

ATAF-H Series

Medium-Voltage
Variable Frequency
Soft Starter



PRODUCT MANUAL

Dedicated to Motor Drive and Control



ATF 奥托科技

Corporate Culture

Vision

To be a leader in motor drive and control

Mission

Inherit the military gene, create first-class products, and make national contributions

Values

Integrity, unity, creativity, risk taking

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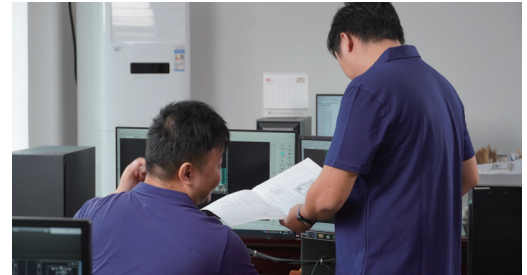
Company Profile

Changsha ATA Automation Co., Ltd. is a national “Little Giant” enterprise specialized in the R&D, production, and sales of soft starters, variable frequency drives (VFDs), and intelligent motor control solutions. We have consistently focused on the development of motor drive and control products and the provision of complete solutions, establishing in-depth cooperation with over 1,000 large-scale enterprises.



A highly experienced R&D team has independently established the Changsha Medium/High Voltage High-Power Variable Frequency Soft-Start Technology Innovation Center and the Hunan Provincial Enterprise Technology Center, fostering deep exchanges with global researchers and experts to ensure product reliability.

With over 80 patents, more than 20 software copyrights, and participation in numerous national standard formulations, we have achieved key technological breakthroughs—including series voltage equalization, medium-low voltage isolation, large-margin long-life multi-level redundancy, flying start, three-phase digital phase-locked loop algorithms, high-power seamless switching, and reliable thyristor/IGBT drive and magnetic triggering. Our medium-voltage soft starters ($\geq 28,000$ kW) and variable-frequency soft starters ($\geq 16,000$ kVA) have been successfully deployed in major projects, positioning us as an industry leader and trusted partner.



The company's flagship products include low-voltage soft starters, medium-voltage soft starters, low-voltage variable frequency drives, medium-voltage variable frequency drives, medium-voltage variable frequency soft starters, and motor intelligent drive controllers. These products are widely used across diverse industrial sectors such as metallurgy, petroleum, chemicals, machinery, shipbuilding, oil fields, mining, papermaking, cement, fire protection, power generation, coal mining, and wastewater treatment.

We have been successfully applied in major domestic and international enterprises and national key projects, including PetroChina, Sinopec, CNOOC, Ansteel Group, Shougang Group, and Messer Group. The company has earned consistent praise from customers for its superior product quality and reliable after-sales service. The products are exported to countries including Saudi Arabia, Oman, Indonesia, Malaysia, Vietnam, Russia, Democratic Republic of the Congo, Zambia, Georgia and Brazil etc, enjoying a strong international reputation.

Company Certifications

Since 1998 – Driving & Protecting Industrial Power Systems



- ISO 9001 Quality Management System Certification
- ISO 14001 Environmental Management System Certification
- ISO 45001 Occupational Health and Safety Management System Certification
- Intellectual Property Management System Certification
- CCC Certification
- CE Certification
- EAC Certification



Product Description

The ATAF-H Series Medium-Voltage Variable Frequency Soft Starter is designed for starting large and medium-sized medium/high voltage AC induction motors and medium/high voltage electrically excited synchronous motors. This soft starter delivers superior soft-start performance, characterized by low inrush current, high starting torque, high input power factor, low demand on grid capacity, as well as smooth and shock-free starting.

It offers particularly significant advantages in applications with limited grid capacity or where the starting current must be kept below the motor rated current—advantages that other step-down soft starters cannot match.



ATAF-H Series Medium-Voltage Variable Frequency Soft Starter

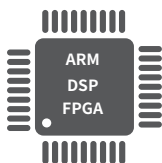
- Low Grid Capacity Requirements
- Fast Dynamic Response
- Input Power Factor >0.95
- High Level of Integration

Product Features



Starting Current $< 1 \times \text{Rated Current}$ ($< 100\% I_e$)

By utilizing the wave-by-wave soft-start technology, the starting current is consistently regulated below the rated current of the motor. In comparison with other step-down soft-start devices, this solution substantially reduces the grid capacity demand during motor startup.



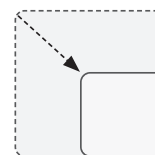
Fast-Response, High-Reliability System

This fast-responding and reliable system is built on a high-speed control platform integrating ARM, DSP, and FPGA technologies.



