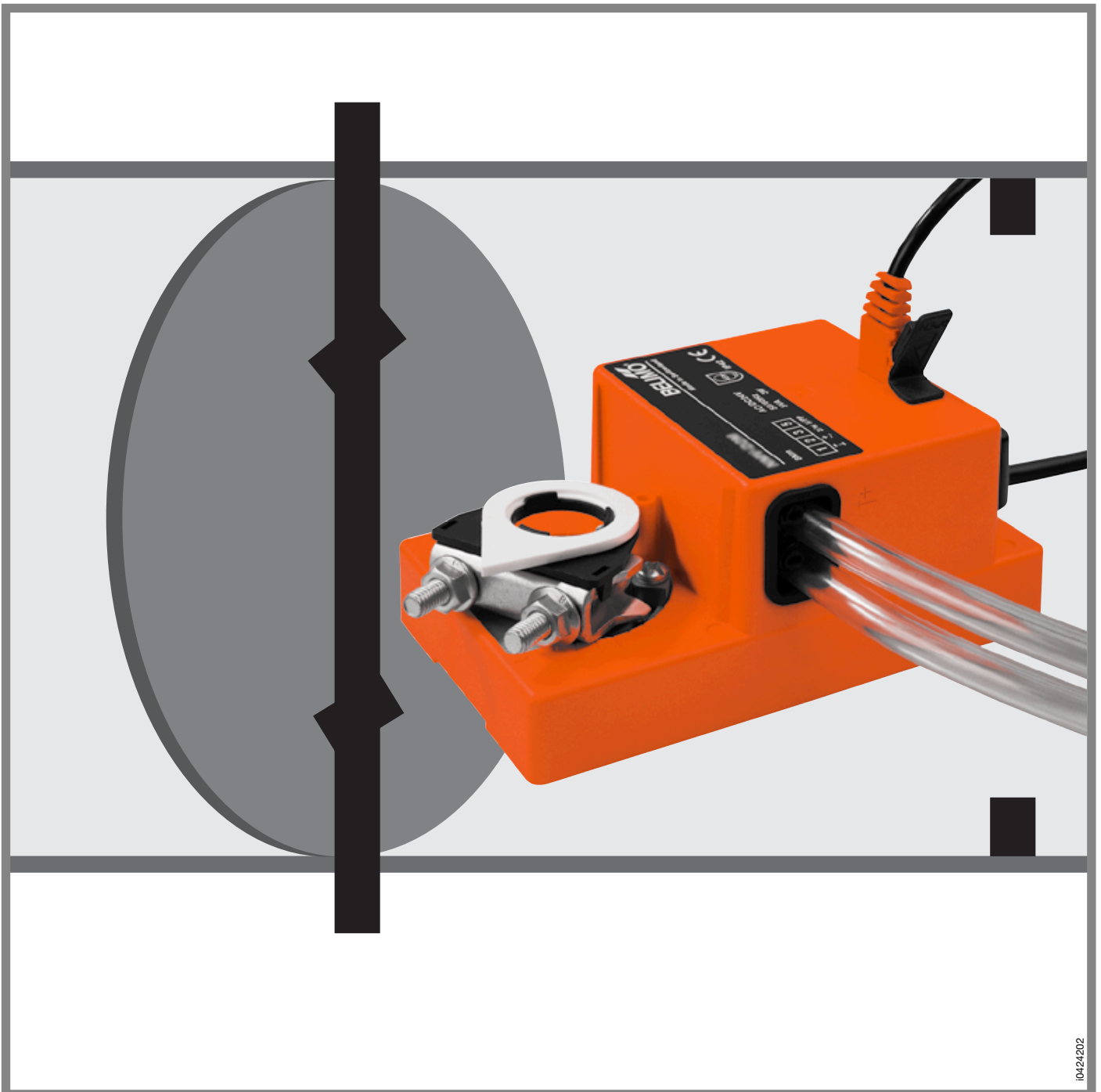


4. LMV-D2M.1

Product Information (Overview)
Air Volume Control

VAV
Compact



The product range for air volume control

VAV-Compact



LMV-D2M



NMV-D2M

— 5 NM

Sensor

— 8 NM

VAV controller

Actuators

Actuators with safety function

VAV-Universal



VFP-100
VFP-300
VFP-600



VRD2



VRP



VRP-STP



NM24-V



AM24-V



GM24-V



LF24-V



AF24-V

General accessories:
Positioner



SGF24



SGA24



SGE24

Room temperature
controller



CR24-B1
CR24-B2 / CR24-B2E
CR24-B3

Adjuster



ZEV
ZEV-Set

Accessories for the
LMV-D2M / NMV-D2M:



