

MODBUS TCP/IP PROTOCOL MANUAL

September 12, 2001

Revised January 3 2002

Maguire WSB Blender MLAN Gateway

**Blender Data Communications
Integrated to Maguire MLAN Protocol**

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Product Overview

The MLAN Gateway has been designed to connect to a 10BaseT Ethernet network. Connecting to a company or factory network utilising other Ethernet wirings standards (e.g. 10Base2, 10Base5, 100BaseT etc.) can be achieved by the use of hubs.

External / Internal Gateway Specifications

General	External Size	H90 x W105 x D60mm
	Mounting	Direct onto 35mm DIN rail
	Network Interface	10BaseT Ethernet
	Host Interface	MLAN
	Operating Temperature	0-55 °C
	Operating Humidity	30-90% non-condensing
Power Requirements	Supply Voltage	5 – 24Volts dc
	Maximum Power	2 Watts

Operation – MLAN Gateway

Power Requirements – External Units Only

The External MLAN Gateway unit requires 5 to 24 Volts DC to be connected via the 3-way plug in connector.

LED Operation

The 2 (yellow & green) front LEDs represents the Ethernet network status and have the following meaning.

Ethernet State:	LED Colour:
Network Traffic	Yellow
Ethernet Link Active (i.e. connected)	Green

The 2 (yellow & green) LEDs within the gateway represent the Comms status between the MLAN unit and Ethernet gateway and have the following meaning.

MLAN Comms State:	LED Colour:
Data Traffic from Ethernet gateway to MLAN	Yellow
Data Traffic from MLAN to Ethernet gateway	Green

Installation – Default IP Address

The Gateway is shipped with a default IP address and subnet mask. Use of a node-commissioning software tool provided with the Gateway allows the user to set the IP address and subnet mask to the required values for the network. This configuration information is stored in non-volatile memory on the Gateway.

Ethernet Connector

The Ethernet connector on the Gateway is located on the left hand side of the unit in the form of a standard 8-Way RJ45 connector. This connector contains the transformer isolation and filtering compliant with the Ethernet 10BaseT specification.

When utilizing the Internal MLAN Gateway Card this replaces the standard RS232 Serial Port.

Programming Overview

Introduction

This manual is intended to provide information for individuals who are writing software for Programmable Logic Controllers (PLCs) and need to communicate with the Maguire Weigh Scale Blender.

For a complete understanding of the operation of the Weigh Scale Blender (WSB), it is recommended that you have the four and / or twelve component controller manual(s) available as a reference.

Likewise if you require additional information on the Maguire Blender MLAN Communication Protocol then please refer to the MLAN Protocol manual.

Both of these manuals are available to download from the Maguire website at www.maguire.com alongside other useful documents and product information.

All numbers in this document are assumed to be decimal (base 10) unless otherwise noted.

Programming Considerations

The software type within the blender controller must be determined before commencing programming. There are 2 options for the type of software, either 4 software or 12 software.

There are three ways to determine the controller's software type:

1. The simplest and quickest method is to turn the blender controller off and on again. You will either see "TWELVE" or "FOUR".
If the controller is very old, look at the number that appears on the display during power up. This number will have a "T" on the end of it if it is twelve component software. If there is some other letter present, the controller has four component software.
2. Use the command "Get Settings from Weigh Scale" command code 20
3. Use the command "Get Weigh Scale Type" command code 49

Messages and responses are different according to which type of software is used. For example, the "Send Settings to the Weigh Scale" command (command code 19) has different formats for each software type.

Finally, the blender series must be known. Blender load cells read in either tenths of grams or whole grams. These are as follows:

- Load Cells for the Micro blender, 100 and 200 series of blenders read in tenths of grams.
- Load Cells for the 400, 900, and 1800 series of blenders read in whole grams.

For example, a response of 234 from a 100 or 200 series blender indicates that 23.4 grams of material have been processed. A response of 234 from a 400, 900, or 1800 series blender indicates that 234 grams of material have been processed.

Summary of all MLAN commands

MLAN Command	Code	Description
Clear Totals	24	Resets all materials totals to zero at the end of the next blender cycle.
Clear Totals Immediately	28	Resets all materials totals to zero immediately.
Get Address	54	Returns Controller Address *** <i>Not supported by the MLAN Gateway Adapter</i> ***
Get All Parameters	22	Returns all of the parameters and their values *** <i>Not supported by the MLAN Gateway Adapter</i> ***
Get Batch Info	84	Returns the batch weight, current portion of the batch, accumulated total and batch count number. (See WSB Manual for more information on how the WSB operates)
Get Cycle Weight & Time	50	Returns the size of the last batch / cycle and the duration of time between the last two cycles.
Get Display	56	Returns the current display buffer.
Get Parameter	69	Returns the value of a specific parameter.
Get Settings	20	Returns the mix percentages and component types along with the recipe, work order and operator number.
Get Status	53	Returns the current state of all signal inputs and outputs.
Get Steady State Rate	64	Returns the steady state throughput rate of the blender.
Get Target Throughput & Status	29	Returns the current target throughput and the extrusion control status.
Get Totals	16	Returns the current totals and resets the internal flag
Get Totals	17	Returns the current totals without resetting the internal flag
Get Type	49	Returns the controller software type (4 or 12) and load cell type (tenths of grams or full grams)
Get Version	80	Returns the version of software in the controller.
Get Weigh Units	85	Returns the units that the blender is using to display totals – Pounds, Kilograms, Ounces or Grams
Send Keystroke	87	Sends a virtual keystroke to the keypad on the controller – see <i>Set Remote Keypad</i>
Send Settings	19	Sets the mix percentages and material types – also sets work order and operator numbers.
Set Batch Weight	83	Sets the size of a single batch in blender in grams.
Set Date & Time	81	Sets the Date and Time of a blender.
Set Parameter	68	Sets the value of a specific parameter.
Set Remote Keypad	88	Enable / Disable Controller Keypad and or the “Send Keystroke” command
Set Steady Rate	65	Sets the steady state throughput rate of the blender – this tells the blender the rate to report back for the “ <i>Get Steady State Rate</i> ” command
Set Tag	90	Sets either recipe, operator or work order number on the controller.
Set Target Throughput	30	Sets the target throughput rate for extrusion control mode.
Set Weight Units	86	Sets the weight unit used by the blender to display totals such as pounds or kilos.
Silence Alarm	82	Silences the alarm for a specific blender
Start / Stop / Status	55	Instructs the blender to stop at the end of the current cycle, start up, or return current operating status.
Stop Cycle / Stop Retry	27	Instructs the blender to abort current cycle or current material dispense. Aborting current cycle cause blender to start a new cycle. Aborting current dispense causes the blender to start dispensing the next material in its current settings.

MLAN Command History

The following table documents when commands have been added to the MLAN software. The chip version number can be found on the MLAN chip within the controller.

In most cases with the introduction of new commands to the software in MLAN chips, 12 software chips were either first to be updated or both the 12 software and the 4 software chips were updated at the same time.

Not all chips are listed below. What are listed are chips that marked a change in the software and were available for testing. If your chip is not listed, it may indicate that your chip did not mark a change in the software or possibly it was not available for testing when this information was compiled.

Chips versions numbers indicate a date. For instance chip "60603A" means 1996 (6), June (06), 3rd (03) followed by "T" or "TC" for twelve software or "A" or "WS" for four software. Your chip version number may fall somewhere in between the chips listed below if it is not directly listed.

