

# 北京科米尼斯节能技术有限公司

Beijing Kemi Nisi Energy Saving Technology Co.,

循环水冷却系统

Recirculating cooling water system

EDI 超纯水设备

EDI Ultrapure Water Equipment

反渗透设备

Reverse Osmosis (RO) Equipment

软化水设备

Water Softener

除垢过滤

Descaling Filtration

自动加药及过滤系统

Automatic Dosing and Filtration System

控制系统

Control System

**适合您的水处理方案**

**The right fit for your water treatment solution**



## 公司简介:

科米尼斯音译于德文“共产主义 (Kommunismus)”，意在使与公司合作人员在自由、平等、互相尊重的前提下实现个人价值。利用公司平台与公司同呼吸，共命运，共同发展和进步，。科米尼斯核心成员均在循环水冷却系统专业工作十年以上，具有丰富的循环水冷却系统的方案、系统设计，制造，安装调试及服务经验，拥有自己的专利技术。

## Introduction:

"Kommunismus" is from the German language, it means "communism" in English. We name our company with this name which reflects our company's belief to build a platform based on freedom, equalization, mutual respects. Each individual and the end users will develop and improve with the "Kommunismus" together.

The core members of "Kommunismus" have more than ten years experience on designing, manufacturing, installation & commissioning. Based on our advanced patent technology, we can supply a whole solution system to supply the best service for the customers.

## 公司宗旨:

与人为先而善其身。—— 凡事以合作为先

凡利益以合作者为先，质量过硬，技术领先。—— 企业长足久远

*Enterprise belief:*

*Cooperation first. High quality & advanced technology. long term development*





## 封闭式循环水冷却系统

### Recirculating cooling water system

#### 封闭式单循环水冷却系统

#### Closed single-cycle water cooling system

KMNST 型封闭式循环水冷却系统

**KMNST type closed circulating water cooling system parameter table**

KMNSQ 型封闭式循环水冷却系统

**KMNSQ type closed circulating water cooling system parameter table**

KMNSD 型封闭式循环水冷却系统

**KMNSD type closed circulating water cooling system parameter table**

#### 封闭式双循环水冷却系统

#### Closed dual-circulation water cooling system

KMNSS 型封闭式循环水冷却系统

**KMNSS type closed circulating water cooling system parameter table**

## 选型参考：

**KMNST 型** - 封闭式冷却塔用于一般场合。

**KMNSQ 型** - 封闭式冷却器用于节水要求较高场合。

**KMNSD 型** - 封闭式冷水机组用于水温低于 25°C 场合。

**KMNSS 型** - 封闭式双循环水冷却系统用于换热量较大场合。

## Product selection:

**Type KMNST** :closed cooling tower is used for normal operation.

**Type KMNSQ** : closed cooling system is used for equipments on strict requirement of water-saving

**Type KMNSD** : closed water chiller can supply cooling water with temperature lower than 25°C

**Type KMNSS** : closed double-loop water cooling system is used for equipments on large quality of heat exchange

## 技术特点：

- ▶ 专业设计，量身定做；
- ▶ 全封闭式水循环，减少设备和管道结垢且无污染
- ▶ 不需水池，占地小，易地方便；
- ▶ 交互式人机界面，操作简单，系统可实现自动化控制；
- ▶ 维护保养简便；
- ▶ 节水节能；
- ▶ 运行稳定，可靠度高；
- ▶ 运行成本低。

## Technical characters:

- ▶ Professional designing, customized manufacture
- ▶ All closed type, reduce the scaling on pipeline, no pollution
- ▶ No water tank is needed, limited space requirement
- ▶ HMI operation, easy and automatic to operate
- ▶ Simple to maintain
- ▶ Water & energy saving
- ▶ Stable and reliable running
- ▶ Low operation cost

## 适用范围：

- ▶ 真空炉
- ▶ 感应加热成套设备、透热设备
- ▶ 高频、中频电源，IGBT 淬火成套设备
- ▶ 压铸机、注塑机
- ▶ 整流设备、阻焊机
- ▶ 其它对水质、水温有较高要求的用水设备

