TurboTag RFID MONITORING SOLUTIONS

Specialty Materials

User Guide for the TagMateQC™ Handheld Reader/Starter

Setup and Operating Instructions – Version 1.3

Table of Contents

FCC ID: UPZ-TMX

These devices comply with Part 15 of the FCC Rules. Operation is subject to the following two rules:

1) This device may not cause harmful interference, and
2) This device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Any changes or modifications to these devices not expressly authorized by Sealed Air Corporation may void the user's authorization to operate the device.

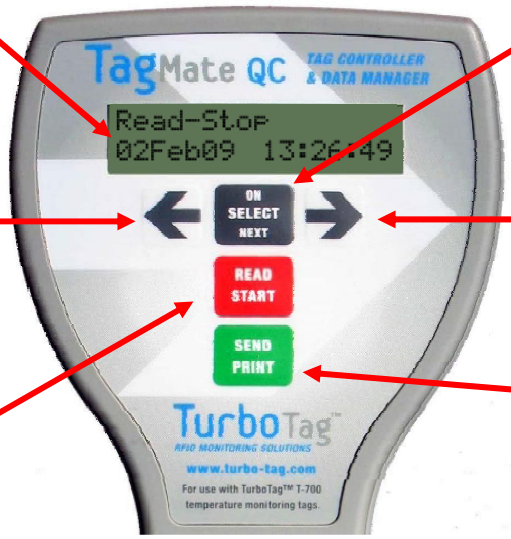
Sealed Air

Overview

TagMateQC™ is a comprehensive tool for starting, reading and configuring TurboTag™ T-700 tags. Various Modes of operation are controlled by DIP switches inside the device (see section entitled "Operating Modes of the TagMateQC™"). The mode of operation will always be displayed on the Home Screen (shown in the image below, which in this case is "Read-Stop").

This is the Home Screen. It is immediately displayed after starting the TagMateQC™. It will display the Mode selected; options are Start-Only, Start-Config, Read-Only and Read-Stop.

SELECT button turns TagMateQC™ on. It also allows scrolling through different functions.



LEFT

RIGHT

READ START button activates an RFID read or write sequence for a T-700 Tag placed directly under the TagMateQC™ (opposite the display) within a distance of less than three inches.

SEND button sends the data from TurboTag™ readings to a printer or a computer – data is beamed from the front of the TagMateQC™

The SELECT button functions to turn the TagMateQC™ on and to navigate through the various setup functions and menus. All reading and starting actions are triggered by pressing the READ START red button.

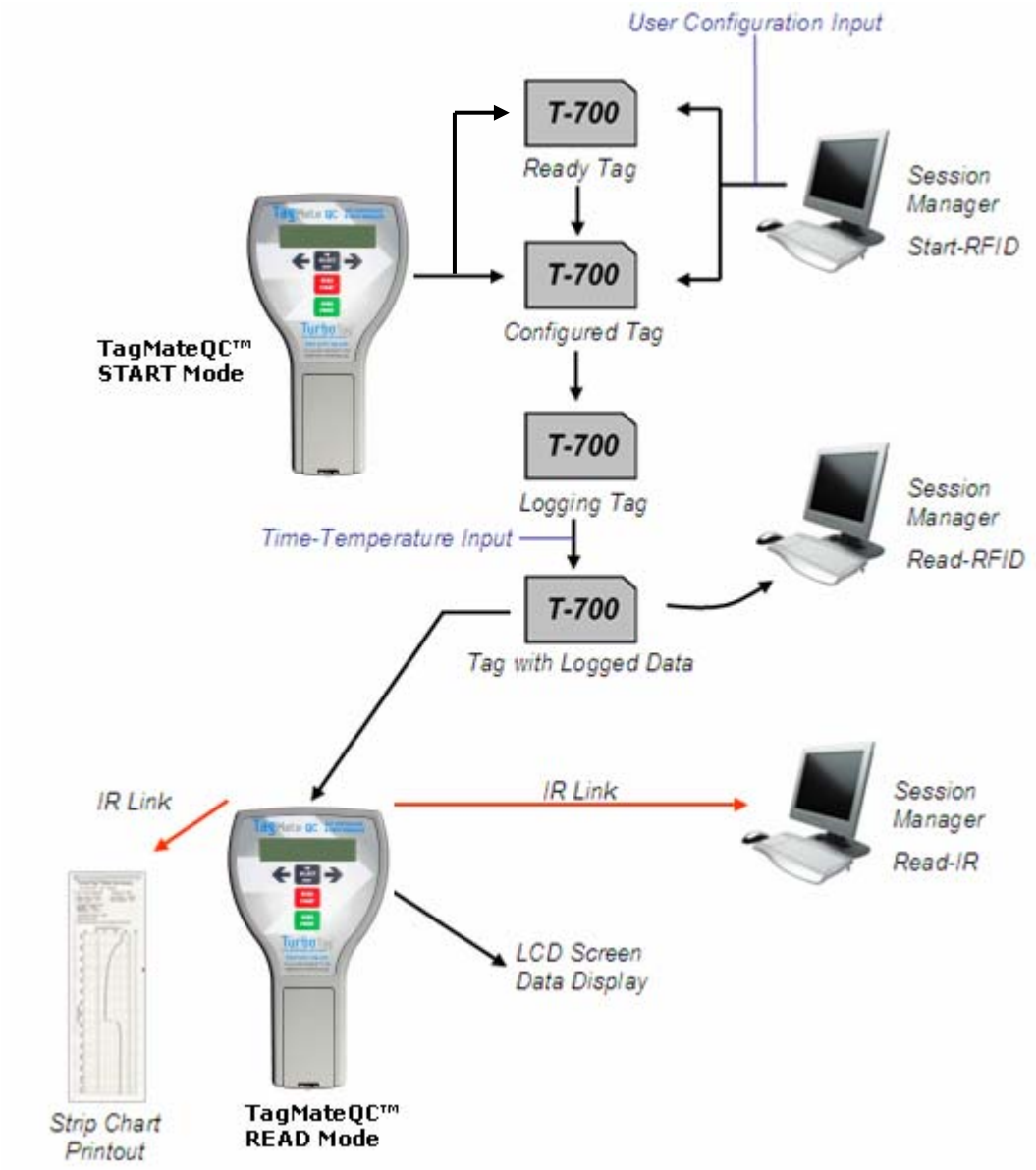
The sequence of screens that are displayed is summarized in Appendix A. Please refer to that section for an understanding of how to set usage modes and how to use the various menus.

Using TagMateQC™ in its SETUP, START, READ, STATS, PRINT and SEND operations is described in different chapters in this user guide. The best way to start is to select a particular operational activity and then read the appropriate section. For example, if you want to start just reading tags, then go to that section and study the operational steps. You may wish to first set the Mode of operation of the TagMateQC™ by making appropriate DIP switch settings (see section entitled "Operating Modes of the TagMateQC™ (DIP switch settings)"). The modes that are settable by DIP switches are: Start-Only, Start-Config, Read-Only and Read-Stop.

The DIP switch is inside the battery compartment of the TagMateQC™.

