

DN 15 - DN 50; PN 10



Advantages / Benefits

- ▶ Easy System integration by Easy LINK provides low cost of ownership
- ▶ Easy commissioning due to multi-language, menu-guided operation
- ▶ TEACH-IN: automatic calibration in particular applications
- ▶ Shows both flow rate and volume (2 totalizers)
- ▶ Simulation: all output signals provided without real flow
- ▶ Options:
 - 2 Alarm relays
 - Pulse output on relay reed
 - Power supply 115/230 VAC
 - 9 VDC battery version
- ▶ Fittings available for all standard hydraulic interfaces

Design

The paddle-wheel flow transmitter for continuous flow measurement and batch control is specially designed for use in neutral and aggressive, solid-free liquids.

The transmitter is made of a compact fitting and an electronic-module quickly and easily connected together by a bayonet.

The Burkert designed plastic-fitting system (PVC, PP, PVDF) ensures simple installation of the transmitters into all pipes from DN 15 to DN 50.

The display and menu-guided operating elements allow a customized adjustment of all measuring parameters:

- multi-language
- various engineering units
- customized measuring ranges
- teaching mode; simulation mode

Flow Transmitter

- 4...20 mA standard output signal
- Pulse output (NPN, PNP or reed),
- Local flow display,
- 2 totalizers display,
- 2 programmable thresholds (option)

Flow Switch

- 2 programmable thresholds

Stand Alone (Battery)

- Battery powered,
- 2 totalizers display,
- Local flow display,

Batch Controller

- 2 totalizers display,
- 2 programmable thresholds
- 3 Dosing modes:
 - Local
 - External (via binary inputs)
 - Time proportional (via PLC)

Applications

Flow Measurement & Dosing Control

Water treatment and process technology

Cooling water monitoring

Industrial waste water treatment

Auxiliary plants

Irrigation

Ideal system solutions for pure water and chemical aggressive liquids

bürkert
Easy Fluid Control Systems

Digital Flow Transmitter

for continuous flow measurement and batch control

Type 8035

Plastic-INLINE

Design

The compact flow transmitter combines a flow sensor and an electronic board with display in an IP65 enclosure.

The sensor part consists of a transducer and an open-cell paddle-wheel.

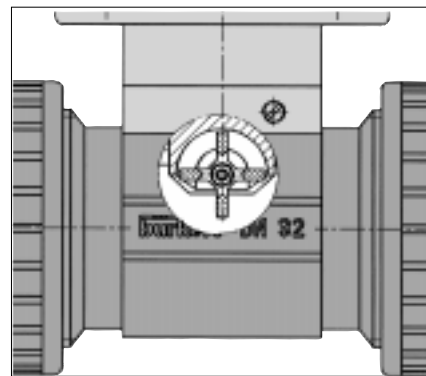
The transmitter component converts the measured signal and displays the actual value. The output signals are provided via a 4-pole cable plug or via cable gland PG 13.5.

Principle of operation

When liquid flows through the pipe, the paddle-wheel is set in rotation inducing a measuring frequency in the transducer, which is proportional to the flow.

The flow transmitter 8035 can receive an optional power supply 230/115 VAC and is also available with 9 VDC battery power supply.

The transmitter measures a flow rate from 0.3 m/s (1.0 ft/s).



Installation

The flow transmitter is made of a compact fitting and an electronic module which can be quickly and easily connected by means of a Quarter Turn.

The recommended In- and Outflow straight pipe length should respect 10xD in and 3xD out.