Other Notes:

- Controllers using chips prior to **60603A (06/03/1996)** have an earlier circuit board, which would need replacement if the chip is to be updated.
- Chips after 90317A (03/17/1999) will have all parameters available.
- Chips prior to 90317A (03/17/1999), please see chart on the following page.

MLAN Command	Chip Version Printed on Chip	MLAN Command	Chip Version Printed on Chip
Get Version	60603A	Get Weight Units	60710T
Clear Totals	20414A	Set Remote Keypad	60911T
Clear Totals Immediately	80609A	Send Keystroke	60911T
Get Address	50925A	Send Settings	20414T
Get All Parameters	60809A	Set Batch Weight	60603A
Get Batch Info	60603A	Set Date & Time	60603A
Get Cycle, Weight & Time	30913A	Set Parameter	70529A
Get Display	50925A	Set Steady State Rate	70916T
Get Parameter	70205T	Set Tag	60710T
Get Settings	20414A	Set Target Throughput	90317A
Get Status	41019A	Set Weight Units	60710T
Get Steady State Rate	60603A	Silence Alarm	60603A
Get Target Throughput Status	90317A	Start / Stop / Status	60603A
Get Totals	20414A	Stop Cycle / Stop Retry	71222T
Get Type	20414A	XT Parameters	60603A

PLEASE NOTE:

Depending on the date of the chip in your controller, all commands may not be available. The chips can be upgraded, so if you need a newer chip, please contact your nearest Maguire reseller.

Modbus TCP/IP Communication for WSB

General Information

The Modbus TCP/IP command protocol data format used has been designed to be as consistent as possible with the MLAN command set. A full description of the Modbus TCP/IP specification can be found at www.modicon.com/openmbus

The Modbus registers are Word (two-byte) values. Values shown are decimal (base 10) values.

Command Format (Write)

Output Byte	Modbus TCP/IP Description	Name	Range	MLAN Description
0	Transaction ID		Usually 0	
1	Transaction ID		Usually 0	
2	Protocol ID		Usually 0	
3	Protocol ID		Usually 0	
4	Total Data Length		0	
5	Total Data Length		7 to 255	
6	Slave Address			MLAN Address
7	Function Code		15 or 16	
8	Register Hi	Command Code	24	MLAN Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		0 to N	
12	Data Byte Count		0 to (N+1)*2	
13	Data Word 0 Hi			
14	Data Word 0 Lo			
.	.			
.	.			
X	Data Word N Hi			
X+1	Data Word N Lo			

Response Format (Write)

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		Usually 0	
1	Transaction ID		Usually 0	
2	Protocol ID		Usually 0	
3	Protocol ID		Usually 0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		15 or 16	Top bit set on error

Command Format (Read)

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		Usually 0	
1	Transaction ID		Usually 0	
2	Protocol ID		Usually 0	
3	Protocol ID		Usually 0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	84	Get Batch Information Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		N	

Response Format (Read)

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		Usually 0	
1	Transaction ID		Usually 0	
2	Protocol ID		Usually 0	
3	Protocol ID		Usually 0	
4	Total Data Length		0	
5	Total Data Length		3 to 255	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		0 to (N+1)*2	
9	Data Word 0 Hi			
10	Data Word 0 Lo			
.	.			
.	.			
X	Data Word N Hi			
X+1	Data Word N Lo			

The Modbus register fields are used to hold the command codes and are the same as those used for the MLAN communication. The number denoting each command is shown in table 3.

Note: One potential source of confusion is the relationship between the reference numbers used in MODBUS functions, and the 'register numbers' used in Modicon PLC's. For historical reasons, user reference numbers were expressed as decimal numbers with a starting offset of 1. However MODBUS uses the more natural software interpretation of an unsigned integer index starting at zero.

So a modbus message requesting the read of a register at offset 0 would return the value known to the application programmer as found in register 4:00001 (memory type 4 = output register, reference 00001)

The checksum specified in the MLAN protocol is NOT used in the Modbus TCP/IP communication. Error checking is taken care of automatically by the Modbus TCP/IP software as each Ethernet frame contains it's own CRC.

When the blender controller has executed the command, the Modbus function code is echoed in the reply Modbus TCP/IP data packet. If an error is encountered the top bit of the reply function code will be set and will be followed by a single byte indicating the reason for the error.

**Response Format with Error
(Write/Read)**

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		Usually 0	
1	Transaction ID		Usually 0	
2	Protocol ID		Usually 0	
3	Protocol ID		Usually 0	
4	Total Data Length		0	
5	Total Data Length		3	
6	Slave Address			MLAN Address
7	Function Code		131, 132, 143 or 144	
8	Error Code			Reason for failure

Error Code Explanations

The Modbus TCP/IP Error Code byte can take the following values:

- 07 Communication error (NAK negative-acknowledge).
- 01 This means that the command is not supported.
- 06 Communication Error (Time-out).
- 03 Invalid parameter passed in the command.

Additions to the MLAN Command Descriptions for use with Modbus TCP/IP

The “*Set-Parameter*” (68) and “*Get-Parameter*” (69) commands use an integer value to identify the particular parameter requested.

Table 4 shows how this number relates to the three-letter parameter abbreviation. “Four-component” software and the “Twelve-component” software options are shown. For the parameters 50 upwards, a second variable is required. This specifies the component number. The number is 1 to 12 for the “Twelve” software. For the “Four” software:

1 = Regrind 2 = Natural 3 = Colour 4 = Additive

Modbus TCP/IP Command Example

The example below illustrates the “Get-Parameter _LA (Lag Time) for component 3” command over Modbus TCP/IP on MLAN address 1. The Purpose of this would be to retrieve the setting for the Lag Time (LA parameter) for hopper / component number 3 on a blender:

Example Get Parameter Command _LA component 3				
Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address		1	MLAN Address = 1
7	Function Code		3 or 4	
8	Register Hi	Command Code	69	MLAN Command Code Get Parameter
9	Register Lo		75	Reference number for the LA Parameter + Hopper / Component number 3
10	Point Count Hi		0	
11	Point Count Lo		1	

Table 2: Input Data: Reply to Command				
Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		5	
6	Slave Address		1	MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		2	
9	Data Word 0 Hi		0	
10	Data Word 0 Lo		20	_AL value

Please refer to Table 4 on the next page to see the Modbus TCP/IP reference number for other MLAN parameters.

Modbus TCP/IP Reference Numbers for Blender Parameters
(Reference Table 4)

Modbus Register Reference # (Lo Byte)	4 Software Parameters	12 Software Parameters
1	FLG	FLG
2	MIX	MIX
3	FCV	FCV
4	DTI	DTI
5	KDF	KDF
6	WDF	WDF
7	BER	BER
8	ROC	ROC
9	ROV	ROV
10	RHL	RHL
11	FUL	FUL
12	MAX	MAX
13	TH	TH
14	TL	TL
15	PRT	PRT
16	RLO	
17	DLY	DLY
18	LT1	
19	LT2	
20	PRC	PRC
21	STL	STL
22	LCL	LCL
23	LCH	LCH
24	LCF	LCF
25	LCZ	LCZ
26		DS1
27		DS2
28	SCR	SCR
28	BCR	BCR
30	XCV	XCV
31	XRC	XRC
32	TCV	TCV
33	TRC	TRC
34	XTP	XTP
35	XAL	XAL
36	XUL	XUL
37	CPL	CPL
38	MPO	MPO