Battery compartment top

The TagMateQC™ Reader and TagMateQC™ Starter function alongside other TurboTag™ products as shown in the information flow diagram below. These handheld devices combine to permit real-time processing of tags in the absence of a computer system if desired.



TagMateQC™ can control the entire process from tag initiation to final reading and data storage. Complete software independence can be achieved by using (1) a TagMateQC™ at START by employing Start-Config Mode, (2) a TagMateQC™ at READ (Read-Stop or Read-Only) to capture tag data and display alarm and other summary data. and (3) an MP-1 Portable Printer to view full data record and create a paper record for filing or other archival purposes.

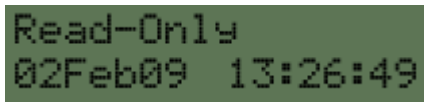
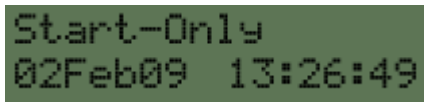
Ask your sales representative to explain how this system can work for your operation.

TagMateQC™ Basic User Guide: SETUP

The TagMateQC™ Reader allows users to read, start and configure TurboTag™ T-700 Tags anywhere. It is a battery powered RFID reader specifically designed to obtain data from up to 99 tags (one at a time). It will store the data and display calculated alarm results. Using an embedded IR port, it can also send a special print file to a portable printer (TurboTag™ MP-1), or transfer complete tag data sets over an IR link to a computer running TurboTag™ *Session Manager*™ Software. A USB-IrDA adapter can be used with the TagMateQC™, along with the *Session Manager*™ Software, for this purpose.

When the TagMateQC™ is first powered up, you will see the Startup Screen (at right) →

On pressing the SELECT button, you will see one of the four displays here; these represent different Modes of TagMateQC™ function. The actual Mode displayed is controlled by DIP switch settings inside the device (see "Operating Modes" section).

Press	Screen Display	What it Means
		Read-Only Mode just displays data at the time of reading; tag is not stopped. Carryover function accessible from this mode.
Settable Option Mode		Read-Stop Mode captures data from a tag and then stops the tag. Carryover function accessible from this mode.
Settable Option Mode		Start-Only Mode simply starts (or restarts) the tag and imparts a "real time" starting time base into the tag memory.
Settable Option Mode		Start-Config writes a new set of configuration parameters and Info field to the tag, and starts it.
		The next press of the SELECT button gives the Main Menu. SETUP DATA and STATS are selectable with ← → presses
		If SETUP is selected by a combination of pressing ← and then the SELECT button, the main SETUP Screen is displayed.

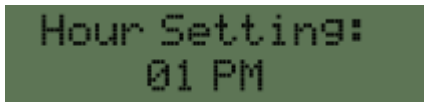
Setting TIME Parameters

The TIME selection sets the time base for the TagMateQC™ when used in either of the two START Modes (Start-Only and Start-Config). You can enter the TIME selection sequence by pressing the ← → buttons to highlight TIME and then pressing SELECT.

An alternative way to set time parameters (excluding time zone and Daylight Saving Time) is to use a specially configured TagMate™ Clock Setup Tag created in *Session*

Manager™ software. Refer to software instructions for creating such a tag. The IR data synchronization process with *Session Manager*™ software (see section on SEND process) includes an option to update the handheld. If this option is used, in addition to updating the startup screen, the source computer's time zone and Daylight Saving Time settings will update the TagMateQC™ settings.

Here is a summary of the clock setup screens. Changes to the values displayed on all of these screens can be made by pressing the RIGHT and LEFT (← →) arrow buttons

Press	Screen Display	Change Settings
		Select the time zone that the TagMateQC™ is being used in…consult GMT tables to find out your zone.
		Turns Daylight Saving Time ON or OFF. Use the RIGHT and LEFT arrows to change ON→OFF and OFF→ON.
		Reset time of day hours. The ← → buttons scroll through a complete 24 hour clock sequence in the AM-PM format.
		Reset the time of day minutes. The ← → buttons allow you to move through all minutes from 0 to 60 minutes.
		Reset the year. The ← → buttons allow you to move year to year in 4 digit year format.
		Reset the month. The ← → buttons allow you to move from month to month in Jan-Feb-Mar…*etc*. format (three letters).
		Reset the day of the month. The ← → buttons allow you to move from 1 through 31 as the numeric day of the month. TagMateQC™ will not permit an impossible date, such as Feb 30.

These screens cycle with successive pressing of the START button. When you get to day of the month, pressing the SELECT button returns you to the top of the sequence: Time Zone.

Setting MODE Parameters

The MODE selection sets various options for the TagMateQC™. You can enter the MODE selection sequence from the SETUP menu by pressing the ← → buttons to highlight MODE and then pressing SELECT.

Continue to press the SELECT button to scroll through the MODE screens. At each screen, you will be able to change the settings by pressing the ← → buttons. The screens are shown below in the order in which they appear:

Press	Screen Display	Change Settings
	Temperature In: DEG C	Allows change from °C to °F and from °F to °C. Use the ← → arrows to change
	Temperature Mode Tavg	Allows change from simple mean temperature (Tavg) to MKT (Mean Kinetic Temperature).
	Monitor Shelf Life? If Logging	Shelf Life Monitoring Status: Use the RIGHT and LEFT arrows to change Never→Always→If Logging
	Minimum Shelf LIfe (d): 0.0	Shelf Life Monitoring alarm level. Up to 5 days, 0.2 day increments are permitted. After 5 days, whole day increments are permitted.
	Sound Enable: ON	Turns the beep signal ON or OFF. Use the ← → arrows to change ON→OFF and OFF→ON.
	Alarm Flash: ON	Controls display flash. Use the ← → arrows to change ON→OFF and OFF→ON.

Note that the sequence is a loop. To revisit a setting, just continue to press the SELECT button until the loop returns to the desired position.

Viewing CONFIG Parameters

Configuration parameters are obtained by reading a specially prepared TagMate™ Configuration Tag created in *Session Manager*™ software. Parameters will be transferred to the memory of TagMateQC™ when this template tag is read in Start-Config Mode. This process is described in the section on the START function.

The CONFIG settings screens are accessed as the third sub-menu option from the SETUP menu. The list of screens is given in the table below. You can scroll through this parameter list, but you cannot edit the viewed parameters (you must use a TagMate™ Configuration Tag for that putpose). The display is a “loop” similar to other selections.

