Hydramotion
viscosity

XL3
mini viscometer

Quick-start guide

Designed and manufactured entirely in the United Kingdom

1 Package contents

- Do not attempt to unscrew or disassemble the instrument. There are no user-servicable parts. Doing so will void the warranty.
- Retain the packaging, it might be needed to return the instrument for any periodic calibration checking or servicing.

2m cable

XL3 transducer
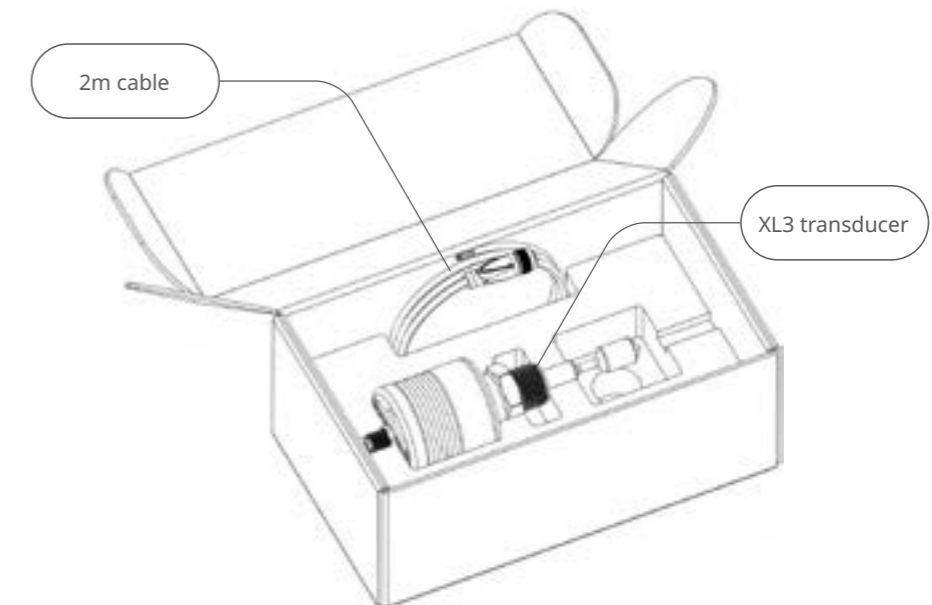
For additional information regarding all aspects of installation and operation, please refer to the main user manual. Scan the QR code to the right to be taken our online support portal.