Modbus Register Reference # (Lo Byte)	4 Software Parameters	4 Software Component #	12 Software Parameters	12 Software Component #
50 to 61			TY	1 TO 12
62 to 73			CS	1 TO 12
74 to 85	RAL	1	AL	1 TO 12
	NAL	2		
	CAL	3		
	AAL	4		
86 to 97	CXT	3	XT	1 TO 12
	AXT	4		
98 to 109	RSE	1	SE	1 TO 12
	CSE	3		
	ASE	4		
110 to 121	RWT	1	WT	1 TO 12
	NWT	2		
	CWT	3		
	AWT	4		
122 to 133	RTI	1	TI	1 TO 12
	NTI	2		
	CTI	3		
	ATI	4		
134 to 145	RMI	1	MI	1 TO 12
	NMI	2		
	CMI	3		
	AMI	4		
146 to 157	RNC	1	NC	1 TO 12
	NNC	2		
	CNC	3		
	ANC	4		
158 to 169	RPT	1	PT	1 TO 12
	NPT	2		
	CPT	3		
	APT	4		
170 to 181	RRP	1	RP	1 TO 12
	NRP	2		
	CRP	3		
	ARP	4		
182 to 193	RRD	1	RD	1 TO 12
	NRD	2		
	CRD	3		
	ARD	4		
194 to 205	RLA	1	LA	1 TO 12
	NLA	2		
	CLA	3		

Data Commands

Clear Totals

Description: Resets the totals to zero.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		7	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	24	Clear Totals Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		0	
12	Data Byte Count		0	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

NOTE: The totals will not be erased until the end of the current cycle. If the blender is idle, the totals will be cleared at the end of the next cycle.

Clear Totals Immediately

Description: Resets the totals to zero.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		7	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	28	Clear Totals Immediately Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		0	
12	Data Byte Count		0	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

NOTE: The totals will be erased immediately.

Get All Parameters

Description: Gets all of the parameters and their values.

***** This MLAN command is not supported *****

Get Batch Info

Description: Returns the batch weight, current portion, accumulated total, and batch count.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	84	Get Batch Information Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		4	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		11	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		8	
9	Data Word 0 Hi	Batch Weight		
10	Data Word 0 Lo	Batch Weight	0 to 65535	Batch Weight (Pounds or Kilos only)
11	Data Word 1 Hi	Current portion		
12	Data Word 1 Lo	Current portion	0 to 65535	Completed portion of current batch
13	Data Word 2 Hi	Accumulative Total		
14	Data Word 2 Lo	Accumulative Total	0 to 65535	Total weight of all completed batches
15	Data Word 3 Hi	Batch Count		
16	Data Word 3 Lo	Batch Count	0 to 65535	Total number of completed batches

Note 1: Batch weight is given in pounds if "Get Weight Units" returns either pounds or ounces. If "Get Weight Units" returns either kilograms or grams, then batch weight is in kilograms.

Get Cycle Weight and Time

Description: Returns the size of the last batch/cycle and the duration of time between the last two cycles.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	50	Get Cycle Weight and Time Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		3	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		9	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		6	
9	Data Word 0 Hi	Cycle Weight		
10	Data Word 0 Lo	Cycle Weight	0 to 65535	Grams (or tenths of grams) in last cycle
11	Data Word 1 Hi	Cycle Time		
12	Data Word 1 Lo	Cycle Time		
13	Data Word 2 Hi	Cycle Time		
14	Data Word 2 Lo	Cycle Time	0 to 4294967295	Number of interrupts during the last cycle (244/sec)

Get Display

Description: Returns the current light emitting diode (LED) buffer.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	56	Get Display Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		8	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		19	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		16	
9	Data Word 0 Hi	Display		
10	Data Word 0 Lo	Display		
11	Data Word 1 Hi	Display		
12	Data Word 1 Lo	Display		
13	Data Word 2 Hi	Display		
14	Data Word 2 Lo	Display		
15	Data Word 3 Hi	Display		
16	Data Word 3 Lo	Display		
17	Data Word 4 Hi	Display		
18	Data Word 4 Lo	Display		
19	Data Word 5 Hi	Display		

20	Data Word 5 Lo	Display		
21	Data Word 6 Hi	Display		
22	Data Word 6 Lo	Display		
23	Data Word 7 Hi	Display		
24	Data Word 7 Lo	Display	ASCII	ASCII characters currently displayed on LED. 1 Char per Word
				Data Word 0 is the leftmost character

Get Parameter

Description: Gets a single parameter.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	69	Get Parameter Command
		Parameter Ref.	0 to 255	Parameter number – please refer to table below 0 – 3 = 4 Software (R,N,C,A) 0 – 11 = 12 Software (0,1,2,3,4,5,6,7,8,9,10,11)
9	Register Lo	Component Num.		
10	Point Count Hi		0	
11	Point Count Lo		1	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		5	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		2	
9	Data Word 0 Hi	Parameter Value		
10	Data Word 0 Lo	Parameter Value	0 to 65535	The value of the parameter.

NOTE: Parameter definitions are given in the blender manual.

Get Settings

Description: Returns the mix percentages, component types, work order #, and operator #.

Command Format (type 1 - Four Component Software)

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	20	Get Settings Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		30	

Response Format Type 1 - Four Component Software

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		63	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		60	
9	Data Word 0 Hi	System Type	0	
10	Data Word 0 Lo	System Type	2, 3, 9, or 10	2=tenths of grams, also, NO change in totals
				Since last get total cmd (16)
				3=tenths of grams, also, change in totals
				Since last get total cmd (16)
				9=grams, also, NO change in totals
				Since last get total cmd (16)
				10=grams, also, change in totals
				Since last get total cmd (16)
11	Data Word 1 Hi	Software Type	0	
12	Data Word 1 Lo	Software Type	4	4=four component software

13	Data Word 2 Hi	Type Hopper 1	0	
14	Data Word 2 Lo	Type Hopper 1	0	Always zeros (implied 1=regrind)
15	Data Word 3 Hi	Setting Hopper 1		
16	Data Word 3 Lo	Setting Hopper 1	0 to 999	Implied decimal point ###
17 to 20	Data Word 4 to 5	Pad 2	0	Padding always zero
21	Data Word 6 Hi	Type Hopper 3	0	
22	Data Word 6 Lo	Type Hopper 3	0	Always zeros (implied 3=color)

Response Format Type 1 - Four Component Software - continued

23	Data Word 7 Hi	Setting Hopper 3	0	
24	Data Word 7 Lo	Setting Hopper 3	0 to 999	Implied decimal point ###
25	Data Word 8 Hi	Type Hopper 4	0	
26	Data Word 8 Lo	Type Hopper 4	0	Padding always zeros (implied 3=additive)
27	Data Word 9 Hi	Setting Hopper 4		
28	Data Word 9 Lo	Setting Hopper 4	0 to 999	Implied decimal point ###
29 to 60	Data Word 10 to 25	Pad 5 - 12	0	Padding always zero
61	Data Word 26 Hi	Recipe Number		
62	Data Word 26 Lo	Recipe Number	100 to 65535	Recipe number
63	Data Word 27 Hi	Operator Number		
64	Data Word 27 Lo	Operator Number	0 to 999	Operator number
65	Data Word 28 Hi	Work Order Number		
66	Data Word 28 Lo	Work Order Number		
67	Data Word 29 Hi	Work Order Number		
68	Data Word 29 Lo	Work Order Number	0 to 999999	Work order number

Response Format Type 2 - Twelve Component Software

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		63	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		60	