Press	Screen Display	Comment
		The Info field contains a 16 alphanumeric character message that serves to identify the recording session. An example is shown here.
		Log interval controls the time spacing of temperature observations. Shorter spacing yields shorter overall monitoring time and longer spacing, greater overall monitoring time.
		Log Delay is a control parameter for the starting time of recording. In this case, the delay is for 1 hour..
		Tmin is a minimum temperature alarm setting. Alarms are triggered by Time-Under-Temperature based on this temperature value. Example shown is 2.0°C.
		Tstd is a standard setting for shelf life monitoring OR an alarm setting for an MKT or arithmetic mean comparing observed mean to this setting. Example is 14.0°C.
		Tmin is an upper temperature alarm setting. Alarms are triggered by Time-Under-Temperature based on this temperature value (example is 18.0°C).
		Tmax2 is the maximum temperature alarm. It is an absolute alarm setting for the highest temperature recorded in the session. Numbers are expressed in degrees over Tmax.
		This is the alarm setting for Time-Over-Temperature for Tmax. Value shown in this example is 7.5 hours.
		This is the alarm setting for Time-Under-Temperature for Tmin. Value shown in this example is zero hours.
		This setting starts the Shelf Life calculation and represents initial Shelf Life at the Tstd setting. *Ignore if Shelf Life is not used.*
		This is the temperature sensitivity setting expressed in Kcal/mol. This value is operational in the calculation of Shelf Life AND MKT. The standard setting for MKT should be 20.

TagMateQC™ Basic User Guide: START

The Mode of operation in starting tags is based on the two DIP switch selectable Modes: Start-Only and Start-Config.

Start-Only Mode

When a configured and ready-to-start T-700 Tag is placed under the TagMateQC™ (directly opposite the screen and less than 3.5 inches away) and the START button is pressed and released, the tag's logging process will be started.

Start-Only Mode will work to start any previously-configured tag that is not yet running. It will also restart a non-CFR[1] tag that has stored data and is not running. TagMateQC™ in Start-Only Mode will start tags and record a "real-time" starting time based on the time entered in the SETUP.

When a tag is started, TagMateQC™ beeps and displays one the following screens, depending upon the status of the tag scanned:

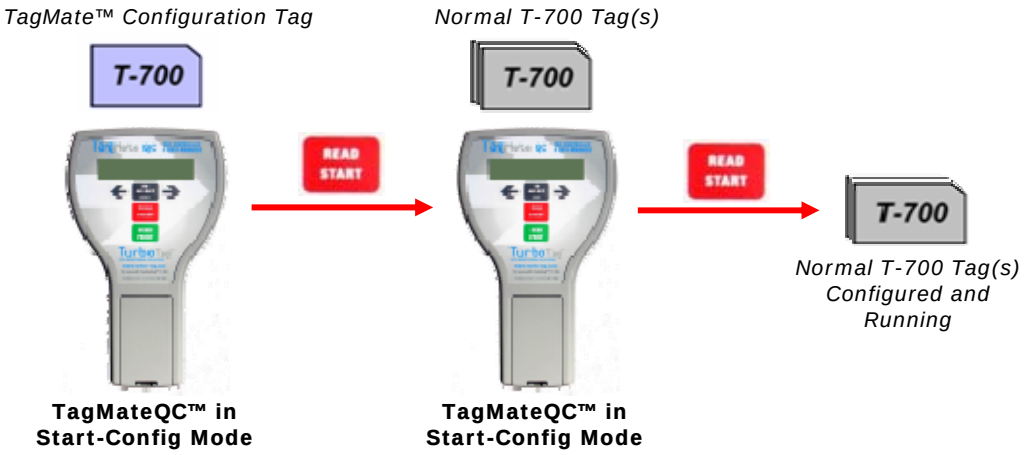
Tag ON(123pts)	This display indicates that an attempt has been made to START a tag that is already running. . TagMateQC™ cannot START a tag in this status. Two beeps confirm that the tag is already running.
Tag Started OK	This display confirms successful starting of a tag. One beep accompanies this display.

Start-Config Mode (non CFR tags only)

Start-Config Mode is useful in packing and shipping operations where it would be inconvenient to have quantities of pre-configured tags on hand for shipments that require different configurations. With a supply of "ready to run" normal tags and a complement of TagMate™ Configuration Tags with appropriate configurations, the need for any software involvement is eliminated. Combining this "software-free" type of operation on the initiation of monitoring with operation of TagMateQC™ on the receiving end, a completely software-free operation is possible.

Non-CFR tags that <u>are not running</u> can be processed using this operating mode. Tags will be started and re-configured according to a stored set of configuration values including the Info field on the TagMateQC™. The diagram below summarizes the complete Start-Config process, which relies on a special type of tag, called a TagMate™ Configuration Tag, at the outset:

[1] T-700, T-700B or T-700D are the current non-CFR tag types. T-700C and T-700E are CFR tag types. Ask your TurboTag(TM) sales representative for more information about these types.



A TagMate™ Configuration Tag, abbreviated as a "template tag", is a specially-prepared non-running tag that serves to transfer its configuration to the TagMateQC™. The resulting stored configuration remains in effect until another template tag is processed. Power-down of the TagMateQC™, which is automatic after a period of disuse (except when under AC adapter line power), will not affect the stored configuration. The currently-stored configuration can be checked in SETUP → CONFIG as described above.

Notes:

It is important to be extremely careful when using TagMateQC™ in Start-Config Mode. This mode should not be confused with Start-Only Mode, as every tag started in Start-Config Mode will automatically be re-configured according to the configuration parameters stored in the TagMateQC™ memory.

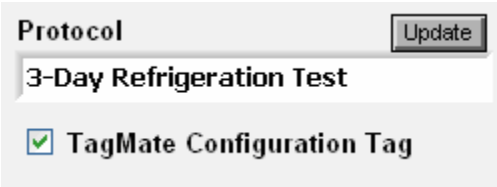
There is a possibility that an intentionally pre-configured normal tag will have its configuration parameters over-written with TagMateQC™ stored configuration parameters.

Be sure you check which Mode is active. If you just want to start pre-configured tags, use Start-Only. If you wish to use a TagMate™ Configuration Tag as a configuration tool to program normal tags, use Start-Config Mode.

The following section describes creation and use of TagMate™ Configuration Tags in further detail.

Creating TagMate™ Configuration Tags

Creating TagMate™ Configuration Tags is an operation that involves specific steps in *Session Manager*™ or *Session ManagerDB*™ software. In this software, when in Configure-Only mode, with a protocol active (not "Open" protocol), an option checkbox appears just below the protocol display to allow the user to activate the creation of a TagMate™ Configuration Tag.



With this option selected, a tag presented to the reader will be specially marked as a template tag for use with TagMateQC™ in Start-Config mode, and the protocol name (first 16 characters) will automatically be placed in the Info field. The configuration parameters that appear in the Time and Temperature panels of the software screen will be written to the template tag as in a normal configuration operation.

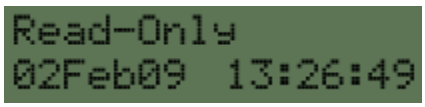
In the above example, the Protocol which served as the source of the configuration parameters is “3-Day Refrigeration Test”. When the TagMate™ Configuration Tag is created, this Protocol name is partially stored on the tag as “3-Day Refrigerat” in the Info field.

Transfer of configuration from the TagMate™ Configuration Tag to the TagMateQC™, as described above, is immediately confirmed by the TagMateQC™ screen. The first 16 characters of the Protocol used (Info field) are displayed, enabling the user to verify the source of the configuration for SOP compliance. Confirmation of the transferred configuration can also be performed in detail by going to SETUP → CONFIG as described above.

