User Manual

# Commissioning of the frequency converter **VEDA-IN DRIVES RD05**




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## General Information about the RD05 Frequency Converter with a Three-Phase Asynchronous Motor

This manual provides connection and configuration procedures for operating the VEDA-IN DRIVES RD05 frequency converter with three-phase induction motors.

### Manual and literature

Before installation and startup, carefully review the "VEDA-IN DRIVES RD05 Frequency Converter Operating Instructions." This manual does not replace the operating instructions.

### Safety Guidelines

- Contact with live parts can be fatal, even when the equipment is powered off. Ensure that all voltage inputs are disconnected (including DC bus connections) and motor cables are detached. High voltage may persist in the DC circuit even after LEDs turn off. Before touching potentially dangerous live parts of drives of all sizes—from A1 to A4—wait at least five minutes.
- The frequency converter must be properly grounded.
- The "Stop" button on the operator panel does not function as a protective switch. —it does not de-energize the frequency converter.

### Checking the Component Match

1. Verify the converter's code number with the one ordered, according to the table below.
2. Make sure the frequency converter's rated input voltage (as specified on its nameplate) matches the supply network voltage it will be connected to. If the supply voltage is lower than the converter's rated input, the device may operate with reduced performance characteristics or may generate faults.

ATTENTION! It is strictly prohibited to connect to a supply voltage exceeding the converter's rated input voltage (as marked on the nameplate)!

3. Ensure that the motor's rated voltage does not exceed the output voltage of the frequency converter. The motor's rated voltage is typically determined by its winding connection scheme, therefore make sure that the motor is connected using the scheme Star [Y] or Delta [Δ] (as indicated on the motor's nameplate), and check the corresponding voltage values for the selected scheme.
4. In most cases, the motor's rated current must not exceed the frequency converter's rated input current, otherwise the drive will be unable to deliver rated torque.

| Ordering code | Type code | Output power, kW | Rated output current, A | Overload current 150%, A | Thermal loss, W | H × W × D, mm |
|---|---|---|---|---|---|---|
| 11A00AAA001 | RD05-S2-0004-IP20-BU | 0.75 | 4 | 6 | 30 | 177×65×148 |
| 11A00AAA002 | RD05-S2-0007-IP20-BU | 1.5 | 7 | 10.5 | 60 | 202×75×163 |
| 11A00AAA003 | RD05-S2-0010-IP20-BU | 2.2 | 10 | 15 | 88 | |
| 11A00AAA004 | RD05-T4-0003-IP20-BU | 0.75 | 3 | 4.5 | 30 | 177×65×148 |
| 11A00AAA005 | RD05-T4-0004-IP20-BU | 1.5 | 4 | 6 | 60 | |
| 11A00AAA006 | RD05-T4-0005-IP20-BU | 2.2 | 5 | 7.5 | 88 | |
| 11A00AAA007 | RD05-T4-0009-IP20-BU | 4 | 9.5 | 14.25 | 160 | 202×75×163 |
| 11A00AAA008 | RD05-T4-0013-IP20-BU | 5.5 | 13 | 19.5 | 220 | |
| 11A00AAA009 | RD05-T4-0016-IP20-BU | 7.5 | 16 | 24 | 300 | 320×130×161 |
| 11A00AAA010 | RD05-T4-0025-IP20-BU | 11 | 25 | 37.5 | 440 | |
| 11A00AAA011 | RD05-T4-0032-IP20-BU | 15 | 32 | 48 | 600 | 342.5 × 170 × 183 |
| 11A00AAA012 | RD05-T4-0038-IP20-BU | 18.5 | 38 | 57 | 740 | |
| 11A00AAA013 | RD05-T4-0045-IP20-BU | 22 | 45 | 67.5 | 880 | |



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### Frequency Converter Installation Conditions

1. The ambient conditions must match the enclosure's protection rating - the converter's standard IP20 housing provides no protection against dust ingress or drops of liquid penetrating the device. Ensure the area around the ventilation fans is clean, free of dust and dirt.
2. The installation site must be dry (maximum relative air humidity 95% without condensation).
3. Optimum ambient operating temperature range: 0...+40°C. Within +40...+50°C, the converter will operate with derated performance characteristics. Operation is permitted at temperatures from –10 to 0°C, provided condensation is prevented. Not recommended to operate the frequency converter: Below –10°C or Above +50°C, since it may accelerate product service life reduction.
4. Maximum installation altitude for full-performance operation: 1,000 m above sea level.
5. Check the frequency converter's ventilation conditions. Side-by-side mounting permitted, but mandatory clearances must be maintained: 150 mm vertical air gap (above/below each unit).

