

MELS-400

Programmable Serial Control Board

BALOGH

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Notes are used to call attention to information that is significant to the understanding and operation of equipment.

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MELS-400 Operational Description (ASCII Mode)

The MELS-400 is an economical four channel Balogh RFID interface designed to allow for a simple RS-232 connection using an ASCII character based command set. This simplified method of communications enables most devices that are capable of sending ASCII strings to Read and Write to Balogh's range of RFID tags. Command strings are easy to build with programming languages such as Visual Basic , VB.Net and Visual C++. Commands can even be issued directly from a terminal program if desired. Examples of formatting commands in these programming languages will be demonstrated in this manual.

Each command is formatted as a comma delimited string and terminated by a Carriage Return and Line Feed. The primary commands that the MELS-400 is capable of executing are Tag Read with Wait or optional Timeout, Tag Write with Wait or optional Timeout and Tag Fill with Wait or optional Timeout. All of the commands are designed for Block data format mode.

The MELS-400 can manage from one to four BALOGH transceivers in a multiplexed mode of operation. The Transceiver receives its power from one of the four onboard 24VDC discrete outputs. Each output channel has an associated Green LED that is activated when power is applied to the selected Transceiver channel. A Transceiver channel is selected by the host device when a command is issued. The last selected channel remains enabled until a new command request arrives with a different channel number specified. Upon initial power up no channel will be active until a command is issued. Once a command is issued the channel selected will be used as the default channel. The default channel will be the one activated at the next power cycle. This setting is saved in EEPROM memory. The default channel can be cleared if desired by sending the Clear Command.

The MELS-400 has one set of three Channel / Command Execution status indicator LED's. The LED indicators include Tag Present, Command in Progress and Transceiver / Tag Fault. The LED's provide a visual indication of the current status of the active channel.

The MELS-400 has one 9 pin female connector that is used for RS-232 communications. The only hardware lines required to communicate are RS-232 Transmit ,RS-232 Receive and the signal ground line. Most standard RS-232 cables will work between the MELS-400 and a host PC.

MELS-400 Electrical Specifications

Power Requirements:

The MELS-400 requires a regulated linear or switching power supply that meets these Minimum requirements.

Voltage	24VDC +- 10% load regulation or better
Current	250 milliamp Minimum recommended power supply capacity 150 milliamps (typical current consumed with 1 transceiver active)
Ripple	<50mVpp (Switching power supply) at Load < 3mVpp (Linear power supply) at Load

Inputs:

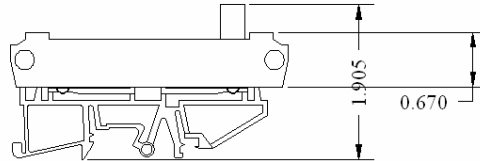
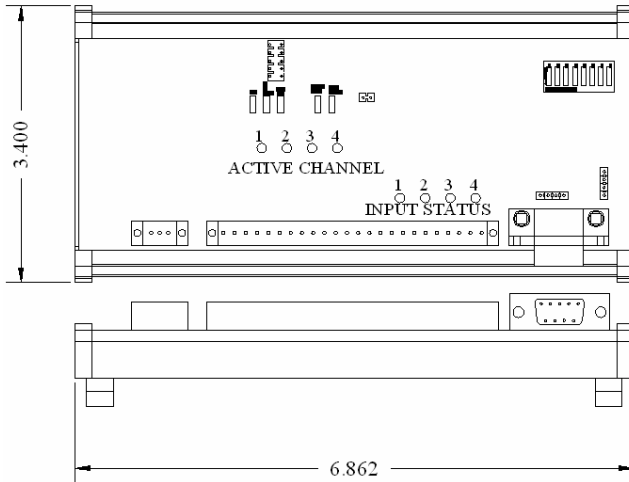
The MELS-400 provides four optically isolated 24V DC Inputs that will sink a maximum current of 10mA each. Each inputs state is visually indicated by a red LED. The state of these inputs can be read using the Input command. The state of these inputs is also returned in the low nibble of the Dynamic Status byte when a channel Status command is requested and no error condition exists. These inputs can accommodate 3-wire and 2-wire proximity switches or dry contact closures.