Be sure to put a special mark or label on TagMate™ Configuration Tags. This will avoid any chance of mixing them in with normal tags.

TagMateQC™ Basic User Guide: READ

Turn on the TagMateQC™ with the SELECT button. For READ operations, the appropriate DIP-switch settings must be in effect. Either Read-Stop or Read-Only will be displayed. The only difference between Read-Only and Read-Stop is the stop tag or don't stop tag action. At the beginning of a READ operation, the Home screen will be displayed:



To read a T-700 tag, hold the Reader directly over the tag face then press and release the READ button (note that all button presses, unless otherwise stated, are press-and-release, not press-and-hold). If the card is at a suitable reading distance of less than 3 inches, the screen will show a progress bar for about two seconds, and then emit a short beep accompanied by the following message:

When the processing operation is complete, a second beep will sound and the screen will change to a DATA SUMMARY screen that indicates:

- The tag's temporary ID number (Tag 01-99) within the Reader
- How many alarms are active for the tag just read
- The tag's logging status (ON / OFF).
- The tag's last temperature reading.
- The count of time-temperature data points retrieved from the tag.

Here is an example DATA SUMMARY screen:

This screen indicates that this is the first tag to be read, with 1 pre-set alarm active; the tag is no longer running (Off), and has a total of 455 logged points (702 is the maximum data capacity; if this is true the message displayed is *FULL*). The display shows the last temperature reading. In this instance, the last reading was 23.1°C.

A blinking alarm display and a second longer beep will accompany any active alarm conditions, as for the above example. The blinking characters repeatedly appear and disappear. If no alarms are active (i.e., "0 Alarms" is displayed), there is only a short beep to signal a successful tag read, and no blinking of the alarm display.

Whenever the DATA SUMMARY screen is displayed, a complete tag data set has been stored in the TagMateQC™. As indicated in the Information Flow Summary above, the data from the TagMateQC™ can be sent to a TurboTag™ MP-1 printer for an immediate strip chart printout (see section on PRINT below). The data from the tag just read cannot be sent to a computer running TurboTag™ *Session Manager*™ as an individual tag record. It must be sent as part of the complete tag data set to the software in READ-IR Mode (see the latest "*Session Manager*™ User Guide" document

and the SEND process summary below) for computer-based data viewing, printing, or file management.

Displaying Further Tag Information

With the DATA SUMMARY display shown, press the SELECT button. The next screen that will be displayed, the ALARM screen, is one that allows you to see the breakdown of individual alarm status:

This sample display screen identifies which alarm outputs are enabled for the tag just read. Any alarm that is active will be indicated by a blinking display.

Tmax and Tmin are the most commonly used alarms. Tmax is the alarm relating to a preset Time over Temperature alarm criterion. Tmin is the alarm relating to the Time-Under-Temperature of all of the readings. Tavg is an optional alarm relating to the average of all of the readings. The TagMateQC™ may be configured for calculation and display of an alarm for MKT (mean kinetic temperature) in place of the Tavg alarm. Note that MKT will not be calculated if a tag is not running.

In cases where shelf life monitoring is enabled, a fourth alarm indicator "SL" appears at the far right. (see section "About the TurboTag™ Shelf Life Function").

When you press SELECT from the ALARM screen, the next screen will indicate the EPC/Info field. This screen presents whatever data has been entered into the EPC/Info field when the tag was configured and started. In the example shown here, the contents of the Info field is "Freds Flowers 3".

If a UHF EPC tag was used at configuration, then the message "<EPC code>" will appear. The actual numeric value of the code is not displayed.

At any of the preceding three screens, the ← → buttons allow scrolling through different stored tag records, scanning for a particular tag record number, Session ID or alarm status. This and other screen navigation processes are summarized in Appendix A.

Press the SELECT button more times, and it will display the individual numeric results associated with each alarm. Here are examples of how this sequence of all data detail screens may appear.

Press	Screen Display	What it Means
	Tag 1 Off 8.3C 2 Alarms 604 Pts	The Data Summary screen reports current temperature at the tag, On/Off status, points recorded and number of alarms.
	Alarms: Tmax Tmin Tavg	Alarm screen displays three alarms or four ("SL" is displayed on the end of the lower line if Shelf Life is activated in settings). Alarms will blink if settings have been exceeded.
	Info: BOL 123W784	This screen displays the content of the Info field. The Info field is a identification means for each tag.
	Shelf Life: 3.1 Setting(d): 7.0	**OPTION**: Shelf life result and alarm criterion are displayed only if Shelf Life is activated in SETUP
	MaxT(C): 20.3 Setting: < 22.0	The maximum temperature recorded was 20.3°C. The alarm was set for over 22.0°C (Tmax + TmaxOvr). An additional screen will indicate hours over Tmax if the Tmax value was exceeded.
	Hrs Over: 7.1 Setting: < 6.0	Additional screen that shows the actual hours over compared to the setting. The setting is NOT for the highest temperature but the Time-Over-Temperature criterion.
	MinT(C): 5.4 Setting: > 5.0	The minimum temperature recorded was 5.4°C. The Tmin alarm was set for under 5.0°C. An additional screen will indicate hours under Tmin if the alarm is tripped.
	HrsUndr: 1.2 Setting: < 0.0	Additional screen that shows the actual hours under compared to the setting.
	AvgT(C): 14.9 Setting: < 20.0	The average temperature for the full data set was 14.9°C. The alarm was set for over 20.0°C. MKT or Average as default display is selected in SETUP.
	StDate 21Sept2009 Time: 8:01:05AM	The logging episode started on 21 September, 2009 at 8:01:05 AM. If the tag is still running, an additional screen will display the total elapsed time.

If any of the alarm information screens has an alarm setting that has been exceeded, the observed Tmax, Tmin, or Tavg number in the upper right of the data detail screen will blink.

Restart "Carryover" Operations Performed in READ Mode

Non-CFR tags can easily be read and then restarted with the same configuration. This operation is performed in Read-Stop and Read-Only Modes.

The operation is simple: after reading a tag, hold the reader over the same, or different, tag and press-hold the READ button until a beep is heard (about 1 second), then release the button. TagMateQC™ will configure and start this tag using the configuration from the most recently read tag (hence the designation "Carryover").

Like all starting operations performed by TagMateQC™, the Restart action can only be performed on stopped tags. If you are in Read-Only mode, the tag just read cannot be restarted—only a different tag can be started, as a duplicate, or surrogate. The idea of creating a duplicate tag can be useful when, for example, a monitored product quantity is split up, and the parts, still in need of monitoring, are now handled separately.

Carryover of "Shelf Life Remaining"

If a restarted tag was set up for shelf-life monitoring, the remaining shelf life will be used as the starting shelf life in the Restart process described above. In this way, shelf life monitoring can be extended beyond a single tag's duration by restarting at intermediate way points in a cold chain.

If shelf life monitoring is not activated, Restart simply allows the user to use the tag again for a new shipment or monitoring episode. This is useful for monitoring delivery routes, facility monitoring (cold rooms, freezers and refrigerators) and general environmental monitoring.

