REFRIGERATED AIR DRYER
TECHNICAL & INSTALLATION GUIDE

QLAD1020 | FOR 10-20 HP COMPRESSORS
220 V / single-phase / 50 Hz

Air-cooled refrigerated drying for compressed air.
Specifications, equipment configurations, dimensions, electrical wiring and service information.



Contents

1. Rated design performance	3
2. Mechanical data & equipment configurations	4
3. Equipment dimensions	5
4. Electrical circuit diagram	6
5. Aluminum plate-fin heat exchanger	7
6. Construction & performance	8
7. Component identification	9
8. Installation, operation & maintenance	10

Read the electrical and pressure ratings before connecting the dryer. Installation and service must be performed by qualified personnel. Keep this guide with the equipment.

1. Rated design performance

Model	QLAD1020
Recommended compressor range	10-20 HP
Rated airflow	91.82 CFM
Rated inlet pressure	101.5 PSI
Maximum inlet pressure	232 PSI
Rated inlet air temperature	113°F
Maximum inlet air temperature	140°F
Pressure dew point	35.6-50°F
Pressure drop	2.9 PSI maximum
Power supply	220 V / single-phase / 50 Hz
Dryer rated power	1.3 HP
Air connections	G1 (1 in. BSPP)
Condensate drain	Automatic / 0.315 in. OD hose
Ambient temperature	33.8-100.4°F
Installation	Indoor / air-cooled
Refrigerant	R410A
Refrigerant charge	1.76 lb
Refrigeration compressor power	1.17 HP
Refrigeration cooling capacity	0.68 refrigeration ton
Cooling airflow	953.5 CFM
Fan power	0.105 HP
Control / alarm	Local controls and local fault indication
Communications	RS-485 / Modbus

Rated flow applies at the stated inlet conditions. Compressor horsepower is a selection guide; size the dryer for actual airflow, pressure, inlet temperature and ambient conditions. The maximum inlet pressure is an equipment limit and is not the rated-flow test pressure.

2. Mechanical data & equipment configurations

Air-side connections	G1 (1 in. BSPP)
Condensate outlet	0.315 in. OD hose / automatic drain
Condensate disposal	Collect discharge in a suitable container or treatment system.
Inlet oil-content limit	0.00131 gr/scf
Inlet particulate limit	1 ppm
Heat exchanger material	Aluminum-magnesium alloy
Mounting	Level supporting surface; no special foundation.
Weight	110.23 lb

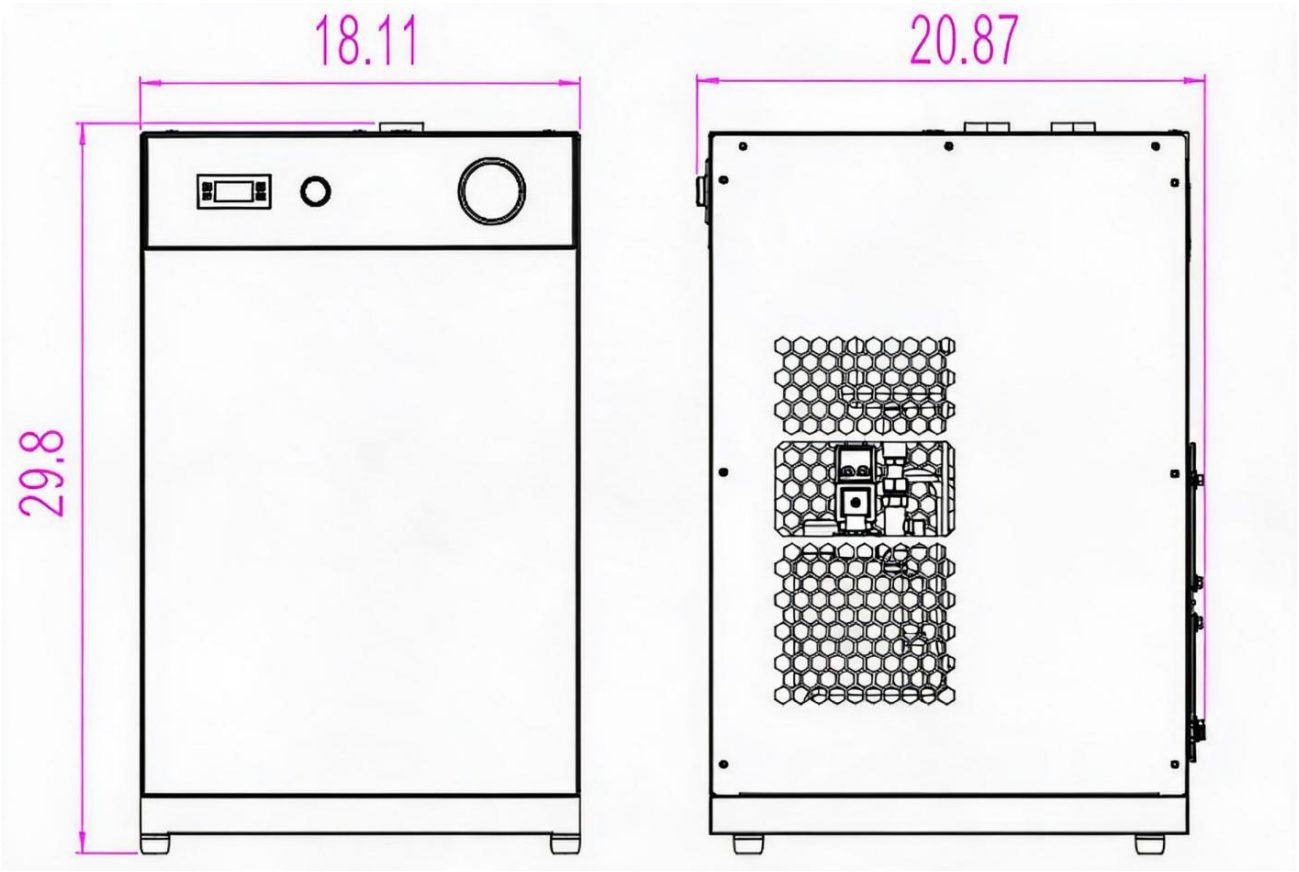
Refrigeration compressor: WHP03250ASV
Expansion valve: CBX-03Z
Refrigerant filter: LDL-032S
External rotor fan: YWF4E-300S-92/35-G
Electronic drain: MIC-A
Controller: LM-LGJ-CT
High-pressure switch: WQM-3.5/2.8
Low-pressure switch: WQM-0.4/0.5