9	Data Word 0 Hi	System Type	0	
10	Data Word 0 Lo	System Type	2, 3, 9, or 10	2=tenths of grams, also, NO change in totals
				Since last get total cmd (16)
				3=tenths of grams, also, change in totals
				Since last get total cmd (16)
				9=grams, also, NO change in totals
				Since last get total cmd (16)
				10=grams, also, change in totals
				Since last get total cmd (16)
11	Data Word 1 Hi	Software Type	0	
12	Data Word 1 Lo	Software Type	12	12=twelve component software

Response Format Type 2 - Twelve Component Software - continued

13	Data Word 2 Hi	Type Hopper 1	0	
14	Data Word 2 Lo	Type Hopper 1	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
15	Data Word 3 Hi	Setting Hopper 1		
16	Data Word 3 Lo	Setting Hopper 1	0 to 999	Implied decimal point r/a ##.# or n ###
17	Data Word 4 Hi	Type Hopper 2	0	Padding always zero
18	Data Word 4 Lo	Type Hopper 2	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
19	Data Word 5 Hi	Setting Hopper 2		
20	Data Word 5 Lo	Setting Hopper 2	0 to 999	Implied decimal point r/a ##.# or n ###
21	Data Word 6 Hi	Type Hopper 3	0	
22	Data Word 6 Lo	Type Hopper 3	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
23	Data Word 7 Hi	Setting Hopper 3	0	
24	Data Word 7 Lo	Setting Hopper 3	0 to 999	Implied decimal point r/a ##.# or n ###
25	Data Word 8 Hi	Type Hopper 4	0	
26	Data Word 8 Lo	Type Hopper 4	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
27	Data Word 9 Hi	Setting Hopper 4		
28	Data Word 9 Lo	Setting Hopper 4	0 to 999	Implied decimal point r/a ##.# or n ###
29	Data Word 10 Hi	Type Hopper 5	0	
30	Data Word 10 Lo	Type Hopper 5	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
31	Data Word 11 Hi	Setting Hopper 5		
32	Data Word 11 Lo	Setting Hopper 5	0 to 999	Implied decimal point r/a ##.# or n ###
33	Data Word 12 Hi	Type Hopper 6	0	
34	Data Word 12 Lo	Type Hopper 6	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none

35	Data Word 13 Hi	Setting Hopper 6		
36	Data Word 13 Lo	Setting Hopper 6	0 to 999	Implied decimal point r/a ##.# or n ###
37	Data Word 14 Hi	Type Hopper 7	0	
38	Data Word 14 Lo	Type Hopper 7	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
39	Data Word 15 Hi	Setting Hopper 7		
40	Data Word 15 Lo	Setting Hopper 7	0 to 999	Implied decimal point r/a ##.# or n ###
41	Data Word 16 Hi	Type Hopper 8	0	
42	Data Word 16 Lo	Type Hopper 8	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
43	Data Word 17 Hi	Setting Hopper 8		

Response Format Type 2 - Twelve Component Software - continued

44	Data Word 17 Lo	Setting Hopper 8	0 to 999	Implied decimal point r/a ##.# or n ###
45	Data Word 18 Hi	Type Hopper 9	0	
46	Data Word 18 Lo	Type Hopper 9	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
47	Data Word 19 Hi	Setting Hopper 9		
48	Data Word 19 Lo	Setting Hopper 9	0 to 999	Implied decimal point r/a ##.# or n ###
49	Data Word 20 Hi	Type Hopper 10	0	
50	Data Word 20 Lo	Type Hopper 10	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
51	Data Word 21 Hi	Setting Hopper 10		
52	Data Word 21 Lo	Setting Hopper 10	0 to 999	Implied decimal point r/a ##.# or n ###
53	Data Word 22 Hi	Type Hopper 11	0	
54	Data Word 22 Lo	Type Hopper 11	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
55	Data Word 23 Hi	Setting Hopper 11		
56	Data Word 23 Lo	Setting Hopper 11	0 to 999	Implied decimal point r/a ##.# or n ###
57	Data Word 24 Hi	Type Hopper 12	0	
58	Data Word 24 Lo	Type Hopper 12	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
59	Data Word 25 Hi	Setting Hopper 12		
60	Data Word 25 Lo	Setting Hopper 12	0 to 999	Implied decimal point r/a ##.# or n ###
61	Data Word 26 Hi	Recipe Number		
62	Data Word 26 Lo	Recipe Number	100 to 65535	Recipe number
63	Data Word 27 Hi	Operator Number		
64	Data Word 27 Lo	Operator Number	0 to 999	Operator number
65	Data Word 28 Hi	Work Order Number		
66	Data Word 28 Lo	Work Order Number		

67	Data Word 29 Hi	Work Order Number		
68	Data Word 29 Lo	Work Order Number	0 to 999999	Work order number

Get Status

Description: Returns the current state of all signal inputs and outputs.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	53	Get Status Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		3	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		9	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		6	
9	Data Word 0 Hi	Output Status		
10	Data Word 0 Lo	Output Status	0 to 65535	See note 1
11	Data Word 1 Hi	Alarm Status	0	
12	Data Word 1 Lo	Alarm Status	0 to 255	See note 2
13	Data Word 2 Hi	Sensor Status	0	
14	Data Word 2 Lo	Sensor Status	0 to 255	See note 3

Note 1a - Output status for FOUR component software

BIT	Name	Value	Description
0	Mixer Valve	1=open 0=closed	Rightmost bit
1	Reserved	1=open 0=closed	
2	Reserved	1=open 0=closed	

3	Reserved	1=open 0=closed		
4	Reserved	1=open 0=closed		
5	Reserved	1=open 0=closed		
6	Reserved	1=open 0=closed		
7	Reserved	1=open 0=closed		
8	Mix Motor	1=open 0=closed		
9	Alarm	1=open 0=closed		
10	Weigh Bin Valve	1=open 0=closed		
11	Additive	1=open 0=closed		
12	Color	1=open 0=closed		
13	Natural	1=on 0=off		
14	Regrind	1=open 0=closed		
15	Reserved	1=on 0=off		Leftmost bit

Note 1b - Output status for TWELVE component software

BIT	Name		Value	Description
0	Component 1	1=open 0=closed		Rightmost bit
1	Component 2	1=open 0=closed		
2	Component 3	1=open 0=closed		
3	Component 4	1=open 0=closed		
4	Component 5	1=open 0=closed		
5	Component 6	1=open 0=closed		
6	Component 7	1=open 0=closed		
7	Component 8	1=open 0=closed		
8	Component 9	1=open 0=closed		
9	Component 10	1=open 0=closed		
10	Component 11	1=open 0=closed		
11	Component 12	1=open 0=closed		
12	Weigh Bin Valve	1=open 0=closed		
13	Mix Motor	1=on 0=off		
14	Mixer Valve	1=open 0=closed		
15	Alarm	1=on 0=off		Leftmost bit

Note 2 - Alarm Status

BIT	Name		Value	Description
0 to 6	Alarm Code	1 to 12=Component alarm		Bit 0 is the rightmost bit
		13 = Batch Alarm		
		14 = Bail Out Alarm		
		15 = Dump Alarm		
7	Alarm Silenced	1 = silenced		Leftmost bit
8-15	Unused			

Note 3 - Sensor Status

BIT	Name		Value	Description
0	Empty bin mix motor sensor or switch	1=yes 0=no		Rightmost bit
1 to 3	Reserved			
4	Manual Mode	1=yes 0=no		
5	Program Mode	1=yes 0=no		
6	Running Mode	1=yes 0=no		
7	Soft Stop Mode *	1=yes 0=no		Leftmost bit
	* See Start/Stop/Status command			
8-15	Unused			