Input Type	Sinking (Maximum Current 10 milliamps / Input)
Maximum Input Voltage	30V Dc
Minimum Input Voltage (Required to transition from 0 to 1)	15V Dc
Input Impedance	2.7 KOhm

MELS-400 Hardware Description

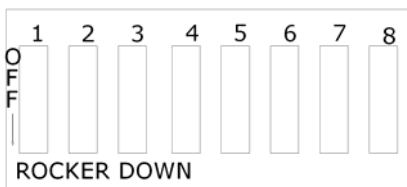
Dimensions:

****NOTE: ALL DIMENSIONS ARE IN INCHES**



NOTE: ALL DIMENSIONS ARE IN INCHES
 Housing for MELS-400 (SERIAL CONTROLLER)
 Date: 04/20/06
 Scale: 1=1

Bank of DIP switches:



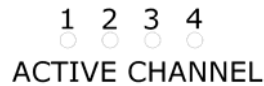
1	2	3	4	5	6	7	8	
Baud Rate		Parity		Reserved for future use				
0	0	9600	0					ODD
1	0	19.2K	1					EVEN
0	1	57.6K						
1	1	115.2K						

LED Definitions

Active Channel:

This bank of four Green LED's indicates when on which transceiver channel is currently active. When a channel is active approximately 22.5 VDC will be present at that channel's 24VDC output terminal.

ACTIVE CHANNEL	
1	CHANNEL 1
2	CHANNEL 2
3	CHANNEL 3
4	CHANNEL 4



Inputs:

This bank of four Red LED's indicates when on that an input point has a voltage level greater than 15 VDC. The state of the Input can be read using the Input Command "I".

INPUTS	
1	INPUT 1
2	INPUT 2
3	INPUT 3
4	INPUT 4



Status:

The channel status LED's consist of the Red Fault LED, Green Operation In Progress LED and the Green Tag Present LED. These LED's are shared among all four channels. These LEDs indicate the current status of the *active* channel. The Green Heart Beat LED is an indication of the unit's current state of command processing. When no commands are awaiting execution it is normal for the Heartbeat to turn On then Off at a rate of 100ms / 3 times a second. Once a command is sent to the unit the Heartbeat will change to a 100ms / twice a second. Two conditions can cause this state. If the Operation In Progress LED is **OFF** and the Heartbeat is beating twice per second this indicates that the MELS-400 is waiting for the remainder of a command to arrive. If the Operation In Progress LED is **ON** then the unit is waiting to complete a Tag related operation. The Red Communication Error LED will flash twice in the event that the host device is attempting to communicate using the wrong Baud rate or Parity settings.

STATUS LEDS	
1	FAULT
2	OPERATION IN PROGRESS
3	TAG PRESENT
4	HEART BEAT
5	COMMUNICATION ERROR

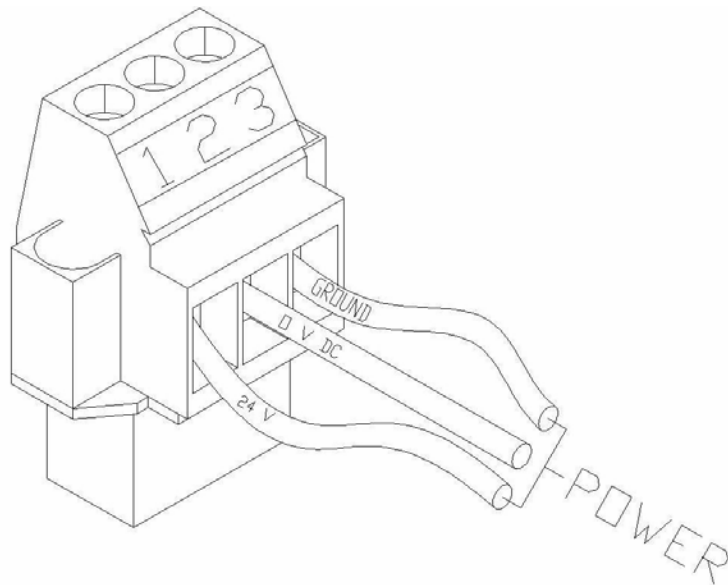


MELS-400 Wiring Diagrams

Wire sizing for the MELS-400 power connection can range from 24 AWG to 14 AWG. The MELS-400 is shipped with a power socket block in place. If a replacement is required the specified part number is given in the table below.

