

# QUBITEKK

**Quantum DataLoc™ Key Server** generates and distributes secure cryptographic keys for Industrial Control System networks.



## UNBREAKABLE KEYS

The Quantum DataLoc™ Key Server uses quantum physics to generate truly random symmetric keys that cannot be cracked by any computer. Quantum entangled photons, shared over optical fiber, are used with a quantum key distribution (QKD) protocol to guarantee 100% secure distribution.



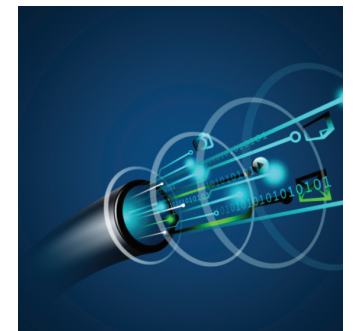
## OPERATIONAL SIMPLICITY

Industrial Control System operators have many challenges they must deal with every day. Managing cryptographic keys shouldn't be one of them. Unlike traditional solutions, like PKI, that can introduce complexity and latency, the Quantum DataLoc™ Key Server is a hardware solution that introduces zero latency, is self-managing, and will not impact operations.



## IMMEDIATE TAMPER DETECTION

Are your communication channels secure? Are hackers monitoring or tampering with your packets? When fibers are distributed over large, uncontrolled areas, this is difficult to know. Leveraging the “no-cloning” properties of entangled photons, the Quantum DataLoc™ Key Server ensures you are immediately alerted to any, and all, eavesdropping attempts.



Qubitekk's Quantum DataLoc™ Key Server is designed for electrical substations and ICS networks. **OPERATING SPECIFICATIONS** are listed below.

## GENERAL SPECIFICATIONS

Operating Temperature Range: 40° to 85°C	Ports: 1-USB/RS232
Relative Humidity: 5% to 95%	2 Duplex LC Fiber Ports
Weight: 10 lbs	1 Ethernet (1G)
Input Voltage: 12-48 VDC	1 3-Pin Terminal Power Receptacle
Maximum Power: 120 Watts	1 Authenticate and Reset Port

## FIBER REQUIREMENTS

Model 810: Photon Wavelength: 810nm	Model 1570: Photon Wavelength: 1570nm
Compatible Optical Fiber: Nufern PM780HP	Compatible Optical Fiber: SMF28e
Fiber/Connector type: Duplex/LC	Fiber/Connector type: Duplex/LC
Maximum Fiber Distance: 25km*	Maximum Fiber Distance: 25km*

\*Transmission distance can be increased indefinitely by daisy-chaining QKD transceivers.

## QUANTUM SPECIFICATIONS

Quantum State: Entangled Bell Singlet State	QKD Protocol: Bennett-Brassard-Mermin
Entanglement: Polarization	1992 (BBM92)

## KEY TRANSFER COMPATIBILITY

Maximum Key Rate: 250 keys / second	Key Transmission Format: Quantum Information Exchange (QIX) frame format (see below)
Key Length: 256 bits	
Key Transmission: Serial over USB/RS232	

### QIX FRAME FORMAT

**<sync> <key identifier> <key data> <status> <CRC>**

Where:

**<sync>**: two characters { 0x5A, 0xA5 } used to determine the start of a frame

**<key identifier>**: 64-bit unsigned key count since boot (pseudo sequential)

**<key data>**: 256-bit (32-byte) key

**<status>**: 8-bit (1-byte) value for current status of QKD system (where 0000001 = Secure, 11111111 = Key Compromised)

**<CRC>**: 32-bit CRC / Castagnoli CRC32 Calculated over the key identifier, key data, and status only