

## Lifeline® Lubricated Rotary Vane Medical Vacuum Modular Triplex Expandable Quadruplex System (5 - 10 HP)

### SPECIFICATION

#### Modular System Design

The Lifeline Lubricated Rotary Vane Medical vacuum package is fully compliant with NFPA 99. Each pump module has a common intake connection point and a common discharge connection point. The system modules are capable of transport through a standard 34.5" doorway. Designed and manufactured with ISO 13485 processes, each system is completely tested before shipment and includes:

- Three oil-sealed rotary vane vacuum pumps with three motors
- Integral pre-wired control panel
- Vertical air receiver with full-size three-valve bypass system sized for appropriate demand
- OSP-322-10 seismic pre-certification rating of 2.50  $S_{DS}$ .

#### Vacuum Pump

Each pump is a direct driven, oil-sealed rotary vane vacuum pump, with an end (ultimate) vacuum of 29.3" Hg. Each pump is completely air-cooled with no water requirements. Each pump contains:

- Integral, fully recirculating oil supply to provide lubrication
- An automotive-type, spin-on oil filter for oil filtration
- High-discharge temperature switch
- Oil drain valve assembly with temperature gauge

The oil separation system is integral and consists of the following:

- No less than three stages of internally installed oil and smoke eliminators through which the exhaust gas stream must pass
- Bulk separation, oil mist elimination, and smoke elimination
- Capability to remove 99.9+ percent of all oil and smoke particles from the exhaust gas stream

Each vacuum pump includes the following:

- Built-in, anti-suck-back valve mounted at the pump inlet
- Three non-metallic, non-asbestos vanes, each having a minimum life of 30,000 hours
- Mounting on vibration isolators
- Flexible connector and isolation valve

#### Vacuum Pump Drive

The pump shall be direct driven. Torque is transmitted from the motor to the pump through a shaft coupling.

#### Vacuum Pump Motor

Motors are continuous duty, NEMA rated, C-face, foot-mounted, TEFC, suitable for 230/460 or 208V, 60 hertz, 3-phase electrical service and 380V, 50 hertz, 3-phase electrical service.

#### Vacuum Filtration per NFPA 99

A HEPA inlet air filter, 0.3 micron, 99.97% efficiency, is mounted before each vacuum pump. A clear, glass collection canister is mounted below each HEPA filter, with quarter turn valve to isolate canister from filter during service. The inlet filter canister contains a bleed valve to relieve vacuum before servicing.

#### Intake Piping

Each vacuum pump has a factory piped intake with integral flex connector, isolation valve, and check valve. Interconnecting piping consists of powder-coated steel tubing and flanges.

#### Vacuum Receiver

The vacuum receiver is ASME Code stamped, and rated for a minimum 150 PSIG design pressure. The receiver has a full-size three-valve bypass system to allow for draining of the receiver without interrupting the vacuum service. A manual drain is provided on the receiver.

#### Exhaust Piping

Each vacuum pump is factory piped with an integral flex connector to an exhaust manifold with a drip leg and ball valve for condensate drain. Interconnecting piping consists of powder-coated steel tubing and flanges.

#### TotalAlert 360 Control System

The quadruplex mounted and wired TotalAlert 360 control system is U.L. labeled. The control system provides automatic lead/lag sequencing and automatic alternation of vacuum pumps based on first-on/first-off principle with provision for simultaneous operation if required. Automatic activation of reserve unit, if required, will activate an audible alarm as well as a visual alarm on the display screen.

