United Utilities Water
Meter Selection Catalogue

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Foreword.

This document contains a catalogue of water meters which are approved for use by United Utilities Water (UUW) for fiscal use, and these meters may be selected by a new Water Supply Licensee (WSL).

Only water meters contained within this document are available for selection. UUW will not accept the installation of any alternative water meter as a fiscal meter.

All water meters will be provided by UUW. The WSL will have a role in selecting the preferred meter to be used.

This document should be read in conjunction with the following documentation:-

a)   Operating Code OC1 – Pulsed Output
b)   Operating Code OC2 – Meter Size Change
c)   Operating Code OC3 – Meter Testing
d)   Operating Code OC4 – Alterations to meter location or housing
e)   Operating Code OC5 – Maintenance activity required
f)   Operating Code OC6 – Failure of data logging equipment
g)   Wholesale Supply Common Contract

This document facilitates Licensee requests to upsize, downsize or exchange existing water meters as described in Section 7 ; Section 12 of the Wholesale Supply Common Contract.

Operating principles of different meter types

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Piston meter (Volumetric). Standard 15/20/25/40mm meters

Piston meters, also known as rotary piston or semi-positive displacement meters, the piston meter operates on the principle of a piston rotating within a chamber of known volume. For each rotation, an amount of water passes through the piston chamber. Through a gear mechanism and, sometimes, a magnetic drive, a needle dial and odometer type display is advanced.

- Accurate at low flow
- Low maintenance

Single jet meter 50mm – 100mm

A single jet meter consists of a simple impeller with radial vanes, impinged upon by a single jet. A magnetic coupling to the register drives directly off the rotor and a needle dial and odometer type display are advanced.

- Low to Medium range meter
- Low headloss across meter

Woltmann meter 50 – 150mm (can go to 250mm for bespoke)

The Woltmann meter comprises a rotor with helical blades inserted axially in the flow, much like a ducted fan; it can be considered a type of turbine flow meter. They are commonly referred to as helix meters, and are popular at larger sizes. A magnetic coupling to the register drives directly off the rotor and a needle dial and odometer type display are advanced.

- High flow range meter
- Horizontal or Vertical Installation

Combination Meters 50 – 150mm

Combination meters combined a volumetric meter and a Voltmann meter in one meter body. During periods of low flow the water is recorded through the volumetric meter. When the flow increases a changeover valve diverts the water through the Voltmann meter.

- Low to high flow range meter
- Suitable for low consumption customers with firefighting facilities
- Horizontal or Vertical Installation

Magnetic flow meters 50mm+ (bespoke sites or Raw Water supplies)

Magnetic flow meters, often called "mag meter's" or "electromag's", use a magnetic field applied to the metering tube, which results in a potential difference proportional to the flow velocity perpendicular to the flux lines. The potential difference is sensed by electrodes aligned perpendicular to the flow and the applied magnetic field. The physical principle at work is Faraday's law of electromagnetic induction.

- Battery or mains powered
- Bi directional
- Do not require strainers
- No mechanical measuring element
- Suitable for non-potable water

Available Meters

The following are standard meters and are available for selection and accepted by UUW.

Size 15mm / 20mm - Diehl Altair (Piston)

- Accurate at low flows
- Supplied with AMR unit attached & paired to meter
- Sizes available – 15mm & 20mm.
- Flow ranges from 5 litres/hr – 5 m^3/hr
- Composite meter body

Size 25mm / 40mm - Diehl Altair (piston

- Accurate at low flows
- Supplied with AMR unit attached & paired to meter
- Reliable, low maintenance
- Sizes available – 25mm & 40mm
- Flow range from 35 litres/hr – 20 m^3/hr

Size 50mm / 100mm Diehl Aquila (Single Jet)

- Low – Mid flow rate meter
- Supplied with AMR unit attached & paired to meter
- Low headloss across meter
- Sizes available – 50mm/80mm/100mm
- Flow range from – 90 litres/hr – 100 m^3/hr

Size 50mm – 150mm Honeywell (Elster)H4000 (Woltmann)

- High flow rate meter
- AMR Enabled retrospectively
- Sizes available – 50mm/80mm/100mm/150mm.
- Flow range from – 0.35 m^3/hr – 600 m^3/hr
- Inductive Pulse output (Primary & Secondary available)
- PR7 Pulse unit

