

Technical Specifications

kajaaniROTARY™ consistency transmitter is used for pulp consistency measurement in pulp and paper industry. The transmitter's operating principle is based on shear force measurement and it's installed directly on the process pipe.

Transmitter is supplied with an operating unit (TCU). Sensing element is selected based on pulp type and measured consistency range. Optional mounting chamber/process coupling is selected based on process pipe diameter and pressure rating.



Main features:

Measuring range	1.5 - 18 %Cs
Span min.	0.5 %Cs
Repeatability	±0.01%Cs
Sensitivity	0.001 %Cs
Damping	adjustable 1 to 60 s

Environmental specifications:

Ambient Temperature	-20...+70°C, -4...+158°F
Storage Temperature	-50...+80°C, -50...+176°F

Transmitter:

Enclosure Class	IP66 (NEMA 4X)
Enclosure material:	Aluminum
Material of wetted parts:	
• AISI 316L (std)	
• 254 SMO®	
• Hastelloy-C 276	
Sealing:	EPDM/Kalrez

Motor:

Enclosure Class	IP55 (optional IP56)
Power:	0.36 kW
Supply voltages:	200 - 690 VAC / 45 - 65 Hz
See table 2 for motor type selection.	

Operating Unit, TCU:

Enclosure Class	IP 65 (NEMA 4)
Operating Voltage	90...260 VAC / 25 W
Outputs:	
• Current output:	4 - 20 mA + HART® 18 ...35 VDC
• Profibus PA	
Inputs:	2 galvanically isolated binary inputs for recipe selection or sampler status (12 - 48 VDC)
Cable length:	10 m/33 ft (30 m/98 ft as option)

Configuration and diagnostics tools:

- DTM for FieldCare™
- AMS

Process Specifications:

Process Temperature	0...+120°C / +32...248 °F
Flow velocity	0,3 - 5 m/s
Process Rating	
• PN10/150 lbs.	
• PN25/363 lbs.	
Vibration	Max. 2g(20 m/s ²), 10 - 2000 Hz

Sensors and consistency ranges (min/max) by pulp types: See table 1.

Table 1. Sensors and consistency ranges by pulp types.

Pulp type	Chemical pulp		Mechanical pulp			Recycled pulp	
	HW	SW	TMP	GW	CTMP	DIP	OCC
TM	1.6-7	1.5-6.5	1.7-7	1.7-7	1.7-7	1.8-8	1.8-8
PL	5.5-12	5-11	6.5-13	6.5-14	6.5-15	7-13	7-13
PM	7.5-14	7-13	8-14	8-15	8-16	8.5-14	8.5-14
PH	10-16	9-15	11-16	11-16	11-16	12-18	12-18

Technical Specifications

Weights and sizes:

Transmitter	35 kg (PN25 38kg)
Total package size (WxHxD)	59.5x45x34 cm
Total package weight	41 kg (PN25 44 kg)
TCU package size (WxHxD)	55x14x36 cm
TCU package weight	2,5 kg

EMC test standards:

Radiated interference: EN50081-1: 1993
 Reference standard EN 55022: 1987/Class B
 Interference immunity: EN 50082-2: 1995
 Reference standards EN61000-4-2, -4, -5, -8, -11,
 ENV 50140, ENV 50204, ENV 50141

Sealing water requirements

- Pressure: 0.5 - 9 bar
- Flow rate: 0.5 - 1 l/min
- Temperature: max. 60 C
- Quality: no impurities, particle size <200 µm

Table 2. Motors Voltages and Connections.

