

## ZGX Fast Dynamic Performance

The ZGX series is a compact modular design power supply with SiC PWM technology, providing full functions of grid simulator, battery simulator, PV simulator, regenerative AC/DC load, bipolar DC source, and RLC/RCD load. The 15KVA bidirectional power supply is designed in a 4U chassis, and can be upgraded to 960KVA system by master/slave paralleling. The maximum output of each unit is AC 450V L-N, 30A/ph, DC~1KHz or DC 636V, 90A.

Figure 1,2 are AC voltage drop/climb waveforms. The AC voltage drops from 450V L-N to 0V and climbs from 0V to 450V L-N in less than 130us.

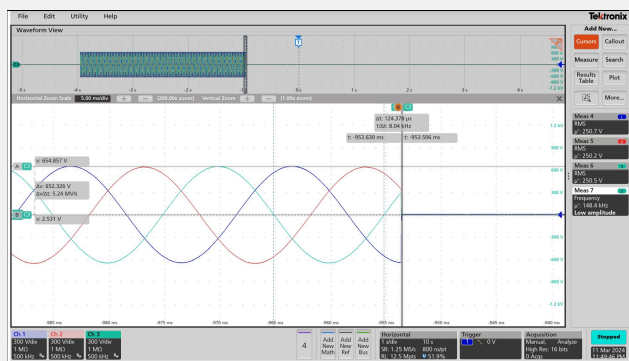


Figure 1 AC Voltage Drop Waveform (450~0V L-N, @no-load)

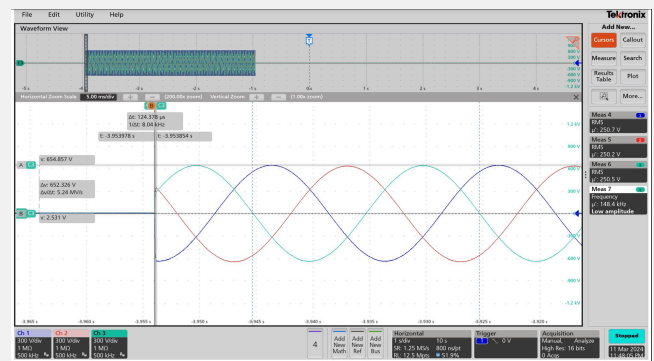


Figure 2 AC Voltage Climb Waveform (0~450V L-N, @no-load)

The ZGX series has fast dynamic performance: Voltage Slew Rate  $\leq 3V/\mu s$ . Current Slew Rate  $< 0.5A/\mu s$ .

The ZGX Series uses true current feedback control when working in Current source mode. It is different from power supplies using voltage feedback with constant current mode, which is called voltage controlled current. The voltage controlled current power supplies maintain setting current value by adjusting output voltage and have relatively long response time to sudden impedance changes, which typically results in dynamic current overshoot or undershoot as the load impedance changes. KGS series working in CC mode does not have such problem and will always maintain the current at the setting value, regardless of transient load conditions.

Figure 3,4 shows the AC current drop/climb waveform when ZGX works in CC mode. The AC current drops from 30A to 0A and climbs from 0A to 30A in less than 140us.

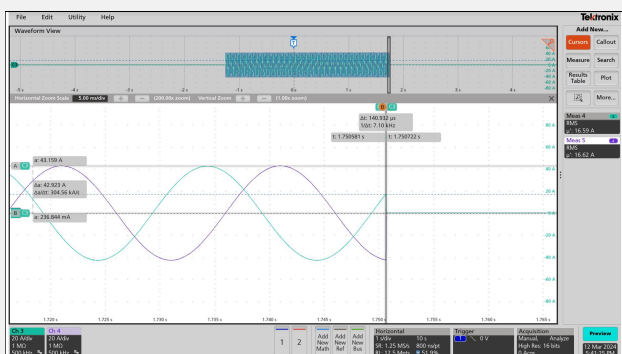


Figure 3 AC Current Drop Waveform (30~0A, @resistor load)

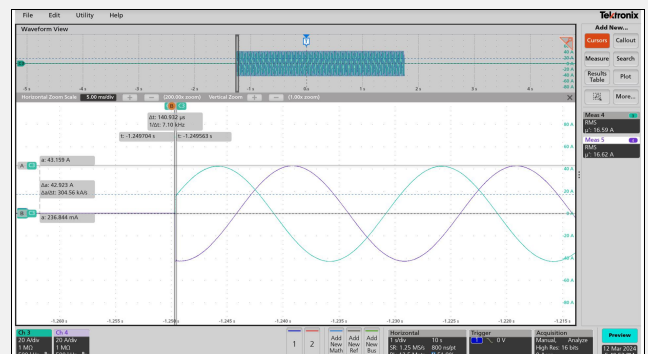


Figure 4 AC Current Climb Waveform (0~30A, @resistor load)

