TagMaster

North America, Inc.

MANUAL

WatchMan Software Manual v1.6.1

Doc no. 06-239 05

GEN4 LONG-RANGE RFID

Revision	Date	Comment
02	2007-10-16	Updated for System Software 1.4.0
03	2008-03-28	Updated for System Software 1.5.0
04	2009-04-28	Updated for System Software 1.6.0
05	2009-08-31	Updated for System Software 1.6.1

1 Introduction

This section introduces WatchMan, which is application software for the LR-series Reader, and defines the target group for the WatchMan Software Manual.

The WatchMan software relies on a connected host computer for controlling the Reader.

The Reader has two main software layers. Every Reader is installed with system software, which constitutes the foundation of the Reader from a software perspective. The Reader system software can be compared to the operating software of a host computer.

Different Reader application software can reside on top of the system software. The Reader application software defines the behaviour of the Reader.

The Reader and the host exchange data over a serial communication interface.

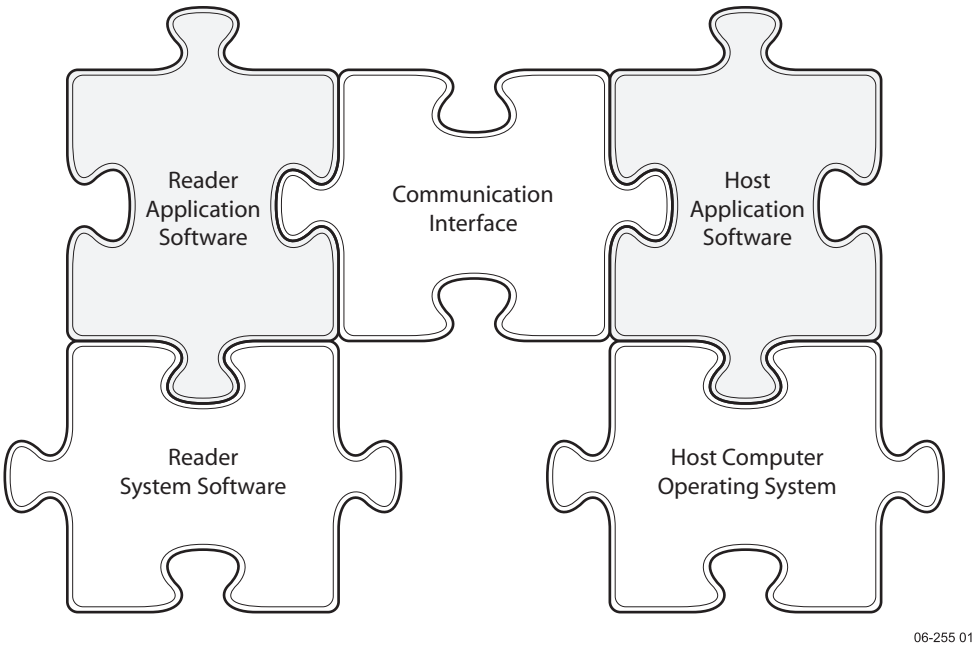

Figure 1 Application and system software overview

The main focus of this manual is the Reader application software. This manual is regarded as a complement to the GEN4 Reader User's Manual [1]. For a more comprehensive coverage of the Reader hardware and software, see the GEN4 Reader User's Manual.

The first target group for this manual is operation engineers configuring the settings of WatchMan, and performing installation tests that are specific to the Reader application software.

The second target group for this manual is software developers integrating the WatchMan software with host applications software.

2 General Information

This section describes the purpose and the basic tasks of the WatchMan software.

The WatchMan software is used in identification systems that include one or several Readers controlled from a host computer.

The WatchMan software is suited for identification systems where the Reader is controlled from a host computer that handles functionality customised by the customer. The communication between the WatchMan software and the host application software is done over a serial communication interface.

A typical application for an LR-series Reader installed with WatchMan is an identification and access system in an industrial area protected by a gate, where custom-made Reader functionality is required.