Get Steady State Rate

Description: Returns throughput rate.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	64	Get Steady State Rate Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		2	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		7	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		4	
9	Data Word 0 Hi	Steady State Rate		
10	Data Word 0 Lo	Steady State Rate		
11	Data Word 1 Hi	Steady State Rate		
12	Data Word 1 Lo	Steady State Rate	0 to 4294967295	Grams (or tenths of grams) per hour

Get Target Throughput & Status

Description: Returns the target throughput rate for extrusion control.
See XCV parameter in blender manual for more information.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	29	Get Target Throughput & Status Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		3	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		9	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		6	
9	Data Word 0 Hi	Status	0	
10	Data Word 0 Lo	Status	255	See note 1
11	Data Word 1 Hi	Steady State Rate		
12	Data Word 1 Lo	Steady State Rate		
13	Data Word 2 Hi	Steady State Rate		
14	Data Word 2 Lo	Steady State Rate	0 to 4294967295	Grams (or tenths of grams) per hour

Note 1 – Status

BIT	Name	Value	Description
0	Extrusion control	1=on	Bit 0 is the rightmost bit

		0=off	
1		1=steady 0=not steady	T or no T on display
2		1=Throughput 0=Voltage	Controlling mode
3		1=Grams 0=Tenths of Grams	Weight unit of rate
4		1=Yield 0=Weight	See note 2
5 - 15	Reserved		Leftmost bit

Note 2: If the extrusion process is being controlled by weight, then the output will be a steady weight per time (e.g. lbs/hr). If however the extrusion process is being controlled by yield, then the output will be a steady weight per length (e.g. lbs/foot).

Get Totals

Description: Returns the current totals.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	16 or 17	Get Totals Command - see note 1
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		23	

Response Format Type 1 - Four Component Software

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		49	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		46	
9	Data Word 0 Hi	System Type	0	
10	Data Word 0 Lo	System Type	2 or 9	2=tenths of grams, 9=grams
11	Data Word 1 Hi	Software Type	0	
12	Data Word 1 Lo	Software Type	4	4=four component software
13	Data Word 2 Hi	Sequence Number	0	
14	Data Word 2 Lo	Sequence Number	0	Reserved for future use
15	Data Word 3 Hi	Cycles		
16	Data Word 3 Lo	Cycles	0 to 65535	Number of batches that have been made
17	Data Word 4 Hi	Flag	0	
18	Data Word 4 Lo	Flag	0	Reserved for future use
19	Data Word 5 Hi	Total Hopper 1		
20	Data Word 5 Lo	Total Hopper 1		

21	Data Word 6 Hi	Total Hopper 1		
22	Data Word 6 Lo	Total Hopper 1	0 to 4294967295	Grams (or tenths of grams) used
23	Data Word 7 Hi	Total Hopper 2		
24	Data Word 7 Lo	Total Hopper 2		
25	Data Word 8 Hi	Total Hopper 2		
26	Data Word 8 Lo	Total Hopper 2	0 to 4294967295	Grams (or tenths of grams) used
27	Data Word 9 Hi	Total Hopper 3		
28	Data Word 9 Lo	Total Hopper 3		
29	Data Word 10 Hi	Total Hopper 3		
30	Data Word 10 Lo	Total Hopper 3	0 to 4294967295	Grams (or tenths of grams) used
31	Data Word 11 Hi	Total Hopper 4		
31	Data Word 12 Hi	Total Hopper 4		
31	Data Word 13 Hi	Total Hopper 4		
32	Data Word 14 Lo	Total Hopper 4	0 to 4294967295	Grams (or tenths of grams) used
33 to 54	Data Word 15 to 23	Pad 5 -12	0	Padding always zero

Response Format Type 2 - Twelve Component Software

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		49	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		46	
9	Data Word 0 Hi	System Type	0	
10	Data Word 0 Lo	System Type	2 or 9	2=tenths of grams, 9=grams
11	Data Word 1 Hi	Software Type	0	
12	Data Word 1 Lo	Software Type	4	4=four component software
13	Data Word 2 Hi	Sequence Number	0	
14	Data Word 2 Lo	Sequence Number	0	Reserved for future use
15	Data Word 3 Hi	Cycles		
16	Data Word 3 Lo	Cycles	0 to 65535	Number of batches that have been made
17	Data Word 4 Hi	Flag	0	
18	Data Word 4 Lo	Flag	0	Reserved for future use
19	Data Word 5 Hi	Total Hopper 1		
20	Data Word 5 Lo	Total Hopper 1		
21	Data Word 6 Hi	Total Hopper 1		
22	Data Word 6 Lo	Total Hopper 1	0 to 4294967295	Grams (or tenths of grams) used
23	Data Word 7 Hi	Total Hopper 2		
24	Data Word 7 Lo	Total Hopper 2		
25	Data Word 8 Hi	Total Hopper 2		
26	Data Word 8 Lo	Total Hopper 2	0 to 4294967295	Grams (or tenths of grams) used
27	Data Word 9 Hi	Total Hopper 3		
28	Data Word 9 Lo	Total Hopper 3		
29	Data Word 10 Hi	Total Hopper 3		
30	Data Word 10 Lo	Total Hopper 3	0 to 4294967295	Grams (or tenths of grams) used
31	Data Word 11 Hi	Total Hopper 4		
32	Data Word 11 Lo	Total Hopper 4		
33	Data Word 12 Hi	Total Hopper 5		
34	Data Word 12 Lo	Total Hopper 5	0 to 4294967295	Grams (or tenths of grams) used
35	Data Word 13 Hi	Total Hopper 6		
36	Data Word 13 Lo	Total Hopper 6		
37	Data Word 14 Hi	Total Hopper 7		

38	Data Word 14 Lo	Total Hopper 7	0 to 4294967295	Grams (or tenths of grams) used
39	Data Word 15 Hi	Total Hopper 8		
40	Data Word 15 Lo	Total Hopper 9		
41	Data Word 16 Hi	Total Hopper 9		
42	Data Word 16 Lo	Total Hopper 9	0 to 4294967295	Grams (or tenths of grams) used
43	Data Word 17 Hi	Total Hopper 10		
44	Data Word 17 Lo	Total Hopper 10		
45	Data Word 18 Hi	Total Hopper 10		
46	Data Word 18 Lo	Total Hopper 10	0 to 4294967295	Grams (or tenths of grams) used
47	Data Word 19 Hi	Total Hopper 11		
48	Data Word 19 Lo	Total Hopper 11		
49	Data Word 20 Hi	Total Hopper 11		
50	Data Word 20 Lo	Total Hopper 11	0 to 4294967295	Grams (or tenths of grams) used
51	Data Word 21 Hi	Total Hopper 12		
52	Data Word 21 Lo	Total Hopper 12		
53	Data Word 22 Hi	Total Hopper 12		
54	Data Word 22 Lo	Total Hopper 12	0 to 4294967295	Grams (or tenths of grams) used

Note 1: If the "Command Code" is set to 16, the controller will reset an internal flag indicating that the totals have been received. If, however, "Command Code" is set to 17, the flag will NOT be reset. See the "System Type" part of the "Get Settings" command for how the internal flag is used.

