DAS-8001

Data Acquisition System Manual (version 1.0)

1 Introduction

This is a user manual for a Bio Medic Data System DAS-8001 Data Acquisition System. We have made this manual as comprehensive and factual as possible. However, since we are constantly working to improve our products, we reserve the right to make changes at any time and without notice in prices, colors, material, equipment, specifications, models, and availability. Because some information may have been updated since the time of printing, please check with your BMDS representative for complete details.

1.1 Contacting BMDS

Corporate Office

Bio Medic Data Systems, Inc.
One Silas Road
Seaford, Delaware 19973
1.800.526.BMDS
www.bmds.com

1.2 Copyright

1.3 Warranty

See warranty card included with item.

1.4 Warning

The probe electronics are very sensitive due to the nature of interacting with a small transponder. Please do not drop the unit onto a hard surface or leave the unit for a long period of time near metal surfaces while it is scanning as the high frequency electronics will interact with the metal and may cause damage to the unit.

2 Overview

The BMDS DAS-8001 is an electronic product whose primary purpose is to read data from radio frequency identification transponders.

Transponders are extremely small, hermetically sealed, electronic chips that can store data internally and transmit that data to a specially designed probe. Some transponder types can also transmit temperature information to a probe. Transponders do not contain a battery and are completely powered from the outside by a probe. Transponders are mainly used to store identification data.

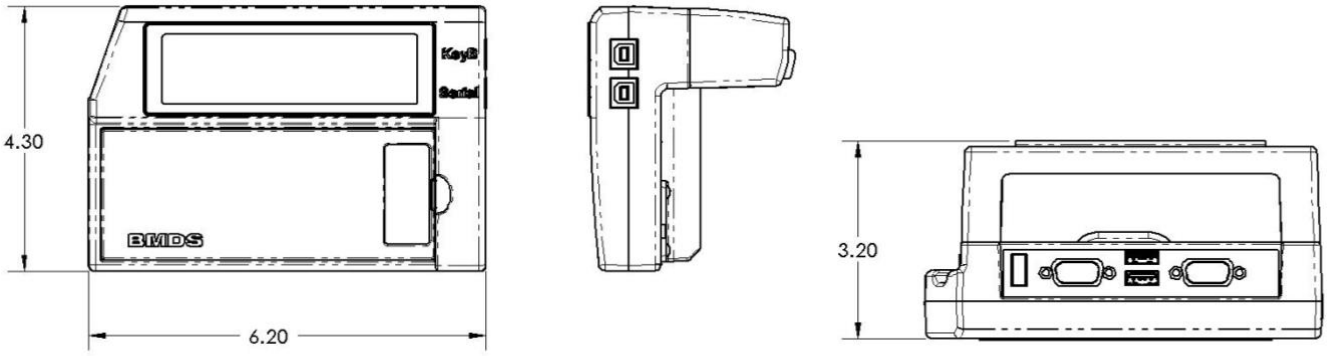
The DAS-8001 unit when used with a BMDS Smart Probe includes the ability to:

- Read identification data from transponders.
- Store the data from transponder inside the unit.
- Allow the user to collect additional data from devices that are connected to the DAS-8001 auxiliary input ports.
- Allow the user to make comments, timestamp, and organize data into fields and records.
- Transmit the gathered data to a computer either while the data is being collected or from internal storage.

3 Technical Features and Specification

Physical Characteristics

- Weight: 12 ounces
- Width: 6.2 inches (157mm)
- Height: 4.28 inches (109 mm)
- Depth: 1.72 inches (44mm) (without stand/handle)
- The integrated stand/handle increases depth to 3.15 inches (80mm) and tilts unit to correct user angle.
- Construction is ABS and polycarbonate blend (Bayblend t85).
- Included is both a snap in front cover to inhibit membrane keyboard use. A attachable Smart Probe holder is available (though separate probe stand is encouraged).



Processor and Memory

- Main Processer: AT32UC3A3256 (32bit, 256K Flash, 64K Ram) Used for main program execution, display control and temperory data storage.

- Two Peripheral Processors: AT32UC3B064 (32bit, 64K Flash, 8K RAM) Used as USB HID Host (input) controllers.

- USB Output Processor: PIC18F4550 (*bit, 32K Flash, 2K RAM) Used to simulate USB keyboard output controllers.

- Memory for user data storage: Dual 1M Byte Serial Flash

Data Input Ports (For transponder and supplementary data collection)

- One (1) BMDS Smart Probe Port (Special Powered RJ11) for connecting all current BMDS Smart Probes. Provides plug and play connection for either read/write IPT & IPTT or read only IMI

- Two (2) RS-232 Serial Input Ports (A&B):. Connects additional input devices such as scales, barcode readers or calipers and combine their data with incoming transponder data. Connector: DB-9

- Two USB Input Ports (C&D): Provides a HID (Human Interface Device) inputs for USB configured devices such as Barcode Wedges, Numerical Keypads, and new generation of scales and calipers. Connector: USB A Type

- One Special USB Control Port: Provides use of alternate full keyboard for unit control and memo input feature. Feature configurable for US, German and France keyboards. This port

also allows unit program updating via USB memory stick. Connector USB A Type.

- Programmable delimiters for organizing incoming data into fields and records. Ability to add user defined data prefix, suffix and titling for each port.

Data Output Ports

- Keyboard USB Output. HID (Human Interface Data) output. Data from this connection will appear a keystrokes. Connector USB B Type

- Serial USB Output. This is a main serial data output and is in a USB format requiring a CD2103 driver. Standard configuration is 9600 baud, 8,1, N. Connector USB B Type

Alternate Control Modes

- Keyboard Control: Allows control of unit via external keyboard (wire or wireless).
- Bypass Mode: Allow connected computer to directly access Smart Probe features.

- Code Switch Mode: Allows all data input ports to be activated or defeated via outside computer commands

Card Slots

- Two (2) built in MMC SD memory card slots for storing data, cross reference map files, ID list programming and script files
- Each slot can store up to 2 Gigabytes of data

Display

- Vacuum Florescent Display: 82mm X 20.3mm viewing area.
- Graphic Mode: 128 x 32 pixels.
- Character Mode: 21 characters per line, 4 lines. Character Height 4.6mm X 3mm

Power and Battery

- Line Power: Separate 12 volt international power supply calibrated for low noise. (Input 100 to 240 volts AC 0.45 amp / output 12 volts DC 1.3 amp)

- Battery Power: Unit includes rechargeable 8.4 volts lithium 2200mAH battery. Battery internally charged via main power supply.

Clock

- Configurable USA, ISO and EURO
- May be used for automated or manual time stamping of incoming data.
- User settable for auto shutdown functions.

Keypad

- Metal Dome Membrane keypad provides access to all menu access and data input. 10 key alphanumeric array is available for direct data entry. Two user programmable keys for function access for when front cover is in place.

- Menu access can be password protected.

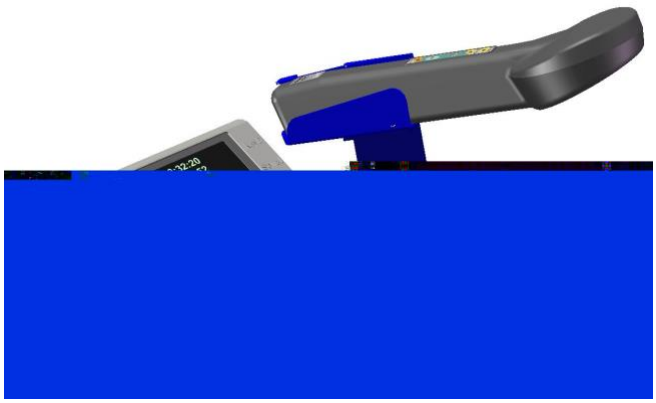
Wireless Option

- Protected ZigBee protocol virtual serial cable. Option installed via access hatch in back. Can be setup for either transponder data input or collected data output.

- 2.4 GHz IEEE 802.15.4. Can be configured with 128 bit AES (Advanced Encryption Standard) encryption as specified by NIST (National Institute of Standard and Technology).

4 System Description

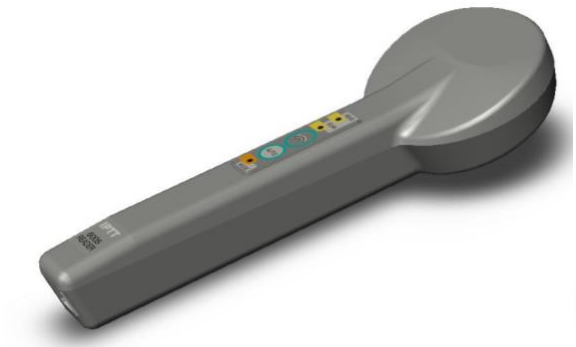
In order for a DAS-8001 to read a transponder, a BMDS Smart Probe must be connected to it. The DAS-8001's role is to control this probe, provide a display for its data and to interface to a computer or terminal for data downloading. Also the DAS-8001 has additional inputs and capabilities in which to gather and collect data i.e. calipers, scales, barcode, observations, timestamp.



Collected data can be stored internally or on a memory card. This data can also be sent out the unit's various output options. This can be done as the data is collected or at a later time. The data is organized into fields and records. A field represents each different type of data collected and a record indicates a complete cycle of data collection that is then repeated. Fields are separated by a symbol called a delimiter, which can be a tab, comma, CR, or CRLF (carriage return, line feed). A record can be indicated by a different or same delimiter. The record delimiter appears after a predetermined data input source receives data. Which source this is, is determined in the Setup menu.

In normal use, the DAS-8001 does not care what order data is collected, except the source that determines a record should be at the end. (This is not true when the DAS-8001 "Script" feature is used. See Scripts for additional details.) Additional data fields can be utilized as needed and the unit will organize the data accordantly. The key point is that the DAS-8001 collects data from various sources and combines it into a single data stream and/or data file. If the unit is storing data internally, there is a back-up feature that allows the undoing of the last action.

4.1 Smart Probe



The Smart Probe is the long slender device that reads the transponder. The smart probe sends the transponder number to the DAS-8001 via the supplied coil cable. The Smart Probe is very delicate and will break if dropped. The term smart probe usually refers to the BMDS products SP-6004/SP-60055 Straight Probe, RSP-6004/RSP-6005 Round Head Probe, FSP-7004/FSP-7005 Flat Probe, RR-6004/RR-6005 Ring Reader Probe, and the VSP-7004/VSP-7005 Vertical Probe.

4.1.1 Smart Probes Ending In 6004 and 7004

Probes with these model numbers are used for reading IMI transponders. These are read only transponders that come with a number pre-programmed into them. This probe comes preconfigured for working with the DAS-8001. The probe communicates back to the display unit via a special data cable

using a digital format to avoid RF noise issues. The DAS-8001 has its own setup options for external communications that are accessible via the DAS-8001 setup menu under main serial output.

If it becomes necessary to make any changes to the probes set up beyond what is available in the DAS-8001 Commands section, a software program called DASHost has a tool box for the advanced user. The DAS-8001 should be in the Bypass Mode when DASHost probe tool box is used.

4.1.2 Smart Probes Ending In 6005 and 7005

Probes with these model numbers are used for reading IPT-300 and IPTT-300 transponders. These are read/write transponders that also have the ability to read temperature. They have a generic ID programmed into them, so they must be programmed prior to use. Programming is performed via the DAS-8001 write functions. As above, the probe is pre-configured to work with the DAS-8001. The DAS-8001 has its own setup options for external communications that are accessible via the DAS-8001 setup menu under main serial output.

If it becomes necessary to make any changes to the probes set up beyond what is available in the DAS-8001 Commands section, a software program called DASHost has a tool box for the advanced user. The DAS-8001 should be in the Bypass Mode when DASHost probe tool box is used.

4.2 Types of Collected Data

4.2.1 Transponders Scanned by Smart Probe

Naturally the primary purpose of the DAS-8001 reader system is to read transponders. The DAS-8001 has a special port for this that is referred to as the Smart Probe Port. As mentioned above, there are two types of transponders, IMI read only and IPTT read/write with temperature. The DAS-8001 menu includes references to the write and temperature ability of the read/write IPTT. **Since IMI transponders do not have write capability, the user should simply ignore the write menu option on the front panel controls and keyboard overlay. If a write function is selected with an IMI probe connected, no damage is done and the command will simply be ignored**. This allows the user to swap probes without making any set up changes. Only BMDS supplied probe cable should be used, but the digital interface of the smart probe allows great variations in cable length and coiling.

4.2.2 Port A and B Serial DB-9

The DAS-8001 has two auxiliary serial inputs: Ports A and B. Typically, when a user is using a BMDS transponder, they are also collecting additional data such a weight or electronic calipers. Any device that has a serial output can be connected to these Ports. Port A and B serial parameters (baud rate etc.) can be configured independently and is done in the Setup menu under Serial Setup.

4.2.3 Port C and D USB HID

The DAS-8001 has two USB inputs that are configured for “human interface devices”. This would be any class of device that provides a standard USB keyboard output. Typically this might be a handheld barcode scanner. There are no set up parameters since this uses a standard configuration. The port has enough power to self power most devices.

4.2.4 Timestamp

The DAS-8001 has an internal clock that can be accessed via various ways. Under setup a user can selected an Auto Time Stamp that will insert the time into a field before the ID. If an external keyboard is connected to the DAS-8001, the time stamp is entered by pressing the F11 key at anytime and will appear in whatever field is current at that time. Under Setup the user can select between time, date or both.

