U S E R   M A N U A L
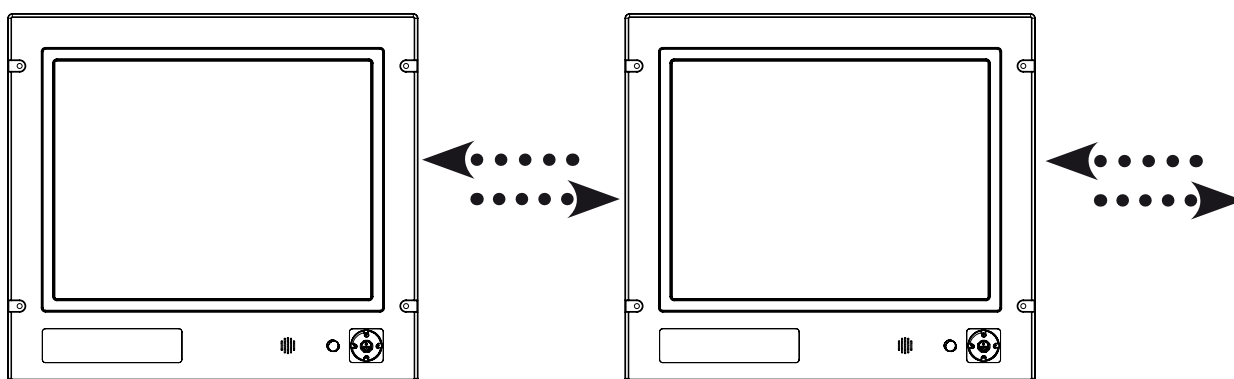

Serial Communication Control Interface (SCOM)

Applies for redesigned Series 1 Maritime Multi Display (MMD) product range

User Manual SCOM MMD Series 1	
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Serial Communication (SCOM) Interface

HATTELAND® SCOM Control Interface

This document defines the electrical interface, serial data format, and communication protocol of the Serial Communication Control Interface for Redesign. The purpose of this interface is to enable a computer application to control one or more units. Units refer to either displays or panel computers.

Interface Configuration

The serial interface can have different configurations, selected by the OSD menu.
The configurations are defined as follows:

RS-232	One computer controls one unit, no individual address
4-wire RS-485/RS-422	One computer controls max 16 units, each with individual address.
2-wire RS-485	

Cable

A cable with an overall shield terminated at the back shell should be used.

