valmetSP Consistency Transmitter

T00112EN
2003-06-10

Type specification selection chart

valmetSP ☐ ☐ ☐ ☐ ☐

Signal
MA / PA /

Blade type
LL/LLP/LS/LSP/JL/UL/ULP/GL/RL/HL/WS/NO
Rem. third character P = polished option
(GL, RL, HL and WS always polished)

Wetted part's materials *)
SS AISI316 L (LL/LLP/LS/LSP/UL/ULP/GL/RL/HL/JL)
TI Titanium (LL/GL/HL/JL)
HC

Process coupling and its material *)
NO No process coupling
SS Std., AISI316 L
TI Std. Titanium
HC Std. Hastelloy C276
SB Blow line installation for HL blade, AISI316 L
SW For WS blade, AISI316 L
TJ For JL blade, Titanium.
for fibreglass-reinforced plastic pipe.

Process pipe diameter
For SS Std.: From DN 100 mm to DN 800 mm
For SW: From DN 100 mm to DN 400 mm

*) HC and TI are marked on wetted parts

The valmetSP consistency transmitter is used for pulp consistency measurement in the pulp and paper industry. The transmitter's operation is based on shear force measurement and it is mounted directly on the process pipe.
The transmitter is supplied with an operating unit (mA + HART® version may also be supplied without one), a blade type to suit the specified application, and a process coupling.

TECHNICAL SPECIFICATIONS

Consistency range: 0.7% to 16% Cs.

Span: Min. 0.8 %Cs
Max. 30 N - zero elevation

Zero elevation: Max. 30 N - Span

Damping time constant: 1 to 60s
Factory setting 2 s (type HL: 20 s)

valmetSP MA:

Output signal
Two-wire transmitter (2W):
4-20 mA + HART®

Power supply: 18 to 35 VDC

Load capacity
18 V / 250 Ω

Note! HART® requires min. 250 Ω load resistance

valmetSP PA

Output signal
PROFIBUS - PA Slave
IEC 61158-2

Power supply: 9 to 32 V DC
22 mA +/- 2 mA

Space for later use

Process pressure: max. 25 bar
If process pressure > 10 bar, see if the coupling's mounting hole has to be reinforced. Refer to Operating and Installation Instructions.

Environmental conditions
Ambient: -20 to 60°C, 0-100% RH (no condensate)
Process: 0 to 120°C
Storage: -50 to 80°C

PERFORMANCE SPECIFICATIONS

Tested in reference conditions in accordance with IEC60770.
Linearity of force measurement: ±0.5% of span
Hysteresis: 0.025 N
Repeatability: 0.01 N
Static pressure effect: 0.02 N per 1 bar
Process temperature effect: 1% of reading per 10°C
Vibration effect: 2 g per 10-2000 Hz: less than ±0.03 N

Examples:
- 0.01 N corresponds to 0.005% consistency variation in bleached softwood chemical pulp (e.g. spruce sulphate) at 3.0% consistency when using the LL sensor.
- 0.01 N corresponds to 0.01% consistency variation in screened recycled fiber pulp at 3% consistency when using the RL sensor.

Pulp type	Application ranges of blade types (% Cs)							
	UL	LL	LS	GL	RL	WS	HL	JL
SW unbleached	0.7-3	1.5-6		(1.7-7)	(1.5-6)		4-16	1.5-6
SW bleached	0,7-3	1.5-6		(1.7-7)	(1.5-6)		4-16	1.5-6
HW unbleached	1-3	(1.8-5)		1.8-7.5	1.7-6.5		5-16	1.8-6
HW bleached	1-3	(1.8-5)		1.8-7.5	1.7-6.5		5-16	1.8-6
Groundwood	1-4			1.8-7.5	1.7-6.5		5-16	
RMP, TMP, CSF < 200 ml (SR > 52)	0.7-3			1.5-6.5	1.7-6.5		5-16	
RMP, TMP, CSF > 200 ml (SR < 52)	0.7-3	1.5-5.5	3-6	(1.5-6)			4-16	
CTMP	0.7-3	1.5-5.5	3-6		(1.5-5.5)		4-16	
Recycled fiber, OCC, unscreened						2-8		
Recycled fiber, unscreened						2-8		
Recycled fiber, OCC, screened	1-3			1.7-8	1.5-7		4-16	
Recycled fiber, screened	1-5			1.8-8	1.7-8		5-16	

Values in brackets are second choices
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EMC test standards

Radiated interference:
EN50081 - 1: 1993
Reference standard EN 55022:
1987 / Class B
Interference immunity:
EN 50082 - 2: 1995
Reference standards EN 61000-4-2, -4, -5, -8, -11, ENV 50140, ENV 50204, ENV 50141

Permissible velocity of flow (m/s)

	Min / max
valmetSP UL	0.1 / 1-3
valmetSP HL	0.4 / 8
ValmetSP WS	0.4 / 4
Other types	0.4 / 5

For detailed specification of flow velocities refer to Operating and Installation Instructions.

Materials

Wetted materials: See type specification chart
Electronics housing: PTB
Mounting clamps and screws: AISI316
Wetted gaskets: PTFE and special rubber material
Operator unit: Polycarbonate

Enclosure class

Transmitter: IP66 (NEMA 4X)
Operator unit: IP65

Weight

valmetSP WS: 7.1 kg
Other transmitter types: 5.8 kg

Accessories:

Turbulence Reducer

FlowTR® , Document W4730198
FlowTR® reduces highly turbulent flow in short straight pipe sections.

