

# Mini Speed Frequency Controlled Series

Control Panel with inverter for 1 Pump 0,37—4 kW



Instruction Manual



**TayTech<sup>®</sup>**

advanced automation solutions

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# 1. Introduction

This manual provides the necessary information for proper installation, use and maintenance of the Mini Speed Series model device. The user must read this manual before operating the device. Misusage may cause damage to the user or product and void the warranty.

This document should be viewed as an integral part of the Mini Speed device. For this reason, it should be protected and stored for the duration of use.

The information and instructions in this manual relate to the standard use of this product. In case of special situations, functions or applications not described in this document, contact our service center for assistance.



When you receive the product, check that is not damaged during transportation. If the product is damaged, report directly to TAYTECH technical service unit within 5 days of receipt.

The information provided in this manual is subject to change without notice. Note that failure to follow the instructions given in this manual may cause physical injury or damage to objects.

The product should be installed in a sheltered, well ventilated, non-hazardous environment and used at a maximum temperature of 40° C and a minimum of -5° C.

## 2. Warnings

**DANGER, WARNING symbols indicate critical points related to the product. Please consider these symbols when you see them.**

	<b>ELECTRICAL DANGER</b> <b>Risk of Electric Shock</b>  There is a risk of electrical shock where this warning is located.
	<b>WARNING</b>  There is a risk of damage for human health, pump or system.

The Mini Speed Series should only be used for the purpose specified in the design. Products used for different purposes are considered dangerous because they are inappropriate. In case of fire in or around the installation site, use a suitable extinguisher (dry, chemical powder, foam, carbon dioxide). Install the product in a dry and sheltered place in accordance with the degree of protection, away from heat sources and easily flammable substances.

Any part of the Mini Speed Series product should not be disassembled without the permission of TAYTECH. No changes should be made to the product. Otherwise, the product will be out of warranty.

The installation and maintenance of the product must be done by the authorized person in accordance with the current standard. The environment in which the product is installed must have a grounding line.

## 3. Transportation



The Mini Speed Set should be handled with care, as falls and bumps can cause damage. If the delivered products are not installed and started to operate immediately for any reason, the unit should be stacked neatly. The outer packaging and accessories packaged separately should not be damaged and should be stored as a whole. It should be stored in a suitable ambient temperature and dry environment.

NOTE: Check whether the product is damaged during the transportation. If there is any damage to the product, report it to TAYTECH service center within 5 days from the delivery date.

## 4. Operation Limits

Mini Speed Set is a smart, simple, easy to understand and reliable control panel specially developed for booster, sewage, circulation and HVAC systems. It integrates all of the mechanical and electronic devices in these systems and controls the system perfectly. It operates without the need for industrial type electricity with its Monophase option. With the three-phase option, it can work under heavy conditions with industrial electricity.

**TAYTECH is not responsible for damaging the panel or users as a result of using the panel in different applications other than the manual or wrong connection.**

### 4.1. Technical Characteristics

- ABS Enclosure / IP 54 / Watertight / Self-Extinguishing Enclosure
- Main switch with locking mechanism
- Power supply 3-50/60Hz 400V  $\pm$ %10
- Protections and Failures;
  - ◊ Motor Overcurrent / Low current (Adjustable)
  - ◊ Phase Loss and incorrect sequence
  - ◊ Min / Max Voltage (Adjustable)
  - ◊ Motor starting time
  - ◊ Over Float function
  - ◊ Dry running protection
  - ◊ Thermal and Magnetic protection
- MODBus (RS485) standart, BACnet, Lonworks optional.
- Password protection for un-authorized people access.
- USB port for downloading failures, messages, events and alarms with date & time. (Last 500)
- Adjustable weekly test run
- P.I.D Regulation