Block Diagram

EVX

UART0

ECOM

USART0

USART1

USART2

FWP
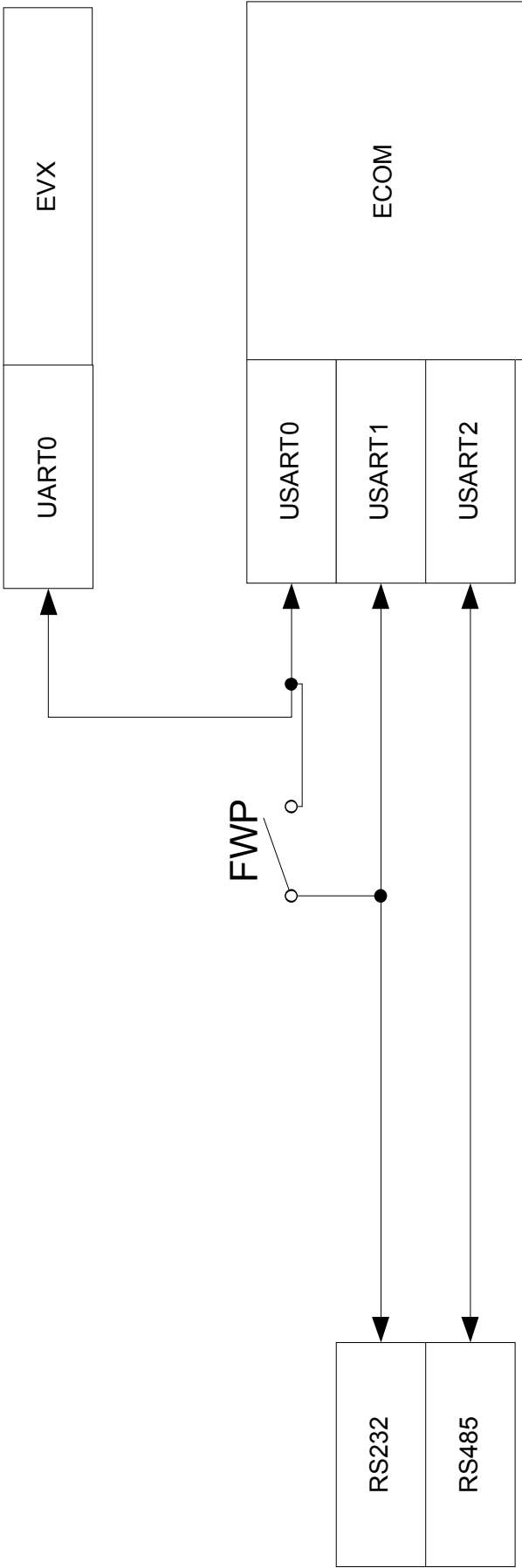
RS232

RS485

Serial Communication (SCOM) Interface

Electrical Interface

Electrical signals shall conform to RS-485, RS-422 or RS-232. Only Receive Data, Transmit Data, and Signal Ground are used. The same conditions apply for both 4-wire and 2-wire, and will just be referred to as RS-485 in this document. Hardware handshake is only supported by loopback handshake for RS-232.

The display is shipped with HATTELAND® Multifunction Cable. The cable have 9-way female DSUB connection for RS-232 interface. RS-485 is optional.

Pin assignments at the unit are as shown below.

Pin	RS 232	RS422/ RS 485 4-wire	RS 485 2-wire
1	Buzzer CTRL (+)	NC[1]	NC[1]
2	Tx	RxD-	NC[1]
3	Rx	TxD+	Data +
4	Pin 6	NC[1]	NC[1]
5	GND	NC[1]	NC[1]
6	Pin 4	NC[1]	NC[1]
7	Pin 8	RxD+	NC[1]
8	Pin 9	TxD-	Data -
9	Buzzer CTRL (-)	NC[1]	NC[1]

[1] NC pins may be internally connected. Do not use these without consulting Hatteland Display.

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Serial Communication (SCOM) Interface

Data Rate
The unit is configured to transmit and receive data at 9600 bits/second.

Data Format
Data shall be transmitted with no parity, 8 data bits, one start bit and one stop bit.

Message Format
The basic message format shall be as follows:

Byte #	0	1	2,3,4	5	6	7, etc	7+LEN
	ATTN	ADDR	CMD	LEN	IHCHK	DATA	IDCHK

The minimum message size is 7 bytes. The maximum message size is 82 bytes, consistent with 61162-1.

Attention (ATTN)
This byte is used to identify a start of message. It can be one of 3 values:

ATTN	Description
0x07	Command (ASCII BELL)
0x06	Acknowledge (ASCII ACK)
0x15	Negative Acknowledge (ASCII NAK)

A device shall send a command using the 0x07 Attention Code. The unit will respond to the command with either an ACK if the command completed successfully, or a NAK if the command failed.

Address (ADDR)
This byte is used to specify a particular unit to receive a Command and to identify the unit responding (ACK or NAK) to a Command. All units will support the broadcast address. The factory default adress is 0.

The Address field shall have the following values:

ADDR	Description
0xFF	Broadcast - Addressed to all units
0x00 to 0x0F	Address of a specific unit (max of 16 units)

Data Length (LEN)
This byte defines the length of DATA in the message in bytes. The maximum value for this field is 74 bytes. The minimum value is 0 bytes.

Inverse Header Checksum (IHCHK)
This is a simple 8-bit checksum of the header data, message bytes 0 to 5 on which a bit-wise inversion has been performed. The checksum shall be initialised to 0. The 8-bit sum (without carry) of bytes 0, 1, 2, 3, 4, 5 and 6 shall be 0xFF.