Frequency	50 Hz		60 Hz	
	Voltage (VAC)		Voltage (VAC)	
Motor type	Delta	Star	Delta	Star
MS	220-240	380-420		440-480
MD	380-420	660-690	440-480	
MF*		500-550		550-575
MX**			200-220	

* non standard, CSA safety certificate available on request

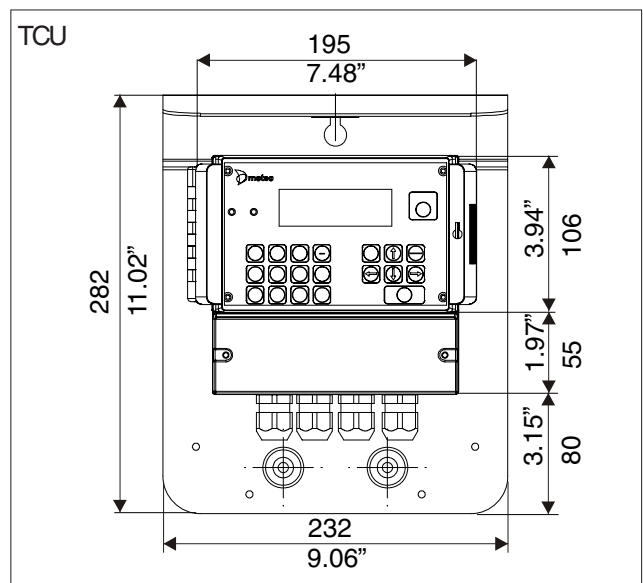
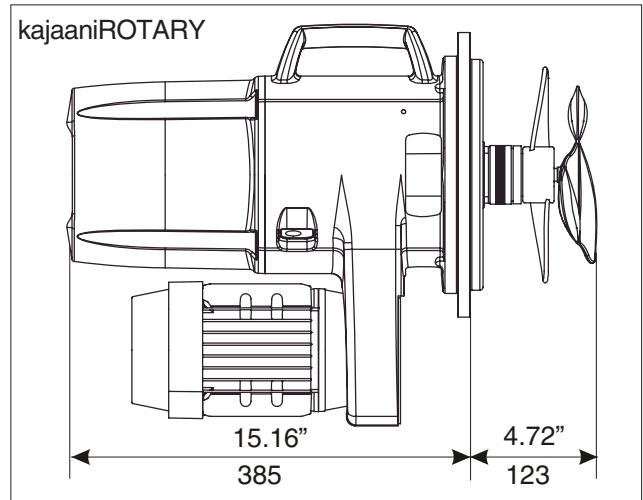
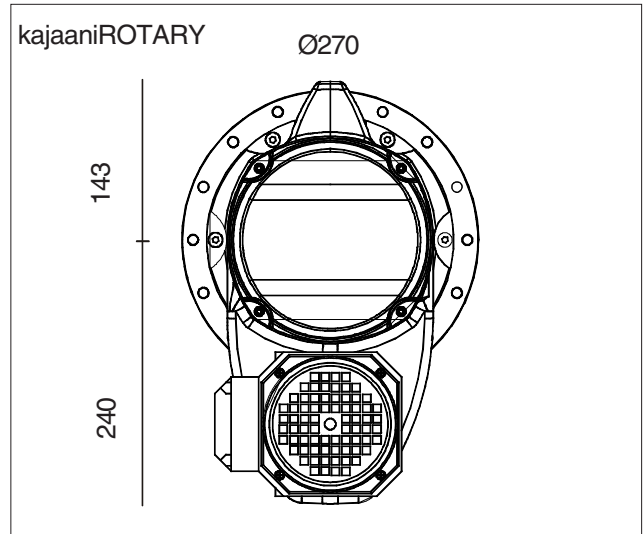
** non standard, also available for other voltage or frequency ratings on request

Options

Table 3. Mounting chamber and process couplings.

