ETL 065-065-160 GGSAV11D201502 B, inkl. PM - ohne Motor!
Inline pump

Operating data

Requested flow rate		Actual flow rate	92.55 m³/h
Requested developed head		Actual developed head	34.96 m
Pumped medium	Water Clean water Not containing chemical and mechanical substances which affect the materials	Efficiency	79.2 %
		MEI (Minimum Efficiency Index)	= 0.70
		Power absorbed	10.71 kW
		Pump speed of rotation	3000 rpm
Ambient air temperature	20.0 °C	NPSH required	5.61 m
Fluid temperature	92.0 °C	Permissible operating pressure	16.00 bar.g
Fluid density	964 kg/m³		
Fluid viscosity	0.32 mm²/s	Discharge press.	4.30 bar.g
Suction pressure max.	1.00 bar.g	Min. allow. mass flow for continuous stable operation	6.31 kg/s
Mass flow rate	24.78 kg/s		
Max. power on curve	13.30 kW	Max. allow. mass flow	40.58 kg/s
Min. allow. flow for continuous stable operation	23.58 m³/h	Design	Single system 1 x 100 % Tolerances to ISO 9906 Class 3B; below 10 kW acc. to paragraph 4.4.2
Shutoff head	44.44 m		

Design

Pump standard	Without	Shaft seal code	11
Caution: The overall length from suction to discharge can be different to the previous generation of Etaline.		Sealing plan	Single-acting mechanical seal with vented chamber (A-type casing cover, taper bore)
Design	Close-coupled in-line	A liquid free of solids is assumed	
Orientation	Vertical	Seal chamber design	Conical seal chamber (A-type cover)
Suction nominal dia.	DN 65	Contact guard	With
Suction nominal pressure	PN 16	Wear ring	Casing wear ring
Suction position	180° (down)	Impeller diameter	171.0 mm
Suction flange drilled according to standard	EN1092-2	Free passage size	11.6 mm
		Direction of rotation from drive	Clockwise
Discharge nominal dia.	DN 65	Silicon free pump assembly	Yes
Discharge norminal pressure	PN 16	Bearing bracket construction	Close-coupled
Discharge position	top (0°/360°)	Bearing bracket size	25
Discharge flange drilled according to standard	EN1092-2	Bearing type	Anti-friction bearings
		Lubrication type	Grease
Shaft seal	Single acting mechanical seal	Color	Vermilion (RAL 2002)
Manufacturer	KSB		
Type	1		
Material code	BQ1EGG-WA		

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Driver, accessories

Driver type	Electric motor	Insulation class	F to IEC 34-1
Drive standard mech.	IEC	Motor enclosure	IP55
Model (make)	KSB SuPremE®	Cos phi at 4/4 load	0.79
Type series motor manufacturer	SuPremE C2 (with mounting plate for PumpDrive 2, non removable)	Motor efficiency at 4/4 load	93.5 %
		Temperature sensor	3 PTC resistors
		Terminal box position	0° same orientation Viewed from the drive
Drive supplied by	Standard motor supplied by KSB - mounted by KSB	Motor winding	230 / 400 V
Motor const. type	V1	Connection mode	Star
Motor size	160M	Motor cooling method	Surface cooling
Efficiency class	Efficiency class IE5 acc. IEC/TS 60034-30-2 (2016) – free of magnets. The efficiency of the motor for a quadratic torque-speed characteristic is > 95% of the nominal efficiency even at 25% of the nominal power.	Motor material	Aluminium
		Motor noise pressure level	71 dBa
		Driver colour	Same as the pump
		Designed for operation with frequency inverter	Yes
Motor speed	3000 rpm		
Frequency	100 Hz		
Rated voltage	400 V		
Rated power P2	15.00 kW		
Available reserve	39.99 %		
Rated current	32.0 A		

Materials G

Volute casing (102)	Grey cast iron EN-GJL-250/A48CL35B	Casing wear ring (502.1)	Grey cast iron GG/CAST IRON
Casing cover (161)	Grey cast iron EN-GJL-250/A48CL35B	Casing wear ring (502.2)	Grey cast iron GG/CAST IRON
Shaft (210)	Tempered steel C45+N	Shaft sleeve (523)	CrNiMo steel
Impeller (230)	Grey cast iron EN-GJL-250/A48CL35B	Stud (902)	Steel 8.8
		Impeller nut (922)	Steel 8
Motor stool (341)	Grey cast iron EN-GJL-250/A48CL35B	Key (940)	Steel C45+C / A311 GR 1045 CLASS A
Flat gasket (400)	DPAF seal plate asbestos free		
Joint ring (411)	Steel ST		

