Configuring Serial Passthrough

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Software Version 2.19

Summary

This document describes the serial pass-through concept, how to set it up, and how to test it.

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FILES

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FTP: internal.sightlineapplications.com:9090

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Overview:

Each communications port can be configured to parse or re-route data.

SightLine Native Command Protocol (FIP)-based pass-through:

- Special "pass-through" FIP packets have variable length payloads.
- The bytes in the payload are copied directly to destination port.
- What happens to incoming serial bytes?
- What is this used for?

Generic UDP Pass-through:

- Bytes in UDP packets arriving at **inbound port** are copied to serial output.
- In pass-through submode: bytes arriving at serial input are formed into packets and sent to destination address/port
- Packets are formed from #bytes received in Max Delay ms or of Max Length bytes
    - whichever is more restrictive
- In **Aquarius and SLA** submode:
    - Bytes arriving at serial input are parsed as aquarius packets and/or FIP packets.
    - Valid packets are sent as UDP packets to destination address/port.
    - Valid FIP packets are parsed normally and executed (command & control)
    - Bytes that conform to neither are discarded

TCP Pass-through

- stream based, so it works very well with serial port, which is also stream based communication channel
- You can use TCP pass-through with virtual comm port for TAU/SONY/Hitachi GUI

General Usage Scenarios:

In	Out	Possible Usage:
Serial 0	Serial 1 Serial 2	• Host to 3rd Party device like a PC, auto-pilot or other serial device • Host to camera • All replies from Serial Port N are passed back to Serial Port 0 • Used to control SLA-HARDWARE (FIP) as well as provide access to device connected on serial port • Variable length Payload has FIP wrapper (0x51,0xAC,...) • “serial to serial” communication
Serial 0	Ethernet	• Host to 3rd Party device like a PC, auto-pilot or other **network** device • All replies from remote IP address are passed back to Serial Port 0 • Used to control SLA-HARDWARE (FIP) as well as provide access to

		device connected on serial port • Variable length Payload has FIP wrapper (0x51,0xAC,...) • "serial to ethernet" communication
Ethernet (FIP)	~~Serial 0~~ Serial 1 Serial 2	• Host to 3rd Party device like a PC, auto-pilot or other serial device • Host to camera • All replies from Serial Port N are passed back to **Serial Port 0** • **[should go to Ethernet 14002]** • Used to control SLA-HARDWARE (FIP) as well as provide access to device connected on serial port • Variable length Payload has FIP wrapper (0x51,0xAC,...) • "Ethernet to serial communication"
Ethernet (TCP)	~~Serial 0~~ Serial 1 Serial 2	• A connection-based socket to something like a PC • **Raw** inbound data is passed to the serial port • Replies from the serial port are passed to the TCP socket • Used with Virtual COM port on PC to allow legacy applications to talk to cameras

NOTE: Historically SERIAL PORT 0 was reserved for SIGHLINE NATIVE COMMUNICATION ONLY. In the near future we can make this more flexible.

MODES:

Value	Name	Description / Use
0	SLA Protocol	Expects SLA Native Command Protocol (0x51,0xAC,...) Use with SLA-PANEL, SLA-PANEL-PLUS User implements FIP calls in their code
1	Aquarius & SLA	Expects SLA Native Command Protocol Expects Insitu Aquarious packets over Ethernet; passes results to Serial Port 0
2	FLIR TAU	For use with SightLine TauPassThroughTestGui
3	Reserved	
4	Not Used	
5	TCP	Use with HW Serial Port to create a virtual COM port on your PC that programs like FLIR Camera Control can use.
6	RAW Pass-through	