UK24LON
Interface for LONWORKS® applications



MFT-H
Parameterizing device



PC-Tool
Parameterizing and service software



ZKS-VAV
Cable set for the NMV-D2M

10425202



Pressure sensor, digital controller and 5 Nm damper actuator all in one, providing a VAV-Compact solution with a communications capability

Variable/Constant volumetric flow for Master-Slave or Parallel applications

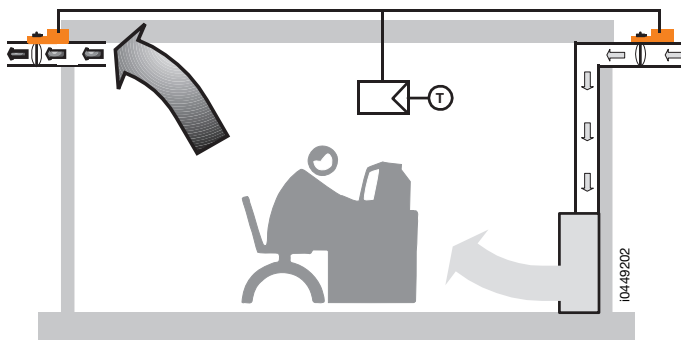
Classic control: DC 2...10 V / 0...10 V / adjustable voltage range

Bus control: For integrating into DDC control or LONWORKS® systems – with additional connection facility for active sensors or switches

Diagnostic socket for operating devices

p0118202

VAV application



t0449202

Application

The VAV-Compact LMV-D2M controller has PI control characteristics and is used for the pressure independent control of VAV air control units. Stepped-mode constant flow control e.g. switch or clock program. Variable flow with modulating reference variable based on, for example, temperature, occupancy, room thermostat, DDC or LONWORKS® system, allowing demand-related, energy-saving ventilation of individual rooms or zones of air-conditioning systems. Maintenance-free sensor technology, thoroughly proven in a great variety of previous applications, means that the controllers can offer total reliability and dependability in various climate conditions.

Variable volumetric flow: VAV

For variable-flow applications the operating range $\dot{V}_{MIN}.. \dot{V}_{MAX}$ can be subdivided by selecting any of the following operating modes:
DC 2...10 V / 0...10 V / Adjustable.

Constant volumetric flow: CAV

The following operating modes are available for constant-flow applications:
CLOSE / \dot{V}_{MIN} / \dot{V}_{MID} / \dot{V}_{MAX} / OPEN

Bus function: MP-Bus

Up to 8 Belimo MFT2 devices (VAV units/damper actuators/valves) can be connected together over the MP-Bus and linked into the following systems:

- LONWORKS® applications: All variables of Functional Profile 8110 are available in conjunction with the Belimo UK24LON Interface.
- DDC controllers with integrated MP-Bus protocol. Additionally, an active sensor (0...10 V), e.g. a temperature sensor or a switch, can be linked into a higher level DDC or LONWORKS® system via the MP-Bus.

Operating and service tools

- PC-Tool, MFT-H, ZEV – plugs into the LMV-D2M controller or the control cabinet
- PC-Tool or MFT-H – plugs into the UK24LON / DDC controller.

OEM factory settings

The LMV-D2M controller is mounted on the air control unit by the maker of the unit who then adjusts and tests it according to the requirements of the particular application involved.

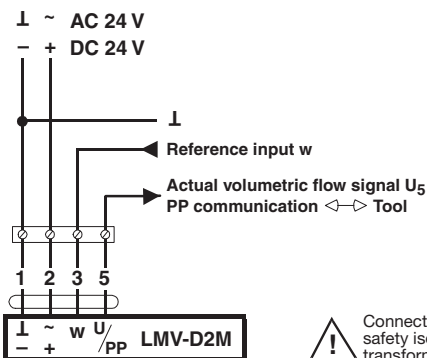
Installing and connecting up

Mounted on an air control unit by an OEM, the LMV-D2M controller is connected by means of a 1 m long cable.