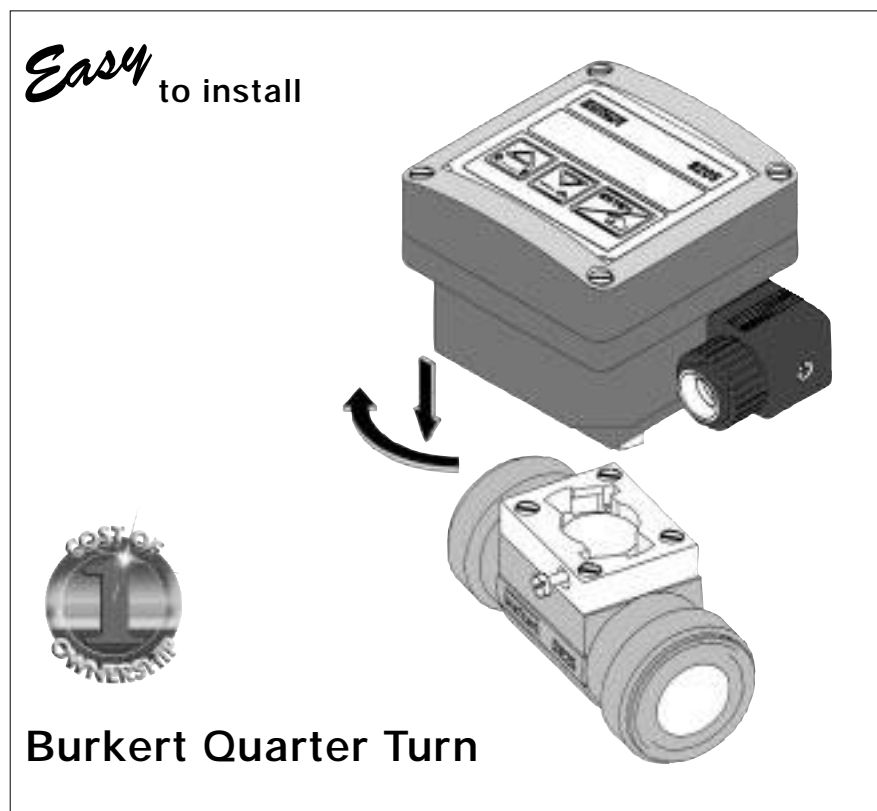
According to pipe's design, necessary distances can be bigger or use a flow conditioner to obtain the best accuracy.

For more informations, please refer to EN ISO 5167-1.

The flow transmitter can be installed in either horizontal or vertical pipes.

The suitable pipe size is selected using the diagram on the next page. Pressure and temperature ratings must be respected according to the selected fitting material (see next page).

The flow transmitter is not designed for gas flow measurement.



Operation / Commissioning

The device can be calibrated by means of the K-factor, or via the Teach-In function.

Customized adjustments, such as measuring range, engineering units, pulse output and filter are carried out on site.

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Examples of fitting selection

The suitable pipe size is selected using the diagram below.

Example 1 :

Specification of nominal flow: 10 m³/h

Ideal flow velocity: 2...3 m/s

For these specifications, the diagram indicates a pipe size of DN 40.

Example 2 :

Specification of nominal flow: 50 gpm

Ideal flow velocity: 8 fps

For these specifications, the diagram indicates a pipe size of 1 1/2".

