PGY-I3C-EX-PD I3C Protocol Exerciser and Analyzer

I3C Protocol Exerciser and Analyzer

I3C Serial bus interface is emerging as a chosen interface for all future sensor connectivity in mobile phone and automotive Industry. This could also be chosen for low cost, reliable interface for future embedded electronic applications to address the new data intensive applications.

PGY-I3C-EX-PD is the leading instrument that enables the design and test engineers to test the I3C designs for its specifications by configuring PGY-I3C-EX-ED as master/slave, generating I3C traffic with error injection capability and decoding I3C Protocol decode packets.

Features:

- Ability to configure it as Master or Slave
- Ability to configure BCR, LVR and DCR registers
- Supports legacy I2C slaves and Master
- Generate different I3C and I2C SDR and HDR Packets
- Flexibility to upgrade the unit TSP and TSL encoding (When it is available)
- Error Injection such CRC errors, parity errors and ACK/NACK errors
- Variable I3C data speeds
- Simultaneously generate I3C traffic and Protocol decode of the Bus
- Timing diagram of Protocol decoded bus
- Listing view of Protocol activity

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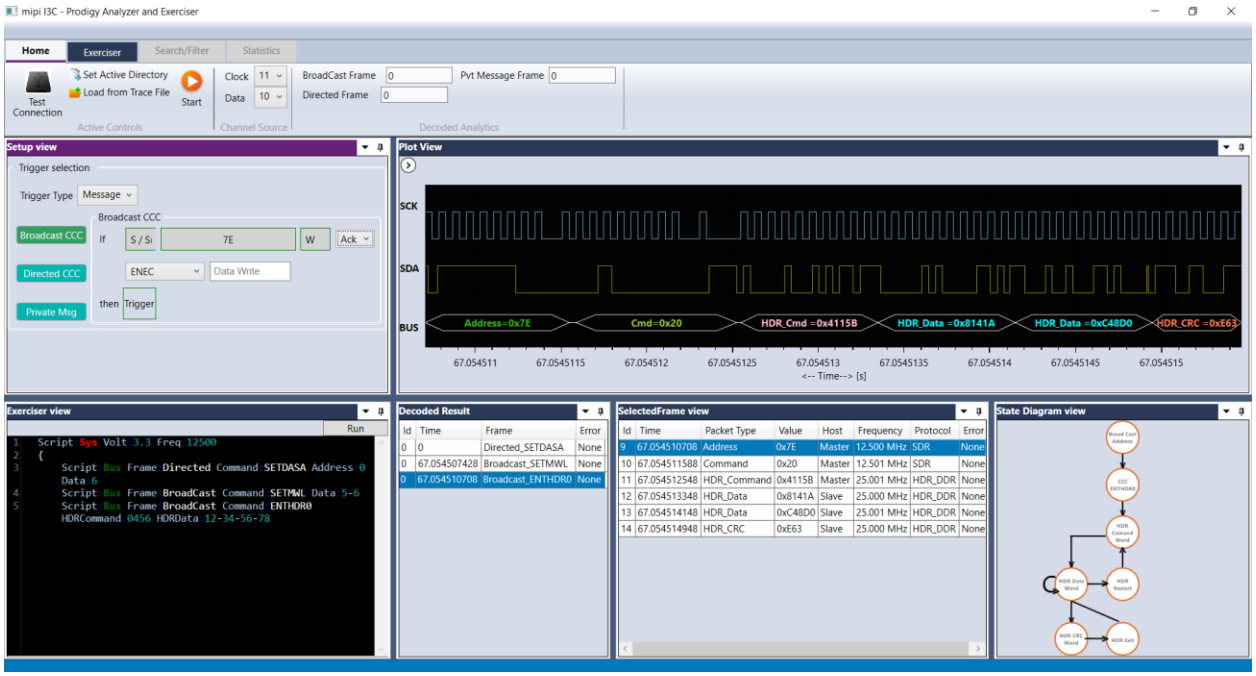
- Error Analysis in Protocol Decode
- State Machine view of the I3C packets
- Ability to write exerciser script to combine multiple data frame generation at different data speeds
- USB2/3 host computer interface
- Flexibility to upgrade to the unit for evolving I3C Specification

Multi-domain View



Multidomain View provides the complete view of I3C Protocol activity in single GUI. User can easily setup the analyzer to generate I3C/I2C traffic using a GUI or script. User can set different trigger conditions from the setup menu to capture Protocol activity at specific event and decode the transition between Master and Slave. The decoded results can be viewed in timing diagram and Protocol listing window with autocorrelation. State machine view provides switching of state machine between master and slave for design validation. This comprehensive view of information makes it industry best, offering an easy to use solution to debug the I3C protocol activity.

