bürkert
FLUID CONTROL SYSTEMS

Flow Controller, flow control system for gases

- Highly cost effective solution, thanks to the integrated system
- Reliable, robust system
- Automatic process tune
- Simple to operate
- Stand-alone operation possible

Type 8750 can be combined with…

Type 2655
Ball valve

Type 8644
Valve island

Type 1150
Controller

Type 8400
Temperature sensor

The 8750 Flow Controller serves to measure and control volumetric flow rate on the differential pressure principle. It consists of a 2712 control valve with an 8630 TopControl, two 8323 pressure transmitters and an optional 8400 temperature transmitter. The overall precision is ±3% of full scale. These components together form a module. The sensors are integrated into the spool piece. To cover a wide variety of control applications, a broad spectrum of nominal diameters and seat combinations are available. The valve trims may be exchanged as required. Regarding the inlet to the device, EN ISO 5167-1 must be observed during assembly of the module. The outlet dimensions are already included in the system.

The pressure drop over the control valve (acting as a restriction) is measured continuously by the two pressure sensors. This pressure difference and the valve flow characteristic are the parameters for determination of the volumetric flow through the control valve, i.e. for the process value. This measured volumetric flow is compared with the setpoint, evaluated in a PID controller and set on the positioner as the new setpoint. The real flow characteristic curve for the current control valve is stored point-for-point in 5 % steps in the memory of the TopControl.

Applications

- Air flow control system for the pneumatic conveying of granular materials (grain, powder, etc.)
- Control system for propellents (gas or air) in pigging systems
- Control of combustion gases and air in industrial furnaces.

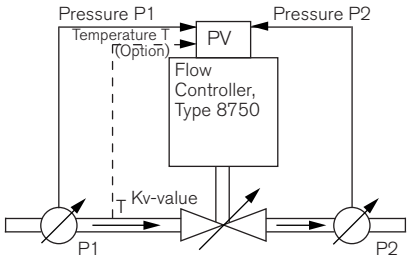
Technical data	
FMR (complete system)	
Media	Air other gases (liquid media and steam on request)
Medium temperature	0 to 80 °C
Medium pressure	Up to 16 bar pressure sensor range
Ambient temperature	-10 to +50 °C
Precision	±3% of full scale
Control valve Type 2712	
Materials	
Body material	Cast 316L
Actuator material	PA (polyamide)
Seat seal material	PTFE/steel or steel/steel
Packed gland (with silicone grease)	PTFE V-rings with spring compensation
Control cone	Parabolic; equipercentile
Seat reduction	Different Kvs-values for each connection
Intake and outlet sections	
Process connection [1]	Flange acc. to DIN EN 1092-1, DN15 bis DN100, [1] others on request
Material	1.4301
Measurement point for p_1, p_2 and T	G1/2 internal thread
Measurement section acc. to	DIN EN 60534-2-3
Positioner Type 8630	
Body material	PPE/PA
Operating voltage	24 VDC ±10%
residual ripple	10%; not industrial DC
Electrical connection	Multipole circular connector, male
Setpoint specification	0/4 to 20 mA, 0 to 5/10 V
Degree of protection	IP65 acc. to EN 60529
Control medium	Instrument air acc. tp DIN ISO 8573-1
Intrinsic air consumption	0 l/min
Control air temperature	0 to +50 °C
Supply pressure	5.5 to 7 bar (up to DN65), 5 to 6 bar (DN80 - DN100)
Operating panel	3 function keys
Display	8 digit LC-display
Options	Binary input, analog feedback Binary output (alarm), bus communication
Bus communication	Profibus DP-V1 or DeviceNet
Conformity	Acc. to **CE** EMV-2004/108/EG