### Electrical Connections

1. Power supply, motor, and grounding cables may be connected to the frequency converter as specified in the table below.

| Supply voltage, V | Rated power, kW | Size specification | Fastening | Tightening torque, N·m | Recommended cross-section of copper conductors, mm² | Weight, kg |
|---|---|---|---|---|---|---|
| 220 | 0.75 | A1 | M4 | 1.2–1.5 | 2.5 | 1.1 |
| | 1.5 | A2 | | | 2.5 | 1.1 |
| | 2.2 | A2 | | | 4 | 1.5 |
| 380 | 0.75 | A1 | | | 1.5 | 1.1 |
| | 1.5 | A1 | | | 2.5 | 1.1 |
| | 2.2 | A1 | | | 2.5 | 1.1 |
| | 4 | A2 | | | 4 | 1.5 |
| | 5.5 | A2 | | | 6 | 1.5 |
| | 7.5 | A3 | | | 6 | 4.1 |
| | 11 | A3 | | | 10 | 4.1 |
| | 15 | A4 | M5 | 2–3 | 10 | 6.32 |
| | 18 | A4 | | | 16 | 6.49 |
| | 22 | A4 | | | 16 | 6.49 |

2. Each drive must be grounded individually. Grounding cable length must be minimized. Recommended cross-section of grounding cables: 4 mm² (A1, A2, and A3) and 16 mm² (A4).

ATTENTION! The grounding conductor must be connected first!

3. A protective input device must be installed. (Refer to the manual for specific ratings).
4. Separate cable channels must be used for: Input power cables; Output power cables; Control cables.
5. Use shielded cables to meet EMC requirements. Provide protection for control cables against electromagnetic interference.
6. Check correct connection of: Input terminals (for single-phase: R/L, T/N; for three-phase: R/L, S, T/N), Output terminals (U, V, W) to the frequency converter.

### Checking the Motor Connection

1. Maximum cable lengths for the shielded motor cable: 100 m (power-dependent). Unshielded motor cable: >100 m (requires PWM frequency reduction to ≤2 kHz).



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2. No capacitor banks must be connected in the power circuit between the drive and the motor to compensate for reactive power.
3. Two-speed motors, wound-rotor motors, and motors previously using star-delta (Y-Δ) starting must operate in a single fixed configuration at one constant speed.
4. When a contactor or disconnect switch is installed between drive and motor the drive must receive a position verification signal (interlock) indicating the device's status. Never interrupt the motor power circuit with a contactor during drive operation.
5. Motors equipped with forced-air cooling must have their ventilation system automatically activated during operation.

**User interface**




*Frequency Converter Control Panel*

| Designation | Function | Description |
|---|---|---|
| A | Indicator size parameter | Hz: Frequency.<br>rpm: Rotational speed.<br>A: Motor current.<br>V: DC bus voltage.<br>%: Setpoint percentage |
| B | Status Indicator | LED illuminated: Motor running in forward direction.<br>LED blinking: Motor running in reverse direction.<br>LED off: Motor stopped |
| C | Menu Button | Enters menu in standby or "Operation" mode.<br>Exits current parameter menu.<br>To access status interface, hold button for 1 second in standby or "Operation" mode |
| D | Set/Switch Button | Saves modified parameter.<br>To toggle parameter bit, hold button for 1 second (continued holding will cycle through options) |
| E | Parameter adjustment buttons | "Up" button increases parameter value.<br>"Down" button decreases parameter value |
| F | Start button | When drive is controlled from panel, "Start" button initiates motor rotation in forward direction |
| | Stop/Reset Button | When the drive is controlled from panel, "Stop/Reset" button stops the motor.<br>Parameter [F04.08] can assign different command to "Stop/Reset" button.<br>In case of fault, "Stop/Reset" button resets the fault |