TagMateQC™ Basic User Guide: STATS

A summary of the number of TurboTag™ data sets stored in the TagMateQC™, and their alarm status can be quickly reviewed by using the STATS menu.

Go to the Main Menu screen to start. You can always get the Main Menu from the Home Screen by pressing the SELECT button.

Use the LEFT and RIGHT arrow buttons to highlight the STATS word on the Main Menu screen. The word STATS will flash on and off when you have highlighted this menu choice.

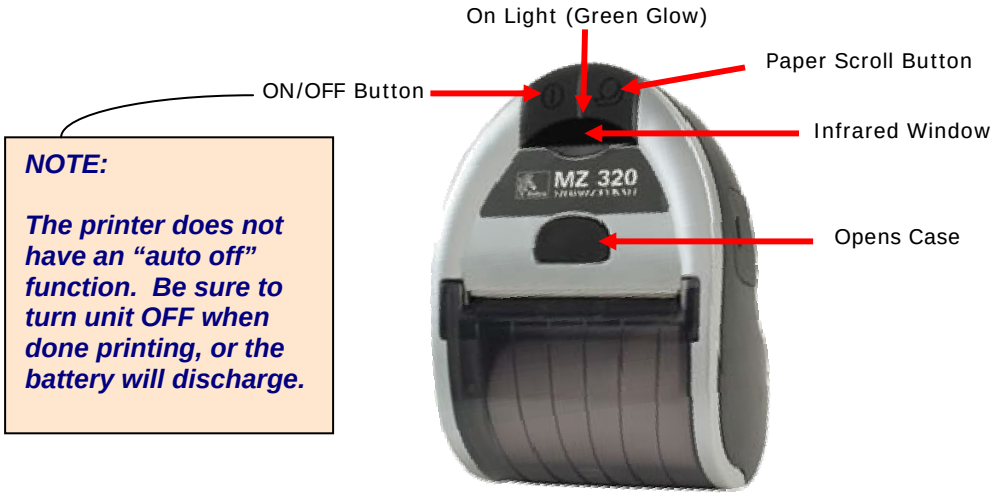
With the word STATS blinking, press SELECT, and you will enter a menu sequence that allows you to access the following screens:

Press	Screen Display	What it Means
ON SELECT NEXT	Tags Stored: 17 Tags w/alarms: 2	There are 17 TurboTag™ complete data sets in the TagMateQC™ memory. Two of these show active alarms.
ON SELECT NEXT	Reader Firmware: CRY00402_005	This screen is only used for reference in issues involving TurboTag™ Technical Support.
ON SELECT NEXT	Clear Tag Memory Press < > To Clr	This clears out all TurboTag™ data sets stored in the TagMateQC™ memory if you simultaneously press the LEFT and RIGHT (← →) keys. The Clear Tag Memory function permanently erases all records currently stored in the TagMateQC™. <u>You cannot select specific TurboTag™ records to erase while retaining others.</u>

Continuing to press the SELECT button will recycle these function screens in the same sequence (loop sequence).

TagMateQC™ Basic User Guide: PRINT

The TagMateQC™ can send data directly to the TurboTag™ MP-1 printer[2] (shown below), avoiding the need for a computer. It takes just seconds to send and print.



NOTE:

The printer does not have an "auto off" function. Be sure to turn unit OFF when done printing, or the battery will discharge.

1) Find the TurboTag™ record that you want to print on the TagMateQC™ screen by entering the DATA menu from the Main Screen, and navigating to the desired tag data set using the SELECT and LEFT/RIGHT (← →) buttons.
2) Turn on the printer and point the front of the TagMateQC™ at the Infrared Window on the MP-1 from distance of 4-8 inches:

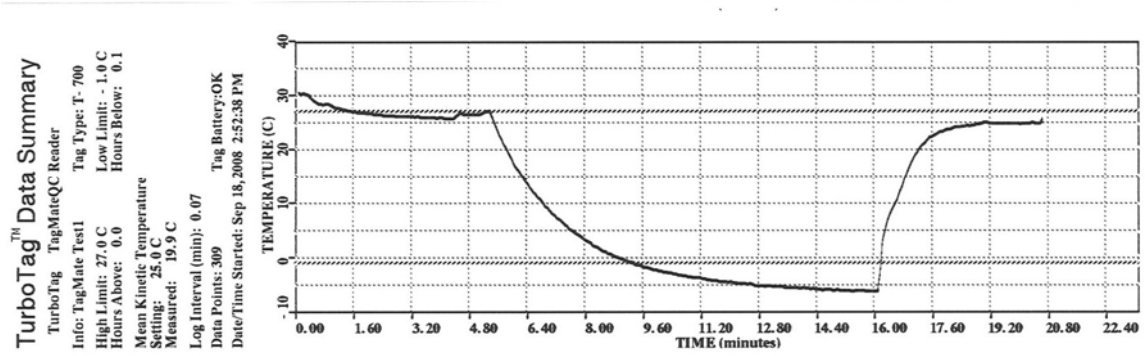
3) Press and release the PRINT button.

[2] This printer is the MZ 320 printer from Zebra® Technologies. It is also available from outside vendors.

4) The Data Receiving Light will flicker while the data is incoming (**Important**: be sure to hold the TagMateQC™ steady and aimed at the MP-1 while the Data Receiving Light is blinking, or the data stream will be interrupted)

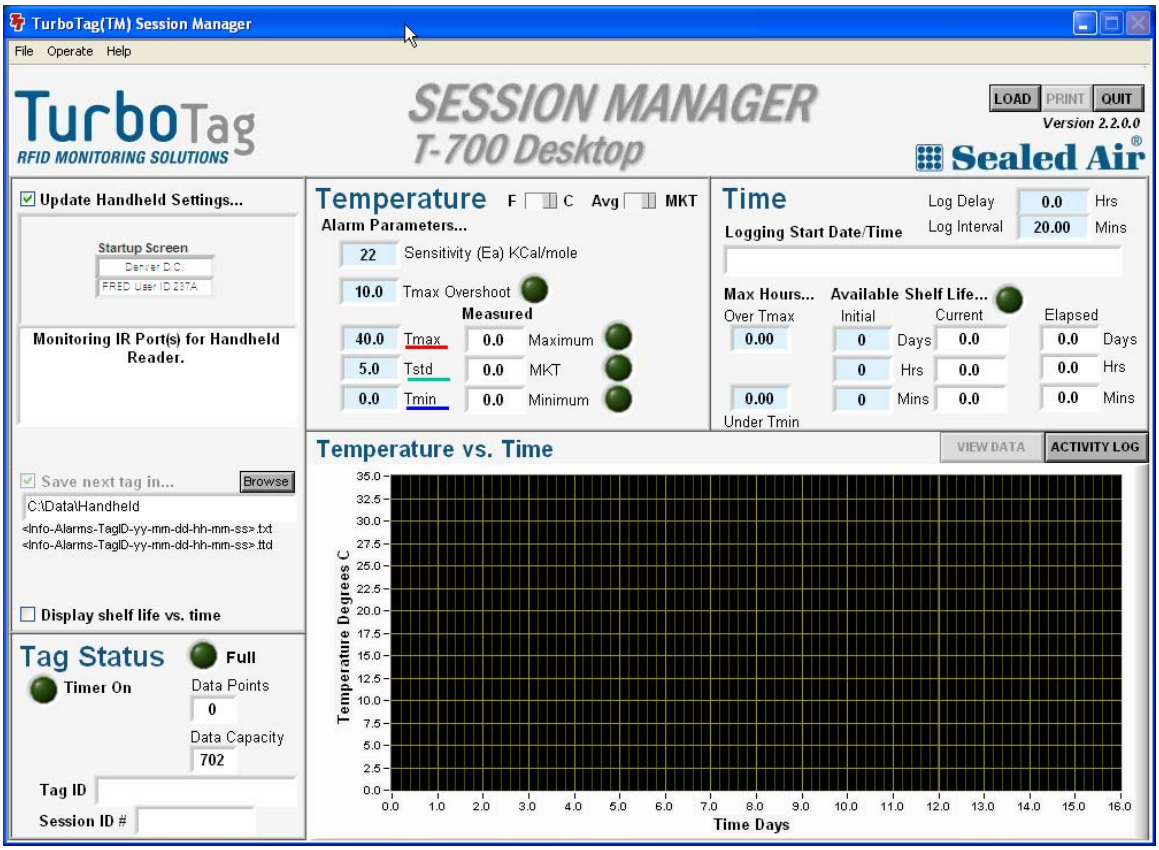
5) As soon as the data is completely received, printing begins.

