

ELEKTROMED

EXCELLENCE IN METERING

ULTRASONIC
WATER
METERS



Ultrasound

Ultrasonic, study and application of the energy of sound waves vibrating at frequencies greater than 20,000 cycles(hertz per second extend to 10Mhz, i.e., beyond the range of human hearing. They are produced, commonly, by a transducer containing a piezoelectric substance, e.g., a quartz-crystal oscillator that converts high-frequency electric current into vibrating ultrasonic waves.

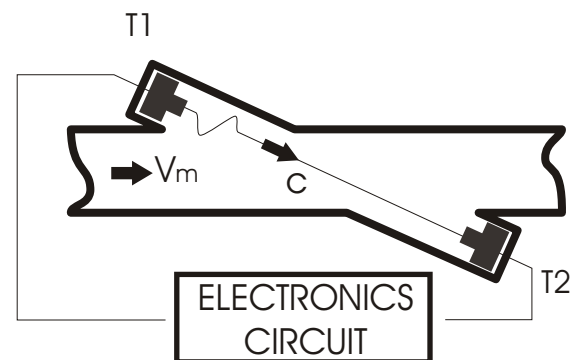
Technology Of Ultrasonic Transducer In A Flow Meter

Transducer uses a refined version of the sing-around method. One or more pairs of ultrasonic transducers are attached to a meter body. In the figure, one pair of transducers is shown in a diagonal type of flow meter with one upstream and one downstream transducer.

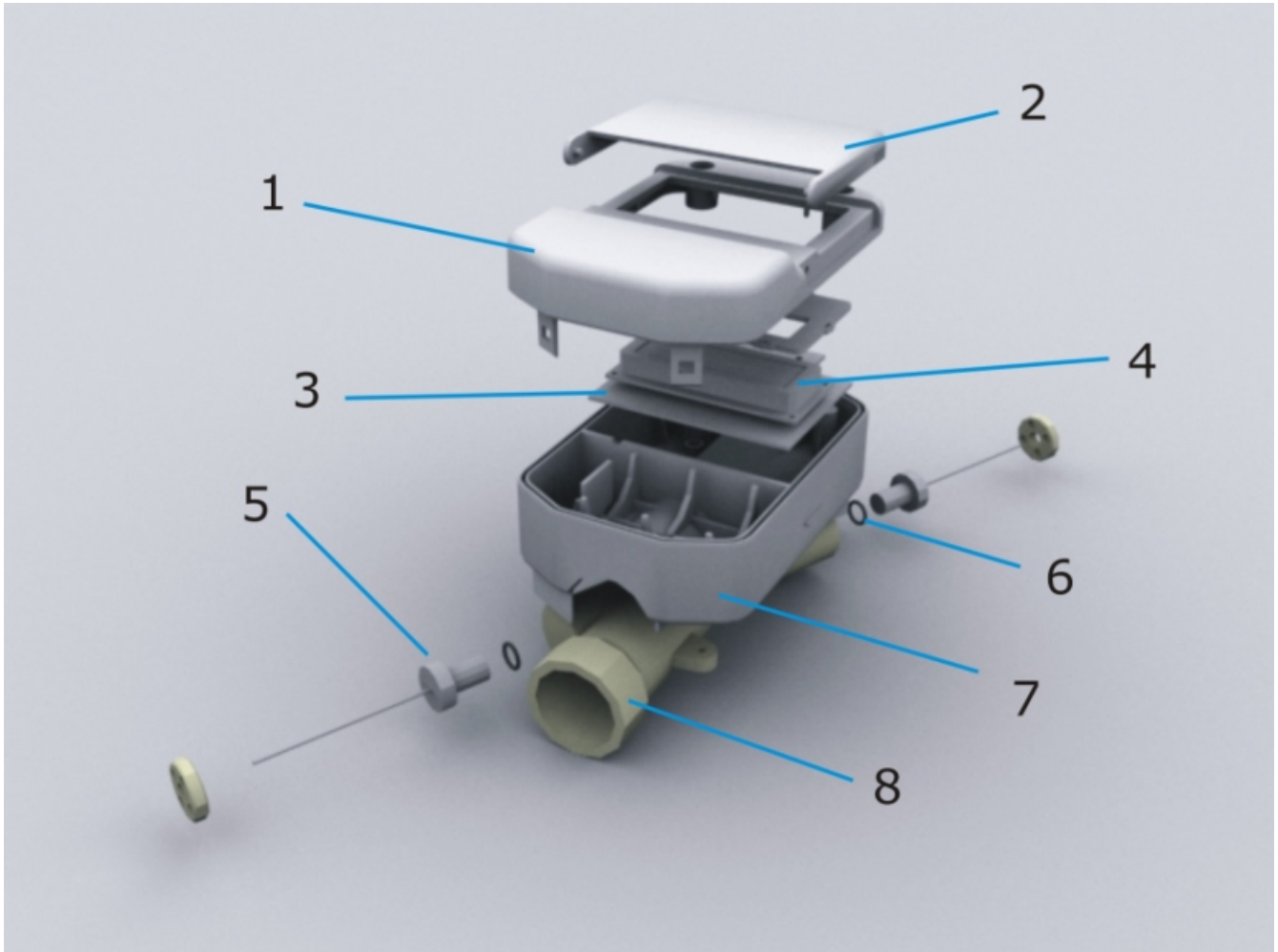
A sing-around loop is established by the Electronic Circuit by sending an ultrasound pulse from Transducer 1 towards Transducer 2. The sound pulse is received and fed back into the Electronic Circuit, which then excites a new sound pulse from Transducer 1. This loop is maintained for N number of sing-around loops. The Electronic Circuit measures the total time it takes to complete the N sing-around loops. The time it takes for the sound to travel between the transducers once in the downstream direction is determined by dividing the measured total time by N. The time required for the sound propagation in the upstream direction is determined in the same manner.