Technical data

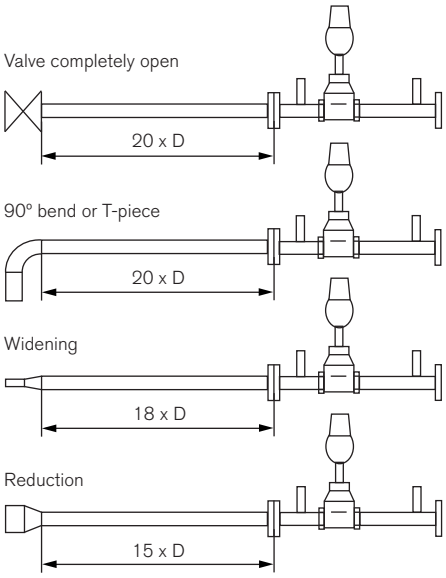
Pressure transmitter Type 8323	
Measurement range	From 0 - 100 mbar to 0 - 16 bar (other pressure ranges on request)
Measurement principle	Piezoresistive
Measurement method	Relative pressure measurement
Measurement error	≤ 0.5% of full scale
Overload limits	At least 5 x full scale
Bursting pressure	At least 5 x full scale
Output signal (2-conductor system)	Standard signal 4 to 20 mA
Body material	Stainless steel 1.4301
Wetted parts	Stainless steel 1.4571

Temperature transmitter Type 8400 (optional)	
Measurement range	- 40 to +125 °C
Connection	G 1/2

Action diagram of the FMR



Intake section according to EN ISO 5167-1



Note

On assembly, be sure to connect an intake section according to EN ISO 5167-1 upstream. The required outlet sections are already integrated into the FMR (6 x DN)

Flow capacity (Kvs)[1] and range of air flow rate[2] - examples

Port size	Seat DN	Kvs	Air flow rate at p1=6 and p2=3 bar(g)		Air flow rate at p1=3 and p2=1 bar(g)		Air flow rate at p1=0.125 and p2=0.060 bar(g)	
	[mm]	[m³/h]	Q_{max} [Nm³/h]	Q_{min} [Nm³/h]	Q_{max} [Nm³/h]	Q_{min} [Nm³/h]	Q_{max} [Nm³/h]	Q_{min} [Nm³/h]
DN15	8	2.1	150	10	90	10	10	0.4
	10	3.1	250	10	150	15	18	0.5
	15	4.3	375	15	220	15	25	0.8
DN25	15	5.3	400	15	250	15	30	0.8
	20	7.2	550	25	320	15	40	1.3
	25	12.0	900	35	550	20	70	2
DN40	25	13.6	1100	40	650	25	80	2.5
	32	20.2	1500	50	900	30	110	3
	40	23.8	1800	70	1100	40	130	4
DN50	32	21.0	1600	60	950	35	120	4
	40	24.6	1900	70	1100	40	140	4
	50	37.0	2900	100	1700	60	210	6
DN65	40	17.5	1200	60	700	30	80	3
	50	26.0	2000	100	1200	50	140	6
	65	52.0	4500	130	2700	80	320	10
DN80	50	42.0	2500	100	1500	50	200	6
	65	70.0	5000	150	3000	90	350	10
	80	100.0	8500	250	5000	140	600	18
DN100	65	75.0	5500	150	3000	90	380	10
	80	115.0	9000	250	5500	150	650	18
	100	140.0	12000	350	7000	210	850	25

[1] Kvs represents the maximum flow capacity of a control valve series. The Kv value [m³/h] is measured to DIN EN 60534-2-3 with water (5 - 40 °C) and a pressure drop of 1 bar over the valve.

[2] The air flow rates mentioned above are given as a reference. The values refer to air with a temperature of 20 °C. The condition for the min. and max. limits is determined at 10 and 90% positions and turbulent air flow.

Note

Please ask for advice in sizing the flow controller FMR. Contact your local sales centre

Specification code for Flow Controller Type 8750

Example 8750 – 040,0 – 032,0 – FD26 – EE – A – G – P – AG – S – B

Specifications key 8750 – XXXX – XXXX – XXXX – XX – X – X – X – XX – X – X

Pipe size [mm] (connection DNA)

15.0
25.0
40.0
50.0
65.0
80.0
100.0

Orifice [mm] (DN)

Port connection	Std.	1st Reduction	2nd Reduction
DN 15	15.0	10.0	08.0
DN 25	25.0	20.0	15.0
DN 40	40.0	32.0	25.0
DN 50	50.0	40.0	32.0
DN 65	65.0	50.0	40.0
DN 80	80.0	65.0	50.0
DN 100	100.0	80.0	65.0