24VDC Power Connection:

3 Terminal Power Connector			
Details	Manufacture	Type	Part Number
	Weidmuller	BL3.5/3/270F	1639940000

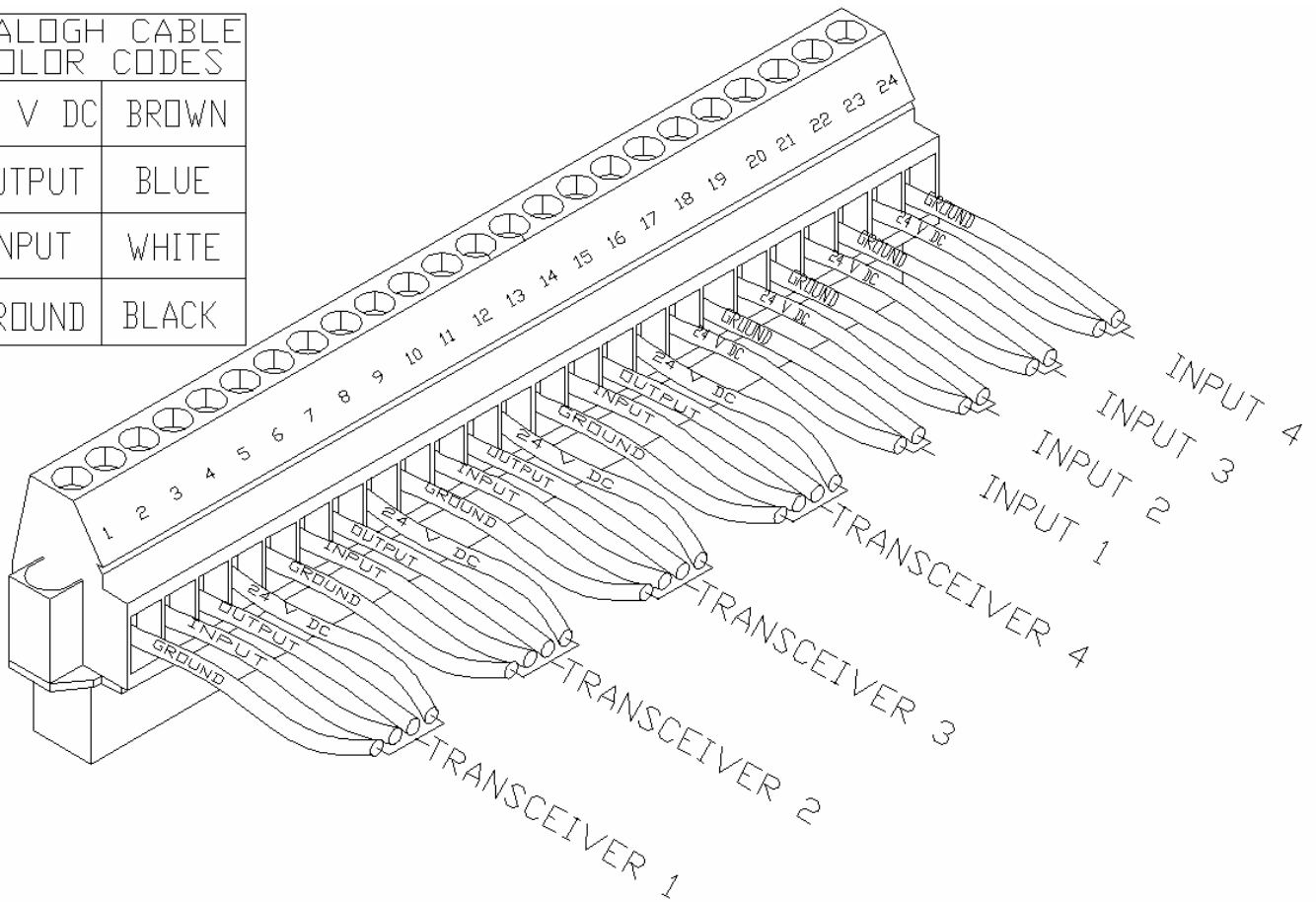


Transceiver and Discrete Input Wiring Diagrams

It is recommended that the connection between the MELS-400 and the Transceiver be made with Balogh 's single ended female cables. These cables are available in a wide range of standard lengths and can also be built to custom lengths. **The color coding table provided below applies only when a Balogh cable is utilized.** Wire sizing for the MELS-400 discrete input connections can range from 28 AWG to 14 AWG. The MELS-400 is shipped with a Transceiver / Input wiring socket block in place. If a replacement is required the specified part number is given in the table below.