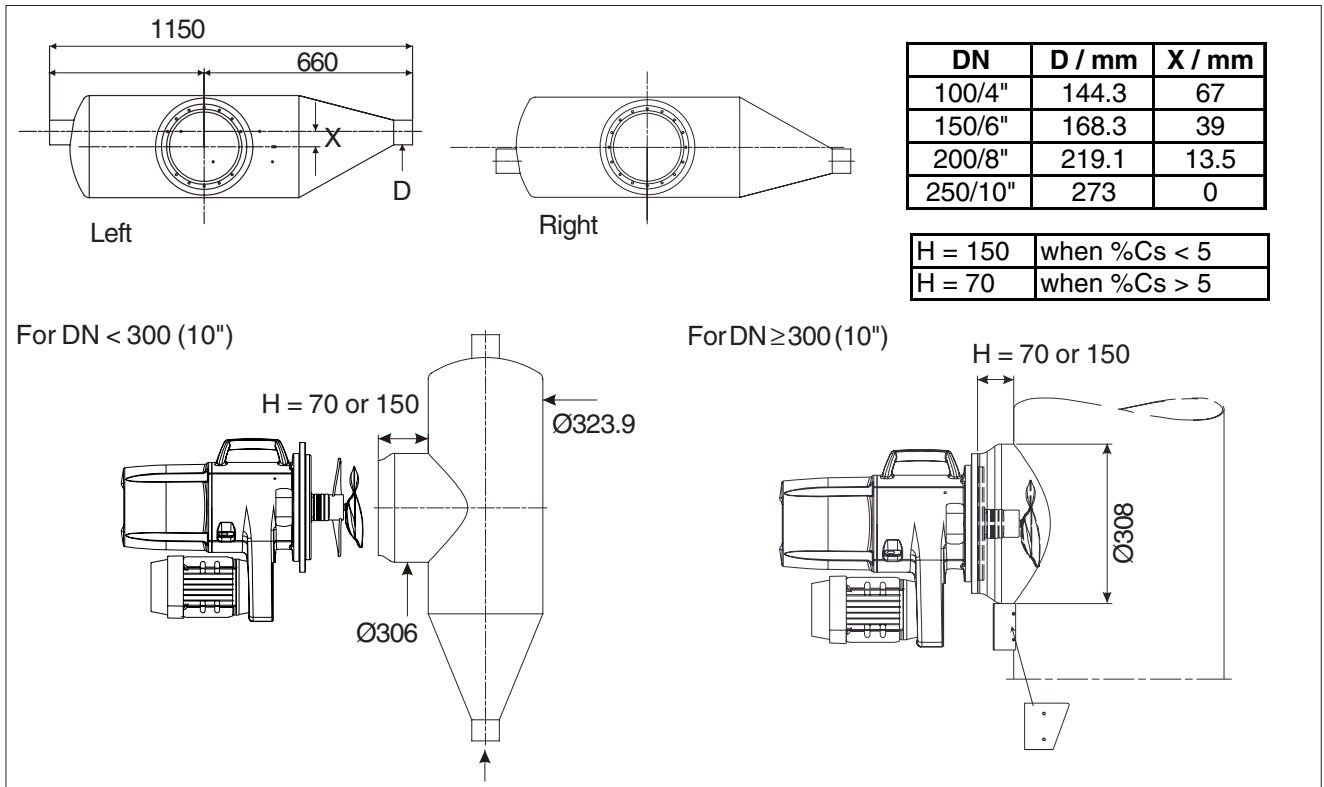
Mounting chamber	Process coupling	
	PN10	PN25
Pipe size	Pipe size	Pipe size
DN100	≥DN300	≥DN250
DN150		
DN200		
DN250		

Dimensions:

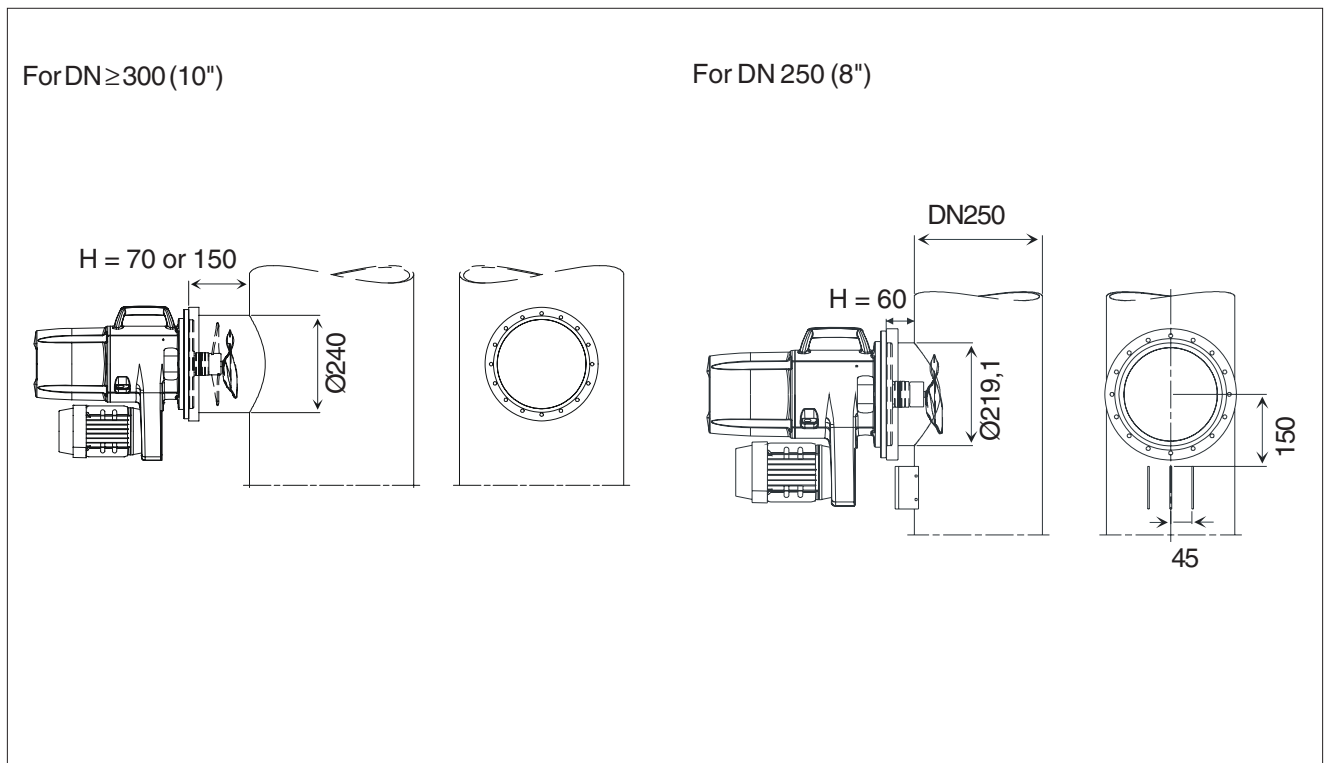


Technical Specifications

Options: Measurement chamber and process coupling: horizontal and vertical installation (PN10)



Options: Process coupling: horizontal and vertical installation (PN25)



Technical Specifications

kajaaniROTARY™ type codes (ordering codes) for transmitters

Transmitter

Product	Communication	Sensing element	Wetted parts	Pressure rating	Motor type
kajaaniROTARY	MA	TM	SS	J	MS
ma+HART: MA Profibus PA: PA					
1.5-6 %Cs: TM 5-10 %Cs: PL 8-12 %Cs: PM 10-18 %Cs: PH					
AISI 316L: SS 254 SMO®: SMO Hastelloy-C 276: HC					
PN10: J PN25: L					
220-480 VAC: MS 690 VAC: MD 550-575 VAC: MF 200-220 VAC: MX					

Remarks: Consistency ranges for specific sensing element are typical as well as voltage ranges for different motors. For selection of mounting parts, refer document Mounting parts for kajaaniROTARY.



Metso Automation Field Systems
Lentokentänkatu 11, P.O. Box 237
FI-33101 Tampere
Finland
Tel. +358 20 483 170
Fax +358 20 483 171