Line connection

Port connection [mm]	Flange			Weld end	
	EN-1092 f-t-f DIN3202	ANSI ASME B16.5 f-t-f ISA S75.03	JIS 10K, B2238 f-t-f JIS B2002 S20	ISO 4200	DIN 11850 S2
DN 15	FD22	FA02 [1]	FJ01 [1]	SA42 [1]	SD42 [1]
DN 25	FD24	FA04 [1]	FJ03 [1]	SA44 [1]	SD44 [1]
DN 40	FD26	FA06 [1]	FJ05 [1]	SA46 [1]	SD46 [1]
DN 50	FD27	FA07 [1]	FJ06 [1]	SA47 [1]	SD47 [1]
DN 65	FD28	FA08 [1]	FJ07 [1]	SA48 [1]	SD48 [1]
DN 80	FD29	FA09 [1]	FJ08 [1]	SA49 [1]	SD49 [1]
DN 100	FD30	FA10 [1]	FJ09 [1]	SA39 [1]	SD50 [1]

[1] auf Anfrage

Seal material

SS	steel/steel
EE	PTFE/steel

Control function

A	spring closed (NC)
B	spring open (NO)

Software feedback

0	none
B	analog feedback +2 binary outputs

Communication

S	serial interface
Y	Profibus-DP-V1
D	Device Net

Max. medium pressure (Pmax)

AA	0 - 0.100	bar (g)
AB	0 - 0.160	bar (g)
AC	0 - 0.250	bar (g)
AD	0 - 1	bar (g)
AE	0 - 2.5	bar (g)
AF	0 -6	bar (g)
AG	0 - 10	bar (g)
AH	0 - 16	bar (g)
AJ	0 - 25 [1]	bar (g)
V1	0 - 1	bar (abs)

[1] on request

Sensor types - process values

P	pressure before and after
T	pressure before and after plus temperature

Actuator size

Port connection	
DN 15	F
DN 20	F
DN 25	F
DN 32	G
DN 40	G
DN 50	H
DN 65	H
DN 80	L
DN 100	L

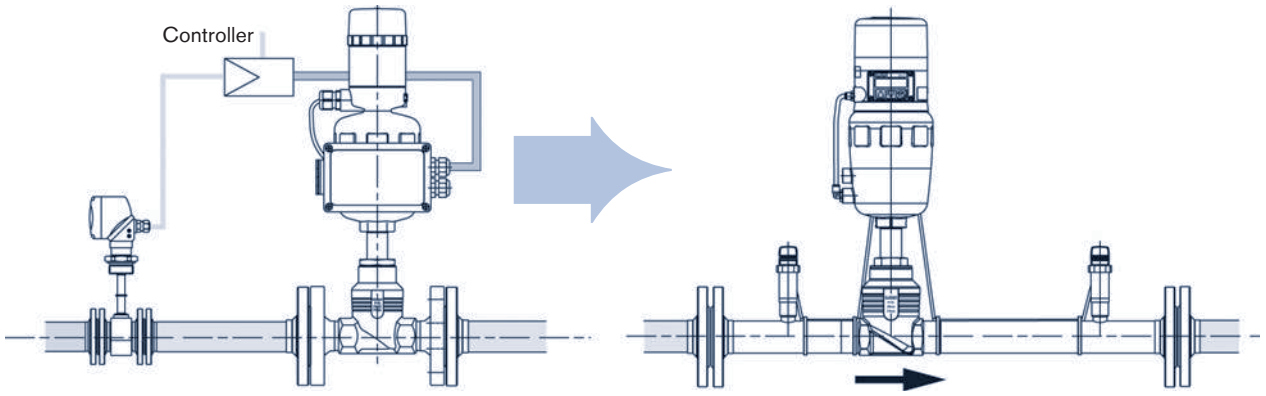
Target segments

Application areas

- Provides a proven solution for pneumatic conveyor systems of granulate material in the chemical, food, plastic and pharmaceutical industries.
- Provides an effective solution for piston speed control in pigging systems in the chemical, paint, pharmaceutical, cosmetic, food and brewerage industries.
- Provides a cost-effective solution for gas/air flow control systems in water purification, power and waste incineration plants, ceramic industries, metal refineries and industrial furnaces.