4.2.5 Memo

Memo function is used to add additional user comments into the data record. Comments will appear and behave as their own data field. This feature can be accessed with an external

keyboard (F12 key) or by programming either the P1 or P2 keys to be “Memo”. No format is required but is limited to 35 characters per entry followed by an enter command. See Menu/Setup/Front Panel.

4.3 Delimiters Substitution

A useful feature of the DAS-8001 is that it will strip off any incoming delimiters and substitute them with a single user specified output delimiter. See setup for more detail.

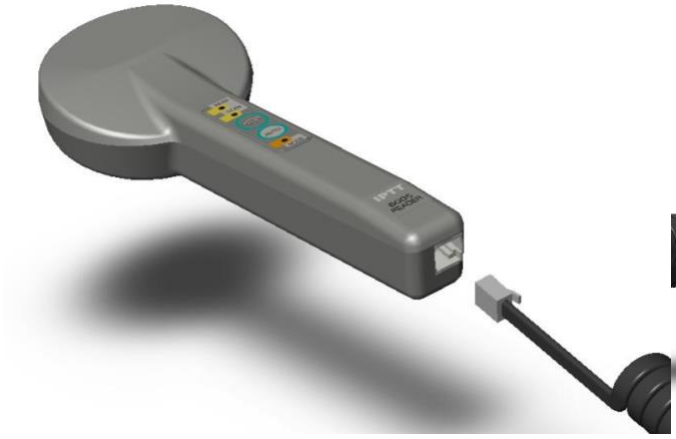
5 Quick Operation

5.1 Power-supply

First connect the unit 12 volt power supply. This goes into the back of the unit via a mini DC connector plug. You must use the power supply provided by BMDS. You will note that there is a small sticker on this power supply that shows that the power supply has been calibrated to reduce switching noise. This calibration assures proper operation of the units RFID functions when the power supply is connected. Using another power supply may reduce read distance.

5.2 Probe Connection

Next connect your BMDS Smart Probe. As mentioned early, Smart Probe with model numbers ending in 6004 or 7004 will read IMI Read Only transponders and probes ending in 6005 or 7005 will read IPTT-300 Read/Write transponder. There is no need to change DAS-8001 settings for either type of probe, and different probes can be swapped as needed. You connect the probe using the black 6 pin RJ-11 cable provided with the unit. Do not substitute with a different cable. The BMDS cable uses a reverse connection and has special power handling ability. Press one end of the cable into the connector at the left up corner of the DAS-8001 and the other end of the cable into the bottom of the probe.



5.3 Scan and View ID

You are now ready to go. Push the power button and the display will turn on with the words **Ready** and an indication of battery level will be displayed. If you have 3 or 4 bars out of 5 you can go ahead and disconnect the power supply if you wish.

You can now push scan button on the DAS-8001 and the system will begin to look to scan a transponder. (Use Menu/Setup/Front Panel to set one time scan or auto.) Simply bring the transponder within 5 cm of the tip of the probe and the transponder will be read. (See “Reading” section in this manual for orientation guidelines.) The ID code will appear on the front screen. Each time you read a transponder or enter data, the previous data entry moves up a line and the new data appears on the next line.

5.4 Data Organization

A key feature of the DAS-8001 is it’s ability to organize data into fields and records. At the very least if data is to be collected the user should turn on memory via setup menu (menu/setup/store data/on) and set a end of record (menu/setup/data format/end of record). This can change later but is very important to do if as part of the quick operation you plan on entering more than just probe ID. See “Data Format” for more information.

5.5 Additional Features

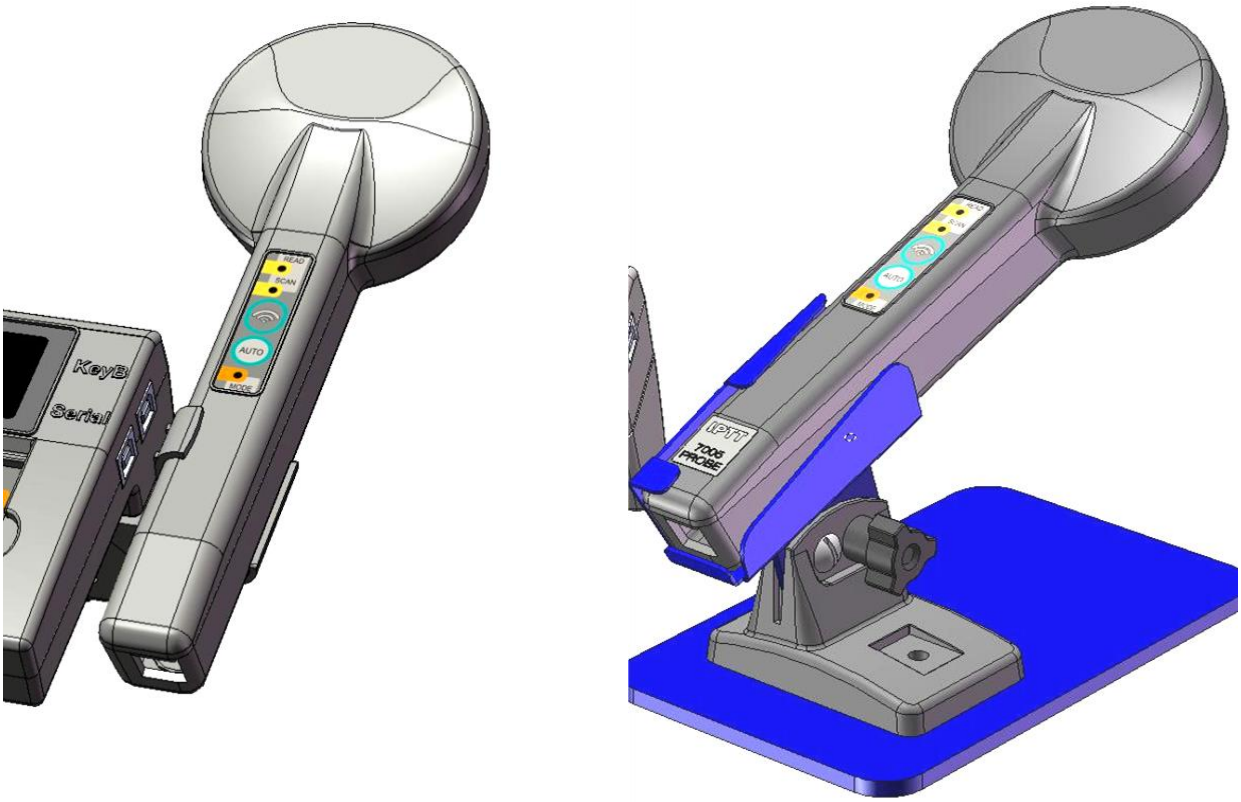
The DAS-8001 and Smart Probe have a wide range of important functions that allows the creation and transfer of the database that is created by the collection of transponder numbers, related measurements and technician observations. Though, the system has been designed for easy first use, the expanded capabilities of the system should not be ignored. The DAS-8001 can be the center hub of complex data collection tasks.

6 Optional Probe Mount

It is best to place the smart probe on its own stand. However if greater portability is needed, the DAS-8001 comes with a special clip for holding the SP-6004/5 Smart Probe. The clip is attached by removing the bottom handle, placing the clip assembly in place, and replacing the handle. The clip includes a cover for routing the probe cable. The Probe is designed to snap into place via a twisting action. You will note that there is a circular bump on the clip that matches up in a circular indentation on the back of the probe. These two should line up. Once the probe is in place, as an option, a set screw can be screwed in from the back for added strength, but is not necessary for most use.

The DAS-8001 will allow use of the smart probe while it is in the clip, however it is not preferred. During critical read and programming function, performance can be enhanced by positioning the probe away from the display unit; Experimentation is worthwhile for a method that works best in a given environment.

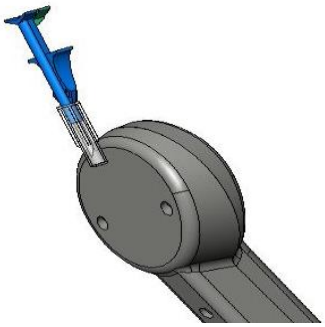
Caution should be used in handling the probe. The probe will break if dropped. The separate probe stand offers the best protection and flexibility.



7 Reading

The front panel Scan (radiating pattern) Key this turns the Smart Probe scan function on in order to read a transponder. This key is the same as pushing the button on the smart probe. There is a feature on the setup menu under front panel regarding this scan button where you can determine whether this button produces a onetime scan / read or whether it is a continuously or repeat scan /read.

In most cases the user never sees the actual transponder. The transponder is either in the needle assembly or implanted, thus it is usually unseen. However it important to note that the orientation of the transponders relative to the probe can have a big effect on read distance. The transponder is a cylinder shaped device. Once implanted or in free air it is best read oriented in line with the handle and of the probe and slightly ahead and below the front of the probe.



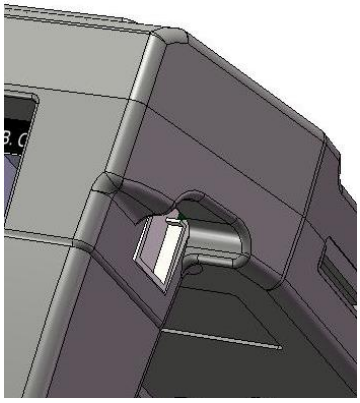
You will notice that when the transponder is in the needle, it must be held very close to the probe. This is because the metal in the needle reduces the read distance. Reading in the needle is best done by touching it to the tip of the probe, inline and 90% down.
There are other positions that can be used. A little experimentation is very useful. Notice how it is never good to have the transponder at right angles to the probe in free air. Also closer is not always better.

Once again for best reads in the animal, the probe should be above, inline, and slightly behind the transponder. To do this successfully, it is important to be consistent as to implant orientation. This makes it easier to imagine the location and orientation of the device when out of view. Do not read the transponder from the side or at right angles. When correctly oriented, the transponder reads best at about 3 to 5 cm away from the tip of the probe. A slight movement away or towards the transponder will sometimes help if difficulty arises.

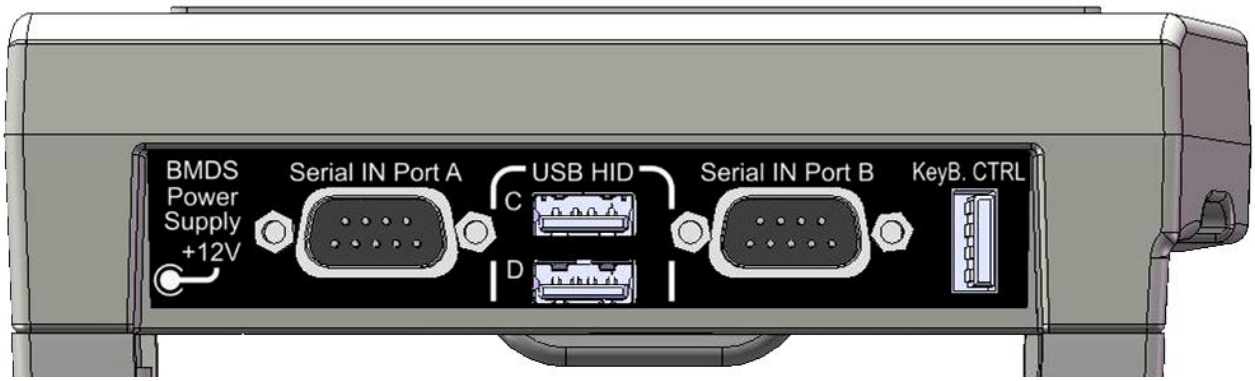
8 Input Connections

8.1 Smart Probe

Used for connecting either a BMDS Smart Probe for reading IMI IPT/ IPTT transponders. Note that the DAS-8001 does not require any set up for either type. Old style 5000 series probes cannot be used. Be sure to only use BMDS supplied probe cable.



or



8.2 DTE Serial Port A

This is a standard serial port used to for connecting such devices as a scale, a separate barcode reader or electronic caliper. Under Setup you can configure this port's baud rate etc. to match the connected device.

8.3 DTE Serial Port B

This is a second standard serial port used for connecting such items as devices as a scale, barcode reader or digital caliper. Under Setup you can configure this port's baud rate etc. as needed.

8.4 HID USB Port C

HID stands for "Human Interface Device". This a type of keyboard interface typical of barcode scanners and other wedge type devices.

8.5 HID USB Port D

This is second USB port to allow a second device such as an auxiliary keyboard, numerical keypad or a caliper equipped with a keyboard output.

