OP Handheld Manual

BALOGH
7699 Kensington Court
Brighton, MI 48116-8561
(248) 486-7343

Notes are used to call attention to information that is significant to the understanding and operation of equipment.

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INTRODUCTION

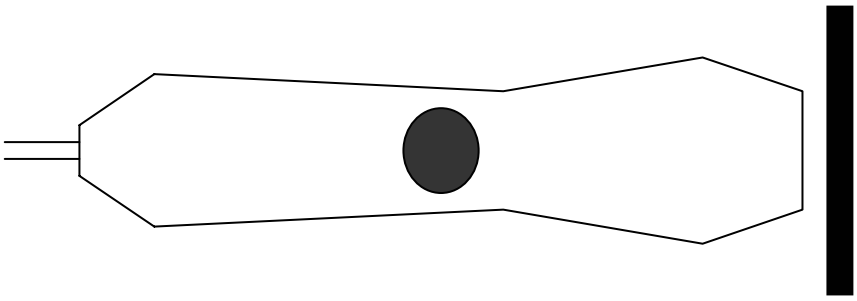
BALOGH OP Handheld RFID TAG READER/WRITER

Description:
The OP Handheld is a portable lightweight unit with the ability to interface with the OP series read/write tags. The OP Handheld is powered by 2 AA rechargeable or alkaline batteries. The OP Handheld features a LCD backlit display, (2) 112 Byte internal buffers, auto power off and remote read/write wand. The OP Handheld can read or write 1 block (4 bytes) to 28 blocks (112 bytes) of data within BALOGH OP Series TAGS. The OP Handheld utilizes the PSION Workabout hand held computer, OP Series RFID Wand with Internal Transceiver and BALOGH custom RFID software. NOTE: The OP Handheld will auto-power down after 4 minutes of idle activity. Press the *On/Esc* to power up unit.

Keys:
On/Esc: Powers up unit. *Off*: Powers down unit.
Commands are controlled by Letter keys or by arrows keys and Enter.

Screen Display:
To turn the LCD back light ON or OFF press the backlight key located in the top right corner of the key section. Contrast is controlled by pressing the contrast key located directly to the left of the backlight key. The screen will gradually darken each time the key is pressed and will reset to bright if pushed repeatedly.

OP Handheld Wand to TAG Orientation:
The read/write transceiver is built into the OP Handheld Wand. When performing a read/write function with the unit, make sure the TAG is 5mm or closer to the end of the wand and that no other TAGS are within 200mm of the TAG being read or written to. The wand must be flush with one of the TAG'S faces. An edge of the TAG will not communicate with the wand.



TAG MEMORY ADDRESSING

TAG Type	Memory Size	Address
OP	Internal 112 Byte EEPROM RAM	Blocks 1 - 28

Description:

The BALOGH OP series TAGS have 112 user bytes of read / write memory. This memory is structured into blocks consisting of 4 bytes in each block. A byte is 8 data bits. The TAG has a total of 28 blocks. The memory is accessed in Blocks with a minimum of a 1 block (4 Bytes) and 28 blocks (112 Bytes) maximum for any read or write operation. The read or write operation begins at the start of a block and the operation will be preformed on the entire block. Read or Write operations within a block are not allowed. When performing a Read or Write operation, the Addressing of the TAG is absolute. If you were to read a TAG starting at block 1 and the operation is 3 blocks in length, the display on the handheld will only display blocks 1 – 3. If you perform a read at starting block 10 and the operation is 3 blocks in length the data displayed will be blocks 10, 11, 12. Any of the individual bytes within a block may be edited and then written back to the tag. The table represents the structure of the TAG memory for your use.

Display Modes:
The OP Handheld addresses TAGS in Block addressing. Data can be displayed in Decimal, Hex(H) or ASCII(*).

