

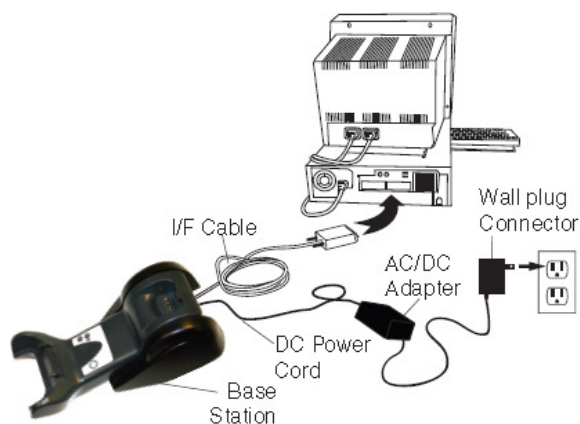
GRYPHON 4400 2D IMAGE CAPTURE PROTOCOL

This document describes the serial image capture protocol between host and device.

The Gryphon series 4400 2D have the possibility to capture images and send the image data to the host via RS232 or USB-COM



a) Serial Port mode (RS232 connector on host)



b) USB-Com mode (USB connector on host)



Below you can find the basic settings to configure the scanner. The complete list of configuration parameters can be found in the Reference Manual :

<https://easeofaccess.scanning.datalogic.com/public/marketlit/Send.aspx?file=R44-3132>

1) Setting up the scanner for RS232 :

a) Factory default :



Restore EU Factory defaults

b) RS232 Interface 115200 baud:



2) Setting up the scanner for USB-COM :

When setting up the scanner in USB-COM, a virtual USB-COM driver must be installed.

For 32-bit systems :

<https://easeofaccess.scanning.datalogic.com/public/marketlit/Send.aspx?file=SU-DLS-USB-COMDriver>

For 64-bit systems :

<https://easeofaccess.scanning.datalogic.com/public/marketlit/Send.aspx?file=SU-DLS-USB-COMDriver2>

A) Factory default :



Restore EU Factory defaults

B) USB-COM Interface :



3) Defining the image format

By default, the image format sent from the scanner to the host is Jpeg. This is the smallest file format of all and so will be the fastest to download. Other options are BMP, Tiff & JPG 2000



JPEG (default)



Tiff



BMP



Jpeg 2000

4) Request Image

To request a picture from the scanner, a command needs to be sent to the serial port on where the device is connected.

Multiple commands exist depending of how the reader reacts to the image taking command.

- a) set the reader to transmit an image after a trigger press : command = x018000000000{CR}
- b) acquire the image by using only the remote command : command = x008000000000{CR}

After the command is sent from the host to the scanner, a response answer string is coming from the scanner. The format is like : \$i00000586360334{CR}

You can use the freeware tool ComtestSerial from Microridge to simulate this behaviour.

http://www.microridge.com/ftp/comtestserial/Setup_ComTestSerial_2_1_0_47.msi

In the below picture you see a print screen from the Serial test Program.

The host is sending : x008000000000{CR} and the scanner is answering \$i0100004c700357{CR}

The format of the answer string is always like :

\$ixyyyyyyyyzzcc{CR}

Where the description of the fields is :

