

Wonder Electric WSTF Series Interver-integrated PM Motors

——Smart Water Supply Solution

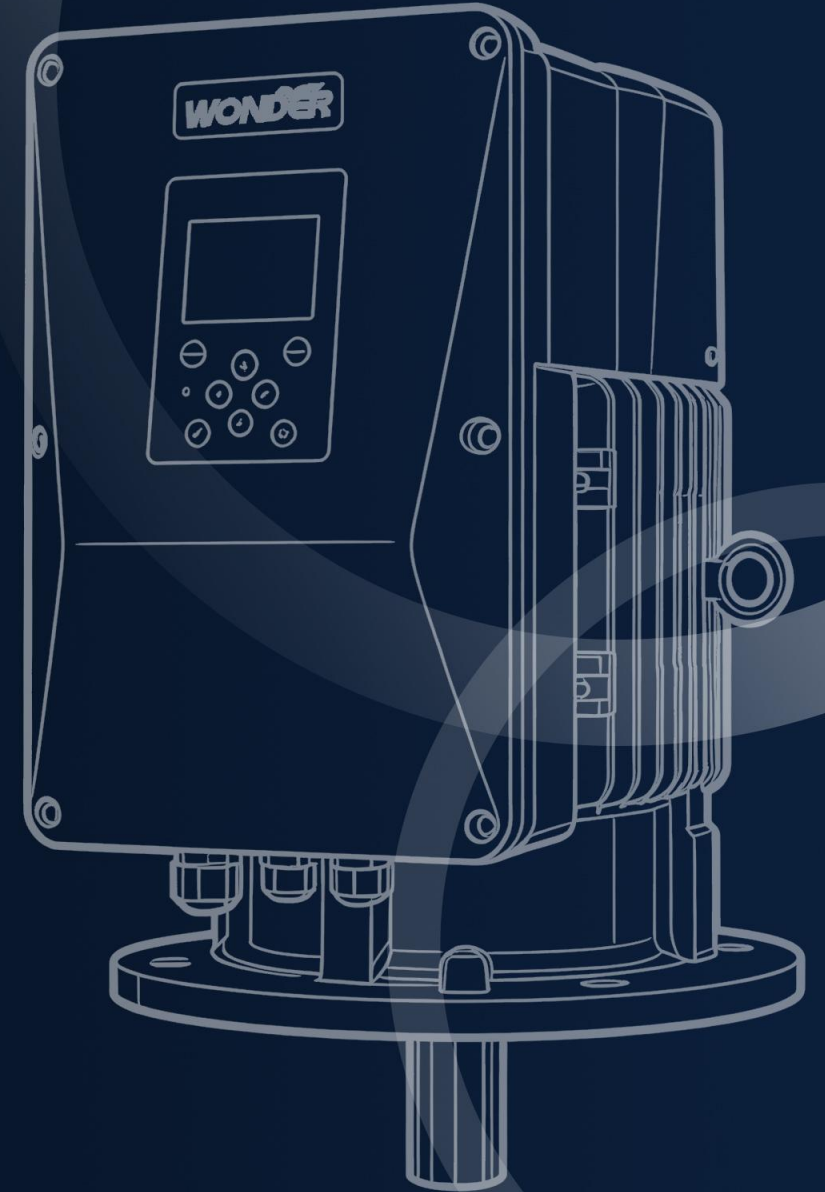
Fuzhou Wonder Electric Co., Ltd.



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Customized configurations for office buildings, shopping malls, hotels and other commercial premises

01. Product Overview



Product Overview

The WSTF Series is a deeply integrated smart water solution designed specifically for secondary water supply systems in commercial buildings. The motor performance complies with **IEC TS 60034-30-2 Ed. 1, 2016-12** standards.

This all-in-one system integrates a high-efficiency PMSM, intelligent variable frequency drive, PLC control logic, and IoT modules, addressing key issues of traditional water supply systems: **high energy consumption, noise, complex maintenance, and unstable pressure.**

It delivers a truly **energy-saving, quiet, intelligent, and reliable** water supply experience, setting a new standard for commercial building water supply.

Core Values



Energy
saving



Quiet



Intelligent



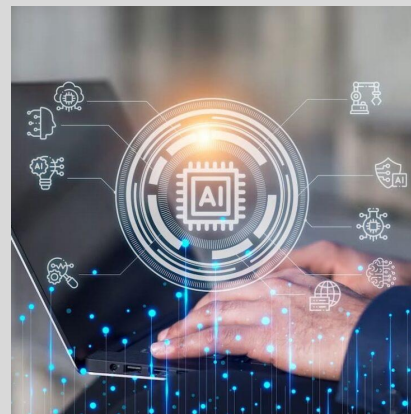
Reliable





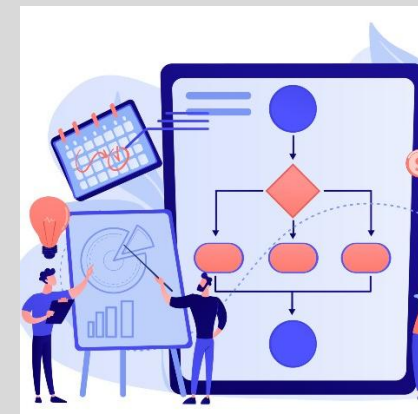
Energy Conservation

Driven by global dual-carbon goals, IE5 has become the new industry threshold. PMSM plus variable frequency technology serve as core approaches to reduce water system power consumption.