BLOCK	BYTE 1	BYTE 2	BYTE 3	BYTE 4
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
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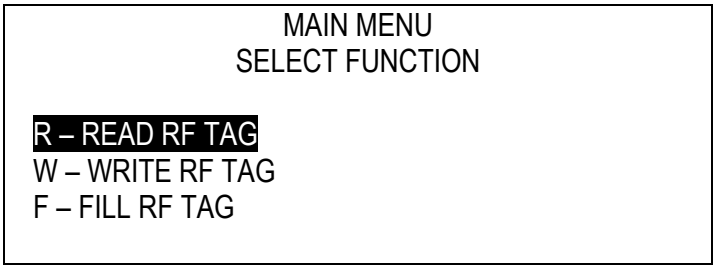
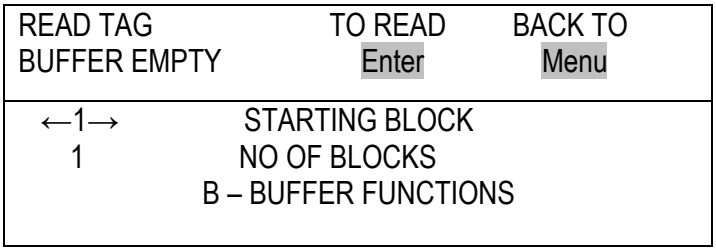
READ TAG

Turn the BALOGH OP Handheld on by pressing the *On/Esc* Key.



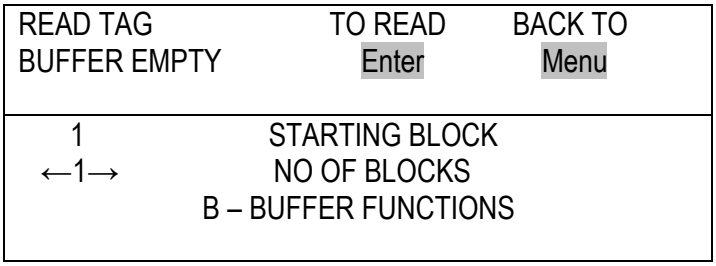
Press the *R* or *Enter* key to go to the Read TAG Screen.



Note: Default Read TAG settings are: Start reading at block 1 and read 1 block of data.

To change the Starting Block for the read process, press the *Tab* key. Next use the up and down arrow keys to select the desired Starting Block. Press the *Enter* key.

To change the Number of Blocks to be read, hit the down arrow key once.



Now change the starting block for the read process by pressing the *Tab* key. Next use the up and down arrow keys to the desired Number of Block to be read. Press the *Enter* key to select. Press the *Enter* key again to send the read command to the wand.

READ TAG Continued

The OP Handheld will beep once to confirm the command and the screen will display “WAND READY” as shown below.

READ TAG BUFFER EMPTY WAND READY	TO READ Enter	BACK TO Menu
1 ←1→	STARTING BLOCK NO OF BLOCKS B – BUFFER FUNCTIONS	

Next, place the wand within 5mm of the TAG to be read with correct orientation and press the black circle button located on the wand. The OP Handheld will emit a long beep when the read is complete. Large data reads may take up to 7 seconds to complete.

If the TAG is not properly orientated or the Wand is removed before the Read is complete, a “READ UNABLE TO COMPLETE” fault will be displayed in the middle of the screen. Press the *Enter* key to clear the Fault and resend the Read command to the wand.

Upon successful TAG read, the screen will change. An example is shown below with data of 255 for each byte of a three block read.

READ TAG READ OK WAND READY		BACK TO Menu
BLOCK ←1→	255 255 255 255 255 255 255 255 255 255 255 255	DISPLAY MODE DEC

TAG data is displayed with each block forming 1 row. The first byte of data for each block is located in the first column. The second, third and fourth data bytes in each column respectively. The top row is the data for the block number displayed in the lower left side of the screen. If more than (3) blocks of data are read, the block data not displayed can be viewed by pressing the *Tab* key and selecting the desired block to be viewed from the list. Use the up and down arrows to highlight the correct block number and press *Enter* to select. The screen will change to correct data. The example below is for block 5 with 36 being the value for each byte in blocks 5, 6 and 7.