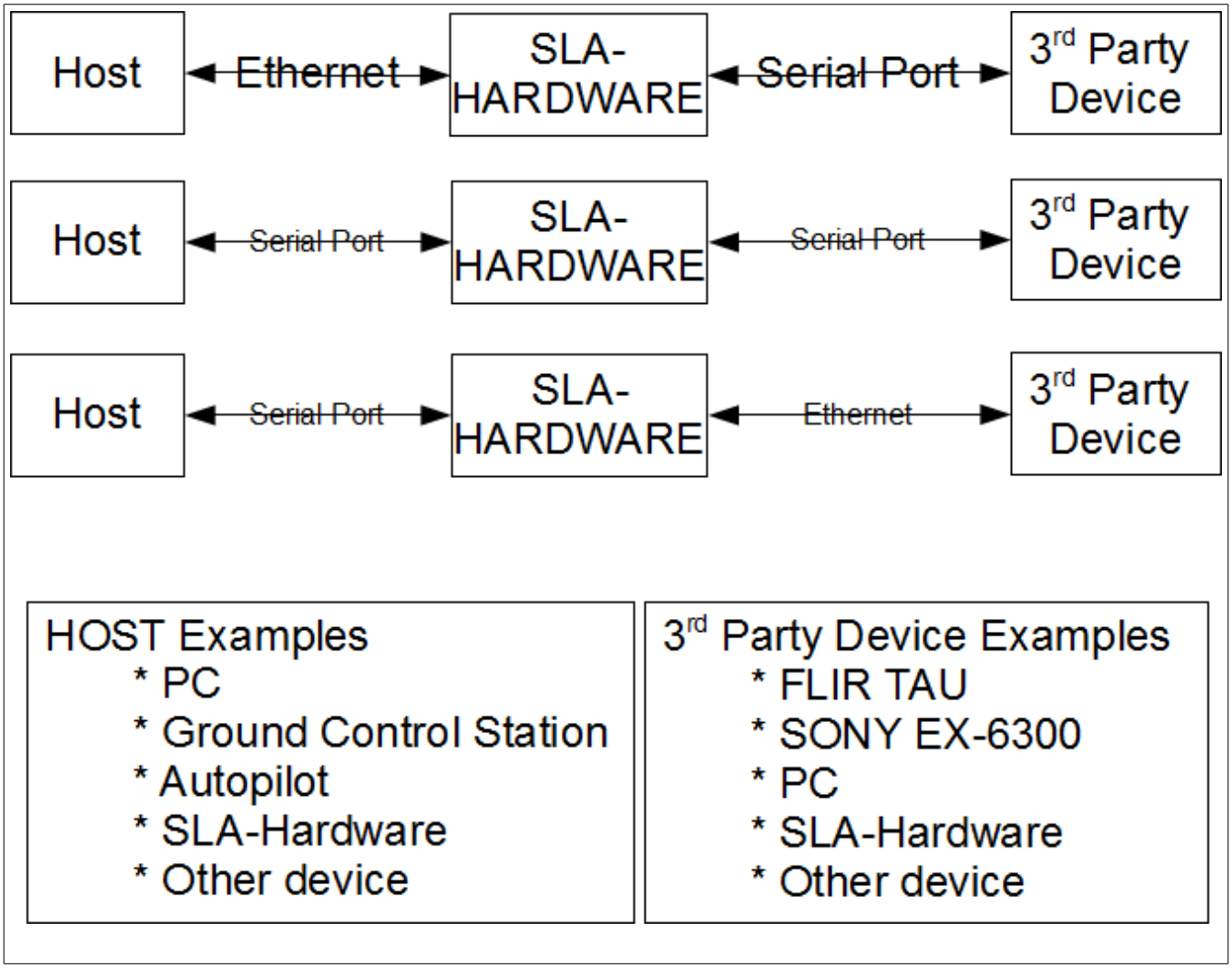
Ports

INDEX	PORT	SUPPORTED MODES
0	SERIAL PORT 0	**SLA Protocol (DEFAULT)**
		Aquarius & SLA
		FLIR TAU
		Reserved
		Not Used
		TCP
		RAW Pass-through
1	SERIAL PORT 1	SLA Protocol
		Aquarius & SLA
		FLIR TAU
		Reserved
		Not Used (DEFAULT)
		TCP
		RAW Pass-through
2	ETHERNET (C2)	**SLA Protocol (DEFAULT)**
3	I2C	*NYI*
4	SERIAL PORT 2	SLA Protocol
		Aquarius & SLA
		FLIR TAU
		Reserved
		Not Used (DEFAULT)
		TCP
		RAW Pass-through
5	ETHERNET (TELEMETRY) [DEPRECATED]	SLA Protocol
		Not Used (DEFAULT)
6 – 10	SERIAL PORTS *N*	*NYI*
11	PASS THROUGH LOG	*???*

Common Camera Serial Port Settings

Camera	Serial Port	Settings
FLIR TAU	2	57600
		8
		1
		NONE
SONY FCB-EH-xxxx	2	{9600, 38400}
		8
		1
		NONE
HITACHI	2	4800
		8
		1
		EVEN
DRS TAM 620	2	57600
		8
		1
		NONE
TAMERON LENS	1	115200
		8
		1
		NONE

Diagram:



Possible Applications:

- Integrating the SLA-Hardware into an existing communications pipe
- SLA-1500-OEM with the FLIR TAU 640 camera
- SLA-1500-OEM with the Sony FCB EH-xxxx camera
- SLA-2000-OEM + SLA-2000-CL and Camera Link cameras

Example:

A SONY VISCA(tm) command can be sent to the SLA-HARDWARE over Ethernet. The command can then be routed to a SONY FCB EH3150 camera connected to Serial Port 2. Any reply from the Sony camera on Serial Port 2 is then routed back to the originating host over the Ethernet channel.

