

## PGY-UART-EX-PD UART Protocol Exerciser and Analyzer



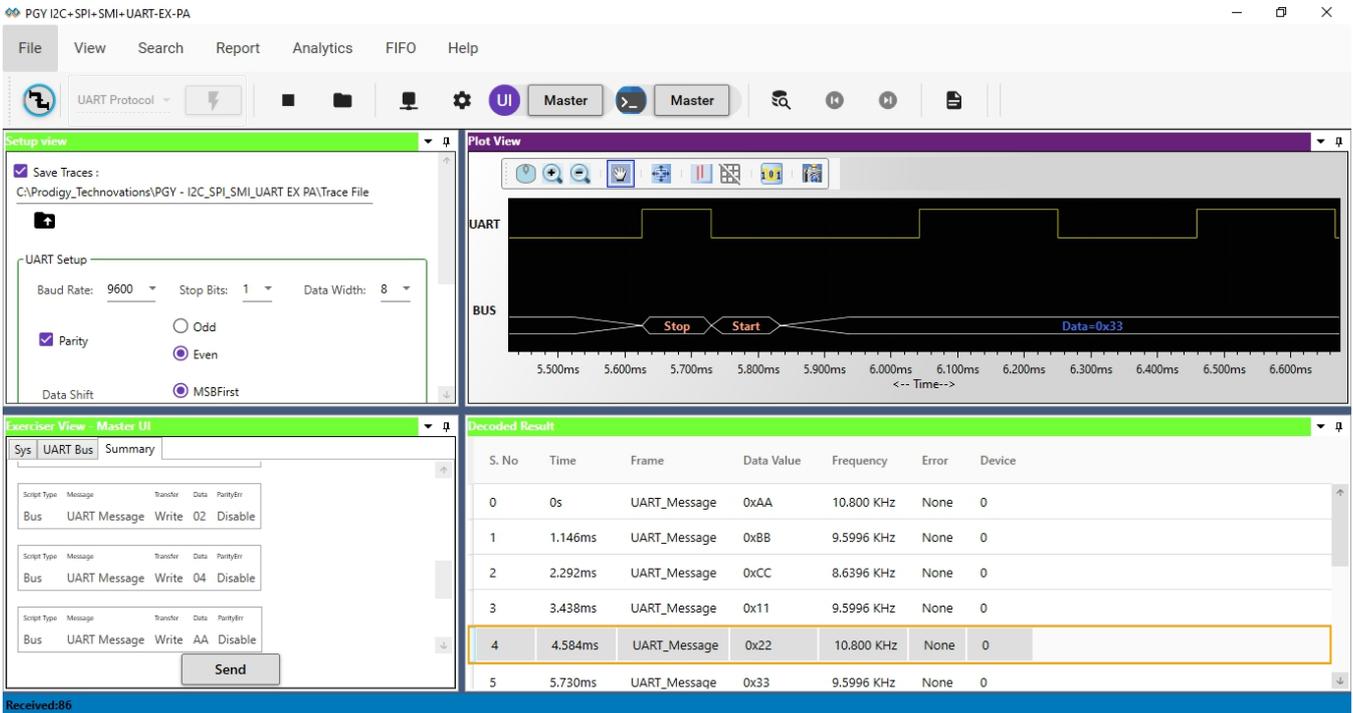
UART stands for Universal Asynchronous Receiver Transmitter. A UART's main purpose is to transmit and receive serial data.

PGY-UART-EX-PD is the leading instrument that enables the design and test engineers to test the UART designs for its specifications. Generating UART traffic with custom traffic capability and decoding UART Protocol packets.