24 Terminal Main Connector Details			
Details	Manufacture	Type	Part Number
	Weidmuller	BL3.5/24/270F	1640150000

BALOGH CABLE COLOR CODES	
24 V DC	BROWN
OUTPUT	BLUE
INPUT	WHITE
GROUND	BLACK



MELS-400 Command Parameter Summary (ASCII Mode)

Command Parameter Field	Alphanumeric Values Allowed	Comments
Attention Header	+	The “+“symbol alerts the MELS-400 that an ASCII coded command is being sent.
Command Codes	R , W , F , S , I , C	Command Codes must be in capitol letters and are reserved for immediate tag interface operations.
Sub Command Code	Reserved for future use	Always set to ASCII 0.
Channel Numbers	1 , 2, 3, 4	Channel numbers will instruct the MELS-400 to turn On one of it four Transceiver Driver Outputs.
Number of Bytes	1 to 248	This parameter defines the number of data bytes that will be accessed on the tag
Tag Start Address	0 to 32764	This parameter defines at what address on the tag an operation will begin
Fill Value	0 to 255	This parameter defines the value to be entered into the tag when a Fill command is issued.
Timeout	0 to 65535	This parameter when > 0 will enable a countdown timer that will cancel the command if not completed within this period. The timers’ resolution is 10ms per tic. A value of 0 disables the countdown timer.
Data	0 to 255	User data to be written into a tags memory
Carriage Return	13	Used to indicate the end of an ASCII message
Line Feed	10	Used to indicate the end of an ASCII message

MELS-400 Command and Response Overview (ASCII Mode)

MELS-400 Command Request Structure:

The MELS-400 command request string is comprised of a series of Alphanumeric Command Parameters delimited by commas. Each parameter is required to be filled with a valid Command Parameter entered as an ASCII Coded Decimal Number or Character. If a Command Parameter Field is not required by the command, the ASCII Coded Decimal value of 0 must be placed within the unused field. All commands are terminated with a carriage return and linefeed. The table below is a general overview the MELS-400's command structure.

Attention Header	Command Code	Sub Command Code	Channel Number	Number of Bytes	Tag Start Address	Fill Value	Timeout	Data	0DHex 0A Hex
------------------	--------------	------------------	----------------	-----------------	-------------------	------------	---------	------	-----------------

MELS-400 Command Response Format:

The MELS-400 will respond with a **non delimited** Hexadecimal message that may include any 8 bit Hex value from 00H to FFH. The table below is a general overview of the MELS-400 message reply format when responding to Tag related commands.

Attention Header	Number of Bytes	Command Code	Channel Number	Status	Data (when reading)	0DHex 0A Hex
------------------	-----------------	--------------	----------------	--------	---------------------	-----------------

Tag Block Read Command and Response (ASCII Mode)

Command Code “R“(52 Hex or 82 Decimal)

The Tag Block Read command will read a consecutive number of data bytes from a tags memory and return the requested number of bytes. When this command is received the MELS-400 will first disable the last active Transceiver Channel if it is different from the currently requested Transceiver Channel. Next the requested channel will be enabled. If a Transceiver is attached to the requested channel the Operation in Progress LED will turn on and remain on until the command is completed. If the command was issued with a Timeout parameter other than 0, the command will remain active until the timer expires and then return a fault code of 9F Hex. The Read Command parameters must be sent to the tag in one continuous ASCII coded decimal string that is delimited with the comma “,” character and terminated with the carriage return and line feed values.

Command Format:

+,R,0, Channel Number, Number of Bytes, Tag Start Address, 0, Timeout, 13 10

The *italicized* Command Parameter Fields will contain the alphanumeric representation of the parameter defined for that field. The command is continuous with NO spaces between the delimiter and the next command parameter field. The Carriage Return and Line Feed are appended after the last comma ‘,’ delimiter. The command termination characters are not separated by a comma.