Additional components include:

- NEMA 12 control panel enclosure
- Circuit breaker disconnects for each motor with external operators
- Full voltage motor starters with overload protection
- 24V control circuit
- 65kAIC SCCR rating for control cabinet

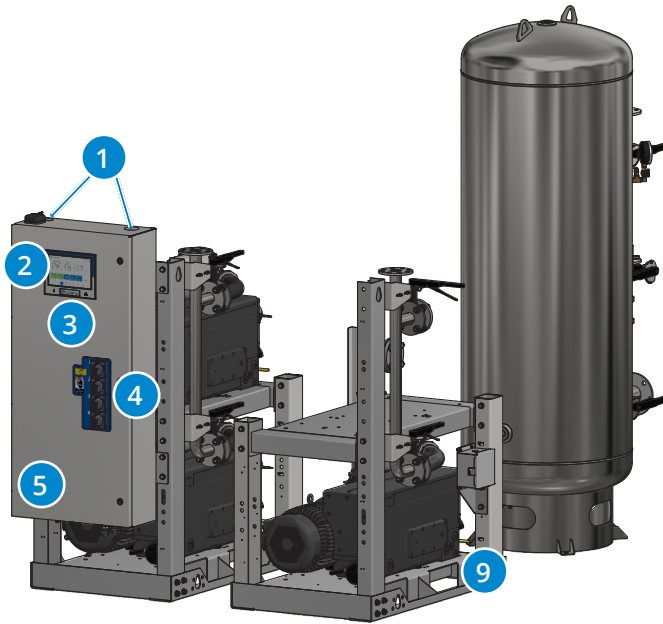
The touch screen controls feature a 10" color, high resolution screen. Screen displays and functions include:

- Easy to read system vacuum level
- Status of all units (Running, Available, Off, next to Run)
- Trend graphs for vacuum level and units running
- Run time hour meters for each unit
- Visual/audible alarm indications with isolated contacts for all standard remote alarms
- Event log recording alarms and system activity
- Service alerts
- Event log recording service warnings and service history
- Integral cellular connectivity to MyMedGas, allowing electronic notifications of alarms and warnings
- Daily rounds uploadable to MyMedGas
- BTL listed, BACnet/IP communication



## Standard Configuration

Model Shown: 7.5 Hp Triplex Expandable Quadruplex



**1** Control panel pre-drilled for power and alarms for easy electrical installations. Ethernet connection on panel top for easy installation of BACnet connectivity, with additional connection on the side panel for software updates.

**2** TotalAlert 360 controls featuring 10" color screen with high resolution 1280 x 800 Capacitive Touch Display for exceptional clarity, visibility, and useability.

**3** LED indication of Reserve in Use condition as backup annunciation to display failure and LED indication of power to the control panel.

**4** Through the door disconnects for pumps add to safety during service.

**5** Control cabinet components achieve rating of 65kAIC SCCR.

**6** Flex connectors on vacuum inlet and discharge to isolate pump vibration from facility pipeline.

**7** Vacuum switch as backup to vacuum transducer. In case of transducer failure, system operates effectively.

**8** Full-size 3-valve receiver bypass with flanged valves reduce potential leak points over NPT fittings.

**9** Oil sight glass and filler plug with ease of access for oil changes.

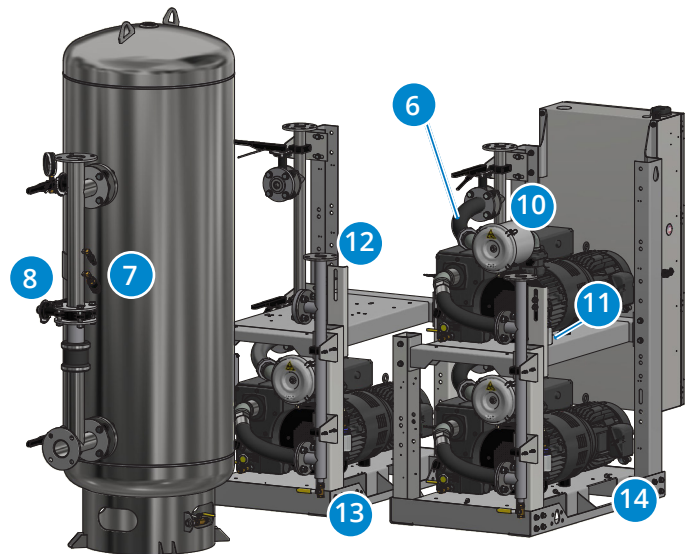
**10** Individual HEPA air inlet filter per vacuum pump to prevent contaminants from entering vacuum pump, ensuring safety during servicing. Housing bleed valve to remove vacuum for filter replacement.