Ultrasonic Water Meter

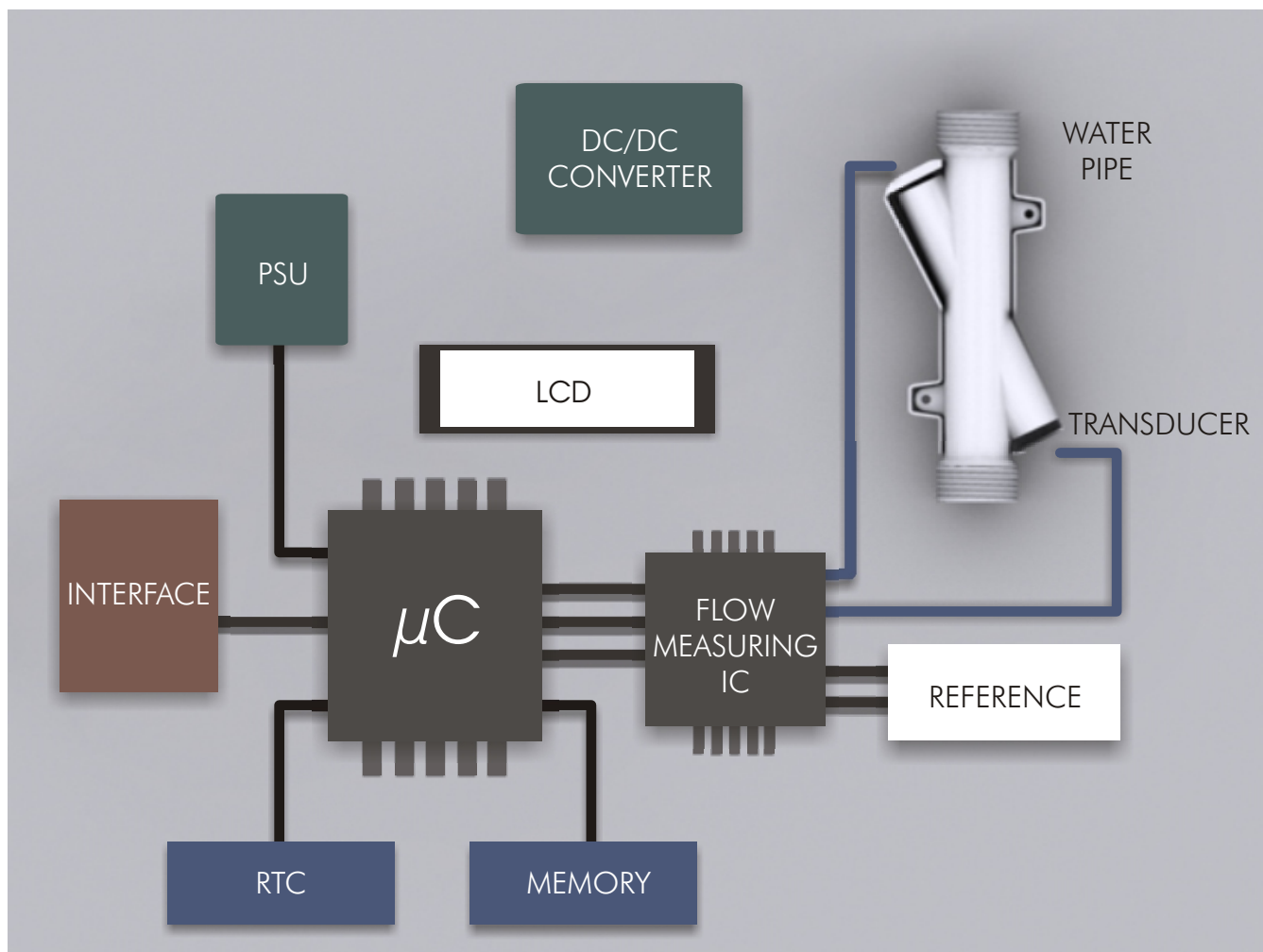


STRUCTURE



The main components US Series meters

- 1-Main Cover
- 2-LCD Cover
- 3-PCB to process
- 4-LCD
- 5-Ultrasonic Transducer
- 6-O-ring
