



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR OSHPD SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

**APPLICATION #: OSP-0715**

**OSHPD Special Seismic Certification Preapproval (OSP)**

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: Beacon Medaes (Atlas Copco Compressors, LLC.)

Manufacturer's Technical Representative: Tim Conner

Mailing Address: 1059 Paragon Way, Rock Hill, SC 29730

Telephone: (803) 817-5656

Email: tim.conner@beaconmedaes.com

**Product Information**

Product Name: Medical Gas and Vacuum Systems

Product Type: Medical Gas Systems

Product Model Number: Beacon Medaes LifeLine Automatic Changeover Gas Manifold Control Modules

General Description: High Pressure x High Pressure, Liquid x Liquid, and Liquid x High Pressure automatic changeover gas manifold control modules offering Standard or Total Alert Embedded electronics options for a range of gasses.

Mounting Description: Rigid, Wall Mounted

DATE: 09/03/2021

Tested Seismic Enhancements: None

**Applicant Information**

Applicant Company Name: Dynamic Certification Laboratories, LLC.

Contact Person: Kelly Laplace

Mailing Address: 1315 Greg St. Suite 109, Sparks, NV 89431

Telephone: (775) 358-5085

Email: kelly@shaketest.com

Title: Business Manager





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**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

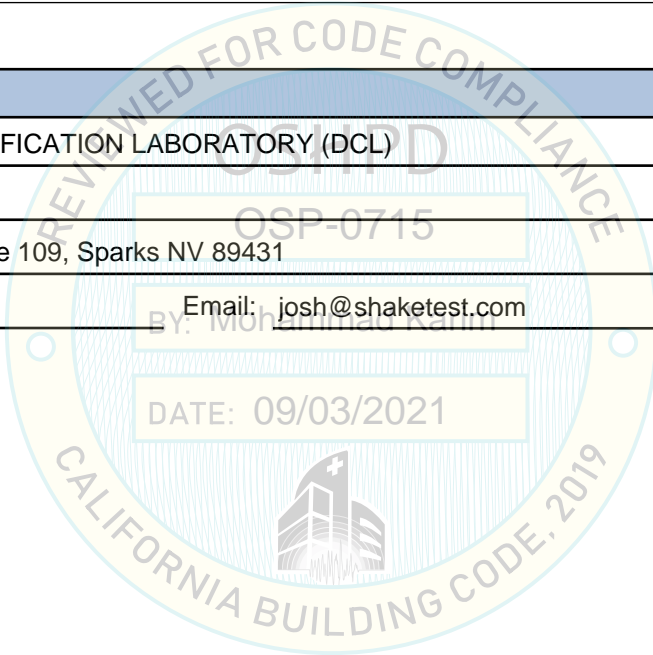
Company Name: THE VMC GROUP  
Name: Kenneth Tarlow California License Number: S2851  
Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814  
Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

**Certification Method**

GR-63-Core       ICC-ES AC156       IEEE 344       IEEE 693       NEBS 3  
 Other (Please Specify): \_\_\_\_\_

**Testing Laboratory**

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)  
Contact Person: Josh Sailer  
Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431  
Telephone: (775) 358-5085 Email: josh@shaketest.com