Air condenser and plate heat exchanger: model-matched assemblies. Match replacement components to the dryer serial number and installed part. G/BSPP threads are not NPT.

Refrigeration service pressures:
Evaporation: 108.78 PSI; condensing: 362.6 PSI.
Low-pressure protection: 2.9 PSI; high-pressure protection: 507.63 PSI.
Pressure controls must be serviced only by qualified refrigeration personnel. Do not bypass protective switches or alter their settings.

3. Equipment dimensions

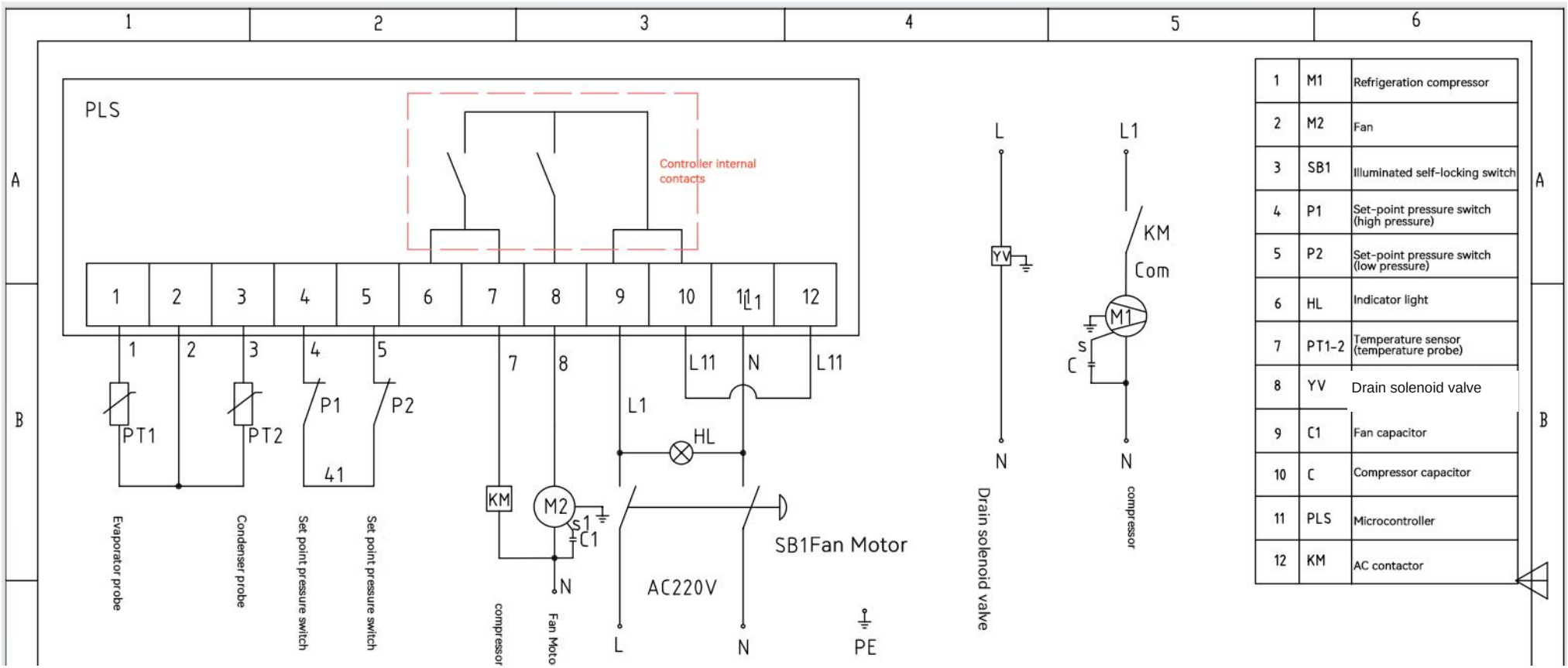
20.87 in. L × 18.11 in. W × 29.80 in. H
Weight: 110.23 lb



