

**Series DCX  
BAT II Module  
Reference Manual**

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## STATUTORY NOTICES



Case Technology Ltd declare that this product conforms with the protection requirements of Council Directive 89/336/EEC on the approximation of the laws of the member states relating to electromagnetic protection.

### WARNING

The DCX 860 and 870 incorporate a panel in front of the plug-in modules. This panel may only be removed by suitably qualified personnel for installation or maintenance purposes, and must be replaced afterwards. Removal under any other circumstance would invalidate any RFI (Radio Frequency Interference) and Safety Type Approvals.

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# Preface

This manual provides information for DCX network supervisors to use the BAT II module. It forms part of the DCX Systems Documentation, and refers to other manuals in the series. It assumes that you will already have some knowledge of the DCX system, obtained either from the System Documentation or from a Case Technology training course.

For an explanation of terms used in this manual, see the Pocket Books of Telecommunications and Computer Communications.



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The Buffer And Timing (BAT II) module may be used in certain members of the Cray DCX family including the DCX 840, 860\* and 870\*, for providing buffer memory and system timing.

The module provides temporary storage areas where channel data can be held during DCX operation.

- \* The DCX 860 and 870 are designed to be soft-configurable, and physical access to the plug-in cards is unnecessary. Full details are given in the DCX 860, 870 and NCAM manuals. Physical access is prevented by a panel, which may only be removed by suitably qualified personnel for installation and maintenance purposes.



The BAT II module provides the multiplexer's main storage area. It holds all data in transit between communications interfaces.

The BAT II module contains eight sections of 256K bytes of dynamic memory for data storage. Each buffer section stores data for 128 queues, and is equivalent to a 256K byte BUF3. The available storage is allocated dynamically, effectively providing large storage capacity for each channel.

Each module incorporates a microprocessor which is used for the management of the memory system. It also continuously carries out a test of the buffer memory as a background routine when the multiplexer is running.

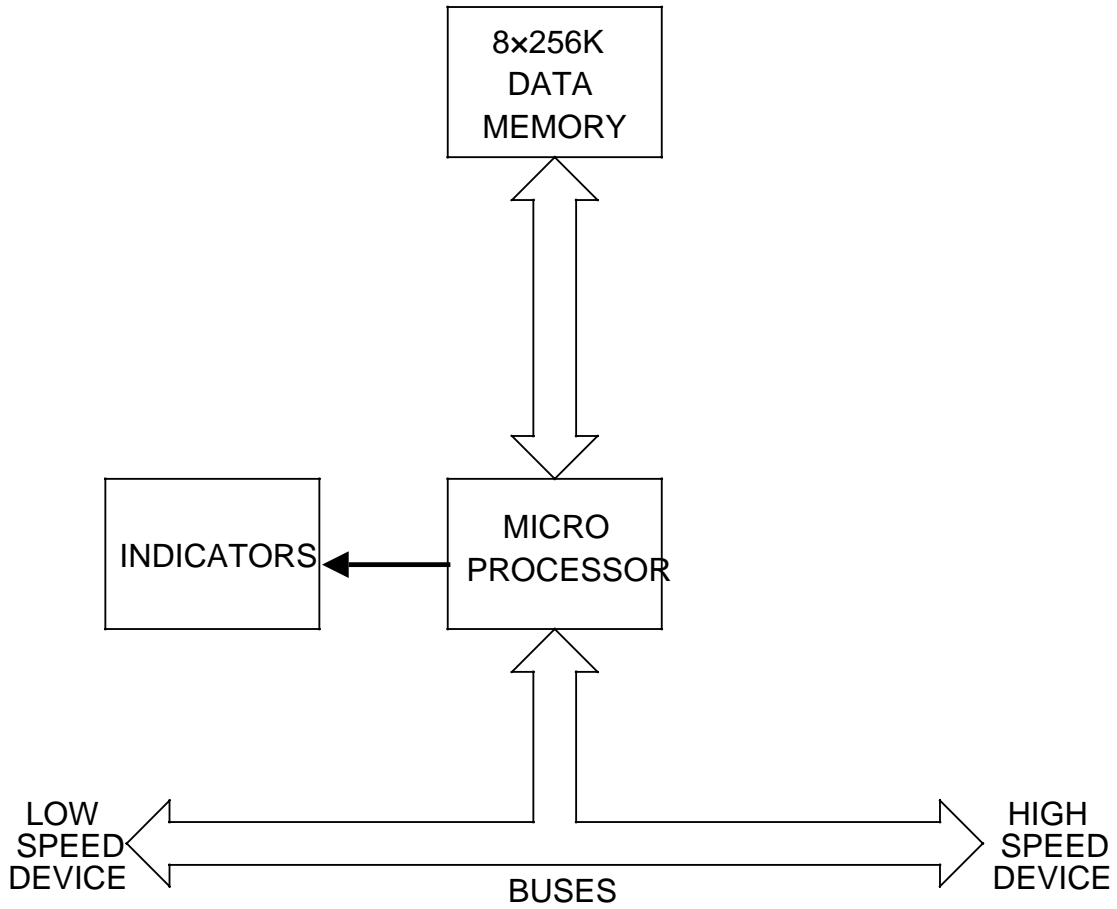
The BAT II module notifies the rest of the system when the data store of the relevant section reaches 75% of capacity, and when it reduces to 50% of capacity.