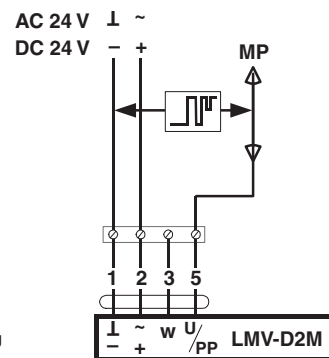
Wiring diagram

(Functional diagram refer to the NVM-D2M Product information)

Classic control



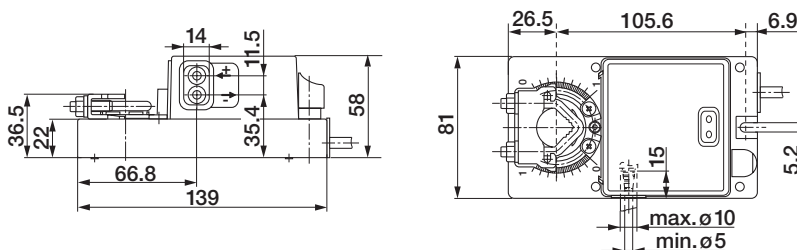
Bus control



Connect via safety isolating transformer

w1193205

Dimensions



d0098202

Important note:

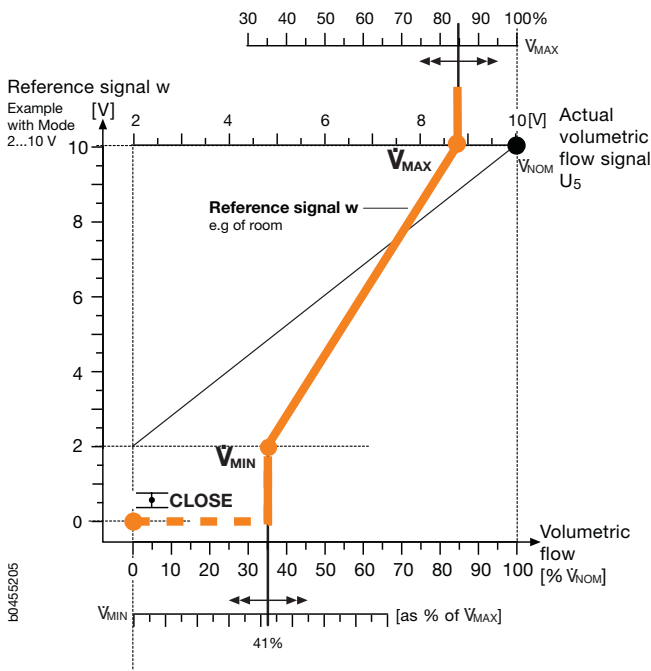
It is the manufacturer of the VAV unit (the OEM) who is responsible for the correct installation and adjustment of the LMV-D2M controller and the overall accuracy of the VAV unit. When replacement units are ordered they are parameterized by the OEM before they leave the factory according to the requirements of the system in which they are to be used. This means that LMV-D2M controllers can only be sold through OEM channels.

