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Triangle MicroWorks, Inc.  
Modbus Slave Source Code Library

What's New?

*a description of the changes included in all versions of the library*

Version 3.09.00  
March 15, 2010

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This document describes features or corrections that have been added to the Modbus Slave Source Code Library.


The symbols to the left of each revision are used to help define the following kinds of revisions:


- MB** Additional or enhanced Modbus features.
-  Additional or enhanced source-code features, allowing implementers to more efficiently install the Source Code Library.
-  Corrections to problems, with indications for when the problems were introduced.


### **Version 3.09.00 (March 15, 2010)**

- MB** Modifications to conform to updated Modbus certification test: updated maximum number of Coil and Holding Register writes; return exception when write quantity is 0; fixed data types of Holding Register and Input Register.
-  Modified WinIOTarg to prefer an exact address match when multiple channels are open and disconnectOnNewSyn==true.
-  Added localIpAddress to WinIoTarg to specify the source address to use when Client (or UDP sender) is sending IP messages. This, in conjunction with the Destination IP address and Routing Tables allows control over which Ethernet card is used to establish a connection. (At Windows command prompt, enter "route print" "route add xxx" can be used to add a route to cause a particular NIC to be used.)
-  Enhanced WinIOTarg to support a list of addresses from which TCP/IP connections will be accepted.
-  Added support for broadcast.
-  Added support for Modbus TCP Unit Identifier 0xFF, which allows all addresses.
-  Added user data pointers to TMWCHNL, TMWSCTR, and TMWSESN.
-  *Description:* When multiple application contexts are used, closing one deleted the memory pool lock, which could cause problems if another application context was open.  
*Introduced:* v3.00  
*Resolution:* Fixed in v3.09
-  *Description:* WinIOTarg could fail to process all available characters, causing timeouts when running at high baud rates.  
*Introduced:* v3.00  
*Resolution:* Fixed in v3.09

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*Description:* When configured to use system time, WinIOTarg System time not setting the dstInEffect flag correctly.  
*Introduced:* v3.00  
*Resolution:* Fixed in v3.09
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*Description:* Data types in mbdefs.h switched Holding and Input Registers.  
*Introduced:* v3.00.24  
*Resolution:* Fixed in v3.09
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*Description:* LinIOTarg could cause high levels of processor utilization when multiple channels were opened.  
*Introduced:* v3.07  
*Resolution:* Fixed in v3.09
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*Description:* FC 2B/0E could be processed incorrectly.  
*Introduced:* v3.00.24  
*Resolution:* Fixed in v3.09


### **Version 3.08(September 25, 2009)**


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*Description:* The rs232Reader thread in WinIOTarg was missing a stop event.  
*Introduced:* v3.00  
*Resolution:* Fixed in v3.08

### **Version 3.07.00 (July 17, 2009)**


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Added LinIOTarg (low-level target for Linux) and new command line-based examples (that can be used with Linux).
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Integrated WinIOTarg (low-level target for Windows) into the standard release package.
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Added FormatMessage Win32 API function to WinIOTarg to provide more descriptive errors instead of just numeric values.

### **Version 3.06.00 (April 14, 2009)**

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Added TMWCNFG\_MAX\_APPLRCVS to “break out” of loop in tmwappl\_checkForInput() after the specified number of iterations.
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Modified timer values in tmwlink\_channelCallback to speed up retries.

### **Version 3.05.00 (December 4, 2008)**


No updates to Modbus Slave Source Code Library in this release.

### **Version 3.04.01 (September 30, 2008)**

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Improved comments on compiler options such as TMWCONFIG\_USE\_MANAGED\_SCL.

### **Version 3.04 (September 12, 2008)**

-  *Description:* tmwdb\_lockQueue and tmwdb\_unlockQueue were described in the header comments for tmwdb\_storeEntry in tmwdb.h, but they were not defined in tmwdb.c.  
*Introduced:* v3.00  
*Resolution:* Fixed in v3.04




### **Version 3.03.00 (April 1, 2008)**

-  Added ability to include session indicator in channel statistics.



