

# Hydramotion

viscosity



## XL3

mini viscometer

### Quick-start guide

#### Guarantee

Hydramotion Ltd will repair an XL3 transducer free of charge within 24 months of the date of purchase if satisfied that:

- (i) the fault is the result of defective materials and/or workmanship, and
- (ii) the instrument is returned to Hydramotion Ltd carriage prepaid and undamaged in transit.

This Guarantee shall not apply to any fault resulting from:

- (i) negligence or lack of proper care by the owner or user,
- (ii) failure to follow (a) the instructions and recommendations given in this User Manual or (b) any additional instructions from Hydramotion regarding instrument installation or operation, or
- (iii) normal wear and tear on the instrument.

Hydramotion Ltd shall in no case be liable for any loss of output, revenue or any other losses or costs, consequential or otherwise, howsoever incurred.

**Hydramotion**

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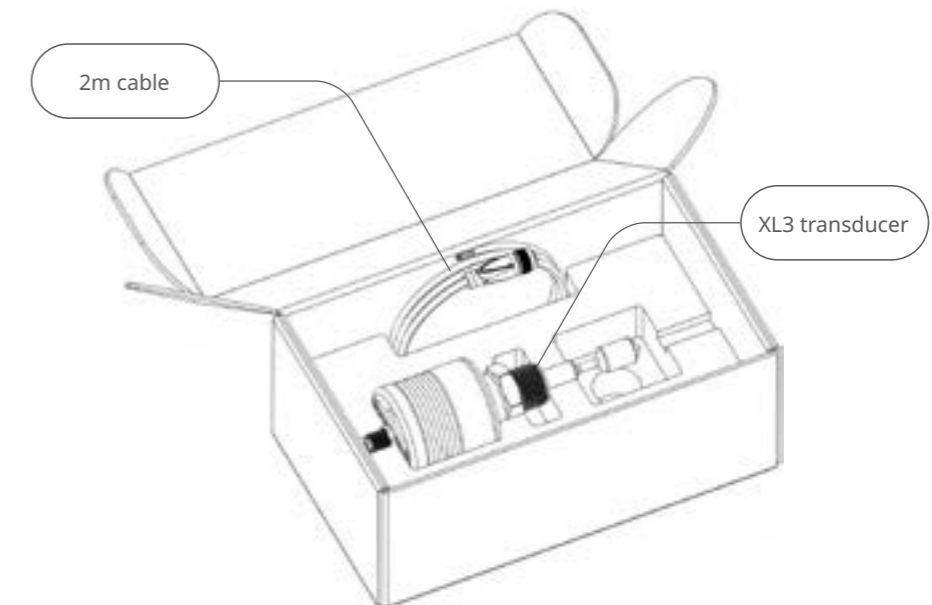