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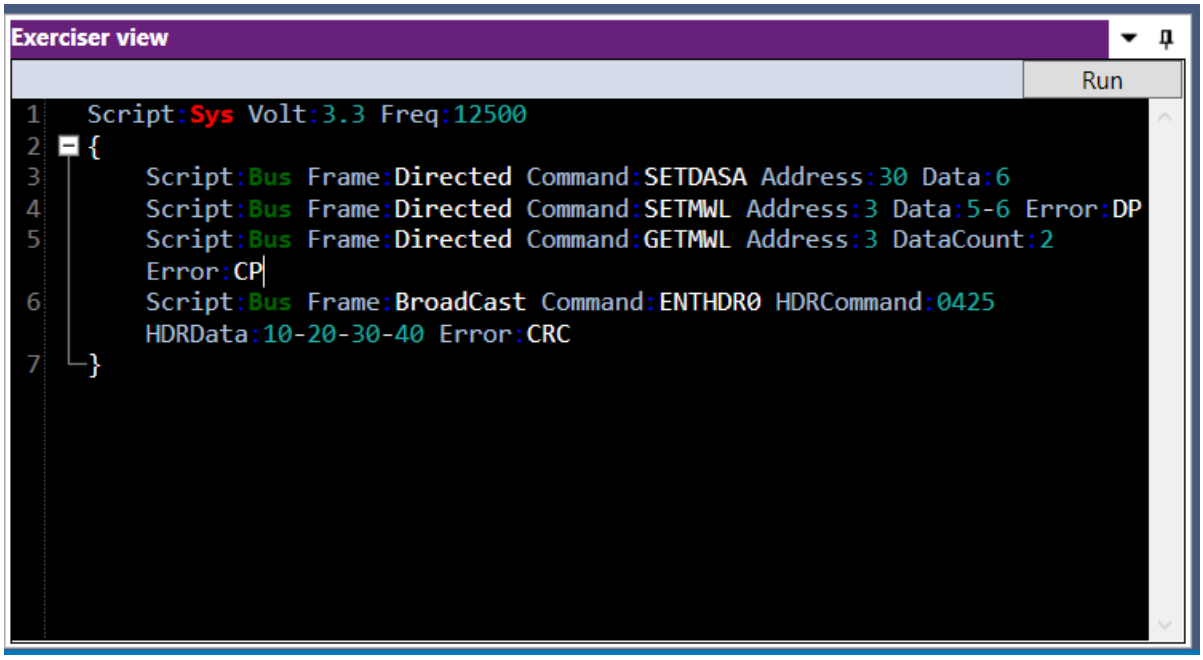
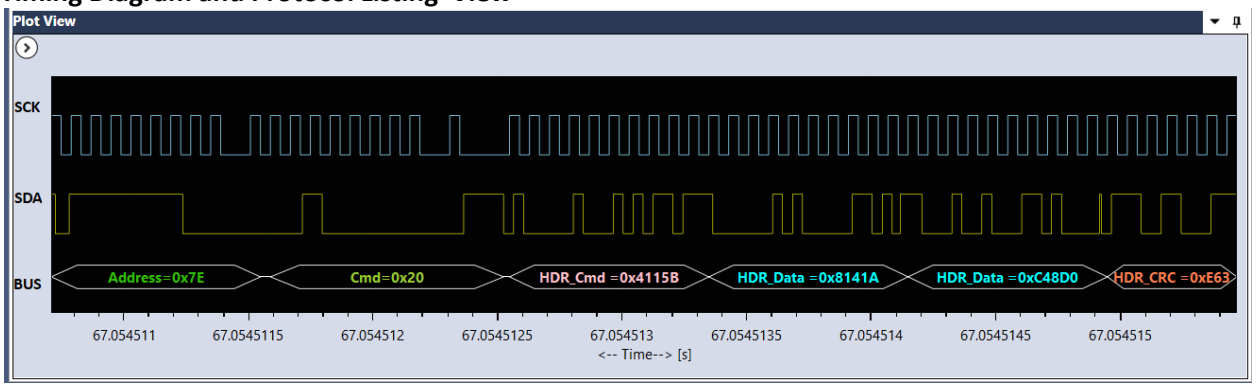
Exerciser:



PGY-I3C-EX-PD supports I3C traffic generation using GUI and Script. User can generate simple traffic generation using the GUI to test the DUT. Script based GUI provides flexibility to emulate the complete expected traffic in real world including error injections. In this sample script user can generate I3C traffic as below.