READ TAG READ OK WAND READY		BACK TO Menu
BLOCK ←5→	36 36 36 36 36 36 36 36 36 36 36 36	DISPLAY MODE DEC

READ TAG Continued

To change the display mode of the data: Press the down arrow once to move the selection arrows to DEC. Decimal is default. Press *Tab* to display the data format options. Use the up and down arrow keys to select the desired format. Press *Enter* to complete the selection. The example listed before changes to the following:

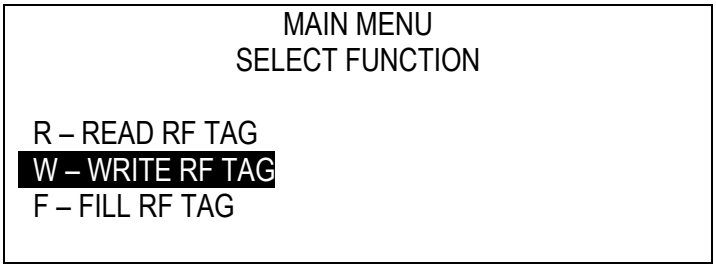
READ TAG READ OK WAND READY		BACK TO Menu
BLOCK 5	$ $ $ $ $ $ $ $ $ $ $ $	DISPLAY MODE ←ASCII→

To read the same memory block from a second TAG, simply place the wand within 5mm of the TAG to be read, with correct orientation and press the black circle button located on the wand. The OP Handheld will emit a long beep when the read is complete. The data from the second TAG will be displayed on the screen. Note: The data from the first TAG will not be saved in the OP Handheld.

WRITE RF TAG

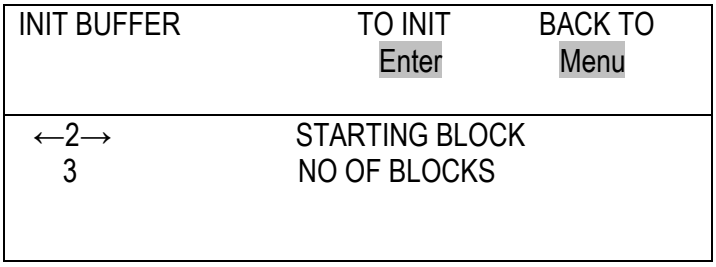
Before the OP Handheld is able to write data to a OP series TAG, the internal Write Buffer must contain the correct data to be written. The internal Write Buffer can be filled by (2) different methods. First, the Write Buffer can be initialized and then edited manually. Second, by reading a TAG with the desired data and copying the data from the read buffer to the write buffer. The Write Buffer data can then be edited as needed. Once the correct data is in the Write Buffer, the OP Handheld can write the data to one or more TAGS.

To initialize the buffer:
First turn on the OP Handheld by pressing the *On/Esc* key. Next hit the down arrow once and press *Enter*.

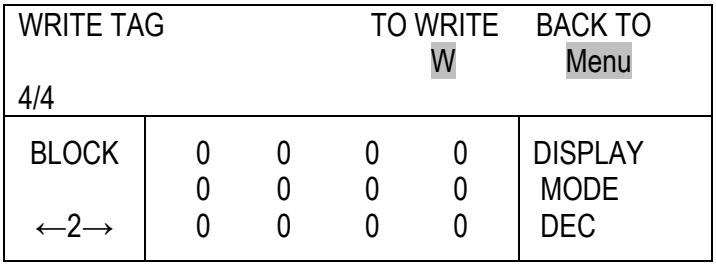


Select the Starting Block by pressing the *Tab* key. Use the up and down arrow keys to highlight the desired number. Press *Enter* to complete the selection.

Next press the down arrow key once to select the NO OF BLOCKS to be written. Press the *Tab* key once to display the block list. Use the up and down arrow keys to highlight the desired number. Press *Enter* once to complete the selection. The example below shows the STARTING BLOCK value as 2 and the NO OF BLOCKS to write value as 3.



Press the *Enter* key to initialize the write buffer for the desired write locations.



Each designated byte in the write buffer is given the value of 0 by default.