Auxiliary Device Not Required

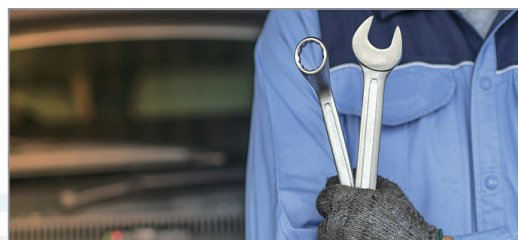
Input power factor > 0.95 (at loads $> 20\%$), with no auxiliary devices required, delivering high-quality sinusoidal voltage and current throughout the motor starting process.



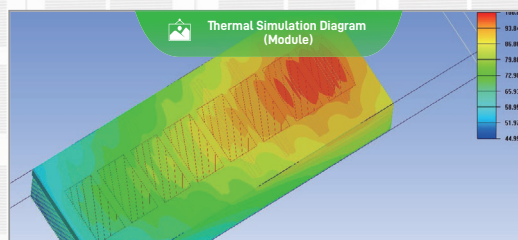
Patented Structural Design

Featuring a patented, high-density structural design, it delivers exceptional power density within a compact cabinet footprint.

- It ensures a smooth and stable acceleration to rated speed, eliminating significant mechanical shock to both the motor and connected load. This results in extended equipment service life, longer maintenance intervals, and effectively reduced operational costs.



- Leveraging advanced computer simulation, the system optimally distributes heat sources and continuously refines its structural design through rigorous analysis under extreme operating conditions, high-voltage finite element analysis, and topological simulation.

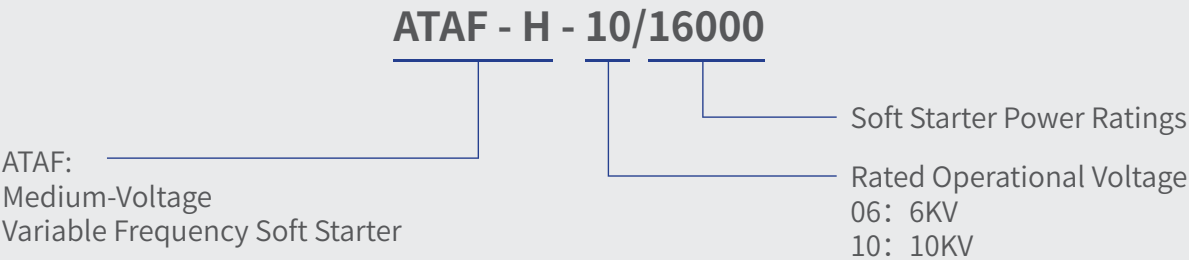


Model Description and Dimensions

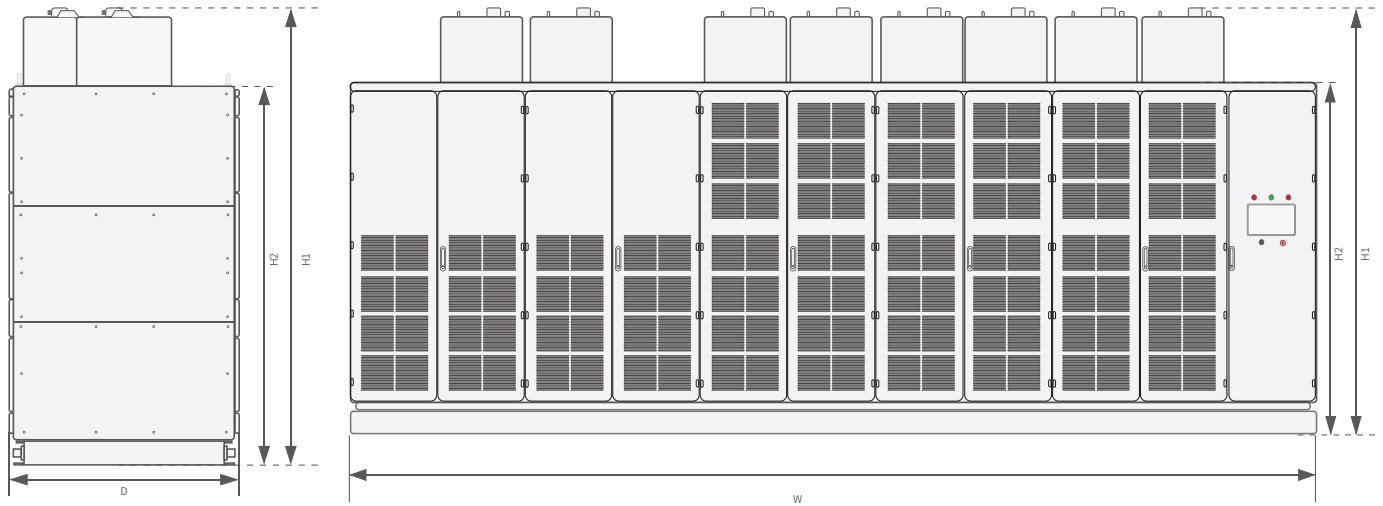
The standard product lineup of the ATAF-H variable frequency soft starter covers a power range from 1,500 to 50,000 kW. We also offer deeply personalized custom solutions. Please note that custom products follow a different naming convention than standard models; for specific details, please consult ATA's technical team.



