◆DATALOGIC™

BM150
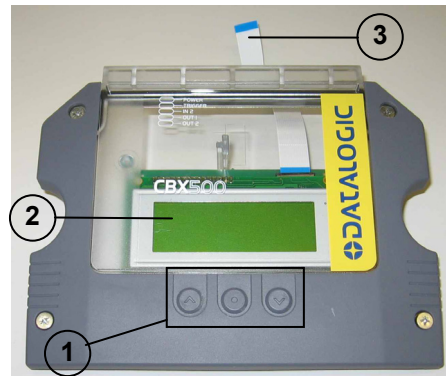### DISPLAY MODULE
INSTRUCTION MANUAL

Figure 1 General View

(1) Keypad   (2) BM150 Display   (3) Flat Cable

DESCRIPTION

The 20-character by 4-line BM150 Display Module is an accessory for the CBX500 connection boxes. It remotely extends the connected reader's HMI interface to the CBX500 and therefore provides:

- Reader HMI functions: (Autolearn, Autosetup, Test, etc)
- Real-time reading result information
- Reader and Network configuration information
- Diagnostic messages
- Multilanguage support

All this information makes it easier to monitor and troubleshoot the connected reader.

BM150 connects internally to the BM100 module and therefore requires that the BM100 accessory is installed into the CBX500. For this reason BM150 also supports the Backup and Restore functions through its keypad and display.

INSTALLATION

> ⚠️ **CAUTION**
> Power must be off during this operation.

The BM150 can easily be installed onto the CBX500 connection box.

1. Remove the original cover of the CBX500 by opening it 90° and gently but firmly pushing it downwards out of the guide.

Figure 2 – Removing CBX500 Cover

2. Install the BM100 Backup Module if not already present. See the BM100 Installation Manual for details.

3. Align the BM150 cover 90° with respect to the CBX500 base and gently but firmly push it upwards into the guide.

4. Connect the flat cable into the BM150 connector located on the BM100 Backup Module. Hold the cable as close as possible to the connector edge to avoid bending the cable.
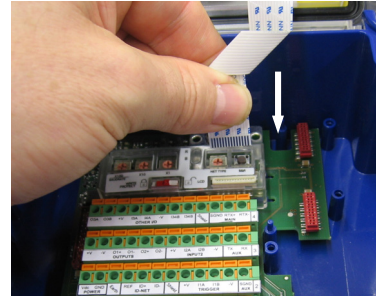

Figure 3 – BM150 Cable Insertion

Insert the cable by applying pressure straight down until you feel the cable seat into the connector. Make sure the cable is straight.
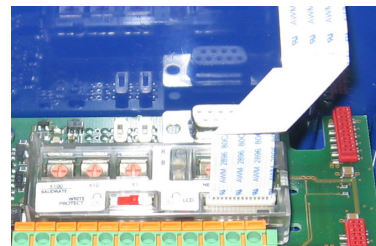

Figure 4 – BM150 Cable Correctly Inserted

5. Make all system connections if not already made according to the CBX500 and reader Installation and Reference manuals.

In order to meet the EMC requirements when using the BM150 Module, clip the provided ferrite sleeve onto the input power cable near the CBX500 compression connector.

Figure 5 – Ferrite Installation Example

If the ferrite sleeve is too loose, you can loop the power cable through the ferrite to hold it in place. You can also hold it in place using a tie wrap to prevent it from sliding away from the CBX500 compression connector.

Figure 6 – Ferrite Installation Example

6. Power up the system and wait for the reader to initialize. By default the keypad is **enabled** (Keypad Functionality parameter for 2/4K scanners; Keypad Status parameter for Matrix readers) so the HMI Interface can be entered through the keypad (either reader or BM150).

HMI INTERFACE THROUGH KEYPAD AND MENU

Up   Enter   Down

Figure 7 – BM150 Keypad

Through its keypad and display, the BM150 provides a remote extension of the reader's HMI Interface. The same menu items can be reached as well as the extended menu for Backup and Restore functions.