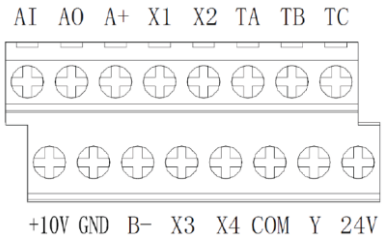


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## Drive Terminal Block Layout

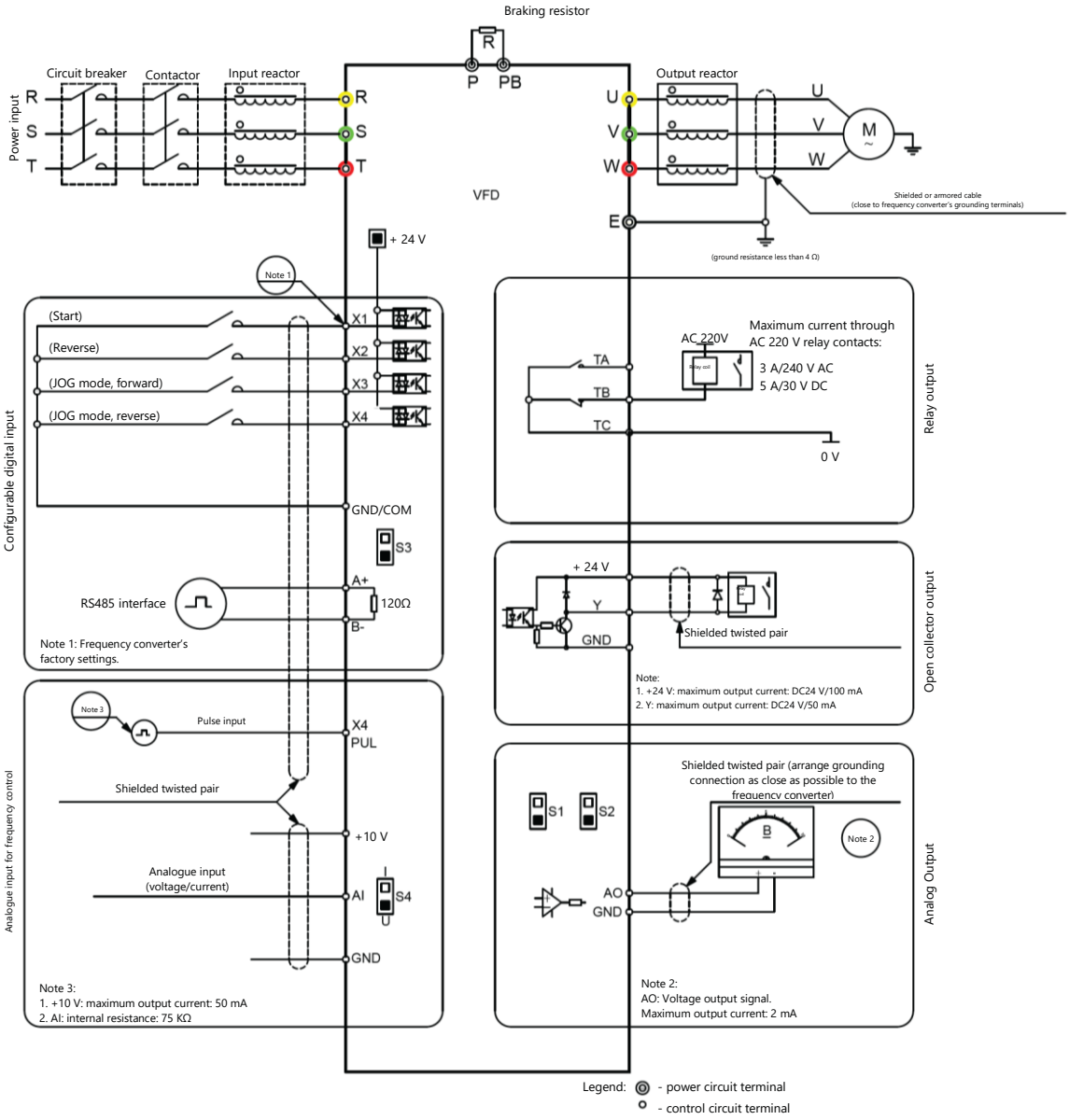



*Frequency converter with a power of 0.4–5.5 kW*




*Frequency converter with a power of 7.5–22 kW*

## Electrical Connection Diagram




*In drives of 0.4–5.5 kW, the common point for inputs/outputs is "GND."*
*In drives of 7.5–22 kW, the common point for inputs/outputs is "COM."*