Model Explanation



* Note: The naming rules illustrated above are based on the example of a three-phase 16,000 kW variable frequency soft starter.

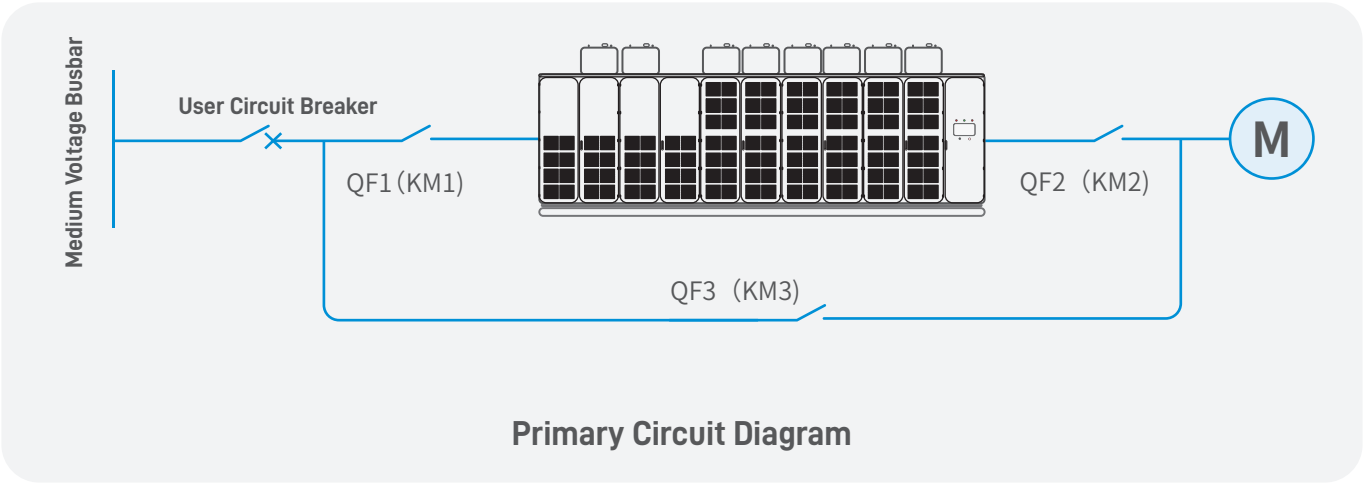
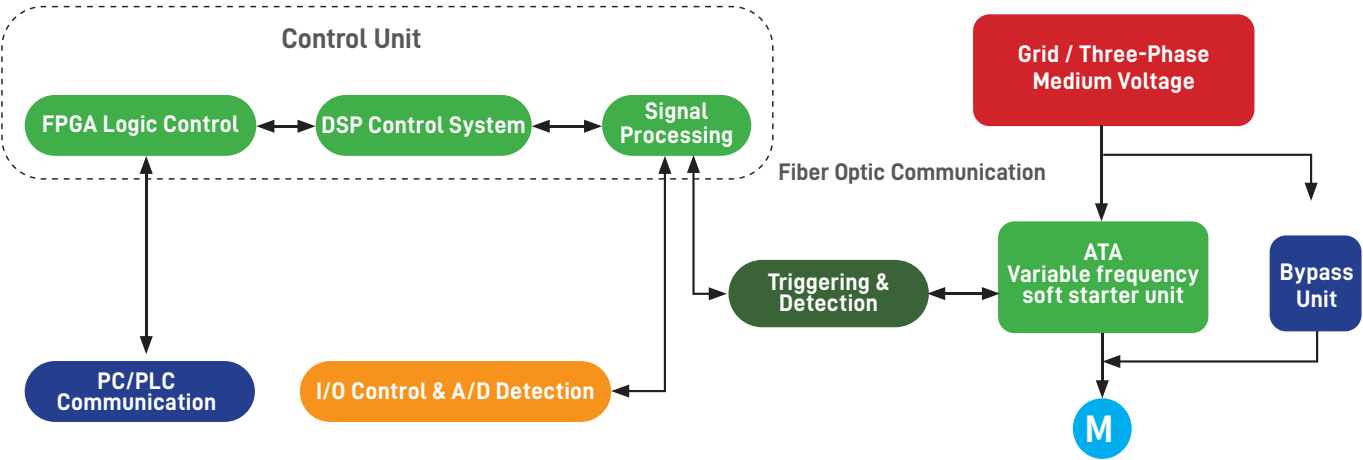