8.6 Keyboard CTRL USB

A standard computer keyboard can be connected here. This can be used to control the unit when in the Keyboard Control Mode. When in the Normal Mode, any keystrokes are passed out through the Keyboard Format PS-2 (Output). See the Control Modes section for details.
This port is also used for firmware updates. See Firmware

9 Connection Outputs

9.1 Keyboard Format

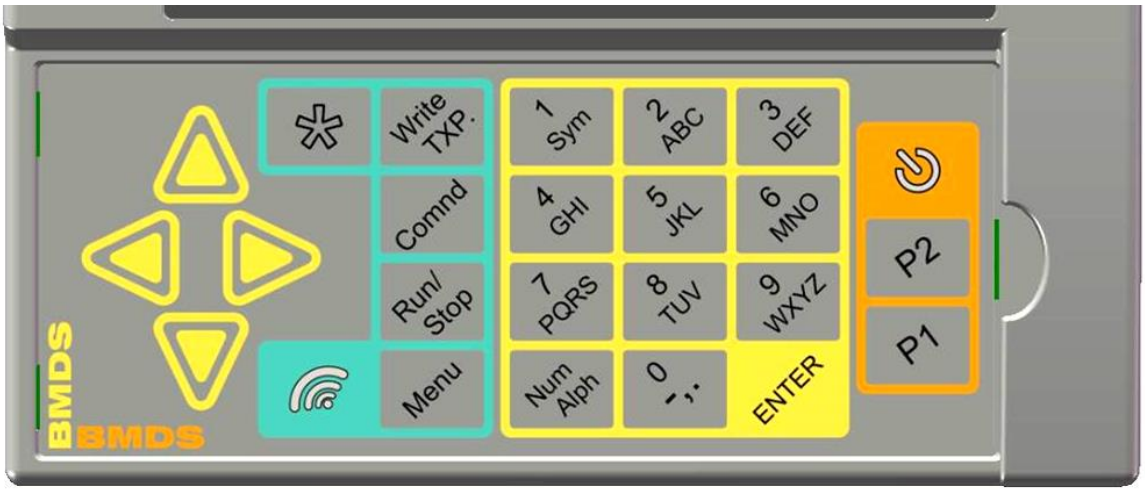
This is a main data output. Data from this connection will appear as keystrokes on any computer program. When connected to a computer, it should recognize the connection as a “human interface device” and automatically configure the connection. It is recommended to cycle the unit power when making this connection if not recognized. The keyboard output uses a USB type connection.

9.2 Serial/USB Format

This is a main serial data output in a USB format. In order to use this port you must load a special software driver on your computer. Contact BMDS for a driver. The settings are fixed at a baud rate of 9600, date size of 8 bits and 1 stop bit.

10 Front Panel

The DAS-8001 has all its controls on a front control panel. In this section each button is discussed. For most applications, these buttons will perform all functions; however the unit does have the ability to connect an external computer keyboard via its USB “KeyB CTRL” input connector, which could make certain operations easier. See Keyboard Control under the Control Mode section for more detail.



10.1 Power (Orange)

This turns the unit on and off. The unit is designed to come up in the on condition if power is interrupted. Pushing the button again will turn the unit off. If the unit is on battery power, the unit will turn itself off in about 15 minutes to preserve power. If the unit is connected to its external power supply, it will stay on continuously and there will be no time out.

10.2 (*) Star

This key is used when programming IPT-300 transponders. Under Front Panel setup the user can specify a template that is activated whenever this key is pressed. For example: The template is programmed to be “Blue Study-“. Then whenever the user is at the writing function menu request for entering the ID, they can simply press this key and the term “Blue Study-” would appear on the screen. The user can then add “001” so that the whole ID to be programmed into the transponder would be “Blue Study-001”.

10.3 Scan (radiating pattern)

This toggles the Smart Probe’s scanning function on or off. In the momentary mode, this key is similar to pushing the scan button on the smart probe. There is a useful feature on the setup menu under front panel (menu/setup/frontpanel/scan) where you set this key for either momentary scan or auto continuous scan.

10.4 Enter

Used to execute a command or move you through a command and/or writing sequence.

10.5 The Four Yellow Arrows (left, right, up and down)

These arrows are used to navigate the user menu. The display provides prompts as to which arrows are active (look to the sides of the statements). Also, when storing to internal memory, the up and down arrows can be used to scroll through collected data.

Note: The UP arrow is very useful. Anytime you want to get out of something, using the up arrow will most times get you out safely without making unintended changes.

10.6 Menu

This the overall main menu button to get to the DAS-8001 various features. The features are basically divided up into 4 groups, CTRL Modes, Commands, Setup Write TXP and Advanced. See Setup section for complete details

10.7 Comnd

This is a fast way to get to the Commands selection of the DAS-8001 without having to go into the main menu. This is where you “do things” whether it is moving data, mapping transponders or sending commands to the probe to turn temperature on or off.

10.8 Run/Stop

This is used to run or stop a script file. A script file is a small program that is written on to a memory card that directs the DAS-8001 to display a prompt for a user to collect data from a particular source. See Scripts for additional information.

10.9 Write Txp

This directs the DAS-8001 to begin a menu driven sequence that is used in writing to IPTT and IPT transponders. It is not used if a user is using IMI transponders. If a user selects this function with an IMI probe connected the unit will let the menu progress but will stop at the write attempt. You can get out at anytime by pressing the up arrow, but once you enter a code to write the only way to exit is to press enter and than select no when the unit prompts “Write another?”.

10.10 Num Alpha

This toggles the 1 through 10 keys between numeral function and alphabet function.

10.11 1 to 10 Keypad

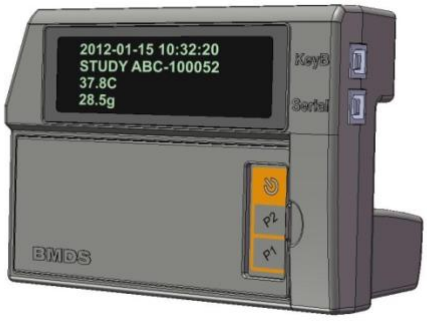
These ten keys are for entering alphanumerical data for various functions. When in the “alph” mode, the user press the key each time to scroll through the set of 3 or 4 letters printed in the key. If the user pauses, the unit will select the letter that is appearing.

10.12 P1 and P2 Keys

These two keys can be set to be None, Timestamp, Memo, Run/Stop, Scan, Blank. These keys and the power key are the only keys usable when the front cover is in place. They are designed to be used when it is desirable to limit access by the user to only certain functions. They are setup via the front panel setup menu option.

10.13 Keyboard Cover and Alternate Handle

The DAS-8001 comes with a snap in keyboard cover which inhibits access to all keyboard function except to power and P1, P2. A typical application might be to have P1 as scan key and P2 as memo. With the cover in place a user would only be able to turn unit on, toggle scan, and take notes. Also if P1 and P2 are left unassigned and the handle is moved to the bottom to act as a stand, then the unit can serve as a display only device.



11 Menu

Note the following instructions are for the menu memory which is accessed via the Menu key on the front panel. There are also two keys on the front panel that will jump you to the second level menu items for Write TXP and Comnd functions. This is done to speed access to these commonly used functions).

11.1 Control Modes

The DAS-8001 has a feature called control modes: **Normal, Bypass, Keyboard Control and Code Switched.** Normal and Keyboard concern themselves with how the DAS-8001 handles a computer keyboard that is plugged directly into the DAS-8001. The Bypass mode is used for direct communications during setting up of the Smart Probe. Code Switched Mode makes the serial input ports and the probe port active only when a command is sent from a computer.

To access the DAS-8001 control modes selection menu, press the menu key and the first menu option of CONTROL MODES appears on the display. Press the down arrow and the following options on the line below may be scrolled through using the right and left arrows: NORMAL, BYPASS, KEYBOARD CONTROL, CODE SWITCH. The unit will prompt you to ENTER TO SAVE which will then automatically exit you out of the menu and to the READY screen.

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11.1.1 Normal Control Mode

In the **Normal Mode**, the DAS-8001 does not “listen” to a connected keyboard. This is the typical mode of operation when the DAS-8001 is used as an independent unit.

11.1.2 Bypass Mode

The Bypass Mode is a special functions mode which main purpose is to allow the user to directly access the smart probe that is attached to the DAS-8001. As its name implies when in this mode, the DAS-8001 provides a direct connection between the main output USB serial port and the smart probe microprocessor and memory. Data will not be displayed or stored by the DAS-8001. The most common use for this mode is when using DASHost to directly access smart probe functions. DASHost is an extra cost utilities program available through BMDS. You would use this mode for the followings

- You want to update the firmware in the smart probe
- You want to change obscure smart probe options such as turning off the beepers.
- You want to load map files directly into the smart probe without using the memory cards.
- You would like to use the fuller featured temperature calibration feature included in DASHost.

It is possible to use this mode for other features that are included in DASHost, but it is usually easier to use the DAS-8001 directly for common smart probe operation and any transponder writing functions.

11.1.3 Keyboard Control Mode

The DAS-8001 has the ability to have a separate standard computer type keyboard connected to it. Please note, that the unit only allows input via a keyboard that has a USB output as standard connection. A PS-2 to USB adapter will not work.

In the **Keyboard Control Mode**, the DAS-8001 listens to the keyboard for any special commands and then takes actions. The commands are configured as F keys and an overlay for your keyboard is provided with the unit. Most of these commands are duplicates and or short

cuts of front panel controls but the last two are unique. By using F12 in the Keyboard Control Mode the user has the option to type in any “memo” note and those notes will be stored and or transmitted as part of the collected data. The F11 key is a manual alternative to auto stamping of time and date.

Also when in the Keyboard Control Mode, anytime there is data that needs to be filled out on the DAS-8001 display screen, the keyboard can be used instead of the alphanumerical keys. This is very useful when entering a transponder user code during programming or mapping.

The DAS-8001 comes with a description label for labeling the function of the F keys on a standard keyboard. The first “menu” label should line up with the F1 key and the last “memo” label should line up with F12 key. The keys are designed to provide a short cut into certain frequently used sections of the DAS-8001 menu. They are

- **F1 Menu** This is a duplicate of the front panel button of the same name.
- **F2 Run/Stop** This is a duplicate of the front panel button of the same name.
- **F3 Comnd** This is a duplicate of the front panel button of the same name.
- **F5 Write TXP** This is a duplicate of the front panel button of the same name.
- **F6 Star(*)** This is a duplicate of the front panel button of the same name
- **F8 Scan** This is a duplicate of the front panel button of the same name
- **F10 Blank Field** This enters a blank field during data collection.
- **F11 Date Time** This is a manual date/time stamp.
- **F12 Memo** This allows the user to add a notes field to the collected data of 36

11.1.4 Code Switched

Under typical applications the DAS-8001 acts as it own traffic manager when it comes to inputting data. Anything can come in at anytime and the DAS-8001 will buffer and direct it. However some users like to be able to have an outside computer/terminal control this activity. This is usually referred to as: Code Operated Switching.

The DAS-8001 has a special mode that makes it compatible with large GLP programs that require a device be assigned to a specific port. This would only be used if the DAS-8001 is acting as a serial port hub and has other serial devices such as a scale and caliper connected to it AND it needs to be under the control of a separate computer’s software. The concept is that each type of peripheral device is connected to and assigned a particular serial port. When the program calls for data from that device it will only accept incoming code from the serial com port assigned to that device. This assures the software will receive data only from the proper device.

This switching is actually very simple. The main computer/terminal is connected to the DAS-8001 main output port. The computer sends arming instructions that lets the DAS-8001 know that the port assignment is coming. Then the computer sends a character that represents a particular port. The DAS-8001 internal firmware automatically switches communication to the specified port while shutting out any data that might come in the other ports.

A feature that sets the DAS-8001 apart from other switch boxes is that the DAS-8001 will still apply delimiter substitution for all incoming data. Also mapping is applied if desired for incoming ID codes from the probe.

The DAS-8001 basically has five inputs ports in which to switch between. The probe port and ports A thru D..

The instruction set for controlling the DAS-8001 ports is as follows

The arming instruction is:

ASCII	CTRL	HEX	DECIMAL
EOT	D	04	4

The input control codes are:

Port	ASCII	CTRL	HEX	DECIMAL
Probe	0		30	48
A	1		31	49
B	2		32	50
C	3		33	51
D	4		34	52

Any other code corresponds to a default input port (which is the probe port).

11.2 Commands

The DAS-8001 has a front panel button called "Commands". You can also access this feature by pressing the main menu and scrolling to COMMANDS or using the F3 key on the optional computer keyboard. When you press the COMMAND button the following word COMMANDS appears on the display and the following option on the line below may be scrolled to using the right and left arrows: SEND STORED TO, CLEAR FILE, CREATE MAP, SEND MAP TO, SET PROBE TEMP, These options all have in common that they are an active action. (The reason why Set Probe Temperature is included is because temperature is actually determined by the separate microprocessor that is in the Smart Probe and that DAS-8001 needs to send a command to the probe to make any changes to that feature.)

11.2.1 Delete Last Entry

This command will delete the last data field of collected data from internal memory. It is used to correct a user error or whenever it is desirable to repeat a measurement or action. It will not remove data that is stored to a memory card.

11.2.2 Send Stored To

This is the command that you use to take the data you have collected and send it out the unit or store it to a card. Upon pressing the command key you may scroll left or right to select SEND STORED TO command. Pressing the down arrow key will move it to the top line. You can than select one of the following options SERIAL/USB OUT, KEYBOARD OUT, CARD A, CARD B. Once the desired data target appears on the screen, you can execute the command by pressing the enter key.

11.2.3 Clear File

This option allows you to clear files. Clearing Internal Data will erase any data that has been collected or loaded map files. This would be done each time AFTER you successfully download the data to your computer. Clearing Probe Map Files clears the map file that has been loaded up into the probe. The display appears as: CLEAR FILE. Pressing the down arrow key will move it to the top line. You can than select one of the following options INTERNAL DATA, PROBE MAP FILE, CARD MAP FILES. Use the arrow key to display your selection and then press enter.

