INNOFLUID

ExD series



3 YEARS WARRANTY

CE

ExD Series

Redefine Explosion Proof Peristaltic Pump



ExD series

- A new category of peristaltic pump based on explosion proof standards.
- The whole pump is explosion proof, reaching II2G Ex db IIC T4 Gb and II2D Ex tb IIIC T130℃ Db explosion proof levels at the same time.
- Intelligent control system to realize high precision transferring and dispensing.



VS



Assembled products with parts

ExD series explosion proof peristaltic pump

	Explosion proof motor type	ExD series
Explosion proof method	Explosion proof motor and Explosion proof control box	Overall explosion proof
Speed range(rpm)	180–600 / 60–600	0.1–600
Speed revolution(rpm)	———	0.1
Display	———	4.3–inch color LCD screen
Control	External frequency converter control	Manual, External signal, Communication
Intelligent dispensing mode	———	Automatic filling and dispensing
Flow rate	———	Display both speed and flow rate
Intelligent calibration	———	Input actual volume and calibrate automatically
Power consumption	370W	300W
Drive weight	⩾40kg	30.1kg
IP rate	IP55	IP66

EXPLOSION PROOF PERISTALTIC PUMP

Integrated casting body

- The unique casting reinforced structure and integrated design have successfully passed the "No explosion transmission" test of the IIC level of the national testing center to ensure safety.
- The cast aluminum shell has a tensile strength of 280MPa after heat treatment, which greatly reduces the overall weight and volume of the pump while ensuring strength and safety.
- The hidden design of the flange explosion proof surface combined with the sunken design of the flange fastening screws changes the appearance of traditional explosion proof products.
- The cast aluminum shell has good heat dissipation performance and no additional heat dissipation device is required.

Intelligent operation system

- 4.3–inch color LCD screen, easy operation.
- Dynamic display working status.
- Flow rate, setting parameters and system configuration are displayed in the same screen.
- Intelligent calibration function.
- Multiple external control methods meet remote control requirements.

Passed EMC test excellent anti–electromagnetic interference capability

- Comply with safety regulations:
  IEC61000–6–2
  IEC61000–6–4
  IEC61000–3–2
  IEC61000–3–3

Three–proof button and knob system: explosion–proof, dustproof, waterproof

- Button dust cover: Double layer protection to ensure dustproof and waterproof effect.
- Concave button design: It conforms to ergonomics and fits more comfortably with fingers.



The whole pump is IP66, designed for industrial environment

- More than 90% of the pump body sealing surface of the pump body is sealed by O–ring, which has self–sealing characteristics.
- Passed the IP66 protection level test, easily cope with hot and humid working environment.

The identification system has been fully upgraded

- The logo pattern on the pump head and operation panel adopts laser engraving technology to eliminate the hidden danger of static electricity of traditional plastic masks.

AC servo motor control system

- AC servo motor, high precision, high torque and smooth operation.
- Under full load:
  ExD–300–30L (with DZ45 pump head): Motor temperature rise 25 ℃
  ExD–600–12L (with YZ35 pump head): Motor temperature rise 15 ℃

IP66 Protection Level



Intelligent Operation System



External Control Interface



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Precise dripping of chemical drug in explosion-proof production workshop

In the titration process of chemical drug production, customers have been using liquid level tanks to drip acetone or ethanol solutions. This method is less accurate. Because this process is used to transport ethanol and acetone, the equipment is required to be explosion-proof and corrosion-resistant. Using ExD-600-12L explosion proof peristaltic pump to achieve precise control and accuracy of ±1%.



ExD series



95% ethanol sub-package production

The customer has been using the explosion proof motor and piston pump to dispensing ethanol. When producing products of different specifications, complicated equipment adjustment work is required, which takes about 2-3 hours. The customer's equipment transformation replaces the sub-package pump with ExD-600-6L. For each replacement, it only needs to adjust the parameters on the control panel of the pump, and it only takes 5 minutes at most.

Catalytic validation equipment and simulation pilot production equipment validation device sampling for chemical enterprises

In the process of validating catalysts and simulating oil production, chemical enterprises need sampling pumps for accurate injection. A lot of electromagnetic interference signals will be generated in the field cause of multiple devices running in a centralized manner. And many similar products in the market cannot meet the demand. ExD-600-12L peristaltic pump achieves accurate sampling through good anti-interference ability on site.