- 7-Threaded ABS Body
- 8-Brass Water Pipeline



Ultrasonic Water Meter Block Diagram

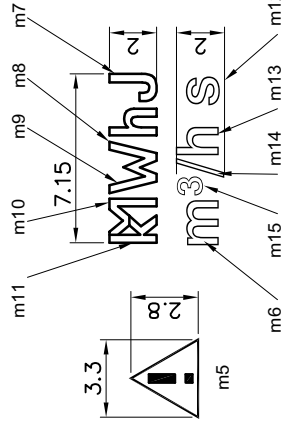
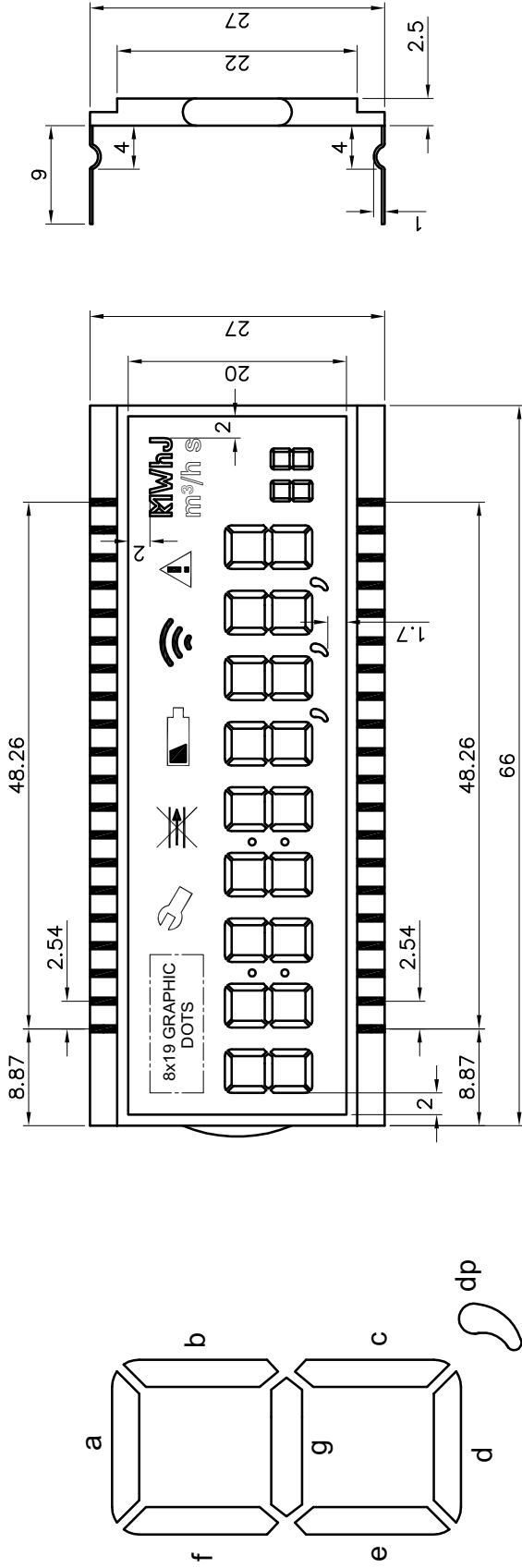
Characteristics of Environmental, Display, Battery

