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MEASUREMENT
RESOURCES

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KTLDE

Intelligent Electromagnetic Flowmeter

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WORLD RECOGNISED
ACCREDITATION

Superior Measurement Systems

www.hmagroup.com.au

Technical Features

- Not affected by the change of the fluid condition such as density, viscosity, temperature, pressure and conductivity, and the signal output of inductive voltage is linear to average velocity, therefore it has a high accuracy of measurement.

- No obstacle parts in the meter tube so that no extra pressure loss;
  No movable parts, so meter has long operation life.

- Short straight pipe required, only 5D for upstream and 3D for downstream due to the inductive voltage signal which is the average value in the cross-section of the pipe.

- Only liner and electrode contact to the fluids, choose proper material of liner and electrode to prevent it from corrosion to ensure meter long operation life.

- MCU and SMT technology used in converter to make it has high performance, high accuracy, low power consumption, stable zero point, easy parameter setting, dot-matrix display for total and instantaneous flowrate, velocity and percentage of flowrate.

- Two-direction measurement for forward and reverse.

CONTENTS

Introduction of KTLDE Electromagnetic Flowmeter

KTLDE Electromagnetic Flowmeter is suitable to measure volumetric flowrate of the conductive liquid and slurry in the closed pipe, e.g. clean water, sewage, various solutions of acid, alkali, salt; slurry, slag, pulp and other liquids such as food-beverage etc.

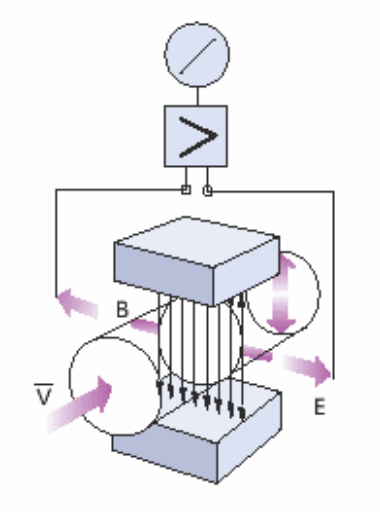


Figure 1. Visual Electromagnetic Meter

Measuring Principle

KTLDE electromagnetic flowmeter is based on the **Faraday's law**, as the conductive fluid passes through the magnetic field, a voltage (electrical potential **E**) developed across the electrodes.

$$E=KB\bar{V}D$$

Thereinto K---------- Meter factor

$\underline{B}$---------- Magnetic induction intensity

$\bar{V}$---------- Average velocity at cross section of the meter pipe

D---------- Inside diameter of the meter pipe

When conductive fluid passes through the magnetic field at right angle at velocity V, a potential voltage be generated, which is proportional to the average velocity and be tested by electrodes, then converter processes this low level voltage signal to output 4 ~ 20mA or 0 ~ 1kHz signal.

How to Select Meter Model Correctly

It is very important to select right meter model in flowrate measurement. Many relative information point out that meter fault happened in application, two thirds is due to wrong selection meter model and installation. Right selection of meter model should be according to the conditions as follow:

- Parameters collection
  (1) Composition, density, conductivity of the fluid to be measured
  (2) Maximum, minimum, normal flowrate
  (3) Max operating pressure
  (4) Temperature range
- The fluid must be conductive and its conductivity > 5μS/cm
  The full span must be conformed to the meter size. Refer to table below:

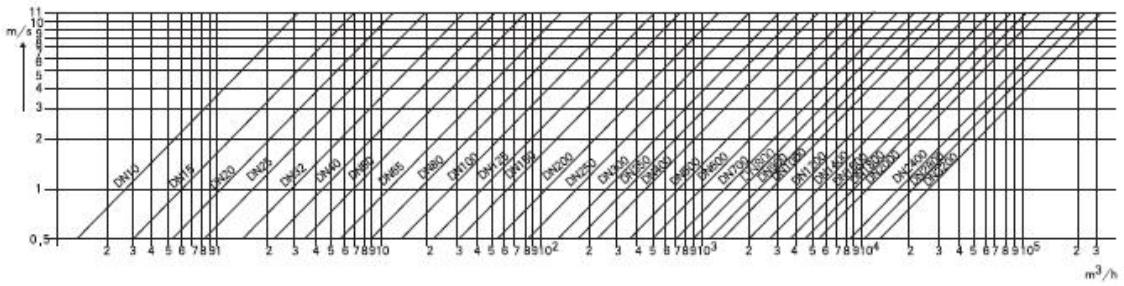
ID(mm)	10	15	20	25	32	40	50	65
Qmin(m^3/h)	0.0848	0.1908	0.3391	0.5299	0.8681	1.3565	2.1195	3.582
Qmax(m^3/h	3.39	7.63	13.56	21.2	34.73	54.26	84.78	143.28
ID(mm)	80	100	125	150	200	250	300	350
Qmin(m^3/h)	5.4259	8.478	13.2469	19.0755	33.912	52.9875	76.302	103.8555
Qmax(m^3/h	217.04	339.12	529.88	763.02	1356.48	2119.5	3052.08	4154.22
ID(mm)	400	450	500	550	600	700	800	900
Qmin(m^3/h)	135.648	171.6795	211.95	256.46	305.208	415.422	542.592	686.718
Qmax(m^3/h	5425.95	6867.18	8478	10258.38	12208.22	16616.88	21703.68	27468.82
ID(mm)	1000	1100	1200	1400	1600	1800	2000	2200
Qmin(m^3/h)	847.8	1025.838	1220.832	1661.688	2170.368	2746.872	3391.2	4103.352
Qmax(m^3/h	33912	41033.52	48833.28	66467.52	86814.72	109874.88	135648	164134.08
ID(mm)	2400	2600	2800	3000	3200			
Qmin(m^3/h)	4883.32	5731.12	6646.75	7630.2	8681.47			
Qmax(m^3/h	195333.12	229245.12	265870.08	305208	347258.88			

- The actual maximum operating pressure must be less than rated pressure
- The maximum and minimum operating temperature should be conformed to the requirements
- Check up if there is negative pressure