### **Version 3.02.00 (December 7, 2007)**

No updates to Modbus Slave Source Code Library in this release.


### **Version 3.01.01 (August 8, 2007)**

-  Added ability to keep time on a per-session basis. Added pSession to tmwdtime structure; target layer can use this parameter to return a time specific to the session.
-  *Description:* The Source Code Library did not properly handle CRC errors.  
*Introduced:* v3.00.24  
*Resolution:* Fixed in v3.01.01
-  *Description:* If a read request with a value quantity of 0 was received, it was passed to the database function; this resulted in exception code 02 being returned instead of exception code 03.  
*Introduced:* v3.00.24  
*Resolution:* Fixed in v3.01.01

### **Version 3.01.00 (May 23, 2007)**

-  Modified online notification algorithm to facilitate notification of sessions that never go online.
-  *Description:* The Source Code Library would count received frames twice.  
*Introduced:* v3.00.24  
*Resolution:* Fixed in v3.01.00

### **Version 3.00.49 (November 1, 2006)**

-  Added a more clearly defined interface in smbdata.h to support diagnostics function and the subfunctions.



Added a new compile flag (MBCNFG\_PEFRORM\_RTU\_CRC), which controls whether the Source Code Library generates CRC for transmitted messages and checks CRC in received messages. This option can reduce code space if CRC generation is being performed by the target (e.g., in hardware); it only applies for Modbus RTU.



Renamed TMWCHNL\_STAT\_CALLBACK and TMWSESN\_STAT\_CALLBACK macros to TMWCHNL\_STAT\_CALLBACK\_FUNC and TMWSESN\_STAT\_CALLBACK\_FUNC. This change avoids having a macro and a typedef with the same name.



Added CRC errors to the Modbus channel statistics.



*Description:* The Source Code Library would process functions other than the Restart Communication subcode of the Diagnostics function.

*Introduced:* v3.00.24

*Resolution:* Fixed in v3.00.49

### **Version 3.00.46 (April 27, 2006)**



Modified release to include WinIoTarg.dll built with Visual Studio 6. This DLL is used when using Visual Studio to build the sample applications.



Updated sample Makefiles to correctly build Source Code Library.



Added support for Modbus FC 8 Diagnostics Subcodes 1 (Restart) and 4 (Force Listen Only)

### **Version 3.00.45 (March 17, 2006)** ♣



Improved documentation in protocol-specific section of the manual. Provided additional text, reorganized layers, and included all header files that comprise the API.

### **Version 3.00.44 (February 2, 2006)**



Added a sample application to provide an example of a multi-threaded, event-driven application.



Set receive indication in diagnostic information to indicate the direction of the message.






Split into tmwtarg.h/c into tmwtarg.h/c and tmwtargp.c/c. This change moves all Triangle MicroWorks, Inc. specific code into a separate file. Customers only need to modify tmwtarg.c.

### **Version 3.00.43 (December 2, 2005)**

No updates to Modbus Slave Source Code Library in this release.





### **Version 3.00.42 (September 12, 2005)**

-  Improved documentation by updating *Modbus Slave.doc* to improve readability and include all user-modifiable files.
-  Added subversion to SCL filename (e.g., *smbv30042.exe*). This allows the version number to be determined from the file name. The version number continues to be defined in *tmwvrsn.h*.
-  *Description:* The Source Code Library could potentially reference a Null pointer in *tmwdlist\_removeEntry*  
*Introduced:* v3.00  
*Resolution:* Fixed in v3.00.42


### **Version 3.00.41 (July 20, 2005)**

No updates to Modbus Slave Source Code Library in this release.