FOOT 85X 50X 60

3 pump feet with bolts for vertical installation
Pump foot for vertical installation
Etaline(Z) 32-160/ up to 100-160/

Material no.: 47077960

Pump foot, not for Etaline SY
Weight : 2,0 kg

Performance curve

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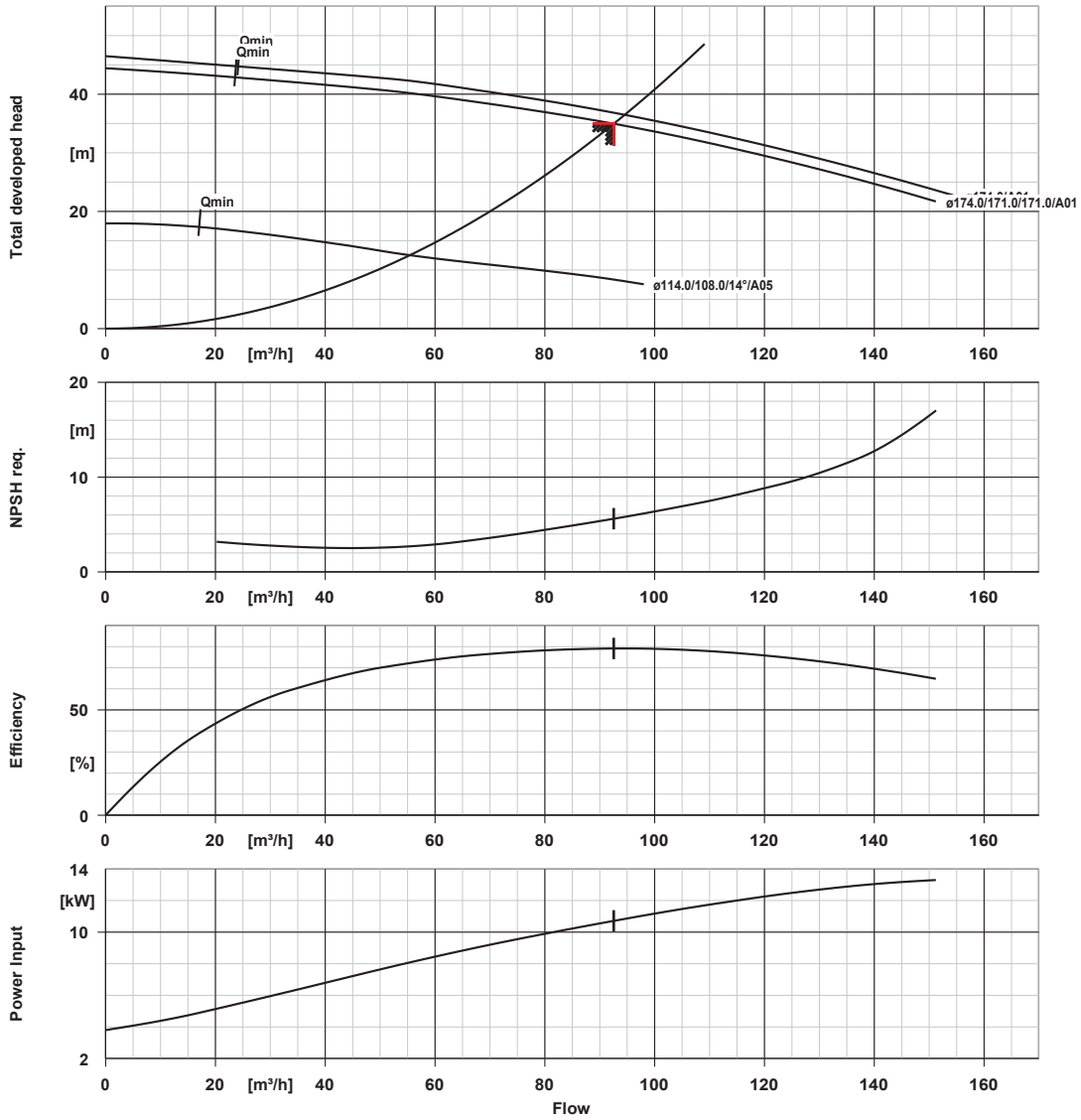