Pressure-Temperature-Diagram

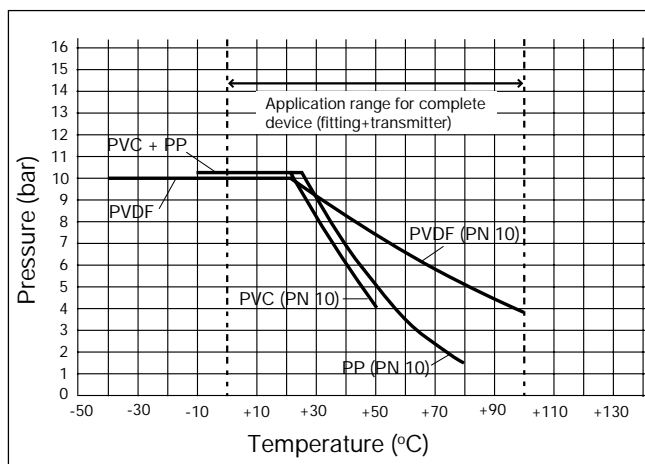
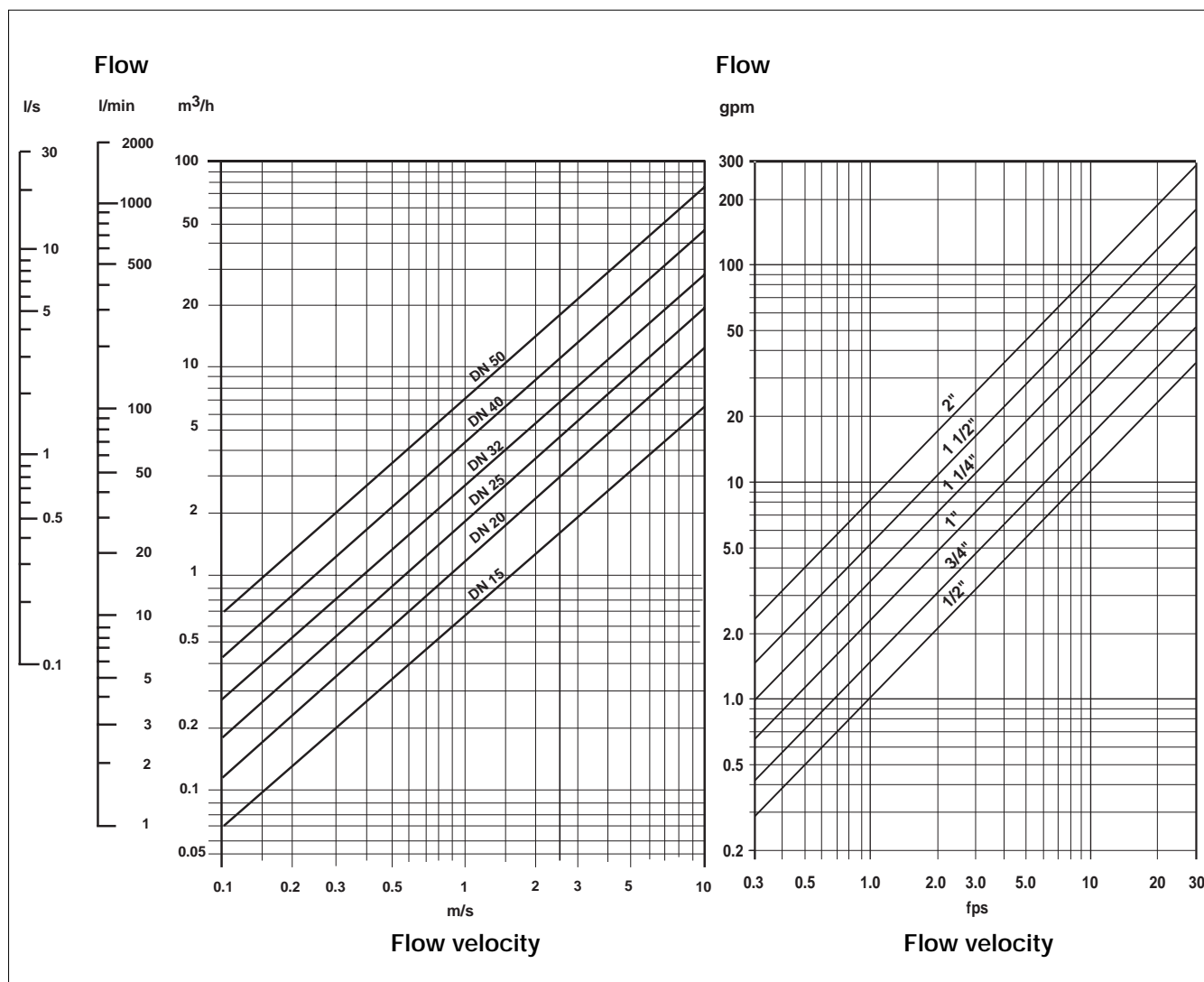