**11** Glass collection canister mounted below HEPA filter, with isolation valve to allow for easy changeout.

**12** Discharge manifold with a single point connection to the exhaust piping, with flex hoses factory installed.

**13** Factory installed exhaust drip leg with ball valve and condensate drain.

**14** Openings in base frame to allow access underneath pumps for pump maintenance.



## **TotalAlert 360 Control System**



## **TotalAlert 360 Touch Screen**

- 10" LCD 1280 x 800 Capacitive Touch Display for exceptional clarity and visibility, with enhanced user experience
- LCD is IPS-TFT for enhanced color and contrast, featuring 85% viewing angle in all directions
- Toolbars on all screens with easy access navigation icons that enable full access with minimal touches

## **MyMedGas Connectivity**

- Cellular connectivity to cloud-based MyMedGas web page for remote operator to view system controls and display information
  - » View remotely system operation details, alarms and event history
  - » View remotely maintenance timers, service history logs
  - » Easily download system trends, event logs and reports for system management and record keeping
- Electronic notification
  - » Allows for remote alerts of alarm and warning conditions
  - » Allows for remote alerts of routine maintenance
- Logging rounds to MyMedGas
  - » Main screen touchpoint for MyMedGas with time stamp to log operating conditions, system parameters during daily rounds
  - » Automated report generated to MyMedGas

## **Ethernet Connectivity**

- Control panel contains Ethernet port on top of cabinet for easy installation of BACnet
- TCP/IP protocol for BACnet activation
- Ethernet port on side of control cabinet that allows reprogramming with a standard computer for software updates

## **Control Cabinet Safety**

- Volt free relay contacts for all standard alarms
- Low voltage (24V) control circuit
- Full voltage motor starters with overload protection
- Circuit breaker disconnects for each vacuum pump
- 65kAIC SCCR rating

## **Redundancy**

- Each vacuum pump has an individual board for control allowing units to function independently
- In unlikely malfunction of display board or display screen, system will function normally and activate alarm
- If master board malfunctions, system goes to failsafe operation with backup vacuum switch
- Independent LED indicators on control screen for Reserve in Use and power to the control panel as backup annunciation to display failure

## **Master Display Screen**

- Main Screen
  - » Displays the system operating conditions, including system vacuum level
  - » Displays the pump unit sequence, including status of pumps (running, available, off) and next to start
- Trends & Graphs
  - » Shows measured values of the system operating conditions over a period of time (operating vacuum, ambient temperature)
  - » Shows unit usage and operation, clearly identifying each unit and its running status
  - » Selectable time periods consist of 60 minutes, 4 hours, 24 hours, and 6 days
  - » Visually precise with green and red shading for normal and non-normal areas
- Service
  - » Displays ambient temperature in the room
  - » Maintenance screen shows suggested and required maintenance items with resettable timers
  - » Historical event log records all service activities
  - » Link to operations manuals associated with system
- Alarms and Shutdowns
  - » All system/unit Alarms and Shutdowns displayed with visual indication (Green or Red) and unit operation status, allowing for quick identification and evaluation of system operation
  - » Custom messaging for each alarm and shutdown
  - » Testing mode enables operator to test all alarm/shutdown events (password protected), with all test events recorded in the event log
  - » Event History Log records all system event history
- Unit Operation
  - » Screens shows the operation mode of the unit along with automatic or manual mode setting
  - » Unit status screen displays the running hour meter values, including average daily run time and average starts/hour
  - » Pump rotation allows the unit to run for a short period to check pump rotation
- System Settings
  - » Allows the adjustment of system pressure operating range
  - » Displays pertinent system model information