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EXPLOSION PROOF PERISTALTIC PUMP

Redefine Explosion Proof Peristaltic Pump

3 YEARS warranty



Explosion Proof Peristaltic Pump

Application: Inflammable and explosive sites, including chemistry, pharmaceutical industry, etc.

IP66

Technical Specifications

- **Standard:** GB/T3836.1-2021, GB/T3836.2-2021, GB/T3836.31-2021, GB/T 4208-2017, Q/BSC03-2022
- **Housing material:** Aluminum Alloy
- **Speed range:**
  ExD-600 series: 0.1-600rpm
  ExD-300 series: 0.1-300rpm
- **Speed resolution:** 0.1rpm
- **Display:** 4.3 inch -Industrial grade - True color LCD screen
- **Control:** Mechanical button, explosion proof knob, external control signal and communication.
- **Working mode:** Flow rate mode, Dispensing mode.
- **Flow rate mode:** Continuous transferring according to the set flow rate or motor speed.
- **Dispensing mode:** Set the dispensing volume, dispensing time, pause time and repeat numbers.
- **Dispensing volume:** 0.1mL-9999L
- **Dispensing time:** 0.1sec-9999hour
- **Pause time:** 0.5sec-9999hour
- **Repeat number:** 1-9999 times, 0 represent unlimited
- **Calibration function:** Input actual volume and calibrate automatically
- **Back suction angle:** 0-360°
- **Communication:** RS485
- **Communication protocol:** Modbus protocol(RTU mode)
- **External control speed signal:** 0-5V, 0-10V, 4-20mA optional
- **External control signal input:** Active switch signal (5-24V) control start/stop, direction and full speed; Passive switch signal control start/stop.
- **External control signal output:** Open collector output working status
- **Drive dimension (L×W×H):** 458×285×335mm
- **Power supply:** AC220V±10%, 50Hz
- **Rated power:** 300W
- **Relative humidity:** <90%
- **Condition temperature:** 0-40℃
- **IP rate:** IP66
- **Drive weight:** 30.1kg

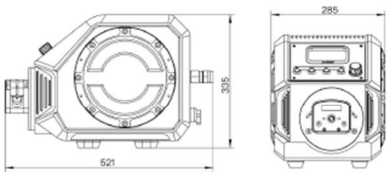
ExD Series Explosion Proof Peristaltic Pump

Pump Head



DZ25-3L

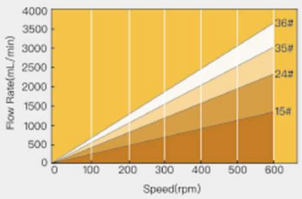
Dimension Drawing(Unit:mm)



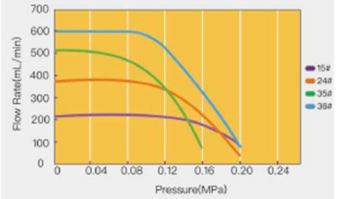
DZ25-3L Flow Rate

Drive	Pump Head	Housing Material	Tube Clamp Material	Tubing		mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-3L	DZ25-3L	Aluminum alloy	Polyamide	15#	4.8x2.4(mm)	2.11	0.1-600	0.211-1264	1.16
				24#	6.4x2.4(mm)	3.85		0.385-2310	
				35#	7.9x2.4(mm)	5.08		0.508-3050	
				36#	9.6x2.4(mm)	6		0.6-3600	

Flow Rate(0.1-600rpm)



Pump Head Pressure/Flow Rate Curve(100rpm)



DZ25-3L Filling Volume Reference Parameter

Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
ExD-600-3L	DZ25-3L	15#	20	1.2	0.5	27	473.9
		24#	40	1.5	0.5	24	415.6
		35#	50	1.5	0.5	24	393.7
		36#	70	2	0.5	20	350.0

Experimental conditions:standard atmospheric pressure, room temperature at 20℃,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

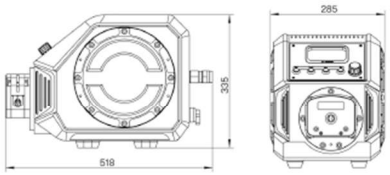
ExD Series Explosion Proof Peristaltic Pump

Pump Head



DZ25-6L

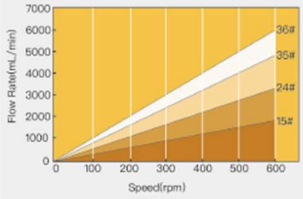
Dimension Drawing(Unit:mm)