The BAT II module also acts as a DCX timing master, providing the necessary bus timing signals for all high and low speed devices installed in the node\*.

The BAT II module can operate in Master mode or Redundant mode. In Master mode, it drives the DCX System Bus timing signals and performs the buffer function. In Redundant mode it shadows the master BAT II's operation, but will not provide bus timing signals unless the master BAT II operation is disabled via the front panel enable switch, or is completely removed from the bay, whereupon it will automatically assume the master role. A fail safe mechanism ensures that one of the BAT II modules will assume Master role if all enable buttons are in the disable position.

Figure 2-1 shows a simplified block diagram of the BAT II module.

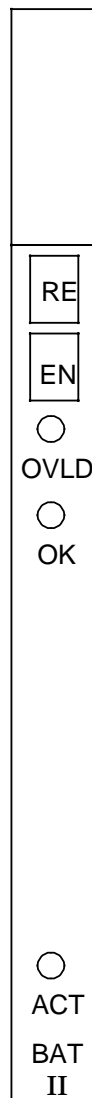
\* Note: An ARQ1 or ARQ4 must not be installed in the master timing slot of a DCX node containing any motherboard other than X840-600412 Issue 01/15 or higher.



**Figure 2-1 Buffer Section Simplified Block Diagram**

## 3.1 The Front Panel

The front panel of the BAT II module is illustrated in Figure 3-1. It has three indicators and two pushbuttons.



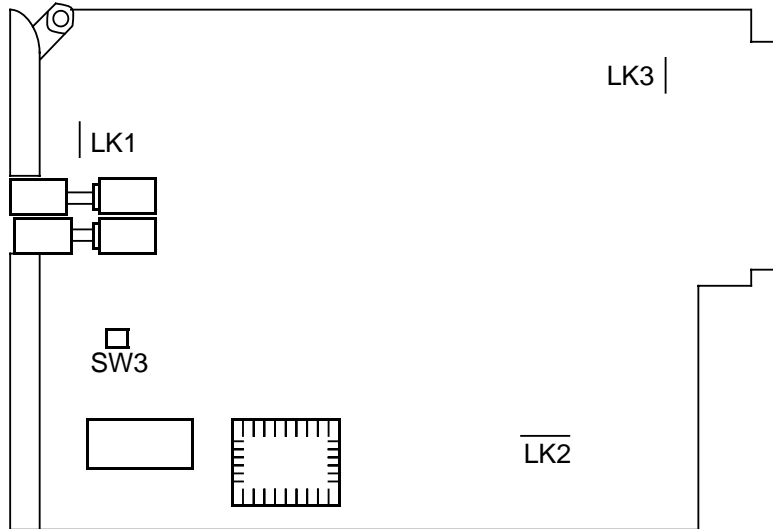
**Figure 3-1 The BAT II Module Front Panel**

### 3.1.1 Buttons

- RE            Reset. This is a non-latching pushbutton which resets the OK indicator.
- EN            Enable. This is a latching pushbutton. This button **must** be latched in to allow the BAT II module to become a master.