Intelligent Upgrade

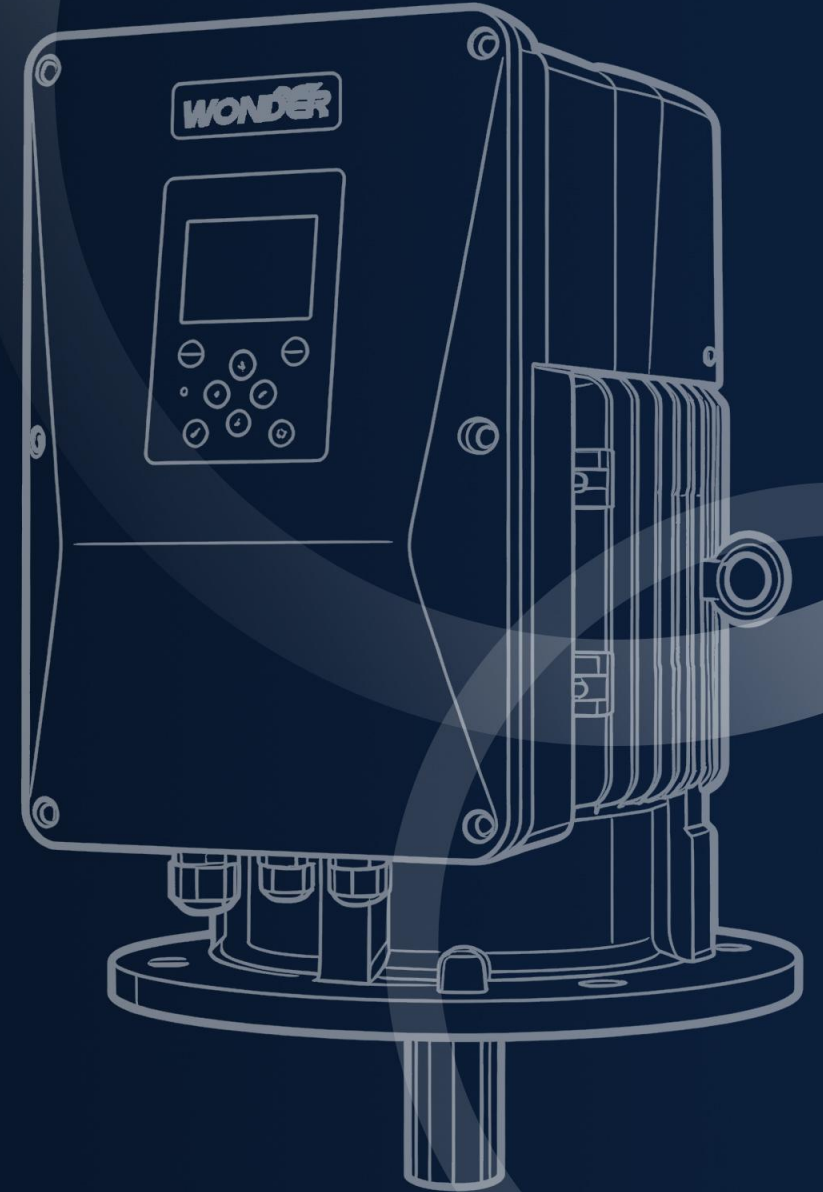
Supported by IoT, big data and cloud computing technologies, remote equipment monitoring, fault pre-alarm and data analysis have become standard configurations for high-end water supply devices.



Integrated Development

Drive-control integration is an inevitable industry direction. System integration downsizes equipment footprint, boosts operational stability and cuts overall maintenance costs significantly.

02. Product Features



Core Functional Modules



01

Multi-pump Control

Automatic rotation of pumps balances wear and extends service life, reducing maintenance costs.

03

Sleep Mode Energy Saving

Optimizes pump operation based on real-time network pressure, eliminating unnecessary energy use.

05

Anti-freeze Protection

Maintains micro-circulation under low temperatures to prevent freezing in pipes and pumps.

02

Soft-fill Injection

Gradually increases water pressure to eliminate water hammer effects, protecting the system.

04

Dry-run Protection

Automatically stops the pump when water shortage, pipe breakage, or dry-run is detected, preventing motor damage.

06

Fire-priority Mode

Ensures uninterrupted water supply for firefighting regardless of non-critical alarms.

Introduction of Core Functions 01

Multi-pump Control

It intelligently manages up to 6 pumps, automatically adjusting operating quantity based on real-time water demand with cyclic switching. This balances pump wear, extends service life and ensures stable uninterrupted water supply.

Sleep Mode Energy Saving

The system automatically enters low-power sleep mode at night or during low water consumption periods. It quickly wakes up once pipeline pressure drops below the threshold, eliminating unnecessary idling to maximize energy savings and reduce mechanical wear.

Soft-fill Injection

During startup or pipeline filling, the unit gradually ramps up speed at low frequencies for gentle water injection. This soft control eliminates destructive water hammer from sudden pressure spikes, fully protecting pumps, valves and the entire water supply pipeline.



