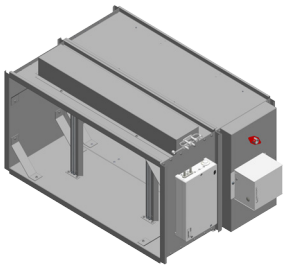
DCV-RC – Room climate control unit

RCX Version A01

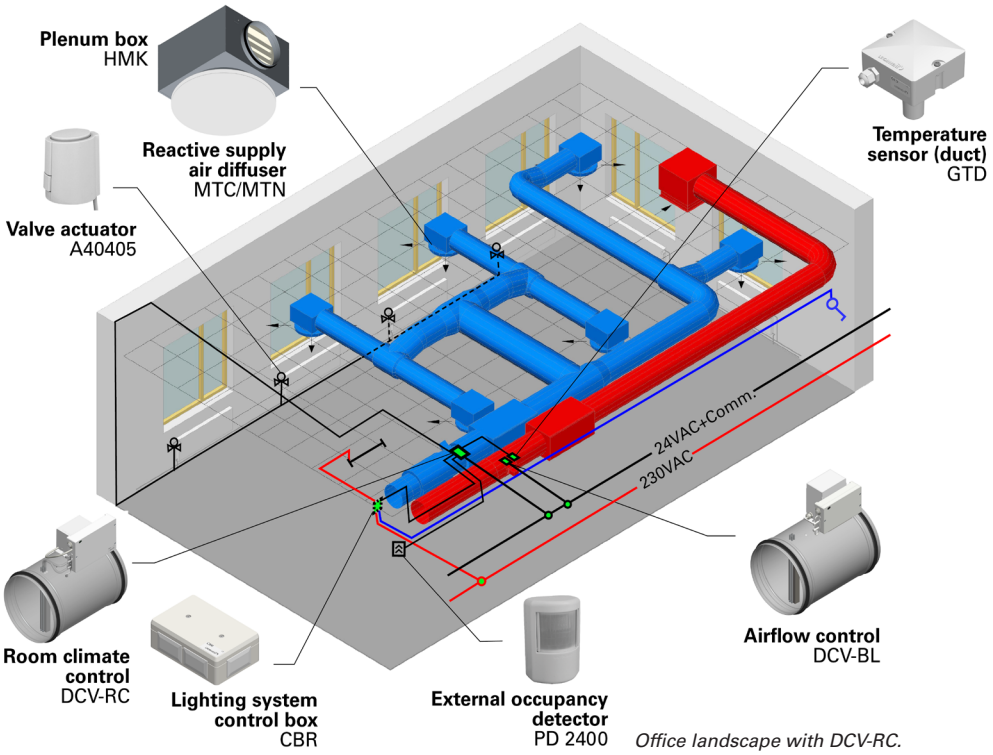
DCV-RC Circular - Controller RCX and damper actuator mounted on a circular damper with measuring flange.



DCV-RC Rectangular - Controller RCX and damper actuator mounted on a rectangular damper with a connecting measuring flange.

DCV-RC

Room climate control unit



Office landscape with DCV-RC.

Product description

DCV-RC – Room climate control unit

RCX Version A01

Contents Page

Products included (circular or rectangular design)

The products below are included in DCV-RC. The damper and measuring flange included are for either circular or rectangular duct.

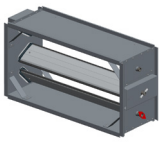
Room climate controller RCX
- Internal flow sensor
- Duct temperature sensor
- CAN connection
- Inputs and outputs for equipment/functions
- Pre-mounted in circular design

Controller RCX

Circular damper with measuring flange SPMF
- Measuring device with double measurement points
- Throttle damper with full damper blade
- Pre-mounted with controller RCX and damper actuator

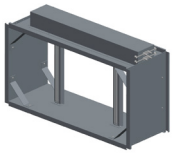
Damper SPMF

Rectangular damper JSPM
- Louvre damper
- Supplied with separate controller and damper actuator



Damper JSPM

Rectangular measuring flange SMRD
- Measuring device with double measurement points
- Supplied separately



Measuring flange SMRD

Damper actuator DA4 or DA8
- Supplied pre-mounted in circular design (DA4)
- Supplied separately with rectangular design (DA4 or DA8 depending on damper size)

Damper actuator DA4 (DA8)

Product description

DCV-RC – Room climate control unit

RCX Version A01

Introduction DCV-RC

DCV-RC, which is included in Lindinvent's series of smart dampers and measuring units, is used for on demand climate control of large rooms where supply air is distributed with reactive or passive air diffusers.

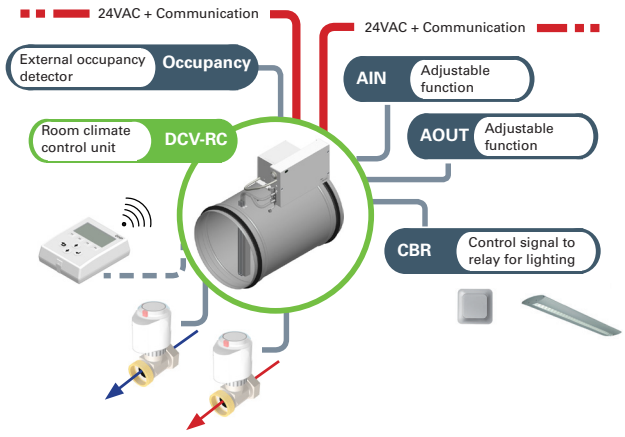
DCV-RC circular (Ø125-500) is supplied factory-assembled and calibrated. For other sizes, calibration on site is needed and the damper actuator and controller are supplied separately. Models are included in the MagiCAD database.

Function

- A duct-mounted active control of airflow to a number of reactive or passive supply air diffusers; see functional chart on page 2.
- Can use an occupancy detector to activate occupancy airflow and lighting control. For detection radius see the product description for PD-2400 with details on coverage angles.
- Can control additional cooling and heating in sequence.
- Duct temperature sensor included.
- Connections for a number of external sensors.
- Can connect and manage lighting by creating lighting zones.
- Can be connected via node ID to a communication loop (CAN) for access to and communication with other concurrent nodes or systems via LINDINTELL or Gateway NCE with ModbusTCP/RTU.
- The controller has a great number of parameters that can be read and controlled from LINDINTELL/ LINDINSPECT via CAN.

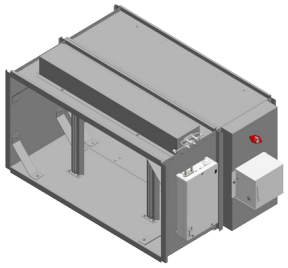
Connections for input and output signals

Many types of equipment/functions can be connected to the controller. For example, a fire signal can be connected and a buzzer alarm provided via relay. If no exchange to a superior system is possible via Modbus, a number of functions can instead be defined for the controller's inputs and outputs.



Connection diagram DCV-RC Circular. The controller is connected to a voltage feed and communication loop via Lindinvent's standard cable with two conductors for voltage feed and two twisted-pair conductors for communication.