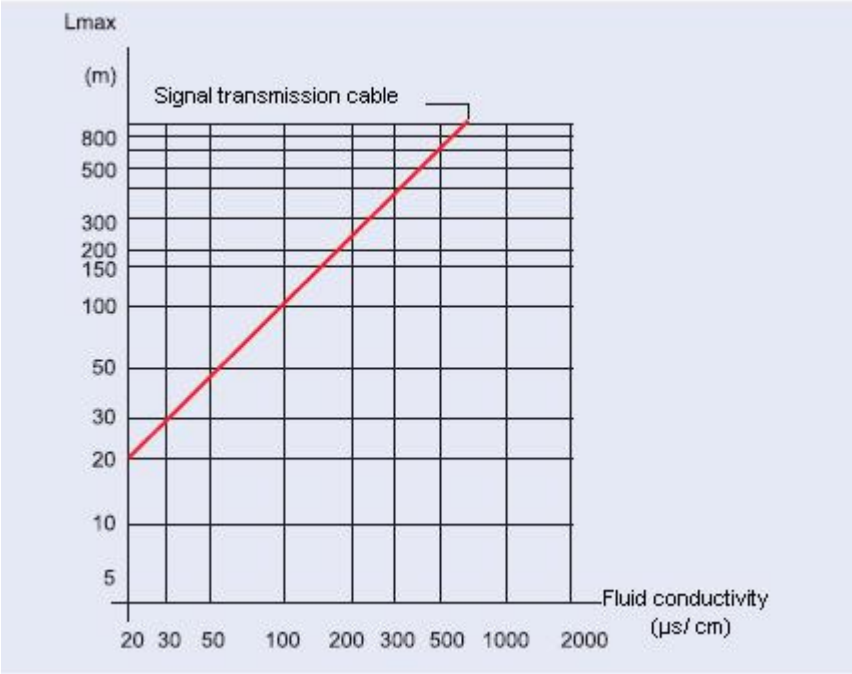
You can select meter model according to the conditions above, if the meter size is not the same with the process pipe, the converging pipe or diverging pipe can be used.

- You should consider that the pressure loss will affect the process condition if converging pipe used.
- It is suggested that small size meter selection saves your cost as possible.

- Figure of Relationship between Inside Diameter with Flowrate and Velocity



- When it is used in tap water, economical velocity is 1.5 ~3 m/s, can be properly increased to 3 ~ 4 m/s if measures for crystallizable solution to prevent dirty deposit. When used for slag, properly decrease the velocity to 1.0 ~ 2 m/s to prevent the liner and electrodes being worn, over 7m/s is rare in application and over 10 m/s is even uncommon.
- Figure of relationship between maximum cable distance for remote type and fluid conductivity.



The remote distance should be as short as possible to prevent the electric noise interference caused by the capacitance distribution in operation.

For example: conductivity of tap water is about 100μS/cm, the maximum distance of remote type is about 100 m, (the conductivity of acid, alkali, salt is slightly high, so their separated distance may be over 100 m, this value be determined by conductivity and cross section of cable core).

How to Select Electrode Material

The selection of electrode material should be according to the corrosion of fluid to be measured. Suggest referring to the text-book related to the corrosion and make some tests before application for special fluids.

Electrode material	Resistance to corrosion
316L	Suitable: 1. clean water, industrial water, well water, and city sewage. 2. weak corrosive solutions of acid, alkali, salt.
Hastelloy B	Suitable: 1. non-oxidation acid such as hydrochloride acid (concentration less than 10%) etc. 2. sodium hydroxide (concentration less than 50%), all concentrated solution of ammonium hydroxide. 3. phosphoric acid, organic acid. Not suitable: nitric acid, nitrate.
Hastelloy C	Suitable: 1. mixed acid solution e.g. chromate mixed with sulfuric acid. 2. oxidized salt e.g. Fe+++, Cu++, seawater. Not suitable: hydrochloride acid.
Ti	Suitable: 1. salts e.g. (1) chlorides (magnesium/ aluminum/ calcium/ ammonium/ iron etc). (2) solution of sodium chlorides/ kali salt/ ammonium salt/ hypochlorous acid / seawater. 2. alkali solution concentration less than 50% such as potassium hydroxide, ammonium hydroxide, barium hydroxide. Not suitable: deoxidation acid such as hydrochloride acid, sulfuric acid, phosphoric acid, hydrofluoric acid etc.
Ta	Suitable: 1. hydrochloride acid (concentration less than 10%), dilute or strong sulpharic acid (excluding oleum). 2. chloride peroxide, ferric chloride, hypochlorous acid, sodium cyanide, lead acetate etc. 3. oxidation acid such as nitric acid (including fuming nitric acid), aqua regia T≤80℃. Not suitable: alkali, hydrofluoric acid.
Pt	Suitable: almost for all solutions of acid, alkali, salt (including oleum, fuming nitric acid). Not suitable: aqua regia, ammonium salt.
Tungsten Carbide	Suitable: slurry, sewage, anti-jamming of solid particle. Not suitable: inorganic acid, organic acid, chlorides.

How to Select Liner Material

Selection of liner material should be according to the corrosion, abrasion and temperature of the fluid to be measured.

Liner material	Name	Mark	Chemical feature	Temperature	Application	Meter size (mm)
Rubber	Chloroprene Rubber	CR	Normal resistant abrasion,resistant corrosion for low concentration solution of acid, alkali, salt	< 60°C	Tap water, industrial water, sea water	DN50 ~ 3200
	Polyurethane	PU	Good resistant abrasion, weak resistant acid and alkali	< 60°C	Pulp, mining slurry	DN25 ~ 500
Fluoroplastic	Polytetrafluoroe-thylene	F4 or PTFE	Stable chemical feature, resistant corrosion to boiling hydrochloride acid, sulfuric acid, aqua regia, strong alkali	< 120°C	Strong corrosive liquid of acid, alkali, salt	DN25 ~ 1200
	Perfluorinated ethylene-propylene copolymer	F46 or FEP	Chemical feature equals to F4, resistance to tensile property better than F4	< 160°C	Corrosive liquid of acid, alkali, salt	DN15 ~ 200
	Ethylene tetrafluoro ethylene copolymer	F40 or ETFE	Chemical feature equal to F4, resistance to tensile property better	< 120°C	Corrosive liquid of acid, alkali, salt	DN250 ~ 2200
Plastic	Polyethylene	PO	Resistance to corrosion of dilute acid, alkali, salt	< 60°C	Sewage with acid, alkali, salt	DN50 ~ 2200
	Polyphenylene sulfide	PPS	Resistance to corrosion of dilute acid, alkali, salt	< 100°C	Sewage with acid, alkali, salt	DN50 ~ 2200

How to Select Meter Protection Grade

IP65: Splash-proof type, protect transducer from water-splash, allows pouring tap water splashing from all directions with pressure 30kPa, water output 12.5L/ min at distance 3m away from the transducer.

