System overview

mtu ENERGYPACK QX 12.0 (NIDEC)

Battery Energy Storage System (BESS) for Commercial and Industrial applications

Technical data - *mtu* EnergyPack QX 12.0 (Nidec) BESS for Commercial and Industrial applications

Parameter	Unit	Value
mtu **EnergyPack type**		QX 12.0 (Nidec)
Name plate apparent power [1]	MVA	10.1
Usable active power charge/discharge at BESS MV-terminal [2]	MW	5.3
Nameplate Energy capacity [3]	MWh	12.034
Usable capacity at BESS MV-terminal at beginning of life [4]	MWh	10.83
Nominal voltage at BESS MV-terminal	kV	11 - 33
Nominal frequency	Hz	50
Power factor [5]		0.8 (over-excited) ... 1 ... 0.8 (under-excited) ... -1
Operation [6]		On-grid (optionally grid-forming)
Communication protocol		OPC-UA, modbus TCP
Controller [7]		***mtu*** EnergetIQ BESS Controller

1) At nominal grid voltage, power factor 1 and 25°C. After 25°C a derating of the inverter apparent power will occure. Please contact us for more information.
2) Based on maximum power of battery units including auxiliary power, power factor of 0.95 and +/- 10 % voltage tolerance.
3) EXW battery supplier according to battery supplier data sheet at SOH 100%. Useable energy depends on SOH, DOD and battery load profile.
4) The nominal energy capacity considers degradation for 3 months after battery EXW factory China. Measured energy capacity subject to time of delivery and commissioning.
5) At nominal power and nominal grid voltage. PQ curves available on request.
6) UPS must be supplied externally.
7) ***mtu*** EnergetiQ Manager Basic S optional

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Physical and ambient properties

Operating ambient temperature [8]	°C	-25 to +40
Relative humidity		< 95%, non-condensating
Altitude	m	1,000
Global irradiance [9]	kWh/m²a	1,300
Peak ground acceleration (PGA)	m/s²	< 1.0
Corrosion level [10]		C3

8) For extended temperature ranges, please consult with Rolls-Royce Solutions (RRS).
9) Above 1,300 kwh/m²a, sunroof is required.
10) For higher corrosion protection options, please consult with Rolls-Royce Solutions (RRS).

Technical specification sheet - Power Conversion System (PCS) & medium voltage skid specifications

Parameter	Unit	Value
PCS supplier		Nidec
PCS type		Bi-directional, four-quadrant operation
Product name		PU30_MV_TR_2PCSQ54
Number of units		1
Nominal apparent power charge/discharge	MVA	10.1
Number of separate DC inputs per PCS		1
Efficiency (max)	%	98.7
Weight per unit	kg	4,000
Dimensions per unit (W x D x H)	mm	2,000 x 2,000 x 2,300
Total nominal apparent power	MVA	10.1 (@ 40°C)
DC voltage range	Vdc	1,045 - 1,500
Transformer ratio (inverter side / grid side)	kV	0.73 / 11 - 35
Operation modes		Grid-following, grid-forming
Degree of protection		IP54 (PCS electronic)
Cooling concept		Air-cooled
Full skid dimension	mm	9,125 x 2,896 x 2,438
Full skid weight per unit	kg	30,000

Technical specification sheet - battery specifications

Parameter	Unit	Value
Battery supplier		CATL
Battery C-rate		0.5C
Battery chemistry		Lithium-ion (LFP)
Number of containers		2
Cell capacity	Ah	565
Cell voltage range	Vdc	2.5 - 3.65
Cell rated energy	Wh	1,808
Container configuration		8P4S (1P104S)
Container total energy	kWh	6,017
Container total power	kW	3,008
Rated voltage	Vdc	1,331.2
Voltage range	Vdc	1,040 - 1,500
Rated charge/discharge current	A	1,130 x 2
Max. charge/discharge current 11	A	1,446.4 x 2
Degree of protection		IP55 (battery room), IP55 (electrical room), IP67 (electric control box of Chiller)
Cooling concept		Liquid-cooled
Dimensions per unit (W x D x H)	mm	2,462 x 6,058 x 2,896
Weight per unit	kg	45,000
Transport dimensions		ISO 20ft container

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