Script line #3: SET Dynamic Address using slave static
Script line #4: SETMWL with Data Parity Error
Script line #5: GETMWL with Command Parity Error
Script line #6: ENTHDR0 DDR mode with CRC Error

Timing Diagram and Protocol Listing View



Timing view provides the plot of SCL and SDA signals with bus diagram. Overlaying of Protocol bits on the digital timing waveform will help easy debugging of Protocol decoded data. Cursor and Zoom features will make it convenient to analyze Protocol in timing diagram for any timing errors.

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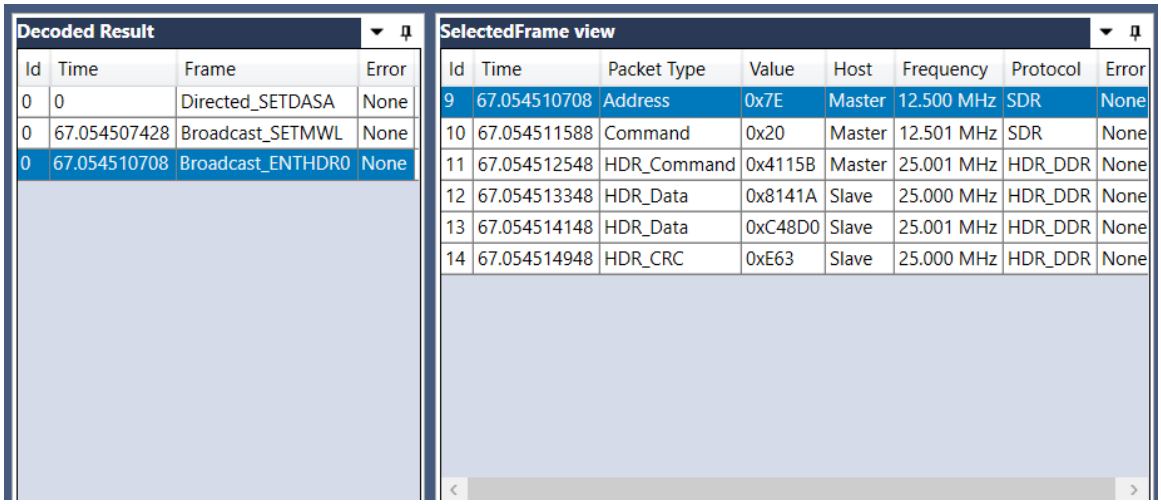


Decoded Result

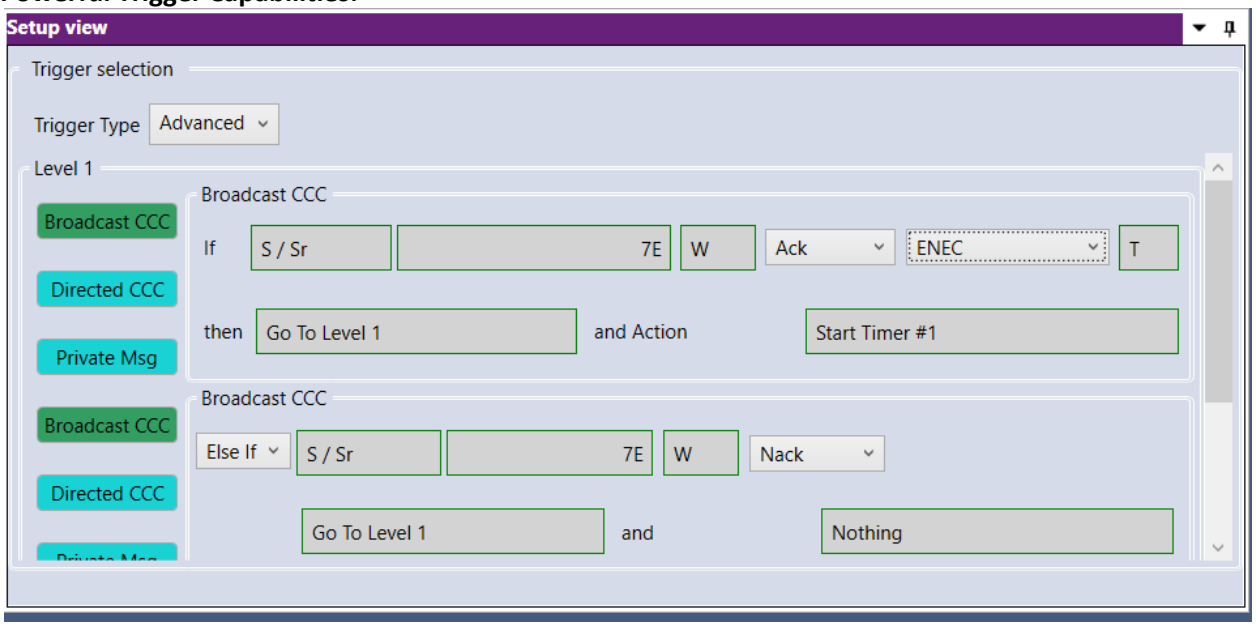
Id	Time	Frame	Error
0	0	Directed_SETDASA	None
0	67.054507428	Broadcast_SETMWL	None
0	67.054510708	Broadcast_ENTHDR0	None