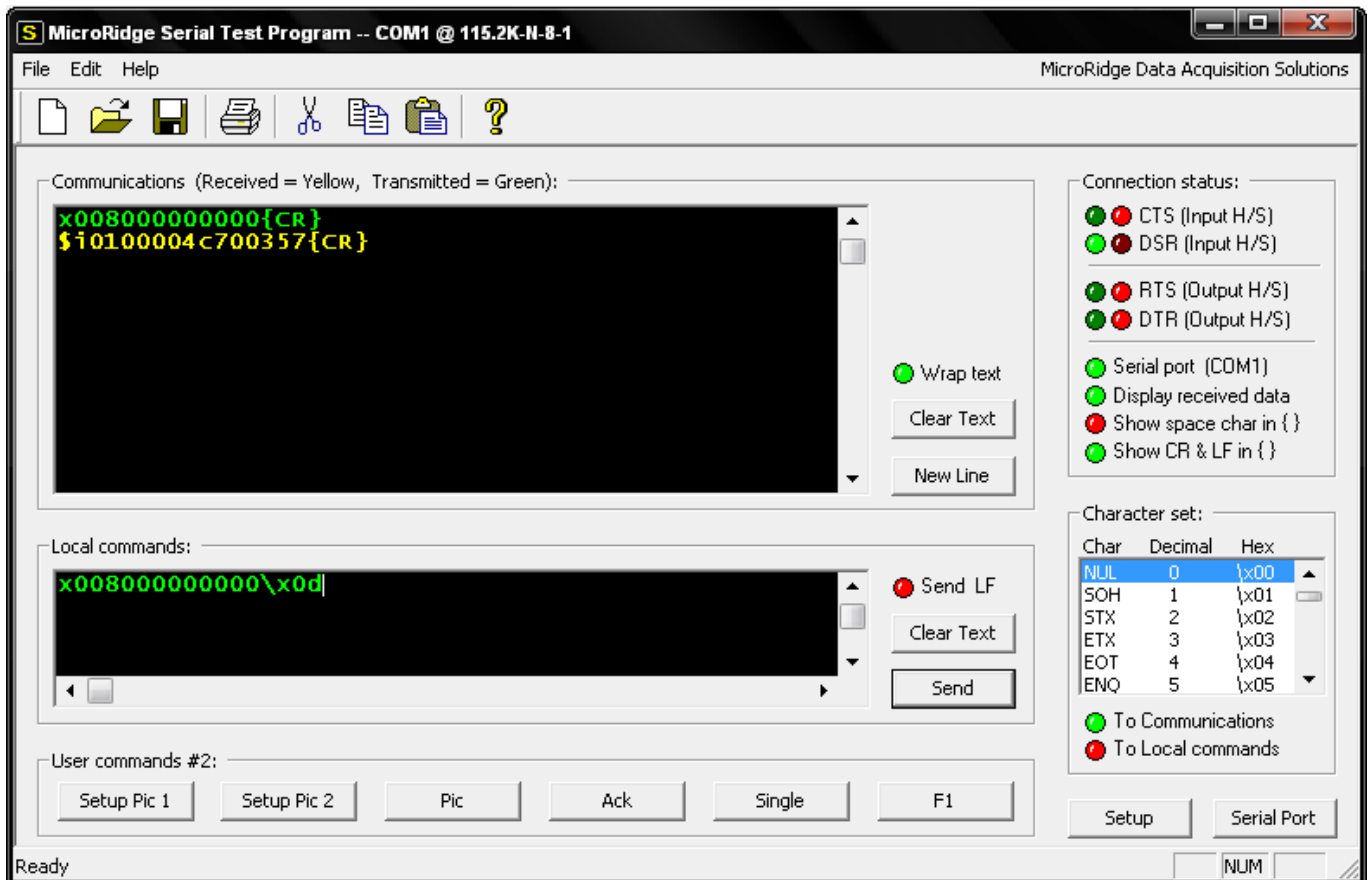
\$i = format header from a request picture answer. This is always \$i

xx = 2 digit Image format type (where : xx = 01 for Jpeg , xx = 02 for Jpeg 2000 , xx = 03 for Tiff , xx = 00 for BMP)

yyyyyyyy = 8 digit hex value of the image size the scanner will send.

zz = 03 (fix)

cc = checksum (CRC 16)



After sending the image request answer to the host, the scanner will start sending the image data. Depending on the Interface selection of the scanner, 2 different situations can occur.

When working in RS232, the image data is sent from the scanner in X-modem 128 bytes protocol. When working in USB-COM, the image data is sent in a continuous stream without any handshaking.