To enter the Menu press the **Up** and **Down** buttons simultaneously. The menu structure is shown below.

Menu: [Exit] (exits HMI Interface menu)
    Test Mode (performs Test mode)
    Autolearn (performs Autolearn function)
    AutoSetup (performs Autosetup function)
    Lock/Unlock Focus (performs Focus Lock/Unlock function only for DS4800)
    Extended (enters Extended menu)

Extended: [Exit] (returns to Extended menu)
    Backup
        Yes (performs Backup - uninterruptible)
        No (returns to Extended menu)
    Restore
        Yes (performs Restore - uninterruptible)
        No (returns to Extended menu)

To move through the list press and release the **Up** or **Down** key.

To select an item or enter a submenu, press and release the **Enter** key. After executing an HMI function the display shows a result message and then automatically exits from the menu structure.

To exit a menu, press and release the **Enter** key at the [Exit] item.

To exit from a running HMI function, press and release the **Enter** key. These functions will also exit upon their configured timeout.

> 👆 **NOTE**
> When the HMI Interface is entered from either the Local Device (reader) or Remote Device (BM150), the key(s) on the other device are disabled.

> 👆 **NOTE**
> The "Reset Reader to Factory Default" function of the HMI Interface is only available on the local device (reader), and not on the BM150.

BACKUP AND RESTORE PROCEDURE

The Backup and Restore functions are valid for any application layout type (point-to-point, network, etc.) using CBX500 connection boxes through the BM100 Backup module (required accessory for BM150 installation).

The Backup and Restore functions are managed through the BM150 display and keypad and therefore are disabled at the BM100 Backup/Restore button.

If it ever becomes necessary to replace the reading device it can be quickly configured through the restore procedure.

BM150 always provides complete backup and restore functions (Configuration and Environmental parameters) and cannot be interrupted once started.

- For Network nodes, the backup module of the Master saves the configuration of all the reading devices in the network, Master and all individual Slaves. **The Slaves must be configured with the same network baudrate as the Master before performing the Restore procedure.**

- For single reading device stations or for Slaves, the backup module saves the configuration of the specific connected reading device.

To perform *Backup*:

1. Make sure the Write Protection switch on the BM100 is unlocked.
2. Select the Backup item from the Extended menu and press the Enter key on the **Yes** item.
3. When the procedure is complete a message appears on the display showing the results (**Done** or **Error**).
4. Set the Write Protection switch to locked.

To perform *Restore*:

1. Select the Restore item from the Extended menu and press the Enter key on the **Yes** item.
2. When the procedure is complete a message appears on the display showing the results (**Done** or **Error**).

CONFIGURATION THROUGH GENIUS™

Since the BM150 is an extension of the reader's HMI Interface, by connecting to Genius™ through the reader, there are a few parameters that are common to both the reader and the BM150.
The setting of these parameters therefore simultaneously refers to and acts upon both of them.

Key Functionality
This parameter controls access to the HMI Interface.

Enabled: the HMI Interface is enabled through the keypad (reader or BM150)

Partially Locked: only the Autosetup function can be entered to read the Lock/Unlock X-PRESS™ barcode.

Locked: the HMI Interface is disabled.

Display Language
The language for all messages to the display can be selected from those available in the list.

Network Status Monitor
The Network Status Monitor parameter allows the Master to receive Network Diagnostic Messages and display them on both the local and remote displays.

Diagnostic Messages
If diagnostic messages are enabled, they are sent to the BM150 display as Internal Numeric Error Messages, even if User Defined Messages are selected for data transmission. See the reader's Help On Line for the meaning of the Internal Numeric Error Messages.

CONFIGURATION THROUGH VISISET™

Since the BM150 is an extension of the reader's HMI Interface, by connecting to VisiSet™ through the reader, there are a few parameters that are common to both the reader and the BM150.
The setting of these parameters therefore simultaneously refers to and acts upon both of them.

Key Status

Enabled: the HMI Interface is enabled through the keypad (reader or BM150)

Disabled: the HMI Interface is disabled.

