ET System Bi-directional AC Source



- Single system from 30kVA to 500kVA and parallel up to 2MVA and above
- Galvanically isolated from the grid
- TFT touch display with simple menu navigation
- Emergency off in the front door
- Indicator lights for operating status
- Bi-directional current flow, regenerative up to 100% of rated output power back to grid
- Output voltage and phase angles can be adjusted per phase
- Sequence programming for output voltage, phase angle, harmonics and output frequency
- Independent three-phase output
- Supports LVRT testing of photovoltaic inverters (test carried out by seeing whether unit can stay connected during voltage drops)
- Can be used for anti-islanding test in accordance with IEC62116-2008 (-62116 option)
- LAN/RS485 interfaces (standard), RS232/Analog control interfaces (optional)
- Can be used to simulate power grid interference, such as: Voltage sag, Frequency shift and Three-phase unbalanced voltage.
- Regenerative AC load function (-LD option)
- Equipment of the same power can be connected in parallel, 4 units can be connected in parallel (standard). Master-Slave interface(-MS option)
- Remote sense
- Output contactor
- Switchable insulation monitoring
- Mod-bus/SCPI protocols

LA1(A) LA2(A) LA3(A) UA1(V) UA2(V) UA3(V) P(kM) C(ker) D00 Harm Select D00 D00 Harm Select D00 D00 Harm Select D00 D00<	Sequence													
OC O.0 O.0 O.0 O.0 O.0 O.0 L1 L2 L3 NO.1 Ksyboard AMP(V) 220.0 AMP(V) 220.0 AMP(V) 220.0 F MMP(V) 120.0 F THD 0.0 THD 0.0 Switching tims 100.0 F THD 0.0 THD 0.0 Switching tims 100.0 F AMP(V) 220.0 AMP(V) 220.0 F MMP(V) 220.0 F MMP(V) 200.0 Switching tims 100.0 F AMP(V) 220.0 AMP(V) 220.0 F MMP(V) 200.0 F MMP(V) MMP(V) MMP(V) MMP(V)	IA1[A]	IA2[A	1 V	A3[A]		UA1[V]	ι	JA2[\	/] UA	3[V]		P[kW]	Q[kvar]	
L L L L Keyboard AMP(Y) 220.0 AMP(Y) 220.0 AMP(Y) 220.0 F	0.00	0.00	(0.00		0.0		0.0	0.	0		0.00	0.00	
Image (1) 22:00 ≧ Ample (1) 22:00 ≧ Ample (1) 22:00 ≧ MmP(1) 22:00 E MmS Select Sel	L1		L2			L3				NO.	1		Keyboard	1 A
Anglet ¹¹ 0.0 Anglet ¹¹ 2.0.0 Anglet ¹¹ 2.0.0 Marglet ¹¹ Marglet ¹	AMP[V]	220.0	AMP[V]	220.0	*	AMP[V]	220.0	×		f[Hz]	50.00	4	Para Select	
THD 0.0 THD 0.0 Switching (tms) 100.0 Harm Select L L2 L3 NO. 2 Keyboard Filter Source <td< td=""><td>Angle[°]</td><td>0.0</td><td>Angle[°]</td><td>120.0</td><td>*</td><td>Angle[°]</td><td>240.0</td><td>*</td><td>Dwell T</td><td>[ms]</td><td>100.0</td><td>(A)</td><td></td><td>Н</td></td<>	Angle[°]	0.0	Angle[°]	120.0	*	Angle[°]	240.0	*	Dwell T	[ms]	100.0	(A)		Н
L L L L L Keyboard AMP(V) 220.0 AMP(V) 220.0 AMP(V) 220.0 File Soud	THD	0.0	THD	0.0	÷	THD	0.0	÷	Switching t	(ms)	100.0	*	Harm Select	
IAMP(N) 22:00 Rep Angle (1) 22:00 Rep File 30:00 Para Select Angle (1) 0.0 Angle (1) 12:00 Rep Angle (1) 10:00 File 30:00 Para Select THO 0.0 THO 0.0 File 30:00 File	L1		L2			L3				NO.	2		Keyboard	
Anglet ^{TI} 0.0 Anglet ^{TI} 20.0 Anglet ^{TI} Devell Time Devell <td>AMP[V]</td> <td>220.0</td> <td>AMP[V]</td> <td>220.0</td> <td>*</td> <td>AMP[V]</td> <td>220.0</td> <td>*</td> <td></td> <td>f[Hz]</td> <td>50.00</td> <td>-</td> <td>Para Select</td> <td>1</td>	AMP[V]	220.0	AMP[V]	220.0	*	AMP[V]	220.0	*		f[Hz]	50.00	-	Para Select	1