11.2.4 Create Map

This function allows you to create a Map on the memory card. Once created you can either use it on the card or you can send the file up into the probe. In most cases it is better to leave it in the card since this file is easier to view and edit. The create sequence is as follows:

MAP FILE NAME:
_____(FILL IN BLANK)

ID:
_____(FILL IN BLANK)

SEQUENTIAL
AUTO-INCREMENT BY 1, AUTO INCREMNT BY 2, SAME ID (GROUP)

SCAN NEXT TXP

11.2.5 Send Map To

This is the command to allow sending a map to a location>
SEND MAP TO PC, SEND MAP TO PROBE

11.2.6 Set Probe Temp

This is the command to set the probe up for temperature function. It is important to recognize that this parameter is a setting in the probe. This is the reason it is in the commands section and not the setup section of the DAS-8001. The options are: TEMP: NONE, TEMP: C, TEMP F, TEMP: C NO TX, TEMP: F NO TX

11.3 Setup

To access the DAS-8001 setup menu, press the menu key and scroll right until you see the word SET UP appears on the display. Press the down arrow and the following options on the line below may be scrolled through using the right and left arrows:
FRONT PANEL, STORE INTERNAL, OUTPUT DATA, WIRELESS, DATA FORMAT, DATA ADDITIONS, DATE & TIME, SERIAL INPUTS, PASSWORD SETUP,

These options all have in common that they set a state in the DAS-8001 that is persistent. Simply make your selection by using the left arrow and right arrow, and then the down arrow to move down further into the menu and your left and right arrows again to make your final selection. The unit will prompt you to ENTER TO SAVE. Use your up arrow key to move back up into the previous menu to than move on to your next item. You can simply use the up arrow to fully exit out once you are done.

11.3.1 Front Panel

The front panel setup allows you to set the functional parameters for the Scan key, the * (star) key, P1 key and P2 Key.

- The Scan key is set by selecting be the option MOMENTARY or AUTO SCAN.
- The *(star) key is programmed with a template for the beginning characters to be used in programming a IPT or IPTT transponder.
- The P1 key is set by scrolling through the options TIMESTAMP, MEMO, RUNSTOP, SCAN, BLANK and pressing ENTER TO SAVE
- The P2 key is set by scrolling through the optionsTIMESTAMP, MEMO, RUNSTOP, SCAN, BLANK and pressing ENTER TO SAVE

11.3.2 Store Internal

This setting tells the unit to store all collected data to its internal memory. If you turn this on, you can use the up and down arrow to review data that has been recorded. Also the DAS-8001 does have the ability to erase the last item stored under the “COMND” menu. In typical usage the user would clear the data each time the internal memory is downloaded or saved to memory card.

```
STORE INTERNAL
YES, NO
```

11.3.3 Output Data

This setting determines which main outputs are on or off. Use the left and right arrows to select: yes or no.

```
OUTPUT DATA
YES, NO
ENTER TO SAVE
```

11.3.4 Wireless

This setting turns on and off the wireless data transmit. This is an optional plug in module that is accessed via the battery cover. If not installed, this function will do nothing.

```
WIRELESS
OFF/NOT INSTALLED, WIRELESS DATA OUTPUT
```

11.3.5 Data Format

Delimiters are special characters that separate data in a database. If the stored data is going to a word processing document, the most common delimiter to use is a CRLF. However if you are loading your data into a spreadsheet, you may want to select a TAB or a COMMA. The DAS-8001 has ability to select two different delimiters, one for use after each piece of data, referred to as a field delimiter, and one for each group of data, which is referred to as a record delimiter. With the DAS-8001 you can decide which input will supply the last data field in a record and then set your chosen record delimiter to follow that data field automatically. Under setup, use your right and left arrow to select field or record and than you down arrow to display the different delimiters

```
END OF RECORD, FIELD DELIM, RECORD DELIM
```

End of Record

This is a very important set up feature because it determines which data type will close out a record, thus in turn, organizing the collected data into record groups. Whenever internal memory is turned on, this end of record selection is then indicated on the display with a dotted line at the end of record data entry. This will make stored data easier to review and is fundamental to the system delimiter functions. This effects how data is outputted and any later changes will affect data that has already been collected.

Warning: You cannot select Probe ID as end of record when the probe temperature is on. It will cause the unit to shut down.

Use your arrow keys to select an input that you want to be your last field. Once again, this will set a record delimiter that closes the record.

```
END OF RECORD
PROBE ID, TEMPERATURE. PORT A, PORT B, PORT C, PORT D,
MEMO, TIMESTAMP, BLANK, NONE
```

Field Delimiter

Use the arrow keys to make a selection

```
FIELD DELIMITER
CRLF, TAB, COMMA, CR, LF, NONE
```

Record Delimiter

Use the arrow keys to make a selection

```
RECORD DELIMITER
CRLF, TAB, COMMA, CR, LF, NONE
```

11.3.6 Data Additions

Unit ID

This function allows the user to create a unique unit ID for each DAS unit, which then can be selected to proceed each probe scan as a way of identifying the source of the data. The unit ID will appear before the date and time when the automated timestamp is enabled. This is a useful feature if you are networking more than one DAS together to a common collection source. The unit ID is also used in the two way remote communication mode for addressing the unit directly (see chapter 19). The transmission of the Unit ID occurs as a result of a transponder scan. The unit ID is placed first in the resulting data stream.

You have a choice between `SEND UNIT ID, EDIT UNIT ID`

Send Unit ID

This will turn on or off the automated sending of the unit ID with each transponder scan.

```
SEND UNIT ID
OFF, ON
```

Edit Unit ID

This is where you enter the Unit ID. Use the arrow key or an external keyboard to enter the Unit ID of your choice. Then press enter to set.

```
Edit Unit ID
__________(Fill in the blank)
```

Field Titles

This is a function that allows the user to add a title to each data source (Probe ID, Temperature, Timestamp, Memo, Port A B C D, Unit ID, Script List and Blank). There is an edit function available for changing and customizing each title. The title will be added to the output data stream to both the serial data and keyboard outputs. However, the Titles are not stored internal memory.

Natrally titles can be set independently for each port input. There are default values for titles, but they can be edited by the user by using the edit feature. Press the up or menu key if you need to escape from the Titles menu.

The menu sequence is as follows:

```
DATA ADDITIONS
FIELD TITLES

SEND TITLES
YES, NO
ENTER TO SAVE

TITLE DELIMITER
```

```
TAB, CRLF, COMMA, NONE, CR, LF
ENTER TO SAVE

EDIT TITLE
PROBE ID
ENTER TO EXCUTE
TITLE:__________
```

After using the up arrow to return to `EDIT TITLE/PROBE ID,` you can scroll to the right for each available data field and set the same setup parameters:

```
TEMPERATIRE
(SAME AS FOR PROBE ID)

TIMESTAMP
(SAME AS FOR PROBE ID)

MEMO
(SAME AS FOR PROBE ID)

PORT A (SERIAL)
(SAME AS FOR PROBE ID)

PORT B (SERIAL)
(SAME AS FOR PROBE ID)

PORT C (USB HID)
(SAME AS FOR PROBE ID)

PORT D (USB HID)
(SAME AS FOR PROBE ID)

UNIT ID
(SAME AS FOR PROBE ID)

SCRIPT LIST
(SAME AS FOR PROBE ID)

BLANK
(SAME AS FOR PROBE ID)
```

By default titles are preloaded with the above names but turned off.

Field Markers

This is a function that allows the user to add a prefix and/or a suffix to each data source (Probe ID, Temperature, Timestamp, Memo, Port A B C D, Unit ID, Script List and Blank). There is an edit function available for changing and customizing each prefix and suffix. The field markers will be added to the output data stream to both the serial data and keyboard outputs. However, the markers are not stored in memory or recorded to the memory cards.

Field Markers can be implemented independently for prefix and suffix and for each input. Press the up or menu key if you need to escape from the Field markers menu.

The menu sequence is as follows:

```
DATA ADDITIONS
FIELD MARKERS
PROBE ID
```

```
SEND PREFIX
YES, NO

SEND SUFFIX
YES, NO

EDIT PREFIX
EDIT

EDIT SUFFIX
EDIT
```

After using the up arrow to return to `EDIT TITLE/PROBE ID,` you can scroll to the right for each available data field and set the same setup parameters.

```
TEMPERATIRE
(SAME AS FOR PROBE ID)

TIMESTAMP
(SAME AS FOR PROBE ID)

MEMO
(SAME AS FOR PROBE ID)

PORT A (SERIAL)
(SAME AS FOR PROBE ID)

PORT B (SERIAL)
(SAME AS FOR PROBE ID)

PORT C (USB HID)
(SAME AS FOR PROBE ID)

PORT D (USB HID)
(SAME AS FOR PROBE ID)

UNIT ID
(SAME AS FOR PROBE ID)

SCRIPT LIST
(SAME AS FOR PROBE ID)

BLANK
(SAME AS FOR PROBE ID)
```

By default all markers are disabled and are not preloaded..

After changing “SEND PREFIX” or “SEND SUFFIX” value, you can press the yellow arrow up and return to the previous menu.

11.3.7 Timestamp

The DAS-8001 has an internal clock. The clock's primary purpose is to allow the user to add time stamp data. The most common way to do this is by turning on the Auto Stamp mode. This will cause the time and date data to appear BEFORE the ID Code data. In other words, every time you read a transponder will be preceded by the time and date data. This was done to allow the data to be organized by the time of the action. If you would like the stamp to appear somewhere else the best method is to make use of the external keyboard function and use the F11 key to stamp the date/time. Also see the Script function.

Under Date & Time you will see the following options

STAMP INCLUDES, AUTO STAMP, SET DATE & TIME, DATE FORMAT

Stamp Includes gives you the option of having your time stamp include date, time or both.
STAMP INCLUDES
DATE & TIME, TIME, DATE

Auto Stamp gives you the option to turn it off or turning on before ID. The only option is to have it appear before the scanned transponder ID.
AUTO STAMP
OFF
ON BEFORE ID

Use Set Date & Time to set the stamp parameters. The unit will remember it if powered down or unplugged.

SET DATE & TIME. Press enter to execute and the following options will appear. Select by scrolling to selection and set by using the enter key:

SET YEAR
(Scroll for Selection)
SET MONTH
(Scroll for Selection)
SET DAY
(Scroll for Selection)
SET HOURS
(Scroll for Selection)
SET MINUTES
(Scroll for Selection)

Format is where you select the three different formats that the date can appear as:
DATE FORMAT
ISO, US, EU

11.3.8 Serial Inputs

The DAS-8001 has 2 serial inputs. The 2 inputs are the ports A and B. Port A and B should be set to match whatever device you are hooking up to the DAS-8001.

To make a change, press the setup key. Then use the left and right arrow key to select the port you will be changing. Use the down arrow to pick that port. You will then see the four parameters you can change. Use the left and rights to select your parameter and the down arrow to view the options. Press the enter key and the selection will be saved.

Serial A

Use the arrow keys to make selections BAUD RATE, PARITY, DATA SIZE, STOP BITS. The options are:

A: BAUD
38400, 19200, 9600, 4800, 2400, 1200
A: PARITY
NONE, EVEN, ODD
A: DATA SIZE
8 BITS, 7 BITS
A: STOP BITS
1 STOP BIT, 2 STOP BITS

Serial B

Use the arrow keys to make selections BAUD RATE, PARITY, DATA SIZE, STOP BITS. The options are:

B: BAUD
38400, 19200, 9600, 4800, 2400, 1200
B: PARITY
NONE, EVEN, ODD
B: DATA BITS
8 BITS, 7 BITS
B. STOP BITS
1 STOP BIT, 2 STOP BITS

11.3.9 Password Setup

This is where the setup menu can be password protected. Once set the user will require a password to enter the setup menu. This is a separate password from the advanced password.

You have a choice between Enable Password, Set Password

11.3.10 Enable Password

11.3.11 Enable Password

This will turn on or off the need for a password to enter the advanced menu.
Enable Passord
Enter To Excute

11.3.12 Setting the Password

The Set PW field is where you enter the password. Use the arrow key or an external keyboard to enter characters. Press enter to set.
Set Password:_____(Fill in the blank)

11.4 Advanced Menu

The advanced menu is only accessible by pressing the menu key and then scrolling to it. The Advanced Menu was designed to control features that are not commonly used and contains more specialized functions. The user should be careful about the use of some of these functions; they can damage transponders if used improperly.

Whereas the command and setup menu divide their functionality between a one-time action item and a persistent state, the advanced user menu contains both. The advanced user menu contains functions that can be very useful, such as the function that returns the unit to factory defaults.

The advanced menu is made up of the following submenus

11.4.1 Power Save

This is where the user can set the time the unit will automaticly turn off

You have a choice between 15, 30, 45 Minutes, 1, 1.5, 2 Hours
Enter to Excute

11.4.2 Factory Reset

A factory reset function was included to return the unit to factory default values. This function

must also be performed after any firmware update.

Factory Reset press enter
Enter To Excute
Up arrow to escape

11.4.3 Repair TXP

WARNING: The function will unlock and erase all data from the transponder and return the transponder back to the factory code of BMDS IPTT-300.Upon pressing enter, the unit will begin writing. See writing section for added details.

11.4.4 Calibrate Temp

This option is used for temperature calibration of the IPTT-300 temperature transponder. Note that this is done at the factory in very controlled environment. It is not recommended that the user attempt this.

There are two steps to the calibration procedure:Offset and Curve. Currently the standard BMDS IPTT-300s are factory calibrated using only the Offset. This provides full accuracy at the typical body temperature of 37 degrees C. If extended temperature range is required the Curve function can be used to provide high accuracies over temperature extremes. Both functions require that the transponder be placed in a highly accurate water bath that is set to exactly 37 degrees for the offset and than 42 degrees for the optional curve. The transponder is then written to and programmed through the bath wall one at a time.

You use the down arrows to enter and the left and right arrows to select between:

SET OFFSET @37C, SET CURVE @ 42C
ENTER TO EXECUTE

11.4.5 Password Advanced

This is where the advanced user menu can be password protected. This is a separate password from the setup password.