Command Parameters Defined:

	Byte	Description	Field size	ASCII Character
Request	0	Attention Character	1 byte	+
	1	Command Code	1 byte	R
	2	Sub Command Code	1 byte	0
	3	Channel Number	1 byte	1,2,3 or 4
	4	Number of Bytes	1 to 3 bytes	1 to 248
	5	Tag Start Address	1 to 5 bytes	0 to 32764
	6	Reserved	1 bytes	0 (Always Zero)
	7	Timeout	1 to 5 bytes	0 to 65535 10ms resolution, 0 = with wait
	8	Command Termination	1 byte	13 decimal
	9	Command Termination	1 byte	10 decimal

Tag Block Read Command Continued

Response Format:

The MELS-400 responds to commands with a string of characters that has *no delimiters* between characters. The response begins with the Start of Text Header <STX> and is followed by bytes that will indicate the following information. The Total Number of Bytes contained in the entire string, the Alphanumeric Command Code “R” and the Alphanumeric Channel Number “1, 2, 3 or 4”. The next byte that follows is an 8 bit byte that represents the commands Operational Status. If no errors were encountered during the Read operation the Data read from the tag will follow. The string is terminated with the carriage return and linefeed characters.

[STX] [Total Number of Bytes] [R] [Channel Number] [Operational Status]
[Data Field] [CR] [LF]

	Description	Data Type	Data Size	Character or Range
Response	Start of Text	Hexadecimal	1 byte	0x02 Hex
	Total Number of Bytes	Hexadecimal	1 byte	7 + number of bytes read from tag.
	Command Code	ASCII	1 byte	R
	Channel Number	ASCII	1 byte	1 , 2 , 3 or 4
	Operational Status	Hexadecimal	1 byte	* see appendix
	Data Field	Hexadecimal	1 byte / address	00 hex to FF hex
	Termination	Hexadecimal	1 byte	0D hex
	Termination	Hexadecimal	1 byte	0A hex

Example Request: (As might appear if typed on a terminal)

+,R,0,3,32,16,0,100,CR LF

This is a Block Read request directed at Channel 3 of the MELS-400. The number of bytes to Read from the tag is 32 and the Tag Start Address is 16. The command is issued with a Timeout value of 100 which is equal to a delay of 1 second. If no Tag is seen within 1 second or if the amount of data being Read from a tag requires longer that 1 second to complete, then the command will be terminated and a fault code of 9F will be returned.

Tag Block Write Command and Response (ASCII Mode)

Command Code “W“(57 Hex or 87 Decimal)

The Tag Block Write command will write a consecutive number of data bytes into a tags memory. When this command is received the MELS-400 will first disable the last active Transceiver Channel if it is different from the currently requested Transceiver Channel. Next the requested channel will be enabled. If a Transceiver is attached to the requested channel the Operation in Progress LED will turn on and remain on until the command is completed. If the command was issued with a Timeout parameter other than 0 the command will remain active until the timer expires and a fault code of 9F Hex will be returned in the reply. The data field that is to be written into the tag can consist of any 8 bit binary value from 0 to 255 the MELS-400 *will not* perform any type conversion upon the data bytes received. The Write Command parameters must be sent to the tag in one continuous ASCII coded decimal string that is delimited with the comma “,” character. The data field that is to be written to the tag follows immediately after the last “,” delimiter character and *is not* a comma delimited string but one continuous string. The string is terminated with the carriage return and line feed values.

Command Format:

+ , W , 0, Channel Number, Number of Bytes, Tag Start Address, 0, Timeout, Data Bytes to be Written 13 10

The *italicized* Command Parameter Fields will contain the alphanumeric representation of the parameter defined for that field. The command is continuous with NO spaces between the delimiter and the next command parameter field. The Carriage Return and Line Feed is appended after the last comma ‘,’ delimiter. The command termination characters are not separated by a comma.

Command Parameters Defined:

Request	Byte	Description	Field size	ASCII Character
	0	Attention Character	1 byte	+
	1	Command Code	1 byte	W
	2	Sub Command Code	1 byte	0
	3	Channel Number	1 byte	1,2,3 or 4
	4	Number of Bytes	1 to 3 bytes	1 to 248
	5	Tag Start Address	1 to 5 bytes	0 to 32764
	6	Reserved	1 bytes	0 (Always Zero)
	7	Timeout	1 to 5 bytes	0 to 65535 10ms resolution, 0 = with wait
	8	Data Field	Number of Bytes size	One 8 Bit Value / Byte
	X	Command Termination	1 byte	13 decimal
X	Command Termination	1 byte	10 decimal	

Tag Block Write Command Continued

Response Format:

The MELS-400 responds to commands with a string of characters that has *no delimiters* between characters. The response begins with the Start of Text Header <STX> and is followed by bytes that will indicate the following information. The Total Number of Bytes contained in the entire string, the Alphanumeric Command Code “W” and the Alphanumeric Channel Number “1,2,3 or 4”. The next byte that follows is an 8 bit byte that represents the commands Operational Status. The string is terminated with the carriage return and linefeed characters.