Diagram Flow-Pipe Size-Velocity



Operation and display

The operation is specified according to two or three levels:

Flow Transmitter :

► Indication in operating mode

- flow
- output current
- main totalizer
- daily totalizer and reset function

► Parameter definition

- language
- engineering units
- K-factor / Teach-In function
- measuring range 4...20 mA
- pulse output
- relay (option)
- filter
- reset of main totalizer

► Test

- alteration of basic adjustment (offset, span)
- frequency test of sensor
- flow simulation (dry-run test operation)

Batch Controller :

► Indication in operating mode

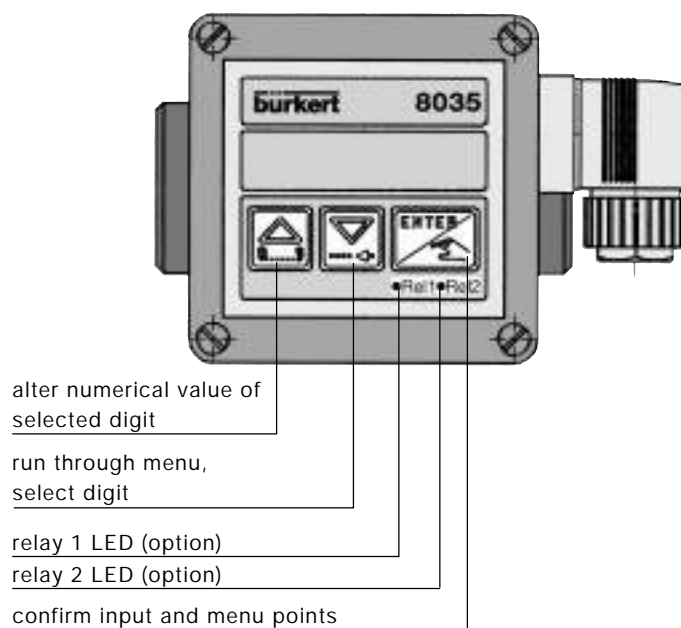
- main and daily totalizers and reset function
- dosing amount
- dosing mode
- flow

► Parameter definition

- language
- engineering units
- K-factor / Teach-In function
- selection of batching mode
- over-run correction
- alarm
- function mode of relays
- reset of main totalizer

► Test

- display of state of binary inputs
- relay test
- frequency test of sensor



Flow Switch :

► Indication in operating mode

- flow

► Parameter definition

- language
- engineering units
- K-factor / Teach-In function
- relay
- filter

► Test

- frequency test of sensor
- flow simulation (dry-run test operation)

Stand alone (Battery) :

► Indication in operating mode

- main and daily totalizers with reset function
- flow

► Parameter definition

- language
- engineering units
- K-factor / Teach-In function
- filter
- reset of main totalizer

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Technical data

General data

Pipe diameter from DN 15 to DN 50 (1/2" to 2")
 Measuring range 0.3 m/s to 10 m/s (1.0 fps to 33 fps)
 as from 3 l/min (DN15 pipe, 0,3 m/s flow velocity)
 as from 0.9 gpm (1/2" pipe, 1.0 fps flow velocity)

Measuring error

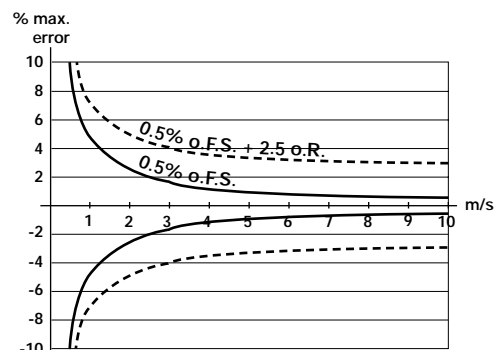
1. With In-line calibration (Teach-In):
 $\leq \pm 0.5\% \text{ o.F.S. (at 10 m/s) }^*$
2. With standard mean K-factor:
 $\leq \pm (0.5\% \text{ o.F.S.} + 2.5\% \text{ o.R.})^*$