Conventional solution

New solution



Flowmeter

Control valve and positioner

FMR System

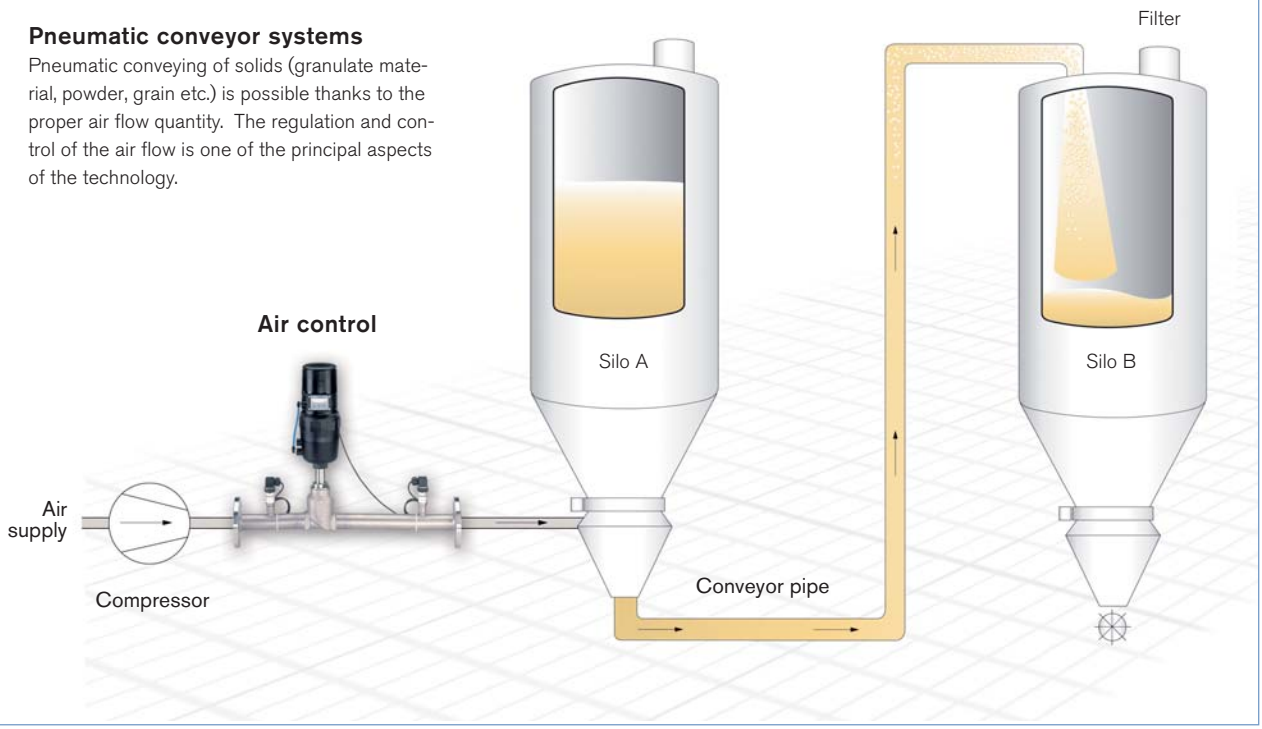
Advantages

- **All in one compact system**
- **Stand-alone operation, no remote device is required**
- **Reliable and robust system**