Application Scenarios

Three Core Intelligent Protection Mechanisms



Dry-run Protection

It monitors frequency and pressure in real time, intelligently identifies water shortage or pipe rupture, and shuts down instantly to protect the motor and avoid high repair costs.



Anti-freeze Protection

It triggers low-flow circulation automatically at low ambient temperatures to prevent pump and pipe freezing, enabling unattended stable operation in winter.



Fire-priority Mode

Upon receiving fire alarm signals, it suppresses non-critical fault alerts and powers fire pumps with top priority to safeguard life safety.

Introduction of Core Functions 03

High Protection Class: IP55 Rated Enclosure

High protection rating allows direct installation in damp and dusty pump rooms without extra costly control cabinets or air conditioning, cutting installation cost and space while improving reliability and service life.



Dust-proof Construction

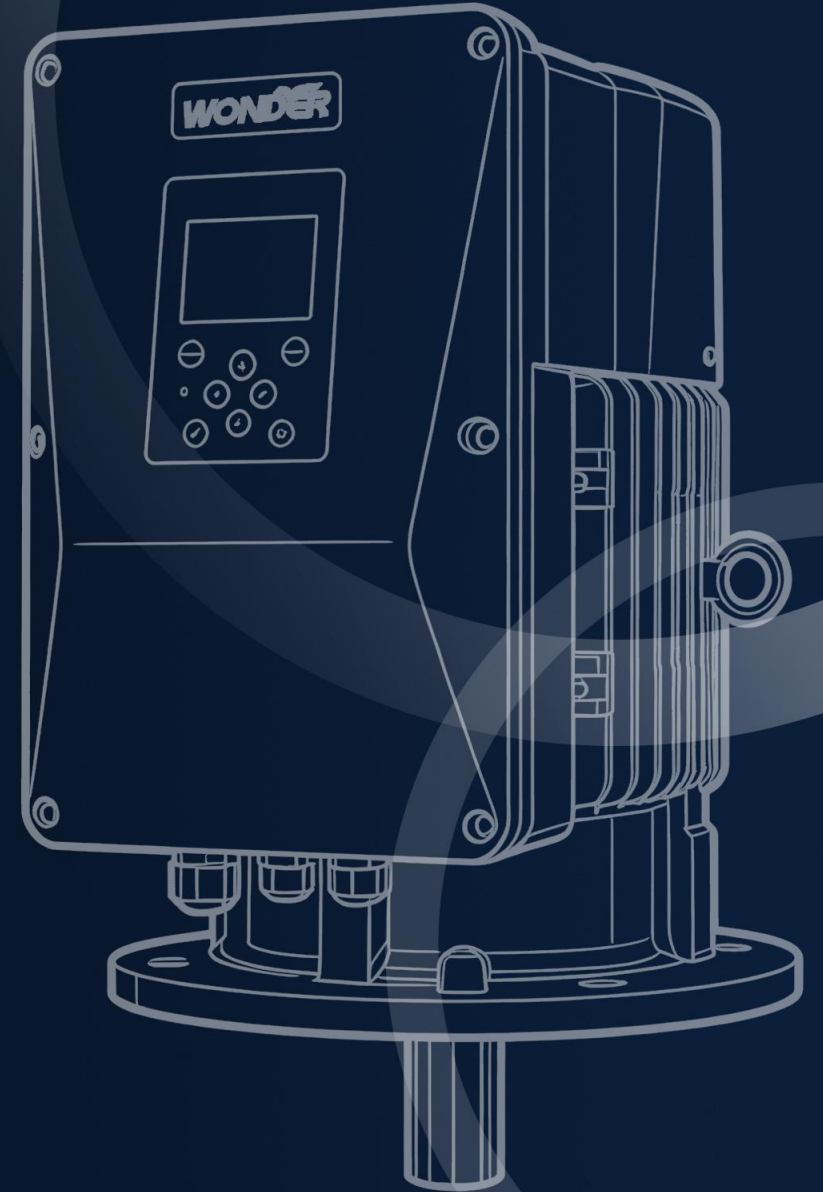
Blocks particulate contaminants from invading internal electronic components to extend core part lifespan.

Water Splash Resistance

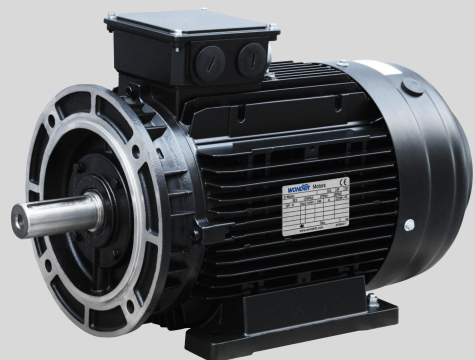
Withstands low-pressure water spray from all directions for stable operation in humid pump rooms.



03. Technical Advantages



Dual-Mode Motor Compatibility (PMSM + AIM)



AIM



PMSM

Dual Motor Compatibility

The embedded variable-frequency driver supports seamless control of two mainstream motor types for flexible project investment planning:

Three-phase Asynchronous Motor: Mature low-cost option with affordable procurement and maintenance, applicable to conventional working conditions and fully compatible to replace all split-type frequency converter + pump systems on the market.