Designed and manufactured entirely in the United Kingdom

## 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.

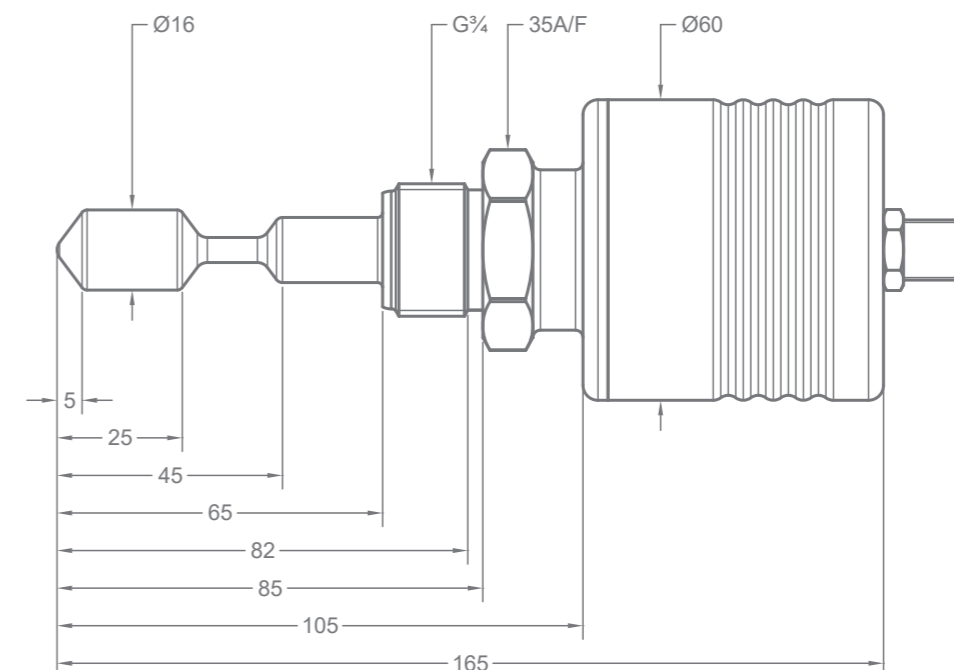


For additional information regarding all aspects of installation and operation, please refer to the main user manual. Scan the QR code to the right to be taken our online support portal.



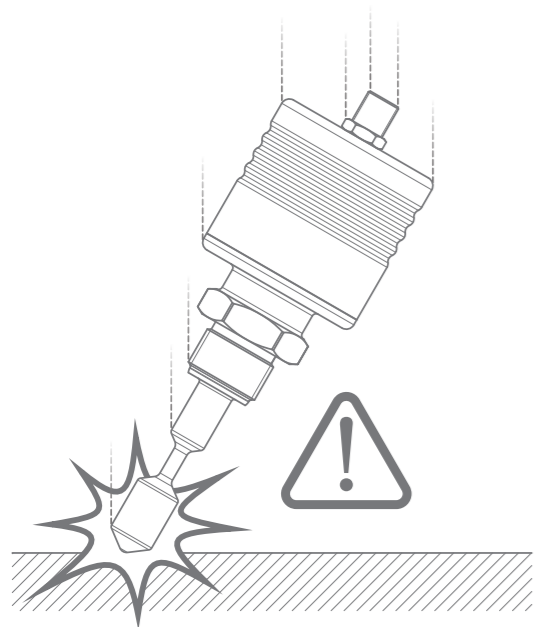
## 2

## Product dimensions



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Handling & specification



Any damage to the sensing shaft could affect reliability of readings.

- Viscosity range

Measurement time

Accuracy

Repeatability

Analogue outputs
- 0 - 5,000 cP

1 second

1% of reading or ±1 digit

0.3% of reading or ±1 digit

1 x 4-20mA configurable, representing either viscosity, referenced viscosity or temperature
- Digital outputs

Power supply

Integral thermometer

Process Temperature range

Pressure range

Process connection

Cable length

Connector type

Construction

Materials
- RS485 Modbus® data link

12-24V DC @ 60 mA

integrated temperature measurement

-30 to +100 °C

to process fitting

pipe thread ISO 228 - G¾ (¾" BSPP)