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**Seismic Parameters**

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.5

SDS (Design spectral response acceleration at short period, g) = 2.0

$a_p$  (Amplification factor) = 2.5

$R_p$  (Response modification factor) = 6.0

$\Omega_0$  (System overstrength factor) = 2.0

$I_p$  (Importance factor) = 1.5

$z/h$  (Height ratio factor) = 1

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

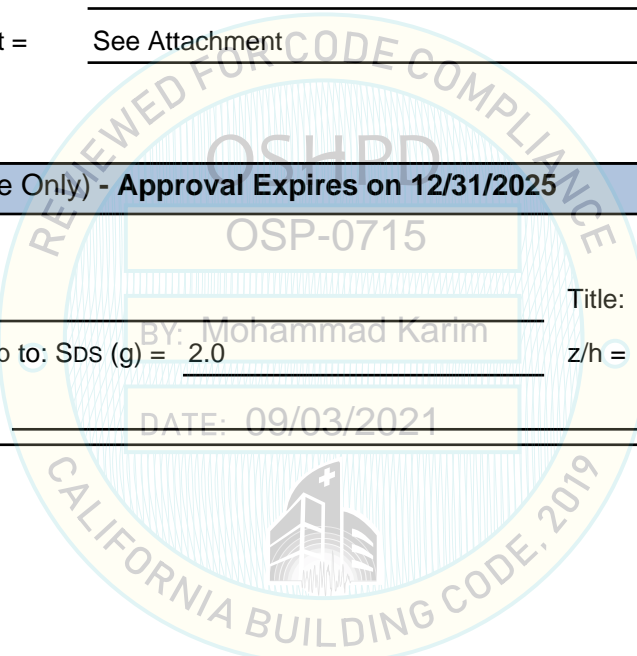
**OSHPD Approval (For Office Use Only) - Approval Expires on 12/31/2025**

Date: 9/3/2021

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 2.0 z/h = 1

Condition of Approval (if applicable): DATE: 09/03/2021



# Special Seismic Certification

## Table 1: Certified Components- Gas Manifold Control Modules



DCL Project No. 13152-2101

**Manufacturer:** Beacon Medaes

**Mounting Configuration:** Rigid Wall Mount

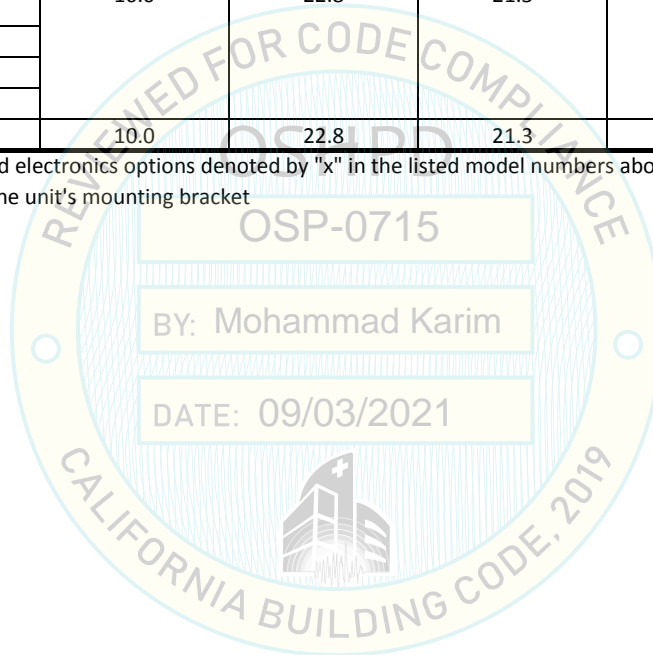
**Product Line:** Beacon Medaes LifeLine

**Product Type:** Automatic Changeover Gas Manifold Control Modules

**Seismic Level:**  $S_{DS} (g) = 2.0$ ,  $z/h = 1.0$

Model Numbers <sup>1</sup>	Max Dimensions (in.) <sup>2</sup>			Max Weight (lb.) <sup>2</sup>	Unit
	Depth	Width	Height		
CMNE-HH-AIR-AS	10.0	22.8	21.3	68.0	UUT-1
CMNE-HH-x-Bx	10.0	22.8	21.3	68.0 to 72.0	Interpolated
CMNE-HH-x-Cx					Interpolated
CMNE-LH-x-Ax					Interpolated
CMNE-LH-x-Bx					Interpolated
CMNE-LH-x-Cx					Interpolated
CMNE-LL-x-Ax					Interpolated
CMNE-LL-x-Bx					Interpolated
CMNE-LL-x-Cx					Interpolated
CMNE-LL-N2-CT	10.0	22.8	21.3	72.0	UUT-2

- Reference Table 2 for the gas and electronics options denoted by "x" in the listed model numbers above
- Dimensions and weight include the unit's mounting bracket



