FOX ESS

DATASHEET

Stackable AIO

THREE-PHASE **HYBRID/AC**

FLEXIBLE APPLICATION

- Built-in 63A bypass for full house backup.
- 3 MPPTs, 20A per string.
- PV min. voltage of 120V and min. battery voltage of 80V.

EASY INSTALLATION

- Integrated configuration, plug and play set-up.
- Designed for single-person installation.

SAFE AND DURABLE

- Integrating active and passive safety.
- Intelligent AFCI function.
- IP66 and type II DC/AC surge protection.

REMOTE MONITORING

- Monitor your system remotely via smartphone App or Web portal.
- Ready for AI and VPP Apps.

Advanced System Monitoring
with FoxCloud V2.0

Stackable AIO is the latest generation of an intergrated residential energy storage system, modular designed to meet various installation scenarios.

5kW ···» **15kW**

For more information about the Fox ESS range, visit:
www.fox-ess.com

TECHNICAL SPECIFICATIONS

MODEL	PQ3-5.0-M	PQ3-6.0-M	PQ3-8.0-M	PQ3-10.0-L-M	PQ3-10.0-M	PQ3-12.0-M	PQ3-15.0-M
PV INPUT							
Max. Array Power[W]	11000	14000	18000	20000	20000	24000	30000
Max. Input Power [W]	11000	13200	17600	20000	20000	24000	30000
Max. Input Voltage [V]	1000 [1]						
Nominal Operating Voltage [V]	620						
Max. MPPT Input Current [A]	20/20/20						
Max. MPPT Short-Circuit Current [A]	25/25/25						
Max. MPPT Input Power [W]	10000/10000/10000						
Min. Operating Input Voltage [V]	90 [2]						
MPPT Voltage Range [V]	120 ~ 950						
Start-Up Input Voltage [V]	140						
MPPT Voltage Range (Full Load) [V]	120 ~ 850	120 ~ 850	140 ~ 850	175 ~ 850	175 ~ 850	210 ~ 850	263 ~ 850
No. of MPP Trackers	3						
Strings per MPP Tracker	1+1+1						
Max. Inverter Backfeed Current to the Array	0						
BATTERY CONNECTION							
Battery Type	Lithium-Ion battery (LFP)						
Battery Voltage [V]	80 ~ 500						
Min. Operating Battery Voltage [V]	85						
Min. Battery Voltage @ Full AC Load [V]	108	125	160	210	210	250	310
Max. Battery Charge Power [W]	6000	7200	9600	12000	12000	14400	15000
Max. Battery Discharge Power [W]	5000	6000	8000	10000	10000	12000	15000
Max. Charge/Discharge Current [A]	50						
Communication Interface	CAN						
AC OUTPUT							
Nominal Output Power [W]	5000	6000	8000	9999	10000	12000	15000
Max. Apparent Output Power [VA]	5500	6600	8800	9999	11000	13200	16500
Rated Grid Voltage (AC Voltage Range) [V]	400/230; 380/220, 3L/N/PE						
Rated Grid Frequency [Hz]	50/60, ±5						
Rated Output Current (Per Phase) [A]	7.6	9.1	12.1	15.2	15.2	18.2	22.7
Max. Output Current (Per Phase) [A]	8.3	10.0	13.3	15.2	16.7	20.0	25.0
Power Factor	1 (Adjustable from 0.8 leading to 0.8 lagging)						
THDI [%]	<3 @rated power						
AC INPUT							
Max. Input Power [VA]	43470						
Rated Grid Voltage [V]	400/230; 380/220, 3L/N/PE						
Rated Grid Frequency [Hz]	50/60, ±5						
Max. Input Current (Per Phase) [A]	63						
EPS OUTPUT(ON GRID MODE)							
Max. Output Power For Backup Load (Per Phase) [W]	43470						
Max. Output Current For Backup Load [A]	3*63						
EPS OUTPUT(OFF GRID MODE)							
Max. Apparent Output Power [VA]	5000	6000	8000	10000	10000	12000	15000
Peak Apparent Output Power (60s) [VA]	6000	7200	9600	12000	12000	14400	15000
Rated Output Voltage [V]	400/230; 3L/N/PE						
Rated Grid Frequency [Hz]	50/60						
Max. Continuous Current (Per Phase) [A]	7.2	8.7	11.6	14.5	14.5	17.4	21.7
Max. Unbalanced Load Power (Per Phase) [kW]	1.6	2.0	2.6	3.3	3.3	4.0	5.0
Step-Down Start	YES						
EPS Overload Automatic Recovery Time	Try 3 times(15s) everytime will alarm a fault, after 3 failures, stop the recovery logic, clients need to clear the fault manually.						
Power Factor	1 (Adjustable from 0.8 leading to 0.8 lagging)						
Parallel Operation	Yes @ Max. 10 pcs						
Switch Time (Single Device) [ms]	<20						
THDV [%]	<3 @rated power						
EFFICIENCY							
MPPT Efficiency [%]	99.90						
Max. Efficiency [%]	97.80	97.80	97.90	97.90	97.90	97.90	97.90
European Efficiency [%]	97.00	97.00	97.10	97.30	97.30	97.50	97.50
Max. Battery Charge Efficiency (PV to BAT) (@ Full Load) [%]	97.00	97.10	97.20	97.40	97.40	97.50	97.60
Max. Battery Discharge Efficiency (BAT to AC) (@ Full Load) [%]	97.00	97.10	97.20	97.20	97.20	97.20	97.20