Size 50mm – 150mm Honeywell (Elster)H5000 (Woltmann)

- Wide measuring range
- AMR Enabled retrospectively
- Retro-fit mechanism into the H4000 body
- Electronic register includes an integrated communications cable
- Electronic register pre-equipped for AMR
- AMR features such as flow rate display, leak detection, tamper alarms and tariffing
- Sizes available 50mm/80mm/100mm/150mm.
- Flow range from 50 litres/hr – 200 m^3/hr

Size 50mm – 150mm Honeywell (Elster)C4000 (Combination)

- Accurate for large variations in flow rate
- AMR Enabled retrospectively
- Sizes available – 50mm/80mm/100mm/150mm*
- Primary and Secondary pulsed outputs available on both dials
- Main meter – PR7 Pulse unit
- By-pass – PR6 Pulse unit

The following are Non-standard and may be subject to additional charges if requested

Size 50mm – 200mm Honeywell (Elster) Q4000 (Electromagnetic)

- Electromagnetic meter
- Visually Read
- Low headloss across meter
- Low – high flow range
- Bi-directional pulsed output (2 outputs if using the remote display)
- Suitable for non-potable water
- Sizes available 50 – 200 mm
- Flow range from 0.10 m^3/hr – 788 m^3/hr

Size 50mm – 300mm ABB AquaMaster (Electromagnetic)

- Electromagnetic meter
- Visually Read
- Low headloss across meter
- Low – high flow range
- User defined pulsed output
- Suitable for non-potable water
- Sizes available 50 – 300 mm
- Flow range from 0.10 m^3/hr – 788 m^3/hr

Size 50mm – 500mm ABB WaterMaster (Electromagnetic)

- Electromagnetic meter
- Visually Read
- Low headloss across meter
- Low – high flow range
- User defined pulsed output
- Suitable for non-potable water
- Sizes available 50 – 500 mm
- Flow range from 0.10 m^3/hr – 788 m^3/hr

Flow Data

Flow Data

Size	Operating Type	UU recommended Flow Range (overload flow)	Meters Available	Compliance Standards	Output Capability	Number of Outputs Available	Pulse Splitter Compatible
15mm	Piston (in-line)	5 l/hr – 3.125 m^3/hr	Diehl Altair V4	EN14154, OIML R49, ISO 4064, MID	AMR meter, no available free output. Requires pulse splitter installation.	1 (with AMR unit removed)	Yes with specific pulse unit
15mm	Piston (Concentric)	5 l/hr – 3.125 m^3/hr	Diehl Altair V4	EN14154, OIML R49, ISO 4064, MID		1 (with AMR unit removed)	Yes with specific pulse unit
20mm	Piston (in-line)	25 l/hr – 5 m^3/hr	Diehl Altair V4	EN14154, OIML R49, ISO 4064, MID	AMR meter, no available free output Requires pulse splitter installation.	1 (with AMR unit removed)	Yes with specific pulse unit
20mm	Piston (Concentric)	25 l/hr – 5 m^3/hr	Diehl Altair V4	EN14154, OIML R49, ISO 4064, MID		1 (with AMR unit removed)	Yes with specific pulse unit
25mm	Piston	35 l/hr – 3.5 m^3/hr (7 m^3/hr)	Diehl Altair V4	EN14154, OIML R49, ISO 4064, MID	AMR meter, no available free output Requires pulse splitter installation	1 (with AMR unit removed)	Yes with specific pulse unit
40mm	Piston	100 l/hr – 10 m^3/hr (20 m^3/hr)	Diehl Altair V4	EN14154, OIML R49, ISO 4064, MID	AMR meter, no available free output Requires pulse splitter installation	1 (with AMR unit removed)	Yes with specific pulse unit
50mm	Single Jet	80 l/hr – 25m^3/hr (31.25m^3/hr)	Diehl Aquila V5	EN14154, OIML R49, ISO 4064, MID	AMR meter, no available free output Requires pulse splitter installation	1 (with AMR unit removed)	Yes with specific pulse unit
50mm	Woltmann	0.75 m^3/hr – 15 m^3/hr (30 m^3/hr)	Elster H4000	ISO4064/BS5728/EEC specification Class B	recommend using K 10:10	2	Yes
50mm	Woltmann	0.05 m^3/hr – 63 m^3/hr (79 m^3/hr)	Elster H5000	(MID) Directive 2004/22/EC	Integrated communication cable.	2, or 4 with splitter	Yes
50mm	Combination	15 l/hr – 25 m^3/hr (50 m^3/hr)	Elster C4000	(MID) Directive 2004/22/EC	Main meter - PR7, Low flow meter - PR6 unit	2 (on each)	Yes
50mm	Electromagnetic	0.1 m^3/hr – 40 m^3/hr (50 m^3/hr)**	Elster Q4000	(MID) Directive 2004/22/EC	MX39 dual output Pulser or MX35 dual output remote display	2	Yes
50mm	Electromagnetic	0.25 m^3/hr – 40 m^3/hr (50 m^3/hr)	ABB AquaMaster	OIML R49	Variable output determined by user	1	Yes
50mm	Electromagnetic	0.2 m^3/hr – 63 m^3/hr (79 m^3/hr)	ABB WaterMaster	OIML R49, (MID) 2004/22/EC	Pulsed output & 4-20mA signal available	2	Yes