Technical data

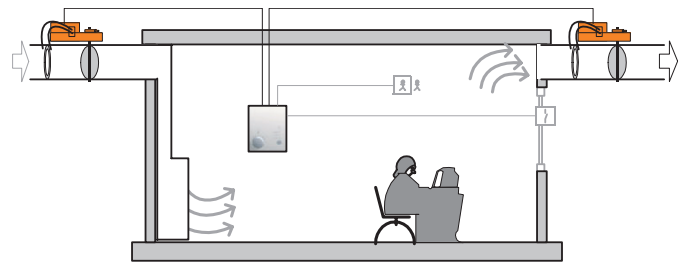
Function	Data
Power supply	
Nominal voltage	AC 24 V 50/60 Hz DC 24 V
Nominal voltage range	AC 19.2...28.8 V DC 21.6...28.8 V
For wire sizing	5 VA (I _{max} . 8.3 A @ 5 ms)
Power consumption	3 W
Differential-pressure sensor	
Operating pressure	2...~300 Pa (depends on OEM)
Operating pressure	max. 1000 Pa
Characterizing	linearized for specific differential-pressure air probe and OEMs
Mounting position	any, no zero setting needed
Operating medium (see «Materials»)	SUPPLY/ EXHAUST air for comfort applications and others with sensor-compatible media
Materials	PC+ABS to UL94-V0; stainless steel, DIN 1.4301 X10CrNiS1810; PP Santoprene
Measuring air conditions	0...+50°C / 5...95% rH, non-condensing
Applications VAV and CAV	
	– SUPPLY/ EXHAUST air control units in stand-alone mode / master-slave / parallel connection for rooms with positive / negative or neutral air pressure – Air mixing units
Operating volumetric-flow	
\dot{V}_{NOM}	depending on OEM and type of VAV unit
\dot{V}_{MAX}	30...100% of \dot{V}_{NOM}
\dot{V}_{MIN}	0...100% of \dot{V}_{MAX} (see NMV-D2M doc. p.8 «Creep flow suppression; Minimum setting limit»)
\dot{V}_{MID}	0...100% of ($\dot{V}_{MIN}... \dot{V}_{MAX}$)
Classic control	
Mode for reference value input w (Terminal 3)	– DC 2...10 V / (4...20 mA with ext. 500 Ω resistor) – DC 0...10 V / (0...20 mA with ext. 500 Ω resistor) – adjustable DC 0...30 V
Mode for actual volumetric flow U _s (Terminal 5)	– DC 2...10 V – DC 0...10 V – adjustable DC 0...10 V
Operating modes for CAV	CLOSE/ \dot{V}_{MIN} / \dot{V}_{MID} */ \dot{V}_{MAX} /OPEN* (*only with AC 24 V)
Bus control – MP-Bus function	
Addressing in bus mode	MP1...8 (classic control: PP)
LONWORKS®	with Belimo UK24LON Interface, 1...8 Belimo MFT2 devices (VAV / damper actuator / valve)
DDC controller	DDC controller with integrated MP interface Your Belimo representative will be glad to inform you about DDC solutions with MP-Bus)
Sensor links	active sensor with DC 0...10 V signal, e.g. temperature, humidity 2-point signal (contact rating 16 mA @ 24 V), e.g. switches, occupancy detector
Operation, Service	
Communication	PP/MP-Bus, max. DC 15 V, 1200 baud
Actuator	
Torque	brushless, non-blocking actuator with current reduction min. 5 Nm at nominal voltage
Direction of rotation	cw ↻ / ccw ↻
Angle of rotation	95°, with adjustable mechanical limiting
Adaption setting	acquisition of angle of rotation and adaption of control range
Manual disengagement – multiple function	push-button, auto-return without affecting functions manual control, start function test, trigger angle of rotation adaption
Position indication	mechanical with pointer
Spindle attachment	– spindle clamp, for round spindles 10...20 mm / square spindles 8...16 mm – form-fit, wide range of versions, e.g. 8 x 8 mm
Connecting cable	
	1 m long, 4 x 0,75 mm ²
Ambient conditions	
Non-operating temperature	0...+50°C, 5...95% rH, non-condensing –20...+80°C
Protection class and tests	
Protection class / EMC	III (extra low voltage) / CE conforming to 89/336/EU
Sound power level	max. 35 dB (A)
Maintenance	
Weight	maintenance-free 900 g

Refer to the NMV-D2M Product-Information for selecting systems and descriptions of functions and applications

Mode setting: 2...10 V



Roomtemperature controlled with CR24-B1



Function

Variable volumetric flow application with 2...10 V control, e.g. by Belimo room controller CR24-B1.

The air flow rate is regulated variably – within the preset range of volumetric flow rates from V_{MIN} and V_{MAX} – to the reference value issued by the room controller, positioner, etc.

The reference signal is normally based on room temperature. Occupancy control, energy hold off, etc. can be incorporated into the reference signal if necessary. It is very easy to produce combinations with operating step control with this operating mode, e.g. for shut-off operation. Application with Master-Slave or parallel control.