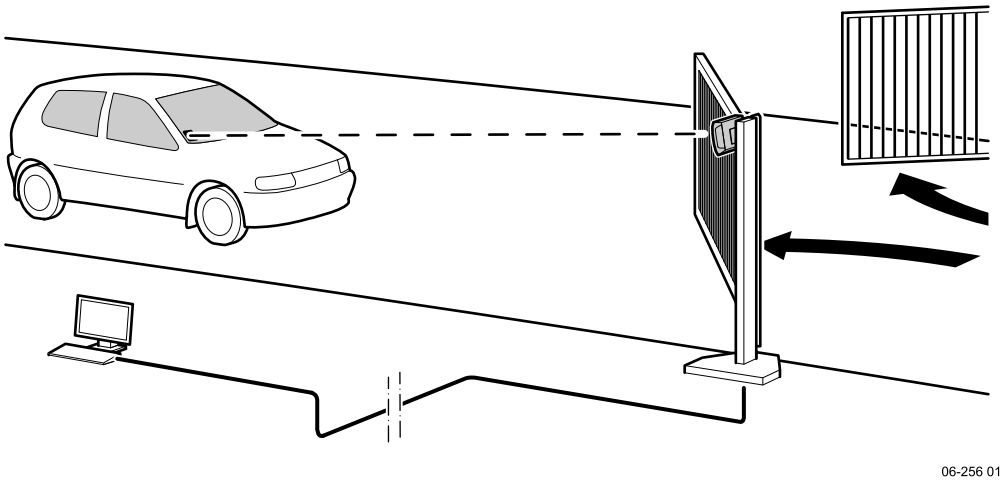

Figure 2 A typical installation using WatchMan

The ID-tag mounted on the surface of the vehicle is read when the ID-tag is detected by the Reader. An opening signal is sent to the gate if the reported ID-tag is found in the database of the host computer. The Reader is also capable of detecting moving objects without ID-tags.

2.1 Basic Tasks

Described at the most basic level, the WatchMan software acts as a transparent layer between the host application software and received input and produced output. The Reader receives input and forwards it to the host and produces output on request from the host. The host computer is the unit that stores information and makes decisions in the identification system.

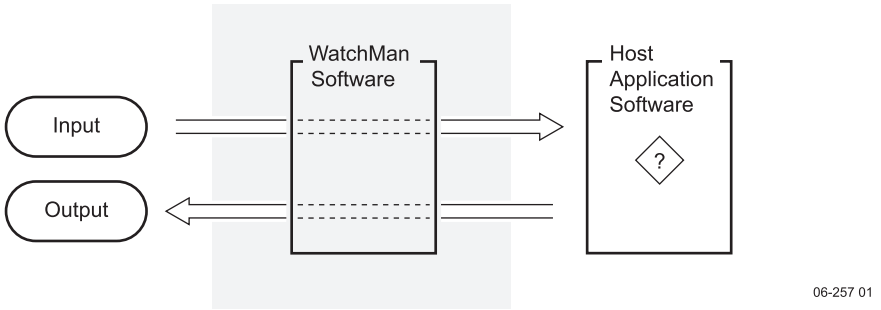

Figure 3 Basic tasks of the WatchMan software

Input includes events generated by ID-tag readings and detection of moving objects. Input can also be commands sent from the host application software.

Output includes events such as causing the relay to be pulled, sounding the buzzer, and turning on the externally-visible indicator. Output can also be information sent to the host application software.

2.2 Serial Communication

Host application software, which is usually developed by the customer, is needed for establishing a communication link between the Reader and the host. Already-existing host applications suitable for testing may also be used.

Two separate serial communication interfaces are used by the WatchMan software as showed in the table below.

Table 1 Serial communication interfaces

Serial Interface	Controller Board Connection	Description
RS485 full duplex (4-wire) or half duplex (2-wire)	J41	Used for ConfiTalk and mail messages
RS232	J42	Used for ConfiTalk and mail messages

For a chart of the controller board with the external connections mentioned above, see the LR-series Installation Manual [2].

2.2.1 ConfiTalk

An open TagMaster standard protocol called *ConfiTalk* is used for serial communication. The commands included in the ConfiTalk protocol map to low-level function calls in the WatchMan software.

ConfiTalk commands are used when specific tasks or data have to be transmitted from the host to the Reader. ConfiTalk commands have access to the low-level function calls in the Reader application software. For information about available ConfiTalk commands, see the ConfiTalk Reference Manual [3].

2.2.2 Mail Messages

Predefined sets of ConfiTalk commands called *mail messages* provide a more rudimentary means of communication between the external application software and the WatchMan software. The WatchMan software understands one mail message, which is used to poll the Reader for its current configuration settings. The available mail message is described further in section 3.3 Get Settings Mail.

3 Configuration

This section describes the available configuration settings in the WatchMan software and how to change them.

There are five available settings that can be configured, covering the serial communication interface in the WatchMan software and enabling a test mode.

The Reader can be configured using a temporarily connected PC via the web interface or the terminal interface.

3.1 Configuration Web/Terminal Interfaces

Connect to the web interface or terminal interface as described in “GEN4 Reader User’s Manual”. WatchMan settings are available under Settings…/Applications…/WatchMan.

Change the settings as described in section 3.2.