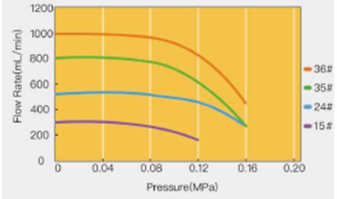
DZ25-6L Flow Rate

Drive	Pump Head	Housing Material	Tube Clamp Material	Tubing		mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-6L	DZ25-6L	Aluminum alloy	Polyamide	15#	4.8x2.4(mm)	3	0.1-600	0.3-1800	1.87
				24#	6.4x2.4(mm)	5.5		0.55-3300	
				35#	7.9x2.4(mm)	8		0.8-4800	
				36#	9.6x2.4(mm)	10		1-6000	

Flow Rate(0.1-600rpm)



Pump Head Pressure/Flow Rate Curve(100rpm)



DZ25-6L Filling Volume Reference Parameter

Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
ExD-600-6L	DZ25-6L	15#	30	1.2	0.5	27	500.0
		24#	50	1.2	0.5	27	454.6
		35#	70	1.2	0.5	27	437.5
		36#	100	5	0.5	24	400.0

Experimental conditions:standard atmospheric pressure, room temperature at 20℃,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

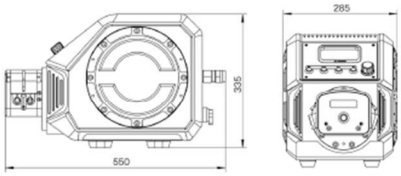
ExD Series Explosion Proof Peristaltic Pump

Pump Head



DY15

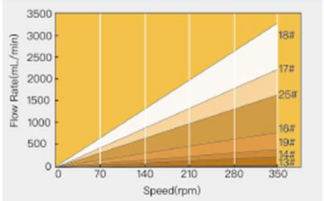
Dimension Drawing(Unit:mm)



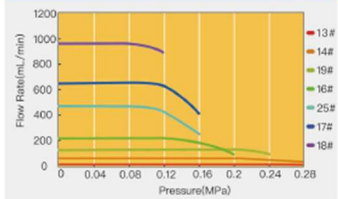
DY15 Flow Rate

Drive	Pump Head	Housing Material	Tube Clamp/ Connector Material	Tubing		mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-6L	DY15	Aluminum alloy	Polyamide	13#	0.8x1.6(mm)	0.14	0.1-350	0.01-48	3.2
				14#	1.6x1.6(mm)	0.64		0.06-223	
				19#	2.4x1.6(mm)	1.28		0.13-448	
				16#	3.1x1.6(mm)	2.07		0.2-723	
				25#	4.8x1.6(mm)	4.65		0.47-1626	
				17#	6.4x1.6(mm)	6.37		0.64-2230	
				18#	7.9x1.6(mm)	9.53		0.95-3337	

Flow Rate(0.1-350rpm)



Pump Head Pressure/Flow Rate Curve(100rpm)



DY15 Filling Volume Reference Parameter

Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
EXD-600-6L	DY15	13#	0.5	0.8	0.8	33	273.4
		13#	1	1.2	0.5	27	364.6
		14#	0.5	0.5	1	30	94.2
		14#	1	0.6	0.8	38	157.0
		14#	3	1	0.5	30	282.6
		19#	5	1	0.8	30	234.4
		16#	15	1.5	0.5	24	290.4
		25#	20	1	0.5	30	258.3
		17#	30	1	0.5	30	282.5
		18#	100	2.5	0.5	17	251.7

Experimental conditions:standard atmospheric pressure, room temperature at 20℃,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

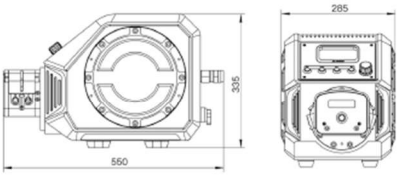
ExD Series Explosion Proof Peristaltic Pump

Pump Head



DY25

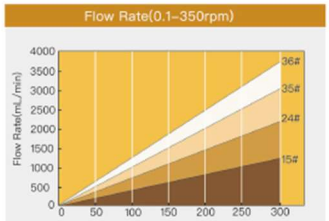
Dimension Drawing(Unit:mm)