# Special Seismic Certification

## Table 2: Beacon Medaes Gas Manifold Control Module Model Number Chart



DCL Project No. 13152-2101

Mounting Configuration: Rigid Wall Mount

Product Type: Automatic Changeover Gas Manifold Control Modules

Seismic Level:  $S_{DS}(g) = 2.0$ ,  $z/h = 1.0$

### Sample Model Number



Variable	Definition	Allowable Value	Description	Abbreviation	Unit
A	Series	N	NFPA	NFPA	UUT-1, UUT-2
		E	English	EN	UUT-1, UUT-2
B	Language	S	Spanish	SP	Interpolated
		HH	High Pressure x High Pressure	HP x HP	UUT-1
C	Type	LL	Liquid x Liquid	LQ x LQ	UUT-2
		LH	Liquid x High Pressure	LQ x HP	Interpolated
		O2	Oxygen	O2	Extrapolated
D	Gas <sup>1</sup>	N2O	Nitrous Oxide	N2O	Extrapolated
		Air	Medical Air	AIR	UUT-1
		N2	Nitrogen	N2	UUT-2
		IAIR	Instrument Air	IAIR	Extrapolated
		CO2	Carbon Dioxide	CO2	Extrapolated
		CO2O2	Carbon Dioxide- Oxygen (CO2 > 7%)	CO2O2	Extrapolated
		O2CO2	Oxygen-Carbon Dioxide (CO2 < 7%)	O2CO2	Extrapolated
		HEO2	Helium-Oxygen (He > 80%)	HEO2	Extrapolated
		O2HE	Oxygen-Helium (He < 80%)	O2HE	Extrapolated
		HE	Helium	HE	Extrapolated
		AR	Argon	AR	Extrapolated
		ISAIR	ISO Air	ISAIR	Extrapolated
		ISINT	ISO Instrument Air	ISINT	Extrapolated
E	Delivery Pressure	A	55 psi delivery pressure	55PSI	UUT-1
		B	100 psi delivery pressure	100PSI	Interpolated
		C	180 psi delivery pressure	180PSI	UUT-2
F	Electronics	S	Standard	STD	UUT-1
		T	Total Alert Embedded	TAE	UUT-2

1. The difference between the gases is the gas ID label. The unit construction remains the same regardless of the gas type.