SelectedFrame view

Id	Time	Packet Type	Value	Host	Frequency	Protocol	Error
9	67.054510708	Address	0x7E	Master	12.500 MHz	SDR	None
10	67.054511588	Command	0x20	Master	12.501 MHz	SDR	None
11	67.054512548	HDR_Command	0x4115B	Master	25.001 MHz	HDR_DDR	None
12	67.054513348	HDR_Data	0x8141A	Slave	25.000 MHz	HDR_DDR	None
13	67.054514148	HDR_Data	0xC48D0	Slave	25.001 MHz	HDR_DDR	None
14	67.054514948	HDR_CRC	0xE63	Slave	25.000 MHz	HDR_DDR	None

Protocol window provides the decoded packet information in each state and all packet details. Selected frame in Protocol listing window will be auto-correlated in timing view to view the timing information of the packet.

Powerful Trigger Capabilities:



PGY-I3C-EX-PD supports Auto, simple and advanced trigger capabilities. Analyzer can trigger on any of the Protocol packets such as Broadcast, Directed or Private message. Advanced Trigger provides the flexibility to monitor Multiple trigger conditions and can set multiple state trigger machine. User can initiate a timer and trigger on set timer values.

PGY-I3C-EX-PD Specification	
Excerciser:	
Configurable	1 Master+ Four Slaves OR
	5 Slaves OR
	Slave with Secondary master
I3C/I2C Traffic generation	Custome I3C/I2C Traffic Generation
	Simulate real world network traffic
SCL Frequency	400KHz to 13.5MHz
Voltage drive level	1 V to 3.3V at steps of 100mV
IBI	Yes, Supported (To be tested with other DUT)
HotJoin	Yes, Supported CTo be tested with Other DUT)
CCC Support	All CCC are supported except SETXTIME, ENTTM, ENTAS*
SCL Duty Cycle variation	User Define
SCL and SDA Delay	User Define
Delay between two messages	User Define
Error Injection	S0 to S5 types of errors specified in the I3C specifications
	CRC Errors in DDR Traffic
	Preamble Errors in DDR Traffic
	ACK/NACK Errors (Slave)
	Master Abort
	Non-Standard Frames
	Non-Standard Start, Stop and HDR Exit Patterns
	Save and load scripts
Protocol Analysis	
Supoorts	I3C and I2C Protocol Decode
Protocol views	Timing Diagram view
	Protocol Listing View
	State machine View
	Bus Diagram to display Protocol packets with timing diagram plot
Protocol Trigger	Auto (Trigger on Any Packet)
	Simple (Triiger on any user defined I3C or I2C packet)
	Advanced (Multistate and Multilevel Trigger with Timer Capability)
Capture Duration	Continious streaming Protocl data to Host HDD/SSD
Protocol Error Report	S0 to S5 types of errors specified in the I3C specifications
	CRC Errors in DDR Traffic
	Preamble Errors in DDR Traffic
	ACK/NACK Errors (Slave)
	Master Abort
	Non-Standard Frames
	Non-Standard Start, Stop and HDR Exit Patterns
Host Coonectivity	USB3.0/2.0 interface

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Ordering Information
PGY-I3C-EX-PD I3C Protocol Exerciser and Analyzer

Deliverables:

PGY-I3C-EX-PD Unit
USB3.0 cable
PGY-I3C-EX-PD Software in CD
12V DC adopter
Flying lead probe cable with female connector to connect to DUT

Contact:
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About Prodigy Technovations Pvt Ltd
Prodigy Technovations Pvt Ltd (www.prodigytechno.com) is a leading global technology provider of Protocol Decode, and Physical layer testing solutions on test and measurement equipment. The company's ongoing efforts include successful implementation of innovative and comprehensive protocol decode and physical Layer testing solutions that span the serial data, telecommunications, automotive, and defense electronics sectors worldwide.

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