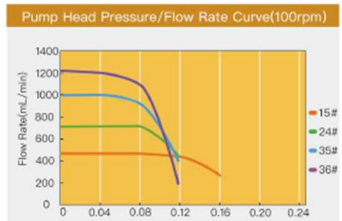
DY25 Flow Rate

Drive	Pump Head	Housing Material	Tube Clamp/ Connector Material	Tubing		mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-6L	DY25	Aluminum alloy	Polyamide	15#	4.8x2.4(mm)	4.23	0.1-350	0.42-1480	3.2
				24#	6.4x2.4(mm)	7.63		0.76-2670	
				35#	7.9x2.4(mm)	10.29		1.03-3600	
				36#	9.6x2.4(mm)	12.40		1.24-4340	

Flow Rate(0.1-350rpm)



Pump Head Pressure/Flow Rate Curve(100rpm)



DY25 Filling Volume Reference Parameter

Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
ExD-600-6L	DY25	15#	10	0.8	0.8	33	177.3
		24#	30	1	0.8	30	235.9
		35#	70	1.5	0.5	24	272.2
		36#	100	2	0.5	20	241.9

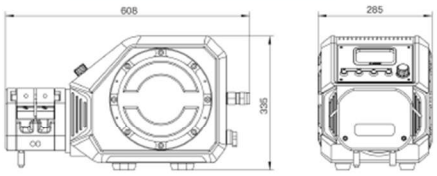
Experimental conditions:standard atmospheric pressure, room temperature at 20℃,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

Pump Head



DY Pump Head

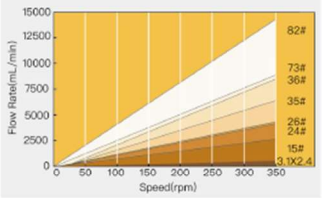
Dimension Drawing(Unit:mm)



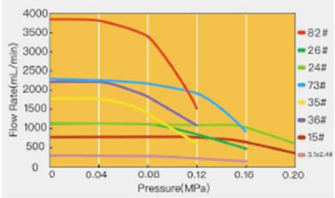
Flow Rate

Drive	Pump Head	Housing Material	Tubing Size	Tubing IDxWall Thickness(mm)	mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
ExD-600-12L	DY25-II	Aluminum alloy	3.1X2.4	3.1x2.4	3.46	0.1-350	0.35-1211	9.45
			15#	4.8x2.4	7.52		0.75-2632	
			24#	6.4x2.4	11.87		1.19-4154.5	
			35#	7.9x2.4	17.64		1.76-6174	
	DY35		36#	9.6x2.4	23.65		2.37-8278	
			26#	6.4x3.3	12.78		1.28-4473	
			73#	9.6x3.3	23.96		2.40-8686	
			82#	12.7x3.3	39.3		3.93-13755	

Flow Rate(0.1-600rpm)



Pump Head Pressure/Flow Rate Curve(100rpm)



YZ35 Filling Volume Reference Parameter

Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy (±%)	Output (pcs/min)	Motor Speed (rpm)
ExD-600-12L	DY25-II	3.1X2.4	20	2	0.5	20	173.4
		15#	80	3	0.5	15	212.8
		24#	150	4	0.5	12	189.6
		35#	200	3.2	0.8	14	212.6
	DY35	36#	200	4	1	12	217.5
		26#	150	3	0.8	15	234.7
		73#	300	3	1	15	250.4
		82#	500	3	1	15	254.5

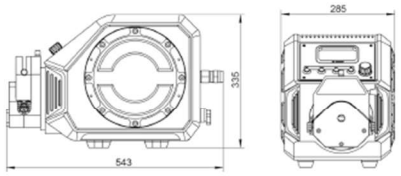
Experimental conditions:standard atmospheric pressure, room temperature at 20℃,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

Pump Head



YZ35

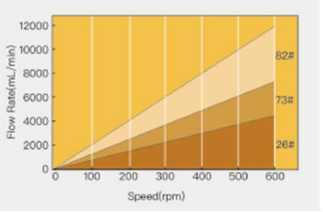
Dimension Drawing(Unit:mm)



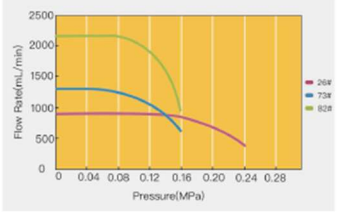
YZ35 Flow Rate

Drive	Pump Head	Housing Material	Tube Clamp Material	Tubing Size	Tubing IDxWall Thickness	mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
ExD-600-12L	YZ35	Aluminum alloy	Polyamide	26#	6.4x3.3(mm)	7	0.1-600	0.7-4200	3.55
				73#	9.6x3.3(mm)	12.3		1.23-7400	
				82#	12.7x3.3(mm)	20		2-12000	