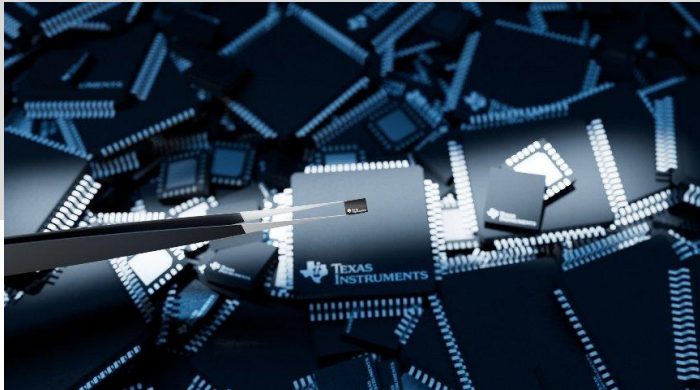
Permanent Magnet Synchronous Motor (PMSM): Ultra-high efficiency solution meeting green building and energy-saving standards with drastically lowered power consumption.

Users retain flexibility to upgrade pump equipment later without replacing core drive units, maximizing return on initial investment.

TI DSP Industrial Master Control Chip



Texas Instruments DSP Core Unit



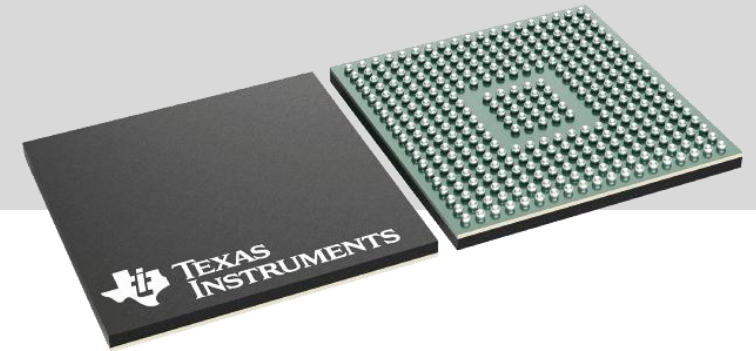
High-speed computing | Precise Control

Ultra-fast computing speed to realize micron-level precision on motor speed and torque regulation.



High Integration | Industrial-grade Stability

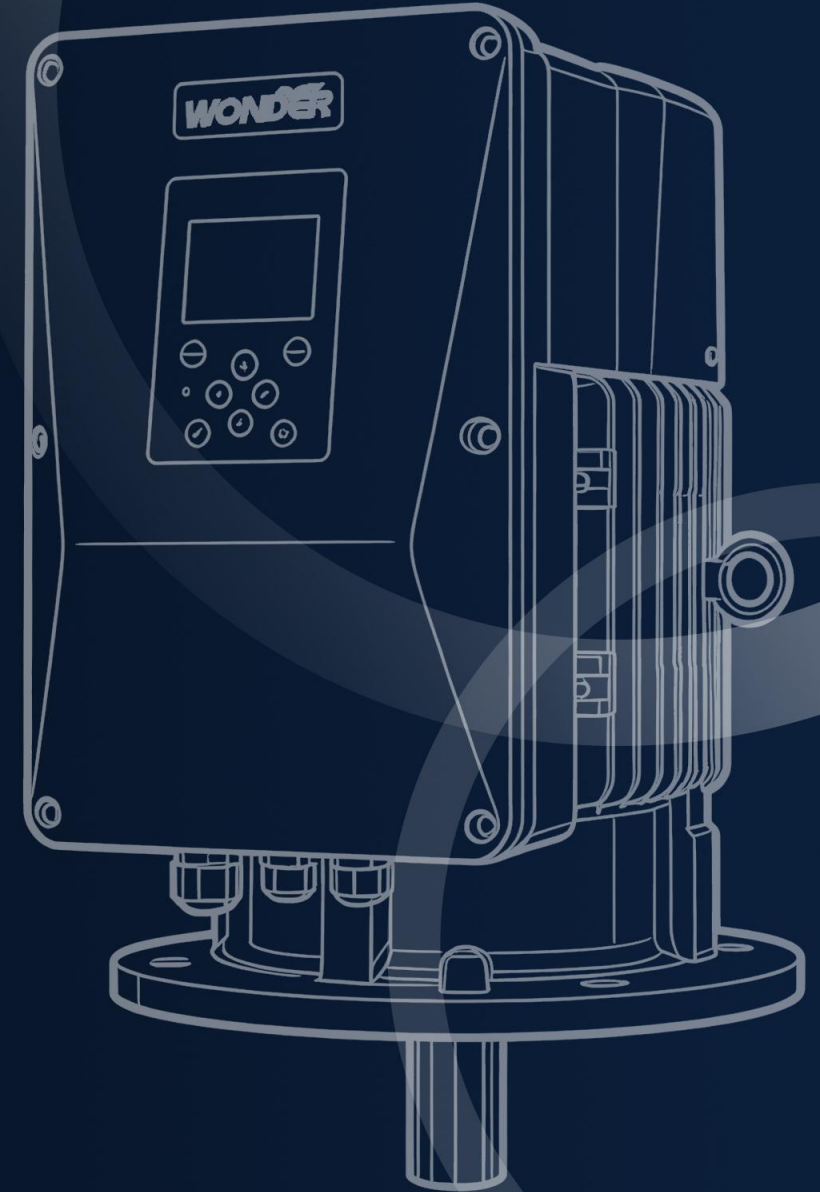
High component integration reduces external accessories and improves anti-electromagnetic interference capacity, lifting system stability by over 40%.