DCV-RC Circular - Controller RCX and damper actuator mounted on a circular damper with measuring flange.



DCV-RC Rectangular - Controller RCX and damper actuator mounted on a rectangular damper with a connecting measuring flange.

User interface

- Server with LINDINTELL/LINDINSPECT via CAN.
- Direct login on the controller via DHP hand unit (IR or wired communication)
- Selected values are available via wall panel DRP (Wired communication via CAN)

LINDINTELL/LINDINSPECT

LINDINTELL is the software package that is installed on a central server. The software coordinates all optimisation and monitoring functions in Lindinvent's system for climate control and protective ventilation. LINDINTELL has functions for optimisation, oversteering and free programming.

LINDINSPECT is a Web interface that has been developed to be used with LINDINTELL.

Control and alarm

Systems with LINDINTELL/LINDINSPECT can log flows continually and set an alarm flag in the event of deviations.

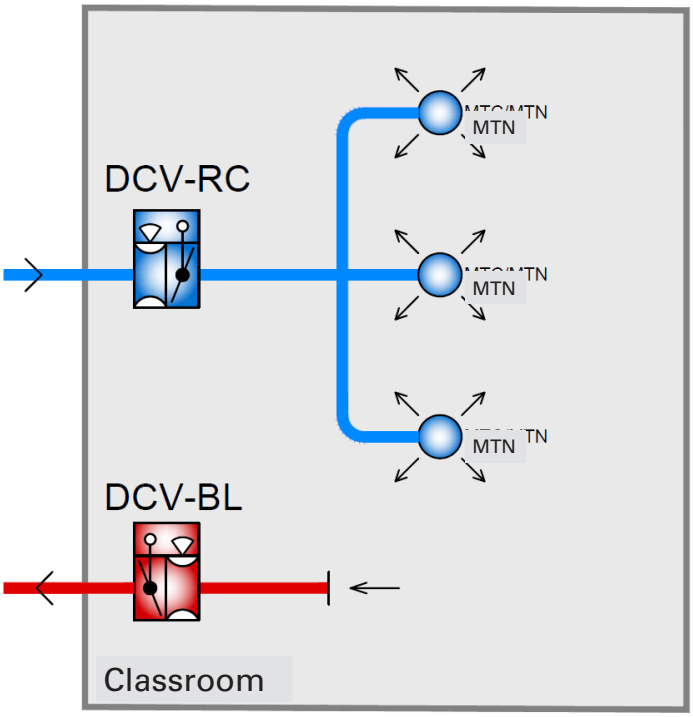
Simplified start-up

DCV-RC is supplied factory calibrated. Simplified start-up is possible with the circular design by stating duct diameter. DCV-RC in rectangular design requires airflow calibration on site.

DCV-RC – Room climate control unit

RCX Version A01

Functional chart for climate control with DCV-RC and DCV-BL

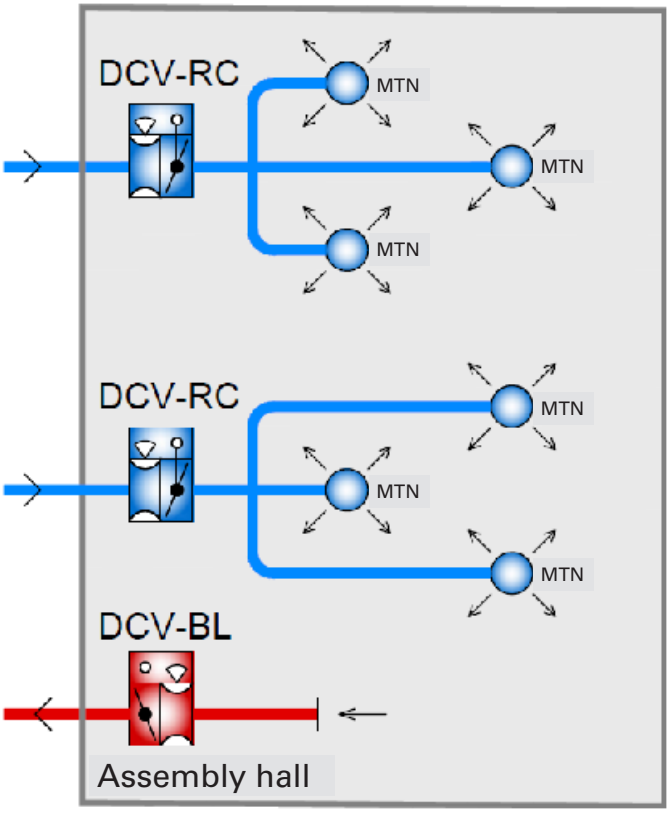


Climate control via DCV-RC and reactive supply air diffusers

- Supply air and duct temperature measured by DCV-RC and its internal airflow sensor.
- External sensors for occupancy, room temperature and CO_2 can be connected to DCV-RC.
- The demand-controlled total airflow is distributed in the premises via reactive supply air diffusers (MTN or MTC).
- DCV-RC can also control heating and cooling vents in sequence.

Flow balancing

- DCV-BL operated for airflow balancing.
- DCV-RC and DCV-BL communicate via the communication loop (CAN). DCV-BL balances airflow according to any preset offset.



Premises served by several supply air ducts

- Each supply air duct is equipped with its own DCV-RC.
- Airflow and duct temperature are measured by each DCV-RC.
- The controllers control individually. Actual control values are obtained either via separate sensors or via sensors that are connected to one of the DCV-RC controllers.

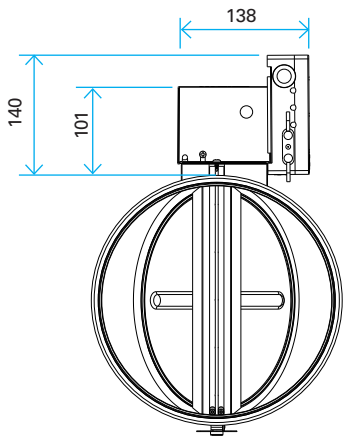
Flow balancing

- DCV-BL operated for airflow balancing.
- DCV-RC and DCV-BL communicate via the communication loop (CAN).
- DCV-BL totals, using CAN-communication, all supply air in the flow zone.
- DCV-BL balances air flow to meet the total supply air adjusted for any preset offset. A positive or negative offset may be added to the air flow.

DCV-RC – Room climate control unit

RCX Version A01

Dimensions DCV-RC



Dimensions to be considered when installing DCV-RC.

Ordering format

Circular Ø125-500
Room climate control unit, Lindinvent AB,
type **DCV-RC-[Damper size][Material]-[Colour]**

Damper size = 125, 160, 200, 250, 315, 400, 500
Material = Galvanised (G), Epoxy lacquered (Epoxy lacquered; RAL9003; Gloss 85), Powder coated (P); Omitted material specification = Galvanised (G)
Colour = RAL9003; Glosslevel30 (Standard); Colour code is indicated for material P.