Size	Type	Flow range	Make/Model	Standards	Notes	Outputs	Pulse
80mm	Single Jet	180 l/hr – 30 m^3/hr (60 m^3/hr)	**Diehl Aquila V5**	EN14154, OIML R49, ISO 4064, MID	AMR meter, no available free output Requires pulse splitter installation	1 (with AMR unit removed)	Yes with specific pulse unit
	Woltmann	1.2 m^3/hr – 40 m^3/hr (80 m^3/hr)	**Elster H4000**	ISO4064/BS5728/EEC specification Class B	recommend using K 10:10	2	Yes
		0.05 m3/hr – 63 m3/hr (79 m3/hr) or 0.13 m3/hr - 160 m3/hr (200 m3/hr)	**Elster H5000**	(MID) 2004/22/EC	Integrated communication cable.	2, or 4 with splitter	Yes
	Combination	15 l/hr – 40 m^3/hr (80 m^3/hr)	**Elster C4000**	(MID) Directive 2004/22/EC	Main meter - PR7, Low flow meter - PR6 unit	2 (on each)	Yes
	Electromagnetic	0.25 m^3/hr – 100m^3/hr (125m^3/hr)**	**Elster Q4000**	(MID) Directive 2004/22/EC	MX39 dual output Pulser or MX35 dual output remote display	2	Yes
		0.63 m^3/hr – 100 m^3/hr (125 m^3/hr)	**ABB AquaMaster**	OIML R49	Variable output determined by user	1	Yes
		0.51 m^3/hr – 160 m^3/hr (200 m^3/hr)	**ABB WaterMaster**	OIML R49, (MID) 2004/22/EC	Pulsed output & 4-20mA signal available	2	Yes
100mm	Single Jet	300 l/hr – 50 m^3/hr (100 m^3/hr)	**Diehl Aquila V5**	EN14154, OIML R49, ISO 4064, MID	AMR meter, no available free output Requires pulse splitter installation	1 (with AMR unit removed)	Yes with specific pulse unit
	Woltmann	1.8 m^3/hr – 60 m^3/hr (120 m^3/hr)	**Elster H4000**	ISO4064/BS5728/EEC specification Class B	recommend using K 10:10	2	Yes
		0.13 m^3/hr – 160 m^3/hr (200 m^3/hr)	**Elster H5000**	(MID) Directive 2004/22/EC	Integrated communication cable.	2, or 4 with splitter	Yes
	Combination	15 l/hr – 60 m^3/hr (120 m^3/hr)	**Elster C4000**	(MID) Directive 2004/22/EC	Main meter - PR7, Low flow meter - PR6 unit	2 (on each)	Yes
	Electromagnetic	0.4 m^3/hr – 160 m^3/hr (200 m^3/hr)**	**Elster Q4000**	(MID) Directive 2004/22/EC	MX39 dual output Pulser or MX35 dual output remote display	2	Yes
		1.0 m^3/hr – 160 m^3/hr (200 m^3/hr)	**ABB AquaMaster**	OIML R49	Variable output determined by user	1	Yes
		0.79 m^3/hr – 250 m^3/hr (313 m^3/hr)	**ABB WaterMaster**	OIML R49, (MID) 2004/22/EC	Pulsed output & 4-20mA signal available	2	Yes
150mm	Woltmann	4.5 m^3/hr – 150 m^3/hr (300 m^3/hr)	**Elster H4000**	ISO4064/BS5728/EEC specification Class B	PR7 unit 100 l/pulse, dual output recommend use K 10:10	2	Yes
		0.13 m^3/hr – 160 m^3/hr (200 m^3/hr)	**Elster H5000**	(MID) Directive 2004/22/EC	Integrated communication cable.	2, or 4 with splitter	Yes
	Combination	60 l/hr – 150 m^3/hr (300 m^3/hr)	**Elster C4200**	German National Approval	Main meter - PR7, Low flow meter - T-probe	2 (on each)	Yes
	Electromagnetic	1 m^3/hr – 400 m^3/hr (500 m^3/hr)**	**Elster Q4000**	CEN pr14154, ISO4064, OIML R49	MX39 dual output Pulser or MX35 dual output remote display	2	Yes
		2.5 m^3/hr – 400 m^3/hr (500 m^3/hr)	**ABB AquaMaster**	OIML R49	Variable output determined by user	1	Yes
		2.0 m^3/hr – 630 m^3/hr (788 m^3/hr)	**ABB WaterMaster**	OIML R49, (MID) 2004/22/EC	Pulsed output & 4-20mA signal available	2	Yes