TECHNICAL SPECIFICATIONS

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PROTECTION							
PV Reverse Polarity Protection	YES						
Battery Reverse Protection	YES						
Anti-Islanding Protection	YES						
Output Short Protection	YES						
Leakage Current Protection	YES						
Insulation Resistor Detection	YES						
Overvoltage Category	III (AC Side), II (DC Side)						
Reverse Connect Protection	YES						
Overcurrent Protection/Overtemperature Protection	YES						
DC/AC Surge Protection	Type II (PV)/Type II (AC)						
AFCI Protection	Optional						
DC Switch	YES						
GENERAL DATA							
Dimensions (W*H*D) [mm]	570*420*380 (Inverter)						
Dimensions of Packing (W*H*D) [mm]	760*545*595 (Inverter)						
Net Weight [kg]	42.6 (Inverter)						
Gross Weight [kg]	64.5 (Inverter)						
Installation	Floor-mounted						
Operating Temperature Range [°C]	-25 ~ +60 (Derating at 45)						
Storage Temperature [°C]	-40 ~ +70						
Storage/Operation Relative Humidity [%]	0 ~ 100 (No condensation)						
Altitude [m]	<4000 @ Derating Exceeding 3000						
Protection Class	I						
Ingress Protection	IP66 (For Outdoor Use)						
Standby Consumption [W]	<15 (Only PV and Battery)						
Idle Mode	YES						
Cooling	Natural	Natural	Natural	Natural	Natural	FAN Cooling	FAN Cooling
Noise Level [dB]	<40	<40	<40	<40	<40	<55	<55
Inverter Topology	Non-Isolated						
Monitoring Module (Integrated)	WIFI, LAN, 4G						
Communication Interface	Meter, WIFI/4G (Optional), Bluetooth, DRM, Ethernet, USB, BMS (CAN), RS485, Ripple Control, SG Ready, Dry Contact*2						
Display	LED, LCD, App, Website						
Button	Capacitive Touch Sensor						
Buzzer	1, Inside (EPS & Earth Fault)						
STANDARD							
Safety	EN/IEC62109-1, EN/IEC62109-2						
EMC	IEC 61000-6-1, IEC 61000-6-2, IEC 61000-6-3, IEC61000-4-2/3/4/5/6/8						
Certification	AS4777.2-2020, VDE-AR-N 4105, VDE0126-1-1, G98, EN50549-1, CEI 0-21, IEC62116, IEC61727, IEC61683						

[1] For 1000V system, PV maximum operating voltage is 950V.
[2] The starting working voltage of the power supply is 90V.

TECHNICAL SPECIFICATIONS

MODEL	TQ5000-S -L2	TQ5000-S -L3	TQ5000-S -L4	TQ5000-S -L5	TQ5000-S -L6
ELECTRICAL CHARACTERISTICS					
Battery Type	LFP ($LiFePO_4$)				
Battery Module	2*TQ5000-S	3*TQ5000-S	4*TQ5000-S	5*TQ5000-S	6*TQ5000-S
Nominal Capacity [kWh]	9.84	14.76	19.68	24.60	29.52
Nominal Voltage [V]	128	192	256	320	384
Operating Voltage [V]	116 ~ 146	174 ~ 219	232 ~ 292	290 ~ 365	348 ~ 438
Recommend Discharge Current [A]	38.5				
Max. Charge/Discharge Current [A]*1	50				
Peak Discharge Current [A]	65 @60sec				
Battery Pack Round-Trip Efficiency [%]	>95				
Depth of Discharge [%]	90				
Communication	CAN				
Display	LED*1				
Scalability	Max. 6 Modules in Series				
OPERATING CONDITIONS					
Installation Location	Outdoor/ Indoor				
Operating Temperature [°C]	Charge: 0 ~ 55, Discharge: -10 ~ 55				
Operating Temperature [°C] (warm up function on, optional)	Charge: -25 ~ 55, Discharge: -25 ~ 55				
Storage Temperature [°C]	-10 ~ 50				
Cooling Method	Natural Convection				
Humidity [%]	5 ~ 95 (No Condensation)				
Altitude [m]	Max. 3,000				
PROTECTION					
Fire Protection Function	YES				
MECHANICAL CHARACTERISTICS					
Dimensions (W*H*D) [mm]	570*375*380	570*510*380	570*645*380	570*780*380	570*915*380
Weight [kg]	97.2	140.7	184.2	227.7	271.2
CERTIFICATES					
Safety	IEC 62619				
EMC	IEC 61000-6-1/2/3/4				
Transportation	UN38.3				
Ingress Protection	IP65				

*1, The current is affected by temperature, cell voltage and SOC.