Adaptive Vector Algorithm | Energy Efficiency Optimization

Adaptive sensorless vector algorithm optimizes dynamic operating performance and overall energy efficiency automatically per actual working conditions.

04. Technical Specifications



Technical Specifications



Power Input

- Rated input voltage: 3-phase AC 380V ($\pm 15\%$), 50/60Hz ($\pm 5\%$)

Motor Connection Parameters

- Rated power range: 0.75kW ~ 22kW
- Output voltage: 0 ~ Rated Input Voltage (3-phase AC)
- Output frequency: 0 ~ 500Hz
- Control modes: V/F control, SVC sensorless vector control

Environmental Adaptability

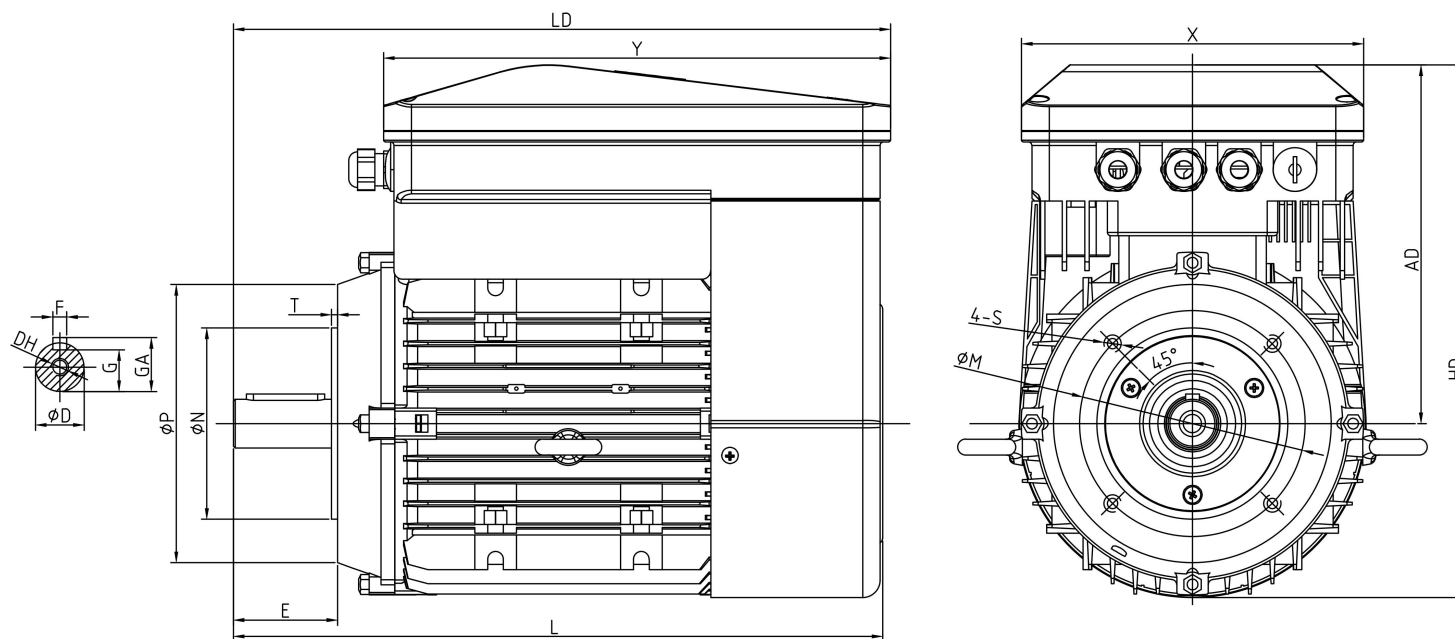
- Supported motors: Conventional AIM & PMSM
- Ambient operating temperature: -15°C ~ $+40^{\circ}\text{C}$ full-load operation without derating; derating required above $+40^{\circ}\text{C}$ up to $+50^{\circ}\text{C}$, frost-free environment required
- Cooling method: Forced air cooling
- Altitude: Full-rated output $\leq 1000\text{m}$; 1% power derating per additional 100m elevation above 1000m