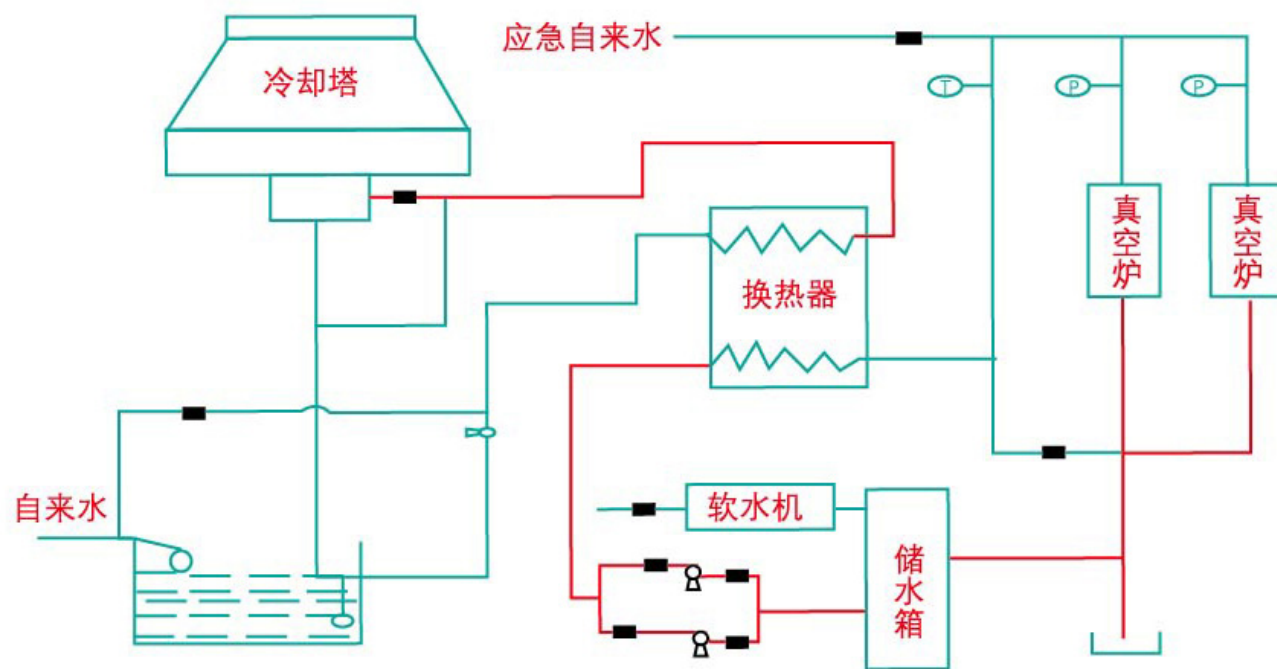
## Application

- ▶ Vacuum furnace for heat treatment, brazing, sintering etc
- ▶ Induction equipment, diathermy equipment
- ▶ High frequency power, middle frequency power, IGBT quenching equipment
- ▶ Die-casting machine, injection molding machine
- ▶ Rectifying equipment, the resistance welding machine
- ▶ Others for high requirement on water quality and temperature

## 封闭式双循环水冷却系统

Closed dual-circulation water cooling system

示意图 Diagram



### KMNSS 型





## KMNSS 型封闭式循环水冷却系统参数表

KMNSS type closed circulating water cooling system parameter table

| 型号规格<br>Type | 循环水量<br>Capacity m <sup>3</sup> /h | 冷却能力<br>Cooling capacity<br>kw | 冷却塔功率<br>Cooling tower power<br>kw | 循环水泵功率<br>Circulating pump efficiency<br>kw | 运转重量<br>Operating weight<br>Kg | 备注<br>Comments on a form                                    |
|--------------|------------------------------------|--------------------------------|------------------------------------|---------------------------------------------|--------------------------------|-------------------------------------------------------------|
| KMNSS-20     | 20                                 | 116                            | 0.75                               | 7.5×2                                       | 1760                           | 循环水泵一用一备<br>The circulating pump is used and one is standby |
| KMNSS-30     | 30                                 | 175                            | 1.1                                | 7.5×2                                       | 1896                           |                                                             |
| KMNSS-50     | 50                                 | 290                            | 1.5                                | 15×2                                        | 2898                           |                                                             |
| KMNSS-80     | 80                                 | 465                            | 3.7                                | 18.5×2                                      | 6548                           |                                                             |
| KMNSS-100    | 100                                | 581                            | 3.7                                | 22×2                                        | 7104                           |                                                             |
| KMNSS-120    | 120                                | 698                            | 5.5                                | 30×2                                        | 11247                          |                                                             |
| KMNSS-150    | 150                                | 872                            | 5.5                                | 37×2                                        | 12355                          |                                                             |
| KMNSS-200    | 200                                | 1162                           | 7.5                                | 45×2                                        | 15856                          |                                                             |
| KMNSS-250    | 250                                | 1453                           | 11                                 | 55×2                                        | 20316                          |                                                             |
| KMNSS-300    | 300                                | 1744                           | 11                                 | 55×2                                        | 24030                          |                                                             |

1. 供水水压 0.2-0.4Mpa 供水水温 ≤ 32℃ ( 环境湿球温度 ≤ 28℃ 时 )。要求水温 ≤ 25℃ 时配冷水机。

2. 管道根据用户要求配置。

3. 阀门的阀芯、阀板为不锈钢。

4. 根据用户需求可配置定压变频控制系统。

5. 当循环水量大时，采用系统组合实现。

6. 参数仅供参考，详细参数以技术方案为准。

1. Water pressure is 0.2~0.4Mpa at ,water temperature is ≤ 32℃ at entry (when environmental wet-bulb is ≤ 28℃ );Required water temperature is ≤ 25℃ ,cooling water machine is required.

2. Pipeline is configured in accordance with customer requirements.

3. The valve core and valve plate are made of stainless steel.

4. Fixed pressure frequency conversion controlsystem can be configured in accordance with customer requirements.

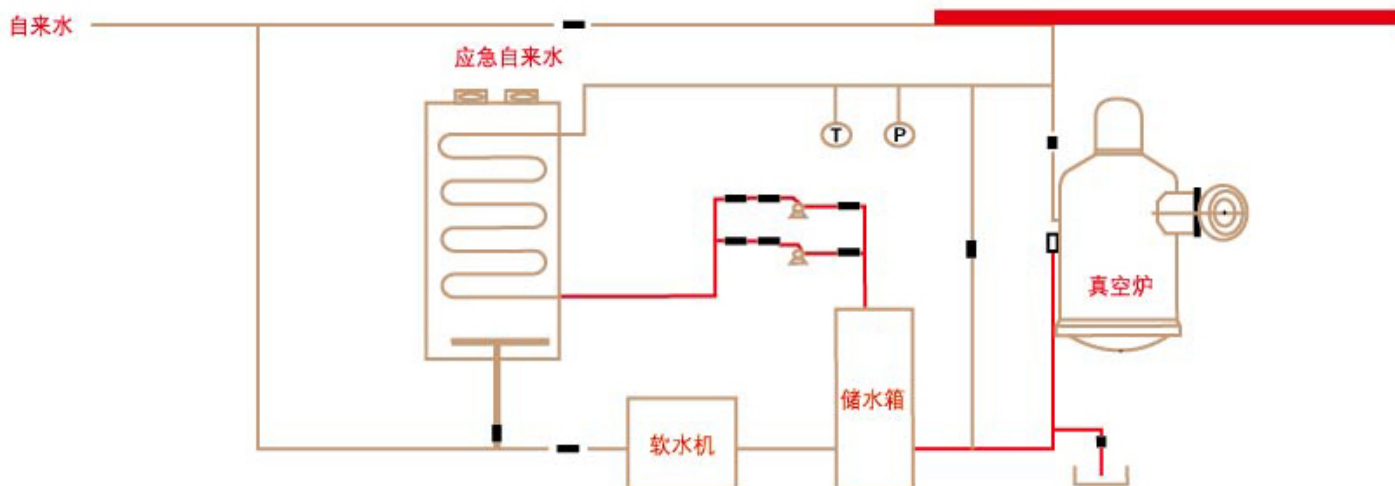
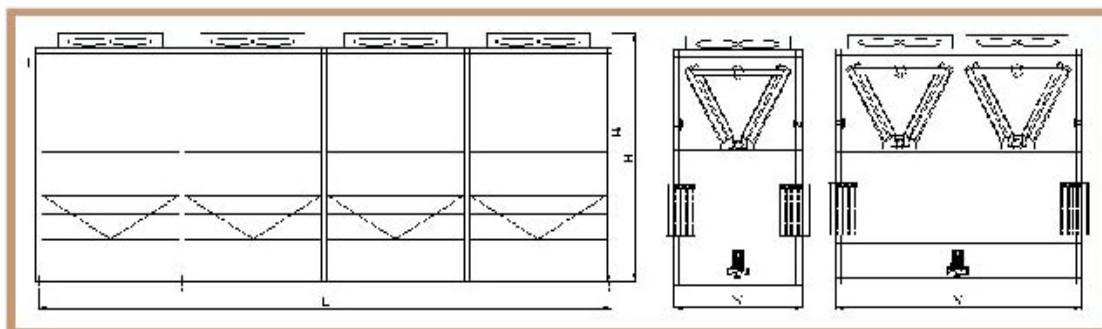
5. When the circulating water is large, the system combination is adopted.