WRITE RF TAG CONTINUED

The number shown in the bottom left corner is memory block displayed in the first row. To change the display to a block not currently shown, press the *Tab* key once. Use the up and down arrow to select the desired block. Press *Enter* to complete the selection. The top row will display the data for the row selected and the block number is now displayed in the bottom left corner. To change a value in the write buffer, press the up arrow key until the cursor is just left of the byte needed to be changed. Press *Enter* once. The screen should now be similar to the figure below:

EDIT BYTE 1/4	OK Enter	BACK TO Menu
0 ← 0 →	- CURRENT DATA VALUE - SELECT NEW DATA VALUE	

Next press *Tab* once. Use the up and down arrow keys to select the desired value. Press *Enter* once to select the desired value. Press *Enter* again and the screen will display the Write TAG screen. In the screen example below, the value of the 4th byte of the 4th block was changed to 2.

WRITE TAG DATA CHANGED 4/4	TO WRITE W	BACK TO Menu

BLOCK	0	0	0	0	DISPLAY
	0	0	0	0	MODE
←2→	0	0	0	2	DEC

Continue to change data values as needed. Once all of the values have been changed to the desired values. Press the *W* key once to send the write command to the Wand. The OP Handheld will beep once to confirm the command. The screen will display WAND READY below WRITE TAG. Next place the wand within 5mm of the TAG to be written to with correct orientation and press the black circle button located on the wand. The OP Handheld will emit a long beep when the write is complete. Large data writes may take up to 7 seconds to complete. After successfully writing a TAG, the OP Handheld will beep once and display WRITE OK beneath the WRITE TAG in the top left corner.

WRITE RF TAG CONTINUED

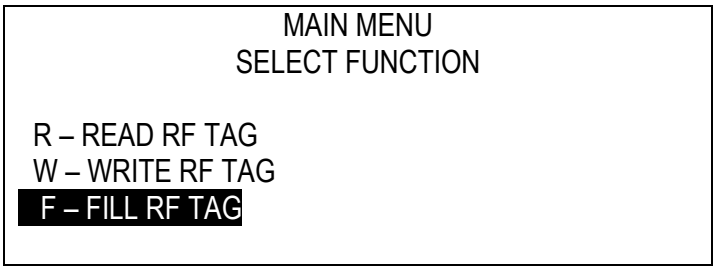
To change the display mode of the data: Press the down arrow once to move the selection arrows to DEC. Decimal is default. Press the *Tab* key to display the data format options. Use the up and down arrow keys to select the desired format. Press the *Enter* key to complete the selection. The example listed before changes to the following:

WRITE TAG 3/4		BACK TO Menu
BLOCK 1	$ $ $ $ $ $ $ $ $ $ $ $	DISPLAY MODE ←ASCII→

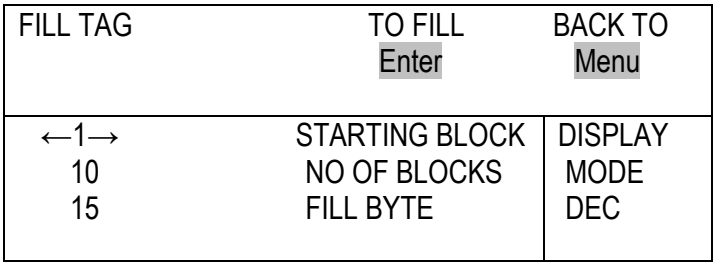
FILL RF TAG

The OP Handheld software includes a Fill TAG command for the OP series TAGS. The Fill command will write a specific value to each byte in a designated TAG memory range. This command is ideal for resetting TAG memory, such as all values to 0. The Fill TAG command will not effect the contents of the Write Buffer.

To execute a Fill command:
First turn on the OP Handheld by pressing the *On/Esc* key. Next hit the down arrow key twice and press *Enter*.