Curve data

Speed of rotation	3000 rpm	Efficiency	79.2 %
Fluid density	964 kg/m³	MEI (Minimum Efficiency Index)	= 0.70
Viscosity	0.32 mm²/s		
Flow rate	92.55 m³/h	Power absorbed	10.71 kW
Requested flow rate	92.60 m³/h	NPSH required	5.61 m
Total developed head	34.96 m	Curve number	K1159.452/31
Requested developed head	35.00 m	Effective impeller diameter	171.0 mm
		Acceptance standard	Tolerances to ISO 9906 Class 3B; below 10 kW acc. to paragraph 4.4.2

Speed curve

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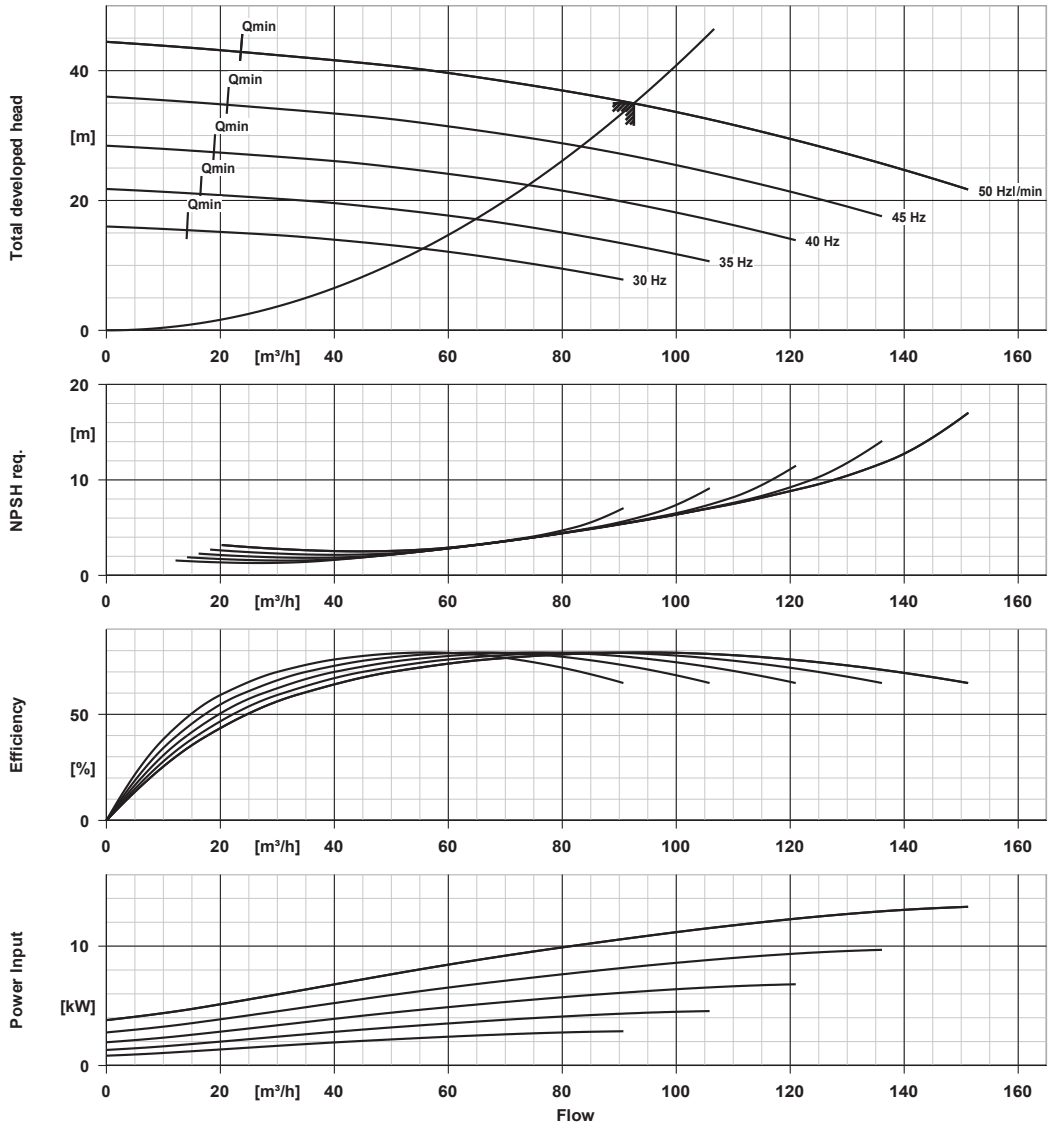
Inline pump