## 4.2. Operating Modes

The assistant panel unit is designed to be mounted on the panel cover. There is also manual and automatic operation selector switch on the panel cover. It has the feature to turn off the desired pump with active passive switch for each pump. Each pump is working and visually inform the user with fault lights. In addition, individual pump malfunction dry contacts are available for each pump. System-related settings can be changed simply with the advanced assistant panel. With the encrypted menu, unauthorized people are prevented from changing system settings. Mini Speed series panel is a device that provides constant pressure water supply by activating the pumps according to the need after the comparison of the instantaneous pressure value read from the sensor and the set value for circulation applications based on fixed pressure booster and differential pressure basis. 1 driver is used in the panel. Thanks to the internal operating macros on the drive, no external control device is required.

### 4.2.1. Automatic Operating Mode

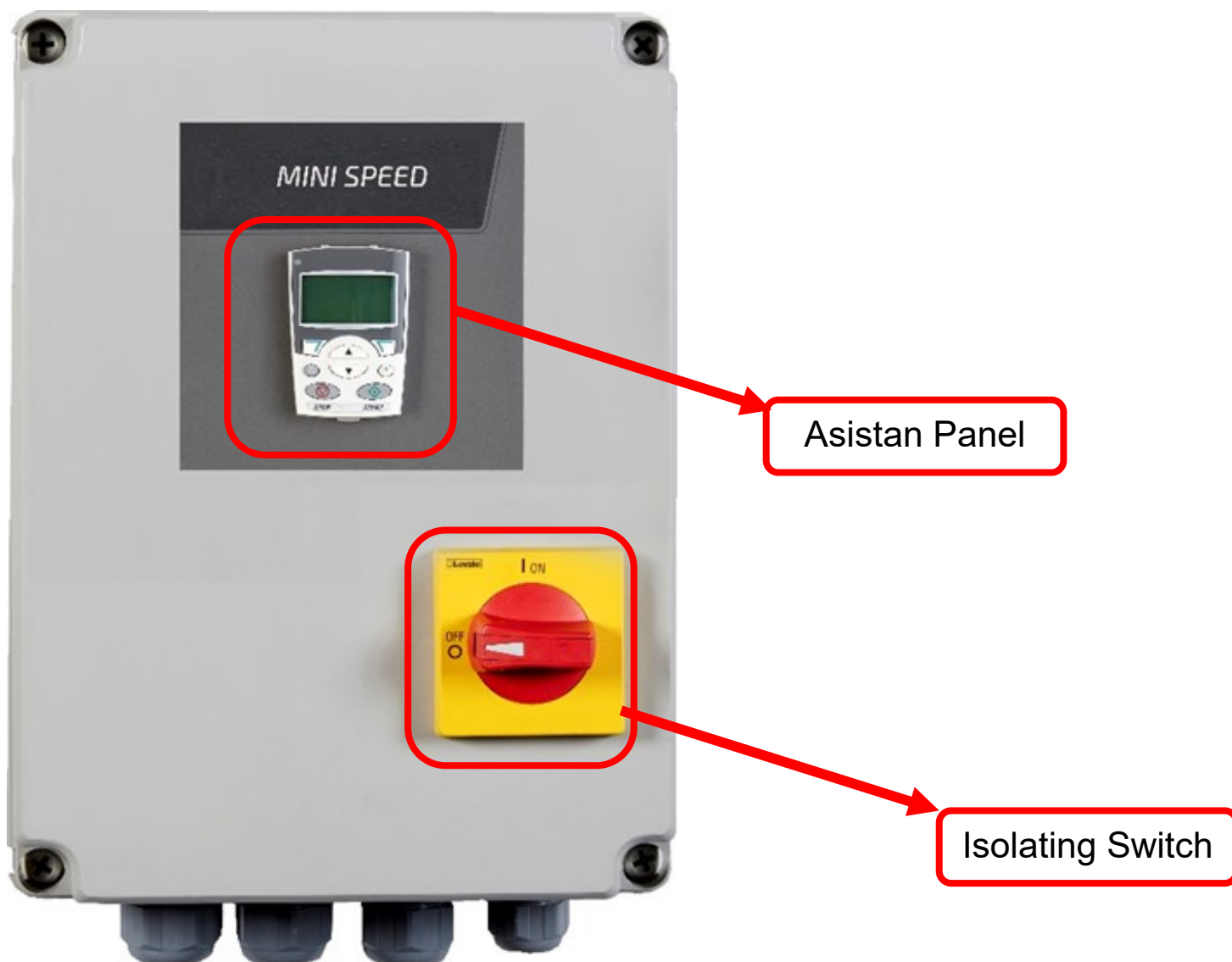
While the system is in automatic operation mode, it is controlled fully automatically with the driver in the panel. Thanks to its own program, the driver constantly controls the pumps in the system and runs the pumps perfectly according to the need.