Technical Specifications

Type	Frame size	Rated speed nN (r/min)	Rated frequency (Hz)	Rated power PN (kW)	Rated torque Mn (Nm)	BEMF at rated EN (V)	Rated current IN (Arms)	Efficiency η (%)	Sound LP dB(A)	Vibration (mm/s)	Weight (kg)
3000 r/min 6p 150Hz											
WSTF80-3000-0.75	80M1	3000	150	0.75	2.4	340	1.40	86.3	61	1.6	10
WSTF80-3000-1.1	80M1	3000	150	1.1	3.5	340	2.10	87.8	62	1.6	10.5
WSTF80-3000-1.5	80M2	3000	150	1.5	4.8	340	2.8	88.9	64	1.6	11
WSTF80-3000-2.2	80M2	3000	150	2.2	7.0	340	4.0	90.2	64	1.6	13
WSTF100-3000-3.0	100L1	3000	150	3	9.6	340	5.6	91.1	67	1.6	17.5
WSTF100-3000-4.0	100L2	3000	150	4	12.7	340	7.5	91.8	69	1.6	19
WSTF112-3000-5.5	112M	3000	150	5.5	17.5	340	10.0	92.6	70	1.6	41
WSTF112-3000-7.5	112M	3000	150	7.5	23.9	340	13.5	93.3	71	1.6	45
WSTF132-3000-11	132M1	3000	150	11	35.0	340	20.0	94.0	72	2.2	54
WSTF132-3000-15	132M1	3000	150	15	47.8	340	27.0	94.5	74	2.2	62
WSTF132-3000-18.5	132M1	3000	150	18.5	58.9	340	32.5	94.9	75	2.2	70
WSTF132-3000-22	132M2	3000	150	22	70.0	340	38.0	95.1	75	2.2	80
3600 r/min 6p 180Hz											
WSTF80-3600-0.75	80M1	3600	180	0.75	2.0	340	1.40	86.3	63	1.6	10
WSTF80-3600-1.1	80M1	3600	180	1.1	2.9	340	2.10	87.8	64	1.6	10
WSTF80-3600-1.5	80M2	3600	180	1.5	4.0	340	2.8	88.9	66	1.6	10.5
WSTF80-3600-2.2	80M2	3600	180	2.2	5.8	340	4.0	90.2	66	1.6	12
WSTF100-3600-3.0	100L1	3600	180	3	8.0	340	5.6	91.1	69	1.6	16.5
WSTF100-3600-4.0	100L2	3600	180	4	10.6	340	7.5	91.8	71	1.6	18
WSTF112-3600-5.5	112M	3600	180	5.5	14.6	340	10.0	92.6	72	1.6	40
WSTF112-3600-7.5	112M	3600	180	7.5	19.9	340	13.5	93.3	73	1.6	43
WSTF132-3600-11	132M1	3600	180	11	29.2	340	20.0	94.0	74	2.2	50
WSTF132-3600-15	132M1	3600	180	15	39.8	340	27.0	94.5	76	2.2	58
WSTF132-3600-18.5	132M1	3600	180	18.5	49.4	340	32.5	94.9	77	2.2	66
WSTF132-3600-22	132M2	3600	180	22	58.4	340	38.0	95.1	77	2.2	76