You have a choice between ENABLE PASSWORD, SET PASSWORD

11.4.6 Enable Password

This will turn on or off the need for a password to enter the advanced menu.
ENABLE PASSORD
ENTER TO EXCUTE

11.4.7 Setting the Password

The Set PW field is where you enter the password. Use the arrow key or an external keyboard to enter characters. Press enter to set.
SET PASSWORD:_____(FILL IN THE BLANK)

11.4.8 Keyboard Layout

This function allows the user to select from three different country keyboard layouts for the auxiliary external keyboard: US, German, and French.

KB LAYOUT
US, FRENCH, GERMAN

ENTER TO SAVE

11.5 Write TXP

Note to read only (IMI) transponder users: This Write function is only applicable when using BMDS programmable transponders IPT-300 and IPTT-300. This option is included so that the user can switch between read only and read/write transponders with a simple probe change.

If you are using an IPT-300 or IPTT-300 transponder and a 6005 or 7005 series smart probe, you can program up to 32 characters into the transponder by selecting the write function. The transponder should be programmed while in the needle assembly. In order to do this the needle assembly must be held in a very specific location relative to the probe.

To get best results, the probe should be about 15 to 30 cm away from any other object (including the DAS-8001). A probe stand that holds the probe in free air is best. If it is necessary to place the probe flat, only lay it down on a non metallic surface. Check below the surface to make sure there is no metal nearby. In most cases, it is best to start the writing function and then bring the transponder into range of the probe. Try to keep all other transponders at least 30 cm away from the probe

When you press the Write button, the DAS-8001 will take you through a series of prompts that will modify the way the write function will work. As you answer each item, the menu will progress.

The steps for writing are

APPEND
LOCK
AUTO WRITE
SEQUENTIAL
ENTER CODE
WRITE ANOTHER?

11.5.1 Append

This feature allows you to add code on to the end of any code already written into transponder by selecting yes. If you select no, the unit will simple erase and over write any current code. Note: Since new transponder have a generic code written to them during factory test, the user should always select no upon first time programming.

11.5.2 Lock

Transponder data can be locked into the transponder. When used it sets a flag in the transponder that tells all BMDS readers not to overwrite this data. It does nothing physical to the transponder, but is irreversible without reformatting the transponder back to factory code. Also, since it is only a digital flag, it can be “tricked” by starting to write to an unlocked transponder and then switching to a locked transponder. It is used only to prevent accidental overwrite.

11.5.3 Auto Write

The auto function will cause the DAS-8001 to automatically start programming another transponder after each successful write. A slight pause is introduced to allow the user to remove one transponder and introduce the next. If “no” is selected than the unit will prompt the user as to whether to write another transponder.

11.5.4 Sequential

If “yes” is selected the DAS-8001 will automatically increase the code by a count of one each time a transponder is successfully programmed. If “no” is selected the unit will continue to program the same code into each transponder. Note that this function will only count up to the allowed characters of the code format. For example if the code entered below were BMDS-001

the highest the unit will count to would be BMDS-999.

11.5.5 Enter Code

At this prompt the user enters the code they want written into the transponder. The up and down arrows are used to review the available characters and the right arrow is used to select and to move the next place. Holding down the up or down arrows will speed the scrolling. The left arrow can be used for corrections. After the complete code is entered the user must press the enter key to begin the writing process.

The unit will display the word `writing` on the first line and the code on the second line. At the same time a command will be sent to the probe to begin the writing process as indicted by a light on the probe. A series of short beeps may be heard during the writing process, followed by a longer beep indicating completion. The DAS-8001 will then display the word `confirmed` on the first line with the code that was programmed on the second.

11.5.6 Write Another

If the auto mode was not selected than the unit will prompt the user whether they would like to program another transponder. To exit the write function, use the right arrow to select “no”, than enter.

11.5.7 Writing Steps Review

`WRITE TXP`
`APPEND`
`YES, NO` (Select by pressing enter, moves to next item)

`LOCK`
`NONE, CODE, ALL` (Select by pressing enter, moves to next item)

`AUTO WRITE`
`YES, NO`
(Select by pressing enter, moves to next item)

`SEQUENTIAL`
`YES, NO`
(Select by pressing enter, moves to next item)

`ENTER CODE`
(Fill in blank) (Pressing enter when done, moves to next item)

`WRITE ANOTHER?`
`YES, NO`
(If No Sequential or writing interrupted)

Using an external keyboard greatly aids in the entering of the ID code. See the Keyboard Control Mode section for complete details

11.5.8 Writing Using a List

This function is simply a list of numbers stored on a memory card that you want to program. See memory card instructions. You create a txt file that is a single column list of IDs Make it neat and it best to end with a carriage return. Use ONLY CAPITALS! IDs can be anything you want and order and different sizes does not matter. After you create file, rename .txt to .xpf and save to memory card. The file looks like this:

XYZ-CBA-023
ABC-FED-067
MNO-JIH-014

Place in unit and press write button. Answer menu options regarding append and lock option and the unit will display that its using the file and will start programming the first ID in the list. If

you don't hit the auto selection the unit will program a number and then ask you if you want to do another. If you stop in the middle of the list, the unit will automatically create a file that lists the last number and pick up on the next item when programming is started again. You can view this file via the computer. So you can start a list and finish the next day. The only thing to be careful of is that if you use the auto mode, then when you stop you will skip a number because the unit already started trying to program it. A way around this is to add spacer or fake numbers every so often so that you have a place to stop without losing a real number. Once again that's only if you are in the auto mode. See memory cards section for added details on card types and formatting.

11.6 Free Memory

The **Memory Free** function is accessed by pressing the menu key and scrolling to the right until it appears. The unit will state the number of free data fields that are available.

11.7 Firmware

The **Firmware** function is access by pressing the menu key and scrolling to the right until it appears. If you have to call BMDS for any technical support for your DAS-8001 unit, they will want to know the version of the firmware (software) that is in the DAS-8001 unit. Pressing down and using the left and right arrows you have a choice of “Version “or “Upgrade”.

At the **VERSION** prompt the unit will display the version information. If you scroll to the right you will see the **UPGRADE** display. Here the DAS-8001 has the ability to upgrade its operating system or firmware. This is done by loading a new firmware file on to a USB memory stick and inserting it into the KeyB CTRL USB input port (not Port C or D). BMDS firmware files for the DAS-8001 end with a UPG suffix. The unit will provide the following menu flow when the upgrade function is selected

UPGRADE
ENTER TO EXECUTE

UPGRADE FROM USB
ENTER TO CONFIM?

A display will show progress of the upgrade and completion.

12 Memory Cards

There are two MMC SD memory card slots that can be use for: (1) Backing up and transferring collected data from internal memory. (2) For creating map files that can be used to transpose transponder code to a user ID. (3) Running scripts that activate different ports on the DAS-8001 with user prompts to guide the operator. (4) For providing a non sequenced list of ID codes for the unit to use during transponder programming. On the DAS-8001 these memory card slot are located on the left side of the display. A is on the top and B is below and indicated on the back label. All four file types can be stored on a single card. The file type is determined by the files suffix. A file name is followed by the file suffix:

".txt" is a data file
".map" is a map file
".scr" is a script file
".xpf" is a list file

12.1 Making Files

To use a card you must format it on a computer. A MMC or SD card reader or computer card slot is required. Once inserted into the computer card reader or slot, find the card under My Computer and high light it. A mouse RIGHT click will bring up a window. Select Format and make sure the option under format type is FAT-32. Once formatted, you can create four different file types using Notepad under accessories. Since the files are very simple it is recommended not to use more complex word processors. It very important to save the file first as a plain TEXT file with the suffix .txt This is first done for all four file types (data, map, script and list) After the file is created and saved than go in and manually change the suffix to either .map (for a map file) or .scr (for a script file) or .xpf (for list file) and resave. Be careful not to accidentally create a file with two suffixes.

Map and Data files can also be made directly on the DAS-8001. This is done under the Commands menu. After collecting data internally you can send data to a card. If the card is formatted, the DAS-8001 will go ahead and make a data file (.txt) using the date as a file name. It will make a new file each time this is done (though no more than once a minute). See section 13.3

A map file can be made in real time. This is done under the Command menu. The unit will first ask you to name your map file. If you are adding to a map file already on a card, simply use the same file name. Once the card is named, the unit will ask you the user code you would like to assign. It will then allow you to read a transponder while it automatically creates the cross reference map file.

The memory card slot is located on the left hand side of the DAS-8001. This is a spring loaded slot. Push the card in until to hear a click and the card is almost flush with the edge. To remove the card, push the card in and it will popped out about.

12.2 Type of Cards

The type of data card that can be used is MMC or Multi Media Card. Multi Media Card is an open standard memory card and is readily available through specialty stores, internet or directly through BMDS. Look for cards that are labeled MMC or SD MMC. You should restrict card size to 2 Giga Bytes. Make sure cards are unlocked.

12.3 Data Files

This is a file of the collected data. Any data file that is loaded from the unit's internal memory onto a card is automatically given a name based on the date and time. It will always create a new file unless you give it a file name using a script. The file is organized into fields and records based first on any script parameters, and then secondarily, on the DAS-8001 internal setup.

12.4 Map Files

This is a cross-reference file for transponders. It can be used with either IMI or IPTT transponders. When used the DAS-8001 will read a transponder and will display the cross-referenced number instead of the transponder code. The file looks like this:

ABC009/STUDY001
DEF008/STUDY002
HIG007/STUDY003

Where the first number is the actually code in the transponder and the second number is the code to be displayed. The file can be created using the DAS-8001 command menu or separately via a word processor.

12.5 Script Files

Script file is an easy to create file that allows the unit to configure itself to a particular setup and than follow a predetermined routine for collecting data. This file is created on a computer using any word processor.

12.6 List Files

List file is used to program transponder based on a list of IDs stored on the card. This file is created on a computer using a wood processor. See “writing” section for instructions.

12.7 File Rules

You can only store data to a card in real time if you use a script file.
The memory cards must be formatted on a computer as a FAT-32 file format
You can have files on different cards or all on the same card.
You cannot have more than one file type loaded.
You should only use an 8 character file name

13 Serial Communications

RS232 is a standard for serial data communications. Serial data communications is a method of transmitting information or data between two pieces of electronic equipment. There are several communication parameters that must be set up correctly on each side of the serial communications for any data to transfer correctly:

- Baud Rate
- Data Frame
- Handshake
- Connection

Each of the sections below describes communications setup between two units. The "units" mean the electronic equipment on both ends of the serial communications cable. It could mean a BMDS DAS unit connected to a computer, or perhaps a DAS unit connected to any other product that supports RS232 serial communications.

13.1 Baud Rate

This is the speed at which the data is transferred across the cable. The higher the number, the faster data is transferred.

It is very important that both units are operating at the same Baud Rate; otherwise they will not be able to communicate!

The available speeds on the DAS-8001 unit are:

- 1200
- 2400
- 4800
- 9600
- 19200
- 38400
-

13.2 Data Frame

The Data Frame describes the formatting or the frame of the transferred data. It is very important that both units are operating with the same Data Frame; otherwise they may not be able to communicate!

The Data Frame consists of three things in the following order:

- The number of data bits. This number is automatically set for you on the DAS-8001 depending on the parity type you select. See below.

- The number of stop bits. In serial data communications this number can be 1 or 2. However, the DAS-8001 unit will only transmit 1 stop bit.

- A letter or word designating the type of parity bits. The valid parity types on the DAS-8001 are: None, Even, Odd

In the DAS-8001 unit, when you select a parity bit of None, the number of data bits will be 8. If you select a parity bit of Odd or Even, the number of data bits will be 7. Therefore, all the valid combinations for the Data Frame in the DAS-8001 unit are (with the format: Data Bits, Stop Bits, and Parity):

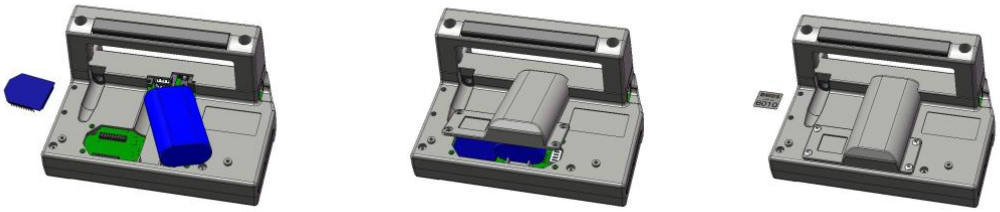
- 8, 1, NONE
- 7, 1, EVEN
- 7, 1, ODD

13.3 Handshake

The DAS-8001 is set up to use the software handshake protocol of XON/XOFF

14 Wireless

The DAS-8001's wireless ZigBee protocol option can be either utilized as an input or output port. When used as an input port, the unit is configured to receive transponder data from a handheld reader like the DAS-7006/7 (basically a wireless probe). In that mode the DAS-8001 is most likely stationery and connected to a computer. As an output port the unit is configured to send data to a wireless BMDS communication module. In that mode the DAS-8001 is most likely mobile and wirelessly transmitting data back to a computer. The wireless option can be added at a later date via a simply plug in module or integrated into an existing wireless reader.



