

# DIRAC-1

1st Generation QUBIT Entropy Quantum Computer

**QCI** | Innovative Quantum  
Solutions Company

Dirac-1™ is a portable, low power, and room temperature qubit entropy quantum computer (EQC). Dirac-1 solves problems of Objective Function Minimization and Maximization for **binary optimization** by finding the ground state of a complex system with many inter-correlated variables.

These problems correspond to minimizing or maximizing the expected return of the objective function:

$$E = \sum_{i=1}^N C_i V_i + \sum_{1 \leq i < j \leq N} \sum_{N,N} J_{ij} V_i V_j$$

where  $V_i$  is the value of each variable,

$C_i$  is the linear coefficient of each variable, which is a real number that can be positive, negative, or zero,

$J_{ij}$  is the coupling coefficient of two variables, which can be any real number

## Key Features

EQC type	Qubit (superposition of 0 and 1)
Maximum size of variables	N = 11,000
Connectivity	All-to-all
Order of correlation	Any types of second-order correlations, where interactions between qubits can be repulsive (positive correlation) or attractive (negative correlation)
Operating Temperature	25 °C (room temperature)
Power Consumption	<80 W
Physical size	Contained in a 3U rack-mountable unit