Meter Type	Unit	US Series
Environmental Data		
Operating Temperature Range	°C	-20 to +70
Maximum Humidity	%	95
ESD Protection Level (EN 61000-4-2)	kV	6 (Contact Discharge) 8 (Air Discharge)
HF Immunity (EN 61000-4-3)	V/m	10
Protection Class IP Level(EN 60529)		IP 65 (US15-US20-US25) IP 68 (US40-US50)
Display Features		
Type		LCD
No of Digits		9
No of Decimal Digits		3
Digit Height	mm	8
Digit Width	mm	3,5
Battery Features		
Type		Lithium 3,6V D size
Chemistry		LiSOCl ₂
Operating life time	years	10
Shelf life	years	10
Self Discharge Rate	% per year	1 - 2

Characteristics of Mechanical Data

Meter Type	Unit	US15	US20	US25	US40	US50
Pipe Size	mm	15	20	25	40	50
Continuous Flow Rate (Q3)	M ³ /h	2,4	4	5,6	16	24
Maximum Flow Rate (Q4)	M ³ /h	3	5	7	20	30
Minimum Flow Rate (Q1)	M ³ /h	0,015	0,025	0,035	0,1	0,15
Medium Flow Rate (Q2)	M ³ /h	0,024	0,04	0,056	0,16	0,24
Maximum Operating Pressure (MOP)	bar	16	16	16	16	16
Maximum Pressure Loss (dP)	bar	0,63	0,63	0,63	0,63	0,63
Accuracy (ISO4064-1:2005)	Class	C (Q3/Q1=160)	C (Q3/Q1=160)	C (Q3/Q1=160)	C (Q3/Q1=160)	C (Q3/Q1=160)
Maximum Water Temperature	°C	50	50	50	50	50

Remote Reading Features	
-Optical Pad	
Type	Meter Embedded
Material	Engineering Polymer
Connection	Internal
Approvals	IEC 62056-21 (IEC 1107)
Remote Reading Features	
Reading Device:HHU (Hand Held Unit)	
Reading Mode	Optical Pad Barcode Manual Data Entry (keypad)
Display	LCD (240 x 160 graphic display)
Maximum number of stored reading	4000
PC Interface	RS232, RS485 or COM
Language	English, German, Arabic
Battery Type	Internal: 2 x AA alkaline cells, NiCd, or NiMH pack Backup: lithium cell
Battery Life Before Recharge	>8 hours (1000 reads)
Options	Route management Language Capability
	Local