If the unit receives a message with an incorrect checksum, the unit will reply with the attention code set to NAK and no data field. This does not apply to Broadcast messages in RS-485 mode, in which case there will be no reply.

Data Field (DATA)
The DATA field shall only be transmitted if LEN is greater than 0. This field depends on the CMD transmitted.

Serial Communication (SCOM) Interface

Inverse Data Checksum (IDCHK)

These bytes shall only be transmitted if LEN is greater than 0. This is a simple 8-bit checksum of the data field, message bytes 7 to 7+(LEN-1) on which a bit-wise inversion has been performed. The checksum shall be initialised to 0. The 8-bit sum (without carry) of bytes 7 through 7+LEN inclusive shall be 0xFF. The receiver will reply to any message that the checksum has failed with the attention code set to NAK. This requirement does not reply to broadcast messages in RS-485 (for units that support it) mode, in which case there will be no reply.

Message Commands and Queries(CMD)

The command can be one of the following values:

CMD 0	CMD 1	CMD 2	ASCII	Description
0x42	0x52	0x54	"BRT"	Brightness Control
0x42	0x5A	0x5A	"BZZ"	Buzzer Control
0x45	0x54	0x43	"ETC"	Elapsed Time Counter Query
0x46	0x53	0x54	"DST"	Display State
0x4D	0x41	0x4E	"MAN"	Manufacturer ID Code
0x4D	0x43	0x43	"MCC"	OSD Control
0x50	0x4F	0x54	"POT"	Potentiometer Control
0x53	0x4E	0x42	"SNB"	Serial Number Query
0x53	0x57	0x49	"SWI"	ECOM Software Version Query
0x53	0x57	0x50	"SWK"	Keypad Software Version Query
0x54	0x4D	0x50	"TMP"	Current Temperature Query
0x54	0x59	0x50	"TYP"	Type/Model Number Query
0x56	0x45	0x52	"VER"	Unit ID Version Number Query

Brightness Command "BRT"

This command is sent to the unit to command the backlight brightness control setting.The brightness value shall be sent as one byte in the DATA field. A setting of 0x00 will indicate off. A setting of 0xFF will indicate maximum brightness. Intermediate values will control brightness over the range from minimum to maximum luminance. LEN = one data byte.

After any power cycle the BRT will be set to 100%.

If the data checksum is valid and the brightness was set, the unit will reply to this command with an ACK attention code. The DATA field in the reply shall indicate the resulting brightness control setting. If an invalid checksum was received and the message was not Broadcast and RS-485, the unit will reply with an NAK attention code. The DATA field in the reply will indicate the current brightness control setting.

Examples:
If BRT is 100%, the user can adjust the brightness from 0-100%. If the BRT is set to 60%, the visual brightness is set to 60%. The user can adjust the brightness from 0-100% within the 60% set by BRT. If the user sets the potensiometer to half, the visual brightness will be 30% (half of 60%). If BRT is set back to 100%, the visual brightness will be 50% (half of 100%).

Command 60% Brightness:

0x07	0xFF	0x42	0x52	0x54	0x01	0x10	0x99	0x66

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Acknowledge 60% Brightness:

0x06	0xFF	0x42	0x52	0x54	0x01	0x11	0x99	0x66

Negative Acknowledge 40% Brightness:

0x15	0xFF	0x42	0x52	0x54	0x01	0x02	0x66	0x99

Buzzer Control "BZZ"

This command is sent to the unit to control buzzer on/off if there is a buzzer present. LEN = one data byte.

0x00	Turn the buzzer off.
0xFF	Turn the buzzer on.

If the data checksum is valid, the unit will reply to this command with an ACK attention code. The DATA field will indicate the buzzer state. If an invalid data checksum was received and the message was not broadcast and RS-485, the unit will reply with a NAK attention code and the current control setting.