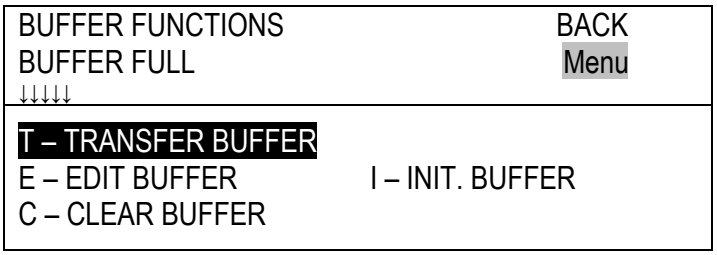
The default starting block is 1. To change the STARTING BLOCK, Press the *Tab* key once. Press the up and down arrow keys to select the correct STARTING BLOCK. Press the *Enter* key to confirm the selection. To change the NO OF BLOCKS to be filled. Press the down arrow key once. Next Press the *Tab* key once. Press the up and down arrow keys to select the correct NO OF BLOCKS to be filled. Press the *Enter* key to confirm the selection. To change the FILL BYTE value, press the down arrow key twice. Press the *Tab* key once. Press the up and down arrow keys to select the correct FILL BYTE value. Press the *Enter* key to confirm the selection. The following figure shows the FILL TAG screen with the STARTING BLOCK value is 1, the NO OF BLOCKS value is10 and the FILL BYTE value is 15.



Press the *Enter* key once to send the FILL TAG command to the wand. The OP Handheld will beep once to confirm the command. The screen will display WAND READY below the words FILL TAG in the top left corner. Next place the wand within 5mm of the TAG to be written to with correct orientation and press the black circle button located on the wand. The OP Handheld will emit a long beep when the write is complete. Large data writes may take up to 7 seconds to complete. After successfully FILLING a TAG, the OP Handheld will beep once and display FILL OK beneath the FILL TAG in the top left corner. Additional TAGS can be filled with the same data by simply placing the TAG in front of the wand and pressing the Wand button.

BUFFER FUNCTIONS

The OP Handheld software has (2) Data Buffers. One is for Reading data from TAGS and the other is for Writing data to TAGS. After successfully reading or writing a TAG, the Buffer Function will be displayed in the Read TAG and Write TAG screens. To go to the Buffer Functions screen, use the up or down arrow keys to move the cursor to the B – BUFFER FUNCTIONS command line and press the *B* key once. The following screen will be shown.



The TRANSFER BUFFER command is activated by pressing the *Enter* key once. This command transfers the contents of the Read Buffer to the Write Buffer. The data will be copied to the corresponding location.

The EDIT BUFFER command is activated by pressing the down arrow key once and pressing the *Enter* key once. The contents of the Write Buffer can now be edited in the same fashion as when Writing to a TAG. See page 7.

The CLEAR BUFFER command is activated by pressing the down arrow key twice and pressing the *Enter* key once. This will delete all data in the Read and Write Buffers.

The INIT. BUFFER command is activated by pressing the down arrow key three times and pressing the *Enter* key once. This command resets the write buffer and adds 0 values to designated blocks in the Write Buffer. This process in described in detail on page 6.

ERROR MESSAGES

DATA ENTRY ERROR MESSAGES

ERROR ENTER BETWEEN 0 - 9

Displayed when edit byte function operator entered non numeric value in DEC DISPLAY MODE

ERROR ENTER VALUE BETWEEN 0 - 255

Displayed when edit byte function operator entered value outside valid decimal range in DEC DISPLAY MODE

ERROR ENTER BETWEEN 0 – FF

Displayed when edit byte function operator entered value outside valid Hexadecimal range. in HEX DISPLAY MODE

ERROR ENTER ONLY 1 CHARACTER

Displayed when edit byte function operator tried to enter 2 or more characters per byte: only 1 is allowed in ASCII DISPLAY MODE

WAND OPERATIONS

READ UNABLE TO COMPLETE

READ TAG operation interrupted during read. The wand was moved away from TAG:

Perform proper TAG wand orientation
Hold wand still and wait for operation to complete
Reduce number of blocks read to reduce time

WRITE UNABLE TO COMPLETE

WRITE TAG operation interrupted during write. The wand was moved away from TAG:

Perform proper TAG wand orientation
Hold wand still and wait for operation to complete
Reduce no of blocks read to reduce time

GENERAL OPERATION ERRORS

If the OP Handheld powers down or is shutoff with a selection box open, the software may experience errors upon power on. To reset the unit, hold the *Ctrl*, *Del* and Psion key (located bottom left, U) simultaneously.

The battery status can be checked by pressing the *Ctrl*, *Shift* and the letter *B* key simultaneously. To change the battery, go to page 12 of this manual.