2 Product dimensions

Ø16   G¾   35A/F   Ø60

5
25
45
65
82
85
105
165

3 Handling & specification

Any damage to the sensing shaft could affect reliability of readings.
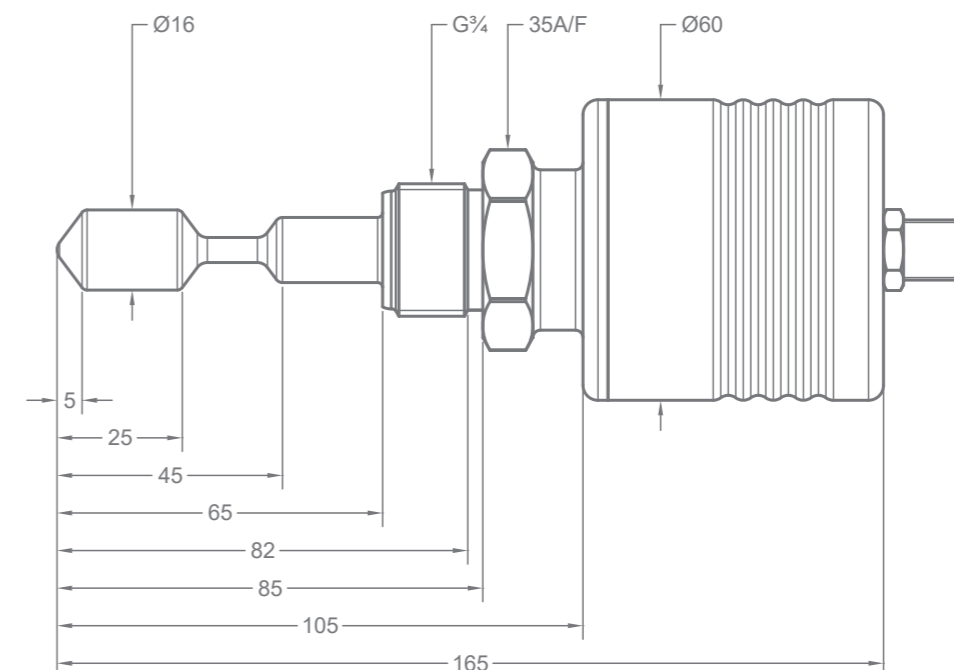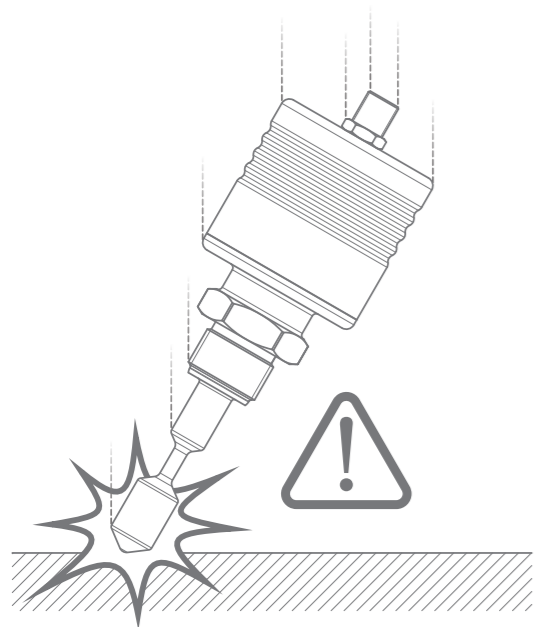
|	
Viscosity range	0 - 5,000 cP
Measurement time	1 second
Accuracy	1% of reading or ±1 digit
Repeatability	0.3% of reading or ±1 digit
Analogue outputs	1 x 4-20mA configurable, representing either viscosity, referenced viscosity or temperature
Digital outputs	RS485 Modbus® data link
Power supply	12-24V DC @ 60 mA
Integral thermometer	integrated temperature measurement
Process Temperature range	–30 to +100 °C
Pressure range	to process fitting
Process connection	pipe thread ISO 228 - G¾ (¾" BSPP)
Cable length	up to 1.2km
Connector type	5 way M12 male connector A-coding
Construction	all-welded, crevice-free
Materials	head: acetal homopolymer sensor: SS316 (EN 1.4401)
Surface finish	N6 0.8 μm Ra
Weight	750 g
Ingress protection	IP67
Software	V-Link configuration utility

4 Physical installation

- The XL3 is a Safe-Area only instrument.
- Mountable in any orientation, on a process fitting compatible with the process connection.
- Some of the preferred mounting options are shown below.
- Virtually any size pipe or tank can be used.