IP68: Submerged type, submerging in water for long term.

Select protection grade according to actual application condition, IP68 for the transducer installed under the ground diving in water for long term, IP 65 for the transducer installed on or above the ground.

How to Select Extra-function

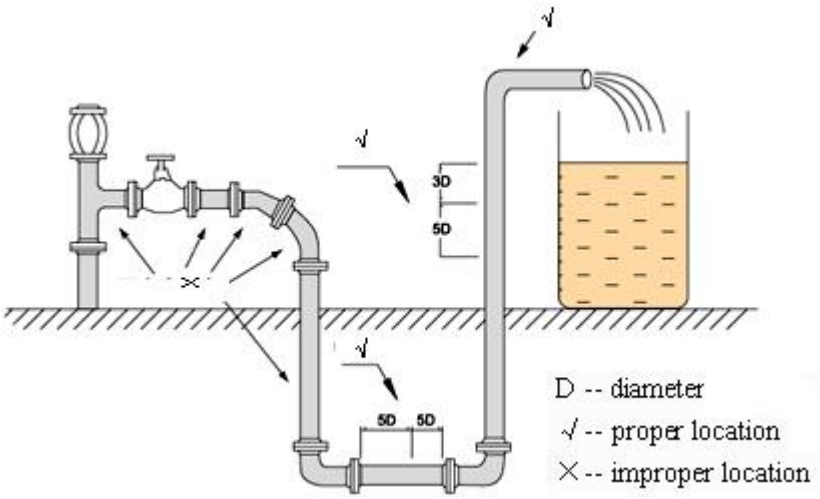
KTLDE electromagnetic flowmeter has functions of display 4-20mA output, 0-1kHz and alarm signal. Other extra-function can be selected according to actual application condition.

Remote type: It is suitable to install the transducer under the ground or other reason.

RS-485 Communication: Communication function should be selected once communication between meter and other equipments needed.

How to Select Meter Installing Location

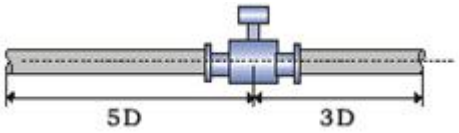
1. Select a location where has a section of straight pipe filled with fluid, e.g. vertical pipe (flowing from bottom to top) or horizontal pipe filled with fluid (the lowest point in pipeline is better). Partial fill is not allowed during the installation and measurement;
2. The length of straight pipe needs 5D for upstream , 3D for downstream of transducer;
3. Far away from the pump, valve and other pipe-fittings, avoid the meter from interference;
4. Fay away from interference resources such as radio, strong magnetic field, strong vibration etc;



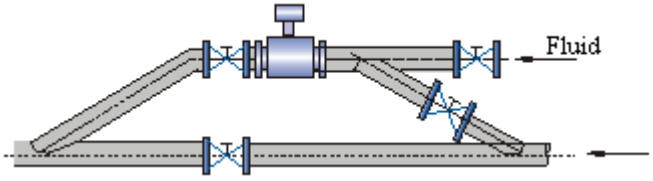
Pay Special Attention to Installing Site:

- Axial line of the measuring electrode must be horizontal

- Meter pipe must be filled with the measured fluid fully
- Specify the minimum length of the straight pipe 5D (D=inside diameter of the flowmeter) for upstream, 3D for downstream. In order to install and remove flowmeter conveniently, suggest a flexing pipe be used behind the flowmeter

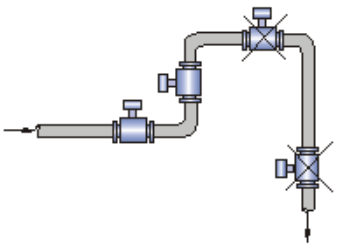


- Flowing direction must be conformed to the indicating arrow on the flowmeter
- Negative pressure in pipe line will destroy the liner of flowmeter
- No strong magnetic field and radio around the meter
- To install and maintain meter conveniently, there should be enough space around the meter
- A fixed bracket be equipped at both side of the flowmeter if the pipe vibration existence
- The distance of the meter to mixing point should be 30D (D=inside diameter of the flowmeter) if the measured fluid is mixed
- To convenient cleaning and maintenance, a by-pass pipe should be equipped, as well as ensure the condition of straight pipe 5D for upstream and 3D for downstream

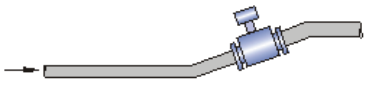


- When install meter, tight the bolts of the flange with a average torque force to prevent liner from broken, using special torque wrench

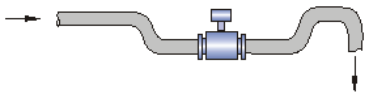
- Meter be installed in the lower pipe or upward vertical pipe, avoid installing at the highest point in pipeline or in the downward vertical pipe



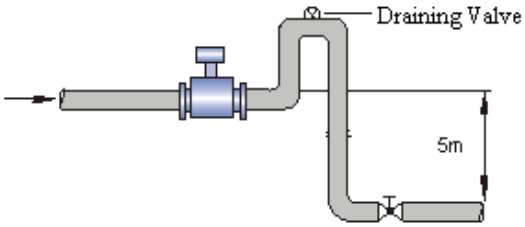
- Install where pipe is rising



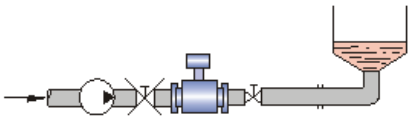
- For draining pipe, meter be installed at the lower point



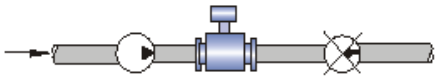
- If the differential fall of the pipe is >5m, a draining valve for gas be installed in the downstream of the meter