6. The parameters are for reference only, and the detailed parameters are subject to the technical scheme.

## ▶▶ 封闭式单循环水冷却系统

Closed single-cycle water cooling system

### 示意图 Diagram



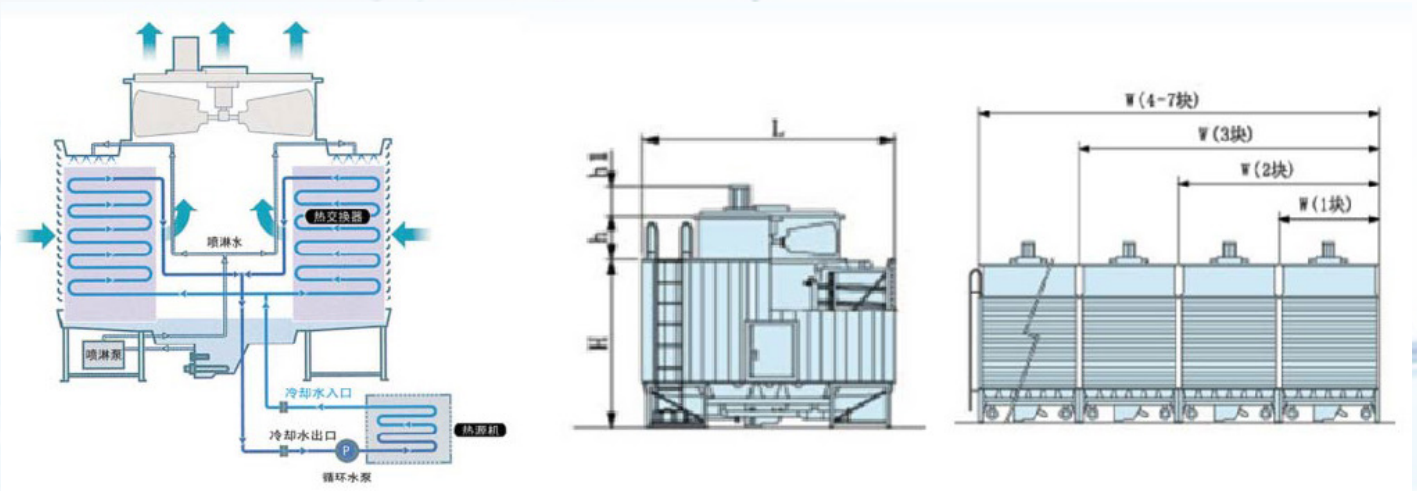
### KMNSQ 型



KMNSQ 型封闭式循环水冷却系统参数表  
KMNSQ type closed circulating water cooling system parameter table

| 型号规格<br>Type                                                                                                                                                                              | 循环水量<br>Capacitym3/h | 冷却能力<br>Cooling capacity<br>kw | 冷却器功率<br>Cooling tower power<br>kw | 循环水泵功率<br>Circulating pump efficiency<br>kw | 运转重量<br>Operating weight<br>Kg | 备注<br>Comments on a form                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------|------------------------------------|---------------------------------------------|--------------------------------|-------------------------------------------------------------|
| KMNSQ-20                                                                                                                                                                                  | 20                   | 116                            | 5.1                                | 7.5×2                                       | 620                            | 循环水泵一用一备<br>The circulating pump is used and one is standby |
| KMNSQ-30                                                                                                                                                                                  | 30                   | 175                            | 7.65                               | 7.5×2                                       | 880                            |                                                             |
| KMNSQ-50                                                                                                                                                                                  | 50                   | 290                            | 12.75                              | 15×2                                        | 1350                           |                                                             |
| KMNSQ-80                                                                                                                                                                                  | 80                   | 465                            | 20.4                               | 18.5×2                                      | 2200                           |                                                             |
| KMNSQ- 100                                                                                                                                                                                | 100                  | 581                            | 25.5                               | 22×2                                        | 2400                           |                                                             |
| 1. 供水水压 0.2-0.4Mpa ， 供水水温≤ 32℃ ( 环境湿球温度≤ 28℃时 )。要求水温≤ 25℃时配冷水机。                                                                                                                           |                      |                                |                                    |                                             |                                |                                                             |
| 2. 管道根据用户要求配置。                                                                                                                                                                            |                      |                                |                                    |                                             |                                |                                                             |
| 3. 阀门的阀芯、阀板为不锈钢。                                                                                                                                                                          |                      |                                |                                    |                                             |                                |                                                             |
| 4. 根据用户需求可配置定压变频控制系统。                                                                                                                                                                     |                      |                                |                                    |                                             |                                |                                                             |
| 5. 当循环水量大时，采用系统组合实现。                                                                                                                                                                      |                      |                                |                                    |                                             |                                |                                                             |
| 6. 参数仅供参考，详细参数以技术方案为准。                                                                                                                                                                    |                      |                                |                                    |                                             |                                |                                                             |
| 1.Water pressure is 0.2~0.4Mpa at ,water temperature is ≤ 32 ℃ at entry (when environmental wet-bulb is ≤ 28 ℃ );Required water temperature is ≤ 25 ℃ ,cooling water machine is required. |                      |                                |                                    |                                             |                                |                                                             |
| 2.Pipeline is configured in accordance with customer requirements.                                                                                                                        |                      |                                |                                    |                                             |                                |                                                             |
| 3.The valve core and valve plate are made of stainless steel.                                                                                                                             |                      |                                |                                    |                                             |                                |                                                             |
| 4.Fixed pressure frequency conversion controlsystem can be configured in accordance with customer requirements.                                                                           |                      |                                |                                    |                                             |                                |                                                             |
| 5. When the circulating water is large, the system combination is adopted.                                                                                                                |                      |                                |                                    |                                             |                                |                                                             |
| 6.The parameters are for reference only, and the detailed parameters are subject to the technical scheme                                                                                  |                      |                                |                                    |                                             |                                |                                                             |

