FOCUS-1 and FOCUS-1 Ex (DRAFT)

MEDIA		Single phase liquid with <5% solid content, <2% gas content and max. Viscosity up to 150 cSt				
APPLICATIONS		Direct Flow control applications can replace a valve or a combination of valves with other flow control applications				
DESCRIPTIONS		CONTROL ELEMENT	 Total Weight = approx. 138 kg	MEASUREMENT SENSOR ELEMENTS		
ELEMENT NAME		Valve		Flow	Pressure	Temperature
TECHNOLOGY		Valve position % or Process control		Ultrasonic flow measurement	Thin film technology	PT 100
DEVICE INFORMATION		DN 100, 4 inch		Velocity of sound	Inlet pressure	Temperature
				Volumetric flowrate	Outlet pressure	
					Differential pressure	
TECHNICAL PARAMETERS	Overall Control Accuracy	With an inbuilt PID controller, control accuracy is < 1%	Measurement accuracy	Uncertainty better than 0,5% of setpoint value and stability better than + 0,2%.		
	Max flow velocity	Typically, up to 7m/s	Pressure measurement range	0 to 40 bar g 0 to 300 lbs.		
	Face to Face	As per ISA 75.08 or EN 558-1	Burst pressure	120 bar g		
			Temperature measurement range	-10 up to 180 °C (special request: -40 up to 180 °C)		
MATERIAL OF CONSTRUCTION	Body / Bonnet	1.4408 /ASTM A351 Gr.CF8M	Bonnet	AISI 316L / A351 CF8M		
	Stem	1.4404 / 316L	Process Connection	1.4404 /316L / A351 CF8M		
	Plug	1.4404 / 316L	Housing	1.4404 /316L		
	Seat	1.4404 / 316L	Sensor Diaphragm	1.4548 /17-4PH		
	Packing / Gasket	PTFE/PTFE with Carbon PTFE / Graphite on metal core Silicone				
DEVICE PARAMETERS	Seat leakage	ANSI Class IV & ANSI Class V	DEVICE PARAMETERS	Electrical connection	Spring clamp connectionsaccording to VDE 0100	
	Size	SB 63: Kv63 or Cv75 SB 80: Kv100 or Cv120 SB 100: Kv160 or Cv190 for 100% Opening		Air Filter Regulator	Optional	
	Pressure class	ANSI 150 # / 300#PN 16 / PN 40		Pneumatic conn.	1/2" NPT	
	End connection	Flanged connections according toANSI B16.5 or DIN/EN 1092-1B1 <Ra 3,2 ....12,5µm>		Air supply min/max	3.8 Bar.g /6 Bar.g	
	Trim type	Standard V - Port plug,with Metal seal		Power supply	100 ... 230 V a.c., 50/60 Hz 18 ... 32 V d.c.	
	Flow characteristics	EQ %		Power Consumption	< 30 VA (AC variant) < 15 Watt (DC variant)	
				Cable entry connection compartment	M20X1.5 – metallic cable glands *Standard for FOCUS-1(non-Ex) *IECEx, ATEX Ex eb certified for FOCUS-1_Ex (Ex variant)	

SPECIFICATIONS SHEET FOCUS-1, DN 100 & 4 inch

FOCUS-1 DEVICE PARAMETERS	
Design pressure Min. / Max.	Depends on the pressure class
Design temperature Min. / Max.	-10 °C / -40 °C up to +180 °C
Ambient conditions Min. / Max	-20 °C up to +55°C

PRE-REQUISITES FOR INSTALLATION	
Inlet run	Min. 4 DN (Straight inlet)
Outlet run	0 DN (Straight outlet)
Face to Face Dimension	4" inch ANSI 150: 352mm 4" Inch ANSI 300: 368 mm
	DN 100 PN 16 : 350 mm DN 100 PN 40 : 350 mm

DEVICE MANAGEMENT & VALUE-ADDED FEATURES	
General	An integrated measurement & control device with capabilities to measure flow, pressure & temperature & also control flow. Powered with an onboard computer with diagnostic capabilities & generating real-time product & process alarms.
Input & Output	**FOCUS-1_Non-Ex :** 4 - 20 mA current input with HART7® passive 4 - 20 mA current output passive and active **FOCUS-1_EX :** 4 - 20 mA current input passive 4 - 20 mA current output with HART7® passive 4 - 20 mA current input passive (see External Sensor)
External Sensor Input	4 - 20 mA current input passive via an external sensor as a set point (available only for the Ex variant).
Digital Twin Technology	Sensor redundancy is based on an algorithm board that uses correlation of dynamic process data to generate model values for key process parameters like flow, pressure & temperature in case of sensor failure.
Remote Access for Control & Maintenance	User-based controlled access to the device through Wi-Fi with a single button on the device or via wired ethernet connection with dual password protection to the internal web server on a smartphone, tablet, or laptop for easy and secure installation, configuration & maintenance.
Set point Control	With integrated sensor technology & onboard PID controller, Process control can be through set points via valve position, flow, inlet, and outlet pressure & also pressure drop for fast & accurate control in the process loop.
PID Auto Tuning	Algorithm-based autotuning of inbuilt PID controller reaction to setpoint changes and unmeasured disturbances such that variability of control error is minimized to ensure consistent product quality.
Single button control	Single button for easy and secure installation & maintenance accessvia smartphone, tablet or laptop
Wi-Fi	According to standard 802.11 b/g/n Range: up to 180 m Frequency: 2.4 GHz to 2.4835 GHz Operating channels -11: (Ch. 1-11) - USA & North America -13: (Ch. 1-13) - Europe -14: (Ch. 1-14) - Japan
Communication protocols	4-20mA, HART7® (non-Ex and Ex variants), Profinet (non-Ex variant only), EtherNet/IP (non-Ex variant only)
Health status communication	Communication via LED Ring in colors as per NAMUR NE107 & NE43 standards and via HART7®
Languages dashboard	English, German, French
On board data storage	Timestamped logs of process & diagnostic data, sufficient for 14 months of condensed data and 14 weeks of raw data.
Webserver	Integrated for installation & service

APPROVALS & CERTIFICATES		
NAMUR	NE21, 43, 53, 80,107	
Ingress Protection IEC 529/ EN60529	IP66	
CE	2014/68/EU - RED Radio Equipment	
	2014/68/EU - PED Eq. under pressure	
	2006/42/EU Machinery Direct.	
	2014/34/EU - ATEX Eq. for HAZLOC	
	2011/65/EU - ROHS	
	Humidity	15 %-99%
	Altitude	2000m
Hazardous Area Classification (HAZLOC)	FOCUS-1 device for non-HAZLOC FOCUS-1 Ex device for ZONE 1 HAZLOC	
Hazardous Area Classification	Europe : ATEX II 2G Ex db eb ia [ia Ga] op is IIB+H2 T3...T4 Gb International: IECEX Ex db eb ia [ia Ga] op is IIB+H2 T3...T4 Gb	
Shock Resistance	IEC 65-2-2730g for 18ms	
Vibration Resistance	IEC 68-2-6; 0,5g 1800Hz up to 1800 Hz IEC 60721; 15g	
IT Security	According to IEC 62443 (no certificate)	