**Special Seismic Certification**  
**Table 3: Certified Subcomponents**



DCL Project No. 13152-2101

**Mounting Configuration:** Rigid Wall Mount

**Product Type:** Automatic Changeover Gas Manifold Control Modules

**Seismic Level:** S<sub>DS</sub> (g) = 2.0, z/h = 1.0

Control Assembly					
Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit
4107653568	Beacon Medaes	PCB ASM MANIFOLD POWER SUPPLY	4 layer polyclad	1	UUT-1, UUT-2
4107653561		PCB ASM MANIFOLD BASIC REDUCED	4 layer polyclad	1	UUT-1
4107653565		PCB ASM MANIFOLD ADVANCED FULL	8 layer polyclad	1	UUT-2
4107655538	Hammond	CAB ELEC ENCL NEMA-4 8X6X3.5	Carbon steel	5	UUT-1, UUT-2
Manifold Assembly					
Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit
4107791380	Beacon Medaes	MANIFOLD ASSEMBLY HPXHP 55PSI	Brass	28	UUT-1
4107791381		MANIFOLD ASSEMBLY HPXHP 100PSI	Brass	28	Interpolated
4107791382		MANIFOLD ASSEMBLY HPXHP 180PSI	Brass	28	Interpolated
4107791383		MANIFOLD ASSEMBLY LQXLQ 55PSI	Brass	30	Interpolated
4107791384		MANIFOLD ASSEMBLY LQXLQ 100PSI	Brass	30	Interpolated
4107791385		MANIFOLD ASSEMBLY LQXLQ 180PSI	Brass	30	UUT-2
Switch Assembly					
Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit <sup>1</sup>
4107653589	Ashcroft	SWT PRES SWITCH 150 PSI SAE-4	Brass, plastic	1	UUT-1
4107653590		SWT PRES SWITCH 300 PSI SAE-4	Brass, plastic	1	Same as UUT-1
4107653591		SWT PRES SWITCH 250 PSI SAE-4	Brass, plastic	1	Same as UUT-1
4107653592		SWT PRES SWITCH 1500 PSI SAE-4	Brass, plastic	1	Same as UUT-1
4107653727	Ashcroft	TDC PRES TRANSDUCER 0-300 PSI	Brass, plastic	1	UUT-2
4107653728		TDC PRES TRANSDUCER 0-3000 PSI	Brass, plastic	1	UUT-2
Enclosure Assembly					
Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit
4107792602	FormaFab	ASM ENCLOSURE HPXHP	Carbon steel	15	UUT-1
4107792665		ASM ENCLOSURE LQXLQ & LQXHP	Carbon steel	15	UUT-2
Relief Valves					
Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit
4107653570	Rego	RLF PRES REL VAL 75PSI SAE-6	Brass, stainless steel	1	UUT-1
4107655847		RLF PRES REL VAL 100PSI SAE-6	Brass, stainless steel	1	Interpolated
4107653571		RLF PRES REL VAL 150PSI SAE-6	Brass, stainless steel	1	Interpolated
4107653572		RLF PRES REL VAL 250PSI SAE-6	Brass, stainless steel	1	UUT-2
4107653573		RLF PRES REL VAL 350PSI SAE-6	Brass, stainless steel	1	UUT-1, UUT-2
4107653574		RLF PRES REL VAL 400PSI SAE-6	Brass, stainless steel	1	UUT-2
Pressure Gauges					
Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit
4107654146	Wika	GAG PRES GAGE 2-1/2" 0-100 PSI	Carbon steel, plastic	1	UUT-1
4107654149		GAG PRES GAGE 2-1/2" 0-3000 PSI	Carbon steel, plastic	1	UUT-1
4107653599		GAG PRES GAGE 1-1/2" DIA 0-400	Carbon steel, plastic	1	UUT-1
4107654148		GAG PRES GAGE 2-1/2" 0-400 PSI	Carbon steel, plastic	1	UUT-2
4107654147		GAG PRES GAGE 2-1/2" 0-300 PSI	Carbon steel, plastic	1	UUT-2
4107653599		GAG PRES GAGE 1-1/2" DIA 0-400	Carbon steel, plastic	1	UUT-2
4107653600		GAG PRES GAGE 1-1/2" 0-60 PSI	Carbon steel, plastic	1	UUT-2
Dome Bias Regulator					
Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit
4107653615	Norgren	REG REGULATOR 1/8" NPT W/ NUT	Brass, zinc	1	UUT-2
Switching Valve					
Part Number	Manufacturer	Description	Material	Weight (lb.)	Unit
4107656430	MAC Valve	VAL SOLENOID BANK SWITCHING	Carbon steel, plastic	1	UUT-1, UUT-2

1. The listed pressure switches are identical to the pressure switch tested in UUT-1, the only difference is the setpoint value.

**Special Seismic Certification**

**Table 4: Tested Units**



DCL Project No. 13152-2101

**Manufacturer:** Beacon Medaes

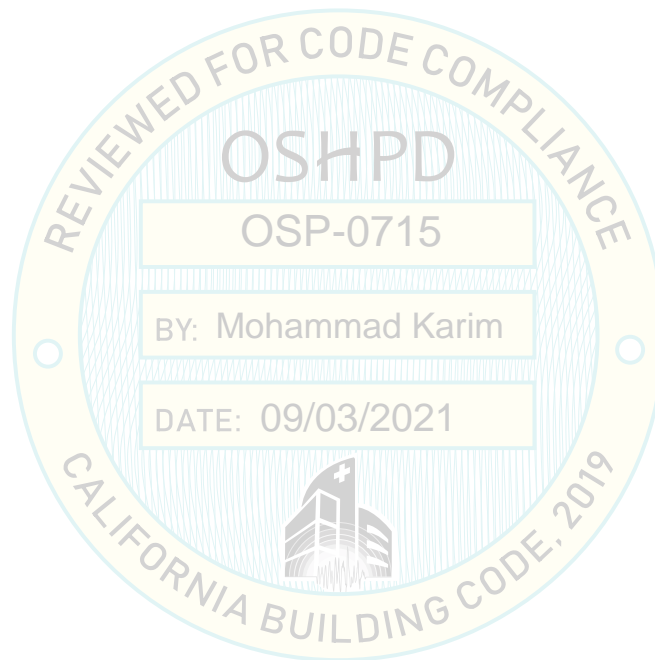
**Mounting Configuration:** Rigid Wall Mount

