

COLD WATER METER TECHNICAL SPECIFICATIONS

Technical Requirement	Description	Either																									
		YES	NO																								
Required Certificates	Type approval certificate: Either according to EN ISO 4064: 2014, or OIML R49:2013, MID 2014/32/EU-to be provided during delivery Manufacturer's authorization to sell, KEBS authorization certificate																										
Communication mode	AMR enabled for remote connectivity and smart meter reading																										
Meter Type	Velocity type																										
Class of Meter	Class R >250, Accuracy class																										
Sizing of Meter	DN 15 Both the inlet and outlet are threaded and same size and on the same axis to ease connection to pipes via connectors. The corresponding fixed set of dimensions to BS 5728/1, ISO 4064 – 1: 2014																										
External Case Bolts	Meter liners made of brass, meter seals made of rubbers material, meter casing-co-polymers, bolts and nuts mad of food grade stainless steel material																										
Dial type	Circular, with straight reading (M ³), in a transparent capsule, Dry dial (protective propylene glycol or glycerin)- dial not in contact with water flowing																										
counter	Temper proof glass with thickness of 5mm, scratch resistant, clockwise resistant, with multiplier scale in factors,																										
Metrological requirements	<p>Q_s = Starting Flow rate.</p> <table border="1"> <tr> <th>DN</th><th>Mm</th><th>15</th><th>Max length of meter & connector</th></tr> <tr> <td>L</td><td>Mm</td><td>110</td><td>250mm</td></tr> <tr> <td>Q₃</td><td>m³/h</td><td>2.5</td><td></td></tr> <tr> <td>Q₃/Q₁</td><td>R</td><td>250</td><td></td></tr> <tr> <td>Q_s</td><td>m³/h</td><td><6</td><td></td></tr> <tr> <td>Q₁</td><td>m³/h</td><td>0.01562</td><td></td></tr> </table>	DN	Mm	15	Max length of meter & connector	L	Mm	110	250mm	Q ₃	m ³ /h	2.5		Q ₃ /Q ₁	R	250		Q _s	m ³ /h	<6		Q ₁	m ³ /h	0.01562			
DN	Mm	15	Max length of meter & connector																								
L	Mm	110	250mm																								
Q ₃	m ³ /h	2.5																									
Q ₃ /Q ₁	R	250																									
Q _s	m ³ /h	<6																									
Q ₁	m ³ /h	0.01562																									

	<table><tr><td>Q₂</td><td>m³/h</td><td>0.025</td><td></td></tr><tr><td>Q₄</td><td>m³/h</td><td>3.125</td><td></td></tr></table>	Q ₂	m ³ /h	0.025		Q ₄	m ³ /h	3.125																											
Q ₂	m ³ /h	0.025																																	
Q ₄	m ³ /h	3.125																																	
Metrological requirements	<table><tr><td>DN</td><td>mm</td><td>50</td><td>Max length of meter & connector</td></tr><tr><td>L</td><td>mm</td><td>260</td><td>350 mm</td></tr><tr><td>Q₃</td><td>m³/h</td><td>4</td><td></td></tr><tr><td>Q₃/Q₁</td><td>R</td><td>160</td><td></td></tr><tr><td>Q₅</td><td>m³/h</td><td>< 2</td><td></td></tr><tr><td>Q₁</td><td>m³/h</td><td>0.025</td><td></td></tr><tr><td>Q₂</td><td>m³/h</td><td>0.04</td><td></td></tr><tr><td>Q₄</td><td>m³/h</td><td>7.875</td><td></td></tr></table>	DN	mm	50	Max length of meter & connector	L	mm	260	350 mm	Q ₃	m ³ /h	4		Q ₃ /Q ₁	R	160		Q ₅	m ³ /h	< 2		Q ₁	m ³ /h	0.025		Q ₂	m ³ /h	0.04		Q ₄	m ³ /h	7.875			
DN	mm	50	Max length of meter & connector																																
L	mm	260	350 mm																																
Q ₃	m ³ /h	4																																	
Q ₃ /Q ₁	R	160																																	
Q ₅	m ³ /h	< 2																																	
Q ₁	m ³ /h	0.025																																	
Q ₂	m ³ /h	0.04																																	
Q ₄	m ³ /h	7.875																																	
Accuracy class and maximum permissible error (MPE)	<p>Accuracy class 2 water meters</p> <p>The water meter shall be designated as accuracy class 2. The Maximum Permissible Error (MPE) for the upper flow rate zone ($Q_2 \leq Q \leq Q_4$) shall be $\pm 2 \%$, (for temperatures from $0.1 \text{ }^{\circ}\text{C}$ to $30 \text{ }^{\circ}\text{C}$ and $\pm 3 \%$ for temperatures greater than $30 \text{ }^{\circ}\text{C}$).</p> <p>The MPE for the lower flow rate zone ($Q_1 \leq Q < Q_2$) shall be $\pm 5 \%$ regardless of the temperature range.</p>																																		
Tightness, pressure, and temperature resistance	<p>Meters are watertight,</p> <p>Working pressure PN16</p> <p>Test pressure 2.5 x meter PN</p> <p>Temperature range cold water meter 50⁰ C</p>																																		
Rotary piston and Meter PH	<p>Smoothly finished with thrust rollers</p> <p>PH 6.5 – 8.5</p>																																		
Material Requirement	<p>The material should be resistant to normal exposures,</p> <p>The meter body shall be UV stabilized co-polymer, NOT plastic.</p> <p>The meter body material to be specified in the brochure clearly.</p>																																		