Flow Rate(0.1-600rpm)



Pump Head Pressure/Flow Rate Curve(100rpm)

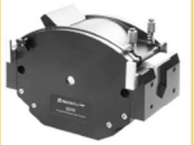


YZ35 Filling Volume Reference Parameter

Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
ExD-600-12L	YZ35	26#	50	1	0.5	30	428.6
		26#	100	2	0.5	20	428.6
		73#	100	1.2	0.5	27	406.5
		73#	150	2	0.5	20	365.9
		82#	200	1.5	0.5	24	400.0
	2*YZ35	73#	100	1.2	0.5	27	203.3
		73#	200	1.5	0.5	24	325.2
		82#	500	2	0.5	20	375.0

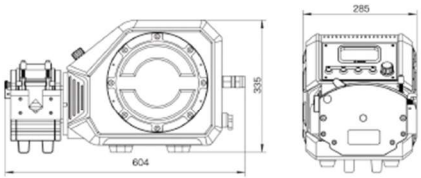
Experimental conditions:standard atmospheric pressure, room temperature at 20℃,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

Pump Head



DZ45

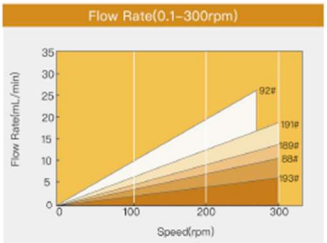
Dimension Drawing(Unit:mm)



DZ45 Flow Rate

Drive	Pump Head	Housing Material	Tube Clamp/ Connector Material	Tubing Size	Tubing IDxWall Thickness	L/r	Speed (rpm)	Flow Rate (L/min)	Weight (kg)
ExD-300-30L	DZ45	Aluminum alloy	Polyamide	193#	9.6x4.8(mm)	0.019	0.1-300	0.0019-5.66	10
				88#	12.7x4.8(mm)	0.035		0.0035-10.5	
				189#	15.9x4.8(mm)	0.047		0.0047-13.98	
				191#	19.4x4.8(mm)	0.063		0.0063-18.78	
				92#	25.4x4.8(mm)	0.104	0.1-270	0.0104-28.15	

Flow Rate(0.1-300rpm)







QUALIFICATION CERTIFICATES

Certificato di esame UE del tipo

EU-type examination certificate

n. ECM 24 ATEX-B TQ39

Rilasciato ai sensi della direttiva 2014/34/UE – Allegato III - Modulo B

Issued according to 2014/34/EU Directive – Annex III - Module B

Richiedente
Applicant

Ragione Sociale *Company Name*	Baoding Shenchen Precision Pump Co., Ltd.
Indirizzo *Address*	No.103, Building 2, Zhidian Industrial Park, Fuxing East Road 999, Baoding, China.
Apparecchiatura *Equipment*	Explosion Proof Peristaltic Pump
Logo *Logo*	Innofluid
Modelli *Models*	ExD-600-3L, ExD-600-6L, ExD-600-12L, ExD-300-18L, ExD-300-30L

Questa apparecchiatura o sistema di protezione e le sue eventuali varianti accettate sono descritte nel presente Certificato e nell'allegato dello stesso

This equipment or protective system and any acceptable variation thereto are described in this Certificate and its Annex.

L'**ECM, Organismo Notificato n° 1282** in conformità all'art. 17 della Direttiva 2014/34/UE del Parlamento europeo e del Consiglio del 26 febbraio 2014, certifica che questa apparecchiatura o sistema di protezione verificata secondo la procedura di cui all'allegato III, Modulo B, è conforme ai requisiti essenziali di sicurezza e salute per il progetto e la costruzione di apparecchiature e sistemi di protezione destinati ad essere utilizzati in atmosfere potenzialmente esplosive, definiti nell'allegato II della Direttiva.
Le verifiche ed i risultati di prova sono registrati nel rapporto a carattere riservato n° PRD-2024-TQ39.

ECM, Notified Body No. 1282 in accordance with Article. 17 of Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014, certifies that this equipment or protective system was tested according to the procedure set out in Annex III, Module B, complies with the essential health and safety requirements for the project and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II of the Directive.
The examination and test results are recorded in confidential report no. PRD-2024-TQ39.