Linearity $\leq \pm 0.5\% \text{ o.F.S. (at 10 m/s) }^*$
 Repeatability 0.4% o.R. *

Fluid temperature max. PVC: 50°C (122°F); PP: 80°C (176°F);
 PVDF: 100°C (212°F)
 Ambient temperature 0°C to 60°C (32 to 140°F)
 Storage temperature 0°C to 60°C (32 to 140°F)
 Pressure class PN 10

Enclosure IP 65

Fitting PVC, PP, PVDF
 Sensor holder PVC, PP, PVDF
 Paddle-wheel PVDF
 Axis and bearing Ceramic
 O-rings FPM standard
 Housing PC
 Front plate foil Polyester



Specific data Flow Transmitter

Voltage supply 12...30 VDC
 Option: 115/230 VAC power supply
 Output signal 4...20 mA
 Load max. 900 Ω at 30V
 max. 500 Ω at 24V
 max. 100 Ω at 15V
 max. 800 Ω with power supply 115/230 VAC
 Pulse output Open collector NPN and PNP, 0...30 V, 100 mA, protected
 Option: relay Reed closing 0,1 sec., opening depending on flow rate 0,1 sec. min.
 max. 34 V, 0,2 A
 Relay output (option) 2 relays, freely programmable, 3 A, 230 V

Specific data Flow Switch

Voltage supply 12...30 VDC
 Option: 115/230 VAC power supply
 Relay output freely programmable, 3 A, 230 V

Specific data Batch Controller

Voltage supply 12...30 VDC
 Option: 115/230 VAC power supply
 Digital inputs 4 inputs, 5...30 VDC
 Digital output 1 input, Open collector NPN and PNP, 0...30 V, 100 mA, protected
 Relay output 2 relays, freely programmable, 3 A, 230 V

Specific data Stand Alone (Battery)

Voltage supply 9 VDC battery supply
 Autonomy 3...4 years with lithium batteries
 1...2 years with standard batteries

* Under reference conditions, i.e. measuring fluid = water, ambient and water temperature = 20 °C, applying the minimum inlet and outlet pipe straights, matched inside pipe dimensions
 o.R. = of reading
 o.F.S. = of full scale (10 m/s)

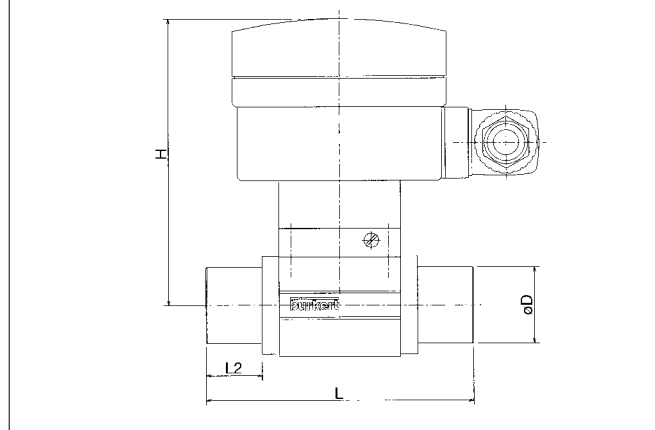
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Dimensions [mm (inch)]