	The water meter shall be threaded. The meters shall be supplied complete with a set of connectors that are made of copper alloy or equivalent material resistant to corrosion, rust, and damage due to shock or vibration. The connectors shall be threaded to the correct male size, comprising cap nuts, linings, and fiber sealing washers. The meter linings shall have adequate provisions to safeguard against tampering.		
Additional Technical Requirement	All meters shall be provided with effective inlet strainers, close fitting and designed for easy removal. Inlet strainers shall be of nickel-plated copper, stainless steel or other materials having satisfactory characteristics. All meters shall be delivered calibrated, The meter is permanently sealed to avoid tampering		
Non-return Valve	The meter shall have inbuilt Non – Return Valve to reduce the risk of water meter reversal fraud.		
Marks and Inscriptions	Direction of flow by means of an arrow should be shown on the body and easily visible under all circumstances, Nominal diameter Nominal Flow rate value – Q ₃ Class ratio Q ₃ /Q ₁ Temperature class Serial Numbered Unit of Measurement Maximum Admissible pressure (MAP) Name or trademark of the manufacturer Year of manufacture		
Engraving	Must be ENGRAVED NARUWASCO + Serial number on side reduce the chance of theft.		
Additional Non-Technical Requirements	Warranty: The minimum warranty period shall be two years. The supplier must produce a warranty document that shall be signed upon acceptance. The water meter manufacturer must guarantee that the meter will perform at its optimum accuracy throughout its lifespan with only the removal of silt.		

	<p>Manuals: Maintenance & Installation manuals and data sheets (in English) shall be provided.</p>		
Testing	<p>Before authorizing payments and upon delivery after the award of contract, the company will be sampling 10% of the meters at random. A batch will be considered as failed if one or more meters do not comply with the established technical specifications or have failed the tests. Under these circumstances, the specific batch of meters must be rejected. A random batch of 5% in every batch of 100 meters will be selected by a representative of the NARUWASCO's technical department.</p> <p>The tests must be conducted by a Kenya National Accreditation Service (KENAS) Accredited Meter Testing Laboratory such as KEBS or Nyeri Water and Sewerage Company Ltd.</p> <p>The costs for testing shall be taken over by the supplier. Furthermore, the supplier has also to bear the costs for replacement if rejected.</p>		
Sample	<p>The bidders must submit two (1) non-returnable sample of a meter during delivery of the tender clearly labelled SAMPLE.</p> <p>DN 15- 1 meter</p> <p>Tested for accuracy and pressure at KEBS</p>		