[STX] [Total Number of Bytes] [W] [Channel Number] [Operational Status] [CR] [LF]

Response	Description	Data Type	Data Size	Character or Range
	Start of Text	Hexadecimal	1 byte	0x02 Hex
	Total Number of Bytes	Hexadecimal	1 byte	0x06 hex
	Command Code	ASCII	1 byte	W
	Channel Number	ASCII	1 byte	1 , 2 , 3 or 4
	Operational Status	Hexadecimal	1 byte	* see appendix
	Termination	Hexadecimal	1 byte	0D hex
	Termination	Hexadecimal	1 byte	0A hex

Example Request: (As might appear if typed on a terminal)

+,W,0,1,6,1,0,100,42h 41h 4Ch 4Fh 47h 48h CR LF

This is a Block Write request directed at Channel 1 of the MELS-400. The number of bytes to write into the tag is 6 and the Tag Start Address is 1. The command is issued with a Timeout value of 100 which is equal to a delay of 1 second. If no Tag is seen within 1 second or if the amount of data being written to a tag requires longer that 1 second completing, then the command will be terminated and a fault code of 9F will be returned. The data field that follows the last comma delimiter is 42h 41h 4Ch 4Fh 47h 48h or the ASCII characters BALOGH. The carriage return and line feed characters immediately follow the data field.

Tag Block Fill Command and Response (ASCII Mode)

Command Code “F”(46 Hex or 70 Decimal)

The Tag Fill command will set a consecutive range of the Tags memory to a specific value. This command is useful when a Tag needs to be preset to a known value before the start of a new a data collection cycle. When the command is received the MELS-400 will first disable the last active Transceiver Channel if it is different from the currently requested Transceiver Channel. Next the requested channel will be enabled. If a Transceiver is attached to the requested channel the Operation in Progress LED will turn on and remain on until the command is completed. If the command was issued with a Timeout parameter other than 0 the command will remain active until the timer expires and a fault code of 9F Hex will be returned in the reply. The string is terminated with the carriage return and line feed values.

Command Format:

+,F,0, Channel Number, Number of Bytes, Tag Start Address, Fill Value, Timeout, 13 10

The *italicized* Command Parameter Fields will contain the alphanumeric representation of the parameter defined for that field. The command is continuous with NO spaces between the delimiter and the next command parameter field. The Carriage Return and Line Feed is appended after the last comma ‘,’ delimiter. The command termination characters are not separated by a comma.

Command Parameters Defined:

	Byte	Description	Field size	ASCII Character
Request	0	Attention Character	1 byte	+
	1	Command Code	1 byte	F
	2	Sub Command Code	1 byte	0
	3	Channel Number	1 byte	1,2,3 or 4
	4	Number of Bytes	1 to 3 bytes	1 to 248
	5	Tag Start Address	1 to 5 bytes	0 to 32764
	6	Fill Value	1 byte	0 to 255
	7	Timeout	1 to 5 bytes	0 to 65535 10ms resolution, 0 = with wait
	8	Command Termination	1 byte	13 Decimal
9	Command Termination	1 byte	10 Decimal	

Tag Block Fill Command Continued

Response Format:

The MELS-400 responds to commands with a string of characters that has *no delimiters* between characters. The response begins with the Start of Text Header <STX> and is followed by bytes that will indicate the following information. The Total Number of Bytes contained in the entire string, the Alphanumeric Command Code “F” and the Alphanumeric Channel Number “1,2,3 or 4”. The next byte that follows is an 8 bit byte that represents the commands Operational Status. The string is terminated with the carriage return and linefeed characters.