Curve data

Fluid density	964 kg/m³	Total developed head	34.96 m
Viscosity	0.32 mm²/s	Requested developed head	35.00 m
Flow rate	92.55 m³/h	MEI (Minimum Efficiency Index)	= 0.70
Requested flow rate	92.60 m³/h	Effective impeller diameter	171.0 mm

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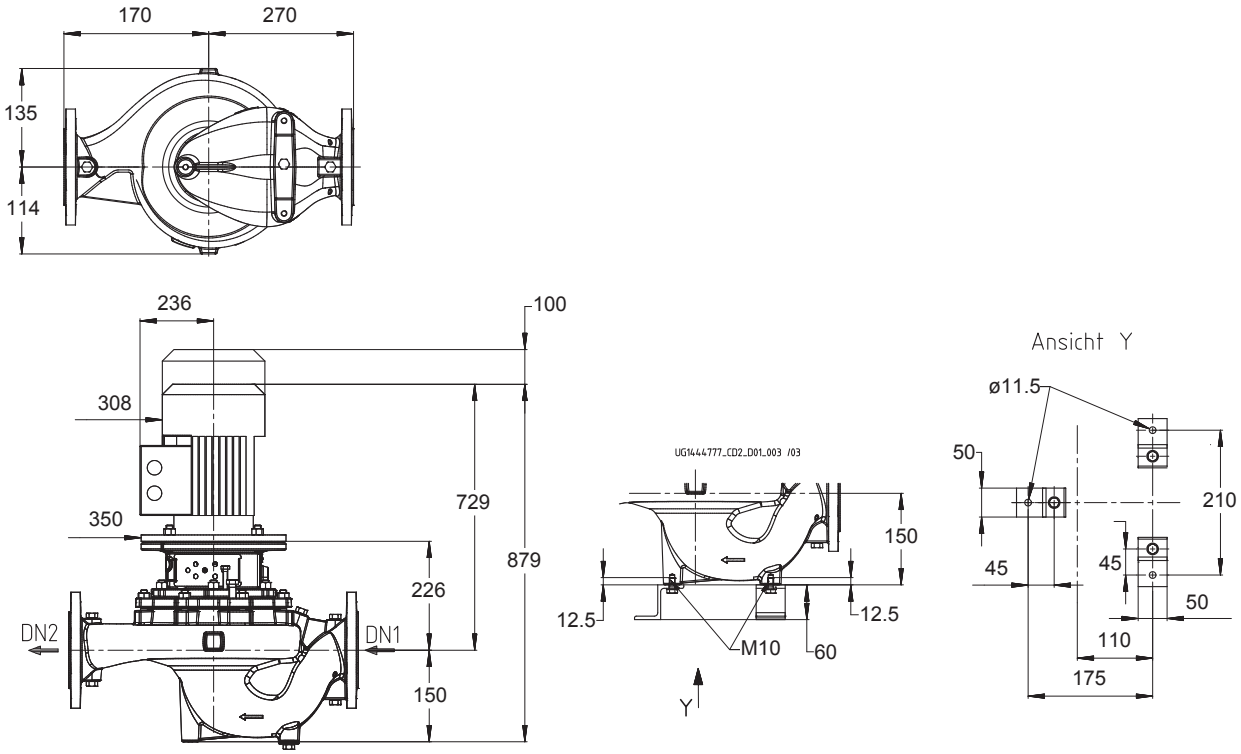
Inline pump



Drawing is not to scale

Dimensions in mm

Motor

Motor manufacturer	KSB
Motor size	160M
Motor power	15.00 kW
Number of poles	2
Speed of rotation	3000 rpm
Position of terminal box	0° same orientation Viewed from the drive

Connections

Suction nominal size DN1	DN 65 / EN1092-2
Discharge nominal size DN2	DN 65 / EN1092-2
Nominal pressure suct.	PN 16
Rated pressure disch.	PN 16

Weight net

Pump	27 kg
Motor	82 kg
Other accessories	2 kg
Total	111 kg

Connect pipes without stress or strain!