Application examples

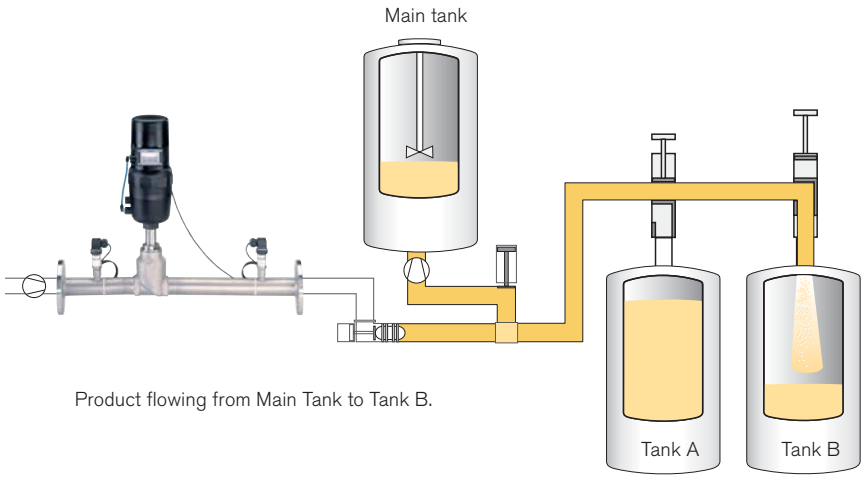
Pneumatic conveyor systems

Pneumatic conveying of solids (granulate material, powder, grain etc.) is possible thanks to the proper air flow quantity. The regulation and control of the air flow is one of the principal aspects of the technology.

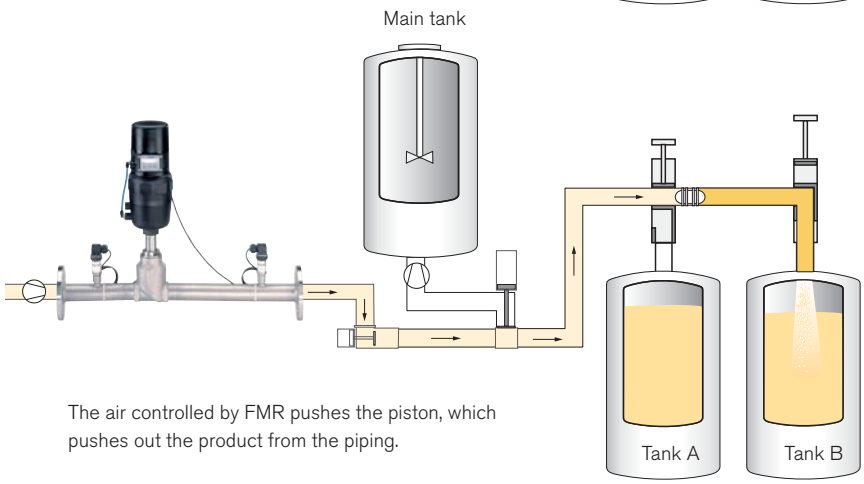


Pigging system

Pigging is an effective method to push expensive products out of pipes without significant product loss. The product will be pushed out by a piston (pig). The push medium used will usually be water or compressed air. The FMR system controls the speed of the piston by maintaining the proper air quantity, avoiding impacts in the piping and blockage of the system.



Product flowing from Main Tank to Tank B.



The air controlled by FMR pushes the piston, which pushes out the product from the piping.

