FOUR–QUADRANT DC SOURCE

Four-Quadrant DC (**4QDC**) is an advanced DC test-bench framework application for COMPISO System Units (**CSUs**). It supports all DC operation modes, in all DC configurations, as a DC source or sink. The user can define I–V curves and emulate real world devices such as an array of PV modules. Additionally, the application offers the possibility to test DC systems at constant voltage, current or power. The ability to set positive or negative voltage, current and power expands the operating area to all four quadrants.

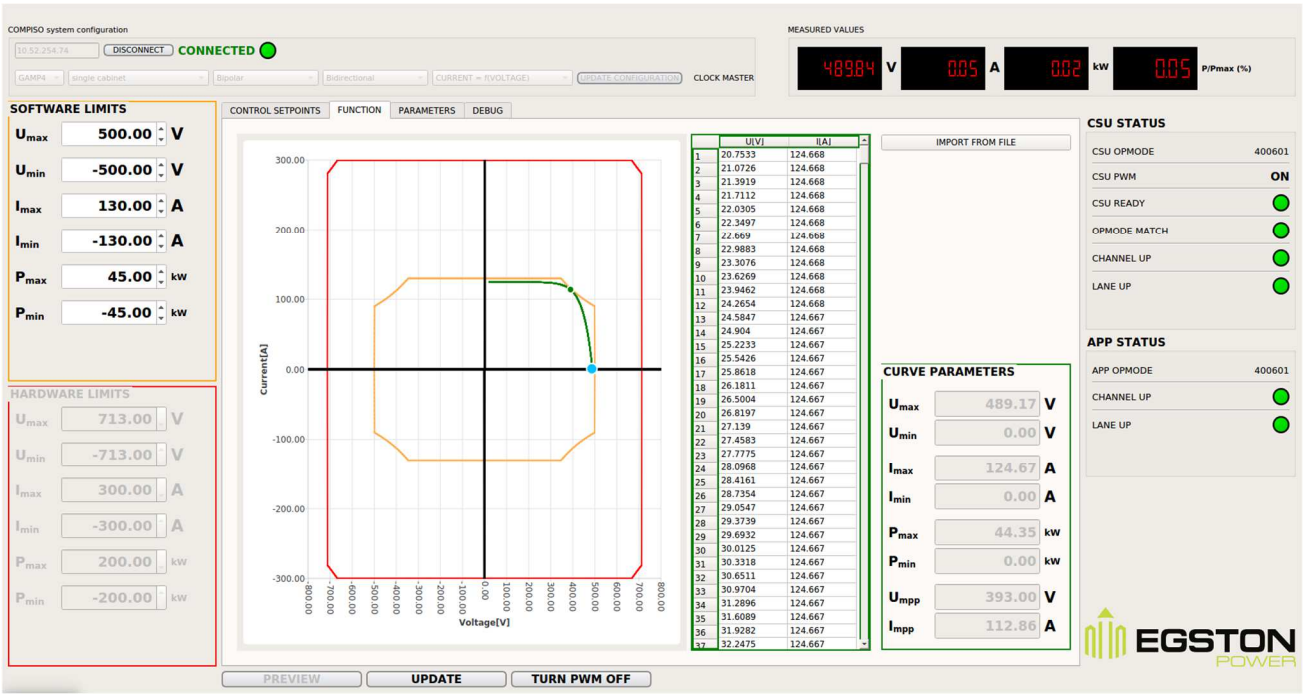

Figure 1: Screenshot of 4QDC operating a DC curve (green)

Features
CSU operation mode support
Bidirectional power flow as DC source and sink
Four-quadrant operation
Adjustable internal impedance emulation, R and L
Adjustable slew rate within the operating area and its limits
Up to eight user defined I–V curves with 4096 points
Simple curve import from .csv files
Dynamic transition between user defined curves
PV module emulation
Measurement and system status monitoring
Static curve analysis featuring minimum, maximum and maximum power point coordinates
Control modes
Constant voltage
Constant current
Constant power

Function mode with up to eight user-defined I–V curves
Limits
Hardware limits (red curve Figure 1)are not user settable and depend on the overall CSU configuration. Independent Current, Voltage and Power **software limits** (orange curve in Figure 1) can be defined by the user **within** hardware limits.
Visualization
Voltage, current and power measurements
I–V diagram with user-defined curves, hardware and software limits
Operating point tracker displayed along imported curves
CSU status indicators: • CSU operation mode • CSU pulse-width modulation enabled • CSU ready • CSU and application operation mode match • Channel up and lane up
Application status: • Connection status between host PC and real-time processor • Channel up and lane up indicators for SFP connection
Scope of delivery
4QDC software
Real-time processor
Host PC
Interfaces
TCP/IP-based configuration between the host PC and real-time processor
SFP-based optical link between the CSU and real-time processor for reliable real-time setpoint and measurement data exchange

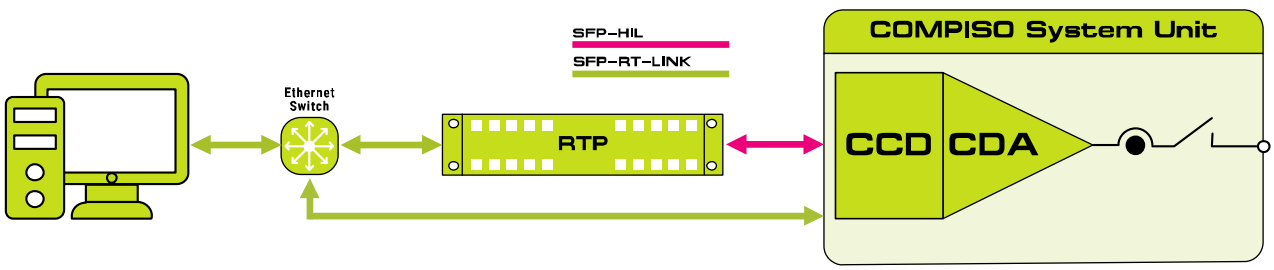

Figure 2: Communication architecture