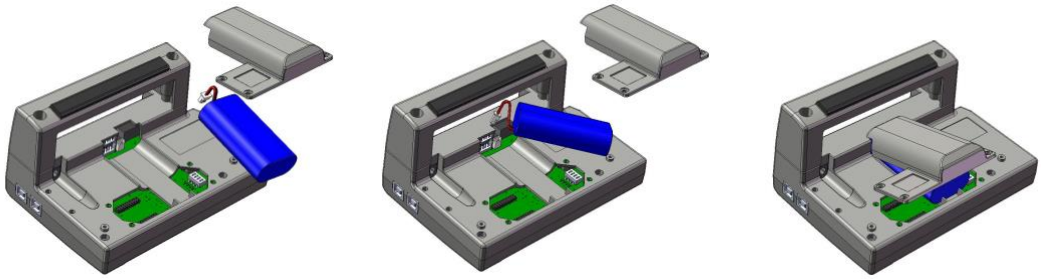
Input Mode

Output Mode

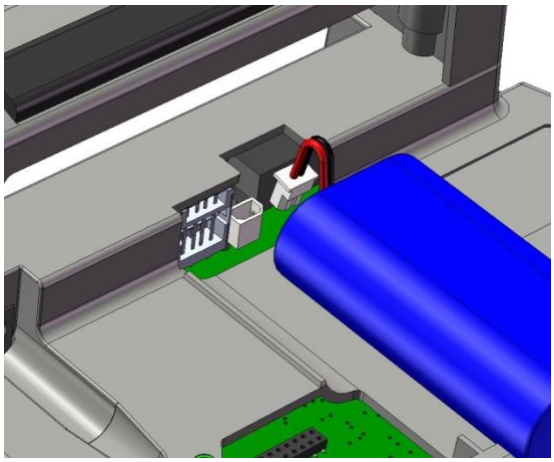
15 Battery

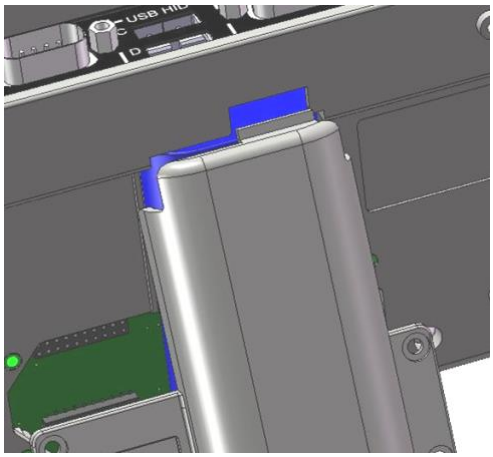
The DAS-8001 uses a high quality custom Lithium Ion battery pack rated at 1000mAh. It should be able to run the DAS-8001 for a full 8 Hours. The unit can be used while being charged, but will result in an increase time to charge. The DAS-8001 uses a microprocessor control charging system that actually monitors the temperature level of the battery during recharge (there is a small circuit built into the battery). If at some point it becomes necessary to replace this battery, the user must obtain a replacement battery directly from BMDS or it distributors.

The DAS-8001 has a small access hatch located at the unit back. There are four screws that free the hatch allowing it to lift up. Located along the side of the battery is a small white connector attaching the battery cable to the circuit board. Note the position of the battery and the orientation of the cable so that you can reposition the new battery correctly. It is best to use a small pair of needle nose pliers and disconnect the connector by pulling straight up and way from the board. Once disconnected, the battery will simply slide straight out. Reverse the procedure for installing the new battery. Once the new battery is in, the wire should be tucked in to avoid being pinched when the cover is replaced. When replacing the cover note how the upper lip must fit into a notch on the made enclosures.



WARNING: The DAS-8001 battery is very powerful and can cause a fire if its output leads are shorted. The battery should only be replaced by an experienced and trained technician.





16 Scripts

The DAS-8001 has the ability to run a mini program that allows the unit to configure itself to a particular setup and then follow a predetermined routine for collecting data. A script file is a text file that is divided into lines. When script is started, DAS-8001 will execute one line at the time starting from first line to the last. When last line of the script executed, unit will go back to first non-setup script line and continue to run script until it stopped. The script routine is an optional function which is not required to collect data and it does necessitate a computer to create the scripts. See Memory cards sections for card type requirements.

This feature can be as simple or complex as the user requires. Basically, a text file is created on a PC using a series of simple commands that is then loaded onto a memory card and inserted into the unit. When creating the text file for the script file, each line is delimited by the host definition of a text file, i.e. Windows is CR LF, Mac is CR, and Unix/Linux is LF. When ran, the script can provide automated parameter setup, provide titling of collected data, prompt the user as to what data to collect and what port to use, provide a user defined observation list to select from and provide the ability organize the data into user defined groupings. Scripts is also the perfect way to configure collected data for use in a spreadsheet application.

Please note, much can be learned by reviewing script examples at the end of this section.

16.1 Script Functions

Each function or line on a script consists of one or more fields separated by comma (,) and can fall within one of 4 categories:

- Setup line
- Data Source line
- Observation List
- Command

A Data Source line may have an optional prefix to modify the action of this line:

Will execute data line once and disregard it during next passes though the script;

***** Will end data line with a record delimiter instead of field delimiter.

Two other prefixes are used in script:

: Used to indicate and start a Setup line.

$ Used to indicate and start a Observation List.

16.1.1 Setup line

First field of Setup line has the colon character (:) as the first character of the line following by a keyword. The keyword determines the setup Item that is being set. Fields after that keyword will either further identify the setup Item or provide the setting. Each Setup line will change the value of the unit's internal setup for the duration of the script only. Once the script is stopped, the unit will then revert back to the stored internal setup. There is also a ":BUFFERED" setup line which causes the unit not to send or store any data until it receives the "FLUSH" command at the end of the script.

Example: **:SERIAL A,9600, NONE** sets serial port A to bout rate of 9600 with no parity.
Example: **:BUFFERED** sets unit to only transmit record after a user command.

16.1.2 Data Source line

A Data Source line will prompt the user via a title message to collect data from a particular source. The first field in the script file is the massage that is displayed on the screen. The second field is the data source or where the next data will be coming from. The unit will only allow data to come from the specified source. All other inputs other than the one specified will be blocked during the execution of this line. Field delimiter will be added after received data unless a star (*) end of record is prefix used.

Example: **READ ID,PROBE** prompts "READ ID:" on display and waits for data from Smart Probe Port. Field delimiter will be added after data received.

***READ ID,PROBE** prompts "READ ID:" on display and waits for data from Smart Probe Port. Record delimiter will be added after data received.

16.1.3 Observation List

Observation List provides user with the option to include with the collected data, an observation code (or phrase), by scrolling and selecting from a list of user defined words. The list of words must precede the line item calling to use the list. A List line has the dollar sign character ($) as the first character of the line. The field after the dollar sign is the user determined title of the list. The next entries in that line form the "list" of items that the user can select from. The total number of items is limited to 18 per list and can be made up of no more than 159 characters total. More then one list can exist in the script. The total number of items in the script is limited to 40 items and can be made up of no more than 255 characters total. Created List can be used as a source of data in the Data Source line. Observation Lists can be nested. Just use one of the items as name for new list, see Example 2.

Example1: **$COLORS,RED,BLUE,YELLOW** generate list "Status" with three items in it;
COLOR,LIST,COLORS DAS-8001 prompts "Color" on display and displays the first item "Red". The user can then use the arrow keys to scroll through Red,Blue and Yellow, which can then be selected into the data file by the enter key. If Red selected, field will appear as "Colors/Red". If titles are included then the field will appear as Color, Colors/Red (assuming a common as a title delimiter).

Example2: **$Colors,Red,Blue,Yellow** generate list "Status" with thee items in it.
$Red,Pale,Bright,Dark new list named as one of the items in existing list.
$Blue,Sky,Navy,Royal adds addition sublists for each main list items.
$Yellow,Yoke,Sun,Lemon

Color,LIST,Colors DAS-8001 prompts "Color:" on display and waits for user to make selection. If Red is selected, then sublist items will be display: Pale, Bright, Dark. If Pale is selected, "Colors/Red/Pale" will be collected. If Yellow selected, Yoke,Sun,Lemon will be the list to select from.

16.1.4 Command

As a final provision, the unit has two commands that can be put at the end. The "PAUSE" command cause the unit to wait for the enter key before continuing. The "FLUSH" commands works with the ":BUFFERED" setup line to allow data to be transmitted as a complete record as opposed to each Field line.

Example: **FLUSH**

16.2 Setup Line Parameters

Setup Lines in the script are used for setting up the unit. This is optional and really only needs to be used if you want to change the setting of the DAS unit from what you have set up via its menu driven setup. Setup line should be place in the beginning of the script and will be executed once at the start of the script. Secondary or modifying setups line (such as a title no, delimiter or store) can be added at the end of “do once” data source lines but should never be used after a repeating DATA SOURCE line. Each line starts with colon symbol, following by keyword and then with the sequence of each parameter separated by a comma. There are six keywords: DELIMITER, SERIAL A(B), TIMESTAMP, STORE, TITLE and BUFFERD.

16.2.1 Setting Field, Record and Title Delimiter

First field:
:DELIMITER

Second field: Type of delimiter. A field delimiter added after each section of data; a record delimiter added after a group of data. Title delimiter added after title and will have an effect if Send Out Title enabled.
FIELD
RECORD
TITLE

Third field: This is the delimiter that will be used. Note: CRLFCRLF will add CRLF twice, and available as a delimiter for RECORD only.
CRLF
COMMA
TAB
CR
NONE
CRLFCRLF

16.2.2 Setting a Serial Port

First field: Select which serial port to set up.
:SERIAL A or **:PORT A** (either is ok)
:SERIAL B or **:PORT B** (either is ok)
Second field: Baud Rate
38400
19200
9600
4800
2400
1200
Third field: Parity
NONE
ODD
EVEN

16.2.3 Selecting a Date Format

First field:
:TIMESTAMP
Second field: Date format
ISO
US
EU

16.2.4 Deciding Where to Store the Collected Data

First field:
:STORE

Second field: Location of data storage
CARD A
CARD B
With DAS-8001 it is possible to collect data on same card you running script off, separate memory card or/and store data internally (see 11.3.2 for setup). Same time DAS-8001 will output data (see Chapter 9) if desired.

Third field: Only if card is specified, the filename you want the data stored as.
<filename> (limit of 12 characters)
If a file with a name specified in the script already exists, the DAS-8001 will not overwrite existing file, it will add data to the file every time you run a script. This will avert data loss if same card used for each data collection session.

16.2.5 Send out Titles

First Field:
:TITLE

Second Field: If YES option selected, titles of Data Source lines will be recorded as a part of data collection. Note: size of recorded title is limited to 9 characters
YES
NO

16.2.6 Buffering a Record

Buffering a Record
First field:
:BUFFERED

This setup parameter will cause collected data not to be sent immediately out the serial port; rather it will store it until the **FLUSH** command is reached in the script. When the **FLUSH** command is reached, the data will be sent as a complete record.

16.3 Data Source Parameters

Two optional prefixes are available for Data Source line.
#
*****
If hash (#) sign is used as a prefix, Data Source line will be executed ONLY once. After first pass, every other time DAS-8001 executes script, lines with hash prefix will be ignored. This prefix is mainly used to create initial titling in data collection. Note: it is permitted to use # with PAUSE command. When star (*) sign is used as a prefix, data collected will end with data record delimiter. When DAS-8001 executes script line with * prefix, the collection of the designated source of data will result in closing of the data record and indication of such by an end of record delimiter. If same source of data used later in the script, collected data will have multiple end or record delimiters, even if * prefix is not used. Therefore, when using multiples of any single date source (with one identified as an end of record), it is strongly recommender to use the BLANK data source as the end of record (* prefix) instead. BLANK source will not collect any data but it will prevent mistakes in script writing (for more details see examples in this section. Both the # and * prefixes can be used at the same time “#*” or *#” in which case Data Source line will be executed once and yield record delimiter to collected data.

First Field: Type in this first field what you want the DAS-8001 to display on its display to prompt the user as to what type of data will be entered. This allows the user to customize the wording.

<Title prompt> This prompt will be used also as a date title if title out function is designated.

Second field: Select the source of the data you want the DAS-8001 to be collected from. TIMESTAMP makes DAS-8001 collect date and time from internal clock, and go to next line of script. SERIAL A(B) and PORT C(D) force DAS-8001 to pause and wait for data from specified input. As soon as expected data received, it is collected and unit goes to next line of the script. If MEMO used as a source of data, DAS-8001 will expect entry from keypad or optional keyboard followed by enter key. If LIST used as a source of data, third field with list name expected. LIST name will direct DAS-8001 to appropriate list of items. User can scroll though list options with up/down arrows and confirm selection with enter key. BLANK source of data will not collect any data. It is useful for better organization of the script files. COMMENT source of data must have third field with message to be collected. When PROBE used as source of data, DAS-8001 expects data from Smart Probe Port. With PROBE selection, optional special modifiers for probe are available.

TIMESTAMP
SERIAL A (PORT A)
SERIAL B (PORT B)
PORT C
PORT D
MEMO
LIST
BLANK
COMMENT
PROBE

16.3.1 Special modifiers for Probes

Third fields probe. (If not used than it will read ID only.)

TEMP If you use after probe the probe will read temperature only. Used on with the IPTT probe. To get both ID and Temperature, two date source lines must be used, one with just Probe as a source and one with Probe,Temp as a source.

NOMAP This modifier overrides the fact that there is a map file card loaded and displays the none-mapped ID. This can only be used when the Temp modifier is not used. This allows the user to display both the raw number and the mapped number as different field separated by field delimiters.

Fourth field must be used if the TEMP modifier is used.

C
F
CNOTX If you want temperature in C but no nomenclature.
FNOTX If you want temperature in F but no nomenclature.

16.4 Script Command

There are two script commands. These are functions that the DAS-8001 will do each time it reaches this line on a script.