### **Version 3.00.40 (June 3, 2005)**

-  Added MBSlave sample application executables and required DLLs to allow running this application without having to build it.
-  Improved documentation of memory type configuration.
-  Fixed compiler warning for *TMWTYPES\_BOOL* type.
-  *Description:* *TMWMEM\_FREE\_FUNC* was doubly defined.  
*Introduced:* v3.00.39  
*Resolution:* Fixed in v3.00.40

### **Version 3.00.39 (March 29, 2005)**

-  Improved memory management within Source Code Library. Added new *#define* (*TMWCNFG\_ALLOC\_ONLY\_AT\_STARTUP*) to *tmwcnfg.h*. Also added new functions that the target to set the maximum number of each buffer in each pool at runtime. Both “only at startup” and static allocations use a linked list of free and allocated buffers instead of just an array that was accessed sequentially.

### **Version 3.00.38 (January 18, 2005)**

-  Modified the API for the channel, session, sector modify functions to initialize a structure with the current settings. Any of these settings may then be modified by the target code.
-  Added support for Modbus Function Codes 7 (Read Exception Status) and 8 (Diagnostics)

### **Version 3.00.37 (December 15, 2004)**



Simplified simulated database (smbsim.c/.h). The simulated database now always uses a linked list for all data types.

### **Version 3.00.36 (November 2, 2004)**

No updates to Modbus Slave Source Code Library in this release.

### **Version 3.00.35 (September 22, 2004)**



Added #define TMWCNFG\_MEMORY\_ALIGN\_NEEDED to tmwcnfg.h to support processors requiring long word (4 byte) alignment and compilers that create unpacked structures.



Added tmwapp\_startTimer and tmwapp\_cancelTimer to tmwtarg.c.  
NOTE: These functions must be defined in the target in order for the Source Code Library to link.



*Description:* The parameter list was inconsistent in TMWLINK\_OPEN\_SESSION\_FUNC and \_openSession in mblink.c.

*Introduced:* v3.00.00

*Resolution:* Fixed in v3.00.35

### **Version 3.00.34 (July 30, 2004)**



*Description:* The Source Code Library could call tmwtarg\_startTimer with a negative value. For some operating systems, this causes timers to stop running.

*Introduced:* v3.00.32

*Resolution:* Fixed in v3.00.34



*Description:* The algorithm for sorting timers did not work properly if the two times being compared were more than 17 days apart.

*Introduced:* v3.00

*Resolution:* Fixed in v3.00.34

### **Version 3.00.33 (June 17, 2004)**

No updates to Modbus Slave Source Code Library in this release.

### **Version 3.00.32 (June 4, 2004)**



Enhanced support for multiple threads. Added support for one timer queue per channel. Also improved locking/unlocking to prevent threads from being interrupted or deadlocked. This enhancement required two changes to the API:

- Added new #define(TMWCNFG\_MULTIPLE\_TIMER\_QS) to allow support of multiple timer queues (default is TMWDEFS\_FALSE)
- Added new parameter to tmwdb\_storeEntry() to indicate whether the queue should be locked (default is not to lock the queue).

*Any implementation using multiple threads should upgrade to this release*



*Description:* The \_timerCallback function in tmwtimer.c did not always lock the proper channel.

*Introduced:* v3.00

*Resolution:* Fixed in v3.00.32



*Description:* tmwappl\_initApplication() could not be called more than once.

*Introduced:* v3.00.29

*Resolution:* Fixed in v3.00.32



*Description:* A 31-day timer would expire immediately.

*Introduced:* v3.00

*Resolution:* Fixed in v3.00.32

### **Version 3.00.29 (March 31, 2004)**



*Description:* When configured for Static memory support, the Source Code Library could fail to allocate buffers if they contained non-zero data on startup.

*Introduced:* v3.00.24

*Resolution:* Fixed in v3.00.29

### **Version 3.00.28 (March 2, 2004)**

No updates to Modbus Slave Source Code Library in this release.

### **Version 3.00.27 (February 3, 2004)**

No updates to Modbus Slave Source Code Library in this release.

### **Version 3.00.26 (January 15, 2004)**

No updates to Modbus Slave Source Code Library in this release.

### **Version 3.00.25 (December 12, 2003)**



Added Transaction ID to Modbus Plus link layer.

**Version 3.00.24 (November 10, 2003)**

Initial Release of Modbus Slave Source Code Library.