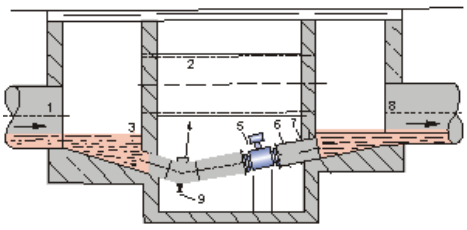
- Control valve and cutoff valve be installed in the downstream of the meter instead of in the upstream



- The meter must be installed at the outlet of the pump, but not at the inlet

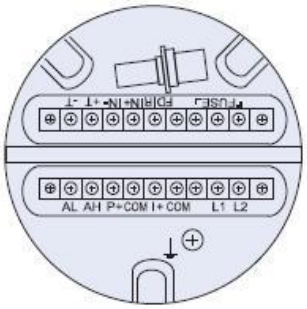


- Meter installed in well
  1. Inlet 2. Overflow-tube
  3. Inlet grid 4. Cleaning hole
  5. Flowmeter 6. Duct
  7. Outlet 8. Draining valve
  9. Draining valve for dirties



Wiring

- Dedicated cable used for remote type electromagnetic flowmeter, the shorter, the better
- YZ rubber conduit used for excitation cable, its length is the same as signal cable
- Signal cable must be isolated with other power cable, do not laid in one conduit or parallel and twisted, should be in the thin wall steel conduit independently
- Keep the signal cable and excitation cable as short as possible, do not wind the exceeding part, which should be cut off and re-weld connector, bend the cable into U shape at the electrical port of the transducer to prevent raining into transducer



Terminals for compact type

Up line: T-, T+ ----------RS-485 Communication

FUSE----------Power fuse

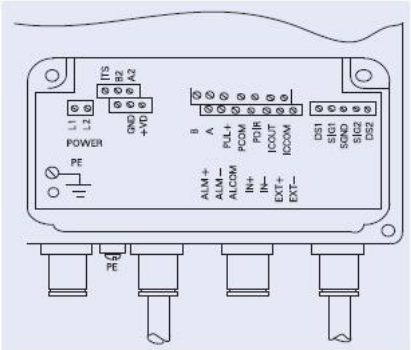
Down line: AL, AH----------Low/ High limit alarm

P+, COM----------Pulse frequency, COM shared with alarm

1+, COM------- 4 ~ 20mA

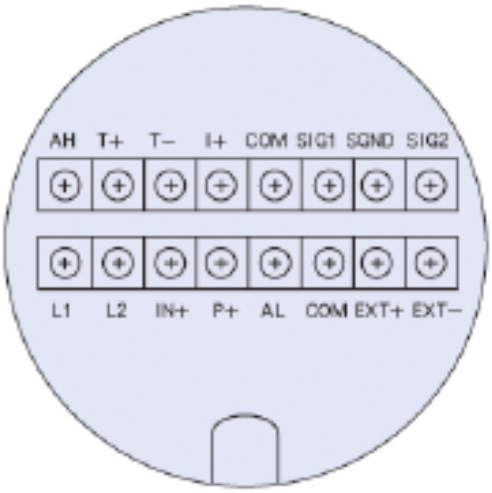
L1, L2----------Power supply 220V (24V DC optional)

Terminal for remote converter



DS1	Signal shield 1	Signal input terminals
SIG1	Signal 1	
SIG GND	Signal ground	
SIG 2	Signal 2	
DS 2	Signal shield 2	
EXT+	Excitation current output+	Excitation output terminals
EXT-	Excitation current output-	
IOUT+	Current output+	Current output terminals
ICOM-	Current output–	
PUL+	Frequency(pulse) output+	Frequency (pulse) output terminals
PCOM	Frequency (pulse) output ground	
PDIR	Flow direction status +	Status output terminals
ALM+	High limit alarm +	
ALM-	Low limit alarm –	
ALCOM	Status output ground	
A2	PROFIBUS data line DP – A	
B2	PROFIBUS data line DP – B	
ITS	Repeater control signal (direction)	
+VD	Optical - isolated power supply 5V	
GND	Optical- isolated power ground	
A	RS485 output +	Communication output terminals
B	RS485 output -	
IN+	Contact input +	Contact control input/ output terminals
IN-	Contact input-	
L1	AC phase line; DC power supply +	Power supply terminals
L2	AC zero line; DC power supply -	

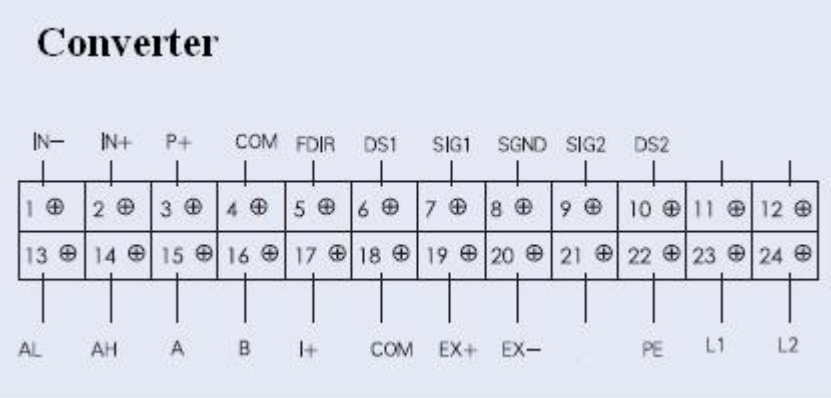
Terminals for compact local display of flameproof



Up line:
AH ---------- High limit alarm
T+, T- ---------- RS 485 communication +, -
SIG1, SGND, SIG2 -------- 4～20mA output

Down line:
EXT+, EXT- ---------- Excitation current output
IN+ ---------- Contact input +
P+, COM ---------- Pulse/ frequency output, COM shared with alarm
AL ---------- Low limit alarm
L1, L2 ---------- Power supply 220V AC, or 24V DC

Terminal for Remote Converter of Flameproof



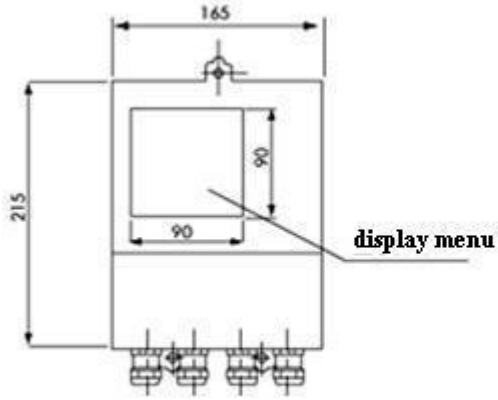
Up Line:

IN -	Contact output -
IN +	Contact input+
P+	Frequency (Pulse) output +
COM	Frequency(pulse)output ground, shared with FDIR, AL, AH
FDIR	Flow direction status+
DS1	Signal shield 1
SIG1	Signal 1
SIG GND	Signal ground
SIG2	Signal 2
DS2	Signal shield 2

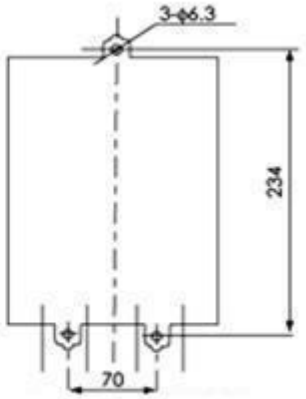
Down Line:

AL	Low limit alarm
AH	High limit alarm
A	RS 485 output+
B	RS 485 output
COM	Frequency(pulse)output ground, shared with FDIR, AL, AH
EXT-	Excitation current output –
EXT+	Excitation current output +
L1	AC phase line; DC power supply+
L2	AC zero line; DC power supply–
PE	Protective ground

Pattern of Remote Type and Dimensions of Converter



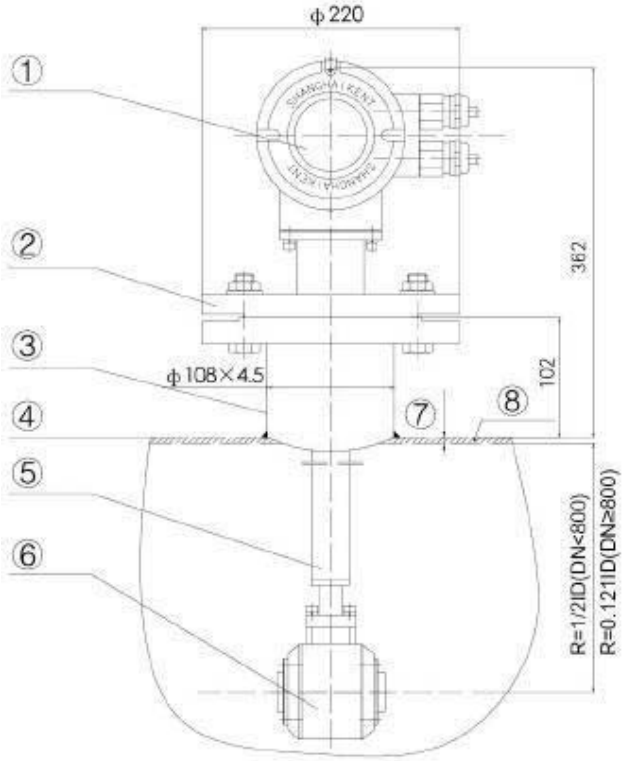
Dimensions of the converter
165×215×70(w*h*t)



Installation size of converter
(wall counted)

Structure of Fixed Inserted Electromagnetic Flowmeter & Dimensions

Inserted flowmeter consists of transducer (electrode assembly), inserted rod, inserted mechanism (duct, flange etc) and converter (compact and remote)



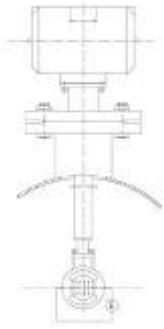
DN	ODxWall thickness	R
250	273×11.5	125
300	325×12.5	150
350	377×13.5	175
400	426×13	200
450	478×14	225
500	529×14.5	250
600	630×15	300
700	720×10	350
800	820×10	96.8
900	920×10	108.9
1000	1020×10	121
1200	1220×10	145.2
1400	1420×10	169.4
1600	1620×10	193.6
1800	1820×10	217.8
2000	2020×10	242

(Note: Data above just for reference)

Parts:

1. Converter
2. Body flange
3. Duct with flange
4. Outer wall of customer's pipe
5. Inserted rod
6. Transducer
7. Wall thickness
8. Customer's pipe

Working principle: Inserted transducer has the same working principle as the pipe electromagnetic flowmeter, using closed magnetic field according to Faraday's Law to ensure stability of flow measuring. This is produced specially by Kent, avoiding leakage of magnetic field. Structure is shown as below:

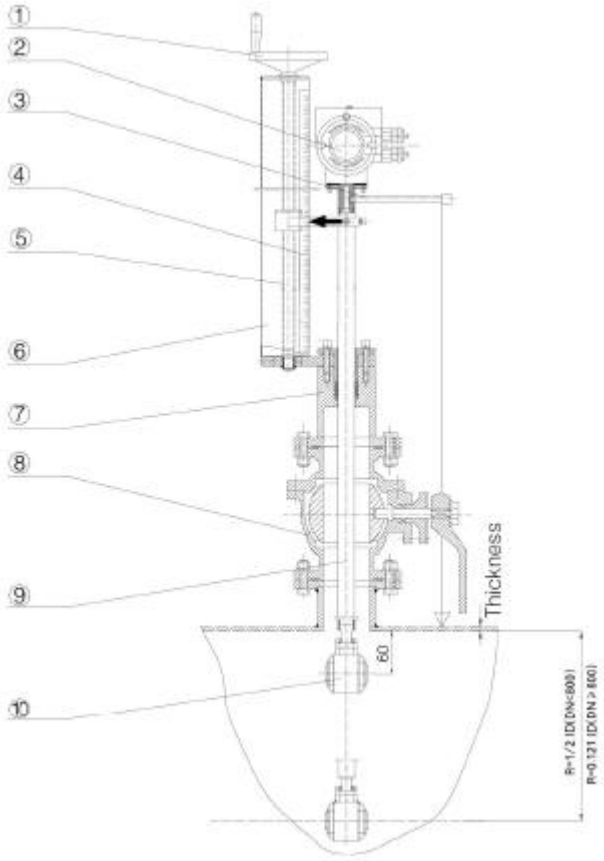


Technology Data of Inserted Type

- Accuracy: ±2.5%
- Repeatability: ±0.83%
- Diameter size: DN250 ~ DN2000
- Straight pipe requirement: 10D for upstream, 3D for downstream
- Converter as same as pipe type