Display Language
The language for all messages to the display can be selected from those available in the list.

Array Layout Monitor
The Array Layout Monitor parameter allows the Master to receive Network Diagnostic Messages and display them on both the local and remote displays.

Diagnostic Messages

If diagnostic messages are enabled, they are sent to the BM150 display as Internal Numeric Error Messages, even if User Defined Messages are selected for data transmission. See the reader's Help On Line for the meaning of the Internal Numeric Error Messages.

DISPLAY MESSAGES

The following examples of Remote Display messages are given to help interpret the information reported. The content of these messages depends on the connected reader.

Test Mode Results:

A	A	A	%		Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
Z	Z	Z	Z		Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
F	=	X	X	X	c	m		-		Y	Y	.	Y	i	n				

A = reading percentage from 000 to 100%.
Z = code content.
F = focus distance given in centimetres and inches.

Autolearn Results:

X	X	X	X	X	X	X	X									Y	Y	D	G	T
A	u	t	o	l	e	a	r	n			O	k						#	Z	Z

X = recognized code symbology.
Y = number of digits in the read code
Z = number of configured slots (at the end of the procedure this number represents the total slots configured).

Diagnostic Alarms:

A	l	e	r	t				:	M	o	t	o	r						
S	p	e	e	d				=	X	X	X	X	/	Y	Y	Y	Y		

X = expected speed
Y = actual speed

Generic Alarms:

A	l	e	r	t				:											
F	a	i	l	u	r	e						#	X	X	X				

X = numeric error value (even if User Defined Messages are selected for data transmission the numeric error value is sent to the display) See the reader's Help On Line for the meaning of the Internal Numeric Error Messages.

Slave Node Alarms:

A	l	e	r	t				:	I	D	-	N	E	T					
N	o	d	e	#	X	X			F	a	i	l	#	Y	Y	Y			

X = slave node number (1-31)
Y = numeric error value
See the reader's Help On Line for the meaning of the Internal Numeric Error Messages.

Reading Results:

A	A	A	A		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Y	Y	C	o	d	e	s													

A = reading result – Good (Good Read), Part (Partial Read), Mult (Multiple Read)
X = code content
Y = number of codes read

G	o	o	d		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Y	Y		D	G	T		D		W	W	W			S	S				

X = code content
Y = number of digits in the code
DGT = "digits"
D = code direction – F=forward, R=reverse, U=unknown

Linear Reading (only if the Quality Counters parameter is enabled)
W = number of scans on the code
S = Quality Counters value (max 100)

Code Reconstruction
W = number of scans on the code (max 255)
S = number of decodes (max 255), on the digit in the code which was decoded the least number of times

Welcome Message:

M	M	M	M	M	M	M	M	M	M	M			R	R					
K	K	K	V	V	V	V	V	V	V	V			N	N					
S	N		D	D	D	D	D	D	D										
F	=	X	X	c	m		-		Y	Y	.	Y	i	n					

M = scanner model
K = software – STD=Standard, SS =Special
V = software version
R = Device Network Type – MUL=Multidata, SYN=Synchronized, ALN=Alone, MUX=Slave Mux32, MST=Master RS232, SLV=Slave RS232
N = Device Network Setting – M00=ID-NET™ Network Master, Sxx= ID-NET™ Network Slave address, Axx= Mux32 Slave address, 232= RS232 network, Null string= Alone (no network)
D = device serial number (if Focus is unlocked) otherwise = "F o c u s L o c k e d a t"
F = focus distance given in centimetres and inches

Network Diagnostic Messages (Master only):

	1			N	e	t	w	o	r	k			1	5
	S	S	S	S	S	S	S	S	S	S	S	S	S	
	1	6										3	1	
	S	S	S	S	S	S	S	S	S	S	S	S	S	S

S = Slave diagnostic condition:
* = scanner OK
- =scanner not detected at startup
? =scanner detected at startup but not responding to diagnostic polling
! = scanner diagnostic error