Example:
DCV-RC-250G (Circular DCV-RC in galvanised style)
DCV-RC-250P-RAL9003 (Power coated in colour RAL9003)

Circular connection Ø630
Room climate control unit, Lindinvent AB,
type **DCV-RC-630(700x700)[Material]**

Material = Galvanised (G)

Example: DCV-RC-630(700x700)G
DCV-RC 630 supplied as a construction kit. The rectangular damper JSPM 700x700 with circular connection 630, a circular measuring flange with diameter 630, controller RCX and damper actuator are supplied individually to be assembled on site.

Rectangular
Room climate control unit, Lindinvent AB,
type **DCV-RC- [WxH] [Material]**

Size: WxH = 200x200 -> 1600x1000 mm
Width (W): 200 to 1000 mm in intervals of 100, then in intervals of 200 mm.
Height(H): 200 to 800 mm in intervals of 100, then in intervals of 200 mm.
Contact Lindinvent where differing dimensions are required.
Material = G (Galvanised)

Example: DCV-RC-600x300G
Rectangular DCV-RC is supplied as a construction kit where damper JSPM, measuring flange SMRD, controller RCX and damper actuator are supplied individually to be assembled on site.

Lindinvent's system for climate control and protective ventilation is based on a server solution with LINDINTELL system software. LINDINSPECT is the web interface that has been developed to be used with LINDINTELL. RCX(DCV-RC), like other connected nodes, can be monitored and administered via LINDINSPECT.

Accessories

Examples of products that may be used in installations together with DCV-RC. Accessories are ordered separately. For technical specifications, see the respective product descriptions.

Extract air balancing
- Airflow control unit DCV-BL

User interface
- Handheld user panel DHP
- Room panel with reference value adjuster DRP

Other sensors
- Wall mounted temperature and CO_2 sensor GTQV
- Occupancy detector PD-2400
- Duct mounted temperature and CO_2 sensor, GTQD

Control boxes
- Lighting system control box CBR
- Electric radiator control box CBT
- Fan coil unit control box CBFS/E

Valve actuator
- A40405 (24VAC, NC),
- A41405 (24VAC, NO, On/OFF)
- APR40405 (0-10V, NC)

Lighting
- Relay box CBR

Lighting control unit SBD for DALI

Additional product documentation DCV-RC

Table 1: Additional documents for DCV-RC can be obtained via the product's website under Products at www.lindinvent.se

Document	Available	Not available	Comments
Installation Instruction	●		Combined installation instruction for DCV-RC and room climate controller RCX (Assembly + connection).
Start-up instruction	●		Simplified start-up For the complete set of settings, see the start-up instruction for room climate controller RCX.
Maintenance instruction		●	Regarded as maintenance-free. For cleaning and control measurement of measuring flange, see the maintenance instruction for SPMF .
External connection diagram	●		External connection diagram for RCX.
Environmental product declaration	●		Assessed by Byggvarubedömningen.
User information		●	Not applicable.
Modbus list	●		Room climate controller RCX.
AMA text	●		

DCV-RC – Room climate control unit

RCX Version A01

Introduction RCX

Room climate controller RCX is factory calibrated and is included in room climate control unit DCV-RC. The controller is intended for demand-controlled climate control of large rooms where supply air is distributed with reactive or passive diffusers.

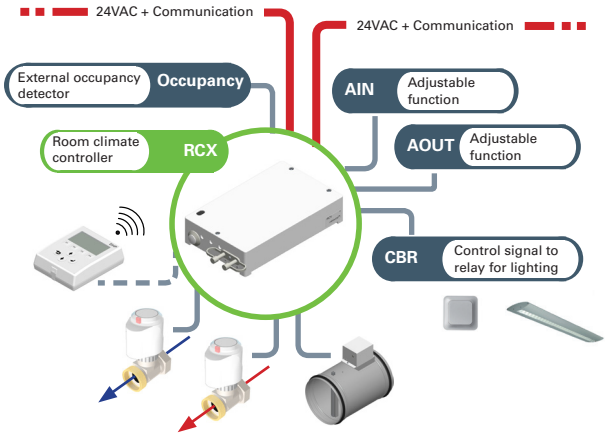
Room climate controller RCX.

Function

- Duct-mounted active control of air flow to a number of reactive or passive supply air diffusers.
- With the aid of occupancy detectors, can activate occupancy flow and lighting. For range and detection fields, see product description for occupancy detector PD-2400.
- Can adjust additional cooling and heating in sequence.
- Duct temperature sensor included.
- Connections for a number of external sensors.
- Can connect lighting to motion-controlled lighting zones.
- Can be connected via node ID to a communication loop (CAN) for access to and communication with other concurrent nodes or systems via LINDINTELL or Gateway NCE with Modbus TCP/RTU.
- The controller has a great number of parameters that can be read and controlled from LINDINTELL/LINDINSPECT via CAN.

Connections for input and output signals

Many types of equipment/functions can be connected to the controller. If exchange to a superior system is desired but is not possible via Modbus, a number of functions can instead be defined for the controller's inputs and outputs.



Connection diagram RCX. The controller is connected to a voltage feed and communication loop via Lindinvent's standard cable with two conductors for voltage feed and two twisted-pair conductors for communication. The same cable is used for connection of a number of other accessories.

User interface

- Communication via server with LINDINTELL/LINDINSPECT via CAN.
- IR communication directly with controller or multi sensor is via hand unit DHP.
- Wired communication via hand unit DHP.

LINDINTELL/LINDINSPECT

LINDINTELL is the software package that is installed on a central server and coordinates all optimisation and monitoring functions in Lindinvent's system designs for climate control and protective ventilation. LINDINTELL has, among other things, functions for optimisation, oversteering and free programming.

LINDINSPECT is a Web interface that has been developed to be used with LINDINTELL.

Control and alarm

Systems with LINDINTELL/LINDINSPECT can log values continually and set an alarm flag in the event of any deviations.

Simplified start-up

RCX is supplied factory calibrated. Simplified start-up is possible by stating duct diameter or K factor. It is not normally necessary to perform flow calibration on site.

DCV-RC – Room climate control unit

RCX Version A01

Technical specifications RCX

General

Dimensions (mm)
200 x 125 x 45 (LxWxH)

Material
Polystyrene encapsulation

Net weight
0.4 kg

Paint colour
RAL 9003

IP classification
Encapsulation complies with IP53

Temperature limits
Operation: 0°C to 40°C; <85% RF
Storage: -20°C to 50°C; <90% RF

Electrical system

Supply voltage
24 VAC

Capacity
1.5 VA

CE marking
Complies with EMC and the Low Voltage Directive

Controlling the air flow

Airflow sensor
RCX is equipped with a flow sensor for measuring supply air flow.