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## Putting into service

### Powering On the Frequency Converter. Restoring Factory Settings/Initialization

ATTENTION! It is recommended to perform the procedure before beginning the works on frequency converter parameter configuration, with no modifications to the existing program, and when setting is performed for a new application or there is no information about previously entered parameters.

ATTENTION! After initialization of the frequency converter, all previously entered parameters will be lost. If the current converter program is requested in the future - it is recommended to save it beforehand.

Initialization Procedure for RD05: Access parameter menu.
Set parameter «F00.03» to value «22»
Initialization options:

| | |
|---|---|
| 0 | Not used |
| 11 | All parameters except for motor parameters |
| 22 | All parameters |
| 33 | Clear error log |

Upon completion of initialization factory settings will be recorded in the converter parameters. The display will show "Save" during the process.

### Drive Adaptation for New Motor Operation. Motor Parameters

The frequency converter (FC) comes with default motor parameters set for a typical motor matching the FC's rated specifications. In most cases (standard 50 Hz induction motor at 400V) the data will match and these defaults will work properly. However, it is strongly recommended to check all parameters against the motor nameplate data.

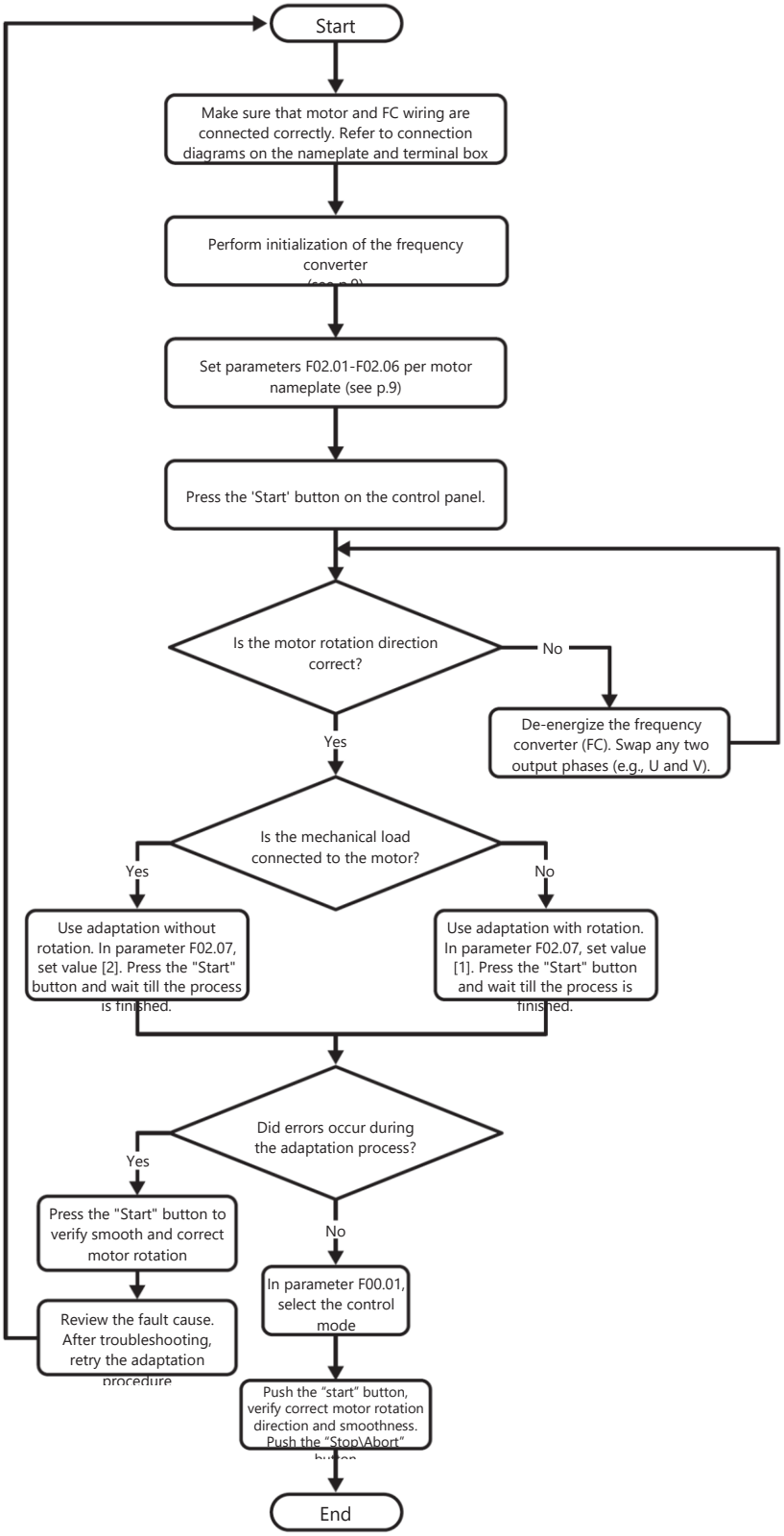
| No. | Parameter | Description |
|---|---|---|
| F02.00 | Motor type | Asynchronous/Synchronous |
| F02.01 | Number of Motor Poles | # pcs. (Motor nameplate may indicate pole pairs) |
| F02.02 | Rated power | ## kW (From motor nameplate, rounded to nearest decimal) |
| F02.03 | Rated frequency | ## Hz (From motor nameplate) |
| F02.04 | Rated speed | ## rpm (From motor nameplate) |
| F02.05 | Rated voltage | ## V (From motor nameplate) |
| F02.06 | Rated Current | ## A (From motor nameplate) |
| F02.07 | Motor Auto-Tuning | 1. Rotation-Based Tuning. It is recommended when the motor coupling is disconnected or where a brief rotation won't affect the process.<br>2. Static Tuning (No Rotation).<br><br>After entering the value, "F-01" appears on the display. Press START to begin tuning. Frequency reference will display when complete |