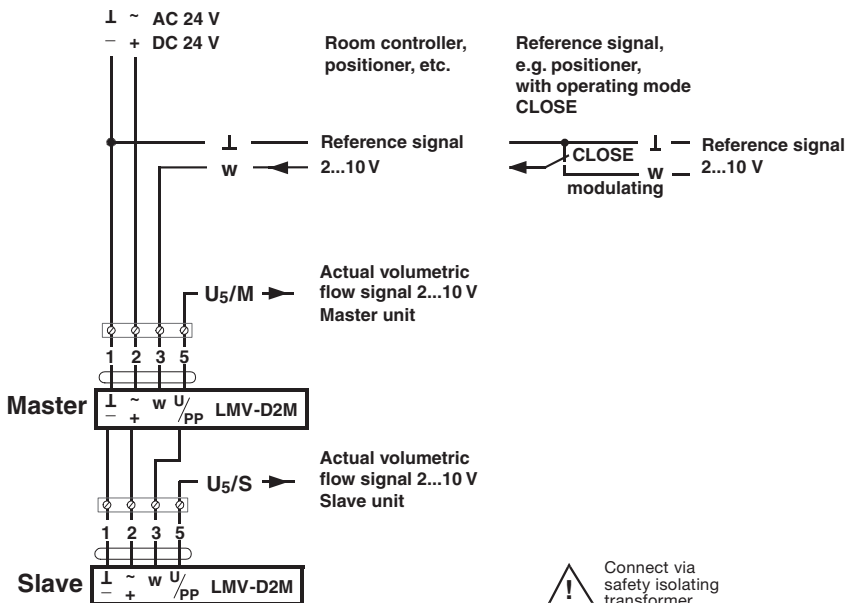
Application

A version of installation for economic operation with high comfort levels suitable for:

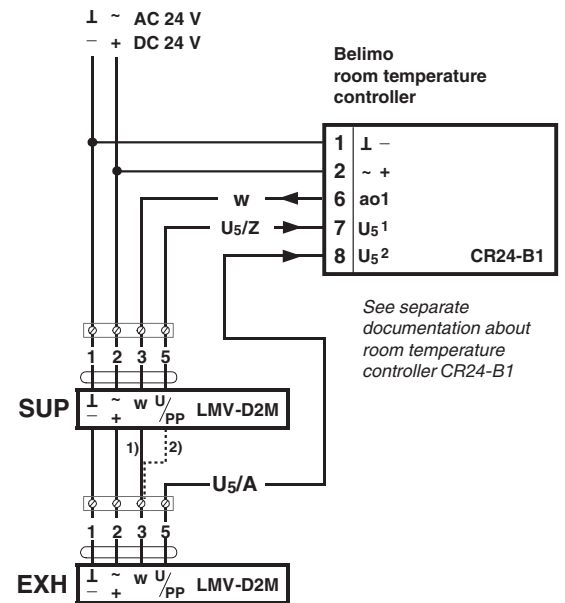
- conference rooms, offices
- presentation and counter rooms
- hotel rooms
- patient wards in hospitals.

Control

2...10 V control
in a Master-Slave circuit



Belimo CR24-B1 room temperature controller
in a parallel¹⁾ or Master-Slave²⁾ circuit



See separate documentation about room temperature controller CR24-B1



Air applications



Standard actuators and spring-return actuators for air control dampers in HVAC systems



Safety actuators for motorizing fire and smoke extraction dampers



VAV systems for individual room air control



Mixing actuators and motorized ball valves for HVAC water circuits



Globe valves and intelligent linear actuators – also for leading makes of valve

Innovation, Quality and Consultancy: A partnership for motorizing HVAC actuators

Contact the following for further information:

Belimo Headquarters

CH BELIMO Holding AG
Brunnenbachstrasse 1
8340 Hinwil, Switzerland
Tel. +41 (0)43 843 61 11
Fax +41 (0)43 843 62 68
info@belimo.ch
www.belimo.ch

Belimo Subsidiaries

AT/ BELIMO Automation
HR/ Handelsgesellschaft m.b.H.
HU/ Geiselbergstrasse 26-32
SI/ 1110 Wien, Austria
SK Tel. +43 (0)1 749 03 61-0
Fax +43 (0)1 749 03 61-99
info@belimo.at

AU BELIMO Actuators Pty. Ltd.
Unit 10, 266 Osborne Avenue
Clayton South, VIC 3169
Australia
Tel. +61 (0)3 9551 0201
Fax +61 (0)3 9551 0215
belimo@belimoactuators.com

CA BELIMO Aircontrols (CAN), Inc.
5716 Coopers Ave., Units 14&15
Mississauga, Ontario L4Z 2E8
Canada
Tel. +1 (1)905 712 31 18
Fax +1 (1)905 712 31 24
webmaster@belimo.com