Installation Procedure: Drilling hole, welding duct, inserting meter, adjusting direction, sealing. Details refer to <Electromagnetic flowmeter operation instruction>

Structure of Adjustable Inserted Electromagnetic Flowmeter & Dimensions



Parts:

1. Hand handle	2. Converter	3. Guide rod
4. Scale	5. Screw rod	6. Enclosure
7. Seat for inserted rod	8. Ball valve	9. Inserted rod
10. Transducer		

Installation Procedure for Adjustable Type

a) Drill hole in the pipe to weld duct, mount and meter as above;

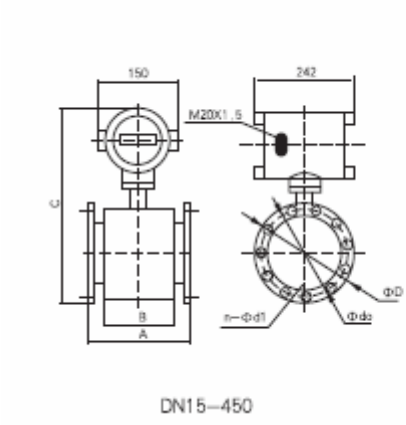
b) Calculate and insert meter into pipe for depth of 0.5D, and rotate hand handle to the depth of arrow indication, then tighten the companion bolts;

c) If clean pipe without fluid stop, loosen companion bolts to make screw rod run rotatable, rotate hand handle to arrow indication of red reading 360 on the scale where measuring probe is over the ball valve, close the valve and clean.

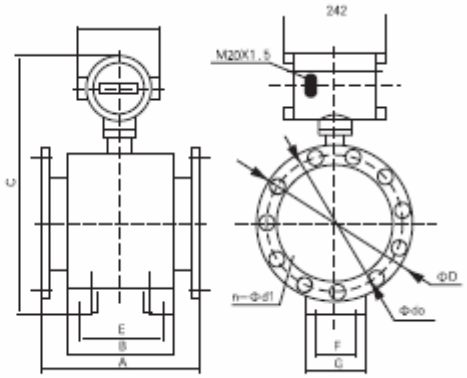
Caution:

1. **Flow direction must be conformed to the flow arrow on the meter body;**
2. **To avoid damaging meter when you weld the flange and pipe, the flowmeter must be not installed on the pipe.**

Meter Dimensions & Weight



DN15—450



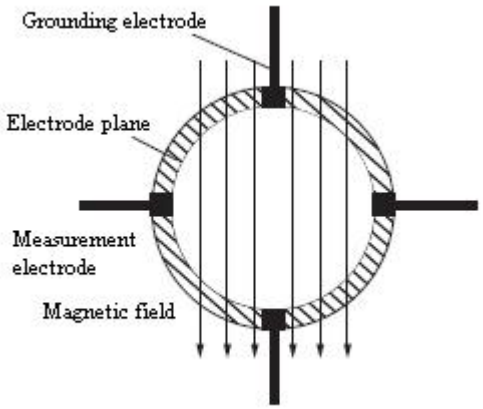
DN500—3200

Size Table

DN	Rated Pressure (MPa)	Dimensions(mm)						E	F	G	H	W.G (kg)
		A	B	C	D	do	n-d1					
15	4.0	150	68	295	95	65	4Φ14					7.5
20					105	75	4Φ14					8
25					115	85	4Φ14					9
32				315	140	100	4Φ18					9.5
40				325	150	110	4Φ18					11.8
50		200	102	340	165	125	4Φ18					13.5
65				360	185	145	8Φ18					15.5
80				375	200	160	8Φ18					17.25
100	1.6	250	134	385	220	180	8Φ18					22
125				426	250	210	8Φ18					28.9
150		300	172	450	285	240	8Φ22					35
200	1.0	350	226	515	340	295	8Φ22					47.5
250		400	266	565	395	350	12Φ22					67.8
300		500	316	615	445	400	12Φ22					85
350				670	505	460	16Φ22					127
400		600	396	725	565	515	16Φ22					183.5
450				780	615	565	20Φ26					194.5
500				886	670	620	20Φ25	306	280	400	399	210
600				1004	780	725	20Φ30				458	303
700		700	456	1158	895	840	24Φ30	366	380	500	560	470
800		800	556	1258	1010	950	24Φ34	466			610	500
900		900	626	1358	1110	1050	28Φ34	536			660	700
1000		1000	726	1458	1230	1160	28Φ36	636			712	921
1200	0.6	1200	866	1670	1405	1340	32Φ33	776	600	700	818	1100
1400		1400	1056	1870	1630	1560	36Φ36	966			918	1285
1600		1600	1196	2080	1830	1760	40Φ36	1106	800	900	1025	1675
1800		1800	1336	2300	2045	1970	44Φ39	1246			1135	2050
2000		2000	1526	2500	2265	2180	48Φ42	1436			1235	2670
2200		2200	1716	2700	2475	2390	52Φ42	1626			1335	3250
2400		2400	1870	2800	2685	2600	56Φ42	1770	1400	1500	1435	3830
2600		2600	2020	3100	2905	2810	60Φ48	1920			1535	4810
2800		2800	2170	3300	3115	3020	64Φ48	2070			1635	5930
3000		3000	2350	3500	3315	3220	68Φ48	2250			1735	7150
3200		3200	2500	3700	3525	3430	72Φ48	2400			1835	8670

Introduction of Multi Electrodes

Along with the theory of electromagnetic flowmeter developed, a new concept about balanced electrode plane raised, add two grounding electrodes in plane of signal electrodes, shown as below:



There are several advantages using this method in design, first no need of grounding ring, second the measuring average velocity is limited in the balanced electrodes plane; third, electricity noise interference is eliminated, so the meter is more accurate and reliable.
Electrode Configuration of KTLDE:

Meter Size	Electrode Configuration
DN15 ~ DN450	2 measuring electrodes 2 grounding electrodes
＞ DN450	4 measuring electrodes 2 grounding electrodes

Blade Electrode Maintenance and Cleaning

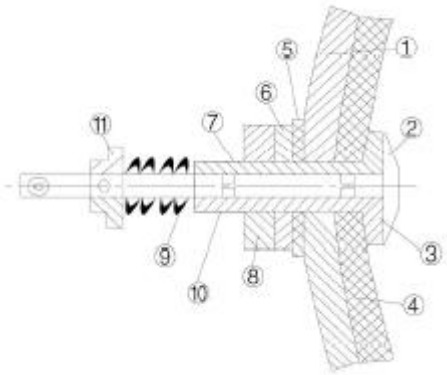
Because the surface of the electrode will be covered easily by the dirtiness to cause output signal drift and swing or even failure the meter measurement when it used in dirty fluid such as slurry and sewage. Use the mechanical blade made by a sliming steel shaft, and adopting mechanical seal between hollow electrodes to prevent the fluid measured from being leakage, then clean the dirty electrode, see figure below.