SLA-PANEL

Configure serial port and UDP port for pass through operation. Bold text indicates default value.

Port	Communications port name or ID to be configured {**Serial Port 0**, Serial Port 1, Ethernet, I2C, Serial Port 2}
Baud Rate	{9600, 38400, **57600**, 115200}
Data Bits	{ 7, **8** }
Stop Bits	{0, **1**}
Parity	{ EVEN, ODD, **NONE** }
Protocol	None: No pass through Alticam & SLA: Pass through Alticam; SLA protocol handled locally FLIR Tau: Pass through FLIR Tau protocol **SLA**: SightLine Native Command Protocol Not Used:
Max Length	Maximum packet length.
Max Delay	Maximum packet delay (ms)
Inbound Port	Incoming UDP port All data received is passed through to Port specified above.
Destination IP	Destination IP address of host where UDP packets will be sent
Destination Port	Network port number on host

Port ID

Port ID	Description
0	Serial Port 0
1	Serial Port 1
2	Ethernet Port
3	I^2C Port
4	Serial Port 2 (SLA-1500 only)

SLFIP – Native Command

See slfip.h and slfip.cpp for more details

Configure Communications Port (0x3E)

Example:

Tell the SLA-HARDWARE to send data received on local port 1000 out on to serial port 2 configured at 57600 baud, 8 data bits, 1 stop bit, and no parity. Any data received from serial port 2 will be sent to the IP address of 192.168.1.119 on port 10000. Raw payload data can now be sent directly to the IP address of the SLA-HARDWARE on port 1234 or data can be sent through the FIP port (serial port 0 or Ethernet port 14001) using Command Pass-Through (0x3D).

Header		**LEN**	**Type**	**Dest Port**	**Baud**	**Data**	**Stop**	**Parity**	**Max**	**Max**	**Parser**	
0x51	0xAC	0x12	0x3E	0x04	0x03	0x08	0x01	0x00	*0x64*	*0x64*	0x02	...
Header				Serial Port 1 configuration								

	Inbound Port		**Outbound/Reply IP Address**				**Outbound Port**		**Checksum**
...	0xe8	0x03	0xc0	0xa8	0x01	0xdb	0x10	0x27	0xc1
	1000		192	168	1	119	10000		

The current setting can be retrieved using the Get Port Configuration (0x3F).

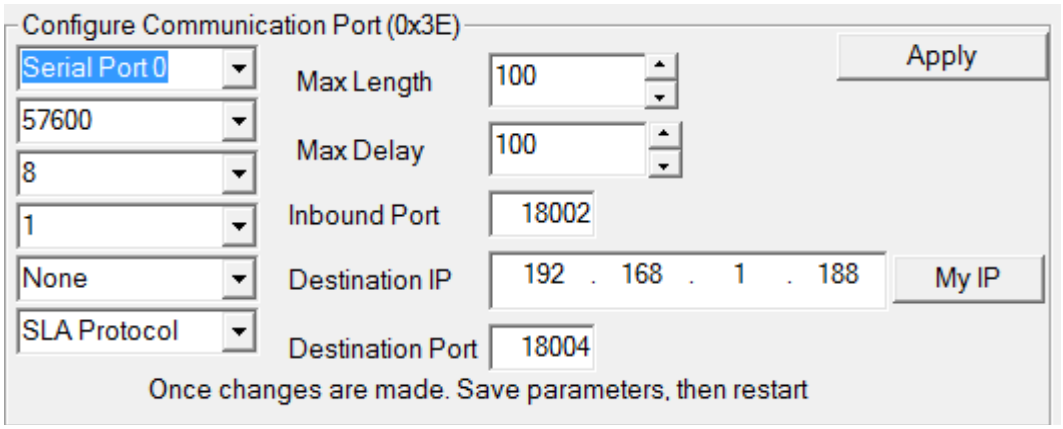
Command Pass-Through (0x3D)

utputs data payload to the port specified. Use Configure Communications Port (0x3E) to setup the inbound and outbound physical ports.

Byte offset	Description
2	Length = 3 + payload length
3	Type = 0x3D
4	Destination Port ID
5 – 5 + Payload Length	Payload *Minimum 1 byte* *Maximum 80 bytes*

NOTE: actual payload length can be anywhere between 1 and 80 bytes.
NOTE: no assumptions are made on terminating characters such as carriage return (0x0D), line feed (0x0A), or null (0x00)

CONFIGURATION:
For things to work on the SLA-1500, it is recommended you set the system to SILENT MODE:



TEST:
Create socket on PC listening to 18004
Send data to SLA-HARDWARE port 18002
Q: Does SLA-PANEL echo the Command Pass-through to the log?

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