*For more product selection options and detailed information, please contact the ATA technical team

Model	Rated Voltage (kV)	Compatible Motor Power (kW)	Dimensions (mm)				Weight (T)
			W	D	H1	H2	
ATAF - H06 / 1500	6	1500	4820	1570	3108	2564	7
ATAF - H06 / 2000	6	2000	4820	1570	3108	2564	7
ATAF - H06 / 2500	6	2500	4820	1570	3108	2564	7
ATAF - H06 / 2800	6	2800	4820	1570	3108	2564	7
ATAF - H06 / 3500	6	3500	4820	1570	3108	2564	7
ATAF - H06 / 4000	6	4000	4820	1570	3108	2564	7
ATAF - H06 / 4500	6	4500	4820	1570	3108	2564	7
ATAF - H06 / 5000	6	5000	5620	1570	3108	2564	9
ATAF - H06 / 5600	6	5600	5620	1570	3108	2564	9
ATAF - H06 / 6300	6	6300	5620	1570	3108	2564	9
ATAF - H06 / 7100	6	7100	5620	1570	3108	2564	9
ATAF - H06 / 8000	6	8000	5620	1570	3108	2564	9
ATAF - H06 / 10000	6	10000	5620	1570	3108	2564	9
ATAF - H06 / 11000	6	11000	5620	1570	3108	2564	9
ATAF - H06 / 12000	6	12000	5620	1570	3108	2564	9
ATAF - H06 / 13000	6	13000	5620	1570	3108	2564	9
ATAF - H06 / 14000	6	14000	7720	1570	3108	2564	13
ATAF - H06 / 15000	6	15000	7720	1570	3108	2564	13
ATAF - H06 / 16000	6	16000	7720	1570	3108	2564	13
ATAF - H06 / 17000	6	17000	7720	1570	3108	2564	13
ATAF - H06 / 18000	6	18000	7720	1570	3108	2564	13
ATAF - H06 / 20000	6	20000	7720	1570	3108	2564	13

Model	Rated Voltage (kV)	Compatible Motor Power (kW)	Dimensions (mm)				Weight (T)
			W	D	H1	H2	
ATAF - H10 / 2500	10	2500	4820	1570	3108	2564	8
ATAF - H10 / 2800	10	2800	4820	1570	3108	2564	8
ATAF - H10 / 3500	10	3500	4820	1570	3108	2564	8
ATAF - H10 / 4000	10	4000	4820	1570	3108	2564	8
ATAF - H10 / 4500	10	4500	4820	1570	3108	2564	8
ATAF - H10 / 5000	10	5000	4820	1570	3108	2564	8
ATAF - H10 / 5600	10	5600	4820	1570	3108	2564	8
ATAF - H10 / 6300	10	6300	4820	1570	3108	2564	8
ATAF - H10 / 7100	10	7100	4820	1570	3108	2564	8
ATAF - H10 / 8000	10	8000	4820	1570	3108	2564	8
ATAF - H10 / 10000	10	10000	5620	1570	3108	2564	10
ATAF - H10 / 11000	10	11000	5620	1570	3108	2564	10
ATAF - H10 / 12000	10	12000	5620	1570	3108	2564	10
ATAF - H10 / 13000	10	13000	5620	1570	3108	2564	10
ATAF - H10 / 14000	10	14000	5620	1570	3108	2564	10
ATAF - H10 / 15000	10	15000	5620	1570	3108	2564	10
ATAF - H10 / 16000	10	16000	5620	1570	3108	2564	10
ATAF - H10 / 17000	10	17000	5620	1570	3108	2564	10
ATAF - H10 / 18000	10	18000	5620	1570	3108	2564	10
ATAF - H10 / 20000	10	20000	5620	1570	3108	2564	10
ATAF - H10 / 23000	10	23000	7720	1570	3108	2564	12
ATAF - H10 / 28000	10	28000	7720	1570	3108	2564	12
ATAF - H10 / 32000	10	32000	7720	1570	3108	2564	12
ATAF - H10 / 40000	10	40000	7720	1570	3108	2564	14
ATAF - H10 / 50000	10	50000	7720	1570	3108	2564	14