up to 1.2km

5 way M12 male connector A-coding

all-welded, crevice-free

head: acetal homopolymer

sensor: SS316 (EN 1.4401)
- Surface finish

Weight

Ingress protection

Software
- N6 0.8 µm Ra

750 g

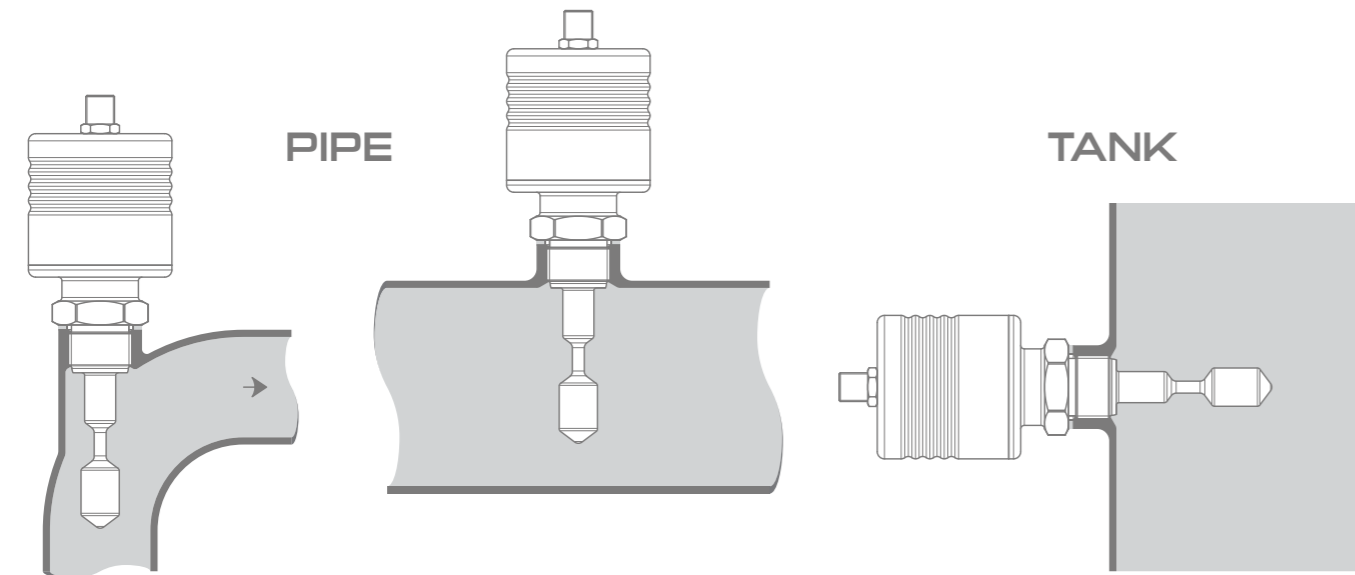
IP67

V-Link configuration utility

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Physical installation

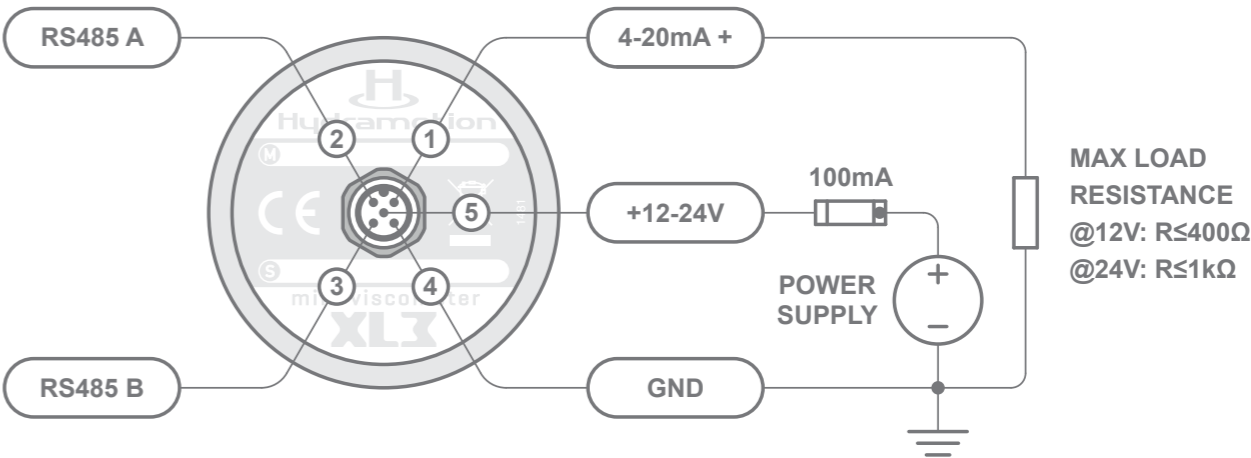
- The XL3 is a Safe-Area only instrument.
- Mountable in any orientation, on a process fitting compatible with the process connection.
- Some of the preferred mounting options are shown below.
- Virtually any size pipe or tank can be used.



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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.



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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/cm³)	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/cm³)	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 holding registers.  
† Default values, user-configurable and are bound to 4-20mA low and high range settings.