### Features

- Supports custom UART traffic generation
- Simultaneously generate UART traffic and Protocol decode of the Bus
- Variable UART baud rates
- Continuous streaming of protocol data to host computer to provides large buffer
- Timing diagram of Protocol decoded bus
- Listing view of Protocol activity
- Error Analysis in Protocol Decode
- Ability to write exerciser script to combine multiple data frame generation at different data speeds
- USB 2.0/3.0 host computer interface
- API support for automation in Python or C++

## Multi Domain view



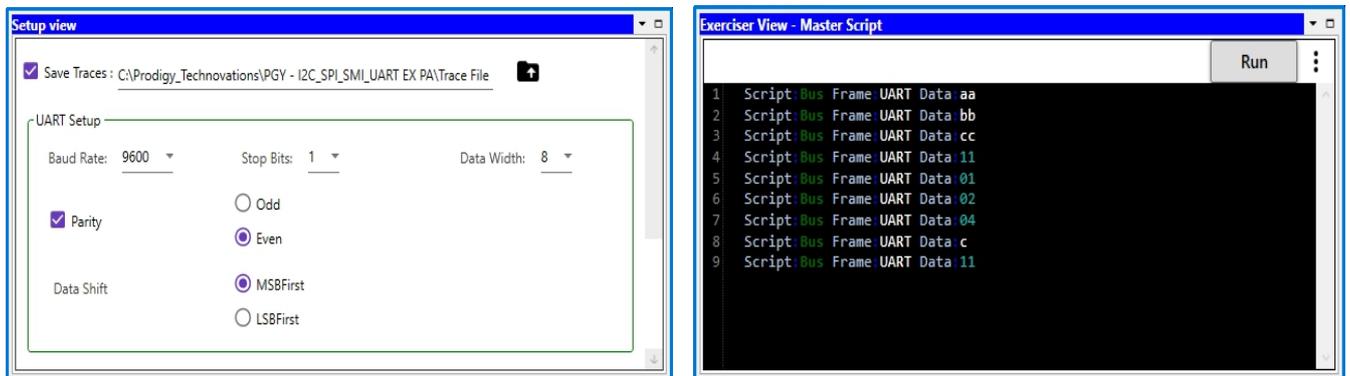
The screenshot displays the PGY-UART-EX-PA software interface with the following components:

- Setup view:** Shows UART configuration including Baud Rate (9600), Stop Bits (1), Data Width (8), Parity (Even), and Data Shift (MSBFirst).
- Plot View:** A timing diagram showing UART signal transitions. A specific data frame is highlighted with the label "Data=0x33".
- Exerciser View - Master UI:** A control panel for sending messages via the UART bus. It includes a "Send" button and a table of message details.
- Decoded Result:** A table listing captured UART messages with their timing and data values.

S. No	Time	Frame	Data Value	Frequency	Error	Device
0	0s	UART_Message	0xAA	10.800 KHz	None	0
1	1.146ms	UART_Message	0xBB	9.5996 KHz	None	0
2	2.292ms	UART_Message	0xCC	8.6396 KHz	None	0
3	3.438ms	UART_Message	0x11	9.5996 KHz	None	0
4	4.584ms	UART_Message	0x22	10.800 KHz	None	0
5	5.730ms	UART_Message	0x33	9.5996 KHz	None	0

Multi domain View provides the complete view of UART Protocol activity in single GUI. User can easily setup the analyzer to generate UART traffic using a GUI or script. User can capture Protocol activity at specific event and decode the transition on UART line. The decoded results can be viewed in timing diagram and Protocol listing window with auto-correlation. This comprehensive view of information makes it industry best, offering an easy to use solution to debug the UART protocol activity.