Examples:
Command Buzzer disable:

0x07	0xFF	0x42	0x5A	0x5A	0x01	0x02	0x00	0xFF

Display State "DST"

This command is sent to the unit to control the unit on/off or query the on/off state of the unit.
LEN = one data byte.

0x00	Turn the unit off
0xFF	Turn the unit on
0x3F	"?" - Query the state of the unit. The returned DATA field will indicate the state. 0x00 = Unit is off. 0xFF = Unit is on.

If the data checksum is valid, the unit will reply to this command with an ACK attention code. The DATA field will indicate the unit sate. If an invalid data checksum was received and the message was not broadcast and RS-485, the unit will reply with a NAK attention code and the current state.

Examples:
Query Display State:

0x07	0xFF	0x44	0x53	0x54	0x01	0x0D	0x3F	0xC0

Acknowledge Display state, unit is on:

0x06	0xFF	0x44	0x53	0x54	0x01	0x0E	0xFF	0x00

Acknowledge Display state, unit is off:

0x06	0xFF	0x44	0x53	0x54	0x01	0x0E	0x00	0xFF

Serial Communication (SCOM) Interface

Elapsed Time Counter "ETC"

The unit features an elapsed time counter which counts the total number of hours that the unit has been switched on. The ETC command can be sent to the unit to acquire the elapsed time in hours. No data shall be sent with this command. The unit will reply to this command with an ACK attention code. The DATA field will be set to a three byte string, where the most significant byte is transmitted first.

The ETC has a limit on maximum 298.261 hours, equivalent to 34 years. When this number is reached, the ETC will stop counting, and the ETC command will always reply with maximum number of hours.

Examples:

Query ETC:

0x07	0xFF	0x45	0x54	0x43	0x00	0x1D

Answer, two hours elapsed time:

0x06	0xFF	0x45	0x54	0x43	0x03	0x1B	0x00	0x00	0x02	0xFD

Manufacturer ID "MAN"

This command is sent to the unit to request Manufacturer ID. No data shall be sent with this command. The unit will reply to this command with an ACK attention code. The DATA field indentify the manufacturer in a text string.

Examples:

Query Manufacturer ID:

0x07	0xFF	0x4D	0x41	0x4E	0x00	0x1D

Acknowledge Manufacturer ID "JHD":

0x06	0xFF	0x4D	0x41	0x4E	0x03	0x1B	0x4A	0x48	0x44	0x29

Unit OSD Control "MCC"

This command gives remote access to the unit's OSD menu settings. The commands are transmitted in the DATA field. See the appendix for a complete list of OSD commands. For future products, it can not be guaranteed that all commands will still be available.

If the checksum is valid, the unit will reply to this command with an ACK attention code, where the data field contains the original command followed by acknowledge from the controller, as described in the appendix. If the checksum is invalid and the message was not broadcast and RS-485, the unit will reply to this command with a NAK attention code, where the data field contains the original command.

Examples:

Command 50% contrast 0x82 0x41 0x38 0x30:

(50% of 0xFF=0x80. In ASCII 80 will be: 0x38 0x30)

0x07	0xFF	0x4D	0x43	0x43	0x04	0x22

0x82	0x41	0x38	0x30	0xD4

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Acknowledge 50% Contrast:

0x06	0x03	0x4D	0x43	0x43	0x06	0x1D

0x82	0x41	0x38	0x30	0x38	0x30	0x6C

Potentiometer Control "POT"

The unit may allow the backlight to be controlled by the local control (potentiometer/keypad) mounted on the front of the unit, by the remote control or by the combination of the two. This command provides means to enable/disable the local control. LEN = one data byte.

0x00	Disables the local control. Backlight controlled only by the remote control.
0xFF	Enables the local control. Backlight is controlled by both the remote control and the local control. (Default) Note: In this setting, with the BRT command at 100%, the local control will have full dimming range. This is the initial setting when a unit is powered on.