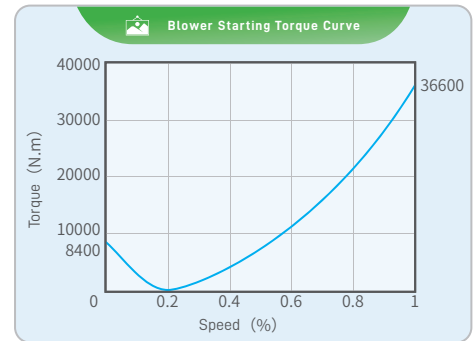
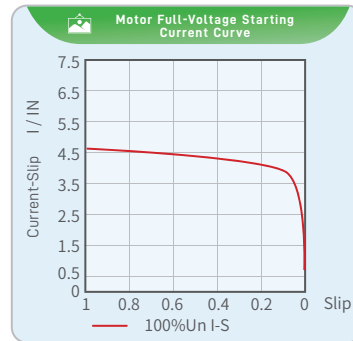
Primary Circuit Diagram



Grid Capacity Demand Reduction

Case Study:

◆ A blast furnace blower at a steel plant is started using a three-phase induction motor with the following specifications: rated voltage 10kV, rated power 19000kW, rated current 1253A, rated speed 1485rpm, power factor 0.905, efficiency 96.9%, and a blower starting torque of 36600N·m.



Comparison of Starting Capacity Requirements

After the energy-saving retrofit of this project, the actual starting current of the motor is 405A, the starting time frequency factor is improved to 0.95, and the required grid capacity for motor starting is 0.323 times the motor input power.

Full-Voltage Start	Step-Down Soft Start	Capacitor-Compensated Soft Start
During full-voltage starting, the starting current is 4.7 times the motor rated current, requiring a grid capacity of: $S_1 = 1.732 \times U \times I \times 4.7$	With step-down soft starting, the starting current is 2.2 times the motor rated current, requiring a grid capacity of: $S_2 = 1.732 \times U \times I \times 2.2$	With capacitor-compensated soft starting, the calculation shows: $T_M = dn \times GD^2 / (375 \times dt) + T_L = 39615 \text{ N.m}$ $I_1 = T_M \times n / (9550 \times \eta \times \cos\theta \times 10 \times 1.732) = 405 \text{ A}$ The starting current is 0.323 times the motor rated current (405/1253), requiring a grid capacity of: $S_3 = 1.732 \times U \times I \times 0.323$
$S_1 = 1.732 \times 10 \times 1253 \times 4.7 = 102000 \text{ kVA}$	$S_2 = 1.732 \times 10 \times 1253 \times 2.2 = 47700 \text{ kVA}$	$S_3 = 1.732 \times 10 \times 1253 \times 0.323 = \mathbf{7000 \text{ kVA}}$

The data above clearly shows that using a medium-voltage variable frequency soft starter limits the starting current to below the motor's rated current. This significantly reduces the required grid capacity during start-up compared to other methods, effectively lowering the user's investment in power distribution equipment and ensuring stable grid operation.

Application Fields



Application Cases



China Salt Changzhou Chemical Co., Ltd.

Air compressor auxiliary project

Soft Starter Model: ATAF-H06/1500

Load Type: air compressor

Motor: 6kV 1500kW



Shandong Leiao New Energy Co., Ltd. LNG Plant

Mixed refrigerant compressor spare unit retrofit

Soft Starter Model: ATAF-H10/6300

Load Type: refrigerant compressor

Motor: 10kV 5700kW



Shandong Huaxing Petrochemical Co., Ltd.

Soft Starter Model: ATAF-H10/10000

Load Type: catalytic cracking axial compressor

Motor: 10kV 9000kW



Shanxi Juli Minsheng Natural Gas Reserve Co., Ltd.