## Exerciser



The screenshots show the configuration and script-based traffic generation options:

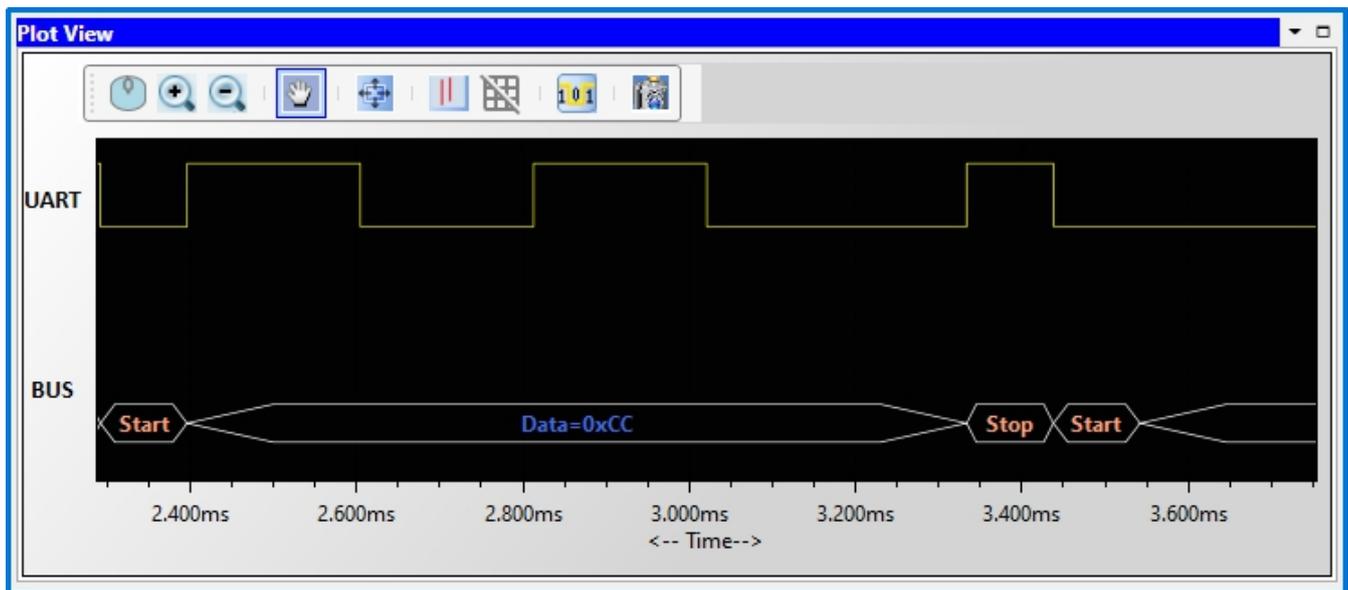
- Setup view:** Identical to the main screenshot, showing UART configuration settings.
- Exerciser View - Master Script:** A text editor window containing a script for generating UART traffic. The script consists of nine lines, each sending a specific data frame.