PAUSE The unit will wait for an enter key before continuing on in the script

FLUSH Used with the **:BUFFERED** setup line to transmit or store by completed record instead of each line item

Execution of the script is done one line at a time. This means that the DAS-8001 will read a single line of the script, execute that line, and then move on to the next line. At the end of the script, the unit will then start over at the beginning of the script reading and executing the first line (but ignoring do once items), and so on until stopped by the user. The script is stopped by pushing the run/stop key

Do not put commas at the end of a script line.

Do not put a space after commas

When attempting to run a script with errors, the unit will display the type of error and which line it occurs on. Unit will not warn against storing to a missing card or transmitting to an open connection.

16.5 Examples of writing Scripts

Typically a script file would have the Setup lines at the beginning, followed by any Execute Once Data Source lines, followed by any regular Data Source lines. The last source line will have an end of record prefix. Each example bellow will show a process of writing scripts with comments and examples of output. The scripts will start out simple and then expanded functionality will be added in a step by step process. Once again, if you are copying examples directly, there should be no spaces before or after the commas (unless used for a forced a title indentation).

16.5.1 A First Example Script File

For this example certain data has to be collected for large group of subjects. Data includes ID code of the subject, temperature from IPTT transponder, weight, information from label (in barcode format) and size of tumor. For this endeavor certain peripheral data collection equipment is connected to DAS-8001. IPTT Smart probe reader (RSP-6005) is connected to smart probe connector, Laboratory scale connection to serial port A, barcode reader is connected to USB HID marked D and a caliper is connected to serial port B. If all internal settings of the DAS-8001 match the corresponding peripheral equipment requirements, the following simple script will accomplish the collection of data.

```
Scan ID,PROBE
Temperature,PROBE,TEMP,C
Scale,SERIAL A
Barcode,PORT D
Caliper,SERIAL B
```

As this script is running, DAS-8001 will display massage (title) for each expected data (Scan ID, Temperature, Scale, Barcode, Caliper, Scan ID…). Data will stream out or be stored (depends on user settings of DAS-8001 prior to running script) with field delimiter after each cluster of data. If internal field delimiter is set as TAB, collected data will look like this:

```
ABC1212-14      26.0C      12.9 H49-1212   .6405      ABC1212-117
     26.7C      16.7 H49-1212   .5710      ABC1212-029
```

To give data better organization, end of record can be added and implemented in stream of data by using * prefix. If user set record delimiter as CRLF in the DAS-8001 internal setup before running script, next script will result in data collection bellow:

```
Scan ID,PROBE
Temperature,PROBE,TEMP,C
Scale,SERIAL A
Barcode,PORT D
*Caliper,SERIAL B
```

```
ABC1212-14      26.0C      12.9 H49-1212        .6405
ABC1212-117     26.7C      16.7 H49-1212        .5710
ABC1212-029     26.6C      15.9 H49-1217-4      .7045
```

To insure use of certain field and record delimiters in collected data and not rely on DAS-8001 internal setting, the script writer can include two new setup lines as bellow:

```
:DELIMITER,FIELD,TAB
:DELIMITER,RECORD,CRLF
```

Also, this addition to the script will save operators time since they don't have to manually change the internal settings to run script and reset it back after data collection done. For exactly same reason, setup lines for serial port A and B can be added to insure that serial port parameters are set as needed (parity not set and data transmitted with 9600 baud rate). Now the script looks like this:

```
:DELIMITER,FIELD,TAB
:DELIMITER,RECORD,CRLF
:SERIAL A,9600,NONE
:SERIAL B,9600,NONE
Scan ID,PROBE
Temperature,PROBE,TEMP,C
Scale,SERIAL A
Barcode,PORT D
*Caliper,SERIAL B
```

Next, an additional line can be added to instruct the DAS-8001 to store collected data on a memory card into the card A slot. Saved file will be named “data_file.txt” as directed by the instruction.

```
:STORE,CARD A,data_file.txt
```

It is good practice to store data directly to the card to avoid user errors and confusion.
To continue with our example, the user can date and time to be added to each data record.
Additionally, to enhance data processing for spread sheet exportation, a comma can be designated as a field delimiter. Changes in script file will be as followed:

```
:STORE,CARD A,data_file.txt
:DELIMITER,FIELD,COMMA
:DELIMITER,RECORD,CRLF
:SERIAL A,9600,NONE
:SERIAL B,9600,NONE
Scan ID,PROBE
Temperature,PROBE,TEMP,C
Scale,SERIAL A
Barcode,PORT D
Caliper,SERIAL B
*Date,TIMESTAMP
```

Since timestamp added as last Data Source line, end of the record prefix (*) is used with timestamp source.
Output data file will change as follows (date and time in ISO standard):

```
ABC1212-14,26.0C,12.9,H49-1212,.6405,2012-12-18 15:44:31
ABC1212-117,26.7C,16.7,H49-1212,.5710,2012-12-18 15:52:28
ABC1212-029,26.6C,15.9,H49-1217-4,.7045,2012-12-18 15:44:31
```

The desired date and time format setup line can also be added to the script to designated US date and time format over ISO or EU formats. (As stated before, script setup lines will override internal settings.)

```
:TIMESTAMP,US
```

Also, for data file identification it would be helpful to have a header (or title) line with user customizable data. However the following line placed right after setup lines will have a confusing consequence.

```
#Study ID,MEMO
```

It will result in data file looks like this:

```
US4567-12,ABC1212-14,26.0C,12.9,H49-1212,.6405,12/21/12 15:44:31
ABC1212-117,26.7C,16.7,H49-1212,.5710,12/21/12 15:52:28
ABC1212-029,26.6C,15.9,H49-1217-4,.7045,12/21/12 15:44:31
```

The memo entered by user has become a part of the very first record (set of fields). To avoid this, it is possible to modify above data header source lane by using the same delimiter that is used for the end

of record by including * as a prefix. (It is make no difference if * placed before or after # prefix.) Latest script and collected data file are now:

```
:STORE,CARD A,data_file.txt
:DELIMITER,FIELD,COMMA
:DELIMITER,RECORD,CRLF
:SERIAL A,9600,NONE
:SERIAL B,9600,NONE
:TIMESTAMP,US
#*Study ID,MEMO
Scan ID,PROBE
Temperature,PROBE,TEMP,C
Scale,SERIAL A
Barcode,PORT D
Caliper,SERIAL B
*Date,TIMESTAMP
```

```
US4567-12
ABC1212-14,26.0C,12.9,H49-1212,.6405,12/21/12 15:44:31
ABC1212-117,26.7C,16.7,H49-1212,.5710,12/21/12 15:52:28
ABC1212-029,26.6C,15.9,H49-1217-4,.7045,12/21/12 15:44:31
```

To finish this example, user can add a personalized note to each subject with this note appearing before date and time. If line:

```
Note,MEMO
```

-added before *Date,TIMESTAMP line, resulting file will appear in the following undesirable format:

```
US4567-12
ABC1212-14,26.0C,12.9,H49-1212,.6405,Good
12/21/12 15:44:31
ABC1212-117,26.7C,16.7,H49-1212,.5710,Good,12/21/12 15:52:28
ABC1212-029,26.6C,15.9,H49-1217-4,.7045,Matted,12/21/12 15:44:31
```

First record (ID, temperature, weight, label, size, note and date) collected after Study ID is interrupted by end of record delimiter after note line. It happened because Data source “MEMO” is set to be an end of record in line “#*Study ID,MEMO” and next time DAS-8001 receives memo, it starts new record collection. In next line on script, TIMESTAMP marked to be an end of record and data file restores it order. THEREFORE to avoid unwanted end of record delimiter, it is recommended to use BLANK source of date as an end of record. Below is the corrected script and resulting data file sample:

```
:STORE,CARD A,data_file.txt
:DELIMITER,FIELD,COMMA
:DELIMITER,RECORD,CRLF
:SERIAL A,9600,NONE
:SERIAL B,9600,NONE
:TIMESTAMP,US
#Study ID,MEMO
#*End of header,BLANK
Scan ID,PROBE
Temperature,PROBE,TEMP,C
Scale,SERIAL A
Barcode,PORT D
Caliper,SERIAL B
Note,MEMO
*Date,TIMESTAMP
```

```
US4567-12,
ABC1212-14,26.0C,12.9,H49-1212,.6405,Good,12/21/12 15:44:31
ABC1212-117,26.7C,16.7,H49-1212,.5710,Good,12/21/12 15:52:28
ABC1212-029,26.6C,15.9,H49-1217-4,.7045,Matted,12/21/12 15:44:31
```

16.5.2 A Second Example Script file

In this example, user needs to collect ID, weight and information from barcode label (study) for each subject. Date, time and technicians initials should be included in each record. In the end, user wants to have data arranged certain way. Below is an example of script.

```
:STORE,CARD B,printable.txt
:DELIMITER,FIELD,CRLF
:DELIMITER,RECORD,CRLFCRLF
:SERIAL A,9600,NONE
:TIMESTAMP,US
Datetime,TIMESTAMP
Scan ID,PROBE
Weight,SERIAL A
Tech. initials,MEMO
*Study,Port C
```

This script will store collected data in the file name “printable.txt”, on memory card into the card B slot. Delimiter for data fields is CRLF and record delimiter CRLFCRLF will guarantee data file appear as follows:

```
12/19/12 12:50:37
15852-d-254
17.2
js
asd-90


12/19/12 12:51:44
15852-d-107
17.4
js
asd-90


12/19/12 12:52:08
15852-d-122
14.9
js
Rfd-14/2011
```

For better data presentation the user wants to add titles in front of collected data. Setup lines:

```
:DELIMITER,TITLE,TAB
:TITLE,YES
```

-will configure DAS-8001 to include titles separated by TAB delimiter from data. Updated script will result in following data file:

```
Datetime  12/19/12 12:50:37
Scan ID   15852-d-254
Weight    17.2
```

```
Tech. ini js
Study     asd-90


Datetime  12/19/12 12:51:44
Scan ID   15852-d-107
Weight    17.4
Tech. ini js
Study     asd-90


Datetime  12/19/12 12:52:08
Scan ID   15852-d-122
Weight    14.9
Tech. ini js
Study     Rfd-14/2011
```

Note, only nine characters of Data Source line title will be collected as data title. Long title “Tech. initials” appears as “Tech. ini”. Also, titles shorter then 8 characters are make data appear not in line with the rest of the data. Knowing these, titles can be revised and corrected as follows:

```
:STORE,CARD B,printable.txt
:DELIMITER,FIELD,CRLF
:DELIMITER,RECORD,CRLFCRLF
:DELIMITER,TITLE,TAB
:SERIAL A,9600,NONE
:TIMESTAMP,US
:TITLE,YES
Datetime:,TIMESTAMP
AnimalID:,PROBE
Weight :,SERIAL A
Taged by:,MEMO
*Study : ,Port C
```

Note, title “Study : “ has two extra spaces to make it 8 character long. Below is a sample of the data file collected with modified script.

```
Datetime: 12/19/12 12:50:37
AnimalID: 15852-d-254
Weight :  17.2
Taged by: js
Study :   asd-90


Datetime: 12/19/12 12:51:44
AnimalID: 15852-d-107
Weight :  17.4
Taged by: js
Study :   asd-90


Datetime: 12/19/12 12:52:08
AnimalID: 15852-d-122
Weight :  14.9
Taged by: js
Study :   Rfd-14/2011
```

Next five additional lines to the script will sent a massages on DAS-8001 display and wait for enter button to continue. Massages will appear only once in the beginning of the script. This massages (comments) will not become a part of “printable.txt” file, because lines are placed before “:STORE” line. Massages like these can give user a reminder or warning before starting data collection.

```
#Check,COMMENT,Check! Card B
#Check,COMMENT,should be installed!
#PAUSE
#Check,COMMENT,Set scale to GRAMS
#PAUSE
:STORE,CARD B,printable.txt
:DELIMITER,FIELD,CRLF
:DELIMITER,RECORD,CRLFCRLF
:DELIMITER,TITLE,TAB
:SERIAL A,9600,NONE
:TIMESTAMP,US
:TITLE,YES
Datetime:,TIMESTAMP
AnimalID:,PROBE
Weight :,SERIAL A
Taged by:,MEMO
*Study : ,Port C
```

In this example display will show:

Check! Card B
should be installed!
ENTER TO CONTINUE

-followed by:

Set scale to GRAMS
ENTER TO CONTINUE

If script customized for one user there are no need to enter same initials every record cycle. Script below is written for user with initials JS with employee number 3489.

```
#Check,COMMENT,Check! Card B
#Check,COMMENT,should be installed!
#PAUSE
#Check,COMMENT,Set scale to GRAMS
#PAUSE
:STORE,CARD B,printable.txt
:DELIMITER,FIELD,CRLF
:DELIMITER,RECORD,CRLFCRLF
:DELIMITER,TITLE,TAB
:SERIAL A,9600,NONE
:TIMESTAMP,US
:TITLE,YES
Datetime:,TIMESTAMP
AnimalID:,PROBE
Weight :,SERIAL A
Taged by:,COMMENT,J.S.(#3489)
*Study : ,Port C
```

Final data file appears as:

```
Datetime: 12/19/12 12:50:37
AnimalID: 15852-d-254
Weight :  17.2
Taged by: J.S.(#3489)
```

```
Study :   asd-90


Datetime: 12/19/12 12:51:44
AnimalID: 15852-d-107
Weight :  17.4
Taged by: J.S.(#3489)
Study :   asd-90


Datetime: 12/19/12 12:52:08
AnimalID: 15852-d-122
Weight :  14.9
Taged by: J.S.(#3489)
Study :   Rfd-14/2011
```