THD 0.0 THD 0.0 Switching t(ms) 100.0 Harm Select L1 L2 L3 NO.3 Keyboard AMP(Y) 220.0 AMP(Y) 220.0 AMP(Y) 220.0 F AMP(Y) 220.0 F AMP(Y) 220.0 F AMP(Y) 220.0 F AMP(Y) 200.0 F F F AmP(Y) 200.0 F AmP(Y) 200.0 F F F F F F F F F F F F F F F F F F <td< td=""><td>Angle[°]</td><td>0.0</td><td>Angle[°]</td><td>120.0</td><td>-</td><td>Angle[°]</td><td>240.0</td><td>×</td><td>Dwell T</td><td>[ms]</td><td>100.0</td><td>-</td><td></td><td>E</td></td<>	Angle[°]	0.0	Angle[°]	120.0	-	Angle[°]	240.0	×	Dwell T	[ms]	100.0	-		E
L1 L2 L3 NO. 3 Keyboard AMP(Y) 220.0 AMP(Y) 220.0 AMP(Y) 220.0 Filter 50.00 Pars Select angletiti 0.0 Angletiti 0.00 Filter 50.00 Filter	THD	0.0	THD	0.0	*	THD	0.0	×	Switching t	(ms)	100.0	-	Harm Select	
AMP(N) 22:00 ○ AMP(N) 22:00 ○ ftHz 50:00 Para Select Anglet1 0:00 ○ Anglet2 12:00 ○ Dwell Timma 10:00 ○ THD 0:00 ○ THD 0:00 ○ Switching timal 10:00 ○ L1 L2 L3 NO. 4 Keyboard Anglet1 20:00 ○ Anglet1 20:00 ○ Anglet1 0:00 ○ The 3:00 ○ ○	L1		L2		1	L3				NO.	3		Keyboard	
Anglet"1 0.0 € Anglet"1 20.0 € Anglet"1 20.0 € Margine"1 100.0 € Ham Select THO 0.0 € THO 0.0 € Switching time) 100.0 € Ham Select L L2 L3 NO. 4 Kayboard Kayboard AMP(V) 220.0 ? AMP(V) 220.0 ? Marking time) 0.00 ? Angle"1 0.0 € Angle"1 240.0 ? Para Select Para Select THO 0.0 ? THO 0.0 ? Switching time) 100.0 ?	AMP[V]	220.0	AMP[V]	220.0	*	AMP[V]	220.0	-	,	f[Hz]	50.00		Para Select	11
THD 0.0 THD 0.0 Switching time 100.0 Harm Select L1 L2 L3 NO. 4 Keyboard AMP(Y) 220.0 AMP(Y) 220.0 AMP(Y) 220.0 Pars Select Angelef1 0.0 Angelef1 Angelef1 0.0 Pars Select THD 0.0 THD NO.0 Switching time 100.0 Harm Select	Angle[°]	0.0	Angle[°]	120.0	*	Angle[°]	240.0	×	Dwell T	[ms]	100.0	Ţ.		
L1 L2 L3 NO. 4 Keyboard AMP[V] 220.0 © AMP[V] 220.0 © AMP[V] 220.0 © Fitral 50.00 Pars Select anglet[10.00 © Anglet[10.00 © Anglet[10.00 Fitral 50.00 Pars Select THD 0.00 © THD 0.00 Switching time] 100.0 Harm Select	THD	0.0	THD	0.0	*	THD	0.0	*	Switching t	(ms)	100.0	-	Harm Select	
AMP(M) 220.0 n AMP(V) 220.0 n f[Hz] 50.00 n Para Select Angle[*] 0.0 in Angle[*] 120.0 in Angle[*] 100.0 in Image: Figure 1 Figure 2 Figure	L1		L2			L3			1	NO.	4		Keyboard	ĨĽ
Angle[*] 0.0 © Angle[*] 120.0 © Angle[*] 240.0 © Dwell T(ms) 100.0 © Imm Select THD 0.0 © THD 0.0 © Switching t(ms) 100.0 © Imm Ferror	AMP[V]	220.0	AMP[V]	220.0	-	AMP[V]	220.0	*		f[Hz]	50.00	A V	Para Select	1
THD 0.0 THD 0.0 THD 0.0 Switching t(ms] 100.0 THD 0.0	Angle[°]	0.0	Angle[°]	120.0	*	Angle[°]	240.0	×	Dwell T	[ms]	100.0	A V		
	THD	0.0	THD	0.0	-	THD	0.0	*	Switching t	[ms]	100.0	×	Harm Select	

Sequence Mode



Anti-islanding Test

EAC-4Q-GS

30kVA ~ 2MVA, Bi-directional Grid Simulator, Meet the test application of distributed power generation products such as photovoltaic inverters.



Sequence Mode

Provides standard software that supports voltage and frequency sequence programming.

Can be used to simulate grid voltage variations, drops, surges and sags.

The change frequency can be set at any time during the test, and slew rate and duration can be programmed.

The voltage drop depth and time can be programmed.

ON and OFF output phase angle can be programmed.

Independent three-phase programming.