Figure 4 Terminal interface with WatchMan settings

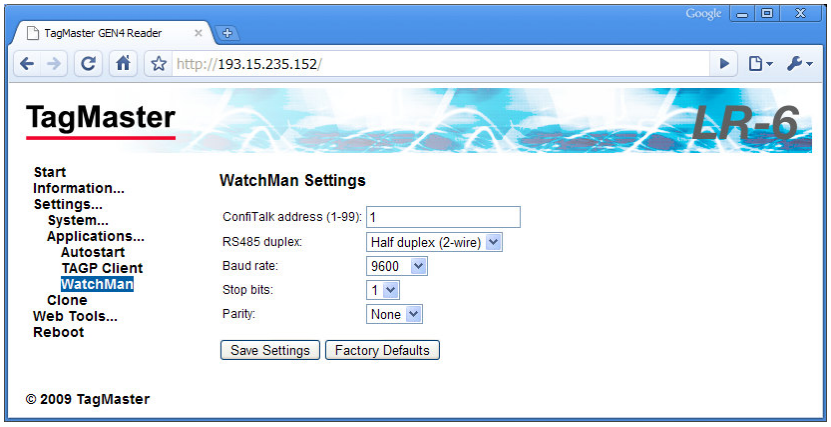

Figure 5 Web interface with WatchMan settings

3.2 Settings

The subsections below describe the different settings that can be configured in the WatchMan software. The corresponding tables include the options as they are seen in the web interface.

3.2.1 ConfiTalk Address

Several Readers controlled by a host computer in a multi-drop network are identified by different ConfiTalk addresses.

Table 2 ConfiTalk address setting

Option	Description
1–99	ConfiTalk address 1–99

Default option for ConfiTalk address is: 1

3.2.2 RS485

RS485 is a serial communication standard used for transmitting data over long distances in noisy environments. The RS485 interface supports both half-duplex with two wires and full-duplex with four wires.

Note: The ConfiTalk protocol only supports half-duplex.

Table 3 Serial communication setting

Option	Description
Half-duplex (2-wire)	Half-duplex with two wires is used
Full-duplex (4-wire)	Full-duplex with four wires is used

Default option for RS485 is: Half-duplex (2-wire)

3.2.3 Baud Rate

The serial communication interface supports several baud rates. The baud rate setting applies to both RS232 and RS485 communication interfaces.

Table 4 Baud rate setting

Option	Description
1200	1200 baud
2400	2400 baud
4800	4800 baud
9600	9600 baud
19200	19200 baud
38400	38400 baud

Default option for baud rate is: 9600

3.2.4 Stop Bits

The number of stop bits can be either one or two. The stop bits setting applies to both RS232 and RS485 communication interfaces.

Table 5 Stop bits setting

Option	Description
1	One stop bit
2	Two stop bits

Default option for stop bits is: 1

3.2.5 Parity

Parity bits are used as a simple error detecting code in the serial communication. The parity setting applies to both RS232 and RS485 communication interfaces.

Table 6 Parity setting

Option	Description
None	No parity bit is used
Odd	The parity bit is set to 1 if the number of ones in a given set of bits is even (making the number of ones odd)
Even	The parity bit is set to 1 if the number of ones in a given set of bits is odd (making the number of ones even)

Default option for parity is: None

3.3 Get Settings Mail

The host can poll the Reader for the current settings by sending a mail message to the Reader. To get a mail with the current settings, a mail message with a single capital “S” is sent from the host to the Reader.

Table 7 Get settings mail syntax

Type of Message	Syntax
Get settings mail	S

The Reader sends two mail massages in response to a Get settings mail. A mail message containing the name and version of the software and a mail message containing a settings string are returned.

The settings string holds information about the current settings of the Reader and is 36 characters long. Only characters with position 11–20 hold information. Characters 1–10 and 21–36 are irrelevant.

Table 8 Returned settings string format

Setting	Character Position	Option	Character Pair
N/A	1–10	N/A	__

Communication Interface	11–12	Half-duplex (2-wire)	42
		Half-duplex (4-wire)	44
ConfiTalk address	13–14	1–99	01–99
Baud Rate	15–16	1200	12
		2400	24
		4800	48
		9600	96
		19200	19
		38400	38
Stop Bits	17–18	1	01
		2	02
Parity	19–20	None	n
		Odd	O
		Even	E
N/A	21–36	N/A	__

Note: The character pair for the parity option includes one leading space character.

Table 9 Example of returned settings string

Type of Message	**Example**
Settings String	_____42179601 n_____

The example has the following meaning:

- Serial communication interface RS485 with half-duplex is used.
- The ConfiTalk address is 17.
- Data is transmitted at 9600 baud with 1 stop bit and no parity.

4 Testing

This section describes how to carry out performance tests using the Reader application software.