KMNST 型





KMNST 型封闭式循环水冷却系统参数表

KMNST type closed circulating water cooling system parameter table

| 型号规格<br>Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 循环水量<br>Capacitym3/h | 冷却能力<br>Cooling<br>capacity<br>kw | 闭式塔功率<br>Closed tower<br>kw | 循环水泵功率<br>Circulating<br>pump efficiency<br>kw | 运转重量<br>Operating<br>weight<br>Kg | 备注<br>Comments on a form                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------|-----------------------------|------------------------------------------------|-----------------------------------|----------------------------------------------------------------|
| KMNST-20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 20                   | 116                               | 3.3                         | 7.5×2                                          | 2090                              | 循环水泵一用一备<br>The circulating pump is<br>used and one is standby |
| KMNST-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 30                   | 175                               | 3.3                         | 7.5×2                                          | 2580                              |                                                                |
| KMNST-50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 50                   | 290                               | 5.5                         | 15×2                                           | 3480                              |                                                                |
| KMNST-80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 80                   | 465                               | 9                           | 18.5×2                                         | 4150                              |                                                                |
| KMNST- 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 100                  | 581                               | 11                          | 22×2                                           | 4700                              |                                                                |
| KMNST- 120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 120                  | 698                               | 15                          | 30×2                                           | 5860                              |                                                                |
| KMNST- 150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 150                  | 872                               | 20.5                        | 37×2                                           | 6770                              |                                                                |
| KMNST-200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 200                  | 1162                              | 22                          | 45×2                                           | 9420                              |                                                                |
| KMNST-250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 250                  | 1453                              | 28                          | 55×2                                           | 11460                             |                                                                |
| KMNST-300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 300                  | 1744                              | 30                          | 55×2                                           | 13540                             |                                                                |
| 1. 供水水压 0.2-0.4Mpa 供水水温 ≤ 32℃ ( 环境湿球温度 ≤ 28℃ 时 )。要求水温 ≤ 25℃ 时配冷水机。<br>2. 管道根据用户要求配置。<br>3. 阀门的阀芯、阀板为不锈钢。<br>4. 根据用户需求可配置定压变频控制系统。<br>5. 当循环水量大时，采用系统组合实现。<br>6. 参数仅供参考，详细参数以技术方案为准。<br>1.Water pressure is 0.2~0.4Mpa at ,water temperature is ≤ 32 ℃ at entry (when environmental wet-bulb is ≤ 28 ℃ );Required water temperature is ≤ 25 ℃ ,cooling water machine is required.<br>2.Pipeline is configured in accordance with customer requirements.<br>3.The valve core and valve plate are made of stainless steel.<br>4.Fixed pressure frequency conversion controlsystem can be configured in accordance with customer requirements.<br>5. When the circulating water is large, the system combination is adopted.<br>6.The parameters are for reference only, and the detailed parameters are subject to the technical scheme. |                      |                                   |                             |                                                |                                   |                                                                |

KMNSD 型



## KMNSD 型封闭式循环水冷却系统参数表

KMNSD type closed circulating water cooling system parameter table

| 型号规格<br>Type | 循环水量<br>Capacitym <sup>3</sup> /h | 冷却能力<br>Cooling<br>capacity<br>kw | 冷水机<br>功率<br>Chiller<br>kw | 冷水泵功<br>率<br>Cold water<br>pump<br>kw | 循环水泵<br>功率<br>Circulating<br>water<br>pump<br>kw | 运转重量<br>Operating<br>weight<br>Kg | 备注<br>Comments on a form                                                                                                                            |
|--------------|-----------------------------------|-----------------------------------|----------------------------|---------------------------------------|--------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| KMNSD-5      | 5                                 | 29.6                              | 8.1                        | 1.1×2                                 | 1.5×2                                            | 920                               | 风冷冷水组，冷水<br>泵、循环水泵一用<br>一备<br>The air-cooled water<br>cooling group, water<br>pump and circulating<br>water pump are used<br>and standby            |
| KMNSD- 10    | 10                                | 60                                | 16.2                       | 1.5×2                                 | 5.5×2                                            | 3000                              |                                                                                                                                                     |
| KMNSD- 15    | 15                                | 88,2                              | 24.8                       | 2.2×2                                 | 5.5×2                                            | 4220                              |                                                                                                                                                     |
| KMNSD-20     | 20                                | 120                               | 33                         | 2.2×2                                 | 7.5×2                                            | 6340                              |                                                                                                                                                     |
| KMNSD-30     | 30                                | 174                               | 57.4                       | 2.2×2                                 | 7.5×2                                            | 6780                              | 水冷冷水组，冷水<br>泵、循环水泵一用<br>一备<br>The water cooling<br>water group, the cold<br>water pump and the<br>circulating water<br>pump are used and<br>standby |
| KMNSD-60     | 60                                | 349                               | 100.5                      | 5.5×2                                 | 18.5×2                                           | 13760                             |                                                                                                                                                     |
| KMNSD- 100   | 100                               | 581                               | 176.6                      | 11×2                                  | 22×2                                             | 16650                             |                                                                                                                                                     |
| KMNSD-200    | 200                               | 1162                              | 300.5                      | 15×2                                  | 45×2                                             | 39500                             |                                                                                                                                                     |
| KMNSD-300    | 300                               | 1744                              | 341                        | 22×2                                  | 55×2                                             | 42520                             |                                                                                                                                                     |

1. 供水水压 0.2-0.4Mpa, 供水水温 ≤ 25℃ .