### 4.2.2. Manual Operating Mode

When the system goes into manual mode, it switches on and off according to the information from the mechanical pressure switches. If there is a problem with any electronic control device in the panel, the system is operated mechanically to avoid stopping. If the system is circulating pump control panel, mechanical pressure switch connections should be short-circuited.

## 5. Control Panel Overview

### 5.1. Keypad and Light Indicators





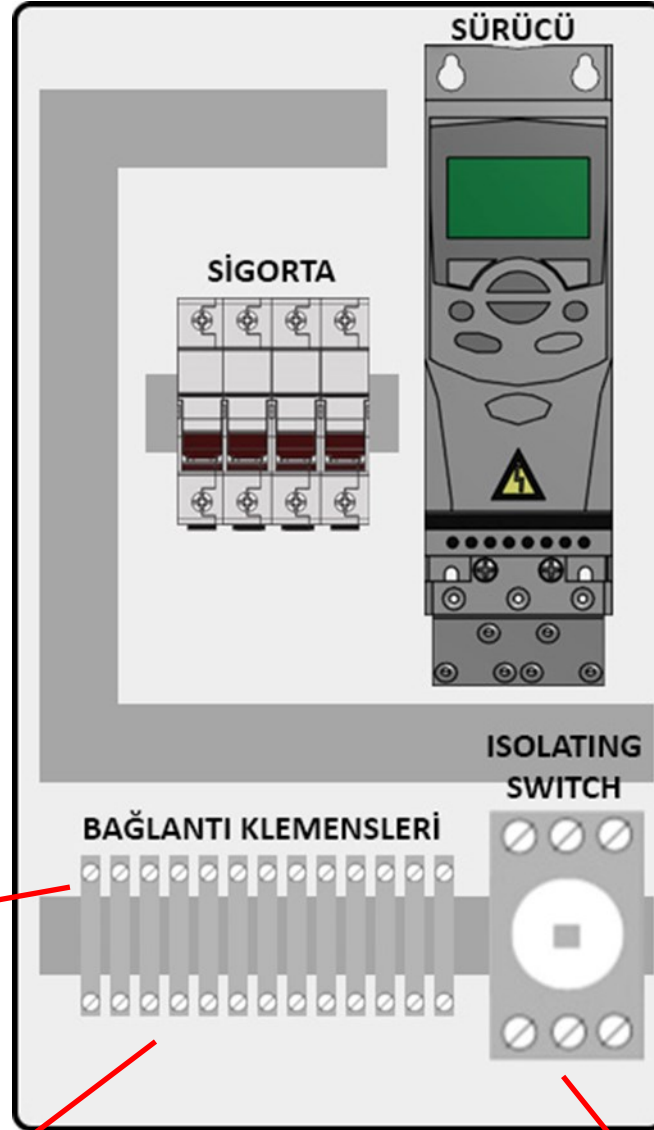
## 6. Assembly

### 6.1. Wall Mounted Assembly



- Fix them on the wall using the mounting screws on the back of the panel.
- Please do not drill any holes in the cabinet.
- For electrical connection, install and assemble the cables regularly through the gland holes.
- Do not try to open the cabinet door while the load-disconnecting latch button (Isolating Switch) is in position 1.