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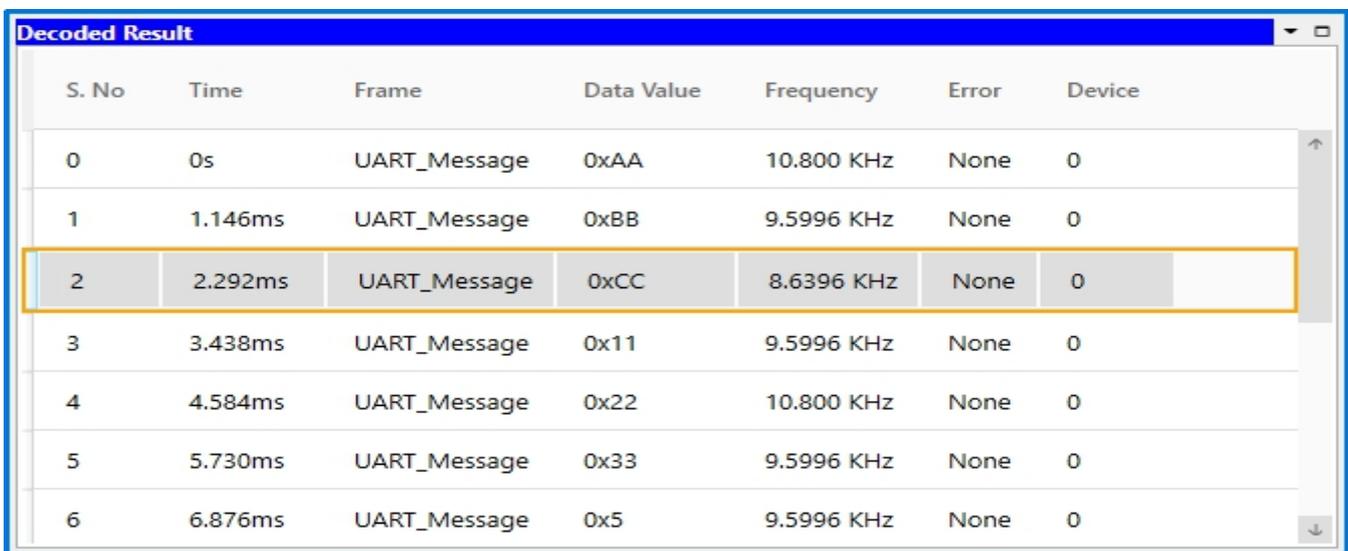
1 Script Bus Frame UART Data aa
2 Script Bus Frame UART Data bb
3 Script Bus Frame UART Data cc
4 Script Bus Frame UART Data 11
5 Script Bus Frame UART Data 01
6 Script Bus Frame UART Data 02
7 Script Bus Frame UART Data 04
8 Script Bus Frame UART Data c
9 Script Bus Frame UART Data 11
    
