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PD Revision 3.0 Plug-in for
Packet-Master USB-PDT Power Delivery Compliance Tester

*The **Packet-Master USB-PDT** is a USB Power Delivery Compliance Tester and development tool. PDT-BT3 is an updated Plug-in reflecting the changing requirements of the PD Specification and Compliance Plan.*

The new Plug-in is a direct, user-fittable replacement for the original.

The Packet-Master USB-PDT from MQP is the world's first comprehensive Power Delivery Compliance Tester, for testing protocol, measuring signal quality and power load testing, all within one unit.

Purpose of New Plug-in

The tester was originally supplied with a PD Rev 2.0 Plug-in; PDT-BT2-CON1. Changes in the PD Specification and Compliance Plan requirements since the introduction of the PDT-BT2-CON1, necessitate a new piece of hardware to implement the required new features.

Installation

The Plug-in is easily fitted by the PDT user. Simply pull out the PDT-BT2-CON1, replace it with the PDT-BT3, and you are ready to go.

Revised Specification Noise Generator	The new plug-in features a noise generator meeting the new requirements of the Compliance Workgroup. Both two-tone and Arbitrary Waveform Generator methods are user selectable, as well as the classic square wave method. This allows full certainty whether the UUT complies with the interference rejection requirements of the PD Specification, as some other test equipment vendors only implement one of these methods.
Fully Implemented Type-C State Machine	The new plug-in features an FPGA with accurate fully-implemented Type-C State machine. The actual Type-C states are reported back to the capture file for better understanding of the functioning of the UUT. This will allow all Type-C devices to be tested in the future.
Special Test Cable with both CC1 and CC2 End to End.	The Special Test Cable provided has both CC1 and CC2 lines connected end to end. It is a 5A cable with no cable marker. It is specially calibrated to allow voltage measurements at the remote end of the cable. • Allows the Tester to choose to assert Ra at remote end of test cable. • Allows the Tester to detect and measure VCONN at remote end of test cable. VCONN can also be measured under load using the VCONN Current Sink. • Allows the Tester to perform tests with flipped connector without user intervention.
Fully adjustable VCONN Generator	VCONN can be set to any value from 2.75V up to 5.75V. Among other things, this allows the cable marker test to run automatically at a selection of VCONN voltages as required by the test plan.
Adustable VCONN Current Sink	This can be used to check the capabilities of the remote VCONN supply.
VCONN input and output Current Measurement	This can be used to check the VCONN current drawn by the UUT.
Voltage Measurement on CC1 and CC2	Precision measurements on CC1 and CC2 are made at 8µs intervals. This allows the PDT to take 'scope' captures of VCONN and CC voltages, with a future SW upgrade.
Dual FRS Test Outputs	In conjunction with our PDT-FRS Mains Switching unit, and similar vendor supplied units, this allows the FR_Swap tests to be automated.
Scope Trigger Output	This can be programmed to provide a scope trigger output on seeing any PD message specified, or other available events. Very useful during development, and project debugging.
Buffered CC1 and CC2 Scope Outputs	If required, an oscillosope may be connected to the outputs without fear of altering the voltages on the CC lines.
Indicators	Front panel indicators are provided for Vbus=5V, 3V > VBUS > 5V, VBUS > 5V, Rp active, Rd active, Ra active, CC1 is data, CC1 is VCONN, CC2 is data, CC2 is VCONN, FPGA loading, FPGA erasing, FPGA Flash programming, plus spare indicators for future use with upgrades.

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Type-C Connector for UUT	The Plug-in is fitted with a user-replacable Type-C connector to simplify problems caused by normal connector wear and tear.
Calibration Connectors	A separately available Calibration Jig may be connected to special calibration connectors on the front panel. This allows the PDT and Plug-in to be user-calibrated without returning to the manufacturer.
High Speed Communication Channel with Motherboard	The new plug-in communicates with the PDT unit via a 10MHz communication channel. This guarantees much more accurate reporting on bus conditions.
BC 1.2 Functionality	The new plug-in automatically checks whether BC 1.2 has been implemented on the UUT, and will report this in the capture display.
Fully Programmable Rp Current Source, plus resistive Rp	Rp is implemented with a fully programmable circuit allowing marginal test conditions to be applied if required.
Rd and Ra resistors	In addition to nominal values for Rd and Ra, the tester also allows all min and max values allowing marginal test conditions to be applied if required.

PDT-FRS

Testing FR_Swap functionality is assisted by using the PDT-FRS AC Mains Switch Box.This is supplied together with cables to allow it automatically to interrupt the AC supply to the UUT at the approprite time during Compliance Testing.

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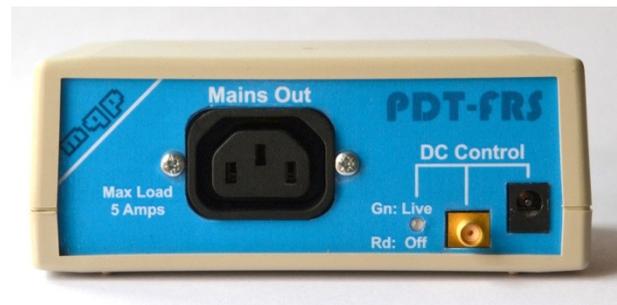
Physical

PDT-BT3 (PD3 Plug-In for USB-PDT)	
Size:	137 x 163 x 55 mm
Weight:	275 gm
Temperature:	0°C - 40°C
Humidity:	20% - 80% non condensing

USB-FRS (FR_Swap Test AC Mains Switch)	
Size:	129 x 97 x 52 mm
Weight:	240 gm
Temperature:	0°C - 40°C
Humidity:	20% - 80% non condensing

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Product Coding

This table describes the system elements at the time of preparation of this brochure.

Designation	Description	Availability
USB-PDT	Tester Base Unit. At least one plug-in should be ordered to complete the unit.	Current
PDT-BT2-CON	Plug-in C-Type Connector	Current
PDT-BT3	Revision 3.0 Plug-in Type-CC-Type Connector	From June 2018
PDT-ANA-POD	PD Analyser Adapter	Current
PDT-FRS	FR_Swap Test AC Mains Switch Box	From June 2018
PDT-CAL-BT3	User Calibration Jig for PDT-BT3 Plug-In	From July 2018
PDT-TF-CB1	Type-C Breakout Board	Current

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