Range
Recommended range: 0.5–6.0 m/s
Maximum range: 0.2 - 7.0 m/s

Tolerance
±5 % or minimum ± x l/s (x = the duct area in dm^2)

Performance
Speed: Change regulated within 4 s (95% within 3 s)

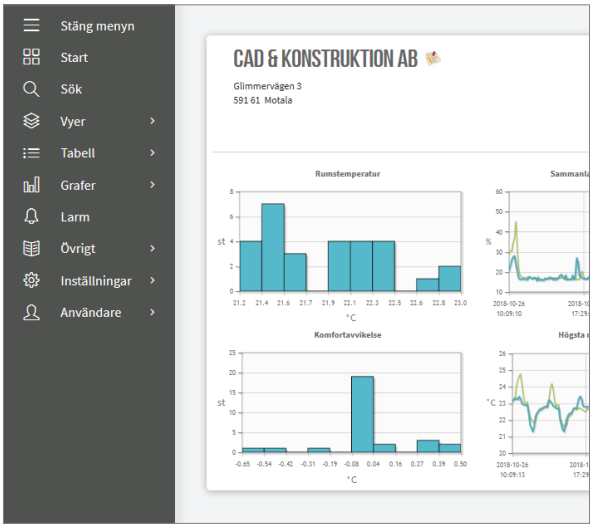
Duct temperature measurement

Temperature sensor
Sensor with thermistor of NTC type.

Accuracy
Temperature ± 0.5 K

Connections

- 2 x for 24 VAC + Communication loop (CAN)
- 1 x connection for 0-10 VDC analogue out for damper actuator
- 1 x 0-10 VDC analogue in for feedback from damper actuator
- 1 x terminal block for occupancy sensor 24VAC/13VD-C/5VDC
- 1 x terminal block for lighting system control
- 1 x terminal block for the normally pre-mounted duct temperature sensor
- 1 x for two general 0-10 VDC (AIN2 and AIN3)
- 1 x for two general 0-10 VDC (AOUT2 and AOUT3)
- 1 x for DIN (G0, DIN1)
- 2 x for valve actuators (Triac 1 and Triac 2)
- IR transciever ”IRDA”
- RJ45 to wired communication via digital room panel DHP
- 1 x for generic voltage feed (G0, +5V, +13V)



Detail from the start page in LINDINSPECT. LINDINSPECT is a web interface where RCX(DCV-RC) and other connected nodes can be visualized and administered.

Room climate control unit DCV-RC is included in the series of smart dampers. The unit is an assembly in which room climate controller RCX is included.

Accessories

The following examples of accessories must be ordered separately:

External occupancy detector
See XPIR or PD-2400.

Flow balancing
Flow control DCV-BL, which is included in Lindinvent's series of smart dampers and measuring units, is used for balancing supply air.

Lighting system control
Lighting can be controlled via CBR lighting system control box using occupancy detectors and/or manually via push buttons. See Lighting control unit SBD for DALI.

Radiator control
A valve actuator for radiators can be connected for adjustment of heating and cooling in sequence. Parameters can be set for achieving cold intrusion protection.

Electric radiator control
Electric radiators and heaters can be controlled via an electric radiator control box.

Fan cooling
Additional cooling can be adjusted via a fan coil unit control box.

Carbon dioxide (CO_2) sensors
Carbon dioxide sensors can be connected to RCX control air quality. The sensors are available for both wall and duct mounting.

Room panel with reference value adjuster
By fitting and connecting digital room panel DRP, display and changing of selected values can be performed in the premises.

Wireless communication via IR link
DHP is a handheld user panel designed for easy and flexible access to Lindinvent's controllers and control units for climate control. The unit is temporarily connected to RCX via IR link or FTP cable.

Additional product documentation RCX

Table 1: Additional documentation for RCX can be obtained via links on the product's website under Products at www.lindinvent.se

Document	Available	Not available	Comments
Installation Instruction	●		Combined installation instruction with DCV-RC (Assembly + connection).
Start-up instruction	●		Describes the complete menu structure with settings for room climate controller RCX.
Maintenance instruction		●	Regarded as maintenance-free.
External connection diagram	●		External connection diagram for RCX.
Environmental product declaration	●		Assessed by Byggvarubedömningen.
User information		●	Not applicable.
Modbus list	●		Room climate controller RCX.
AMA text	●		

DCV-RC – Room climate control unit

RCX Version A01

Introduction SPMF

SPMF is a throttle damper with a full damper blade equipped with a measuring flange with double measurement points. The damper requires low torque, which makes control quick and accurate. The actuator seat is adapted for Lindinvent's damper actuator. SPMF is included as a damper unit in the circular design of control unit DCV-RC, DCV-LC, DCV-BL and DCV-CF.

SPMF – A Circular damper with measuring flange.

Function

SPMF is used together with Lindinvent's flow sensor and damper motor, which allows regulation of airflow at low air speeds. In combination with a measuring flange, see SMED or SMID, damper SPM can be used as an alternative to SPMF.

Ordering information

Circular damper with measuring flange, Lindinvent AB, [FC-]SPMF-[Size][Material]-[Colour]
Size: 125, 160, 200, 250, 315, 400, 500
Material: G (Galvanised), E (Epoxy lacquered; RAL9003; Gloss 85), P (Powder coated); Omitted material specification = G.
Colour: Stated only for material code P. RAL9003; Gloss level 30 is standard.

Example: SPMF-250P-RAL9003
SPMF can also be supplied in stainless steel, SS 23 33 or SS 23 43; state material in plain text when ordering.

To be placed after a straight duct section

For accurate measurement data: SPMF should be positioned in the correct direction and directly after a disturbance-free straight duct section corresponding to a length of 3.5 times the duct diameter.

Directly after SPMF no minimum distance to a subsequent bend or other disturbance is required.

When SPMF is placed after a silencer with a different cross-sectional area (smaller inner diameter, center body or center baffle), SPMF can be placed directly after a straight duct section, corresponding to 2.0 times the duct diameter where the length of the silencer not is included.

Technical specifications

General

Material
The dampers are manufactured in galvanised steel plate, but can be supplied in other materials and surface treatments; see material under *Ordering information* above. Duct seal in EPDM rubber and damper blade seal in silicon rubber.

Size and classification
Sizes: Ø125 – Ø500 mm according to EN 1506:2007
SPMF: Tightness class 3 according to VVS AMA.
SPMF: Pressure class A according to VVS AMA.
FC-SPMF: Tightness class 1 according to VVS AMA.

Flow measuring
Recommended measuring range: 0.5 – 6.0 m/s
Maximum range: 0.2 – 7.0 m/s
Measurement accuracy*: ± 5% or minimum ± x l/s
(x = duct area in dm^2) *Applies together with Lindinvent's controller and damper actuator.