2. 管道根据用户要求配置。

3. 阀门的阀芯、阀板为不锈钢。

4. 根据用户需求可配置定压变频控制系统。

5. 当循环水量大时，采用系统组合实现。

6. 参数仅供参考，详细参数以技术方案为准。

1. Water pressure is 0.2~0.4Mpa at ,water temperature is ≤ 25℃ .

2. Pipeline is configured in accordance with customer requirements.

3. The valve core and valve plate are made of stainless steel.

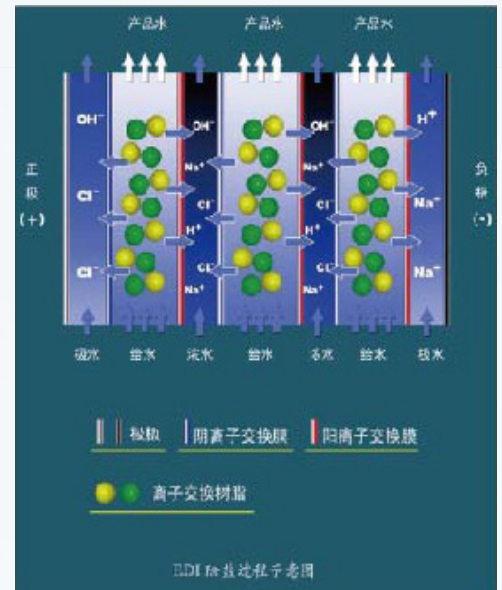
4. Fixed pressure frequency conversion controlsystem can be configured in accordance with customer requirements.

5. When the circulating water is large, the system combination is adopted.

6. The parameters are for reference only, and the detailed parameters are subject to the technical scheme.

EDI(Electrodeionization) 是一种将离子交换技术、离子交换膜技术和离子电迁移技术相结合的纯水制造技术。它巧妙的将电渗析和离子交换技术相结合，利用两端电极高压使水中带电离子移动，并配合离子交换树脂及选择性树脂膜以加速离子移动去除，从而达到水纯化的目的使超纯水电阻率达 2-1825MO·CM

*Electrodeionization (EDI) is a pure water manufacturing technology that combines ion exchange technology, ion exchange membrane technology, and ion electromigration technology. It ingeniously integrates electrodialysis and ion exchange technology, using high voltage from electrodes at both ends to drive charged ions in water to move. In conjunction with ion exchange resins and selective resin membranes, it accelerates the removal of ions through migration, thereby achieving the purpose of water purification. This process enables the resistivity of ultrapure water to reach 2-18.25 MO·cm.*



**EDI 除盐示意图**  
EDI Desalination Schematic Diagram

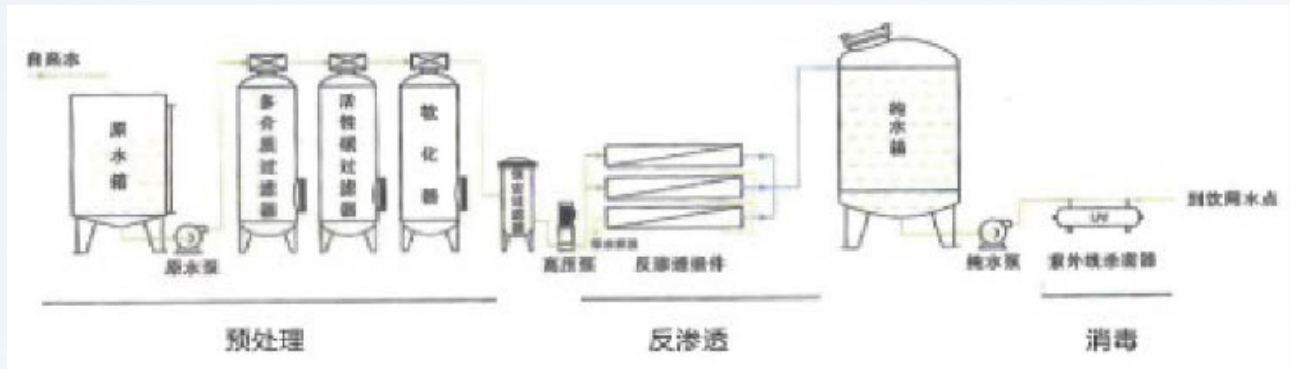




EDI 技术凭借其独特的连续电除盐优势，以及无化学药剂再生优势，EDI 可以广泛应用于化工、石油、冶金、电厂、造纸、印染、制药、电子、半导体及汽车等众多行业。

*Electrodeionization (EDI) technology, with its unique advantages of continuous electro-deionization and chemical-free regeneration, can be widely applied in numerous industries such as chemical engineering, petroleum, metallurgy, power plants, paper manufacturing, printing and dyeing, pharmaceuticals, electronics, semiconductors, and automotive.*

## 工艺流程 Process Flow



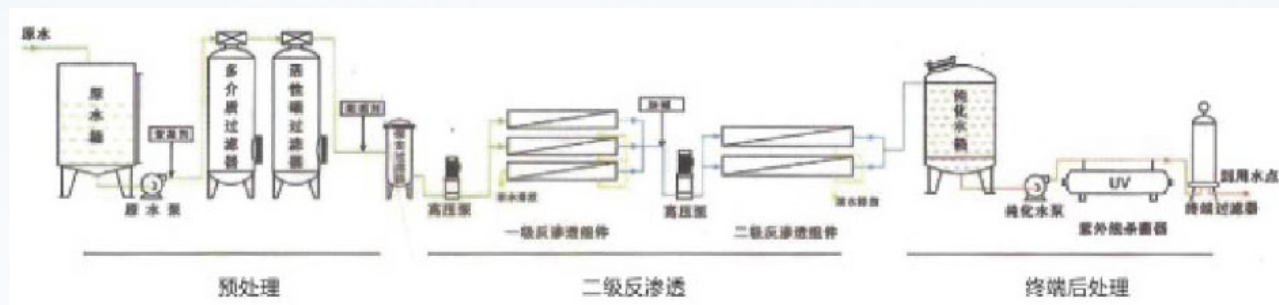
原水 → 原水箱 → 多介质过滤器 (石英砂过滤器) → 活性炭过滤器 → 软水处理装置 (添加阻垢剂装置) → 精密过滤器 → 高压泵 → 一级反渗透 (RO) 装置 → 紫外线杀菌装置 (臭氧杀菌装置) → 用水点