I requisiti essenziali di sicurezza e salute sono assicurati dalla rispondenza alle **Norme applicate:** EN IEC 60079-0:2018+A11:2024, EN 60079-1:2014+A11:2024, EN IEC 60079-31:2018.

The essential health and safety requirements are assured by compliance with applied **Standard:** EN IEC 60079-0:2018+A11:2024, EN 60079-1:2014+A11:2024, EN IEC 60079-31:2018.

Questo **Certificato di esame UE del tipo** è relativo soltanto al progetto, all'esame ed alle prove dell'apparecchiatura o sistema di protezione specificato in accordo con la Direttiva 2014/34/UE. Ulteriori requisiti di questa Direttiva si applicano al processo di produzione e fornitura dell'apparecchiatura o sistema di protezione: questi requisiti non sono oggetto del presente certificato.

This **EU-type examination certificate** relates only to the design, examination and tests specified equipment in accordance with Directive 2014/34/EU. Further requirements of the Directive shall be applied to the manufacturing process and supply condition: these requirements are not covered by this certificate.

L'apparecchiatura o il sistema di protezione deve riportare i seguenti contrassegni:
The equipment shall be marked with the following symbols:

II2G Ex db IIC T4 Gb
II2D Ex tb IIIC T130°C Db

Valsamoggia (BO)
Data - *Date* 13/06/2024
Timbro
Scadenza - *Expiry date* 12/06/2029

Firma autorizzata
Authorized signature
Amanda Payne
(Deputy Manager)

Test Report / Technical Construction File no. **ASDFC24-0506A**

Questo certificato, incluso l'allegato, può essere riprodotto solo integralmente e senza alcuna variazione.
This certificate, annex included, can only be reproduced in its entirety and without any change.

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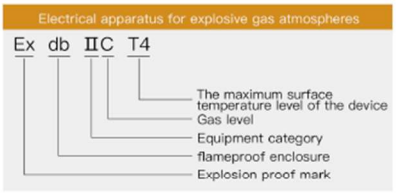
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1. Explosion-proof concept analysis

• Classification of areas – Explosive gas atmospheres

Countries around the world have different zones for dangerous places, but there are roughly two factions: China and most European countries use the IEC classification method, Other countries, mainly represented by the United States and Canada, use the North American method.
The provisions of the Chinese standard GB3836.14-2014 Explosive atmospheres-Part 14: Classification of areas-Explosive gas atmosphere as follows:
Hazardous areas are classified into the follow zones according to the frequency and duration of the explosive gas atmospheres:
Zone 0: A place where an explosive gas atmospheres is present continuously or for a long time.
Zone 1: A place where an explosive gas atmospheres may occur during normal operation.
Zone 2: A place where an explosive gas atmospheres is not likely to occur in normal operation, but if it does occur, it will occur occasionally and only for a short time.

Electrical apparatus for explosive gas atmospheres



Maximum surface temperature grouping for Class II electrical equipment

Temperature group	Maximum surface temperature of equipment (℃)
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

Classes and temperature groups of explosive gases or vapors

温度组别		T1		T2		T3	T4	T5	T6
category	I	methane		–		–	–	–	–
	IIA	Acetic acid acetone acetonitrile Allyl fluorine ammonia aniline Styrene Benzene Methylstyrene Tritoluene penta-2-one (Methylpropyl ketone)	Cresol Bromoethane Isobutane Butyryl fluoride Chloromethane propane Chloroethane petroleum Nitrogen (impurity) benzene	Cyclopentane Methylcyclopentane Propionic acid ethane methanol Methyl formate ethyl acetate ethylene oxide Diisopropyl ether	Propanol cyclohexanone Ethylene Furan Butane methylamine chloroethanol Ethyl acrylate	Pentane Methylcyclohexane Petroleum (including gasoline) Naphtha Diesel kerosene hexane ethanethiol Pentyl alcohol chlorobutane tetrahydrothiophene	Acetaldehyde	–	Ethyl nitrite
	IIB	Propylene (methyl acetylene) Cyclopropane Acrylonitrile	Hydrogen cyanide Coke oven gas	Butadiene-1,3 ethylene oxide Methyl acrylate furan		Diformaldehyde methylfuryl alcohol Butenal Ethylthiol	Ethyl methyl ether diethyl ether Dibutyl ether tetrafluoroethylene	–	–
	IIC	Hydrogen		Acetylene		–	–	Carbon disulfide	–