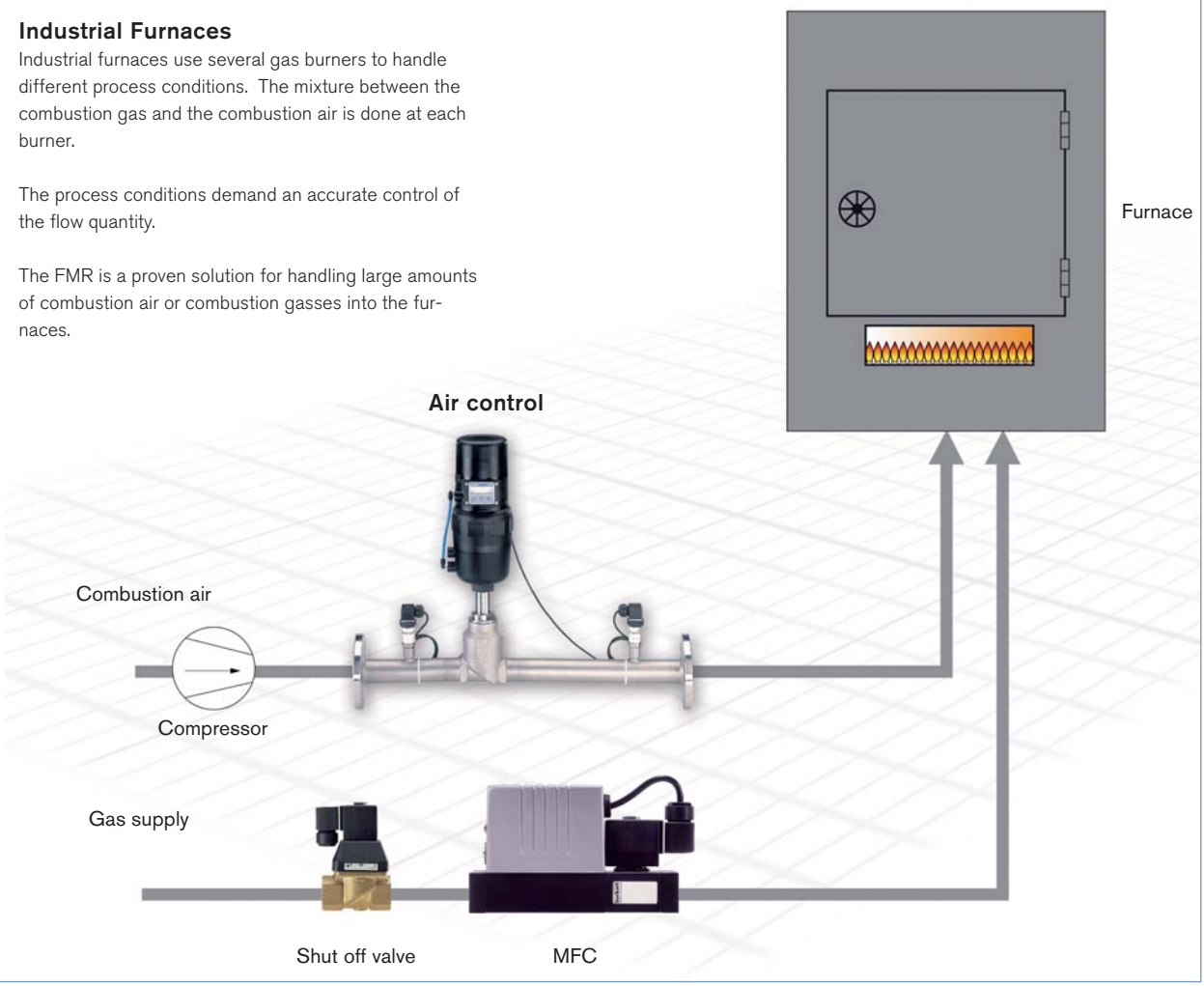
Application examples

Industrial Furnaces

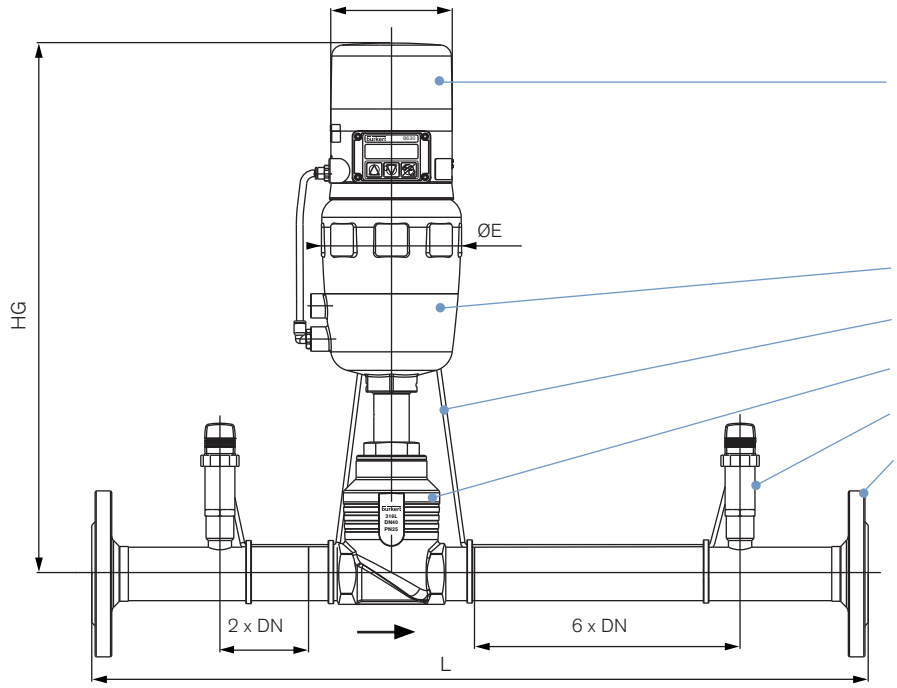
Industrial furnaces use several gas burners to handle different process conditions. The mixture between the combustion gas and the combustion air is done at each burner.