CH BELIMO Automation AG
Sales Switzerland
Brunnenbachstrasse 1
8340 Hinwil, Switzerland
Tel. +41 (0)43 843 62 12
Fax +41 (0)43 843 62 66
info@belimo.ch
www.belimo.ch

DE BELIMO Stellantriebe
Vertriebs GmbH
Welfenstr. 27, Postfach 72 02 30
70599 Stuttgart, Germany
Tel. +49 (0)711 1 67 83-0
Fax +49 (0)711 1 67 83-73
info@belimo.de
www.belimo.de

ES BELIMO Ibérica
de Servomotores, S.A.
C/San Romualdo, 12-14
28037 Madrid, Spain
Tel. +34 91 304 11 11
Fax +34 91 327 25 39
info@belimo.es

FR BELIMO Servomoteurs
Z.A. de Courtry
33, Rue de la Régale
77181 Courtry, France
Tel. +33 (0)1 64 72 83 70
Fax +33 (0)1 64 72 94 09
mail@belimo.fr

GB BELIMO Automation UK Limited
Shepperton Business Park
Govett Avenue, Shepperton
Middlesex TW17 8BA
Great Britain
Tel. +44 (0)1932 260460
Fax +44 (0)1932 269222
belimo@belimo.co.uk

HK BELIMO Actuators Ltd.
Room 208, 2/F
New Commerce Centre
19 On Sum Street, Shatin, N.T.
Hong Kong
Tel. +852 26 87 17 16
Fax +852 26 87 17 95
info@belimo.com.hk

PL BELIMO Siłowniki S.A.
ul. Zagadki 21
02-227 Warszawa, Poland
Tel. +48 (0)22 886 53 05
Fax +48 (0)22 886 53 08
info@belimo.pl

SG BELIMO Actuators Pte Ltd
2, Jurong East Street 21
#04-31F IMM Building
Singapore 609601
Tel. +65 6564 9828
Fax +65 6564 9038
info@belimo.com.sg

US BELIMO Aircontrols (USA), Inc.
43 Old Ridgebury Road
P.O. Box 2928
Danbury, CT 06810 USA
Tel. +1 (1)203 791 99 15
Fax +1 (1)203 792 29 67
webmaster@belimo.com
www.belimo.com

Belimo Representatives and Agencies

AE BELIMO Trading
Middle East Office
P.O. Box 73885
Dubai, U.A.E.
Tel. +971 (0)4 295 9670
Fax +971 (0)4 295 9680
belimome@emirates.net.ae

BG BELIMO Bulgaria Ltd.
j.k. Lagera, 3 Smolyanska Str.
bl. 56, entr. B, ap. 50
1612 Sofia, Bulgaria
Tel. +3592 952 3470/1
Fax +3592 545 995
belimo@mbox.contact.bg

CN BELIMO Actuators Ltd.
Room 1305, Financial Square
No. 333 Jilijiang Road
200001 Shanghai, China
Tel. +86 21 6360 8980
Fax +86 21 6360 8981
shanghai@belimo.ch

CN BELIMO Beijing
Rm 605, Beijing Hai Chang
Edifice, 44, Liang Ma Qiao Road
Chao Yang District
100016 Beijing, China
Tel. +86 10 6462 1382
Fax +86 10 6462 1383
beijing@belimo.ch

CZ BELIMO CZ (Ing. Ivar Mentzl)
Charkovská 16
10100 Praha 10, Czech Republic
Tel. +420 (0)2 717 40 311
Fax +420 (0)2 717 43 057
info@belimo.cz

DK BELIMO A/S
Thomas Helstedsvvej 7A
8660 Skanderborg, Denmark
Tel. +45 86 52 44 00
Fax +45 86 52 44 88
info@belimo.dk

EE BELIMO Balticum AS
Türi 10 d
11313 Tallinn, Estonia
Tel. +372 6 140 811
Fax +372 6 140 812
info@belimo.ee

FI Oy Suomen BELIMO Ab
Insinöörinkatu 2
00810 Helsinki, Finland
Tel. +358 (0)424 651 1
Fax +358 (0)424 651 250
belimo@belimo.fi