### 3.1.2 Indicators

- OVL            Overload. When illuminated, indicates that the BAT II module has reached the overload threshold. The intensity indicates the number of buffer sections in overload (see Section 5.1.1).
- OK            When illuminated, indicates that the BAT II module is running normally. When it is extinguished, there is an error which could be due to overflow or memory failure.
- Note that the OK indicator is extinguished on a redundant BAT II whose polling rate switches do not match those of the Master BAT II.
- ACT            Active. When illuminated, indicates that the BAT II module has assumed the master timing and buffering role.



**Figure 3-2 BAT II Layout**



# 4 Configuration and Installation

## 4.1 Configuration

There is one configuration DIP switchbank (SW3) near the pushbuttons on the BAT II module. The purpose of this is to set the SC2 polling rate and high speed device transfer rate as shown in Table 4-1 (see Appendix A.3 for explanation).

SC2 POLLING RATE			
	NORMAL	DOUBLE	QUAD*
SW3.1	On	On	Off
SW3.2	On	Off	don't care

HIGH SPEED DEVICE TRANSFER RATE			
	NORMAL	1.5* TRANSFER	DOUBLE* TRANSFER
SW3.1	On	On	Off
SW3.2	On	Off	don't care

**Note:** The features marked \* are not currently supported and reserved for future use.

**Table 4-1 BAT II Module Switchbank Settings**

There are three links on the BAT II module as shown in Figure 3-2. LK1 performs a reset function, and shorting this link will cause a software restart and erasure of the BAT II buffer sections contents.† LK2 is used to select System Module MSC, or STC operation and must be set correctly i.e. left (link fitted) for MSC and right (equivalent to no link fitted) for STC. (Note that the STC position is not present on Issue 1 boards.) LK3 is fitted to select a non-870 motherboard i.e. any motherboard other than X840-600412.

**† Note that using pin shorting as a form of BAT reset with the SM2 may cause a complete restart of the node.**

## **4.2 Installation**

When the BAT II has been configured, it is ready to be installed in the parent unit (for appropriate slots, see the parent unit manual).

**Warning:** For installation in DCX 860 and 870, see page 0-2.

Note that BAT II modules cannot be mixed with BUF or BEM and BTM modules within the same DCX node.

1. Power down the parent DCX.
2. Insert the BAT II module in the appropriate slot.
3. Power up the parent DCX.

## 5.1 BAT II Operation

No user action is required: the BAT II module operates entirely automatically.

In normal operation, the green OK indicator should be ON and the OVL indicator should be OFF.

### 5.1.1 Error Indications

If the yellow OVL indicator comes on, it means that the buffer has been filled to 75% of its capacity. This can be caused by various reasons, for example, channels connected together with different speeds, errors on the composite link, a low speed printer flow-controlling the LSC card, etc. If an overload condition persists or the reason for the overload is not clear, contact your supplier.

Note that the OVL indicator is shared by all the buffer sections on the BAT II module, and will vary in intensity depending on the number of buffer sections in overload. Only if all the sections are in an overload state will the indicator be at full brilliance.

If the OK indicator is extinguished, there is, or has been, an error in one or more of the BAT II sections.

After the source of the error has been cleared, press the RE pushbutton to reset the indicators (except in DCX 860 and 870).



# Appendix A      Technical Specification

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## A.1 BAT II Specification

### Used in Conjunction with System Module

Data Capacity	2 Mbytes
Channel Capacity	Up to 512 full-duplex channels

### Used in Conjunction with STC

Data Capacity	1 Mbytes
Channel Capacity	Up to 256 full-duplex channels

Note: The minimum requirement for STC operation is STC assembly X840-601612 Issue 01/52 or X840-601613 (STC 870).

## **A.2 Compatibility**

BAT and BAT II modules are incompatible and must not be mixed in the same DCX node.

LSC modules cannot be installed in the master frame using the BAT II module, and are restricted to slave frame operation only.

LSC and SC1 modules will only operate with Normal polling rate settings.

SC2 modules will operate Normal or Double polling rates. Double polling, as its name suggests, increases the effective throughput between the SC2 and the DCX bus. It should be noted however, that the double polling option reduces the maximum number of low speed channels from 256 to 128 (see QEM and RES Reference Manual (part no. X840-314951) for channel distribution options).

The BAT II module cannot be mixed with BUF or BEM and BTM modules within the same DCX node.

ARQ2 modules may not be used on internal clock settings within a node containing the BAT II module.