Dimensions

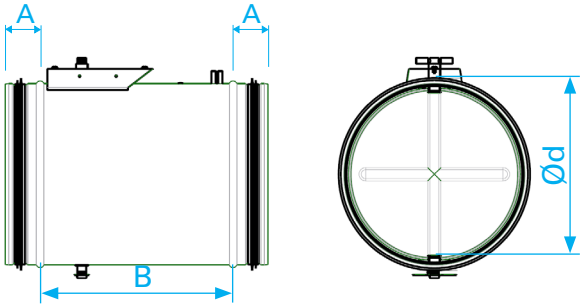


Diagram 1: Airflow intervals for SPMF-125 to SPMF-500

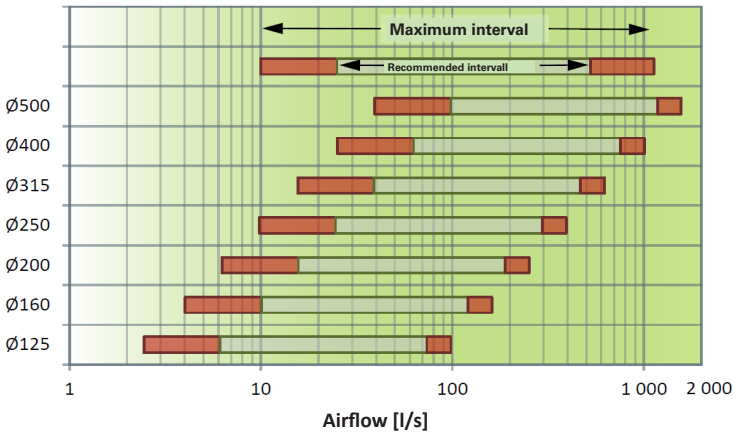


Table 1: Dimensions, weight and K-factor

Ød	A	B	Weight/ kg	K-factor (c)
125	38	150	1	9.5
160	38	180	1.5	15.4
200	38	200	2	23.9
250	60	240	2.5	36.9
315	60	290	4.5	57.8
400	78	350	6	91.7
500	78	410	9.6	141.0

Flow calculation: $q = c \times \sqrt{\Delta p}$ [l/s]

DCV-RC – Room climate control unit

RCX Version A01

Diagram 2 to 5 below: Total A-weighted sound power levels, dB (A) for SPMF-125 to SPMF-250.

Noise generation

$L_W = L_{WA} + K_0$

L_W = Sound power level [dB]
L_{WA} = Total A-weighted sound power level [dB (A)] is read from the sound level diagram for each SPMF dimension.
K_0 = Correction factor for actual frequency band is read from the table under each SPMF sound diagram.

Table 2: Tolerance sound power level L_W [dB]

Hz	63	125	250	500	1k	2k	4k	8k
± dB	6	4	3	3	3	3	3	3

Diagram 2: Sound diagram SPMF-125

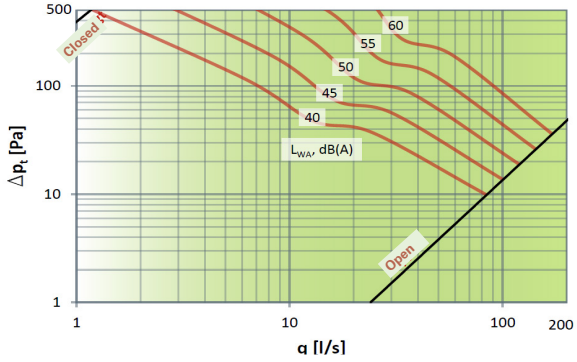


Table 3: Correction factor K_0 [SPMF-125]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	13	13	10	3	-6	-10	-17	-23

Diagram 3: Sound diagram SPMF-160

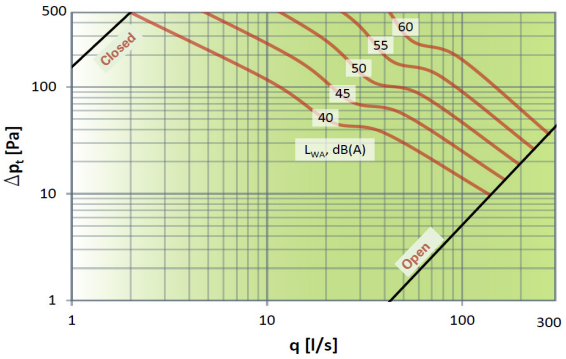


Table 4: Correction factor K_0 [SPMF-160]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	12	9	8	0	-4	-9	-15	-21

Diagram 4: Sound diagram SPMF-200

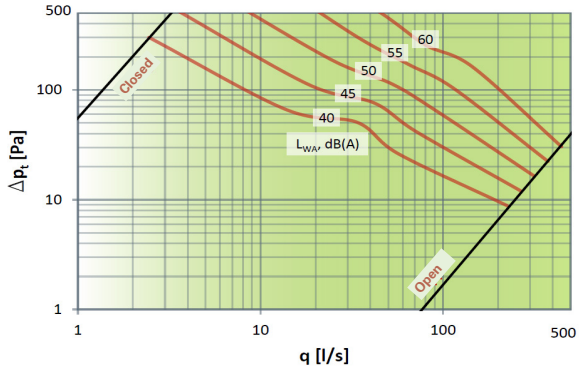


Table 5: Correction factor K_0 [SPMF-200]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	14	8	6	0	-4	-9	-15	-21

Diagram 5: Sound diagram SPMF-250

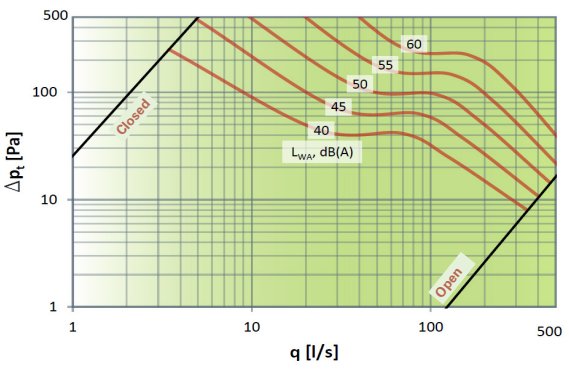


Table 6: Correction factor K_0 [SPMF-250]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	15	9	7	0	-5	-10	-16	-24

DCV-RC – Room climate control unit

RCX Version A01

Diagram 6 to 8 below: Total A-weighted sound power levels, dB (A) for SPMF-315 to SPMF-500.

Noise generation

$L_W = L_{WA} + K_0$

L_W = Sound power level [dB]
L_{WA} = Total A-weighted sound power level [dB (A)] is read from the sound level diagram for each SPMF dimension.
K_0 = Correction factor for actual frequency band is read from the table under each SPMF sound diagram.

Table 2: Tolerance sound power level L_W [dB]

Hz	63	125	250	500	1k	2k	4k	8k
± dB	6	4	3	3	3	3	3	3

Diagram 6: Sound diagram SPMF-315

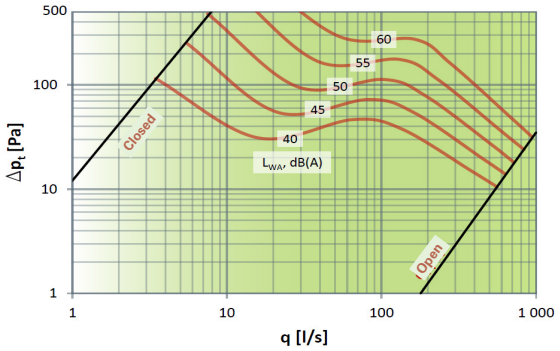


Table 7: Correction factor K_0 [SPMF-315]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	15	8	5	1	-5	-11	-16	-24