Solvent joint/weld-end connections



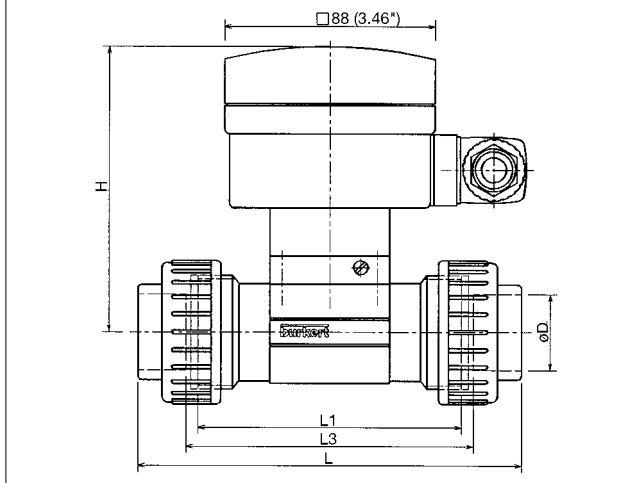
Dimensions [mm] Solvent joint/weld-end

Port connection	DN	Variable dimensions [mm]					
		øD	L		L2		H
			PVC	PP PVDF	PVC	PP PVDF	
Solvent joint or weld-end connection	15	20	90	85	16,5	14	122
	20	25	100	92	20	16	119
	25	32	110	95	23	18	120
	32	40	110	100	27,5	20	123
	40	50	120	106	30	23	127
	50	63	130	110	37	27	134

Dimensions [inch] Solvent joint/weld-end

Port connection	DN [mm (inch)]	Variable dimensions [inch]					
		øD	L		L2		H
			PVC	PP PVDF	PVC	PP PVDF	
Solvent joint or weld-end connection	15 (9/16)	.79	3.54	3.35	.65	.55	4.81
	20 (3/4)	.99	3.94	3.62	.79	.63	4.69
	25 (1)	1.26	4.33	3.74	.91	.71	4.73
	32 (1 1/4)	1.58	4.33	3.94	1.08	.79	4.85
	40 (1 1/2)	1.97	4.72	4.17	1.18	.91	5.00
	50 (2)	2.48	5.12	4.33	1.46	1.06	5.28

True union with solvent/fusion spigot connections



Dimensions [mm] True union ISO

Port connection	DN	Variable dimensions [mm]				
		øD	L	L1	L3	H
True union	15	20	128	90	96	122
connection with	20	25	144	100	106	119
solvent/ fusion	25	32	160	110	116	120
spigot	32	40	168	110	116	123
	40	50	188	120	127	127
	50	63	212	130	136	134

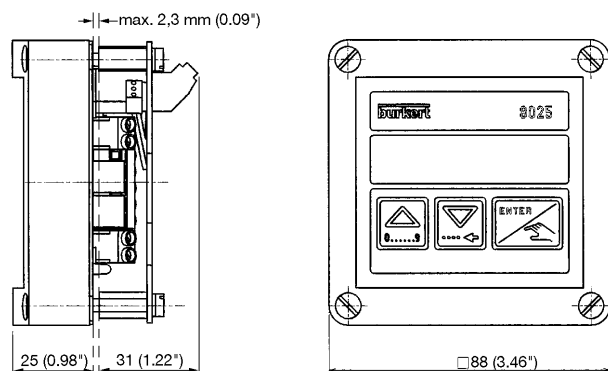
Dimensions [inch] True union ASTM

Port connection	DN [mm(inch)]	Variable dimensions [inch]				
		øD	L	L1	L3	H
True union	15 (9/16)	.84	5.12	3.55	3.78	4.81
connection with	20 (3/4)	1.05	5.73	3.94	4.18	4.69
solvent/ fusion	25 (1)	1.31	6.35	4.33	4.57	4.73
spigot	32 (1 1/4)	1.66	6.69	4.33	4.57	4.85
	40 (1 1/2)	1.90	7.49	4.73	5.00	5.00
	50 (2)	2.37	8.41	5.12	5.36	5.28