Jing-Jin-Ji LNG reserve and peak shaving project

Soft Starter Model: ATAF-H10/13000

Load Type: refrigerant compressor

Motor: 10kV 13000kW



Qinhuangdao Baigong Steel Air Separation Project

Soft Starter Model: ATAF-H10/17000

Load Type: air compressor

Motor: 10kV 16500kW



Lingyuan Steel 30000Nm³/h air separation gas supply project

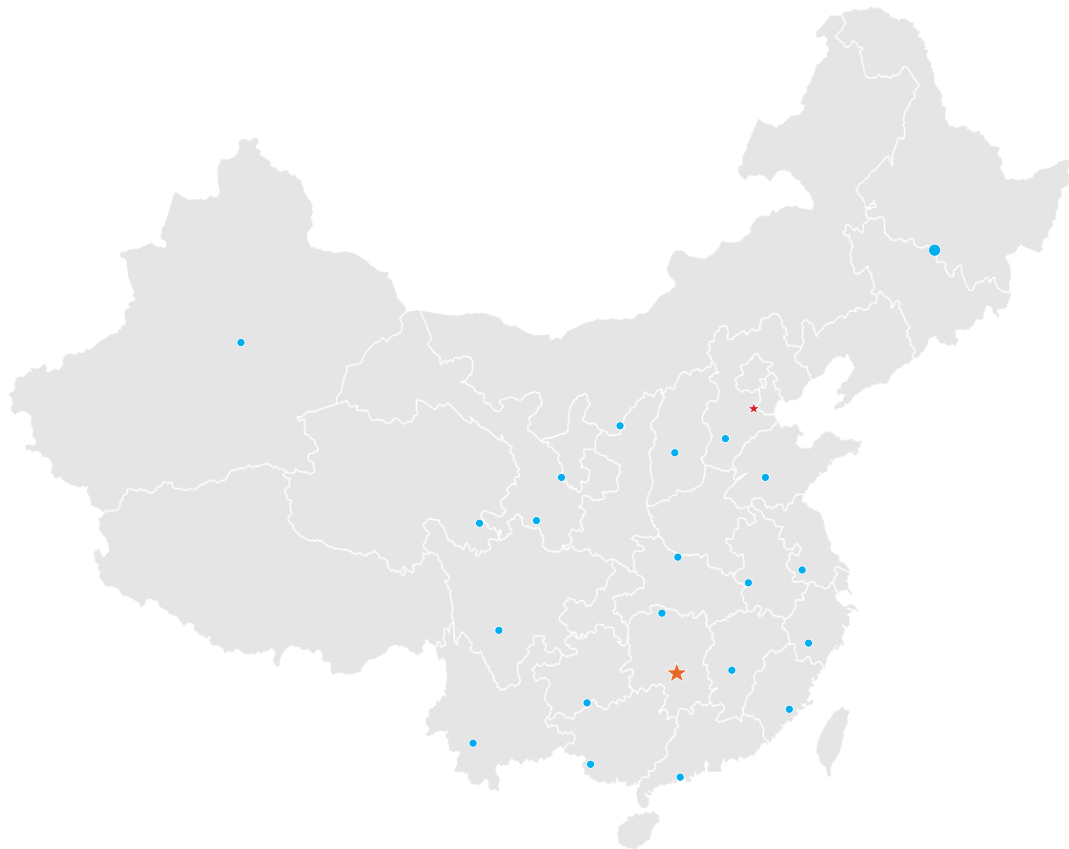
Soft Starter Model: ATAF-H10/18000 (one drives two)

Load Type: air compressor, booster compressor

Motor: 10kV 18000kW, 10kV 10000kW

Service Support

We provide comprehensive post-sales services including technical consultation, training programs, on-site support, rapid response mechanisms, 24/7 monitoring, scheduled maintenance, and documentation management.



● Subsidiaries / Offices

★ Headquarters / Inventory Center / Spare Parts Center



Service Hotline

+852 6589 9216



Tech. Support Hotline

+86 0731-88996605 +86 0731-88996887

Ordering Instructions

Committed to providing the highest quality services and efficient ordering solutions.

**When placing an order
please provide the following information**

01

Motor Mode
Rated Power
Rated Current
Rated Voltage
Rated Speed

02

The type of motor
driving load such
as fan, water pump,
compressor and
etc.

03

If the device will be
operated in special
environment, please
inform us when you
place the order

04

Please contact
us for additional
requirements

- ◆ The company reserves the right to modify product design and specifications without prior notice.
- ◆ In case of any discrepancy between the images in this product selection manual and the actual product, the actual product shall prevail.
- ◆ The final interpretation right of this product selection manual belongs to Changsha ATA Automation Co., Ltd.



WhatsApp Account



English Website

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