

QET industrial terminal

Scalable 1-30 MW family. The reference architecture shown here is a three-lane core with three nominal 1 MW converter lanes, one common QH-1 head and a REBCO collector.

Programme family	1-30 MW scalable industrial terminal family.
Reference core configuration	3 MW aggregate architecture: 3 x 1 MW nominal converter lanes.
Internal DC reference	1.2 kV DC; 833 A per 1 MW lane; 2.50 kA aggregate for the three-lane reference core.
External customer interface	DC or AC delivery configured for the customer bus, protection scheme, local grid code and jurisdiction.
QH-1 optical head	One common QH-1 head; 64 radiator branches; 1035 nm optical-control target.
SiC power stage	6 x Wolfspeed CAB650M17HM3T modules, 1700 V / 650 A class, with 6 x CGD1700HB3P-HM3 gate-driver boards.
DC-link hardware	6 x TDK ModCap UHP B25648-family allocations; ordering variant selected to lane energy and installed duty.
Lane protection	3 x Eaton 180D7620-family 1000 A / 1500 VDC aR semiconductor fuses; coordination configured to site circuit duty.
Main isolation	3 x Schaltbau C320K/1000 contactors, 24 VDC coil; auxiliary configuration selected to the site control package.
REBCO collector	64 Fujikura FYSC-SCH12 tape envelopes, 32 per pole; source tape geometry 480 x 12 x 0.13 mm.
Thermal / cryogenic services	3 liquid cold plates. Cryogenic service, current leads, terminations and quench protection are configured to installed rating, site conditions and industrial load.
Reference core envelope	1030 x 750 x 389 mm for the current three-lane core, excluding external service plant.

One machine. Several clocks.

The quantum head, qualification cadence, conventional power electronics and customer output operate on different timescales. They should not be collapsed into a single "operating frequency".

ER/QET work spectrum	GHz regime; geometry and loaded-work dependent. The usable work band follows the Einstein-Rosen geometry, loaded Hamiltonian, branch-conditioned work spectrum and QH-1 receiver response.
Bare-head electrical response	Approximately 2.6-4.0 GHz reference family for the current receiver geometry; used as an electrical response family rather than a universal fixed QET clock.
Qualification / capture cadence	10 MHz project qualification / capture reference.
Conventional backend transfer	60-80 kHz C_R / SiC transfer reference.
Customer-facing output	Conventional DC or standard AC after site conversion; voltage and frequency configured to the installed bus and jurisdiction.

Conformity and safety basis

EU production release: CE marking and EU Declaration of Conformity. The delivered configuration is documented against the applicable electrical-safety, EMC, laser-safety and RoHS requirements.

Electrical safety	Low Voltage Directive 2014/35/EU; EN 62477-1 power-electronic converter-system safety.
Industrial EMC	EMC Directive 2014/30/EU; EN 61000-6-2 industrial immunity; EN 61000-6-4 industrial emissions.
Laser safety	EN 60825-1; 1035 nm optical subsystem; enclosed / Class 1 user boundary design.
RoHS / technical documentation	RoHS 2011/65/EU; technical documentation to EN IEC 63000.
Configuration-dependent scopes	Machinery, pressure-equipment and radio requirements apply where the delivered configuration falls within those regimes.
Scaling to installed rating	The 1-30 MW family scales by lane count, power interconnections, protection and cryogenic/site-service package. The v5.3 drawing presents the reference three-lane core.