## ZGX Fast Dynamic Performance

Fast frequency change ability as shown in Figure 5. (15~1kHz fastest <20us @ resistive load)

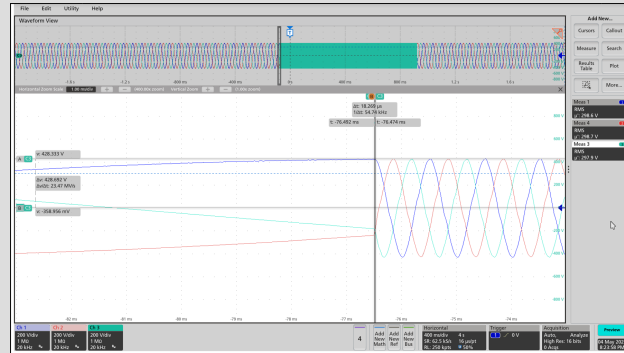


Figure 5 Frequency change waveform

The ZGX series can also output DC in source and sink mode. Output modes include AC, DC, and AC+DC modes, which are easy for measurement of DC components.

Figure 6,7 shows the DC voltage drop/climb waveforms. The DC voltage drops from 636V to 0V in less than 180us and climb from 0V to 636V in less than 120us.

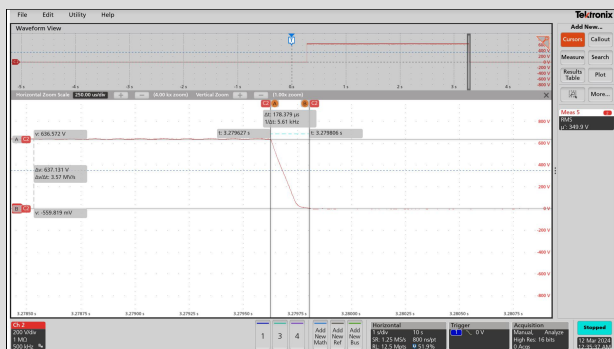


Figure 6 DC Voltage Drop Waveform  
(636-0V, @no-load)

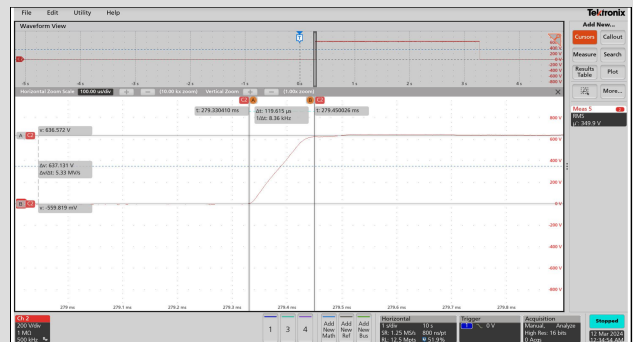


Figure 7 DC Voltage Climb Waveform  
(0-636V, @no-load)

Figure 8,9 shows the DC current climb waveforms when ZGX works in CC mode. The DC current climb from 0A to 30A in less than 100us. The DC current climb from -30A to 30A in less than 180us.

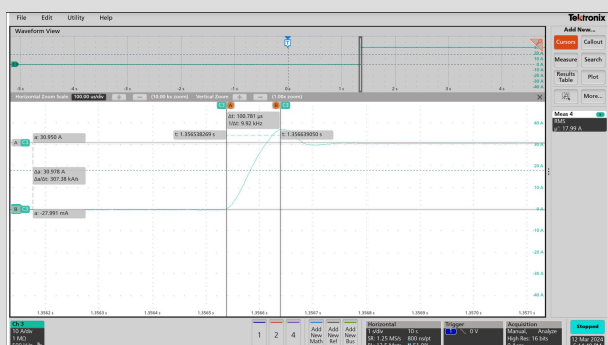


Figure 8 DC Current Climb Waveform  
(0-30A, @resistor load)

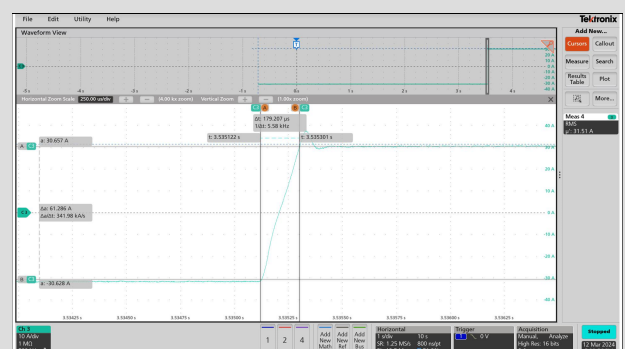


Figure 9 DC Current Climb Waveform  
(-30-30A, @resistor load)