Raw Water → Raw Water Tank → Multi-media Filter (Quartz Sand Filter) → Activated Carbon Filter → Water Softener (Scale Inhibitor Dosing System) → Cartridge Filter → High-pressure Pump → Single-stage Reverse Osmosis (RO) System → UV Sterilizer (Ozone Sterilizer) → Point of Use



### 工艺流程（以医药行业为例）

#### Process Flow (Taking the Pharmaceutical Industry as an Example)



原水箱 → 原水泵 → 多介质过滤器 → 活性炭过滤器 → 软水器 → 精密过滤器 → 一级反渗透设备 → 中间水箱 → 二级反渗透设备 → 无菌水箱 → 纯水箱 → 紫外线杀菌器 → 微孔过滤器 → 用水点（循环到纯化水箱）

双级反渗透就是第一级反渗透的透过水经调整 PH 值后，再由第二级高压泵送进第二级反渗透系统处理从而获得透过水的过程。

Raw Water Tank → Raw Water Pump → Multi-media Filter → Activated Carbon Filter → Water Softener → Cartridge Filter → First-stage RO System → Intermediate Tank → Second-stage RO System → Aseptic Tank → Purified Water Tank → UV Sterilizer → Microporous Filter → Point of Use (Circulation back to Purified Water Tank)



软水器采用钠离子交换树脂将原水中的钙、镁离子置换出去，经该设备流出后成为硬度极低的软化水。当树脂吸附到一定量饱和的钙、镁离子后，必须进行再生，用饱和的盐水浸泡或冲中洗树脂把树脂里的钙、镁等离子再置换出来，恢复树脂的软化交换能力，并将废液排出。整个再生过程包括：反洗（松动树脂层）→ 吸盐再生（发生交换反应）→ 冲洗（排出钙镁）将置换出来的钙、镁离子冲净 → 盐箱注水（为了下次再生准备）。

*Water softeners use sodium ion exchange resins to replace calcium and magnesium ions in raw water, resulting in softened water with extremely low hardness after flowing through the equipment. When the resin has adsorbed a certain amount of saturated calcium and magnesium ions, it must be regenerated. The resin is soaked or rinsed with saturated brine to re-exchange and remove the calcium, magnesium, and other ions from the resin, restoring the resin's softening and exchange capacity, and discharging the waste liquid. The entire regeneration process includes: backwashing (to loosen the resin layer) → brine suction regeneration (where exchange reactions occur) → rinsing (to discharge calcium and magnesium ions, flushing out the replaced ions completely) → brine tank filling (preparing for the next regeneration).*



软化利用变频电流将大分子水电离，使之成为由 5 个或更少水分子组成的小分子团水，并释放铜、银离子消灭细菌溶解由于小分子团的水具有很强的还原特性，可以渗透进设备管道的水垢及铁锈层，逐步将其中的金属离子还原成离子状态 ( $\text{Ca}^{2+}$ 、 $\text{Mg}^{2+}$ ) 吸附水垢被溶解后所产生的金属离子 ( $\text{Ca}^{2+}$ 、 $\text{Mg}^{2+}$ ) 随着系统的循环水流动，并被收集器外网 (电极负极) 所吸附，形成钙、镁的化合物结晶清理将收集到的结晶从收集器外网上清除，从而将系统中成垢的最主要因素  $\text{Ca}^{2+}$ 、 $\text{Mg}^{2+}$ ) 从循环水中去除。



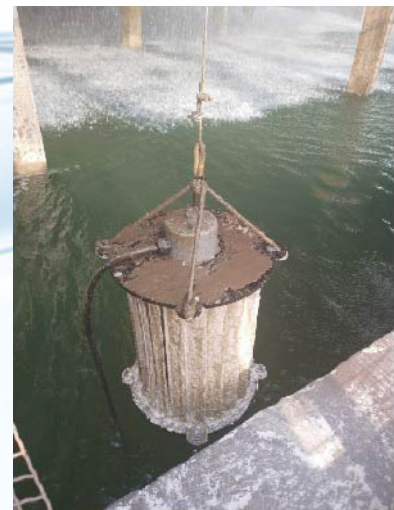
纯钛收集器外网，使用前。  
Outer network of pure titanium collector, before use

*Softening utilizes variable-frequency current to ionize large-molecule water, converting it into small-molecule clustered water composed of 5 or fewer water molecules. It also releases copper and silver ions to eliminate bacteria. Due to their strong reducing properties, the small-molecule clustered water can penetrate into the scale and rust layers in equipment pipelines, gradually reducing the metal ions within them to an ionic state ( $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ). The metal ions ( $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ) produced by the dissolution of scale are adsorbed and then flow along with the circulating water of the system. They are adsorbed by the outer network of the collector (the negative electrode of the electrode), forming calcium and magnesium compound crystals. During cleaning, the collected crystals are removed from the outer network of the collector, thereby removing the primary scaling factors ( $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ) from the circulating water in the system.*

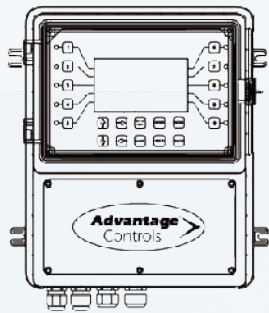


使用三周左右 (具体效果根据客户具体情况而定)  
Approximately three weeks of use  
(the specific effect depends on the customer's specific situation)

使用一个月左右 (具体效果根据客户具体情况而定)  
Approximately one month of use  
(the specific effect depends on the customer's specific situation)