Mounting Arrangement

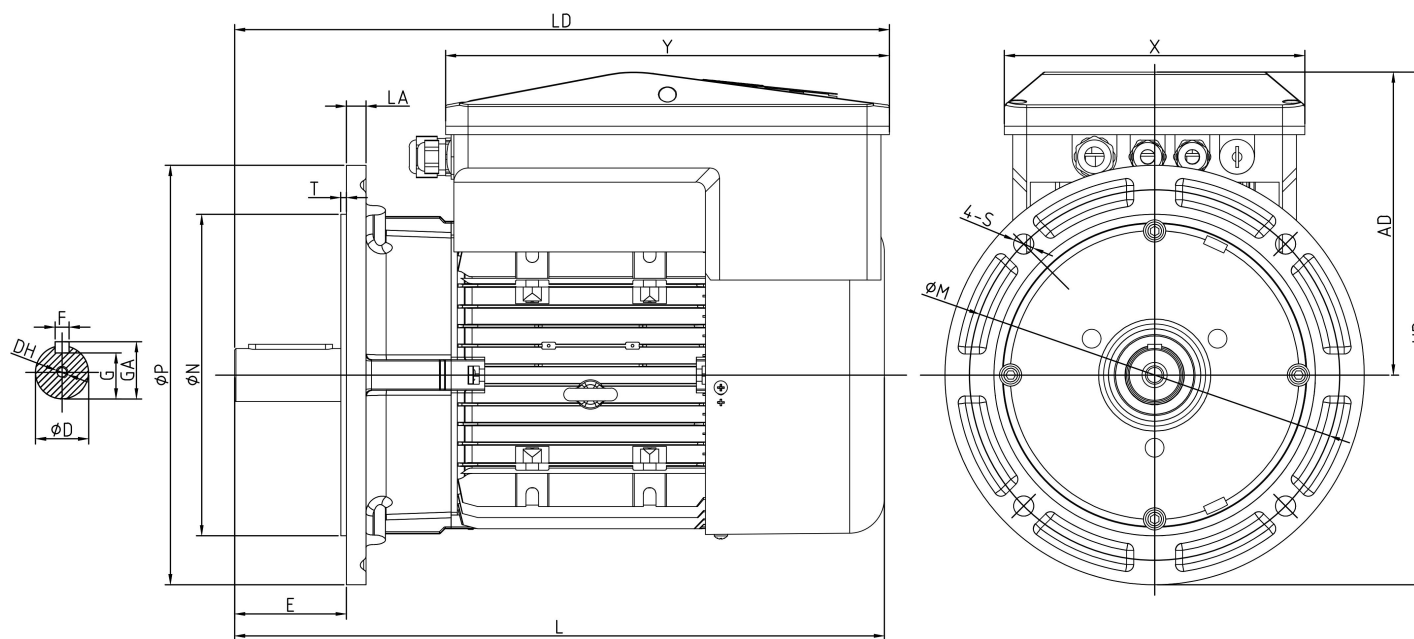
V18 for FS80 & FS100



Frame size	Mounting dimensions(mm)											Overall dimensions(mm)					
	D	E	F	G	M	N	P	S	T	DH	GA	X	Y	AD	HD	LD	L
80M1	19	40	6	15.5	100	80	120	4-M6	3	M6×16	21.5	197	292	186	265	355	351
80M2	24	50	8	20	115	95	140	4-M8	3	M8×20	27	197	292	186	265	365	361
100L	28	60	8	24	130	110	160	4-M8	3.5	M10×22	31	197	292	207	307	379	374

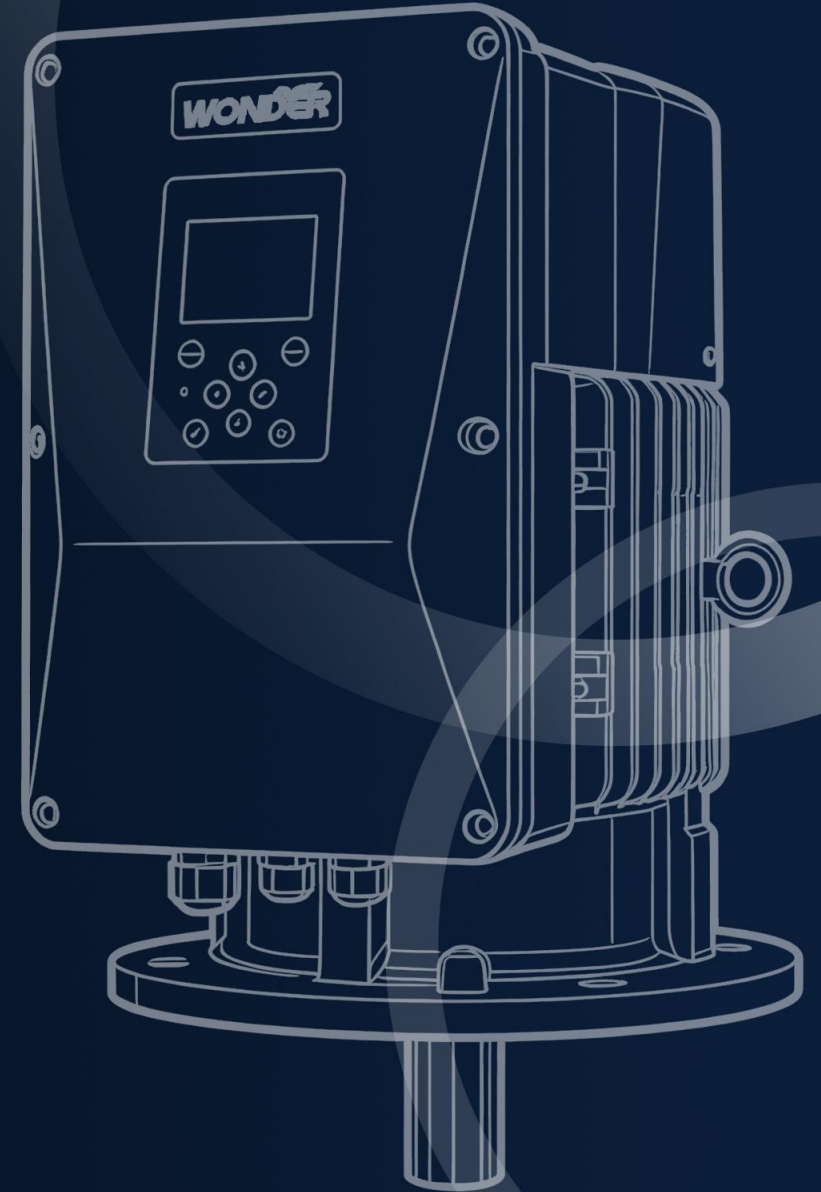
Mounting Arrangement

V1 for FS112 & FS132



Frame size	Mounting dimensions (mm)											Overall dimensions (mm)						
	D	E	F	G	M	N	P	S	T	DH	GA	X	Y	AD	HD	LA	LD	L
112M	38	80	10	33	265	230	300	4-Φ14	4	M12×28	41	215	318	217	367	20	469	465
132M1	42	110	12	37	300	250	350	4-Φ18	5	M16×26	45	256	350	266	441	20	571	567
132M2	48	110	14	42.5	300	250	350	4-Φ18	5	M16×26	51.5	256	350	266	441	20	571	567

05. Application Solutions



Two Drive Solution Options



Three-phase Asynchronous Motor

Asynchronous motors are widely used in water supply for constant-pressure feeding, sewage treatment and complicated working conditions. Equipped with dedicated water-supply software, the product is easy to operate and reliably meets water demands. It can fully replace conventional split frequency-converter pump units with easier installation, lower maintenance and superior reliability.