**SPECIFICATION TABLE**

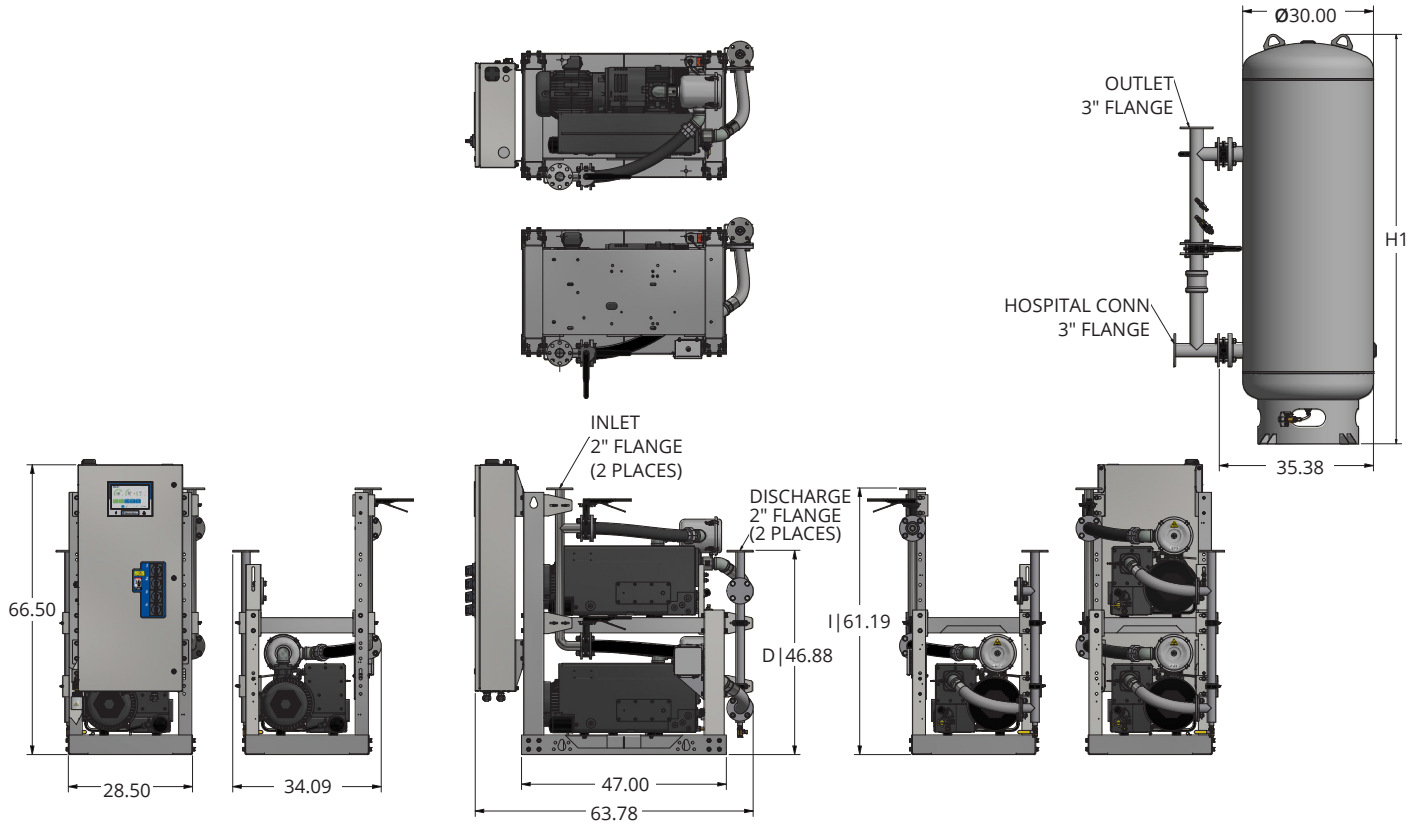
Vacuum System Specifications¹											
System Model No.	HP	Capacity² @19" Hg (scfm)		System³ BTU/Hr	Receiver (gallons)	Noise⁴ Level	System FLA			System Weight (lbs)	
		Pump	System				208V	230V	460V	Module⁵	Receiver
Modular Tpx-Exp-Qpx - 60 Hz											
VLM05T-200V-Q	5	37	74 (111)	30,540	200	75.8	62.0	54.1	27.4	2,078	638
VLM05T-240V-Q	5	37	74 (111)	30,540	240	75.8	62.0	54.1	27.4	2,078	713
VLM07T-200V-Q	7.5	52	104 (156)	45,810	200	83.8	96.4	89.7	45.2	2,790	638
VLM07T-240V-Q	7.5	52	104 (156)	45,810	240	83.8	96.4	89.7	45.2	2,790	713
VLM10T-200V-Q	10	77	154 (231)	61,080	200	85.8	136.4	107.3	54.0	3,678	638
VLM10T-240V-Q	10	77	154 (231)	61,080	240	85.8	136.4	107.3	54.0	3,678	713
Modular Tpx-Exp-Qpx - 50 Hz							380V				
VLM05T-200V-Q	5	31	62 (93)	30,540	200	75.8	33.0			2,078	638
VLM05T-240V-Q	5	31	62 (93)	30,540	240	75.8	33.0			2,078	713
VLM07T-200V-Q	7.5	43	86 (129)	45,810	200	83.8	47.6			2,790	638
VLM07T-240V-Q	7.5	43	86 (129)	45,810	240	83.8	47.6			2,790	713
VLM10T-200V-Q	10	64	128 (192)	61,080	200	85.8	55.2			3,678	638
VLM10T-240V-Q	10	64	128 (192)	61,080	240	85.8	55.2			3,678	713

