC (UK) 8/16 BIT SOFTWARE SYSTEM

4.1 Start Up

Start up your 8/16 Bit RC855 MFWS with an Applications Program Workdisc in Drive A:

The CP/M 2.2 System Prompt will be displayed which looks like this:

```
A>_
```

You may now operate the Workstation in the normal way with your 8 Bit Applications Software Packages and your Utility Programs.

You may also use the **M DRIVE FACILITY** as described in Section 4 of this User Guide to increase the Productivity and Throughput of your Workstation dramatically. Normally 8 Bit Software using the M Drive Facility will operate faster than the same Application running in its 16 Bit format.

4.2 Switch to 16 Bit Operation

To switch your Workstation to 16 Bit Operation you must:

Type:**Z88E<RETURN>** Key

Control will be passed to the Intel 8088 Co-Processor and the RC (UK) 8/16 Bit Operating System Prompt will be displayed, which looks like this:

```
A3_
```

You may now run Applications Programs and Utilities which have the Suffix **.CMD** together with the DRI CP/M 86 Built-In Utilities.

4.3 Switch to 8 Bit Operation

With the RC (UK) 8/16 System Prompt displayed:

A]_

Type:**Z80<RETURN>** Key

Control of the Workstation will be passed back to the Z80A Processor under CP/M 2.2 and the CP/M 2.2 Prompt will be displayed:

A>_

to indicate that the Workstation is ready for 8 Bit operation.

4.4 The M DRIVE Feature

4.4.1 Introduction

When you are Operating in the 8 Bit Mode the Intel 8088 Co-Processor and its Memory can be used by the Z80A Processor as a Virtual High-Speed Disc Drive of capacity 240 K Bytes.

Data Files and Programs (e.g. for a DBASE™ 2 multiple file report generation job) can be moved to the M Drive and the Workstation logged on to Drive M: to execute the task much more quickly.

4.4.2 Starting Up the M DRIVE Feature

To use the M DRIVE Facility you must first ensure that the Workstation is Switched to 8 Bit Mode then:

Type:**MD<RETURN>** Key

The M DRIVE will be initialised by the Operating System and you may use it in the same way as any other Drive:

4.4.3 Using the M DRIVE Feature

You may Transfer Programs and Data Files to DRIVE M: using DRI PIP.COM or RC (UK) SIMPLIFILE$_{tm}$.

You may use STAT.COM, CAT.COM, DIR, ERA etc to deal with Files and Programs on Drive M: in the Normal way.

You may make Drive M: the logged on Drive.

There are a few Simple Rules:

Always make sure that there is enough space on Drive M: to accommodate the Programs and Files you intend to Transfer to it.

It is not a good idea to assign the Drive M: Identity to Data Files being created under your Application Program because it is too easy to forget to transfer the Data to a real Disc. **If you forget you will lose your work.** Always assign a real Disc Identity Pre-Fix (A:, B: etc) to a Data File.

The most sensible way to use Drive M: is as the basis of repetitive tasks which you leave the Workstation to get on with while you do something else.

4.4.4 Moving From M DRIVE Mode to 16 Bit Mode

Because the M DRIVE Feature occupies the Intel 8088 Co-Processor a General Hardware Reset of the Workstation is needed to return to normal CP/M 2.2 Operation and thence to 16 Bit Mode.

CHECK CAREFULLY THAT ALL VITAL DATA FILES HAVE BEEN SAVED ON A REAL DRIVE BEFORE PROCEEDING

Press the small Button Marked RESET on the rear of the Workstation Pedestal. This button is located between the Keyboard Connector and the LINE 2 (Printer) Port.

This will cause a General Hardware Reset of the Workstation followed by a Re-Load of the CP/M 2.2 Operating System from Drive A:

SECTION 5 SUPPORT

RC (UK) Ltd. supplies Fully Supported Software and Systems and as the Registered License Holder of an RC (UK) Ltd. 8/16 Bit Operating System you are entitled to our best attention. Please contact us by telephone, telex or mail using the information which appears on the front cover of this User Guide if you have any problems.

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8/16 BIT RC855 MULTI-FUNCTION WORKSTATION

RC (UK) LTD 8/16 HARDWARE UPGRADE

INSTALLATION INSTRUCTIONS

Distributed by: REGNECENTRALEN (UK) Ltd.
9-12, Long Lane,
LONDON, EC1 9HA,
ENGLAND.
Telephone: 01-606-3252
Telex: 892800

Prepared by: S.W.Weeks

SECTION 1 PURPOSE OF THIS DOCUMENT

1.1 PURPOSE

This Document is intended to enable a Competent and Qualifed Field Engineer to Upgrade an RC855 MFWS System with a 60 Hz Monitor to operate with the RC (UK) Ltd. version of the Intel 8088 Co-Processor Feature supporting 256 K Bytes of Random Access Memory. The Upgrade is based on the use of the RC (UK) Co-Processor Upgrade Kit which is listed in Section 1.2 below.

1.2 CONTENTS OF THE UPGRADE KIT

You should check carefully that the Upgrade Kit you are proposing to Install contains the following items and that you can identify them all.