Harmonic Programming

Harmonics waveforms of EAC-4Q-GS series can be programmed by specifying amplitude and phase up to 40th harmonics. The user can directly set the harmonic components in the graphical user interface to simulate the grid voltage of different harmonics in the real environment, so as to understand the influence of harmonic components on the power output.

Voltage drop simulation(LVRT for PV inverter)

When the power grid fails and the voltage drops, the distributed power generation equipment is required to have a low voltage/zero voltage ride-through capability to maintain a normal output for a period of time. According to the degree of voltage drop, a certain reactive power can be supplied to the power grid to support the power grid to return to a normal state. The EAC-4Q-GS series provides hardware and software support for low-voltage/zero-voltage ride-through testing of distributed power generation equipment (sequence mode establishes ride-through conditions).

IEC 62116-2008 Test¹

EAC-4Q-GS series with -62116 option integrates power grid simulator and AC electronic load for anti-island testing. During operation, the user does not need to calculate and set the specific values of R, I and C, only needs to directly set the test parameters such as QL, PAC and QAC according to the test standard IEC 62116-2008, and the power system will display the equivalent R, L and C setting values.

Re-generative AC Load²

Constant current CC and constant power CP modes are available to adjust load current or power, phase angle can be set from 90° to -90° simulating the voltage and current conditions under inductive and capacitive loads. The rectifier mode can be used to simulate non-linear loads, CF parameters can be set through the interface. EAC-4Q-GS can be calibrated for source mode or load mode. The voltage and current accuracy will be out of specification if works in un-calibrated mode. For example, if GS is calibrated for source mode, while used as load, the accuracy will NOT be as good as the output specification.

¹ In old versions, the option named -RLC. This option is different from setting R, L, C load, so it is renamed to -62116. ² In old versions, -LD included the function to set the R, L, and C values independently. Since this function cannot be provided with other functions at the same time, this function has been deleted.

Model Config	juration								
EAC-4Q-GS	AAA	- <u>BBB</u>	- <u>CCC</u>	-DDD	/ <u>EEE</u>				
Series Models	Power, kVA	Voltage(L-N), V	Current(per phase), A	Option	Input configuration				
Options									
-232	RS232 program interface								
-ATI	Analog control interface								
-LD	Regenerative AC load function								
-62116	Hardware&Software for IEC 62116-2008 test								
-DC	Extend output frequency to DC-100Hz								
-1P	Add single phase output								
-MS	Master-Slave interface								

AC Input Configuration

3 x 208 V (L-L) ±10 % 3 x 230 V (L-L) ±10 % 3 x 380 V (L-L) ±10 % 3 x 400 V (L-L) ±10 % 3 x 480 V (L-L) ±10 %

Specification

Model	GS 30	GS 60	GS 120	GS 250	GS 500			
Input Voltage	3P+N+PE, 380 VLL ±10 %							
Frequency	47 – 63 Hz							
Efficiency	≥90 %							
Power Factor	0.95							
Output Power	30kVA	60kVA	120kVA	250kVA	500kVA			
Output Voltage Range	300V L-N (std)							
Voltage Resolution	0.1V							
Voltage Accuracy	0.5%FS							
THD		<	1% (Resistive Load	1)				
Load Regulation	0.2%FS							
Line Regulation	0.1%FS							
Output Current Range	46A/ph	46A/ph 91A/ph 182A/ph 379A/ph						
Current Resolution	0.1A							
Current Accuracy	0.3%FS							
Frequency range	30~100Hz							
Frequency Resolution	0.01Hz							
Frequency Accuracy	±0.05%FS							
Phase output	Phase B/C relative to phase A, 0.0~360.0°							
Phase Accuracy	<1.2° (@50 Hz)							
Harmonic Generation	Up to 40 th							
Protection	OVP, OCP, OTP							
Cooling	Forced Air Cooling							
Regulatory	CE Conformity							
Temperature	Operating: 0~40°C Storage: -20~85°C							
Operating Humidity	20-90%RH (None Condensing)							
Measurement	List of all type measurements done							
Power Accuracy	0.5%FS							
AC Voltage Accuracy	0.5%FS							
AC Current Accuracy	0.3%FS							
Frequency Accuracy	0.05%FS							
Phase Accuracy	<1.2° (@50 Hz)							
Dimension (W*D*H mm)	800*800*1900	800*800*2100	2*800*800*2200	2*900*900*2200	4*900*900*2200			
Weight (kg)	<800	<1000	<1700	<2500	<5000			

Note: 1. Specifications are subject to change without notice.

2. Specifications are warranted over an ambient temperature range of $25^{\circ}\pm 5^{\circ}$ C.

3. Customized power/voltage/current output is available.

Bi-directional AC Source | ET System electronic GmbH

DISTRAME SA

Parc du Grand Troyes - Quartier Europe Centrale 40 rue de Vienne - 10300 SAINTE-SAVINE Tél. : 03 25 71 25 83 - Fax : 03 25 71 28 98 - infos@distrame.fr - www.distrame.fr