Diagram 7: Sound diagram SPMF-400

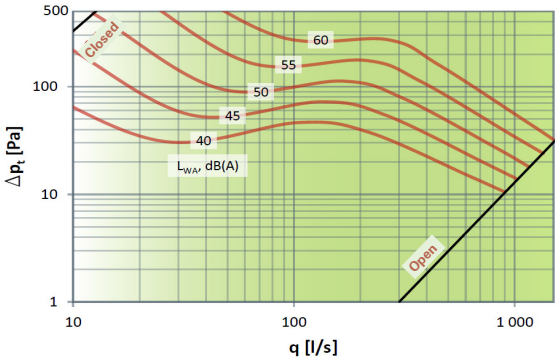


Table 8: Correction factor K_0 [SPMF-400]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	12	7	4	0	-4	-12	-15	-23

Diagram 8: Sound diagram SPMF-500

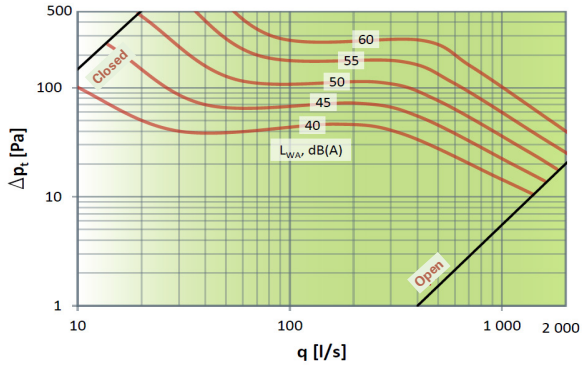


Table 9: Correction factor K_0 [SPMF-500]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	11	5	5	1	-4	-12	-15	-22

Additional product documentation SPMF

Table 10: Additional documentation for SPMF can be obtained via the product's website under Products at www.lindinvent.se

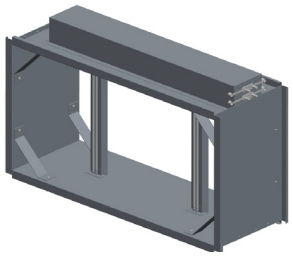
Document	Available	Not available	Comments
Installation Instruction		●	See the installation instruction for DCV-BL.
Start-up instruction		●	Not applicable.
Maintenance instruction	●		Cleaning of measuring flange and control measurement of air flow
External connection diagram		●	Not applicable.
Environmental product declaration	●		Assessed by Byggvarubedömningen and Sundahus
User information		●	Not applicable.
Modbus list		●	Not applicable.
AMA text	●		

DCV-RC – Room climate control unit

RCX Version A01

Introduction SMRD

SMRD is a measuring flange for rectangular ducts, built with one to four flanges depending on size. All flanges are connected to a double measuring point. SMRD is used in the rectangular design of measuring unit DCV-MF. SMRD is also used with damper JSPM to install a rectangular version of DCV-RC, DCV-LC, DCV-BL and DCV-CF.



SMRD – A rectangular measuring flange.

Order information

Rectangular damper, Lindinvent AB, type SMRD-[WxH]
Sizes (W x H) in combinations according to *Table 1*.
Width (W): from 200 to 1600 mm.
Height (H): from 200 to 1000 mm.
Length (L): Not relevant here (Always 220 mm)
Example: SMRD-600x300

Dimensions: Width(W) x Height(H) in mm

W/H	200	300	400	500	600	700	800	1000
200								
300								
400								
500								
600								
700								
800								
1000								
1200								
1400								
1600								

Table 1: Standard dimensions for W and H, available to order. The length (L) is always 220 mm. Units within the marked area are all available in MagiCAD.

To be placed after a straight duct section

For accurate measurement data: SMRD should be positioned in the correct direction and directly after a disturbance-free straight duct section is required of 3.5 x the length of the equivalent channel diameter.

Directly after SMRD no minimum distance to a subsequent bend or other disturbance is required.

When SMRD is placed after a silencer with a different cross-sectional area (smaller inner diameter, center body or center baffle), SMRD can be placed directly after a straight duct section corresponding to 2.0 x the length of the equivalent duct diameter is required where the length of the silencer is not included.

The equivalent duct diameter (de) is calculated by the following formula: $de \approx 1.15 \times \sqrt{A}$ (where A = W x H).

Technical specifications

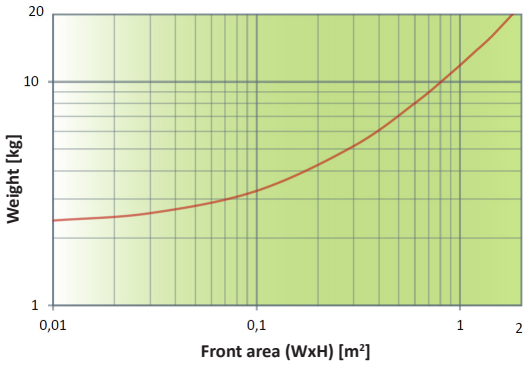
General

Material

The measuring device consists of a case and measuring flanges in galvanised steel plate. Measuring tubes in aluminium.

Weight

Diagram 1: Weight SMRD



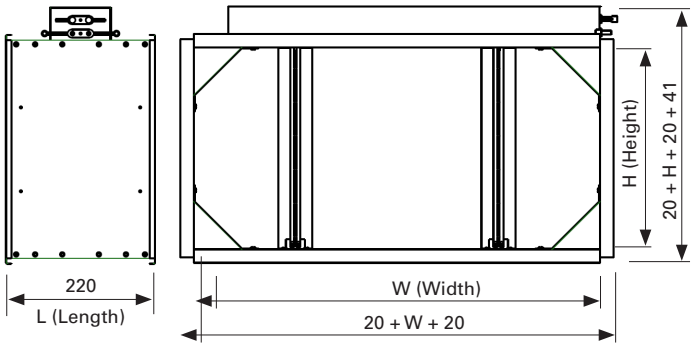
Flow measuring

Recommended measuring range: 0.5 – 6.0 m/s
Maximum range: 0.2 – 7.0 m/s
Measurement accuracy*: ± 5% or minimum ± x l/s
(x = duct area in dm²)
*Applies together with Lindinvent's controller and damper actuator.

K-factor and air flow calculation

K = 749 x A; A = Width (W) x Height (H) in metres.
Example: K-factor for SMRD 500x200 = 749x0.5x0.2 = 74.9
Air flow calculation (q): $q = K \times \sqrt{\Delta p}$ [l/s]

Measure in mm



Pressure drop and sound data SMRD

Pressure drop
Total pressure drop for various cross section areas of SMRD can be read from the pressure drop diagram below.

Noise generation
$L_W = L_{WA} + K_0$

L_W = Sound power level [dB]
L_{WA} = Total A-weighted sound power level [dB (A)] is read from diagram 3.
K_0 = Correction factor for actual frequency band is read from table 2 for different cross section areas.