##: Factory defaults match the frequency converter's rated parameters. It is necessary to enter the actual motor parameters.



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## FC Preparation Algorithm for Application Setup






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**Key Motor Protection, Limitation, and Threshold Parameters**

| No. | Parameter | Description |
|---|---|---|
| F01.13 | Minimum Rotation Speed | [0] Hz - For most applications<br>[20] Hz - For pumps (prevents overheating and mechanical wear) |
| F01.10 | Full Rotational Speed | [50] Hz (Do not exceed motor's rated speed) |
| F10.14 | Braking Function (for high-inertia loads) | [2] Braking with resistor and overvoltage control<br>[1] Braking with resistor (no overvoltage control)<br>[0] No braking resistor |
| F10.16 | Kinetic Buffering (for high-inertia loads) | [1] Enabled: When DC bus voltage drops below F10.17 setting, the FC automatically reduces output frequency to prevent undervoltage shutdown. Higher inertia extends FC operation without input power |
| F10.11 | Overvoltage Protection | Prevents overvoltage fault conditions during rapid acceleration/deceleration |
| F01.40 | PWM frequency | [4] kHz Low frequency reduces FC heat (ideal for high ambient temps), allows longer motor cables (see manual), but increases cable/motor losses and acoustic noise. High frequency reduces motor acoustic noise |

**General Functions**

Operate independently of control mode or application.