Explosive gas group

Electrical equipment category	Representative gas	Gas classification	Maximum Experimental Safe Gap(MESG)	Minimum ignition current (MIC)
I	Methane	–	–	–
IIA	Propane	A	MESG is greater than 0.9mm	MIC ratio is greater than 0.8
IIB	Vinyl	B	MESG is 0.5-0.9mm	MIC ratio is 0.45-0.8
IIC	Hydrogen/Acetylene	C	MESG is less than 0.5mm	MIC ratio is less than 0.45

• Electrical equipment for combustible dust environments

Protected by an enclosure to prevent dust from entering and limit the surface temperature, an explosion proof form of electrical equipment used in explosive dust atmospheres.
The type of protection "t" is divided into three protection classes according to the degree of danger that Ex equipment can become a source of ignition in explosive dust atmospheres.
Equipment protected by a dust ignition-tight enclosure "t" is classified as:
---"ta" (Equipment Protection Level "Da"); or
---"tb" (Equipment Protection Level "Db"); or
---"tc" (Equipment Protection Level "Dc").

Protection rate,Relationship between device category and protection rate (IP)

Protection rate	IIIC	IIIB	IIIA
"ta"	IP6X	IP6X	IP6X
"tb"	IP6X	IP6X	IP5X
"tc"	IP6X	IP5X	IP5X

2.Description of IP protection level (According to GB4208/IEC60529)

For example, the protection level is IP54, IP is the marked letter, the number 5 is the first marked number, and 4 is the second marked number. The first marked number indicates the contact protection and foreign object protection level, and the second marked number indicates the waterproof protection level

The first characteristic number fixed conductor foreign matter enters.

0	No protection
1	Fixed foreign object with a diameter greater than 50mm
2	Fixed foreign object with a diameter greater than 12mm
3	Fixed foreign object with a diameter greater than 2.5mm
4	Fixed foreign object with a diameter greater than 1.0mm
5	Dustproof
6	Dusty

Second special identification number to prevent harmful effects from ingress of water

0	No protection
1	Vertical drip
2	15° drip
3	Deluge
4	Splash
5	Spray water
6	Blast water
7	Short time immersion
8	Continuous immersion

Peristaltic Pump Tubing

INNOFLUID

Silicone Tubing

Platinum-cured silicone tubing: Soft, slightly transparent, smooth inner wall; low protein adhesion, low protein penetration, temperature range: -51~238°C.

Micro Flow Rate Tubing

Tubing Size		0.13×0.86	0.5×0.86	0.86×0.86	1.52×0.86	2.06×0.86	2.79×0.86	1×1	2×1	3×1	2.4×0.8
Tubing cross sections(1:1)		•	•	•	•	•	•	•	•	•	•
Wall thickness (mm)		0.86						1.0			0.8
Inside diameter (mm)		0.13	0.5	0.86	1.52	2.06	2.79	1.0	2.0	3.0	2.4
Maximum pressure (Mpa)	Continuous	0.1									
	Intermittent	0.1									

Basic Flow Rate Tubing

Tubing Size		13#	14#	19#	16#	25#	17#	18#	15#	24#	35#	36#
Tubing cross sections (1:1)		•	•	•	•	•	•	•	•	•	•	•
Wall thickness	mm	1.6							2.4			
	inch	1/16							3/32			
Inside diameter	mm	0.8	1.6	2.4	3.2	4.8	6.4	7.9	4.8	6.4	7.9	9.6
	inch	1/32	1/16	3/32	1/8	3/16	1/4	5/16	3/16	1/4	5/16	3/8
Maximum pressure (Mpa)	Continuous	0.17			0.14	0.1	0.07	0.17			0.14	
	Intermittent	0.27			0.24	0.14	0.1	0.27			0.24	

Industrial Tubing

Tubing Size		26#	73#	82#	86#	90#	88#	92#
Tubing cross sections (1:1)		◠	◠	◠	◠	◜	◠	◜
Wall thickness	mm	3.3			6.4		4.8	
	inch	1/8			1/4		3/16	
Inside diameter	mm	6.4	9.6	12.7	9.5	19	12.7	25.4
	inch	1/4	3/8	1/2	3/8	3/4	1/2	1
Maximum pressure (Mpa)	Continuous	0.2			0.25			
	Intermittent	0.27			0.3			



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