If the data checksum is valid, the unit will reply to this command with an ACK attention code. The DATA field will indicate the resulting control setting. If an invalid data checksum was received and the message was not broadcast and RS-485, the unit will reply with a NAK attention code and the current control setting.

Unit Serial Number "SNB"

This query is sent to the unit in order to identify the unit serial number. No data shall be sent with this query.

The unit will reply to this command with an ACK attention code. The DATA field will be set to an text string to indicate the specified Serial Number, e.g: "12345".

Examples:
Command Display Serial Number

0x07	0xFF	0x53	0x4E	0x42	0x00	0x16

Acknowledge Type/Model Number "12345":

0x06	0xFF	0x53	0x4E	0x42	0x05	0x12

0x31	0x32	0x33	0x34	0x35	0x00

Unit Type/Model Number "TYP"

This query is sent to the unit in order to identify the unit type by its model number / part number. No data shall be sent with this query.

The unit will reply to this command with an ACK attention code. The DATA field will be set to an text string to indicate the specified Type/Model Number, e.g: "JH23T01MMD-A1".

Examples:
Command Type/Model Number

0x07	0xFF	0x54	0x59	0x50	0x00	0xFC

Acknowledge Type/Model Number "JH20T03":

0x06	0xFF	0x54	0x59	0x50	0x07	0x1A

0x4A	0x48	0x32	0x30	0x54	0x30	0x33	0x54

Unit ID Model/Version Number "VER"

This query is sent to the unit in order to identify unit type by a preassigned code and establish the version of the serial communications interface software. No data shall be sent with this query.

Any future revisions, such as additions or changes to the commands or data fields, shall increment the unit Version Number. The unit will reply to this command with an ACK attention code. The DATA field has a unique 1-byte unit model code. The next 2 bytes shall contain major and minor version of the serial communication protocol in use.

Examples:
Command Unit Model/Version Number:

0x07	0xFF	0x56	0x45	0x52	0x00	0x0C

Unit Version 1.0:

0x06	0x05	0x56	0x45	0x52	0x03	0x04	0x01	0x01	0x00	0xFD

Operational Requirements
The following sections define the operational requirements.

Serial Message Failure
If serial messages stop being transmitted or are corrupt, the unit will remain at the last commanded brightness.

Periodic Messages
The Brightness Command shall be transmitted to the unit at a repetition no faster than 4 Hz.

Serial Communication (SCOM) Interface

Keep-alive Alarm

The VER query can be used for keep-alive alarm logic in the application software on the computer. It is recommended to limit this function to one query per second.

Response Time

Individually Addressed Command Response

The unit will output the required response within Tr = 2.5 character periods after the last byte of a command message is received (2.6ms at 9600 bit/sec), except as specified herein.

Broadcast Command Response

In response to RS-485 broadcast command messages, after the last byte of the command message is received, all units will reply within the time period defined for Te, below. Further more, any gap between these individual responses will be less than the Intermessage Gap, defined below.

$Te = (Tr + Lr) * N$, where
Lr = length of the ACK/NAK message response
Tr = response time
N = the total number of units. *

*) As the units reply in order to their address, the units must be given subsequent addresses, starting at zero, for N to equal the total number of units. If not, N = the highest unit address + 1.

The maximum Lr for each command are shown in the table below:

Command	BRT	BZZ	ETC	DST	MAN	MCC	POT	SNB	SWI	SWK	TMP	TYP	VER
Lr	9	9	11	9	11	xx	9	13	19	19	14	28	11

Example: For the BRT command, and 8 units, this corresponds to
$Te = (2.5 * 10 + 9 * 10) * 8 / 9600 = 95.8$ ms

Inter-message Gap

Following an individually addressed command, the next command shall not be issued until at least Tg = 5 character periods after the ACK or NAK message received. At 9600, that is $5 * 10 / 9600 = 5.2$ms.

Following the issue of a broadcast command message, the next command shall not be issued until at least $Tc = Te + Tg$, where Te is as defined for Broadcast Command response and Tg is defined above.