The printed tape is 10 inches in length, and provides a complete graph of the TurboTag™ time-temperature data. The header reports a complete set of summary information shown in the picture here, including the customizable TagMateQC™ Startup Screen (2nd line). This permits identification of the source TagMateQC™ unit on the chart.



TagMateQC™ Basic User Guide: SEND

The TagMateQC™ SEND function sends all of the data currently in storage to a suitably-configured computer. TurboTag™ Session Manager™ Software must be running on the computer, in READ – IR Mode, for the computer to receive data from the TagMateQC™ (see the user guide to *Session Manager*™ software).



The IR screen shown above is obtained whenever a suitable RFID reader is not available on the computer for discovery by the Session Manager™. It is possible to enter this Mode of operation by two methods:

- Re-starting the *Session Manager*™ after disconnecting the reader.
- While running *Session Manager*™ with an RFID reader connected, open a second instance of Session Manager™. The second instance of this program will fail to connect to the reader and will enter the IR screen.

The IR screen is very similar to the READ screen. The upper left now contains information that pertains to managing the TagMateQC™ Handheld Reader settings, and the "Stop tag after reading" check box is missing since direct communication with T-700 tags is not enabled. This screen is strictly for viewing (printing) data that has previously been retrieved from a T-700 tag. There are two options for viewing these data:

- Use of the LOAD button to view previously-saved files (same as on READ screen).
- Linking to the TagMateQC™ Handheld via an IR port, which triggers downloading of all stored tag data, sequentially displayed on the screen and saved automatically.

Infrared Port

For data retrieval from the TagMateQC™ Handheld Reader, an active infrared port is required.

- Most laptop computers have built-in infrared ports. If an infrared port is not already present, or if an additional infrared port is desired, any USB IrDA adapter can be installed.
- The process for installing the BAFO® IrDA adapter, without need for the manufacturer's installation CD, is as follows:
    - Connect the BAFO® device to a powered USB port with or without the USB cable.
    - From the Windows® Start Menu, go to Programs → TurboTag → IR Port Installer, and the installation program will run.
    - Accept all defaults and license terms to complete the installation.

Go to the Main Menu screen of the TagMateQC™. You can always get the Main Menu by holding down the SELECT button.

Point the front of the TagMateQC™ at the IR port on the target computer at a distance of 4-8 inches and press the SEND button.

The TagMateQC™ display will indicate an active IR link, and the computer's *Session Manager*™ Software display will indicate progress of the download. This download may take several minutes depending on the number of tag data sets transferred. (Important: be sure to keep the TagMateQC™ steady and aimed at the IR port while the data light is blinking or the data stream will be interrupted; it is best to place the reader on a desktop rather than hold it during data transfer).

When data transfer is complete, all sent data is erased from the TagMateQC™ but saved as a data file on the computer instead. The last data file downloaded remains displayed on the Session Manager™ screen; all other data files have been saved and may be loaded for viewing as well.

Notes:

1. ***The TagMateQC™ must be on the Home Screen or Main Menu when preparing to SEND data to Session Manager™ or Session ManagerDB™***
2. ***The DR-1 must NOT be plugged into the computer that is running Session Manager™ or Session ManagerDB™ if an Infrared SEND is to be made. When the software is started, it looks for a port on the computer that has the DR-1 connected. If it does not find the DR-1, it reverts to IR Mode. In this Mode it searches for a port with an IR communication link capability. This capability may be a USB IR adaptor or a built-in IR port.***

Setting a Custom Startup Screen

The message area of the Control Panel will indicated the loading of files gathered by the TagMateQC™ and ported by the IR link. All of the transferred data sets are copied to the files stored on the computer. Note that you can change the message that appears on the TagMateQC™ screen any time an IR connection is made between the PC computer running Session Manager™ software and the TagMateQC™. Just click the Update Handheld Settings checkbox:

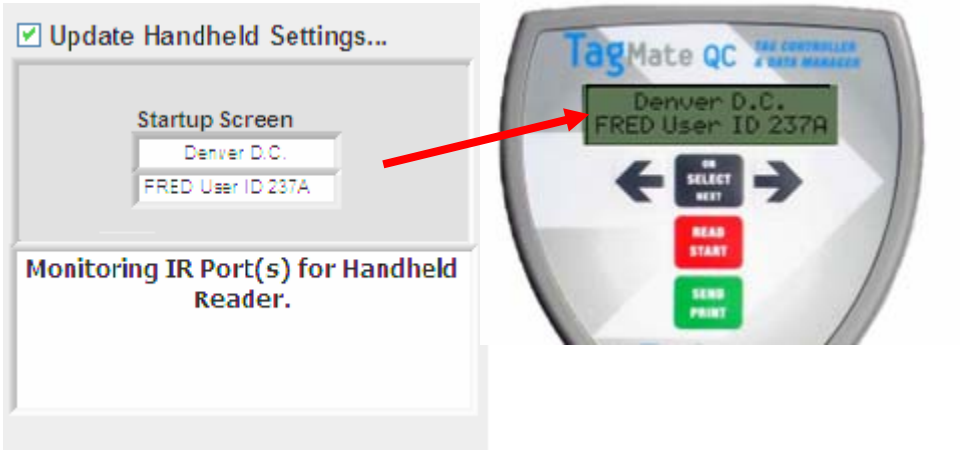
You can set up a custom Startup Screen (this Startup Screen message is saved in the database when tag records are delivered via the TagMateQC™ to *Session Manager™ DB* software). This feature is useful for identifying the user for HACCP and other regulated programs.