## 6.2. Electrical Connection



Motor  
Connections

Sensor Connection Terminals

- (1-2) Floater Control
- (3-4) Pressure Switch 1
- (5-6) Solenoid Valve
- (7-8) Failure Relay

3~380-400VAC  
50/60 Hz

## 7. Troubleshoots



Error Code	Error Name on Panel	Description and Proposed Corrective Action
1	OVER CURRENT	Output current is excessive. Check and correct the following: <ul style="list-style-type: none"> <li>• Excessive engine load.</li> <li>• Low acceleration time (parameters 2202 ACCELER RAMP 1 and 2205 ACCELERATION RAMP 2).</li> <li>• Faulty motor, motor cables or connections.</li> </ul>
2	DC OVER VOLTAGE	The DC voltage of the intermediate circuit is excessive. Check and correct the following: <ul style="list-style-type: none"> <li>• Static or transient overvoltage at the input supply.</li> <li>• Low deceleration time (parameters 2203 SLOW RAMP 1 and 2206 SLOW RAMP 2).</li> <li>• Small brake chopper (if equipped).</li> <li>• Make sure the overvoltage controller is ON (using parameter 2005).</li> </ul>
3	DRIVE OVERHEAT	Drive heatsink is overheated. The temperature is at or above the limit. R1... R4: 115 ° C (239 ° F) R5, R6: 125 ° C (257 ° F) Check and correct the following: <ul style="list-style-type: none"> <li>• Fan error.</li> <li>• Air flow obstruction.</li> <li>• Dirt or dust has been covered by the heatsink.</li> <li>• Excessive ambient temperature.</li> <li>• Excessive engine load.</li> </ul>
4	SHORT CIRCUIT	Faulty current. Check and correct the following: <ul style="list-style-type: none"> <li>• Motor cable (s) or motor short circuit.</li> <li>• Feed interruption.</li> </ul>
6	DC LOW VOLTAGE	The DC voltage of the intermediate circuit is not sufficient. Check and correct the following: <ul style="list-style-type: none"> <li>• Missing phase in input power supply.</li> <li>• The fuse has blown.</li> <li>• Low mains voltage.</li> </ul>
7	AI1 LOST	Analog input 1 is missing. Analog input value is less than AI1 FAULT LIMIT (3021). Check and correct the following: <ul style="list-style-type: none"> <li>• Source and connection for analog input.</li> <li>• Parameter settings for AI1 FAULT LIMIT (3021) and 3001 AI &lt;MIN FUNCTION.</li> </ul>