Get Type

Description: Returns the software type (4 or 12) and load cell type (2 or 9),
(tenths of grams or whole grams)

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	49	Get Type Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		2	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		7	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		4	
9	Data Word 0 Hi	System Type	0	
10	Data Word 0 Lo	System Type	2 or 9	2=tenths of grams, 9=grams
11	Data Word 1 Hi	Software Type		
12	Data Word 1 Lo	Software Type	4 or 12	4=four component software 12=twelve component software

Get Version

Description: Returns the version of the software in the controller.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	80	Get Version Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		6	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		15	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		12	
9 to 14	Data Word 0 to 5	Version Number	ASCII	Software version number (ASCII)

Get Weight Units

Description: Returns the units that the blender is using to display totals, such as pounds or kilograms. This command is needed to interpret the Get Batch Info command.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	85	Get Version Command
9	Register Lo		0	
10	Point Count Hi		0	
11	Point Count Lo		1	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		5	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		2	
9	Data Word 0 Hi	Weight units	0	
10	Data Word 0 Lo	Weight units	0, 1, 2, or 4	0=pounds, 1=ounces, 2=grams, 4=kilograms

Send Keystroke

Description: Sends a keystroke. (See "Set Remote Keypad" command)

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		7	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	87	Send Keystroke Command
9	Register Lo	Code	ASCII	See note 1
10	Register Count Hi		0	
11	Register Count Lo		0	
12	Data Byte Count		0	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Please refer to notes on the next page:

Notes reference Send Keystroke Command:

<u>KEY</u>	<u>CODE</u>	<u>KEY</u>	<u>CODE</u>
VIEW	Q	*	*
RECP	h	0	0
BTCH	H	CE	X
FAST	I	HOLD	M
EXIT	E	DUMP	D
-----		-----	
SET	S	PARA	K
OPER	O	ZERO	Z
TIME	T	FULL	F
CAL	L	MIX	G
-----		ALRM	k
TAG	e		
REG	R		

1	1		
2	2		
3	3		
NAT / A	A		

4	4		
5	5		
6	6		
COL / B	B		

7	7		
8	8		
9	9		
ADD / C	C		

Send Settings

Description: Sets the mix percentages, component types, work order #, and operator #.

Command Format Type 1 - Four Component Software

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		63	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	19	Send Settings Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		28	
12	Data Byte Count		56	
13	Data Word 0 Hi	Type Hopper 1	0	
14	Data Word 0 Lo	Type Hopper 1	1	Always 1=regrind
15	Data Word 1 Hi	Setting Hopper 1		
16	Data Word 1 Lo	Setting Hopper 1	0 to 999	Implied decimal point ###
17	Data Word 2 Hi	Type Hopper 2	0	
18	Data Word 2 Lo	Type Hopper 2	2	Always 2=natural
19	Data Word 3 Hi	Setting Hopper 2	0	
20	Data Word 3 Lo	Setting Hopper 2	0	Always on
21	Data Word 4 Hi	Type Hopper 3	0	
22	Data Word 4 Lo	Type Hopper 3	3	Always 3=color
23	Data Word 5 Hi	Setting Hopper 3	0	
24	Data Word 5 Lo	Setting Hopper 3	0 to 255	Implied decimal point ###
25	Data Word 6 Hi	Type Hopper 4	0	
26	Data Word 6 Lo	Type Hopper 4	3	Always 3=additive
27	Data Word 7 Hi	Setting Hopper 4	0	
28	Data Word 7 Lo	Setting Hopper 4	0 to 255	Implied decimal point ###
29	Data Word 8 to 12	Padding	0	Padding always zero
61	Data Word 24 Hi	Recipe number		
62	Data Word 24 Lo	Recipe number	100 to 65536	Recipe number
63	Data Word 25 Hi	Work Order Number		
64	Data Word 25 Lo	Work Order Number		Recipe number
65	Data Word 26 Hi	Work Order Number		
66	Data Word 26 Lo	Work Order Number	0 to 999999	Work order number

Command Format Type 1 - Four Component Software – continued

67	Data Word 27 Hi	Operator number		
68	Data Word 27 Lo	Operator number	0 to 999	Operator number

Command Format Type 2 - Twelve Component Software

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		63	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	19	Send Settings Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		28	
12	Data Byte Count		56	
13	Data Word 0 Hi	Type Hopper 1	0	
14	Data Word 0 Lo	Type Hopper 1	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
15	Data Word 1 Hi	Setting Hopper 1		
16	Data Word 1 Lo	Setting Hopper 1	0 to 999	Implied decimal point r/a ##.# or n ###
17	Data Word 2 Hi	Type Hopper 2	0	
18	Data Word 2 Lo	Type Hopper 2	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
19	Data Word 3 Hi	Setting Hopper 2	0	
20	Data Word 3 Lo	Setting Hopper 2	0 to 999	Implied decimal point r/a ##.# or n ###
21	Data Word 4 Hi	Type Hopper 3	0	
22	Data Word 4 Lo	Type Hopper 3	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
23	Data Word 5 Hi	Setting Hopper 3	0	
24	Data Word 5 Lo	Setting Hopper 3	0 to 999	Implied decimal point r/a ##.# or n ###
25	Data Word 6 Hi	Type Hopper 4	0	
26	Data Word 6 Lo	Type Hopper 4	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
27	Data Word 7 Hi	Setting Hopper 4	0	
28	Data Word 7 Lo	Setting Hopper 4	0 to 999	Implied decimal point r/a ##.# or n ###
29	Data Word 8 Hi	Type Hopper 5	0	
30	Data Word 8 Lo	Type Hopper 5	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none

31	Data Word 9 Hi	Setting Hopper 5	0	
32	Data Word 9 Lo	Setting Hopper 5	0 to 999	Implied decimal point r/a ##.# or n ###
33	Data Word 10 Hi	Type Hopper 6	0	
34	Data Word 10 Lo	Type Hopper 6	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
35	Data Word 11 Hi	Setting Hopper 6	0	
36	Data Word 11 Lo	Setting Hopper 6	0 to 999	Implied decimal point r/a ##.# or n ###
37	Data Word 12 Hi	Type Hopper 7	0	
38	Data Word 12 Lo	Type Hopper 7	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
39	Data Word 13 Hi	Setting Hopper 7		
40	Data Word 13 Lo	Setting Hopper 7	0 to 999	Implied decimal point r/a ##.# or n ###
41	Data Word 14 Hi	Type Hopper 8	0	
42	Data Word 14 Lo	Type Hopper 8	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
43	Data Word 15 Hi	Setting Hopper 8	0	
44	Data Word 15 Lo	Setting Hopper 8	0 to 999	Implied decimal point r/a ##.# or n ###
45	Data Word 16 Hi	Type Hopper 9	0	
46	Data Word 16 Lo	Type Hopper 9	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
47	Data Word 17 Hi	Setting Hopper 9	0	
48	Data Word 17 Lo	Setting Hopper 9	0 to 999	Implied decimal point r/a ##.# or n ###
49	Data Word 18 Hi	Type Hopper 10	0	
50	Data Word 18 Lo	Type Hopper 10	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
51	Data Word 19 Hi	Setting Hopper 10	0	
52	Data Word 19 Lo	Setting Hopper 10	0 to 999	Implied decimal point r/a ##.# or n ###
53	Data Word 20 Hi	Type Hopper 11	0	
54	Data Word 20 Lo	Type Hopper 11	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
55	Data Word 21 Hi	Setting Hopper 11	0	
56	Data Word 21 Lo	Setting Hopper 11	0 to 999	Implied decimal point r/a ##.# or n ###
57	Data Word 22 Hi	Type Hopper 12	0	
58	Data Word 22 Lo	Type Hopper 12	0 to 3	1=regrind, 2=natural, 3=additive/color, 0=none
59	Data Word 23 Hi	Setting Hopper 12	0	
60	Data Word 23 Lo	Setting Hopper 12	0 to 999	Implied decimal point r/a ##.# or n ###
61	Data Word 24 Hi	Recipe number		
62	Data Word 24 Lo	Recipe number	100 to 999	Recipe number
63	Data Word 25 Hi	Work Order Number		
64	Data Word 25 Lo	Work Order Number		
65	Data Word 26 Hi	Work Order		