Unit Response and Addresses

When individual unit addressing is supported by an installed configuration of units in a RS-485 (for units that support it) system, a separate ACK or NAK message for each unit will be transmitted providing each unit's individual address in response to any broadcast-addressed Command.

NAK messages will not be generated when an error in a Broadcast message is detected. When individual unit addressing is not supported, the unit will only respond to the broadcast address and will include the broadcast address in the ACK and NAK messages. NAK messages will not be generated when an error in a Broadcast message is detected.

When a unit receives an incomplete message and the next byte is not received until after a time equal to the Intermessage Gap, the next bytes received shall be processed to check for the start of a new command (0x07, ASCII Bell).

If the header checksum is valid, but the first byte of the command message is not 0x07, as specified, the unit may wait until after the next inter-message gap to resume checking. A NAK message shall not be generated.

If the header checksum is valid, but the value of the CMD field does not equal one of the defined commands, the unit shall reply by generating a NAK message as though a VER command had been received.

If the header checksum is valid, but the value of the LEN field is greater than the maximum allowed, the unit shall ignore the message. A NAK message shall not be generated.

If the data checksum is valid, but the value in the DATA field associated with a command is invalid (out of range, undefined, etc.), the unit shall generate a NAK message indicating the current data value in the DATA field.

Additional Commands
In time, additional commands and corresponding data fields may be defined. These additions will not conflict with the operation of the interface as defined herein.

Video Controller Interface Commands

COMMAND TABLE
Commands to implement switch mount control buttons

n = 1-byte ascii-coded hex number, e.g., parameter value of 0x1 is represented by "1" (0x31).
nn = 2-byte ascii-coded hex number, e.g., parameter value of 0x1e is represented by "1", "e" | "E" (0x31, x6e|0x4e).

Function	Command	Description	Acknowledge (if enabled)
Brightness control	0x81, nn | "+" | "-" | "r" | "R" | "?"	Set brightness = value/increment/decrement Reset Query	Brightness Range: "0" "0" – "6" "4" Default: "3" "2"
Contrast control - all channels	0x82, "a" | "A", nn | "+" | "-" | "r" | "R" | "?"	Set all contrast = value/increment/decrement Reset Query	Contrast red Range: "0" "0" – "6" "4" Default: "3" "2"
Color control	0x83, nn | "+" | "-" | "r" | "R" | "?"	Set color = value/increment/decrement Reset Query	Color (In video mode only) Range: "0" "0" – "6" "4" Default: "3" "2"
Tint control	0x84, nn | "+" | "-" | "r" | "R" | "?"	Set tint = value/increment/decrement Reset Query	Tint (In video mode) Range: "0" "0" – "6" "4" Default: "3" "2"
Manual Phase control	0x85, nn | "+" | "-" | "?"	Set dot clock phase = value/increment/decrement Query	Dot clock phase. (In RGB mode only)
Image H position	0x86, nnnn | "+" | "-" | "r" | "R" | "?"	Set image Hpos = value/increment/decrement Reset Query	Image horizontal position. If Value > 100, Value =100 Range: "0" "0" – "6" "4" Default: "3" "2"
Image V position	0x87, nnnn | "+" | "-" | "r" | "R" | "?"	Set image Vpos = value/increment/decrement Reset Query	Image vertical position. If Value > 100, Value =100 Range: "0" "0" – "6" "4" Default: "3" "2"
Sharpness	0x8a, n | "+" | "-" | "r" | "R" | "?"	Set sharpness = value/increment/decrement Reset Query	Sharpness. Range: "0" "0" – "0" "F" Default: "0" "7"
Manual Frequency control	0x8b, nnnn | "+" | "-" | "?"	Set dot clock frequency = Value/increment/decrement Query	Dot clock frequency (PC mode only) Range: "0""0" "0""0" – "0""0" "C" "E"