[STX] [Total Number of Bytes] [F] [Channel Number] [Operational Status] [CR] [LF]

Response	Description	Data Type	Data Size	Character or Range
	Start of Text	Hexadecimal	1 byte	0x02 Hex
	Total Number of Bytes	Hexadecimal	1 byte	0x07 hex
	Command Code	ASCII	1 byte	F
	Channel Number	ASCII	1 byte	1 , 2 , 3 or 4
	Operational Status	Hexadecimal	1 byte	* see appendix
	Termination	Hexadecimal	1 byte	0D hex
	Termination	Hexadecimal	1 byte	0A hex

Example Request: (As might appear if typed on a terminal)

+,F,0,4,100,0,255,100,CR LF

This is a Block Fill request directed at Channel 4 of the MELS-400. The number of bytes to Fill the tag with is 100. The Start Address were Filling will begin is 0. The value to fill the Tag with is 255. The command is issued with a Timeout value of 100 which is equal to a delay of 1 second. If no Tag is seen within 1 second or if the amount of data Filling the tags memory requires longer that 1 second to complete, then the command will be terminated and a fault code of 9F will be returned. The carriage return and line feed characters immediately follow the data field.

Channel Status Command and Response (ASCII Mode)

Command Code “ S “ (53 Hex or 83 Decimal)

The Status Command will return the current Dynamic Status from any one of the four channels available on the MELS-400. The Dynamic Status Byte represents the current state of the selected channels Tag to Transceiver interface as it actually exists when the command is issued.

Command Format:

+ , S, 0, *Channel Number*,13 10

The *italicized* Command Parameter Fields will contain the alphanumeric representation of the parameter defined for that field. The command is continuous with NO spaces between the delimiter and the next command parameter field. The Carriage Return and Line Feed is appended after the last comma ‘,’ delimiter. The command termination characters are not separated by a comma.

Command Parameters Defined:

	Byte	Description	Field size	ASCII Character
Request	0	Attention Character	1 byte	+
	1	Command Code	1 byte	S
	2	Sub Command Code	1 byte	0
	3	Channel Number	1 byte	1,2,3 or 4
	4	Command Termination	1 byte	13 decimal
	5	Command Termination	1 byte	10 decimal

Channel Status Command Continued

Response Format:

The MELS-400 responds to commands with a string of characters that has *no delimiters* between characters. The response begins with the Start of Text Header <STX> and is followed by bytes that will indicate the following information. The Total Number of Bytes contained in the entire string, the Alphanumeric Command Code “ S” and the Alphanumeric Channel Number “ 1,2,3 or 4”.The next byte that follows is an 8 bit byte that represent the commands Dynamic Status. The string is terminated with the carriage return and linefeed characters.

[STX] [Total Number of Bytes] [S] [Channel Number] [Dynamic Status] [CR] [LF]

Response	Description	Data Type	Data Size	Character or Range
	Start of Text	Hexadecimal	1 byte	0x02 Hex
	Total Number of Bytes	Hexadecimal	1 byte	0x07 hex
	Command Code	ASCII	1 byte	S
	Channel Number	ASCII	1 byte	1 , 2 , 3 or 4
	Dynamic Status	Hexadecimal	1 byte	defined below
	Termination	Hexadecimal	1 byte	0D hex
	Termination	Hexadecimal	1 byte	0A hex

Example Request: (As might appear if typed on a terminal)

+,S,0,4,CR LF

This is a Dynamic Status request directed at Channel 4 of the MELS-400.The carriage return and line feed characters immediately follow the last reserved byte.

Dynamic Status Byte Defined

The Dynamic Status byte has a dual meaning depending upon the current state of the channel being requested. The High nibble will always represent the Execution Status bit, the Memory Backup Bit, the Tag Present bit and the General Fault Bit. The Low nibble will have one of the following meanings depending upon the state of the General Fault Bit.

Condition 1: General Fault Bit is Low.

If a Transceiver is properly connected to the channel whose status is being requested the Low nibble of the byte will contain the current state of the MELS-400's discrete inputs.

Dynamic Status	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	Execution Bit	Memory Fault	Tag Present	General Fault	Input 4	Input 3	Input 2	Input 1

Condition 2: General Fault Bit High.

If the General Fault bit is High then the Low nibble of the Dynamic Status Byte will contain the specific fault type that has occurred on the requested Channel.

Dynamic Status	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	Execution Bit	Memory Fault	Tag Present	General Fault	See Specific Fault Indication Table			

Specific Fault Codes:

The following table of fault codes is valid when the general fault bit of the status result is set to one.