Notes:

The IR beam from the TagMateQC™ reader must be aimed directly (on a straight and parallel path) at the "window" of the BAFO® device. Hold the alignment steady during the process as an uninterrupted stream of data must be received by the device for the transfer from the TagMateQC™ to files (or in some instances, a database) as generated by Session Manager™.

Battery Replacement

The Main Menu screen will indicate when the TagMateQC™ battery is low. When this occurs, you must immediately replace the battery. Turn the unit OFF, and look on the back side for the battery compartment door.



Press the tab in the direction of the lower edge of the unit and pull out. Remove the door from the compartment and gently ease the battery out of the compartment. It will have contacts at the end of two wires clipped onto the end of the battery.

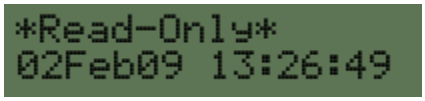
The battery used in the TagMateQC™ is a 9VDC alkaline battery. Do not use a "heavy duty" battery or any other type of battery, even if it will fit the contacts. Alkaline batteries in 9VDC are available almost everywhere.

Detach the battery contacts from the old battery and dispose of the expired battery properly. Insert the new, replacement battery into the contacts, and tuck the

battery and the wire leads back into the compartment, being sure that the compartment door can snap back in place without interference.

AC Line Powered Operation

The TagMateQC™ offers user the option hands-free operation (reader always on, reads when tag presented with no button press). The startup screen displaying operation Mode will alert the user to AC Line Powered Operation by bracketing the Mode display with asterisks, as shown below:



With this display, tags may be placed at or near the read surface, and reading will automatically occur. This option is available in all four operating modes: Read-Only, Read-Config, Start-Only and Start-Config.

Carryover operating mode is NOT possible with AC Line Powered Operation. All display menus (DATA, STATS and CONFIG) and IR processes (SEND, PRINT) are available by pressing keys in AC Line Powered Operation.

Using the TurboTag™ Shelf Life Function with TagMateQC™

Shelf life information will be displayed on the TagMateQC™ screen if the following conditions have been met:

1) The Monitor Shelf Life setting on the Reader is set to either “Always” or “If Logging” (see Changing TagMateQC™ Settings).
2) The tag being read has between 3 and 701 data points (neither empty nor full).
3) (“If Logging” mode only) The tag being read is still running.
4) The configuration settings of the tag include a nonzero value for the Ea Temperature Sensitivity parameter.

If these conditions are met, the shelf life alarm will be displayed in the lower right hand corner of the Alarms screen. SL will flash if shelf life minimum criterion is not met according to the setting programmed into the TagMateQC™ (minimum shelf life).

As you continue to press the SELECT button, an alarm detail screen on Shelf Life will be displayed with actual shelf life calculations displayed:

In this instance, the shelf life setting for the Reader was preset to 7.0, and the shelf life remaining is calculated at 3.1 days. If the shelf life is *greater than* the minimum shelf life programmed into the TagMateQC™, the alarm is not tripped. If the shelf life is *less than* the minimum the alarm is tripped (flashes).

The ability to configure the TagMateQC™ Reader (and not the T-700 Tag) with a minimum shelf life setting allows receivers of monitored goods to account for a needed number of days’ shelf life in order to complete the distribution and sale of

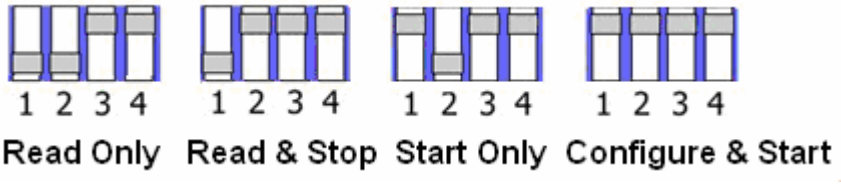
products. It would not be possible to set this parameter at the start of the monitoring process without risking incorrect alarm functioning due to reading of the tag at an unanticipated time. With a reader-specific setting, it is possible to make the shelf life alarm much more reliable and meaningful to the recipient of monitored goods. It is even possible to re-read the same tag by more than one TagMateQC™ reader, each at a different location in the supply chain, and each with its own shelf life alarm limit.

NOTE:

The screen alarm in the Session Manager™ Software does not allow specification of a non-zero shelf life limit as an alarm condition (the computer's visual alarm is always triggered by a shelf life less than zero.)

Operating Modes of the TagMateQC™ (DIP Switch Settings)

TagMateQC™ Operates in 4 Modes settable by customer-accessible DIP switches, located inside the battery compartment:



A tool is required to set the DIP switches—they cannot be set by use of fingers. The simplest tool is a "jumbo" paper clip, about 5 cm (2 inches) long, bent as shown here.

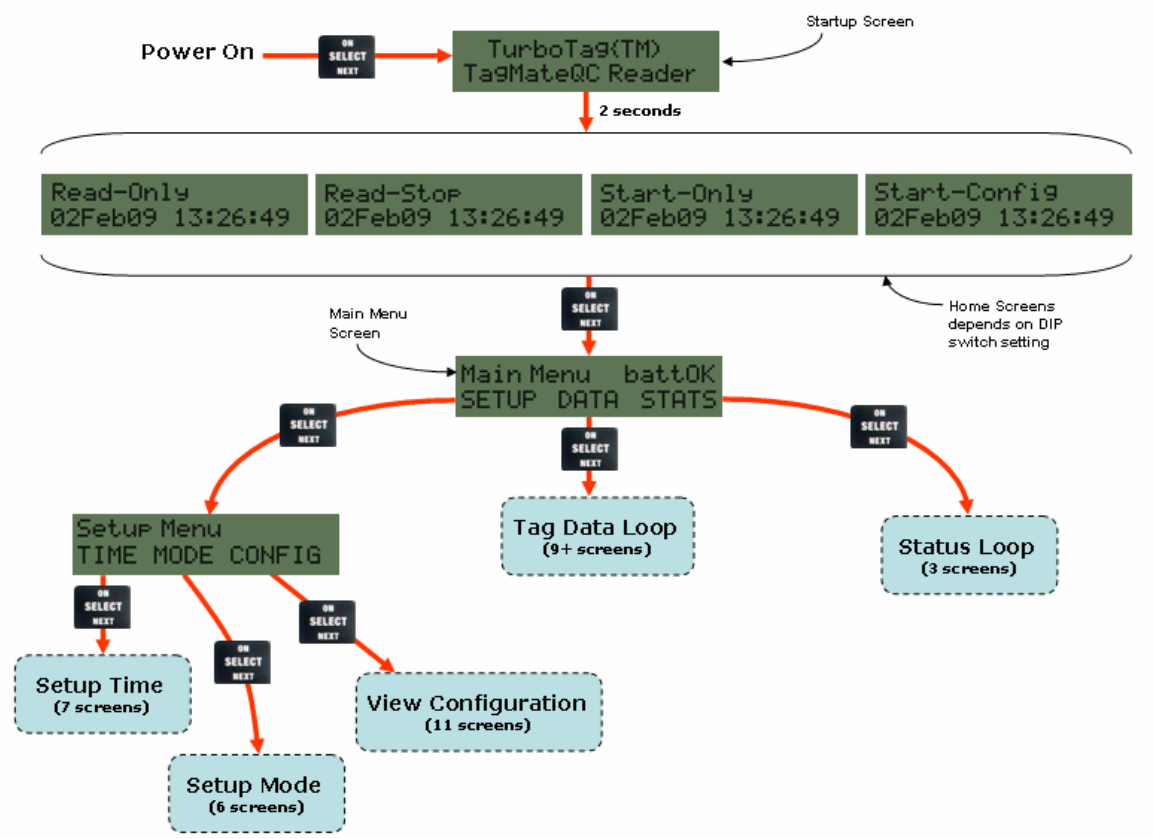
These DIP switch choices produce the four operating modes described in this manual (see SETUP section). The operating mode is verified by the Home Screen. Note that changes in DIP switch settings take effect only after the next power-on.