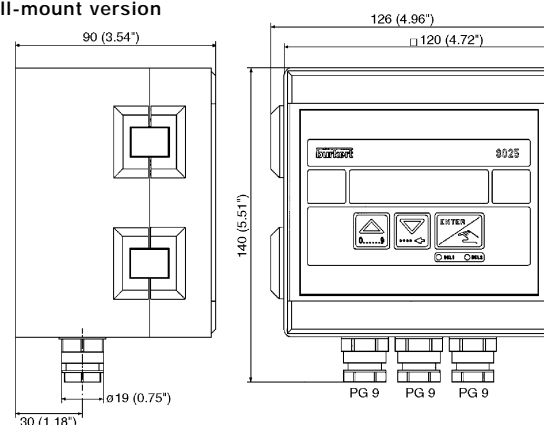
Dimensions [mm] True union JIS

Port connection	DN	Variable dimensions [mm]				
		øD	L	L1	L3	H
True union	15	18.40	135	90	96	122
connection with	20	26.45	151	100	106	119
solvent/ fusion	25	32.55	167	110	116	120
spigot	32	38.60	175	110	116	123
	40	48.70	196	120	127	127
	50	60.80	219	130	136	134

Panel version



Wall-mount version



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Ordering Chart

A compact Flow Transmitter System type 8035 is consisting of two basic units as to know:

- Fitting type S030 which houses the paddle-wheel,
- Transmitter electronic compact version type SE35

Selection example: A Flow Transmitter System for PVC pipe DN25 consists of:

- Fitting type S030 (True union with solvent spigot) 423 940 U
- Transmitter electronic type SE35 (4...20 mA, pulse output, 2 totalizers, 2 relays, 12...30 VDC) 423 918 J

Ordering Chart Fittings Type S030

PVC body

Specifications	ITEM - NO.					
	DN 15	DN 20	DN 25	DN 32	DN40	DN 50
True union connection with solvent spigot (Europe standard version)	423 938 N	423 939 P	423 940 U	423 941 R	423 942 J	423 943 K
True union connection with solvent spigot (North America standard version)	423 950 W	423 951 K	423 952 L	423 953M	423 954 N	423 955 P
True union connection with solvent spigot (JIS standard version)	429 072 T	429 073 U	429 074 V	429 075 W	429 076 X	429 077 Y
Solvent joint connection	423 944 L	423 945 M	423 946 N	423 947 P	423 948 Y	423 949 Z

PP body

Specifications	ITEM - NO.					
	DN 15	DN 20	DN 25	DN 32	DN40	DN 50
True union connection with fusion spigot	423 956 Q	423 957 R	423 958 S	423 959 T	423 960 Y	423 961 M
Weld-end connection	423 962 N	423 963 P	423 964 Q	423 965 R	423 966 J	423 967 K

PVDF body

Specifications	ITEM - NO.					
	DN 15	DN 20	DN 25	DN 32	DN40	DN 50
True union connection with fusion spigot	423 968 U	423 969 V	423 970 S	423 971 P	423 972 Q	423 973 R
Weld-end connection	423 974 J	423 975 K	423 976 L	423 977 M	423 978 W	423 979 X

Ordering Chart Transmitter Electronics Compact Type SE35

Specifications	ITEM - NO.		
	Power Supply	Cable Entry	
Flow transmitter with 4...20 mA, pulse output, 2 totalizers	12-30 VDC	DIN 43650 PG9	423 915 F
Flow transmitter with 4...20 mA, pulse output, 2 totalizers	12-30 VDC	1x PG 13.5	423 916 G
Flow transmitter with 4...20 mA, pulse output, 2 totalizers, 2 relays	12-30 VDC	2x PG 13.5	423 918 J
Flow transmitter with 4...20 mA, pulse output on relay reed, 2 totalizers	12-30 VDC	2x PG 13.5	423 919 K
Flow switch with 2 relays	12-30 VDC	2x PG 13.5	423 917 H
Batch controller with 2 totalizers, 1 flow, 2 relays	12-30 VDC	2x PG 13.5	423 920 Q
Stand alone with 2 totalizers, 1 flow	9 VDC batteries	None	423 921 D
Flow transmitter with 4...20 mA, pulse output, 2 totalizers	115-230 VAC	2x PG 13.5	423 922 E
Flow transmitter with 4...20 mA, pulse output, 2 totalizers, 2 relays	115-230 VAC	2x PG 13.5	423 924 G
Flow transmitter with 4...20 mA, pulse output on relay reed, 2 totalizers	115-230 VAC	2x PG 13.5	423 925 H
Flow switch with 2 relays	115-230 VAC	2x PG 13.5	423 923 F
Batch controller with 2 totalizers, 1 flow, 2 relays	115-230 VAC	2x PG 13.5	423 926 A