Video Controller Interface Commands

Function	Command	Description	Acknowledge (if enabled)
Scaling Mode	0x8c, n | "r" | "R" | "?"	Set graphic image scaling mode = value Reset Query	Image expansion on/off. "0" – 1:1 "1" – fill screen "2" – fill to aspect ratio "3" -- Anamorphic "4" – Auto
OSD H position	0x90, nnn | "+" | "-" | "r" | "R" | "?"	Set OSD Hpos = value/increment/decrement Reset Query	OSD horizontal position. If Value > 100, Value =100 If Value is not a multiple of ten, it change to less nearest multiple value Range: "0" "0" – "6" "4" Default: "3" "2"
OSD V position	0x91, nnn | "+" | "-" | "r" | "R" | "?"	Set OSD Ypos = value/increment/decrement Reset Query	OSD vertical position. If Value > 100, Value =100 If Value is not a multiple of ten, it change to less nearest multiple value Range: "0" "0" – "6" "4" Default: "3" "2"
OSD Transparency	0x92, nn | "+" | "-" | "r" | "R" | "?"	Set OSD transparency = value/increment/decrement Reset Query	OSD transparency. Range: "0" "0" – "6" "4" Default: "3" "2"
Select menu timeout	0x93, nn | "+" | "-" | "r" | "R" | "?"	Select menu timeout = value/increment/decrement Reset Query	OSD menu timeout value. Range: "0" "0" – "1" "E" Default: "0" "A"
Select OSD language	0x95, n | "r" | "R" | "?"	Select language = English, Norwegian,… Reset Query	"0" – English (Default) "1" – Norwegian "2" – Chinese simplified "3" – French. "4" – Spanish.
Input Filter	0x96, n | "r" | "R" | "?"	Select input filter = On/Off Reset Query	"0" – Off (Default) "1" – On
Input main select	0x98, nn | "+" | "-" | "r" | "R" | "?"	Select input main = PC or VIDEO or next available Reset Query	Main selected. "0x41,0x31" ARGB1 (Default) "0x41,0x32" ARGB2 "0x42,0x31" Composite1 "0x42,0x32" Composite2 "0x42,0x33" Composite3 "0x43,0x31" S-video1 "0x43,0x32" S-video2 "0x43,0x33" S-video3 "0x46,0x31" DVI

Video Controller Interface Commands

Function	Command	Description	Acknowledge (if enabled)
Source Layout	0x9a, n | "r" | "R"| "?"	Select source layout = Single, PIP or PBP Reset Query	Query: "0" – Single (default) "1" – PIP "2" – PBP
Video System	0x9b, n | "r" | "R" | "?"	Set video system = Auto/NTSC/PAL/SECAM Reset Query	Query: "0" – Auto (default). "1" – NTSC "2" – PAL "3" – SECAM
GAMMA value select	0x9d, n | "r" | "R" "?"	Select GAMMA value = Value Reset Query	GAMMA value: "0" – 1.0, (default) "1" – 1.6 "2" – 2.2,
Power Down / DPMS Option	0x9f, "0" | "1" | "r" | "R" | "?"	Set power down option = On/Off Reset Query	"0" – Off. "1" – On.
Direct Access	0xa0, "1", n | "r" | "R" | "?"	Set direct access = Value Reset Query	"0" – Brightness "1" – PIP size "2" – Main source "3" – Second source "4" – Alpha Blend "5" – Video Scaling "6" – Swap "7" – Test Pattern "8" – No function (Default)
Set runtime counter	0xa1, "?"	Set runtime counter value = nnnnn (* 0.5 hour) Query	Runtime = nnnnn.
PIP/PBP brightness control	0xa2, nn | "+" | "-" | "r" | "R" | "?"	Set PIP/PBP window brightness = value/increment/decrement Reset Query	PIP window brightness. Range: "0" "0" – "6" "4" Default: "3" "2"
PIP/PBP contrast control	0xa3, nn | "+" | "-" | "r" | "R" | "?"	Set PIP/PBP window contrast = value/increment/decrement Reset Query	PIP window contrast. Range: "0" "0" – "6" "4" Default: "3" "2"
PIP H position	0xa4, nnn | "+" | "-" | "r" | "R" | "?"	Set PIP_Hpos = value/increment/decrement Reset Query	PIP window horizontal position Range: "0""0" "0" –"0" "6" "4" Default: "0" "0" "0".