Keep the condenser fan, ventilation openings, drain, air connections and service panels accessible. Support connected piping independently. Verify the actual cabinet and connection locations before fabricating brackets or piping.

4. Electrical circuit diagram

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1	M1	Refrigeration compressor
2	M2	Fan
3	SB1	Illuminated self-locking switch
4	P1	Set-point pressure switch (high pressure)
5	P2	Set-point pressure switch (low pressure)
6	HL	Indicator light
7	PT1-2	Temperature sensor (temperature probe)
8	YV	Drain solenoid valve
9	C1	Fan capacitor
10	C	Compressor capacitor
11	PLS	Microcontroller
12	KM	AC contactor

Electrical installation and service: disconnect and lock out power, verify absence of voltage and follow the installed component ratings. Provide equipment grounding. Neutral and protective earth are separate conductors. A qualified electrician must size supply conductors and overcurrent protection for the actual dryer and installation.

5. Aluminum plate-fin heat exchanger

The aluminum-magnesium alloy heat exchanger uses closely spaced fins and multiple flow passages to provide a large heat-transfer surface within a compact assembly.

Warm compressed air transfers heat to cooler air leaving the dryer. Refrigeration then cools the incoming air so that water vapor condenses. A separator removes the liquid water for discharge through the automatic drain.

Reheating the outgoing air helps recover cooling energy and reduces condensation on downstream piping when operating conditions permit. A refrigerated dryer reduces water vapor; it does not remove all moisture or replace every downstream filtration requirement.

Aluminum-magnesium alloy construction helps resist corrosion in the heat exchanger. Helium leak testing checks assembly integrity during manufacturing.

Select the dryer for the actual air demand and operating conditions. Hotter inlet air, high ambient temperature, low operating pressure or excess flow can reduce drying performance.



6. Construction & performance

Compact heat-transfer assembly
Multiple layers of corrugated fins and partitions provide heat-transfer area in a compact cabinet.

Air / water separation
Stainless steel wire-mesh separation removes condensed water from the air stream. The separation mesh is corrosion-resistant SST304 stainless steel.

Air-cooled condenser
Internally enhanced copper tubing supports heat transfer. The fan moves ambient air through the condenser; unobstructed ventilation and clean surfaces are essential.

Protected cabinet
The sheet-metal enclosure is prepared and coated to protect the cabinet finish. Keep panels secured and avoid damage during transport or service.

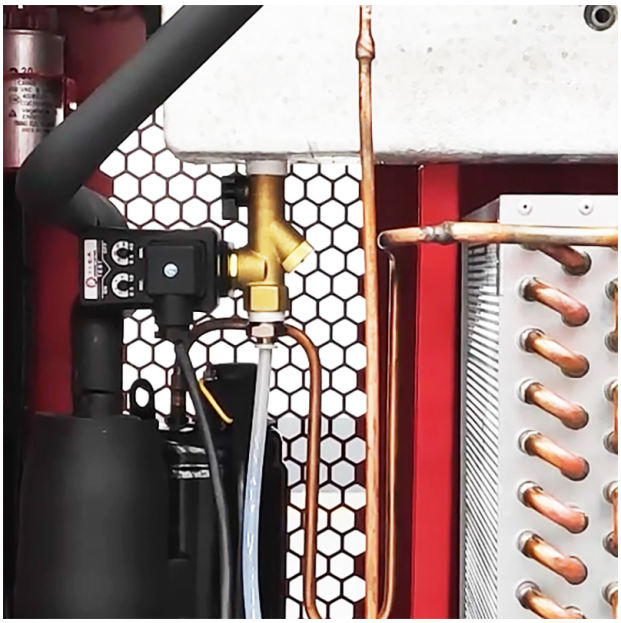
Optimized refrigerant piping
The refrigerant circuit uses a compact arrangement to reduce unnecessary joints. Refrigerant connections and sealed-system components require qualified service.