For auxiliary connections see separate drawing.

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Supplementary drawing for PumpDrive

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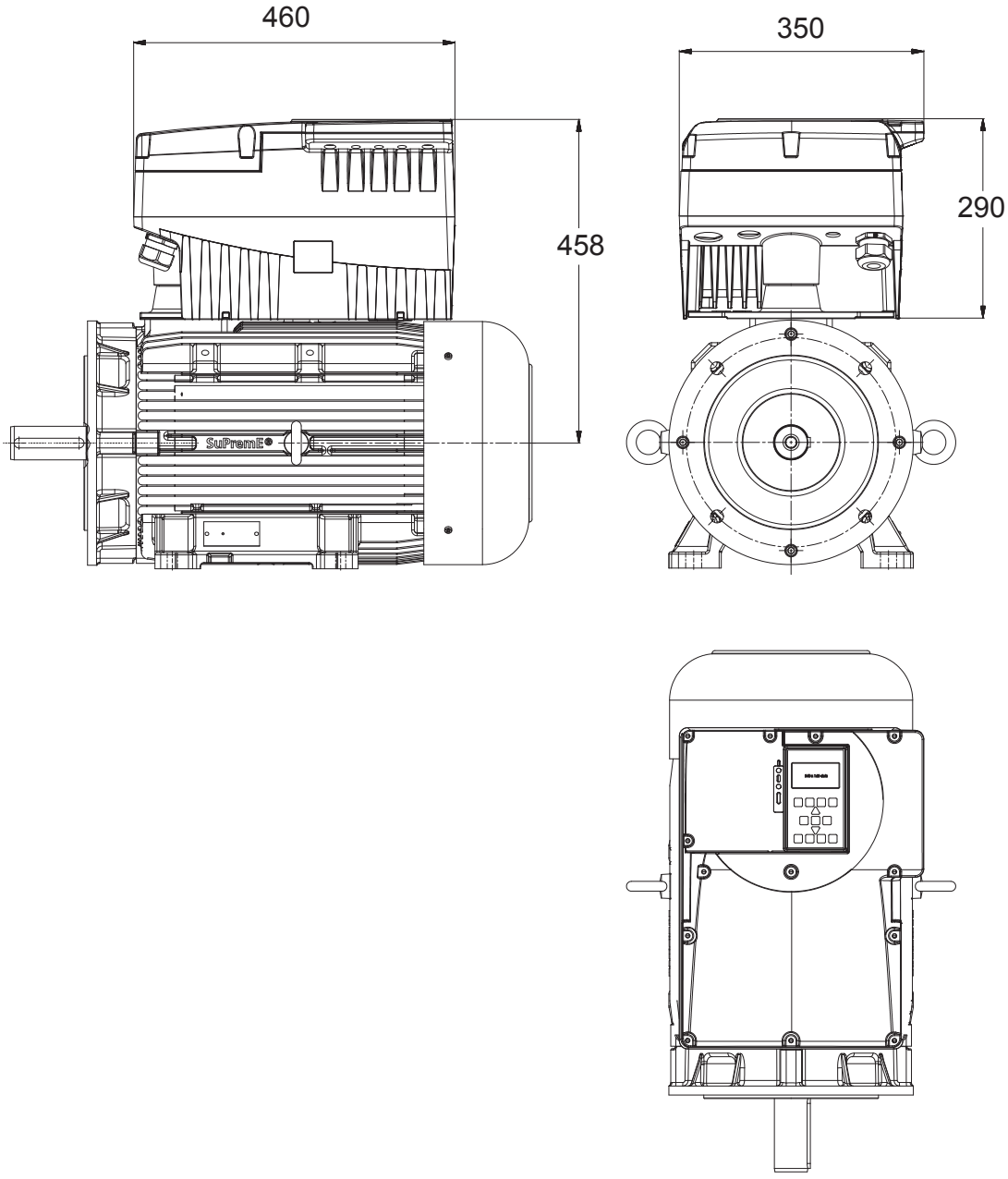