PM Syn. Drive Solution

PM technology greatly improves motor efficiency and compactness with outstanding advantages in pump control. Equipped with advanced sensorless vector control, the integrated PMSM unit steadily drives self-developed PMSM without speed or rotor position sensors, ideal for high-efficiency energy-saving water supply systems.

Single-Pump Constant Pressure Water Supply



Small Commercial Buildings • High Efficiency Water Supply

Scenarios

Small office buildings, convenience stores and small commercial premises with stable, low-volume water consumption.

System Composition

1 set of WSTF integrated unit + 1 pressure transmitter.

Merits

Eliminates pipeline pressure fluctuation, cuts energy loss; compact layout for easy installation and steady running.

Solution Features

Customized for small commercial buildings



**Compact
Structure**



**Easy
Installation**



**Stable
Operation**



**High
Efficiency**

Single-Pump Constant Pressure Water Supply



**Horizontal Multi-stage
Centrifugal Pump**



**Vertical Multi-stage
Centrifugal Pump**



Pipeline Pump

Multi-Pump Parallel Constant Pressure Water Supply



Scenarios

Large shopping malls, star hotels, general hospitals and high-rise business complexes with volatile peak-valley water consumption.

Working Principle

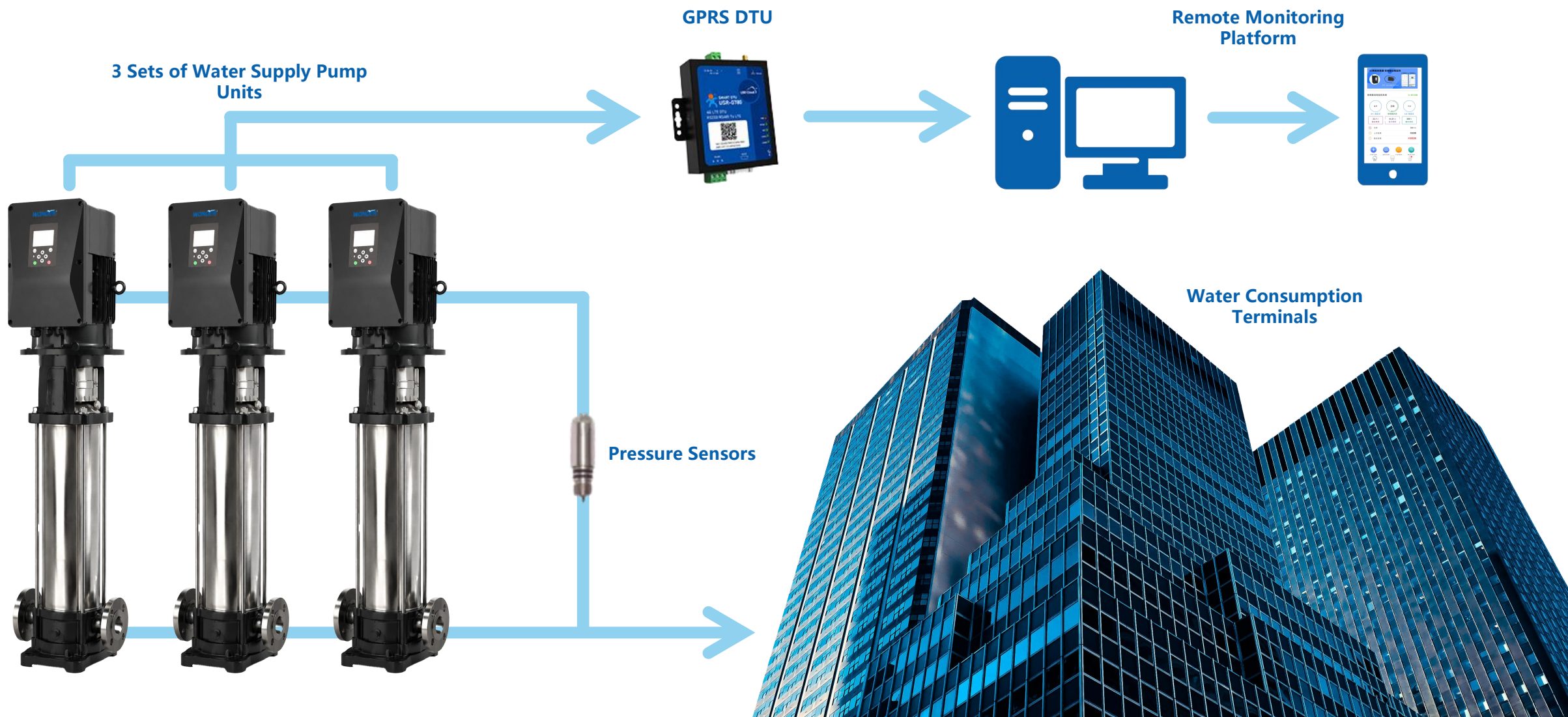
The intelligent inverter regulates pump rotation speed and auto switches between main/standby pumps according to real-time pipeline pressure to stabilize water pressure and minimize idle energy consumption.

Safety Redundancy Design

Parallel pump array ensures uninterrupted water supply; faulty pumps get automatically substituted by standby units to secure continuous water service.

Multi-Pump Parallel Constant Pressure Water Supply

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For a wonderful world.



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