Open the cover of the electrode to rotate the blade along with the surface of the electrode to clean the dirtiness by manual.

Meter should be bigger than DN80 with 316L electrode.

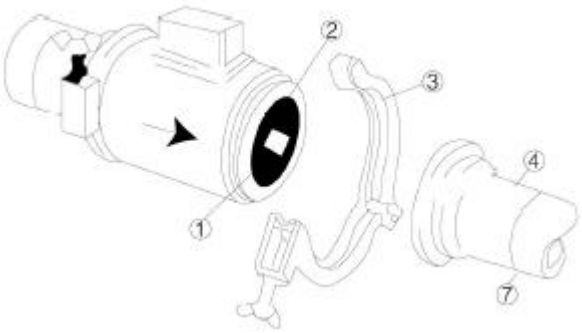
Parts:

1. Meter pipe	2. Blade
3. Electrode surface	4. Liner
5. Isolating gasket	6. Washer
7. Electrode	8. Nut
9. Spring	10. “O” ring
11. Block	



Sanitary Flowmeter Application and Selection

In sanitary industry, such as food or pharmaceutical etc, require timely high temperature steam to sterilize and clean in processes, the remaining medium be not allowed to stay on the place where pipe connection to prevent the bacilli propagate, therefore a quick install meter with hoop produced in sanitary industries, shown as below:



Parts:
1. Liner
2. Gasket
3. Hoop
4. Sleeve
5. Welding seam

Item	Code	Description
Factory Mark	KT	Shanghai Kent
Meter Type	LDE	Intelligent Electromagnetic Flowmeter
Meter Classification	/W	Sanitation
Meter Size	-XXX	-100=DN100, Size DN15 ~ DN 150 available
Electrode Type	-1	Standard Fixed
Electrode Material	0	SS
	1	Pt
	2	HB
	3	Ta
	4	Ti
	5	HC
Liner Material	6	F46 (FEP)
Rated Pressure	-1.6	1.6MPa (extra pressure specified)
Temperature	H	≤120℃
Protection Grade	- 0	IP65
	1	IP68
Converter Type	0	Compact
	1	Remote
Output Signal Communication	0	4 ~20mA DC
	1	RS-485
	2	HART
	3	Profibus- DP
Power Supply	0	220V AC
	1	24V DC
FS (Flowrate Span)	(XXX)	(200)=Maximum flowrate 200m^3/h at 20mA

Example: KTLDE/W-100-106-1.6 H-0000 (200)

Description: Sanitary type, Standard electrode SS, DN100, Liner F46, Rated pressure 1.6 MPa, Medium temperature≤120℃, IP65, Compact, No communication, 220VAC, FS 200m^3/h

Model Selection

Item	Code	Description
Factory Mark	KT	Shanghai Kent
Meter Type	LDE	Intelligent Electromagnetic Flowmeter
Meter Size	-XXX	Example: 100=DN100, if it is followed by I,stands for Inserted Type, by AI, stands for adjustable inserted type
Electrode Type	-1	Standard Fixed Mount
	2	Blade
	3	Exchangeable
Electrode Material	0	316L SS
	1	Pt
	2	HB
	3	Ta
	4	Ti
	5	HC
	6	TuC
Liner Material	3	Chloroprene Rubber (DN50 ~ DN3200)
	4	Polyurethane (DN25 ~ DN500)
	5	F4 (DN25 ~ DN1200)
	6	F46 (PFA) (DN15 ~ DN200)
	7	F40 (DN250 ~ DN2200)
	8	PO (DN50 ~ DN2200)
	9	PPS (DN50 ~ DN2200)
Rated Pressure (MPa)	-4	DN10 ~ 80
	1.6	DN100 ~ 150
	1	DN200 ~ 1000
	0.6	DN1100 ~ 2000
	0.25	DN2200 ~ DN3200
Working Temperature	E	＜60℃
	H	＜160℃
Grounding Ring	0	No ring
	1	With ring
Protection Grade	0	IP65
	1	IP68
Converter Type	0	Compact
	1	Remote
Output Signal Communication	0	4 ~ 20mA
	1	RS-485
	2	Hart
	3	Profibus-DP*1
Housing Material	0	CS
	1	304 SS
Material of Body Flange	0	CS
	1	304 SS
Companion Flange	0	No
	1	With
Power Supply	0	220V AC
	1	24V DC
Explosion Proof	0	Non（0 could be omitted)
	Ex	Exdemib II BT3 ~ BT6

Example: KTLDE-100-223-1.6E-0000-0010

Description: Kent intelligent electromagnetic flowmeter, DN100, Blade type, HB electrode, Chloroprene Rubber liner, Rated pressure 1.6MPa, T≤80℃, No grounding ring, IP65, Compact, No communication, Housing and flange material CS, with companion flange (include bolt and nut), 220V AC, Non explosion proof.

Note: *1 Profibus-DP is available for non explosion proof electromagnetic flowmeter.