Welding guide

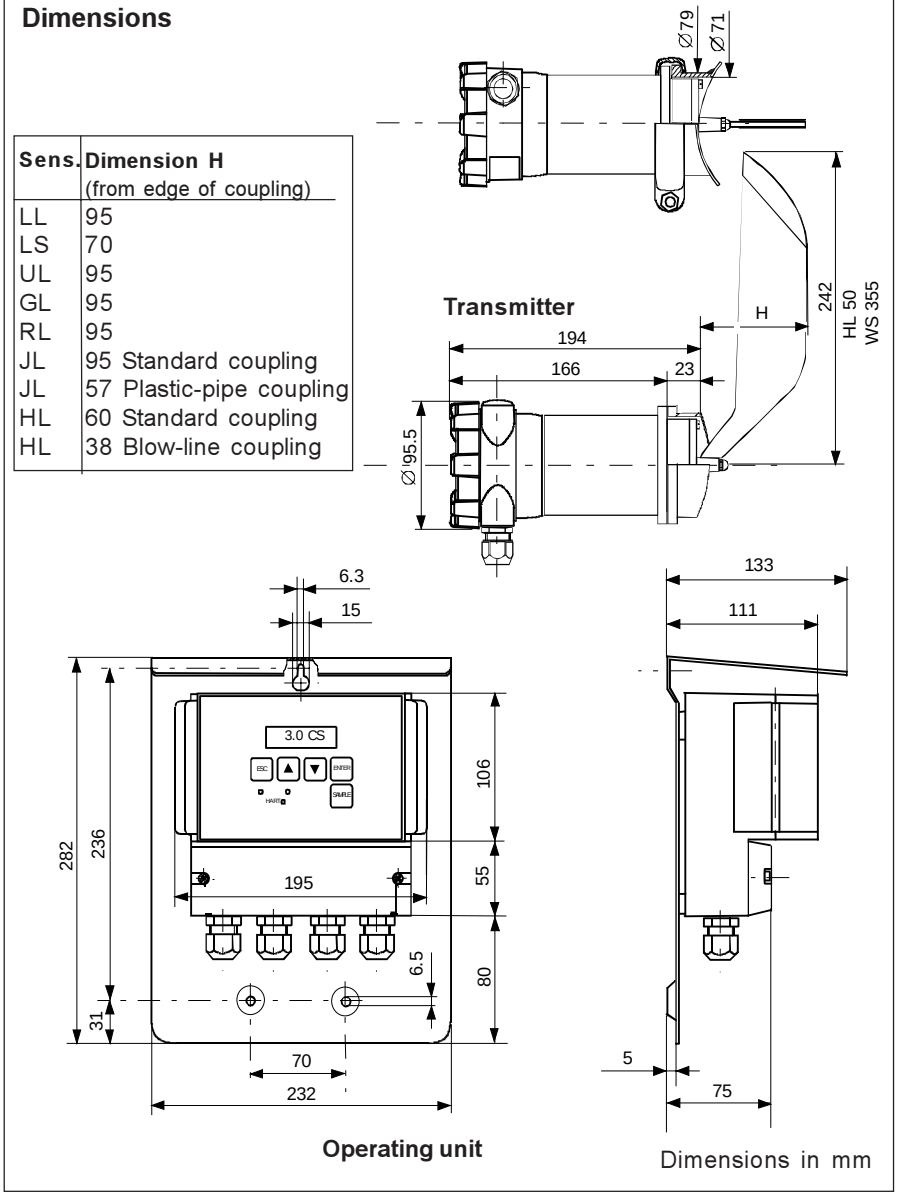
We recommend the use of the welding guide shown in the Operating and Installation Instructions for the installation of a standard process coupling.

Patents

AT E77691 B	FR 0274478
DE 3780021	GB 0274478
EP 0274478	SE 0274478
FI 75424	US 4,757,708

Dimensions

Sens.	Dimension H (from edge of coupling)
LL	95
LS	70
UL	95
GL	95
RL	95
JL	95 Standard coupling
JL	57 Plastic-pipe coupling
HL	60 Standard coupling
HL	38 Blow-line coupling



Calibration curves and calibration

The transmitter is provided with built-in calibration curves and linearisation for all blade types and recommended pulp types. There are max. 8 customised recipes, each of which contains one automatically calibrated pulp type curve and possible information on filler content.
Active recipe is selected from the display unit's operating keys, through HART® interface, through binary inputs or through Profibus PA.

Sampling and calibration support

Includes calculation of shear force, standard deviation of consistency and average consistency during sample taking. Sampling time can be synchronised exactly with average value calculation with a sampler provided with switch function (Valmet NOVE). Each of the 8 recipes can be calibrated automatically with 1 or 2 samples. Recipe No. 1 can be additionally calibrated with max.16 calibration points.

Recycling of used up units

Almost all parts of units are suitable for recycling.
Parts materials are specified in documents dispatched with the product.
Also a separate recycling instructions guide is available from the manufacturer.
Alternatively the manufacturer takes care of the used up units on a special fee.