Operating envelope
Indoor ambient: 33.8-100.4°F.
Rated inlet air: 113°F; maximum inlet air: 140°F.
Rated inlet pressure: 101.5 PSI; maximum inlet pressure: 232 PSI.
Pressure dew point: 35.6-50°F.
Protect the equipment and condensate piping from freezing.

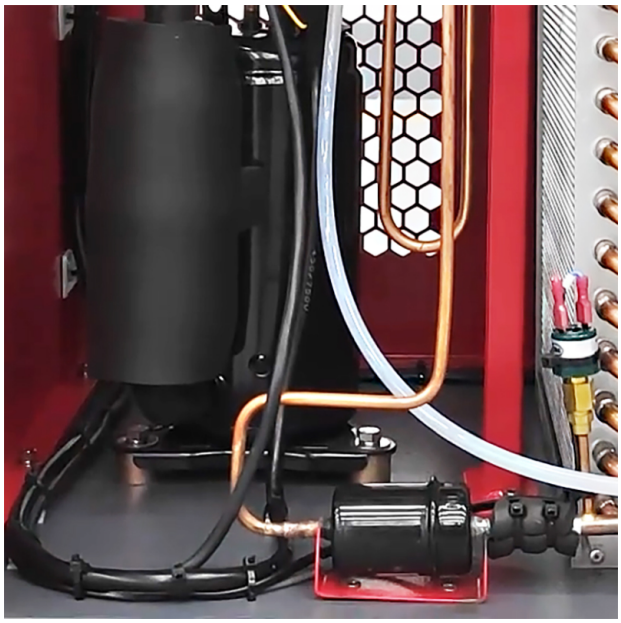


7. Component identification

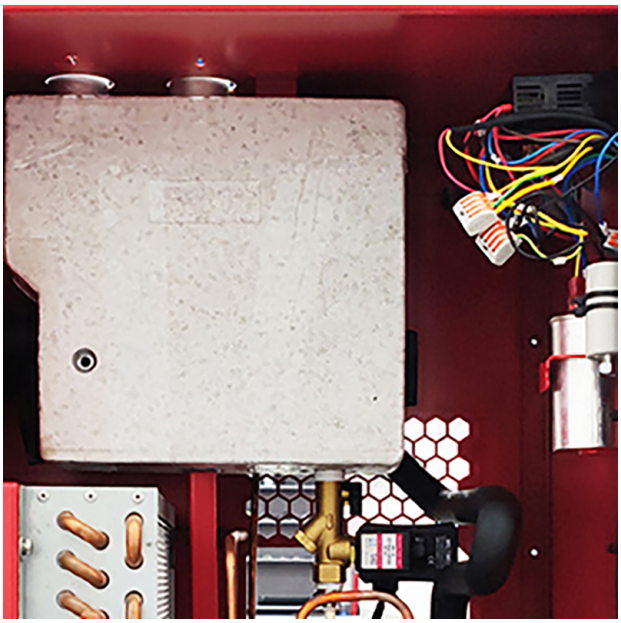
Identify installed components before service. Stop the dryer, isolate electrical and compressed-air supplies, and verify zero pressure before opening air-side components.



Refrigerant piping and valve assembly



Compressor and condensate drain area



Heat exchanger and wiring area



Refrigeration compressor

8. Installation, operation & maintenance

Installation
Place indoors on a level surface capable of supporting the dryer. Protect from rain, freezing, corrosive vapors and excessive dust. Keep ventilation openings and service access clear. Use suitable lifting equipment and secure the cabinet during transport.

Air connections and drainage
Connect to the marked inlet and outlet using compatible pressure-rated fittings. Support piping independently. Install isolation and pressure-relief provisions appropriate to the connected system. Route condensate discharge securely to a suitable collection or treatment system.

Electrical supply
Use 220 V, single-phase, 50 Hz power matched to the unit nameplate. A qualified electrician must provide grounding, a suitable disconnect and correctly sized conductors and protection.

Starting and monitoring
Check piping, power, drains and ventilation before starting. Use the local dryer controls. Confirm normal indication and condensate discharge before supplying air to moisture-sensitive equipment. Do not exceed the rated operating envelope or repeatedly reset a protective fault.

Maintenance
Inspect for air and refrigerant leaks, check drain operation and keep condenser surfaces clean. Isolate and lock out power before cleaning or electrical work. Isolate and fully depressurize the air system before servicing drains, fittings or air-side components. Refrigerant work requires qualified personnel.

Service support
Provide the model, serial number, operating conditions and fault indication.
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