RS232 mode flow :

Gryphon 4400		Host
	←	x018000000000{CR}
\$i010000249a0359{CR}	→	
	←	NAK
SOH 01 FE Data[128] CSUM	→	
	←	ACK
SOH 02 FD Data[128] CSUM	→	
	←	ACK
SOH 03 FC Data[128] CSUM	→	
	←	ACK
<i>..... multiple blocks will be sent</i>		
SOH xx FA Data[xx] CPMEOF[xx] CSUM	→	
	←	ACK
EOT	→	
	←	ACK

More information on the X-modem protocol can be found on :
<http://www.techheap.com/communication/modems/xmodem.html>

In the Printscreen below, you will see that the host is sending x008000000000{CR} , the receives \$i0100003882032e{CR}, and starts the x-modem protocol by sending {NAK}

MicroRidge Serial Test Program -- COM1 @ 115.2K-N-8-1

File Edit Help MicroRidge Data Acquisition Solutions

Communications (Received = Yellow, Transmitted = Green):

```

x008000000000{CR}
$i0100003882032e{CR}
{NAK}{SOH}{SOH}{\xfe}{\xff}{\xd8}{\xff}{\xe0}
{NUL}{DLE}JFIF{NUL}{SOH}{SOH}{NUL}{NUL}{SOH}{NUL}
{SOH}{NUL}{NUL}{\xff}{\xdb}{NUL}C{NUL}{DLE}{VT}
{FF}{SO}{FF}{LF}{DLE}{SO}{CR}
{SO}{DC2}{XON}{DLE}{XOFF}{CAN}({EOF}{CAN}{SYN}
{SYN}{CAN}1#%{GS}(:3=<9387@H\N@DWE78PmQW_bghg>
Mqypdx\egc{\xff){\xc0}{NUL}{VT}{Bksp}{SOH){\xe0}
{STX}{\xf0}{SOH}{SOH}{XON}{NUL}{\xff){\xc4}{NUL}
{US}{NUL}{NUL}{SOH}{ENQ}{SOH}{SOH}{SOH}{SOH}
{SOH}{NUL}{NUL}{NUL}{NUL}{NUL}{NUL}{NUL}{NUL}
{SOH}{STX}{ETX}{EOT}{RS}{SOH}{SOH}{\xfe){\xff}
                
```

Wrap text

Clear Text

New Line

Connection status:

- CTS (Input H/S)
- DSR (Input H/S)
- RTS (Output H/S)
- DTR (Output H/S)
- Serial port (COM1)
- Display received data
- Show space char in { }
- Show CR & LF in { }

Local commands:

```

x008000000000\x0d
                
```

Send LF

Clear Text

Send

Character set:

Char	Decimal	Hex
NUL	0	\x00
SOH	1	\x01
STX	2	\x02
ETX	3	\x03
EOT	4	\x04
ENQ	5	\x05

To Communications

To Local commands

User commands #2:

Setup Pic 1
Setup Pic 2
Pic
Ack
Single
F1

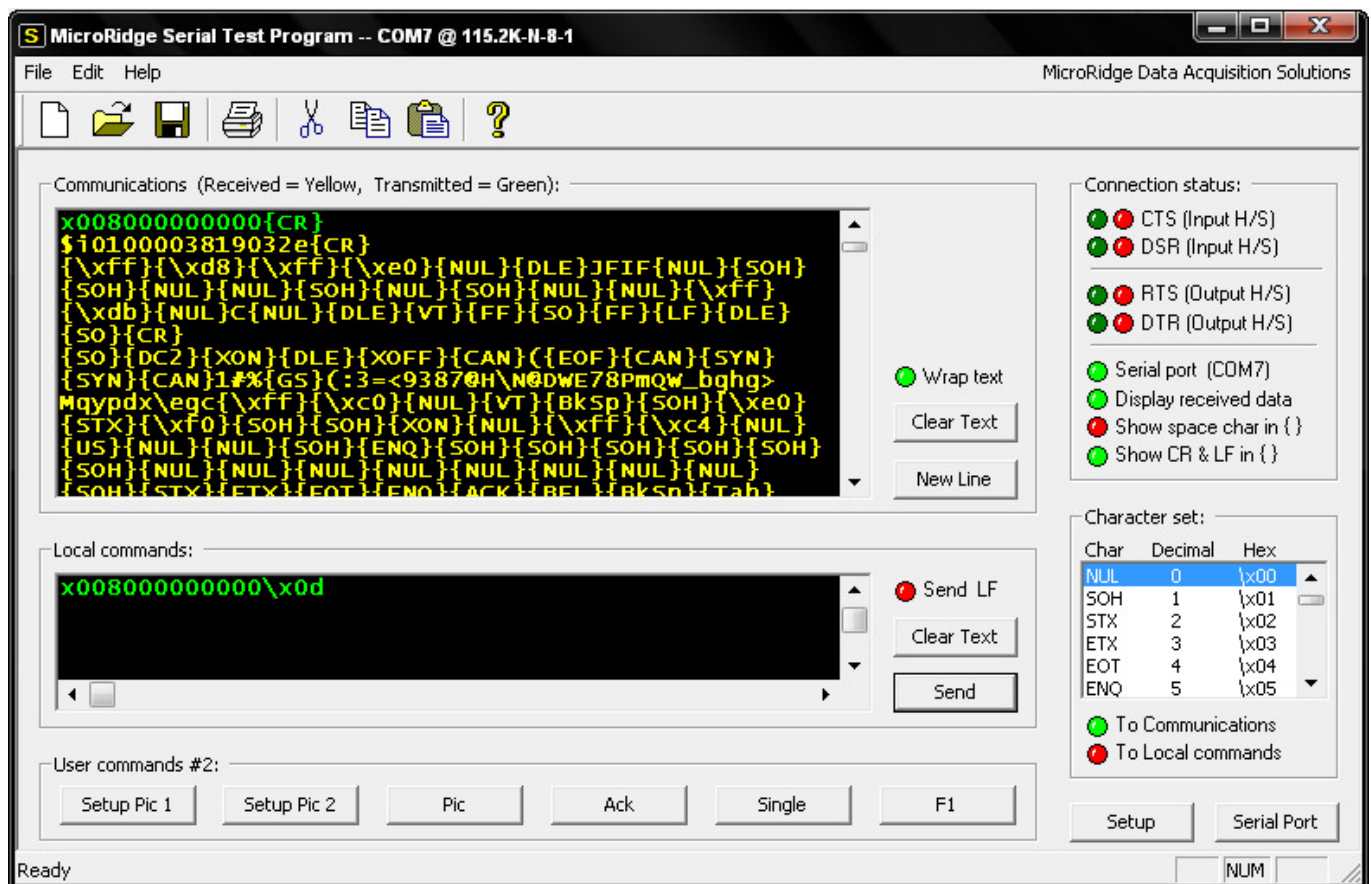
Setup
Serial Port

Ready NUM

USB-COM mode flow :

Gryphon 4400		Host
	←	x018000000000{CR}
\$i010000249a0359{CR}	→	
Image Data (number of bytes are known from the size information field in the above answer.	→	

Printscreen of Jpeg image data received in USB-COM



As you see, the data is starting with `{\xff}{\xd8}` and ending with `{\xff}{\xd9}`. In fact these are the Jpeg data headers and trailers as described in the Jpeg format description :

<http://en.wikipedia.org/wiki/JPEG>

5) Additional information

The above described commands to capture a picture can be extended with following information :

If you want to download the images with different brightness, you can set the available options on the basic command:

```
x0nnqaabbccdd<CR>
```

- nn specifies the command type:

“08” -> HOST_CMD_CAPTURE_NO_HANDSHAKE

“10” -> HOST_CMD_CAPTURE_ON_TRIGGER

“11” -> HOST_CMD_MULTIPLE_CAPTURE_ON_TRIGGER

“18” -> HOST_CMD_CAPTURE_ON_TRIGGER_NO_HANDSHAKE

“19” -> HOST_CMD_MULTIPLE_CAPTURE_ON_TRIGGER_NO_HANDSHAKE

“40” -> HOST_CMD_ABORT_IMAGE_CAPTURE

- q specifies brightness and contrast. If q is different from '1', the configured brightness and contrast will be applied. In this case all the remaining fields aabbccdd don't care.

If q = '1' ASCII(0x31) then image brightness and contrast are specified by the following fields:

- aa = brightness value, range “00” to “64” (example “2A” for brightness 42%)

- bb = contrast value, range “00” to “64”

- cc = brightness direction: “00” to increase it; “01” means decrease.

- dd = contrast direction: “00” to increase it; “01” to decrease.

6) Aladdin

Aladdin can be used to show the capabilities of the imaging features of the GBT4400.

<https://easeofaccess.scanning.datalogic.com/public/marketlit/Send.aspx?file=SU-ALADDINv16031-100415-1519>