TOLERANCE UNLESS OTHERWISE SPECIFIED : ±0.3

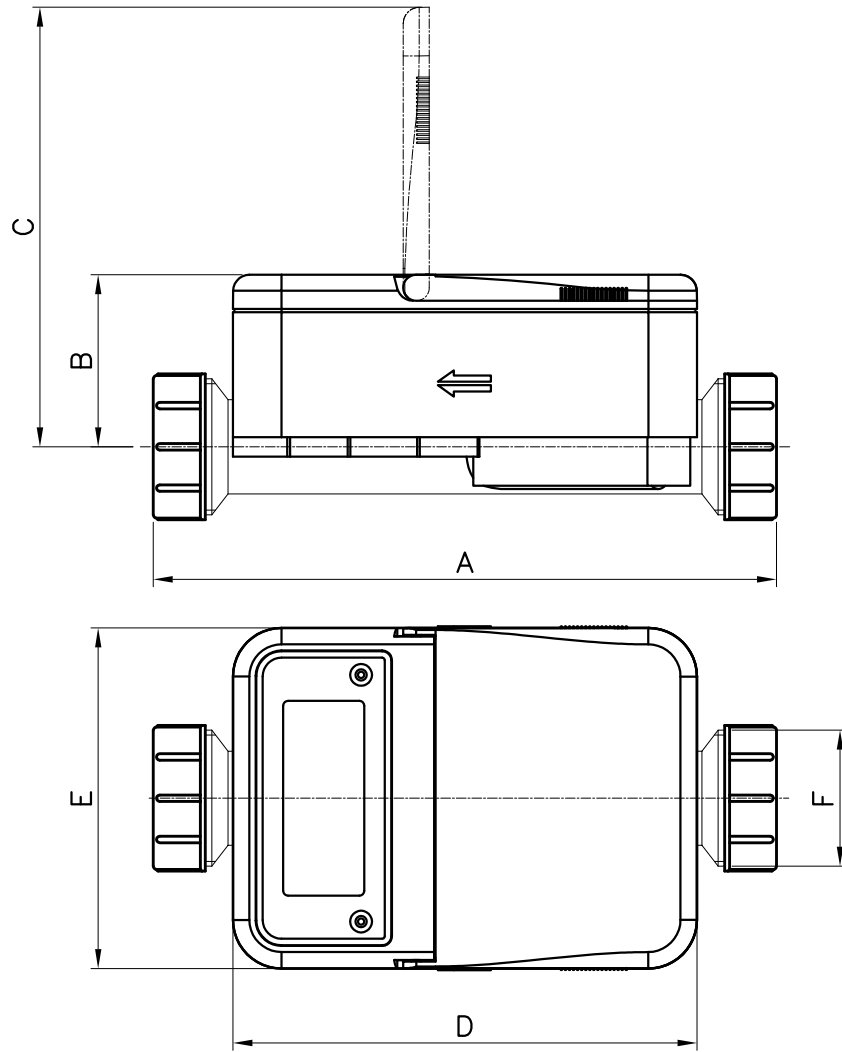
All icons (m1-m15) will be in sequential SEG-COM rows.

8COM*32Segment Glass LCD Design Specifications:

- STN, Grey,
- Transflective,
- Vop=2,7 to 3,6 VDC,
- 1/4 bias,
- 1/8 duty,
- Top: -20 to 70 °C
- Pin type connector (2 rows, 20+20=40 pin, 2,54 pitch)
- Note: Driver IC (used in our circuit): Holtek 16220

ELEKTROMED		PARÇANIN ADI	
Cizgen	Ad - Soyad	ELM 13	
Drawn	Name - Surname	CUSTOM LCD GLASS	
Kontrol	A.KIZILIRMAK		
Checked	E.ERTAŞ		
Onay	M.ÇINAR		
Approval			
GENEL TOLERANSLAR / GENERAL TOLERANCES		Malzeme / Material :	
		Stok No / Stock No :	
		Revizyon No / Revision No: 0	
Bu dokümanda tescilli bilgiler mevcut olup Elektromed Ltd.Şti.'nin yazılı izni olmadan yayımlanamaz. Açıkça karılamaz herhangi bir amaç için kullanılmamalıdır ve tamamen veya kısmen kopya edilemez.			

TECHNICAL DRAWING



MODEL	A	B	C	D	E	G
US 15(DN15)	190	53	136	143	105	R3/4"
US 20(DN20)	190	53	136	143	105	R1"
US 25(DN25)	190	53	136	143	105	R1 1/4"
US 40(DN40)	300	68	151	143	105	R2"
US 50(DN50)	300	68	151	143	105	Flanged