After completing the configuration as described in the previous sections, carry out a basic reading test and a test of the serial communication.

The guidelines in section 4.3 Troubleshooting may be valuable if an error occurs.

4.1 Basic Reading Test

Perform a basic reading test as follows:

1. Turn on the Reader. The externally-visible indicator will flash green to show that the Reader has been initiated.
2. Go to the ID-tag R/W page of the configuration web interface.
3. Set “Filter” to “Off” and enable “Read beep”.
4. Place an ID-tag in front of the Reader, with the ID-tag on the object where it normally will be mounted. Perform repeated readings while simultaneously moving the ID-tag along the planned movement path and check that the ID-tag can be read in all anticipated positions.
5. Restore the default settings by disabling “Read beep” and setting “Filter” to “Periodic”.

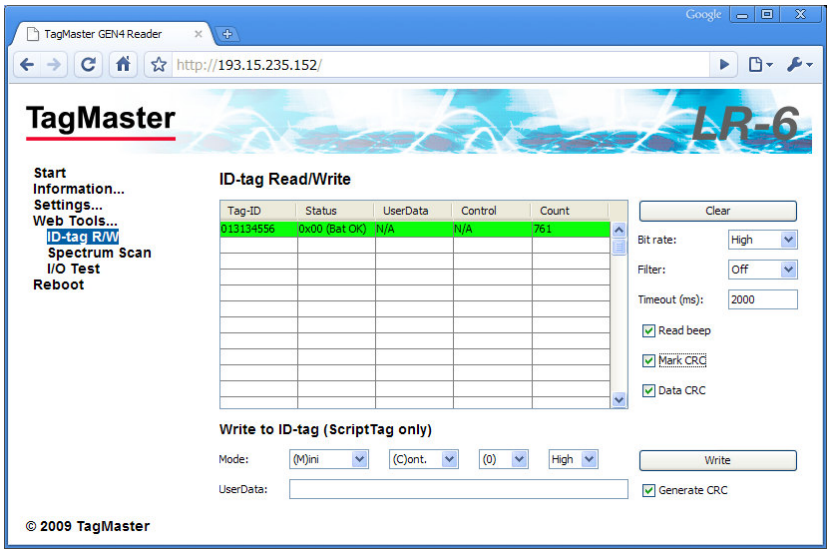

Figure 6 Screen shot of the configuration web interface Demo page

4.2 Serial Communication Interface test

Perform a test of the serial communication interface as follows:

1. Connect the Reader to a host via the serial communication interface.
2. Use host application software and send commands to the Reader application software to verify the serial communication.

4.3 Troubleshooting

The following tables describe the most frequently encountered problems during testing.

Table 10 Common problems during a basic reading test

Problem	Solution
The externally-visible indicator is constantly off.	Check the Reader installation according to the LR-series Installation Manual [2].
The Reader does not beep when an ID-tag is presented.	Verify that the tag speed setting of the Reader corresponds to the tag speed of the ID-tag.
	If several Readers are used in close proximity of each other, set them to different frequency channels.

Table 11 Common problems when testing the serial communication interface

Problem	Solution
The Reader does not respond to commands from the host application software.	If several Readers are controlled by the same host, make sure that all Readers are set to unique ConfiTalk addresses.
	Make sure that the serial communication settings (baud rate, stop bits, and parity) are the same in both the Reader and the host.

5 Contact

For any further inquiries, please contact TagMaster North America, Inc.

5.1 Technical Support

Phone: (253) 238-1421
Fax: (253) 238-7762
E-mail: support@tagmasterna.com

5.2 Office

TagMaster North America, Inc.
2007A 70th Avenue West
Tacoma, WA 98466, USA

Phone: (253) 238-1421
Fax: (253) 238-7762
E-mail: sales@tagmasterna.com
Web: www.tagmasterna.com

6 Glossary

The following abbreviations and acronyms are used in this manual.

ConfiTalk	Open standard protocol for serial communication.
external application software	*See* host application software
host	The external intelligence, for instance workstation or server, which acts as master of a Reader or a set of Readers.
host application software	The application software installed in the host used for communicating with the Reader.
ID-tag	ID-carrier In the TagMaster system, which is readable and writable via microwaves.
Reader	TagMaster LR-series ID-tag reader.
Reader application software	The application software installed in the Reader, defining the behaviour of the Reader.
system software	The fundamental software and operating system installed in the Reader.
WatchMan	*See* Reader application software

7 References

[1] *GEN4 Reader User's Manual*
Doc no. 06-118

[2] *LR-series Installation Manual*
Doc no. 06-136

[3] *ConfiTalk Reference Manual*
Doc no. 510213