火电厂专用冷却水处理系统  
Cooling Water Treatment System for Thermal Power Plants



我公司为配合药剂的精准投加，开发了多种自动控制系统，包含适用于区域供热二次网以及封闭式冷却水或中央空调冷冻水的 pH 自动加药系统、开式循环冷却水自动加药自动排污系统。不同的水系统可根据不同参数进行自动控制加药，使系统中药剂浓度保持充足稳定，不但降低了人工成本，还保证了水质处理效果。为保证设备质量，所有控制设备元件、探头、仪表均为国外知名品牌。

为配合药剂作用，我公司选用了磁柱袋式过滤，以并联的方式与主回水管路连接，由循环泵将主管路 5%~15% 的水打入过滤器，进行过滤，过滤精度可选 1-5-10 $\mu$ m。采用旁路式过滤，最大优势就不影响生产的正常进行，易于操作。过滤器内置超强磁柱，可有效去除铁屑及焊渣等金属，内置过滤袋采用德国进口抗强酸强碱聚合物制成，可过滤水中杂质、沉积物、藻类、油类和其他悬浮物，从而延长各种仪表、阀门、管道、水泵、散热器的寿命，提高换热效率。

To enable precise chemical dosing, our company has developed advanced automatic control systems, including:

Automatic pH Dosing Systems for district heating secondary networks, closed-loop cooling water systems, or central air-conditioning chilled water systems.

Integrated Dosing & Blowdown Control Systems for open recirculating cooling water systems.

These systems adjust chemical injection based on real-time water parameters, maintaining optimal and stable chemical concentrations. This reduces labor costs while ensuring consistent water treatment efficiency. All control components, sensors, and instruments are sourced from globally recognized brands to ensure reliability.

Magnetic Cartridge Bag Filters are installed in parallel with the main return pipeline to enhance chemical treatment effectiveness. A circulation pump diverts 5-15% of the main flow through the filter, offering adjustable filtration precision (1-5-10 $\mu$ m). The bypass design allows continuous operation without disrupting production, ensuring easy maintenance.

Key Features:

Powerful magnetic cartridges efficiently remove iron filings, welding slag, and metallic particles.

German-made filter bags (acid/alkali-resistant polymers) capture impurities, sediments, algae, oils, and suspended solids.

Extended lifespan for meters, valves, pipes, pumps, and radiators.

Enhanced heat exchange efficiency by maintaining clean fluid pathways.

This integrated solution combines intelligent dosing and advanced filtration to optimize water quality and system performance.

## 一流的服务保证完美的水处理效果

First-class service guarantees perfect water treatment results

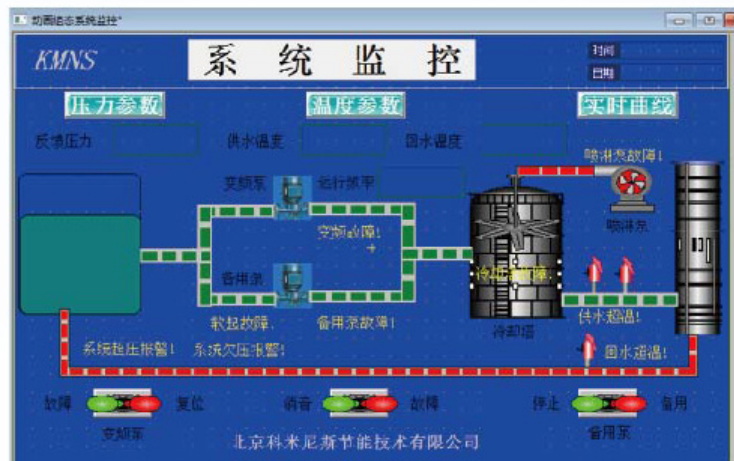
- ▶ 根据每个客户的水质及系统状况制定针对性的水处理方案
- ▶ 具有先进的实验室设备，为客户提供准确的水质化验及详细的水质分析报告
- ▶ 强大的售后服务团队，保障客户系统的安全运行
- ▶ 提供紧急问题 24 小时内到场服务
- ▶ 为客户提供详尽的水处理效果汇报
- ▶ 客户遇到复杂及难解决的问题，我们将联系外方专家协助客户解决
- ▶ 为客户提供详尽的产品资料、资质证书
- ▶ 为客户提供水处理技术培训，使客户相关工作人员掌握基本的常识及安全操作规范
- ▶ **Develop targeted water treatment solutions based on each customer's water quality and system conditions**
- ▶ **We are equipped with advanced laboratory equipment to provide customers with accurate water quality testing and detailed water quality analysis reports.**
- ▶ **A strong after-sales service team ensures the safe operation of customers' systems.**
- ▶ **Provide on-site service within 24 hours for emergency issues**
- ▶ **Provide customers with detailed reports on water treatment results**
- ▶ **When customers encounter complex or difficult-to-solve problems, we will contact foreign experts to assist them in resolving the issues.**
- ▶ **Provide customers with detailed product information and qualification certificates**
- ▶ **We provide water treatment technical training for customers, enabling their relevant staff to master basic knowledge and safe operation specifications.**

## 控制系统特点：

- ▶ 混合控制系统；
- ▶ 手动、自动功能；
- ▶ 电流、电压、水压、水温显示；
- ▶ 主泵变频启动，备用泵软启动；
- ▶ 恒压供水；
- ▶ 根据进水温度自动调整风机、喷淋（喷雾）启停；
- ▶ 备用泵在主泵故障时自动启动；
- ▶ 应急供水；
- ▶ 故障报警及查询。

## Character of control system：

- ▶ Combined control system
- ▶ Function of manual or automatic control
- ▶ Display of electricity current, voltage, water pressure, temperature
- ▶ VF start for main pump, soft start for spare pump
- ▶ Constant inlet pressure
- ▶ Automatic stop & start of blower, sprayer based on the inlet water temperature
- ▶ Automatic start spare pump when main pump fails
- ▶ Emergency water supply
- ▶ Malfunctions alarm, and history tracing