The backside label on the TagMateQC™ provides a quick reference for switching operating modes:

Appendix A - Screen Navigation Overview

This section gives a brief overview of the entire TagMateQC™ screen navigation process, highlighting the context-sensitive nature of the five buttons across these screens.

The diagram below summarizes the complete set of displays available by pressing SELECT on the TagMateQC™ from startup:



In the above diagram, red arrows display the result of pressing of the SELECT button in a specific context. The Main Menu and the Setup Menu work by selecting one of the bottom row options by pressing of the LEFT and RIGHT (← →) buttons. The Startup Screen is a fixed message that can be customized via an IR link to the PC (see above). The Main Screen provides an entry point into one of three menus (SETUP, DATA, and STATS). Each of these menus is explained within its own section in this guide.

The context-dependent behaviour of each of the five buttons is explained completely below:

SELECT (ON/NEXT) button:

- Used for "downward" and "cycle-up" navigation within all "loops".
- Press and hold from any screen to go back to the Home Screen, or if from within a SETUP submenu, back to the SETUP Screen.
- Press and hold from the Home Screen to power off the TagMateQC™.

LEFT and RIGHT (← →) buttons:

- Used for menu selection within the Main Menu and the Setup Menu Screens.
- Used for adjusting of reader settings within the TIME and MODE Sub-menus.
- Used for sideways navigation across different tag data sets within the first three screens of the DATA menu.
- Simultaneous pressing of both (← →) from the Main Screen powers off the Reader.
- Simultaneously pressing of both (← →) from the 3rd Status screen ("Clear Tag Memory" screen) erases all tag data from the reader.

READ (START) button:

- Used for reading or starting a T-700 Tag, but only active from within the Home Screen and Main Menu Screen and the DATA sub-menu
- Note that the READ button also has a navigation effect:
    - If a tag is successfully read, the navigation is to the first DATA screen for the new tag data set. When a tag is re-read, it is assigned the highest Tag number. For example, if you re-read Tag 3 (out of 5), Tag 3 will become Tag 5, Tag 5 becomes Tag 4, and Tag 4 becomes Tag 3. In this way, duplicate tag records are avoided, and the tag numbering always corresponds to chronological ordering of reading events.
    - If the read attempt fails, the navigation is to the Home Screen.

SEND (PRINT) button:

- Used to activate an IR link and subsequent data transfer, either to the MP-1 Printer or to a computer running *Session Manager*™ Software in the READ – IR Mode. The factor that determines which of these processes is attempted is the screen from which the button is pressed:
    - The Home Screen OR Main Screen causes a PC connection (as indicated by the SEND icon in the diagram).
    - Any Data menu screen causes an MP-1 printer connection (as indicated by the PRINT icon in the diagram).

- Note that the SEND button also has a navigation consequnce:
    - After printing, the screen reverts to the first DATA screen for the tag just printed. This navigation permits rapid selection of a different tag data set by pressing the LEFT or RIGHT (← →) button. In this manner, it is easy to print a series of tag data sets by alternating SEND and (← →).
    - Note also that the data memory and reader settings can be affected by the action taken…If a PRINT is executed, the tag memory and settings are unaffected.

If a SEND to PC is executed completely without any errors, the reader self-erases all stored tag data in order to make room for more reads.

Appendix B - Frequently Asked Questions

I am reading TurboTag™ cards OK, but there is no shelf life display. What is happening?
The TagMateQC™ only reports a remaining shelf life when configured to do so, and when reading a tag that is running, if in the "If Running" mode (see About the TurboTag™ Shelf Life Function).

I attempted to send data to the printer, the lights on the printer flashed, but there was no tape printed. What happened?
Several things can cause failure to print.

- Make sure the attempt is made from a DATA menu screen and not the Main Screen.
- Make sure the printer is isolated from any computers having IR ports as they will interfere with the TagMateQC™ Reader's transmissions.
- Make sure the printer's battery is charged and the paper is not jammed.
- Make sure that you hold the TagMateQC™ steady as you point it at the printer IR window. Wait until the amber light stops flashing (this happens during data transfer) before changing the "aim" of the TagMateQC™ towards the printer.

I just want to send a single record to my computer. How do I do this?
You cannot send a single record to the computer. The TagMateQC™ is designed to send the entire current data set in its memory to the computer, and then erase its memory to make room for more data sets incoming from new tag data sets to be read.

Can I print out all of the records in the TagMateQC™ to the printer in a group?
Not with a single button press. The TagMateQC™ is designed to send only one record at a time to the MP-1 printer. It is possible to navigate through tag data sets and sequentially print as many records as desired.

What is the significance of the "minimum shelf life" setting in SETUP?
Some TurboTag™ users prefer to have a criterion for receipt of perishables in terms of remaining shelf life. The minimum shelf life setting allows users to set this criterion according to their position within a supply chain, or further time required to sell a product after its receipt. (see About the TurboTag™ Shelf Life Function)

Do I need a PC computer to use the TagMateQC™?
No. If you do not need to store TurboTag™ data, just use the TagMateQC™ to review incoming data and alarm conditions, and to print graphic data and summaries using the MP-1 printer.

Can TagMateQC™ store successive "reads" of the same tag as it is running?
Yes. Multiple sessions for same tag can be secured without overwriting the previously stored data set.

Will TagMateQC™ lock onto the nearest tag?
Yes. TagMateQC™ uses "addressed Mode" to avoid crosstalk between tags.

When TagMateQC™ sends data to the MP-1 printer sometimes the data record consists of substantially less than the full 702 data points. Will a short reading occupy just the front end of a mostly blank tape printout?
No. TagMateQC™ auto scales the time axis on MP-1 printout, so the existing data is expanded to occupy the whole length of the printed chart.

What are the limitations setting shelf life alarm criteria on the TagMateQC™?
Shelf life setting can be to nearest 0.2 days below 5 days.

When setting the Shelf Life Calculation in Settings, what are my options?
Shelf life calculation Mode has three states: Never/Always/If Logging.

What is the read range of the TagMateQC™?
TagMateQC™ reads reliably up to 3.5 inches (9 centimeters) measured from the bottom reading surface. Note that the unit is designed to read tags using the face on the side opposite the LCD screen display and button panel.