Size	Type	Flow Range	Meter	Standard	Output	No.	Available
200mm	Electromagnetic	1.6 m^3/hr – 630 m^3/hr (788 m^3/hr)**	**Elster Q4000**	(MID) Directive 2004/22/EC	MX39 dual output Pulser or MX35 dual output remote display	2	Yes
		3.9 m^3/hr – 630 m^3/hr (788 m^3/hr)	**ABB AquaMaster**	OIML R49	Variable output determined by user	1	Yes
		3.2 m^3/hr – 1000m^3/hr (1250m^3/hr)	**ABB WaterMaster**	OIML R49, (MID) 2004/22/EC	Pulsed output & 4-20mA signal available	2	Yes
250mm	Electromagnetic	6.8m^3/hr – 1000m^3/hr (1250 m^3/hr)	**ABB AquaMaster**	OIML R49	Variable output determined by user	1	Yes
		5.1 m^3/hr – 1600m^3/hr (2000m^3/hr)	**ABB WaterMaster**	OIML R49, (MID) 2004/22/EC	Pulsed output & 4-20mA signal available	2	Yes
		2.5 m^3/hr – 1000m^3/hr (1250 m^3/hr)**	**Elster Q4000B Flanged**	JIS B8570 conforms to (MID) Directive 2004/22/EC	MX39 dual output Pulser or MX35 dual output remote display	2	Yes
300mm	Electromagnetic	10 m^3/hr – 1600 m^3/hr (2000m^3/hr)	**ABB AquaMaster**	OIML R49	Variable output determined by user	1	Yes
		7.9 m^3/hr – 2500m^3/hr (3125m^3/hr)	**ABB WaterMaster**	OIML R49, (MID) 2004/22/EC	Pulsed output & 4-20mA signal available	2	Yes
		2.5 m^3/hr – 1000m^3/hr (1250 m^3/hr)**	**Elster Q4000B Flanged**	JIS B8570 conforms to (MID) Directive 2004/22/EC	MX39 dual output Pulser or MX35 dual output remote display	2	Yes
350mm	Electromagnetic	25 m^3/hr – 1600 m^3/hr (2000m^3/hr)	**ABB AquaMaster**	OIML R49	Variable output determined by user	1	Yes
		12.7m^3/hr – 4000m^3/hr (5000m^3/hr)	**ABB WaterMaster**	OIML R49, (MID) 2004/22/EC	Pulsed output & 4-20mA signal available	2	Yes
400mm	Electromagnetic	40 m^3/hr – 2500 m^3/hr (3125m^3/hr)	**ABB AquaMaster**	OIML R49	Variable output determined by user	1	Yes
		12.7m^3/hr – 4000m^3/hr (5000m^3/hr)	**ABB WaterMaster**	OIML R49, (MID) 2004/22/EC	Pulsed output & 4-20mA signal available	2	Yes