The process conditions demand an accurate control of the flow quantity.

The FMR is a proven solution for handling large amounts of combustion air or combustion gasses into the furnaces.



Dimensions [mm]



TopControl Type 8630

Actuator, control valve Type 2712

Signal line from pressure transmitter to control head

Fitting, control valve Type 2712

Pressure transmitter Type 8323

Flange acc. to DIN EN 1092-1

Port size	L	HG	ØE
DN15	330	391	101
DN25	500	389	101
DN40	700	481	127
DN50	800	518	157
DN65	1000	547	157
DN80	1200	623	261
DN100	1400	633	261

(The version shown was assembled without a temperature transmitter)
An FMR is delivered ready assembled with pressure transmitter lines wired.

Note
Observer the flow direction on assembly

bürkert

Note
You can fill out the fields directly in the PDF file before printing out the form.

Specification sheet for Type 8750

Please fill out and send to your local Bürkert Sales Centre* with your inquiry or order

Company	Contact person
Customer no.	Department
Address	Tel./Fax
Postcode/Town	E-Mail

■ = mandatory fields to fill out ☐ **Quantity** ☐ **Required delivery date**

Operating data

Site of control					
Measuring and control task					
Pipeline	DN ☐	PN ☐			
Pipe material					
■ **Process medium**					
■ **Type of media**	☐ Gas	☐ Steam [1]	☐ Liquid [1]		
Standard density	☐ Kg/Nm³				
	Min	Standard	Max	Unit	
■ **Flow rate (Q, QN, W)** [2]					
■ **Temperature at valve inlet T1**					
■ **Absolute pressure at valve inlet P1**					
■ **Absolute pressure at valve outlet P2**					

[1] on request

[2] standard unit
Liquid Q = m³/h; Steam W = Kg/h; Gas Q_N = Nm³/h

Valve features

Standard connection (flange)	☐ DIN	☐ ANSI	☐ JIS	☐ other Versions	☐
Seat sealing material	☐ Metal	☐ PTFE			
Function	☐ NC [3]	☐ NO [3]			
Max. sound level accepted	☐ dB (A)				
Pilot pressure	☐ min.		☐ max.		

[3] NC: resting position with spring closed; SFB: resting position with spring open

Controller features

■ **Communication**

☐ **Analogue signals for setpoint/output**

- ☐ Input 0/4 - 20 mA / 0 - 5/10V + 1 Binary input
- ☐ Output 0/4 - 20 mA / 0 - 5/10V + 2 Binary output

or

☐ **Fieldbus**

- ☐ Profibus DP-V1
- ☐ Device Net

Pressure measurement

■ **Measuring range**

- ☐ 0 - 100 mbar
- ☐ 0 - 160 mbar
- ☐ 0 - 250 mbar
- ☐ 0 - 1 bar
- ☐ 0 - 2.5 bar
- ☐ 0 - 6 bar
- ☐ 0 - 10 bar
- ☐ 0 - 16 bar
- ☐ 0 - 25 bar
- ☐ 0 - 1 bar (absolute)

☐ other range
max. media pressure: ☐ bar

Temperature measurement

■

☐ necessary range: ☐ °C

or

☐ not necessary, because the media temperature is app. constant (see Note)

Note:
The media temperature can be set at the FMR's display.
The temperature compensation will be calculated based on this pre-defined value.

reset formular

Process Valves, 5 Caulside Drive, Antrim, Northern Ireland, BT41 2DU
www.process-valves.com, sales@pneutrol.com, Tel +44 (0) 28 9448 1809