| Parameter | Description | Recommended value |
|---|---|---|
| Flying Start | | |
| F07.00 | Start Mode | [2] Start after detecting rotation speed/direction |
| F07.26 | Frequency Search Time | *0.5 s Shorter times increase motor current impact and reduce coasting time |
| F07.27 | Post-Search Delay | *1 s. Demagnetization time after speed detection (increase for higher power motors). The higher the power of the motor, the longer the recommended pause time. |
| F07.28 | Search Current | *120%. Current level for rapid speed detection |
| Kinetic Buffering (Recommended for high-inertia loads like fans) | | |
| F10.16 | Undervoltage Control | [1] On When this function is enabled, in case of a voltage drop in the DC link of the FC, the frequency converter will brake the drive to maintain the voltage level specified in parameter F10.17 |
| F10.17 | Voltage Maintenance Level | *430 V. Activation threshold for undervoltage control. It is also the value that will be maintained until power is restored or the motor stops and the FC is turned off. |
| F03.16 | Torque in generator mode | 80–90%. Braking torque generated on the motor shaft during braking. Adjust onsite. A value that is too low will delay the motor braking in normal operation. |
| Sleep Mode (PID control only) | | |
| F13.29 | Sleep Mode | [1] On Enable sleep function |
| F13.30 | Sleep Frequency | *10 Hz. The frequency at which the sleep timer is activated. (must be ≥ F01.13 limit) |
| F13.31 | Sleep Delay | *60 s Time at minimum frequency. before "sleep" |
| F13.32 | Wake-up Threshold | *5%. Deviation drop below the setpoint that wakes FC |
| F13.33 | Wake-up delay | *1 s Response time after threshold breach |
| F13.23 | Minimum Frequency Limit | 40% of maximum frequency. Set per manufacturer guidelines |

* Default value.



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| Parameter | Parameter number in the corresponding mode | | Description |
|---|---|---|---|
| | OLVC | U/f | |
| Control Mode | F01.00 [1] | F01.00 [0] | Scalar/vector mode for asynchronous/synchronous motors |
| Energy Saving Mode Activation | F03.37 | F04.30 | Compensation for stator winding losses in electric motors. Particularly relevant for low-power motors (where active resistance exceeds reactive resistance) and mechanisms without increased overload. |
| Energy Saving Mode Adjustment | F03.38/ F03.39 | F04.30/ F04.31 | Search for the minimum permissible magnetization point without losing regulation quality. |
| Motor Characteristic Control (Speed/Torque) | F03.40 | - | Mode for maintaining constant speed/torque. |

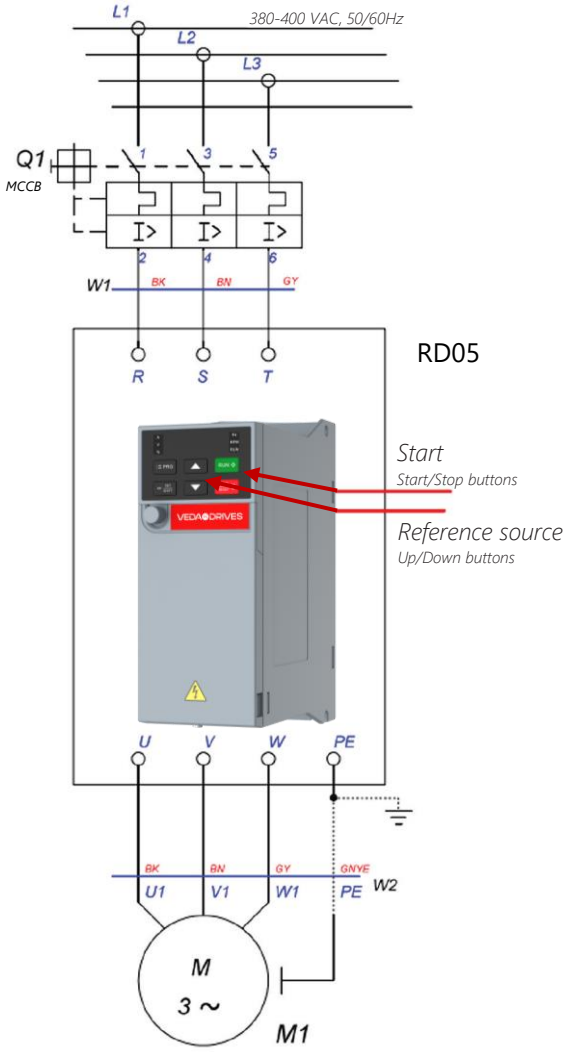
Detailed descriptions of these functions are provided in the operation manual.