Meter Specification

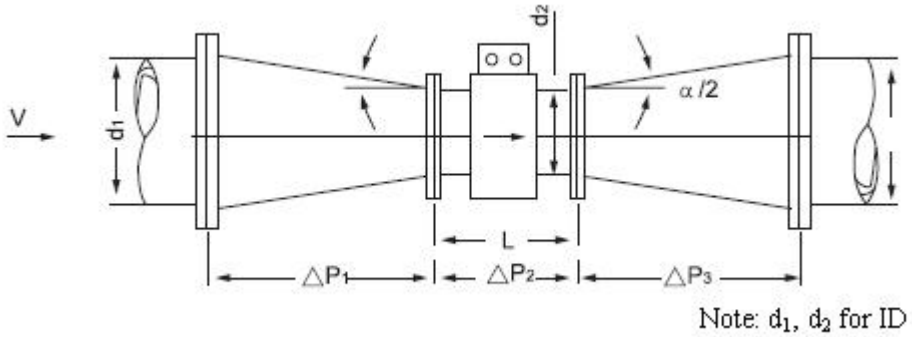
Kent guarantee that the performances parameters for all products are not exceeded the error we give hereafter, the data means the meter´s average value obtained from a series homologous type meters.

Fluid---------- Conductive liquid, slurry
Conductivity---------- ⩾5μS/cm
Velocity---------- 0.3 ~ 1.2m/s (expandable 0.1~15m/s)
Flowing direction---------- forward, reverse
Meter accuracy---------- ±0.3%, ±0.5%
Repeatability---------- ±0.1%,±0.17%(pulse)
Working pressure---------- 0.25, 0.6, 1.0, 1.6, 4.0MPa, (or specified by customer)
Working temperature---------- E level ＜60℃
---------- H level＜160℃
Protection grade---------- IP65, IP68
Electrode material---------- SS, Pt, Ta, Ti, HB, HC, Tuc
Electrode type ----------Standard, blade, exchangeable
Electrode number---------- 2 ~ 6 pieces
Liner material----------Chloroprene rubber, polyurethane, F4, F46, F40, PO, PPS
Flange material---------- CS, SS
Meter body material---------- CS, SS
Output signal---------- Standard 4~20mA, isolated, load resistor ＜750Ω
---------- Pulse frequency 0~1kHz, OCT, External power ⩽35V DC, 250mA/max
Output function---------- Forward, reverse, net flowrate signal
Communication---------- RS-485(Hart, DP)
Alarm (normal open) ---------- Empty, exciting, high / low limit
Power supply---------- 85-265V AC, 45-63Hz, Power <20W; 24V DC, 10VA
Ambient---------- Temperature: -25 ~ +60℃; Humidity: 5 ~ 90%

Appendix 1

Pressure lose of the diverging and converging pipe equipped

If the velocity of measuring pipe is low, please install diverging / converging pipe (as figure shown below) and select electromagnetic flowmeter with small size to meet flow velocity.



Note: d_1, d_2 for ID

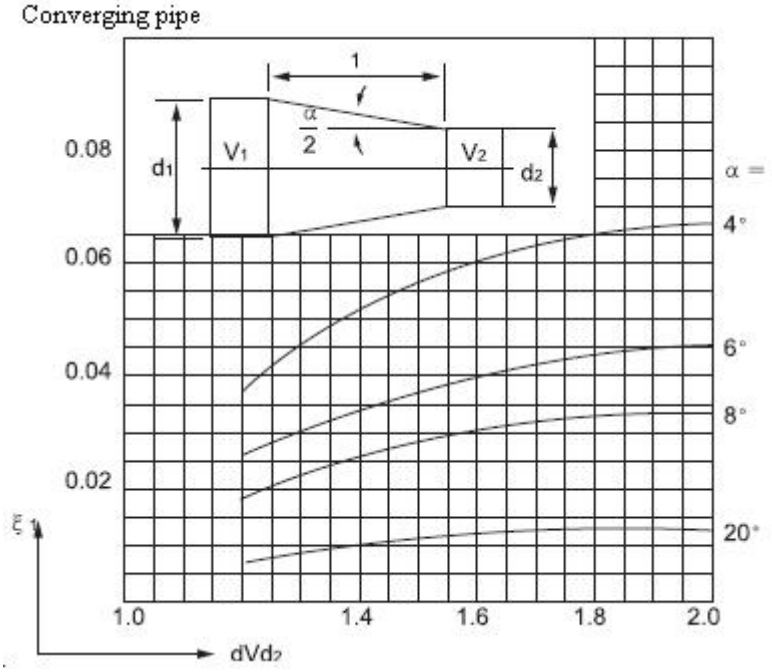
Total pressure lose ΔP

$$\triangle P=\Delta P_1+\Delta P_2+\Delta P_3=\rho/2[(\zeta_1+\zeta_2)V^2{}_2+\zeta_3 V^2{}_1]Pa$$

Thereinto: ρ----Density, kg/m^3

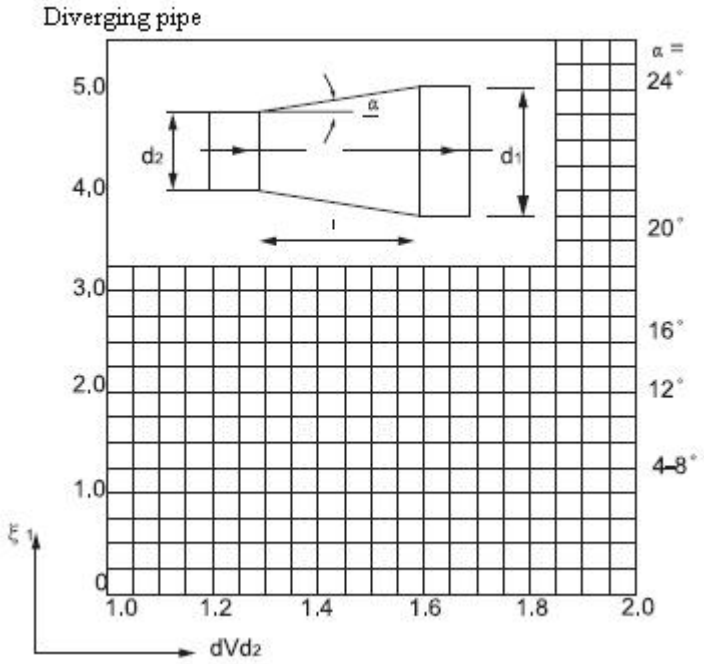
ΔP_1, ΔP_2, ΔP_3----Pressure lose of converging pipe, transducer, diverging pipe, Pa

ζ_1, ζ_3----Resistance factor of converging pipe and diverging pipe



ζ_2 ---------- --- Resistance force factor of transducer, normal is 0.02

V1,V2----Velocity of pipe and transducer, m/s



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