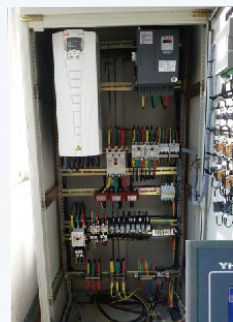

|   |   |   |   |   |   |    |   |    |   |     |
|---|---|---|---|---|---|----|---|----|---|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7  | 8 | 9  | 0 | <-  |
| A | B | C | D | E | F | G  | H | I  | J | Del |
| K | L | M | N | O | P | Q  | R | S  | T | Cap |
| U | V | W | X | Y | Z | 确定 |   | 取消 |   |     |



立式循环水泵  
Vertical Circulating Water Pump



饮水机  
Water Dispenser



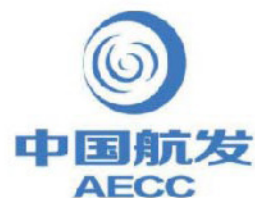
变频器、软启动器  
Frequency Converter  
Soft Starter



混合控制器  
(PLC、控制仪一体机)  
Hybrid Controller  
(PLC and Controller Integrated Machine)

### 水质基准值 Water Quality Criterion

| 项 目<br>Items                               | 冷却水系<br>Cooling water system |                        | 冷水系<br>Cold water system                          |                        | 温水系 Warm water system                                                |                        |                                                                      |                        | 倾向<br>inclined |                               |
|--------------------------------------------|------------------------------|------------------------|---------------------------------------------------|------------------------|----------------------------------------------------------------------|------------------------|----------------------------------------------------------------------|------------------------|----------------|-------------------------------|
|                                            |                              |                        |                                                   |                        | 低位中温水<br>Low-level medium-<br>warm water                             |                        | 高位中温水<br>High medium<br>temperature water                            |                        |                |                               |
|                                            | 循环水<br>Recycled<br>water     | 补给水<br>Refill<br>water | 循环水<br>20℃以下<br>Recycled<br>water<br>below<br>20℃ | 补给水<br>Refill<br>water | 循环水<br>20℃以上<br>60℃以下<br>Recycled<br>water<br>above 20℃<br>Below 60℃ | 补给水<br>Refill<br>water | 循环水<br>20℃以上<br>90℃以下<br>Recycled<br>water<br>above 20℃<br>Below 90℃ | 补给水<br>Refill<br>water | 腐蚀<br>corrode  | 水垢<br>生成<br>Scale<br>generate |
| pH(25℃)                                    | 6.5-8.2                      | 6.0-8.0                | 6.8-8.0                                           | 6.8-8.0                | 7.0-8.0                                                              | 7.0-8.0                | 7.0-8.0                                                              | 7.0-8.0                | ●              | ●                             |
| 电导率 ( μ S/cm)(25℃)                         | 800 以下<br>Below 800          | 300 以下<br>Below 300    | 400 以下<br>Below 400                               | 300 以下<br>Below 300    | 300 以下<br>Below 300                                                  | 300 以下<br>Below 300    | 300 以下<br>Below 300                                                  | 300 以下<br>Below 300    | ●              | ●                             |
| 氯离子 (mgCL <sup>-</sup> /L)                 | 200 以下<br>Below 200          | 50 以下<br>Below 50      | 50 以下<br>Below 50                                 | 50 以下<br>Below 50      | 50 以下<br>Below 50                                                    | 50 以下<br>Below 50      | 50 以下<br>Below 50                                                    | 50 以下<br>Below 50      | ●              |                               |
| 硫酸根离子 (mgsO <sub>4</sub> <sup>2-</sup> /L) | 200 以下<br>Below 200          | 50 以下<br>Below 50      | 50 以下<br>Below 50                                 | 50 以下<br>Below 50      | 50 以下<br>Below 50                                                    | 50 以下<br>Below 50      | 50 以下<br>Below 50                                                    | 50 以下<br>Below 50      | ●              |                               |
| 酸消耗量 (mgCaCO <sub>3</sub> /L)<br>(ph4.8)   | 100 以下<br>Below 100          | 50 以下<br>Below 50      | 50 以下<br>Below 50                                 | 50 以下<br>Below 50      | 50 以下<br>Below 50                                                    | 50 以下<br>Below 50      | 50 以下<br>Below 50                                                    | 50 以下<br>Below 50      |                | ●                             |
| 全硬度 (mgCaCO <sub>3</sub> /L)               | 200 以下<br>Below 200          | 70 以下<br>Below 70      | 70 以下<br>Below 70                                 | 70 以下<br>Below 70      | 70 以下<br>Below 70                                                    | 70 以下<br>Below 70      | 70 以下<br>Below 70                                                    | 70 以下<br>Below 70      |                | ●                             |
| 钙硬度 (mgCaCO <sub>3</sub> /L)               | 150 以下<br>Below 150          | 50 以下<br>Below 50      | 50 以下<br>Below 50                                 | 50 以下<br>Below 50      | 50 以下<br>Below 50                                                    | 50 以下<br>Below 50      | 50 以下<br>Below 50                                                    | 50 以下<br>Below 50      |                | ●                             |
| 氧化硅 (mgSiO <sub>2</sub> /L)                | 50 以下<br>Below 50            | 30 以下<br>Below 30      | 30 以下<br>Below 30                                 | 30 以下<br>Below 30      | 30 以下<br>Below 30                                                    | 30 以下<br>Below 30      | 30 以下<br>Below 30                                                    | 30 以下<br>Below 30      |                | ●                             |
| 铁 (mgFe/L)                                 | 1.0 以下<br>Below 1.0          | 0.3 以下<br>Below 0.3    | 1.0 以下<br>Below 1.0                               | 0.3 以下<br>Below 0.3    | 1.0 以下<br>Below 1.0                                                  | 0.3 以下<br>Below 0.3    | 1.0 以下<br>Below 1.0                                                  | 0.3 以下<br>Below 0.3    | ●              | ●                             |
| 铜 (mgCu/L)                                 | 0.3 以下<br>Below 0.3          | 0.1 以下<br>Below 0.1    | 1.0 以下<br>Below 1.0                               | 0.1 以下<br>Below 0.1    | 1.0 以下<br>Below 1.0                                                  | 0.1 以下<br>Below 0.1    | 1.0 以下<br>Below 1.0                                                  | 0.1 以下<br>Below 0.1    | ●              |                               |





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