Table 2: Correction factor, K_0

Cross section area	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
0.1 m²	-3	-7	-2	-2	-5	-9	-17	-31
0.5 m²	+5	+1	+1	-3	-5	-10	-17	-30
1 m²	+5	+1	+1	-3	-5	-10	-17	-30
2 m²	+5	+1	+1	-3	-5	-10	-17	-30

Table 3: Tolerance sound data

Hz	63	125	250	500	1k	2k	4k	8k
± dB	6	4	3	3	3	3	3	3

Diagram 2: Static pressure drop [SMRD]

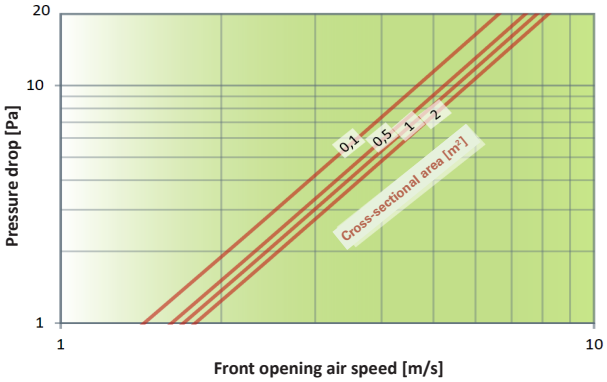
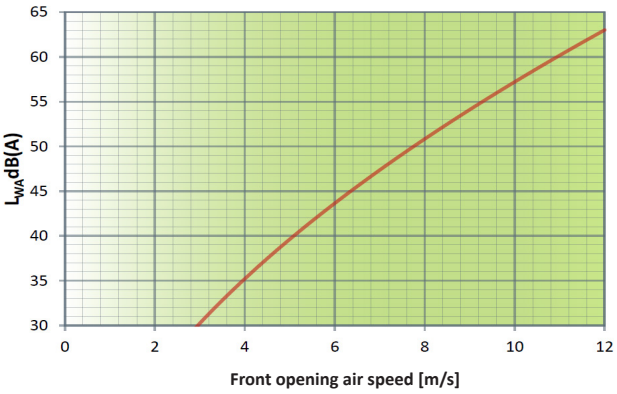


Diagram 3: Sound level [SMRD]



Additional product documentation SMRD

Table 4: Additional documentation for SMRD can be obtained via the product's website under Products at www.lindinvent.se

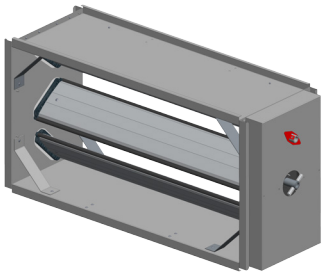
Document	Available	Not available	Comments
Installation Instruction		●	See the installation instruction for DCV-RC.
Start-up instruction		●	Not applicable.
Maintenance instruction	●		Cleaning and control measurement.
External connection diagram		●	Not applicable.
Environmental product declaration	●		Assessed by Byggvarubedömningen.
User information		●	Not applicable.
Modbus list		●	Not applicable.
AMA text	●		

DCV-RC – Room climate control unit

RCX Version A01

Introduction JSPM

JSPM is a fully sealed balancing damper with an actuator seat adapted for Lindinvent's damper actuator. The damper blades are linked via gears. JSPM is included in the rectangular design of control unit DCV-SP. JSPM is also included, along with the rectangular measuring flange SMRD, in the smart control units DCV-RC, DCV-LC, DCV-BL and DCV-CF.



JSPM size 600x300 mm.

JSPM size 700x700/630 mm.

Function

The damper is used for controlling flow and pressure together with a Lindinvent controller and a damper actuator.

Order information

Rectangular damper, Lindinvent AB, type JSPM-[WxH]

Sizes (WxH) in combinations according to *Table 1*.
Width (W): from 200 to 1600 mm.
Height (H): from 200 to 1000 mm.
Length (L): Not relevant here (Always 220 mm)
Example: JSPM-400x300

JSPM may be ordered with circular connection Ø630 or Ø800. Designations as follows: *JSPM-700x700/630* or *JSPM-800x800/800*.

Dimensions: Width(W) x Height(H) in mm

W\H	200	300	400	500	600	700	800	1000
200	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
300	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
400	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
500	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
600	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
700	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
800	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1000	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1200	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1400	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1600	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8

Table 1: Available standard dimensions for W and H. The length (L) is always 220 mm. Devices within the marked area are available in MagiCAD. The table shows which actuator DA4 or DA8 should be used for each damper.

Technical specifications

General

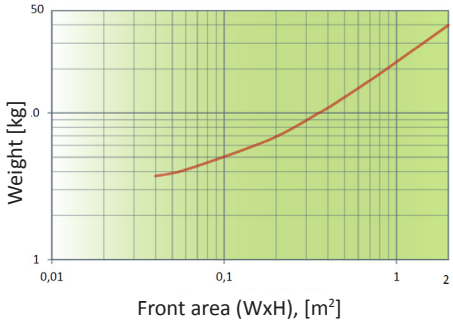
Material

The damper consists of a case in galvanised steel plate and damper blades in aluminium. The damper blades are equipped with end gaskets made of nylonplated EPDM-rubber and with length going gaskets made of silicon-rubber.

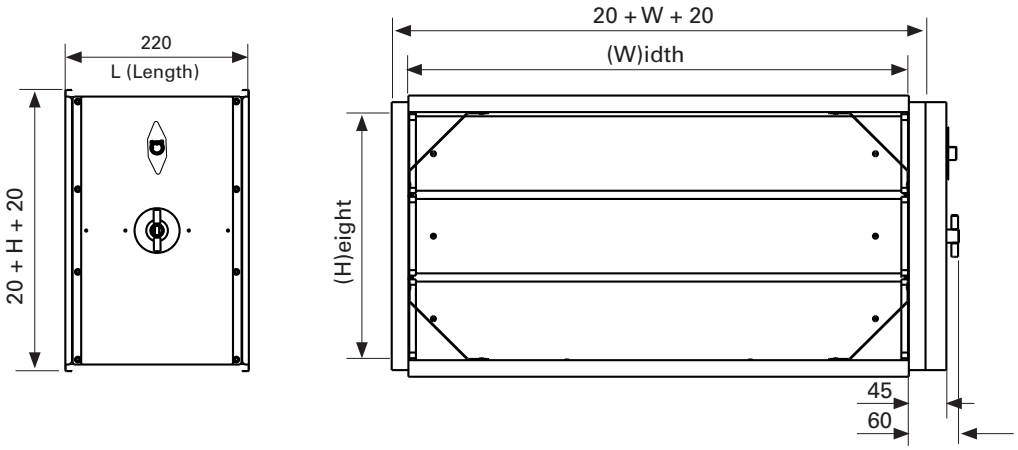
Tightness class 2 according to VVS AMA.
Pressure class A according to VVS AMA.

Weight

Diagram 1: Weight JSPM



Measure in mm



DCV-RC – Room climate control unit

RCX Version A01

Sound data JSPM

Noise generation

$L_W = L_{pA} + K_0 + K_k$

L_W = Sound power level, dB.
L_{pA} = Total A-weighted sound power level, dB (A), read from sound level diagram below for cross section area 1 m².
K_0 = Correction factor for actual frequency band read from table 2 for actual damper blade angle.
K_k = Correction factor for actual duct area is read from diagram 3.