```

PGY-UART-EX-PD supports UART 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 UART traffic as below:

## Timing Diagram and Protocol Listing View



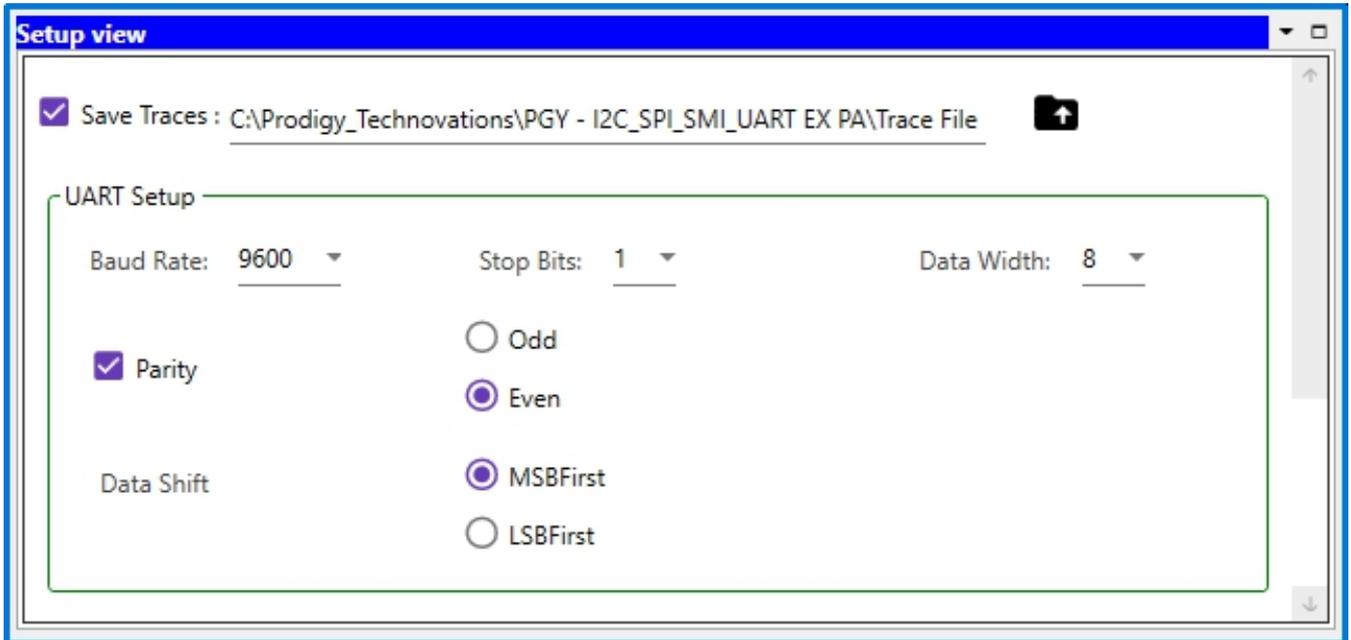
Timing view provides the plot of TX signals with bus diagram. Overlaying of Protocol bits on the digital timing waveform will help easy debugging of Protocol decoded data. Cursor and Zoom features will make it convenient to analyze Protocol in timing diagram for any timing errors.



S. No	Time	Frame	Data Value	Frequency	Error	Device
0	0s	UART_Message	0xAA	10.800 KHz	None	0
1	1.146ms	UART_Message	0xBB	9.5996 KHz	None	0
2	2.292ms	UART_Message	0xCC	8.6396 KHz	None	0
3	3.438ms	UART_Message	0x11	9.5996 KHz	None	0
4	4.584ms	UART_Message	0x22	10.800 KHz	None	0
5	5.730ms	UART_Message	0x33	9.5996 KHz	None	0
6	6.876ms	UART_Message	0x5	9.5996 KHz	None	0

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

## Setup View



The screenshot shows a window titled "Setup view" with a blue header bar. Below the header, there is a checkbox labeled "Save Traces" which is checked, followed by the file path "C:\Prodigy\_Technovations\PGY - I2C\_SPI\_SMI\_UART EX PA\Trace File" and a folder icon. A green-bordered box contains the "UART Setup" section with the following options:

- Baud Rate: 9600 (dropdown menu)
- Stop Bits: 1 (dropdown menu)
- Data Width: 8 (dropdown menu)
- Parity:  Parity
  - Odd
  - Even
- Data Shift:
  - MSBFirst
  - LSBFirst

Users can configure the PGY-UART-EX-PD for different baud rates, for different configurations of Data width and Stop bits. Users can also choose whether the parity is odd or even depending on the data type being used and also select the data shift type.

## UART Specifications

PGY-UART Specification	Features	PGY- UART -EX-PD
<b>Exerciser:</b>		
UART Traffic Generation	Custom UART traffic generation Simulate real world network traffic	✓
UART Baud rate supported	300-256000	✓
Voltage Drive Level	1V to 3.3V at steps of 100mV	✓
Parity Bit Selection	Odd or Even Parity	✓
Data Width	User Defined, 5-10bits	✓
Data Shift	User Defined, LSB First or MSB First	✓
Delay between two messages	User Defined	✓
Error Injection	Parity Error	✓
API Support	Support for Automation of operation using Python or C++	✓
<b>Protocol Analysis:</b>		
Supports	UART protocol decode	✓
Protocol Views	Timing Diagram View Protocol Listing View Bus-Diagram to display Protocol packets with timing diagram plot	✓
Protocol Error Report	Parity Error	✓
Capture Duration	Continuous streaming Protocol Data to host HDD/SSD	✓
Host Connectivity	USB 3.0 / 2.0 interface	✓

## Ordering Information

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

## Deliverables for PGY-UART -EX-PD

PGY- UART -EX-PD Unit

USB 3.0 cable

PGY- UART -EX-PD Software in CD

12V DC adapter

Flying lead probe cable with female connector to connect to DUT

## Warranty Information

Hardware Warranty - 2 years

Software and Firmware Warranty - 1 year

Probes (covered under warranty for any manufacturing defect) - 6 months

## Contact Information



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## About Prodigy Technovations Pvt Ltd

Prodigy Technovations Pvt Ltd ([www.prodigytechno.com](http://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.