16.5.3 A Third Example Script File

In this example collected data presented in a table. Script starts by setting place and file name for collected data and setting (insuring) parameters for ports A and B. Next lines are for creating titles on a record made up of four title fields.

```
:STORE,CARD A,Daily_data.txt
:PORT A,9600,NONE
:PORT B,9600,NONE
:DELIMITER,FIELD,CRLF
:DELIMITER,RECORD,CRLFCRLF
:DELIMITER,TITLE,TAB
:TITLE,YES
#,COMMENT,Report prepared by LAB Inc.
#,COMMENT,for Dr. Smith
#Tech.  ,MEMO
#*Date:  ,TIMESTAMP
```

Delimiters specify that next data field start at new line and record ends with double CRLF, titles send out with TAB delimiter. This script makes data file as below:

```
     Report prepared by LAB Inc.
     for Dr. Smith
Tech.     John N.
Date:     2012-12-20 13:02:49
```

Note two “COMMENT” lines starts with blank title fields. Even if blank titles are sent out they followed by delimiter, TAB in this case. This is why two lines in “Daily_data.txt” looks indented. Next lines of script generate a record that appears as titling line for future columns of data.

```
:TITLE,NO
:DELIMITER,FIELD,TAB
#Column,COMMENT,Animal ID
#Column,COMMENT,Weight
#Column,COMMENT,TumorL
#Column,COMMENT,TumorW
#Column,COMMENT,Obs. code
#*Column,COMMENT,Note
```

Note, from this point of the script, DAS-8001 stops sending titles out and uses TAB as field delimiter. Collected data file looks as below:

```
     Report prepared by LAB Inc.
```

```
     for Dr. Smith
Tech.      John N.
Date:      2012-12-20 13:02:49

Animal ID Weight    TumorL    TumorW    Obs. code Note
```

Next lines of script are responsible for data collection. In this example, record delimiter changed form CRLFCRLF to CRLF to avoid empty line in data file. Modified script and sample data file are:

```
:STORE,CARD A,Daily_data.txt
:PORT A,9600,NONE
:PORT B,9600,NONE
:DELIMITER,FIELD,CRLF
:DELIMITER,RECORD,CRLFCRLF
:DELIMITER,TITLE,TAB
:TITLE,YES
#,COMMENT,Report prepared by LAB Inc.
#,COMMENT,for Dr. Smith
#Tech.  ,MEMO
#*Date:  ,TIMESTAMP
:TITLE,NO
:DELIMITER,FIELD,TAB
#Column,COMMENT,Animal ID
#Column,COMMENT,Weight
#Column,COMMENT,TumorL
#Column,COMMENT,TumorW
#Column,COMMENT,Obs. code
#*Column,COMMENT,Note
:DELIMITER,RECORD,CRLF
Animal ID,PROBE
Body weight,PORT A
Tumor Length,PORT B
Tumor Width,PORT B
Animal observed,MEMO
Any additional OBS?,MEMO
*Record ends,BLANK
```

```
     Report prepared by LAB Inc.
     for Dr. Smith
Tech.      John N.
Date:      2012-12-20 13:02:49

Animal ID Weight    TumorL    TumorW    Obs. code Note

ABC5245-14      21.2 .1070      .1050      NORMAL
ABC5245-21      16.5 .1200      .1210      FW    code12
ABC5245-68      19.0 .2105      .1520      NORMAL
```

Observation codes in this example are set of predefined words and abbreviations. Script can be improved by providing user an option to choose code from list of selections instead of typing it in. Following three lines will replace “Animal observation,MEMO” line.

```
$NORMAL,YES,NO
$NO,Y,C,FW,N,D,A,S
Animal obs.?,LIST,NORMAL
```

In first line “NORMAL” list has two choices “YES” and “NO”. In second line choice “NO” starts new list of choices with seven options in it. In third line list “NORMAL” used as a source of data. Unit executes Observation List line (with prefix $) by coping name of the list and selections in to internal memory. When list with recognized name used as data source, DAS-8001 using selections associated with list name from the memory. User’s selection is compared to other known lists names and if list with the same name found DAS-8001 presents user with farther selections from other list. In our example, as unit rich “Animal obs.?,LIST,NORMAL” line of the script, it displays:

Animal obs.?:NORMAL/YES

-YES is flashing. User may confirm selection by enter or right arrow key, or scroll through the selections with up and down arrow keys. In our example if arrow up pressed, flashing YES replaced with flashing NO. If user made selection (enter key) display will appear as:

Animal obs.?:NORMAL/NO/Y

-Y is flashing. The user can scroll through and select from new list of selections.
Final script and sample data file are presented below:

```
:STORE,CARD A,Daily_data.txt
:PORT A,9600,NONE
:PORT B,9600,NONE
:DELIMITER,FIELD,CRLF
:DELIMITER,RECORD,CRLFCRLF
:DELIMITER,TITLE,TAB
:TITLE,YES
#,COMMENT,Report prepared by LAB Inc.
#,COMMENT,for Dr. Smith
#Tech.  ,MEMO
#*Date:  ,TIMESTAMP
:TITLE,NO
:DELIMITER,FIELD,TAB
#Column,COMMENT,Animal ID
#Column,COMMENT,Weight
#Column,COMMENT,TumorL
#Column,COMMENT,TumorW
#Column,COMMENT,Obs. code
#*Column,COMMENT,Note
:DELIMITER,RECORD,CRLF
Animal ID,PROBE
Body weight,PORT A
Tumor Length,PORT B
Tumor Width,PORT B
$NORMAL,YES,NO
$NO,Y,C,FW,N,D,A,S
Animal obs.?,LIST,NORMAL
*Any additional OBS?,MEMO
```

```
     Report prepared by LAB Inc.
     for Dr. Smith
Tech.      John N.
Date:      2012-12-20 13:02:49

Animal ID Weight    TumorL    TumorW    Obs. code Note

ABC5245-14     21.2 .1070     .1050     NORMAL/YES
```

```
ABC5245-21      16.5 .1200      .1210      NORMAL/NO/FW    code12
ABC5245-68      19.0 .2105      .1520      NORMAL/YES
```

16.5.4 A Fourth Example Script File

This example is demonstrating the use of :BUFFERED setup parameter and FLUSH command. Below is script and sample output of Inventory.txt script file.

```
:STORE,CARD A,Inventory.txt
:PORT B,9600,NONE
:DELIMITER,FIELD,TAB
:DELIMITER,RECORD,CRLF
:BUFFERED
Animal ID,PROBE
PAUSE
Temperature,PROBE,TEMP,F
Weight,PORT B
*Cage code,PORT C
FLUSH
```

```
CBA037-158      85.2F      14.2 CAGE12-56-48
CBA032-012      83.8F      14.7 CAGE12-56-48
CBA032-007      84.7F      13.4 CAGE12-56-27
```

As user starts the script, the DAS-8001 prompts to scan an animal for ID. After ID scanned unit displays ID and pauses for user's conformation. If animal with displayed ID is desired and correct, user may continue to collect data by pressing enter key. The unit is prompts for temperature, weight and cage code. Only after cage code received, FLUSH command necessitates the DAS-8001 to send entire record in to memory card. Note, if work of this script interrupted before FLUSH command, data collected since last FLUSH will not become a part of the inventory.txt file it will be lost. If user chooses to scan different animal after reviewing scanned ID (before enter key pressed) an up arrow key should be used. As a result, user will be prompted to collect Animal ID and previously scanned ID is disregarded. In this example the combination of BUFFERED setup parameter, FLUSH and PAUSE command allows user to collect data for "desired" animals only, without creating unwanted additional records.

The above sample script is simple, but the buffer feature can be added to any of the previous more complex scripts by simply adding the BUFFERED parameter to the setup and the FLUSH command to last line of the script.

MENU TREE

The following is a complete menu tree for the DAS-8001. Right indentation implies deeper into the menu.

- WRITE TXP KEY
  - "SHORT CUT TO WRITING SUBMENU"
- COMND (COMMANDS) KEY
  - "SHORT CUT TO COMMAND SUBMENU"
- RUN/STOP KEY
  - "STARTS OR ENDS A SCRIPT"
- MENU KEY
  - CONTROL MODES
    - NORMAL
    - BYPASS
    - KEYBOARD CONTROL
    - CODE SWITCH
  - COMMANDS
    - DELETE LAST ENTRY
    - SEND STORED DATA
      - SERIAL/USB OUT
      - KEYBOARD OUT
      - CARD A
      - CARD B
    - CLEAR FILE
      - INTERNAL DATA
      - PROBE MAP FILE
      - CARD MAP FILE
    - CREATE MAP
      - MAP FILE NAME:_____
      - ID:_____
      - SEQUENTIAL
        - AUTO INCREMENT BY 1
        - AUTO INCREMENT BY 2
        - SAME ID (GROUP)
    - SEND MAP TO
      - SEND MAP TO PC
      - SEND MAP TO PROBE
    - SET PROBE TEMP
      - NONE
      - C
      - F
      - C NO TX
      - F NO TX
  - SETUP
    - FRONT PANEL
      - SCAN KEY
        - SCAN KEY AUTO
        - SCAN MOMENTERY
      - P1 KEY FUNCTION___
        - TIMESTAMP
        - MEMO
        - RUN/STOP
        - SCAN
        - BLANK
        - NONE
      - P2 KEY FUNCTION___
        - NONE

TIMESTAMP
MEMO
RUN/STOP
SCAN
BLANK
*KEY FUNCTION
WRITE TXP TEMPLATE
TEMPLATE:_____
STORE INTERNAL
YES
NO
DATA OUPUTS
YES
NO
WIRELESS
OFF / NOT INSTALLED
WIRELESS DATA OUT
WIRELESS PROBE IN
DATA FORMAT
END OF RECORD
NONE
PROBE ID
TEMPERATURE
PORT A
PORT B
PORT C
PORT D
MEMO
TIMESTAMP
BLANK
FIELD DELIMITER
TAB
CRLF
COMMA
NONE
CR
LF
RECORD DELIMITER
CRLF
COMMA
CRLF CRLF
NONE
CR
LF
TAB
DATA ADDITIONS
UNIT ID
SEND UNIT ID
NO
YES
EDIT UNIT ID
UNIT ID:_____
FIELD TITLES
SEND TITLES
NO
YES
TITLE DELIMITER
TAB
CRLF
COMMA

- NONE
- CR
- LF

EDIT TITLES
- PROBE ID
- TEMPERATURE
- TIMESTAMP
- MEMO
- PORT A (SERIAL)
- PORT B (SERIAL)
- PORT C (USB HID)
- PORT D (USB HID)
- UNIT ID
- SCRIPT LIST
- BLANK

FIELD MARKERS
- PROBE ID
  - SEND PREFIX?
    - NO
    - YES
  - SEND SUFFIX?
    - NO
    - YES
  - EDIT PREFFIX
    - PREFFIX:_____
  - EDIT SUFFEX
    - SUFFEX:_____
  - TEMPERATURE
    - “REPEAT OF ABOVE”
  - TIMESTAMP
    - “REPEAT OF ABOVE”
  - LIST
    - “REPEAT OF ABOVE”
  - MEMO
    - “REPEAT OF ABOVE”
  - PORT A (SERIAL)
    - “REPEAT OF ABOVE”
  - PORT B (SERIAL)
    - “REPEAT OF ABOVE”
  - PORT C (USB HID)
    - “REPEAT OF ABOVE”
  - PORT D (USB HID)
    - “REPEAT OF ABOVE”
  - TITLE
    - “REPEAT OF ABOVE”
  - UNIT ID
    - “REPEAT OF ABOVE”

TIMESTAMP
- STAMP INCLUDES
  - DATE & TIME
  - TIME
  - DATE
- AUTO STAMP
  - ON BEFORE ID
  - OFF
- SET DATE & TIME
  - YEAR
  - MONTH
  - DAY
  - HOUR

- MINUTE
- SAVE
- TIMESTAMP FORMAT
  - US
  - EU
  - ISO
- SERIAL INPUTS
  - PORT A
    - BAUD RATE
    - PARITY
    - DATA SIZE
    - STOP BITS
  - PORT B
  - BAUD RATE
  - PARITY
  - DATA SIZE
  - STOP BITS
- PASSWORD SETUP
  - SET PASSWORD
  - ENABLE PASSWORD
    - NO
    - YES

ADVANCED

- POWER SAVE
  - 15 MINUTES
  - 30 MINUTES
  - 45 MINUTES
  - 1 HOUR
  - 1.5 HOURS
  - 2 HOURS
- FACTORY RESET
  - ENTER TO CONFIRM
- REPAIR TXP
  - ENTER TO EXECUTE
- CALIBRATE TEMP
  - SET OFFSET @37C
    - AUTO CALIBRATE
      - YES
      - NO
  - SET CURVE @42C
    - AUTO CALIBRATE
      - YES
      - NO
- PASSWORD ADVANCED
  - SET PASSWORD
  - ENABLE PASSWORD
    - NO
    - YES
- KEYBOARD LAYOUT
  - US
  - FRENCH
  - GERMAN

WRITE TXP

- APPEND
  - NO
  - YES
- LOCK
  - NONE
  - CODE
  - ALL

- **AUTO WRITE**
  - **YES**
  - **NO**
- **SEQUENTIAL**
  - **NO (GROUP)**
  - **INCREMENT BY 1**
  - **INCREMENT BY 2**
- **ENTER CODE**

FREE MEMORY

- **(NUMBER) FIELDS**

FIRMWARE

- **VERSION**
- **UPGRADE**
  - **ENTER TO CONFIRM**

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