Table 2: Correction factor K_0 [JSPM]

Damper angle	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
30 - 40°	-4	-6	-8	-8	-9	-12	-16	-19
50 - 60°	-5	-5	-8	-10	-10	-10	-13	-15
70 - 80°	-6	-4	-5	-7	-9	-9	-10	-12

Table 3: Tolerance sound power level L_W [JSPM]

Hz	63	125	250	500	1k	2k	4k	8k
± dB	6	4	3	3	3	3	3	3

Diagram 2: Noise generation (cross section area 1 m²) [JSPM]

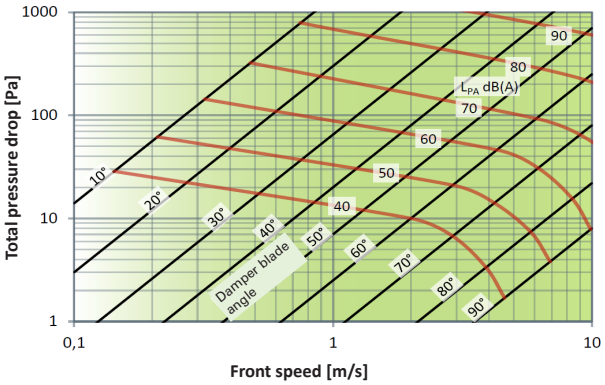
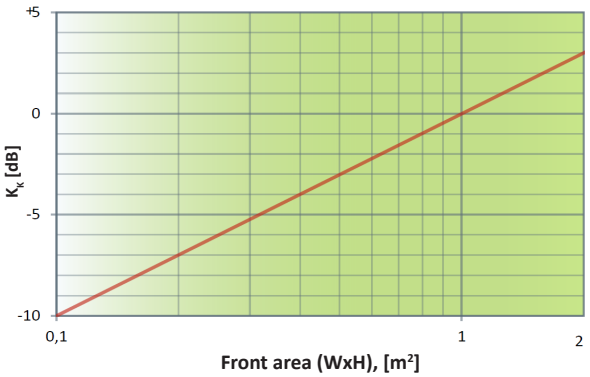


Diagram 3: Correction factor for duct area [K_k]



Additional product documentation JSPM

Table 4: Additional documentation for JSPM can be obtained via links on the product's website under Products at www.lindinvent.se

Document	Available	Not available	Comments
Installation Instruction		●	See installation instruction for DCV-RC.
Start-up instruction		●	Not applicable.
Maintenance instruction		●	Maintenance free.
External connection diagram		●	Not applicable.
Environmental product declaration	●		Assessed by Byggvarubedömningen.
User information		●	Not applicable.
Modbus list		●	Not applicable.
AMA text	●		

DCV-RC – Room climate control unit

RCX Version A01

Introduction DA4 and DA8

The damper motors DA4 and DA8 are designed for Lindinvent's dampers for air flow and pressure control. All smart dampers in circular design are equipped with DA4 while DA8 is used for larger rectangular dampers as shown in Table1 below.

Function

The damper motor controls damper blades via signal from the connected regulator.

The motor cover is specially designed to act as holder for Lindinvent's regulators. Assembly and disassembly of the regulator on the cover is made easy and without tools.

Ordering information

Both DA4 and DA8 can be ordered with cabling mounted in two designs: Length 0.25 meters with a connector mounted or length 3 meters without a connector mounted.

Motor size: DA4 or DA8

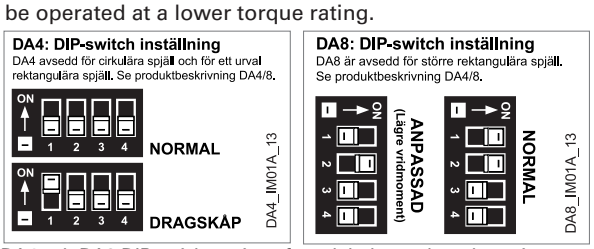
DA4 is used for Lindinvent's circular dampers Ø125 - Ø500 and for a selection of rectangular dampers. DA8 is used for Lindinvent's larger rectangular dampers, see Table 1 below. DA8 should also be used for the rectangular damper 700x700 with circular connection Ø630.

B\H	200	300	400	500	600	700	800	1000
200	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
300	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
400	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
500	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
600	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
700	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
800	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1000	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1200	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1400	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1600	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8

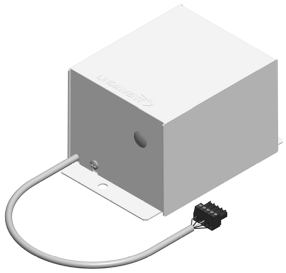
Table1: Rectangular damper JSPM showing it's size dependent designated actuator DA4 or DA8. Sizes within the marked area are available in MagiCAD.

Mode of operation

Both actuators are normally delivered with it's DIP-switch settings at "NORMAL", as shown bellow . DA4 is set to "DRAGSKÅP" when installed with Fume capboard controller FCL. DA8 can be switched to "ANPASSAD" to be operated at a lower torque rating.



DA4 och DA8 DIP-swich settings from labels used on the units.



DA4 with pre-mounted connector. Damper actuator for Lindinvent's controllers.

DCV-SP circular: Regulator SPL and damper motor DA4 mounted on a circular damper.

Technical specifications

General

Dimension
DA4: 140 x 97 x 80 mm (LxWxH)
DA8: 140 x 130 x 80 mm (LxWxH)

Material
Gearbox in metal
DA4: Thermoplastic encapsulation (PS)
DA8: Powder-coated steel plate encapsulation

Weight
DA4: Net weight 0.7 kg (0.25 m cable with connector)
DA8: Net weight 1.4 kg (0.25 m cable with connector)

Colour
RAL 9003

IP class
Encapsulation complies with IP42

Damper blade positioning
By turning a screw, any damper angle can be selected on a switched-off motor. The engine calibration is not affected by the damper position being set with the screw.

Electrical system

Supply voltage
24 VAC

Capacity
DA4: 2.3 VA (max 12 VA)
DA8: 2.3 VA (max 17 VA)

CE marking
Complies with EMC and the Low Voltage Directive

Performance

DA4: Running time 0-90° 6.5 s
DA8: Running time 0-90° 6.5 s

Input and output signals

Input signals
1 x 0-10 VDC control signal

Output signals
1 x 0-10 VDC feedback signal

Additional product documentation DA4/8

Table 1: Additional documentation for DA4/8 is available via the product's website under Products at www.lindinvent.se

Document	Available	Not available	Comments
Installation Instruction	●		
Start-up instruction		●	See start-up instruction for connected controller.
Maintenance instruction		●	Regarded as maintenance-free.
External connection diagram		●	Cable with connector for terminal block on controller.
Environmental product declaration	●		Assessed by Byggvarubedömningen.
User information		●	Not applicable.
Modbus list		●	Not applicable.
AMA text		●	See corresponding controller.

Product documentation can be downloaded via www.lindinvent.se/produkter/

Contact
www.lindinvent.se
Tel: 046–15 85 50

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