D:Wave

System Specifications for D-Wave Quantum Computers

This document provides the high-level specifications for the following generations of D-Wave[™] quantum computers:

- Advantage[™] system
- Advantage2[™] system

For more information:

- Descriptions of qubit topologies as well as QPU-specific properties are in the online <u>D-Wave Documentation</u>.
- Detailed requirements for a facility that will house a D-Wave system are in *D-Wave Quantum Computer Site Preparation (09-1282A)*, available from D-Wave. Contact <u>support@dwavesys.com</u> for a copy.

QPU Specifications

Product	Qubits	Couplers	Connectivity
Advantage system	5000+	35,000+	15-way Pegasus™ topology
Advantage2 system	4400+	40,000+	20-way Zephyr™ topology
Physical Specifi	cations		
Length Width Height Mass		3.5 m (11.5 ft.) 2.1 m (7 ft.) 3.0 m (10 ft.) 3900 kg (8600 lb	.)
System Electric	al		
Average power		12.5 kW	
Rating		208 V, 60 Hz, 40 230/400 V, 50 Hz	A (standard) z, 32 A (international)
Cooling Require	ements		
Coolant Max. water pr Min. temp. Max. temp. HVAC	essure	15 kW (4.3 refrig 6 bar (88 psi) 15 °C at 9.4 L/mi (2.5 gpm at 50 °F 25 °C at 20.5 L/m (5.4 gpm at 77 °F 5 kW (17,000 BT	eration tons) n =) nin =) U/h) normal mode
		12.5 kW (43,000	BTU/h) aux. mode

Networking Requirements

Physical connections	Copper-based Gigabit Ethernet (RJ-45, 1000BASE-T) or fiber-based Ethernet (SFP+, 1 Gbps)
Internet connection	ISP with a min. bandwidth 500 Mbps, with a /28 block of public IPv4 addresses
Cloud provider connection	L1 fiber (e.g., AWS direct connect) with a min. bandwidth of 1 Gbps
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Note: For more networking requirements, see 09-1282A.

Environmental Requirements

Temperature		
Operating	20 to 25 °C (68 to 77 °F)	
Rate of change	1 °C (1.8 °F) in 15 minutes (max.)	
Shipping/storage	–10 to 40 °C (14 to 104 °F)	
Humidity		
Operating	5 to 80% RH (noncondensing)	
Shipping/storage	< 85% RH (noncondensing)	
Pressure		
Operating	65 to 106 kPa (9.4 to 15.4 psi)	
Shipping/storage	65 to 106 kPa (9.4 to 15.4 psi)	
Altitude	0 to 2300 m (7500 ft.)	
Max. building vibration	50 μm/s	
Ambient magnetic field	100 µT (max.)	
Noise level	75 dBA (max.)	
Consumable Materials		
Gases	Nitrogen gas grade 4.8 (99.998%)	
	Helium gas grade 5.0 (99.999%)	
	Usage: ~1 T-size cylinder/gas/year	
Cryogens	Liquid nitrogen	
	Usage: ~6 L/day (1.6 US gal/day)	
Regulatory Compliance		
US	UL 62368-1, FCC Part 15 Part B Class A	
Canada	CSA C22.2 No. 62368-1 Industry Canada ICES-003 Class A	
Europe	CE	
Note: The system is designed to be installed in a Pestricted Access		

Note: The system is designed to be installed in a Restricted Access Location as defined by UL/CSA 60950 and EN 62368.