Error Code	Error Name on Panel	Description and Proposed Corrective Action
8	AI2 LOST	Analog input 2 is missing. Analog input value is less than AI2 FAULT LIMIT (3022). Check and correct the following: <ul style="list-style-type: none"> <li>• Source and connection for analog input.</li> <li>• Parameter settings for AI2 FAULT LIMIT (3022) and 3001 AI &lt;MIN FUNCTION.</li> </ul>
9	ENGINE OVERHEAT	Motor is too hot due to rider's calculation or temperature feedback. <ul style="list-style-type: none"> <li>• Check the overloaded motor.</li> <li>• Set the parameters used for the calculation (3005... 3009).</li> <li>• Check temperature sensors and Group 35: MOTOR HEAT MEASUREMENT parameters.</li> </ul>
16	SOIL LEAKAGE ERROR	Possible ground fault detected in motor and motor cables. The drive monitors earth faults when the drive is running or not running. Detection is more sensitive when the drive is not running and can produce errors. Possible fixes: <ul style="list-style-type: none"> <li>• Check the input cable connections / correct any errors.</li> <li>• Verify that the motor cable does not exceed the maximum specified length.</li> <li>• Decrease the detection level for ground fault with parameter 3028 EARTH FAULT LVL.</li> <li>• Triangular grounded input power supply and high capacitance motor cables may give erroneous error reports during inoperative tests. To disable error tracing when the drive is not running, use parameter 3023 WIRING FAULT. Use parameter 3017 EARTH FAULT to disable response to ground fault monitoring.</li> </ul> Note: Disabling ground fault may void the warranty.
22	FEEDING PHASE	The pulsating electrical voltage at the DC link is very high. Check and correct the following: <ul style="list-style-type: none"> <li>• The mains phase is missing.</li> <li>• The fuse has blown.</li> </ul>
35	OUTPUT CABLE	Incorrect input power and motor cable connection (for example, input power cable is connected to the drive motor connection). If the drive is faulty or the input supply is a delta grounded system and the motor cable capacitance is high, the error can be accidentally given. This error can be disabled using parameter 3023 WIRING ERROR. <ul style="list-style-type: none"> <li>• Check the input power connections. Check grounding.</li> </ul> If the error persists, you must send the driver to the factory for repair under warranty.
1012 1013 1014	PAR PFC IO	IO configuration is incomplete - Not enough relays are parameterized to PFC. Or Group 14: RELAY OUTPUTS, there is a mismatch between parameter 8117 Number of Auxiliary Motors and parameter 8118 AUTOCHANGE RANGE. The 14th Group Relay Outputs on the parameter pages above should be checked correctly and the number of auxiliary motors and the total number of motors should be checked in the 81st Group Parameters.

## 8. General Conditions

### 8.1. Warranty

All products are covered by a 24-month warranty, covering production defects and replacing / repairing defective parts.

Warranty conditions; does not cover damage caused by missing / incorrect electrical connections, improper installation, misuse or any negligence due to the installation and operation of the facility.

In addition;

- Damage due to corrosion or wear of any type or quality
- Malfunction due to incorrect installation;
- Repair, dismantling or tampering by unauthorized persons
- Natural disasters such as fire, flood, water or lightning occur

Damages that may occur due to their reasons are not considered under warranty.

The defective material must be shipped by the customer and sent to the Taytech factory address.

## 8.2. Maintenance



Mini Speed series panel does not require routine maintenance, within the working limits and provided that the instructions in this manual are followed. Special maintenance or repairs should only be carried out by authorized service centers. Only original spare parts should be used in case of repair. The manufacturer rejects all responsibility for injury or material damage resulting from maintenance interventions by unauthorized personnel.

## 8.3. Disposal

If the product is taken out of service, local regulations on waste regulations must be observed. According to the material categories, it should be separated within the scope of recycling. You can get help by applying to appropriate recycling centers.

## 8.4. Spare Parts

When you request technical information or spare parts from our sales or service / service center, always state the product model and serial number.

Any defective product component should only be made by an authorized person in accordance with the applicable standard.

## 9. Certification



### CONFORMITY OF DECLARATION



The company name: **TAYTECH OTOMASYON ve BILISIMTEKNOLOJILERI A.S.**

İnönü Mahallesi, Atatürk Blv. No:7/2 41400 Gebze Plastikçiler O.S.B Gebze / Kocaeli

*DECLARES UNDER HIS OWN RESPONSIBILITY THAT THE MACHINE DESCRIBED BELOW:*

#### ***Mini Speed – Frequency Series***

*ARE IN CONFORMITY WITH COMMUNITY DIRECTIVES REGARDING:*

- European Directive 2014/35/EU (Low Voltage Directive)
- Electromagnetic Compatibility Directive 2014/30/EU

*AND IN COMPLIANCE WITH THE FOLLOWING STANDARTS:*

- \* EN 61439-1
- \* EN 61439-2
- \* EN 60204-1
- \* EN 55014-1
- \* EN 55014-2
- \* EN 61000-3-2
- \* EN 61000-3-3



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