PIPE   TANK
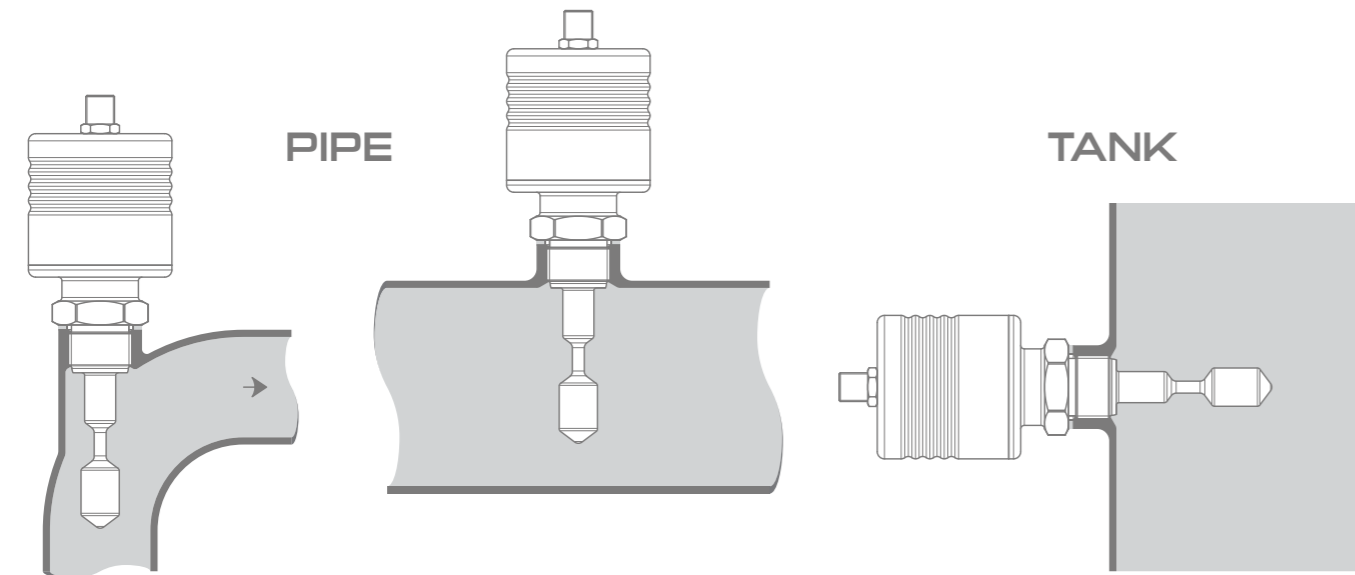
5 Electrical hookup

- All connections are made via the 5 way M12 A-coded connector.
- The supplied 2m cable is unshielded. For extended runs or installations in high-interference environments, a shielded cable is recommended to ensure signal integrity.
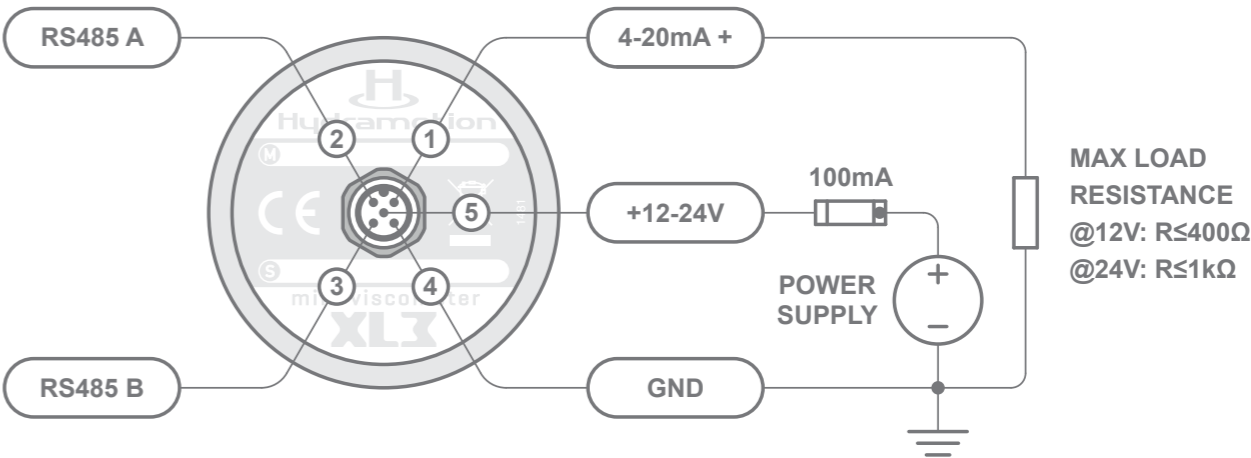
6 Modbus® ASCII/RTU

Input registers (FC04)   **Serial settings: 9600 baud, even parity, 8 data bits, 1 stop bit**

Description	INT16 Address	Scaling factor	FLOAT32* Address
Averaged live viscosity (cP)	0x0000	0 to 5000†	0x2000 - 0x2001
Average temp corrected viscosity (cP)	0x0001	0 to 5000†	0x2002 - 0x2003
Density (g/cm^3)	0x000B	0 to 20	0x2016 - 0x2017
Temperature (°C)	0x0013	-50 to 500	0x2026 - 0x2027

Holding registers (FC03 / FC16) - Also configurable with our V-Link utility. See online support page.

Description	INT16 Address	Scaling factor	FLOAT32* Address
Analogue out low scale	0x0010	No scaling	0x2020 - 0x2021
Analogue out high scale	0x0011	No scaling	0x2022 - 0x2023
Dynamic viscosity scaling span	0x0013	No scaling	0x2026 - 0x2027
Dynamic viscosity scaling offset	0x0014	No scaling	0x2028 - 0x2029
Tolerance band	0x0015	No scaling	0x202A - 0x202B
Average filter	0x0016	No scaling	0x202C - 0x202D
Density (g/cm^3)	0x0018	0 to 20	0x2030 - 0x2031
Reference temperature	0x0017	-50 to 500	0x202E - 0x202F
Temperature correction factor	0x0029	No scaling	0x2052 - 0x2053
Kinematic viscosity scaling span	0x0030	No scaling	0x2060 - 0x2061
Kinematic viscosity scaling offset	0x0031	No scaling	0x2062 - 0x2063

* FLOAT32 values use IEEE 754 format, big-endian byte order, and are transmitted with the high word first (register n = high word, n+1 = low word).
Do not use FC06 for writing to holiding registers.
† Default values, user-configurable and are bound to 4-20mA low and high range settings.