		Number		
66	Data Word 26 Lo	Work Order Number	0 to 999999	Work order number
67	Data Word 27 Hi	Operator number		
68	Data Word 27 Lo	Operator number	0 to 999	Operator number

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Set Batch Weight

Description: Sets the batch flag parameter and the batch weight.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		11	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	83	Set Batch Weight Command
9	Register Lo			
10	Register Count Hi		0	
11	Register Count Lo		2	
12	Data Byte Count		4	
13	Data Word 0 Hi	Batch Weight		
14	Data Word 0 Lo	Batch Weight	0 to 65536	Batch weight (pounds or kilograms only) (See "Get Weight Units" command for units) See note 2
15	Data Word 1 Hi	Flag		
16	Data Word 1 Lo	Flag	0, 1 or 2	0=no batch, 1=alarm & stop, 2=alarm & cont. See note 1

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

NOTE 1: A flag of 0 means to stop running batches. A flag of 1 means to sound the alarm and stop running at the end of the batch. A flag of 2 means to sound the alarm but continue running at the end of the batch.

NOTE 2: Batch weight is given in pounds if "Get Weight Units" returns either pounds or ounces. If "Get Weight Units" returns either kilograms or grams, then batch weight is in kilograms.

Set Date And Time

Description: Sets the date and time for a particular blender. If the address is 0, all WSBs are set with the new date and time and NO response is sent back.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		15	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	81	Set Date and Time Command
9	Register Lo			
10	Register Count Hi		0	
11	Register Count Lo		4	
12	Data Byte Count		8	
13	Data Word 0 Hi			
14	Data Word 0 Lo			
15	Data Word 1 Hi			
16	Data Word 1 Lo			
17	Data Word 2 Hi			
18	Data Word 2 Lo			
19	Data Word 4 Hi			
20	Data Word 4 Lo	Date and Time	See note 1	Set Date and Time Command

Note 1 - Date and Time

Bit #	Name	Range	Description
0 to 7	Padding	0	
8 to 11	Seconds (ones place)	0 to 9	yy/mm/dd hh:mm:s S
12 to 14	Seconds (tens place)	0 to 5	yy/mm/dd hh:mm: Ss
15	Padding	0	
16 to 19	Minutes (ones place)	0 to 9	yy/mm/dd hh:m M :ss
20 to 22	Minutes (tens place)	0 to 5	yy/mm/dd hh: Mm :ss
23	Padding	0	
24 to 27	Hours (ones place)	0 to 9	yy/mm/dd h H :mm:ss
28 to 29	Hours (tens place)	0 to 2	yy/mm/dd Hh :mm:ss
30	Padding	0	
31	One	1	
32 to 34	Day of week	1 to 7	1 = sunday, 2=monday, ..., 7=saturday

35	Padding	0	
36	One	1	
37	Padding	0	
38 to 39	Padding	0	
40 to 43	Day (ones place)	0 to 9	yy/mm/d D hh:mm:ss
44 to 45	Day (tens place)	0 to 3	yy/mm/ D d hh:mm:ss
46 to 47	Padding	0	
48 to 51	Month (ones place)	0 to 9	yy/m M /dd hh:mm:ss
52	Month (tens place)	0 or 1	yy/ M m/dd hh:mm:ss
53 to 55	Padding	0	
56 to 59	Year (ones place)	0 to 9	y Y /mm/dd hh:mm:ss
60 to 63	Years (tens place)	0 to 9	Y y/mm/dd hh:mm:ss

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Set Parameter

Description: Sets a single parameter.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		13	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	68	Set Parameter Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		3	
12	Data Byte Count		6	
13	Data Word 0 Hi		0	
14	Data Word 0 Lo	Parameter reference number	0 to 63	Parameter number – please refer to table below
15	Data Word 1 Hi			
16	Data Word 1 Lo	Component Number	1 to 4 1 to 12	1 – 4 = 4 Software (R,N,C,A) 1 – 12= 12 Software (1,2,3,4,5,6,7,8,9,10,11,12)
17	Data Word 2 Hi			
18	Data Word 2 Lo	Parameter Value	0 to 65535	Value of the Parameter

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

NOTE: Parameters explanations are given in the blender manual.

Set Remote Keypad

Description: Enables or disables the controller's keypad and/or the "Send Keystroke" MLAN command.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		9	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	88	Set Remote Keypad Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		1	
12	Data Byte Count		2	
13	Data Word 0 Hi		0	
14	Data Word 0 Lo	Flag	0 to 1	See note 1

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Note 1: A flag of 0 enables the keypad on the controller and disables the "Send Keystroke" MLAN command. A flag of 1 disables the keypad and enables the command.

Set Steady State Rate

Description: Sets throughput rate. Note however that the blender will continue to reset the rate accordingly to how much material is being consumed. This is useful if you know that the rate just changed, such as in extrusion control, and you don't want to wait until the blender figures it out.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		15	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	65	Set Steady State Rate Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		4	
12	Data Byte Count		8	
13	Data Word 0 Hi	Steady State Rate		
14	Data Word 0 Lo	Steady State Rate		
15	Data Word 1 Hi	Steady State Rate		
16	Data Word 1 Lo	Steady State Rate		
17	Data Word 2 Hi	Steady State Rate		
18	Data Word 2 Lo	Steady State Rate		
19	Data Word 3 Hi	Steady State Rate		
20	Data Word 3 Lo	Steady State Rate	0 to 4294967295	Grams (or tenths of grams) per hour

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Set Tag

Description: Sets a tag value, recipe, work order, and operator #.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		15	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	90	Set Tag Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		4	
12	Data Byte Count		8	
13	Data Word 0 Hi	Tag ID		
14	Data Word 0 Lo	Tag ID		
15	Data Word 1 Hi	Tag ID		
16	Data Word 1 Lo	Tag ID	ASCII	Two letter acronym designating tag. "RC" = Recipe (1 char per word) "WO" = Work Order (1 char per word) "OP" = Operator (1 char per word)
17	Data Word 2 Hi	Tag Value		
18	Data Word 2 Lo	Tag Value		
19	Data Word 3 Hi	Tag Value		
20	Data Word 3 Lo	Tag Value	0 to 4294967295	The value of the tag. Recipe numbers: 0 to 65,536. Work order numbers: 0 to 999,999. Operator numbers: 0 to 999.