BATTERY REPLACEMENT

The OP Handheld requires (2) AA alkaline or rechargeable batteries. The battery status can be checked by pressing the *Ctrl*, *Shift* and the letter *B* key simultaneously. To install batteries in the OP Handheld:

First, push the Drawer Release Button located in the top left corner next to the display.

Second, extend the drawer by gently pulling it away from the main unit.

Third, utilize the plastic strip to remove the battery pack.

Fourth, replace batteries as needed.

Fifth, assemble in reverse order. Verify battery pack polarity peg is on the side the Drawer Release Button is located.

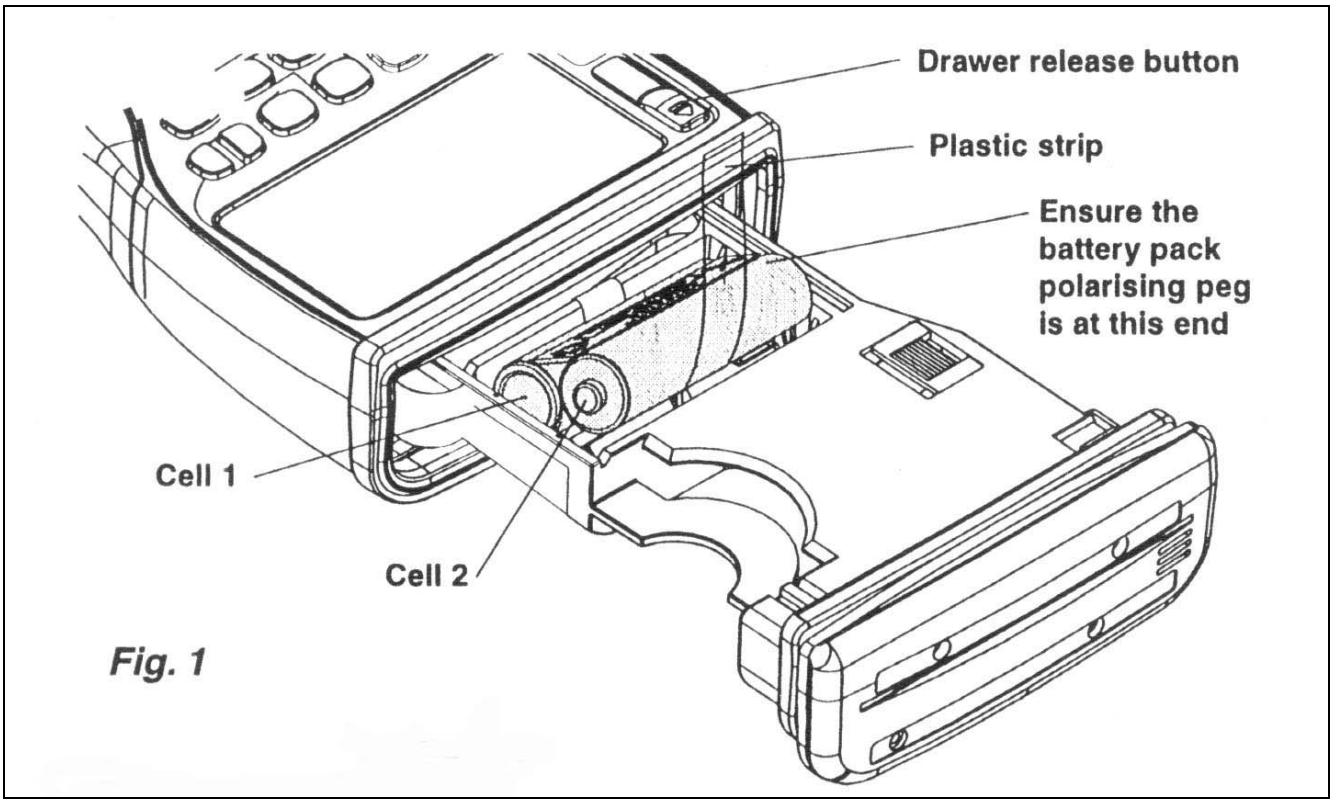


Fig. 1