1 X Daughter Board (PCBA)
1 X Intel 8088 Processor Board with 256 KB RAM (PCBB) pre-mounted on metal bracket.
1 X Plug Ended 16 Wire Bus Inter-Connect Cable (Bus Cable)
1 X PCBA Power Cable (Power Cable)

SECTION 2 LOCATION OF COMPONENTS

2.1 Location of the Daughter Board (PCBA)

PCBA Plugs into the Socket on the RC855 MFWS Micr-Processor Board (Position 62) after the removal of the Z80A Processor.

2.2 Location of the Co-Processor Board (PCBB)

PCBB is mounted onto the side of the 60 Hz Monitor assembly on the Right Hand Side when the Workstation is viewed from the rear.

2.3 PCBA to PCBB Interconnect

PCBA and PCBB are Interconnected using the BUS Cable.

2.4 Power Supply

Power is supplied to PCBB from the RC855 MFWS PSU via the Power Cable.

SECTION 3 INSTALLATION PROCEDURE

STEP 1 Disconnect and Strip Down RC855 MFWS

Ensure that the Workstation is powered of then Disconnect all power and data cables.

Remove Cover

Disconnect and remove the MIC 50X Main Micro-Processor Board

STEP 2 Install PCBA and Re-install the Z80A Processor

Remove the Z80A Micro-Processor from the MIC 50X Board (position 62) and install it in position U2 on PCBA (Pin 1 to Pin 1).

Install PCBA on the MIC 50X Micro-Processor Board in position 62 (pin 1 to pin 1).

STEP 3 Remove the Monitor Assembly

Disconnect all Power and Data Cables from the Monitor Assembly.

Remove the four (4) Allen Screws, located on the underside of the swivel case which hold the Monitor in place and remove the monitor assembly from the RC855 MFWS Workstation.

STEP 4 Install PCCB on Monitor Assembly

PCBB is mounted on the Right Hand Side of the Monitor Assembly when viewed from the rear.
Slacken off the two (2) screws holding the side plate of the monitor assembly to the assembly base plate.
Mount PCBB onto the side plate with the lip over the top of the side plate, and the slots in the bottom behind the screw heads in the side plate. Tighten these two (2) screws.

STEP 5 Re-Install the Monitor Assembly

Insert the plug on one end of the BUS cable into the socket at position U17 on PCBB (pin 1 to pin 1).

Re-install the Monitor Assembly into the RC855 MFWS using the four (4) Allen screws removed during step 3 above. Check that there is clearance between the PCBB and the outer case of the RC855 MFWS, on some of the terminals it may be necessary to enlarge the holes in the bottom of the casing to achieve this.
Check that it is postioned to allow the Workstation Cover to be refitted.

Re-connect all cables to the monitor assembly.

STEP 6 Check The PCBB Power Supply Lead

Power for PCBB is taken from Connector J4 of the Main Micr-Processor Board (MIC 50X).

+5 V DC is taken from Pin 7 of Connector J4.

0 V DC is taken from Pin 8 of connector J4.

The +5 V DC Lead in the Power cable Supplied with the Upgrade Kit has the **SMALLER** of the two spade connectors.

STEP 7 Re-Mount the Main Processor Board Complete All Connections

Re-mount the Main Processor Board in the Down Position.

Connect the Power Cable Supplied with the Upgrade kit to the pins on Connector J4 of the Main Processor Board. Attach the spade connectors of the Power Lead to PCBB.

Connect the BUS cable Plug (pin 1 to pin 1) to PCCA (now Mounted on the Main Processor Board).

Re-Install the Main Processor Board in the RC855 MFWS.

STEP 8 Pre-Completion Check

Before re-installing the cover attach the Workstation Peripheral Devices (Keyboard, F/Disc Drive and Printer) and check for normal operation under CP/M 2.2.

STEP 9 Post-Completion Check

Re-Install the Workstation Cover and run the TOTEM test pack.

STEP 10 RC (UK) 8/16 Bit Operating System Check

Use the RC (UK) Ltd. CP/M 86 Operating System as described in the User Guide to check that the 8/16 Bit RC855 MFWS is functioning normally.

THE 8/16 BIT RC855 MULTI-FUNCTION WORKSTATION IS READY FOR SERVICE

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(UK) LTD

CHECK YOUR RC(UK) Ltd. DISTRIBUTION DISK

Power on the Workstation, the F/Disc Drives, and the Printer (if available).

After the Self-Check Cycle the System Load Prompt will appear:

ITT 3290 - Insert diskette

Load your CP/M System Disc into Drive A

The screen message will change briefly to:

ITT 3290 LD

and the CP/M Sign-on Message and Prompt will appear:

ITT 3290 CP/M 56K rel 1.X (or 2.X)

A>_

Your Distribution Disc as delivered contains two files in addition to your package:

CRC .COM
CRCKLIST .CRC

The **CRC.COM** file is a CP/M utility which enables you to rapidly verify that the **Distribution Disc** contains a good copy of your package.

When your **Distribution Disc** was made, the last part of production was to write the file **CRCKLIST.CRC** which contains check values of the data on the disc.

Before leaving RC (UK) Ltd. your disc was checked, however before transferring the files, it is advisable to run the CRC program to check that no damage has occured after the disc was dispatched to you.

This is accomplished by following the next procedure.

Your workstation should be displaying the CP/M prompt

A>_

Type:**B:**<RETURN> Key

This changes the CP/M logged drive to disc B
The screen will now look like this:

B>_