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Set Target Throughput

Description: Sets the Target Throughput for extrusion control.
 See XCV parameter in blender manual for more information.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		11	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	30	Set Target Throughput Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		2	
12	Data Byte Count		4	
13	Data Word 0 Hi	Target Throughput		
14	Data Word 0 Lo	Target Throughput		
15	Data Word 1 Hi	Target Throughput		
16	Data Word 1 Lo	Target Throughput	0 to 4294967295	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Set Weight Units

Description: Sets the units that the blender uses to display totals, such as pounds or kilograms.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		9	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	86	Set Weight Units Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		1	
12	Data Byte Count		2	
13	Data Word 0 Hi	Weight units	0	
14	Data Word 0 Lo	Weight units	0, 1, 2, or 4	0=pounds, 1=ounces, 2=grams, 4=kilograms

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Silence Alarm

Description: Has the same effect as if the silence alarm button was pressed.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		7	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	82	Silence Alarm Command
9	Register Lo		0	
10	Register Count Hi		0	
11	Register Count Lo		0	
12	Data Byte Count		0	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Start/Stop/Status

Description: Either causes the WSB to stop at the end of the current cycle, start up again, or return its current status.

Command Format (Subcommand 1:stop or 2:start)

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		7	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	55	Start / Stop / Status Command
9	Register Lo	Subcommand	1 or 2	0=mode status, 1=soft stop, 2=soft start
10	Register Count Hi		0	
11	Register Count Lo		0	
12	Data Byte Count		0	

Command Format (Subcommand 0:mode status)

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		6	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	
8	Register Hi	Command Code	55	Start / Stop / Status Command
9	Register Lo	Subcommand	0	0=mode status
10	Point Count Hi		0	
11	Point Count Lo		0	

Response Format (Subcommand 1:stop or 2:start)

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Response Format (Subcommand 0:mode status)

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		5	
6	Slave Address			MLAN Address
7	Function Code		3 or 4	Top bit set on error
8	Byte Count		2	
9	Data Word 0 Hi	Mode	0	
10	Data Word 0 Lo	Mode	0,1 or 2	0 = Hard Stop 1= Soft stop 2 = Automatic Mode / Running Mode

Stop Cycle / Stop Retry

Description: Either causes the WSB to abort the current cycle or the current dispense.

Aborting the current cycle causes the WSB to start the next cycle.

Aborting the current dispense causes the WSB to start dispensing the next component.

Command Format

Output Byte	Modbus Description	Name	Range	MLAN Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		7	
6	Slave Address			MLAN Address
7	Function Code		16	
8	Register Hi	Command Code	27	Stop Cycle / Stop / Retry Command
9	Register Lo	Subcommand	1 or 2	1 = Stop Cycle; 2 = Stop Retry
10	Register Count Hi		0	
11	Register Count Lo		0	
12	Data Byte Count		0	

Response Format

Input Byte	Modbus Description	Name	Range	Description
0	Transaction ID		0	
1	Transaction ID		0	
2	Protocol ID		0	
3	Protocol ID		0	
4	Total Data Length		0	
5	Total Data Length		2	
6	Slave Address			MLAN Address
7	Function Code		16	Top bit set on error

Parameter Table from Four Component Blender Software - Sample

Name	Value	Name	Value
FLG	0	NWT	20800
RAL	0	NTI	7808
NAL	4	CWT	1024
CAL	4	CTI	31232
AAL	4	AWT	1024
MIX	3010	ATI	31232
FCV	5	RMI	325
DTI	10	NMI	325
KDF	2	CMI	4
WDF	2	AMI	1
BER	200	RNC	1
CXT	0	NNC	1
AXT	0	CNC	1
ROC	0	ANC	1
ROV	0	RRP	10
RHL	0	NRP	10
FUL	4000	CRP	10
MAX	6000	ARP	10
TH	200	RRD	81
TL	100	NRD	81
PRT	0	CRD	2
RSE	1000	ARD	5
CSE	1000	RLA	20
ASE	1000	NLA	20
RLO	50	CLA	15
DLY	488	ALA	15
LT1	0	PRC	10
LT2	0	STL	244
RPT	0	LCL	80
NPT	0	LCH	120
CPT	0	LCF	79
APT	0	LCZ	583
RWT	20800	XTP	20010
RTI	7808		

Parameter Table for 12 Component Blender Software (Sample as of version 01003T)

Prior chip versions may not contain all listed parameters, future chip versions may contain additional parameters.

Name	Value	Name	Value	Name	Value	Name	Value
FLG	00000	2TY	00002	5PT	00000	9SE	01000
MIX	03010	2CS	00000	5RP	00010	9WT	26000
FCV	00006	2AL	00004	5RD	00500	9TI	00976
DTI	00006	2XT	00000	5LA	00020	9MI	00001
KDF	00010	2SE	01000	5PO	00000	9NC	00010
WDF	00010	2WT	26000	6TY	00002	9PT	00000
BER	01000	2TI	00976	6CS	00000	9RP	00010
ROC	00000	2MI	00001	6AL	00004	9RD	00500
ROV	00000	2NC	00010	6XT	00000	9LA	00020
RHL	00000	2PT	00000	6SE	01000	9PO	00000
FUL	20000	2RP	00010	6WT	26000	ATY	00002
MAX	30000	2RD	00500	6TI	00976	ACS	00000
TH	01000	2LA	00020	6MI	00001	AAL	00004
TL	00500	2PO	00000	6NC	00010	AXT	00000
PRT	00000	3TY	00002	6PT	00000	ASE	01000
DLY	00488	3CS	00000	6RP	00010	AWT	26000
PRC	00010	3AL	00004	6RD	00500	ATI	00976
STL	00122	3XT	00000	6LA	00020	AMI	00001
LCL	00027	3SE	01000	6PO	00000	ANC	00010
LCH	00039	3WT	26000	7TY	00002	APT	00000
LCF	00079	3TI	00976	7CS	00000	ARP	00010
LCZ	00583	3MI	00001	7AL	00004	ARD	00500
DS1	00000	3NC	00010	7XT	00000	ALA	00020
DS2	00000	3PT	00000	7SE	01000	APO	00000
XCV	00000	3RP	00010	7WT	26000	BTY	00002
XRC	00001	3RD	00500	7TI	00976	BCS	00000
TCV	00000	3LA	00020	7MI	00001	BAL	00004
TRC	00004	3PO	00000	7NC	00010	BXT	00000
XTP	05050	4TY	00002	7PT	00000	BSE	01000
MPO	00183	4CS	00000	7RP	00010	BWT	26000
SCR	00000	4AL	00004	7RD	00500	BTI	00976
XAL	00005	4XT	00000	7LA	00020	BMI	00001
XUL	00200	4SE	01000	7PO	00000	BNC	00010
BCR	00000	4WT	26000	8TY	00002	BPT	00000
CPL	00000	4TI	00976	8CS	00000	BRP	00010
PTD	00020	4MI	00001	8AL	00004	BRD	00500
MCT	00000	4NC	00010	8XT	00000	BLA	00020
1TY	00002	4PT	00000	8SE	01000	BPO	00000
1CS	00000	4RP	00010	8WT	26000	CTY	00002
1AL	00004	4RD	00500	8TI	00976	CCS	00000
1XT	00000	4LA	00020	8MI	00001	CAL	00004
1SE	01000	4PO	00000	8NC	00010	CXT	00000
1WT	26000	5TY	00002	8PT	00000	CSE	01000
1TI	00976	5CS	00000	8RP	00010	CWT	26000
1MI	00001	5AL	00004	8RD	00500	CTI	00976
1NC	00010	5XT	00000	8LA	00020	CMI	00001
1PT	00000	5SE	01000	8PO	00000	CNC	00010
1RP	00010	5WT	26000	9TY	00002	CPT	00000
1RD	00500	5TI	00976	9CS	00000	CRP	00010
1LA	00020	5MI	00001	9AL	00004	CRD	00500
1PO	00000	5NC	00010	9XT	00000	CLA	00020
						CPO	00000