Video Controller Interface Commands

Function	Command	Description	Acknowledge (if enabled)
Graphic horizontal sync frequency	0xb9	Horizontal sync frequency (in units of 100Hz) in 3 digit hex number	"nnn" = horizontal frequency
Graphic vertical sync frequency	0xba	Vertical sync frequency (in units of Hz) in 3 digit hex number and 1 char	"nnnc" = vertical frequency nnn = 3 digit hex c= "i" or "p" interlace or Progressive
Swap Main & PIP/PBP	0xe3	Swap Main and PIP/PBP Source	"0" – fail. "1" – successful.
Temperature sensor	0xe4	Read Temperature Sensor	"nn" = Temperature °C
PIP Window Transparency	0xed nn | "+" | "-" | "r" | "R" | "?"	Set PIP window transparency Value/increment/decrement Reset Query	PIP window transparency Range: "0" "0" – "6" "4" Default: "6" "4"

OTHER COMMANDS

Function	Command	Description	Acknowledge (if enabled)
Auto-setup	0xc3	Auto-setup. (PC only)	"0" – fail. "1" – successful.
Command availability	0xc4, nn	Check whether a command is available.	"0" – not available. "1" – available.
Auto-calibration	0xc5	Start auto-calibration of gain of the RGB amplifier.	"0" – fail. "1" – successful.
Soft Power On/Off	0xc8, "0" | "1" | "?"	Soft power off/on query	"0" – soft power off. "1" – soft power on.
Query EVX firmware version	0xcb, "0"	Read EVX firmware version	Version "VV.YY.ZZ?" VV = V0 or E0, V0 = Release version E0 = Engineering Sample YY= Version Number ZZ= Customer Number ? = For E0 version (A-Z)
Test Pattern	0xcd, "0" | "1"	Leave test pattern display mode Display test pattern screen	"0" = normal display "1" = displaying built in test pattern

Video Controller Interface Commands

Function	Command	Description	Acknowledge (if enabled)

Reset Factory default	0xce	Reset all parameters to default value	"1" , DB, mn,
			
			"1" – successful.
			
			DB – Serial Mode Query
			m – serial address (0 to 15)
			n – serial mode
			    0x31 – RS232
			    0x32 – 4-wire RS485/422
			    0x33 – 2-wire RS485

Saving the user default	0xd7	Saving all parameters to user default value	"1" - successful.

Loading the user default	0xd8	Loading all parameters to user default value	"1" , DB, mn,
			
			"1" – successful.
			
			DB – Serial Mode Query
			m – serial address (0 to 15)
			n – serial mode
			    0x31 – RS232
			    0x32 – 4-wire RS485/422
			    0x33 – 2-wire RS485

Wide Screen Mode Selection	0xd9, n | "r" | "R" "?"	Wide Screen Mode Reset Query	"1" – 1280x768 "2" – 1366x768
Setup DDC	0xdc	Setup DDC	"1" - successful
Serial Mode Query	0xdb, "?" | mn	Setting serial address & serial mode: Query Value – m, n	0x db, mn m – serial address 0 to 15 n – serial mode 0x31 – RS232 0x32 – 2-wire RS485 0x33 – 4-wire RS485/422

Video Controller Interface Commands

Commands to implement switch mount control buttons

Function	Command	Description	Acknowledge (if enabled)
Menu button	0xf7	Menu button pressed	Button equivalent
Select-down button	0xfa	Select-down button pressed	Button equivalent
Select-up button	0xfb	Select-up button pressed	Button equivalent
Right/+ button	0xfc	Right/+ button pressed	Button equivalent
Left/- button	0xfd	Left/- button pressed	Button equivalent

Revision History - HATTELAND® SCOM

Rev.	By	Date	Notes
1	BU SE	04 Jun 2009	First release.