Specific Error Description	
Fault Code	Meaning
05 Hex	Internal channel communications fault
0B Hex	Invalid TAG address requested
0C Hex	Transceiver fault
0E Hex	TAG memory fault
0F Hex	TAG dialogue fault

Discrete Input Command and Response (ASCII Mode)

Command Code “ I “ (49 Hex or 73 Decimal)

The Input Command will Read the state of the MELS-400's 4 Discrete inputs. This command returns the state of the inputs in the form of a hexadecimal value.

Command Format:

+ , I , 13 10

This Command contains no Parameter Fields. The command is continuous with NO spaces between the delimiter and the next character. The Carriage Return and Line Feed is appended after the last comma ‘,’ delimiter. The command termination characters are not separated by a comma.

Command Parameters Defined:

Request	Byte	Description	Field size	ASCII Character
	0	Attention Character	1 byte	+
	1	Command Code	1 byte	I
	2	Command Termination	1 byte	13 Decimal
	3	Command Termination	1 byte	10 Decimal

Response Format:

The MELS-400 responds to commands with a string of characters that has *no delimiters* between characters. The response begins with the Start of Text Header <STX> and is followed by bytes that will indicate the following information. The Total Number of Bytes contained in the entire string, the Alphanumeric Command Code “ I ” and the Hexadecimal value of the Input State. The string is terminated with the carriage return and linefeed characters.

[STX] [Total Number of Bytes] [I] [Input State] [CR] [LF]

Discrete Input Command Continued (ASCII Mode)

Response	Description	Data Type	Data Size	Character or Range
	Start of Text	Hexadecimal	1 byte	0x02 Hex
	Total Number of Bytes	Hexadecimal	1 byte	0x06 hex
	Command Code	ASCII	1 byte	I
	Input State	Hexadecimal	1 byte	00 hex to 0F hex
	Termination	Hexadecimal	1 byte	0D hex
	Termination	Hexadecimal	1 byte	0A hex

Example Request: (As might appear if typed on a terminal)

+,I,CR LF

Example Reply:

[2] [6] [73] [1] [13] [10]

This reply would indicate that the first discrete input on the MELS-400 is high.

Clear Settings Command and Response (ASCII Mode)

Command Code “ C “ (43 Hex or 67 Decimal)

The Clear command is used to set the following non-volatile memory locations to there factory default values.

Default Channel

Preload Trigger Bit

Trigger Command Array

Poll Command Array

Command Format:

+ , C , 13 10

This Command contains no Parameter Fields. The command is continuous with NO spaces between the delimiter and the next character. The Carriage Return and Line Feed is appended after the last comma ‘,’ delimiter. The command termination characters are not separated by a comma.

Command Parameters Defined:

Request	Byte	Description	Field size	ASCII Character
	0	Attention Character	1 byte	+
	1	Command Code	1 byte	C
	2	Command Termination	1 byte	13 Decimal
	3	Command Termination	1 byte	10 Decimal

Response Format:

The MELS-400 responds to commands with a string of characters that has *no delimiters* between characters. The response begins with the Start of Text Header <STX> and is followed by bytes that will indicate the following information. The Total Number of Bytes contained in the entire string, the Alphanumeric Command Code “ C ” and the Hexadecimal value <ACK> . The string is terminated with the carriage return and linefeed characters.

<STX> [Total Number of Bytes] [C] <ACK> 13 10

MELS-4000 Communication Error Responses (ASCII Mode)

The MELS-400 will respond with a communications error message in the event that an improperly formatted command is sent to the device. The follow is a description of the error response message format and the error code meanings.

Error Communication Response Format:

<STX> [Number of bytes] [E] [Error Code] 0D 0A

Parsing Error	0 ASCII	30Hex
Invalid Command Code	1 ASCII	31Hex
Invalid Channel Number	2 ASCII	32Hex
Invalid Length	3 ASCII	33Hex

Definitions

Alphanumeric

Describes the combined set of all letters in the alphabet and the numbers 0 through 9

ASCII

Acronym for the *American Standard Code for Information Interchange*. ASCII is a code for representing English characters as numbers, with each letter assigned a number from 0 to 127. For example, the ASCII code for uppercase R is 82.

Dynamic Status Byte

Describes the current state of the Transceiver / Tag interface.