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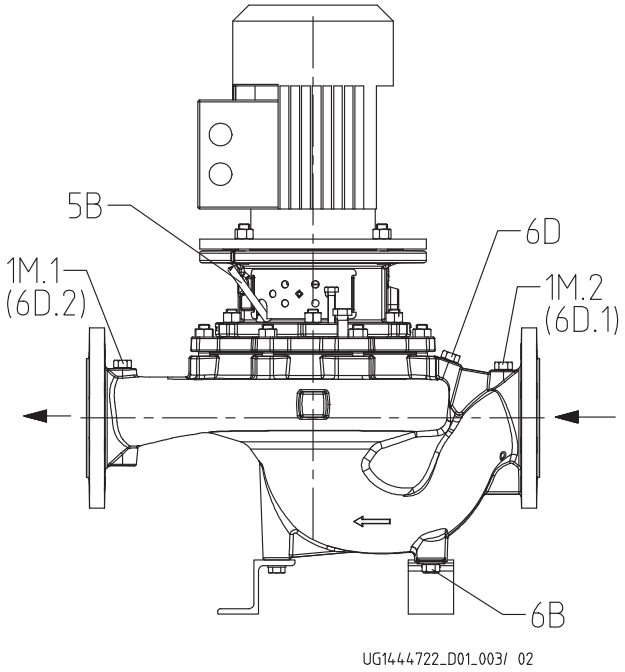
Inline pump



Connections

Pump casing variant		XX46
1M.1 Pressure gauge connection	G 1/4	Pressure sensor for PumpMeter fitted
1M.2 Pressure gauge connection	G 1/4	Pressure sensor for PumpMeter fitted
6B Pumped liquid drain	G 1/4	Drilled and plugged.
6D Pumped medium - filling / venting	G 1/4	Drilled and plugged.
5B venting	G 1/4	Closed with venting plug

PumpMeter
Intelligent Pressure Transmitter PumpMeter - with on-site display of operating point

General description:

PumpMeter in an intelligent pressure transmitter with on-site display of measurement values and operating data of the pump. It comes factory-provided completely assembled and parameterised for your individual pump, to be connected via M12 connector and immediately ready to operate. PumpMeter records the pumps load profile during operation in order to – if applicable – provide information on the potential for energy savings or increased availability.

On-site display unit:

Backlit display unit for on-site display of measurement values and operating data of pump with intuitive and internationally comprehensible icons, rotatable in steps of 90°.

Display values:

suction pressure, pressure at inlet of pump in bar, gauge pressure
discharge pressure, pressure at outlet of pump in bar, gauge pressure
differential pressure between in- and outlet of pump in bar
qualitative indication of operating point

Connection of display unit via connector (M12 x 1, 5-pin for power supply and utilization of communication interface.
Making alternatively available:
measurement value of discharge pressure via analogue signal 4 … 20 mA
calculated value of differential pressure via analogue signal 4 … 20 mA
all display values via serial interface RS 485 (Modbus RTU).
Service interface RS232 for parameterisation.
Factory provided parameterisation for individual pump.

Sensors:

Two gauge pressure transmitters, one each factory provided on both, inlet and discharge side of pump. Connected to display unit via connector.

Accuracy of measurement (sum of errors; relating to measurement range):

±1% for fluid temperature -10 … 100 °C

±2.5% for fluid temperature -30 … -10 °C and 100 … 140 °C

Material of measuring cell: stainless steel (no internal gasket)

Available measurement ranges:

-1 ...3 bar (gauge pressure)

-1 ...10 bar (gauge pressure)

Ambient conditions:

Type of protection: IP 65

Ambient temperature:
-30°C … 80°C (during transport, storage)
-10°C … 60°C (operation)

Fluid temperature: -30°C … 140°C

Scuff resistance:
Ultraviolet resistance (outdoor installation)
Resistance to most cleaning agents
Resistance to oil mist

Silicone free:
No detrimental to paint adhesion

Electric data:

Power supply:
24V DC ± 10%, min. 140 mA
Interfaces, alternatively utilisable:
4 … 20 mA, 3-conductor (discharge pressure or differential pressure)
RS485, Modbus RTU (Slave)
Service interface: RS232
EMC:
EN 61326 (Immunity: industrial environment, Emissions: applicable in home and building environment)