**Specification Table Notes:**

1. Normal operating conditions at a maximum ambient of 105° F. Consult factory for higher ambient conditions.
2. All capacities are shown as NFPA 99 system capacities (reserve vacuum pump on standby).
3. All system BTU/HR are shown with reserve vacuum pump on standby.
4. All noise levels are shown in dB(A) and reflect reserve pump on standby.
5. Total weight for a duplex module with quad control panel and duplex module with no control panel, includes weight of future expansion module.
  - 5 Hp: Module with control panel, 1145lbs. Module without control panel 933lbs.
  - 7.5 Hp: Module with control panel, 1478lbs. Module without control panel 1312lbs.
  - 10 Hp: Module with control panel, 1927lbs. Module without control panel 1751lbs.

### Standard Configuration

Model Shown: 7.5 Hp Tpx-Exp-Qpx



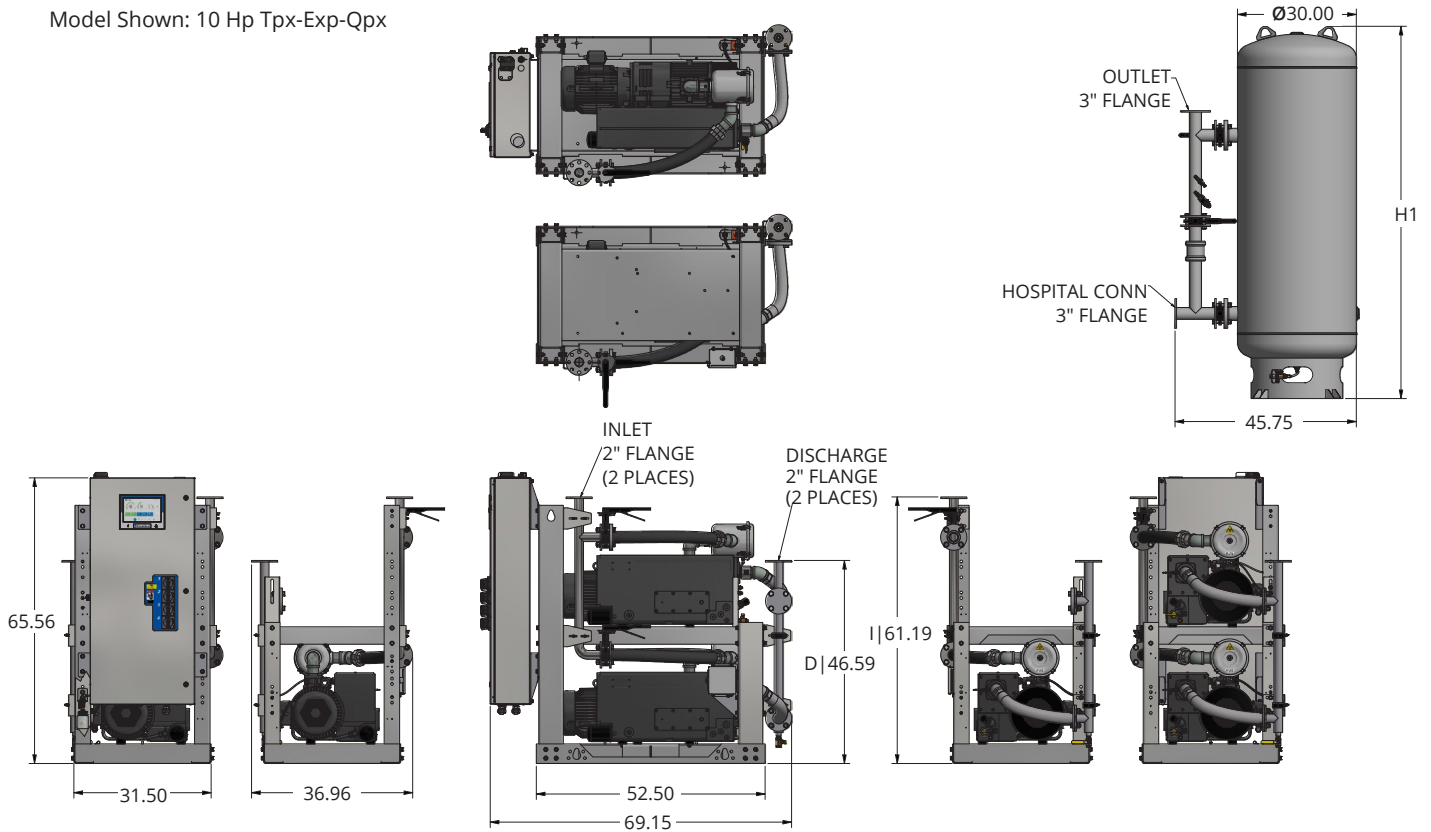
System Model No.	HP	Dimensions
		H1
VLM05T-200V-Q	5	81.92
VLM05T-240V-Q	5	93.97
VLM07T-200V-Q	7.5	81.92
VLM07T-240V-Q	7.5	93.97

### Notes:

- Allow 36 inches in front of control panel for maintenance and ventilation, all other sides require 24 inches of clearance
- Additional drawings/diagrams available for download at [www.beaconmedaes.com](http://www.beaconmedaes.com).

### Standard Configuration

Model Shown: 10 Hp Tpx-Exp-Qpx



System Model No.	HP	Dimensions
		H1
VLM10T-200V-Q	10	81.92
VLM10T-240V-Q	10	93.97

### Notes:

- Allow 36 inches in front of control panel for maintenance and ventilation, all other sides require 24 inches of clearance
- Additional drawings/diagrams available for download at [www.beaconmedaes.com](http://www.beaconmedaes.com).

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