**Product Line:** Beacon Medaes LifeLine

**Product Type:** Automatic Changeover Gas Manifold Control Modules

**Seismic Level:**  $S_{DS}$  (g) = 2.0, z/h=1.0

Model Numbers	Max Dimensions (in.)			Max Weight (lb.)	Unit
	Depth	Width	Height		
CMNE-HH-AIR-AS	10.0	22.8	21.3	68.0	UUT-1
CMNE-LL-N2-CT	10.0	22.8	21.3	72.0	UUT-2



# UNIT UNDER TEST (UUT) SUMMARY SHEET



## UUT-1

**DCL Project Number: 13152-2101**

**Manufacturer:** Beacon Medaes

**Product Line:** Beacon Medaes LifeLine

**Product Type:** Automatic Changeover Gas Manifold Control Module

**Model Number:** CMNE-HH-AIR-AS

**Mounting:** Rigid Wall Mount

**Product Construction Summary:**

Type 4 NEMA Rated Enclosure

**Options / Component Summary:**

Control Assembly, Manifold Assembly, Switch Assembly, Enclosure, Relief Valves, Pressure Gauges, Switching Valve

**Unit Mounting Description:**

UUT-1 was mounted to the DCL wall fixture via the manufacturer-provided mounting bracket. The mounting bracket was mounted to the wall fixture using (4) 3/8" Grade 5 bolts, round washers, 1-1/4"x1-1/4"x1/4" galvanized steel plate washers, and spring nuts. The bolts were spaced approximately 9-1/2" on center width-wise and approximately 14-3/4" on center height-wise. Each bolt was torqued to approximately 25 ft.-lb. to the Unistrut on the DCL wall fixture. UUT-1 was mounted to the mounting bracket using the manufacturer-provided mounting instructions. (4) 307a 5/16" bolts and round washers, spaced approximately 6" on center width-wise and approximately 10" on center height-wise, were used to mount the manifold to the mounting bracket.

BY: Mohammad Karim

**Beacon Medaes Mounting Bracket Part Number:** 4107 6559 95

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
68	10.0	22.8	21.3	N/A	N/A	N/A

**Seismic Test Parameters**

Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>p</sub>	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2019	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	1.33	0.53



**Figure 1.** Overall exterior view of UUT-1



**Figure 2.** Overall interior view of UUT-1



# UNIT UNDER TEST (UUT) SUMMARY SHEET



## UUT-2

**DCL Project Number: 13152-2101**

**Manufacturer:** Beacon Medaes

**Product Line:** Beacon Medaes LifeLine

**Product Type:** Automatic Changeover Gas Manifold Control Module

**Model Number:** CMNE-LL-N2-CT

**Mounting:** Rigid Wall Mount

**Product Construction Summary:**

Type 4 NEMA Rated Enclosure

**Options / Component Summary:**

Control Assembly, Manifold Assembly, Switch Assembly, Enclosure, Relief Valves, Pressure Gauges, Dome Bias Regulator, Switching Valve

**Unit Mounting Description:**

UUT-2 was mounted to the DCL wall fixture via the manufacturer-provided mounting bracket. The mounting bracket was mounted to the wall fixture using (4) 3/8" Grade 5 bolts, round washers, 1-1/4"x1-1/4"x1/4" galvanized steel plate washers, and spring nuts. The bolts were spaced approximately 9-1/2" on center width-wise and approximately 14-3/4" on center height-wise. Each bolt was torqued to approximately 25 ft.-lb. to the Unistrut on the DCL wall fixture. UUT-2 was mounted to the mounting bracket using the manufacturer-provided mounting instructions. (4) 307a 5/16" bolts and round washers, spaced approximately 6" on center width-wise and approximately 10" on center height-wise, were used to mount the manifold to the mounting bracket.

BY: Mohammad Karim

**Beacon Medaes Mounting Bracket Part Number:** 4107 6559 95

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

### UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
72	10.0	22.8	21.3	N/A	N/A	N/A

### Seismic Test Parameters

Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>p</sub>	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2019	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	1.33	0.53



Figure 1. Overall exterior view of UUT-2



Figure 2. Overall interior view of UUT-2