Ordering separate Flow Transmitter System (panel or wall-mount versions) see next page

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Ordering Chart Panel and Wall-mount Versions Type 8025

A Flow Transmitter System in separate version is consisting of three basic units as to know:

- Separate Transmitter Electronic Type 8025 in panel or wall-mount version,
- Flow Sensor Electronic Type SE30,
- Fitting Type S030 which houses the paddle-wheel

Selection example:

-Sep. Transmitter electronic type 8025 (Wall, 4...20 mA, pulse output, 2 totalizers, 2 relays, 12...30 VDC)	418 396 S
-Fitting type S030 (PVC, True union with solvent spigot, DN 25)	423 940 U
-Sensor electronic type SE30 (Hall sensor "low power")	423 914 E

Panel version

			ITEM - NO.
Specifications	Power Supply	Cable Entry	
Flow transmitter with 4...20 mA, pulse output, 2 totalizers	12-30 VDC	None	418 992 Q
Flow transmitter with 4...20 mA, pulse output, 2 totalizers, 2 relays	12-30 VDC	None	418 994 J
Flow transmitter with 4...20 mA, pulse output on relay reed, 2 totalizers	12-30 VDC	None	418 395 Z
Flow switch with 2 relays	12-30 VDC	None	425 492 A
Batch controller with 2 totalizers, 1 flow, 2 relays	12-30 VDC	None	419 536 P

Wall-mount version

			ITEM - NO.
Specifications	Power Supply	Cable Entry	
Flow transmitter with 4...20 mA, pulse output, 2 totalizers	12-30 VDC	3x PG 9	418 397 T
Flow transmitter with 4...20 mA, pulse output, 2 totalizers, 2 relays	12-30 VDC	3x PG 9	418 396 S
Flow transmitter with 4...20 mA, pulse output on relay reed, 2 totalizers	12-30 VDC	3x PG 9	418 398 C
Flow switch with 2 relays	12-30 VDC	3x PG 9	425 493 B
Batch controller with 2 totalizers, 1 flow, 2 relays	12-30 VDC	3x PG 9	419 539 S
Stand alone with 2 totalizers, 1 flow	9 VDC batteries	1x PG 9	418 402 Z
Flow transmitter with 4...20 mA, pulse output, 2 totalizers	115-230 VAC	3x PG 9	418 400 B
Flow transmitter with 4...20 mA, pulse output, 2 totalizers, 2 relays	115-230 VAC	3x PG 9	418 399 D
Flow transmitter with 4...20 mA, pulse output on relay reed, 2 totalizers	115-230 VAC	3x PG 9	418 401 Y
Flow switch with 2 relays	115-230 VAC	3x PG 9	425 494 C
Batch controller with 2 totalizers, 1 flow, 2 relays	115-230 VAC	3x PG 9	419 542 V

Sensor Electronic for Type SE30 for separate version of 8025

			ITEM - NO.
Specifications	Power Supply	Cable Entry	
Coil sensor (only connectable to type 8025 wall-mount version with batteries)	None	DIN 43650 PG9	423 912 C
Hall sensor " low power" (only connectable to type 8025, 8021, 8023 and 8034)	from 8025	DIN 43650 PG9	423 914 E