GR/ CY BELIMO Air Controls
29, Tagm, Plessa, Kallithea
GR 17674 Athens, Greece
Tel. +30 2 10 94 00 766
Fax +30 2 10 94 00 767
belimogr@tee.gr

IE Safegard Systems Ltd.
Systems House, Unit 34
Southern Cross Business Park
Bray, Co Wicklow, Ireland
Tel. +353 (0)1 2761600
Fax +353 (0)1 2761611
info@safegard.ie

IL Shemer Representations
P.O. Box 296
56101 Yehud, Israel
Tel. +972 3 536 51 67
Fax +972 3 536 05 81
shemer@shemerep.co.il

IN BELIMO Vitek Air Controls
C-114 Lancelot, First Floor
S.V. Road, Borivali (West)
Mumbai 400 092, India
Tel. +91 22 5695 9439
Fax +91 22 2807 5866
bvac@bom2.vsnl.net.in

IS Hitataekni ehf.
Langholtsvegi 109
104 Reykjavik, Iceland
Tel. +354 5 86 60 70
Fax +354 5 86 60 71
fridmar@hitataekni.is

IT BELIMO Servomotori S.r.l.
Via Stezzano, 5
24050 Zanica BG, Italy
Tel. +39 035 67 26 82
Fax +39 035 67 02 00
info@belimo.it

KR HANMO Corporation
3rd Floor, Yeosam Bldg. 648-23
Gangnam-Ku, Seoul, Korea
Tel. +82 2 3453 8225
Fax +82 2 3453 8228

LB Energy Center (EC)
Hamra, Leon Street, Shatilla,
Bldg. 4th Floor,
P.O. Box 113-6955
Beirut, Lebanon
Tel. +961 (0)1 35 38 23
Fax +961 (0)1 35 38 23
belimome@emirates.net.ae

NL/ BE/ LU BELIMO Servomotoren BV
BENELUX
Postbus 300, 8160 AH Epe
Radeweg 25, 8171 MD Vaassen
Netherlands
Tel. +31 5 78 57 68 36
Fax +31 5 78 57 69 15
info@belimo.nl

NO BELIMO Spjeldmotorer A/S
Konowgate 5
0192 Oslo 1, Norway
Tel. +47 22 70 71 71
Fax +47 22 70 71 70
info@belimo.no

PH BELIMO Actuators Philippines
Rm.# 507 Anita Build., 5th Floor
1300 Quezon Ave., Cor. South Ave.
1103 Quezon City, Philippines
Tel. +63 (2)373 5440
Fax +63 (2)373 5424
philippines@belimo.com.hk

RO BELIMO Automatizări SRL
Cameleii nr 5, corp. B
10851, sector 1, Bucuresti,
Romania
Tel. +40 21 212 6993
Fax +40 21 212 6995
office@belimo.ro

RU BELIMO Servomotors
Russia Ltd.
Nizhnyaya Pervomaiskaya,
46 Bld. 1, Office 303
105203 Moscow, Russia
Tel. +7 095 965 74 64
Fax +7 095 965 74 73
info@belimo.ru

SE BELIMO AB
Hägerstens Allé 88
129 37 Hägersten, Sweden
Tel. +46 (0)8 464 07 00
Fax +46 (0)8 97 85 75
info@belimo.se

SY Philippe A. Jabran
P.O. Box 7791
Damascus, Syria
Tel. +963 11 231 6586
Fax +963 11 231 4052
belimome@emirates.net.ae

TR BELIMO Otomasyon A.S.
Keyap Sitesi No. 20
TR-34775 Y. Dudullu
Istanbul, Turkey
Tel. +90 (0)216 527 98 70
Fax +90 (0)216 527 98 71
info@belimo.com.tr

TW Chianseng Enterprise Co. Ltd.
2F, No. 21, Tong Fong Street
Taipei, Taiwan
Tel. +886 2 27 08 77 80
Fax +886 2 27 02 90 90
taiwan@belimo.com.hk

UA BELIMO Ukraine S.A.R.
34-A, Ul. Yurkovskaya, Appt.N°2
254080 Kiev, Ukraine
Tel./Fax +380 44 463 7586
comaster@belimo.kiev.ua

ZA BELIMO Actuators Southern Africa cc
P.O. Box 2483
Alberton 1450, South Africa
Tel. +27 (0)11 868 5681
Fax +27 (0)11 900 2673
belimo@mega.co.za