# VEDA-IN DRIVES RD05 Application Examples

## Starting and Controlling the Drive from the FC Panel Without External Control Circuit

Starting using Start/Stop buttons on the FC panel.
Speed adjustment using Up/Down buttons on the FC panel.

| Parameter ID | Parameter | Set value |
|---|---|---|
| F00.03 | Parameter reset | [22] Initialization - Reset to factory settings |
| F02.01 | Number of motor poles | pcs. - From motor nameplate |
| F02.02 | Rated power | kW - From motor nameplate |
| F02.03 | Rated frequency | Hz - From motor nameplate |
| F02.04 | Rated speed | rpm - From motor nameplate |
| F02.05 | Rated voltage | V - From motor nameplate |
| F02.06 | Rated Current | A - From motor nameplate |
| F01.01 | Command source selection | [0] Keyboard control - Commands via Start/Stop keys |
| F01.02 | Reference source selection | [0] Keyboard control - Commands via Up/Down keys |
| F01.22 | Acceleration time | sec. - Determined individually onsite |
| F01.23 | Braking time | sec. - Determined individually onsite |
| F01.10 | Maximum output frequency | Hz - Determined individually (default 50 Hz) |
| F01.12 | Upper frequency limit setting | Hz - Determined individually (default 50 Hz) |
| F01.13 | Lower frequency limit setting | Hz - Determined individually (default 0 Hz) |



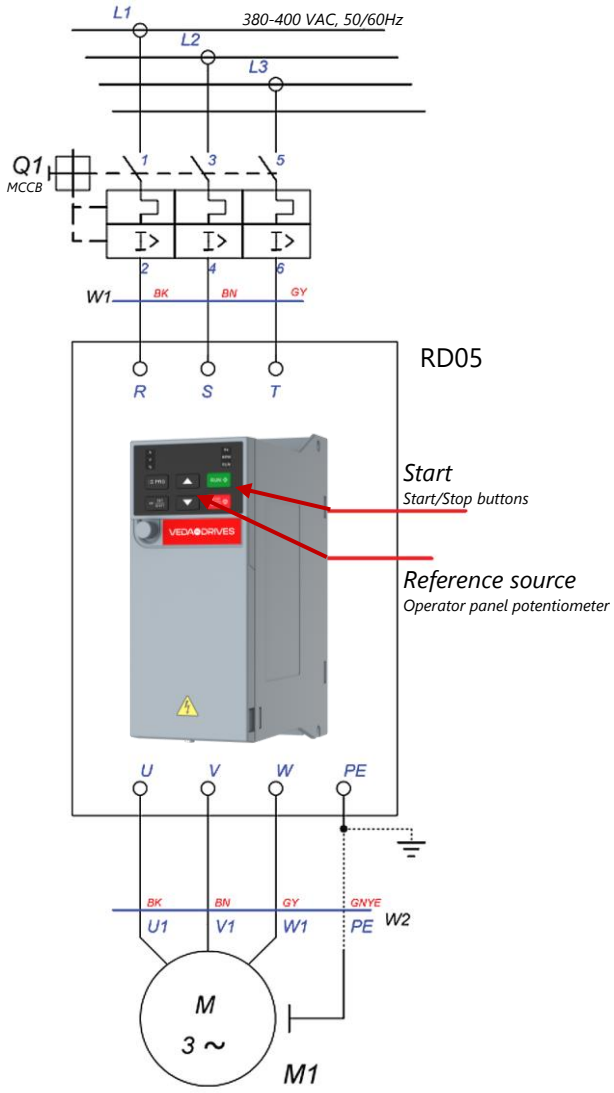



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## Starting and Controlling the Drive from the FC Panel Without External Control Circuit

Starting using Start/Stop buttons on the FC panel.
Speed adjustment using the control panel potentiometer.

| Parameter ID | Parameter | Set value |
|---|---|---|
| F00.03 | Parameter reset | [22] Initialization - Reset to factory settings |
| F02.01 | Number of motor poles | pcs. - From motor nameplate |
| F02.02 | Rated power | kW - From motor nameplate |
| F02.03 | Rated frequency | Hz - From motor nameplate |
| F02.04 | Rated speed | rpm - From motor nameplate |
| F02.05 | Rated voltage | V - From motor nameplate |
| F02.06 | Rated Current | A - From motor nameplate |
| F01.01 | Command source selection | [0] Keyboard control - Commands via Start/Stop keys |
| F01.02 | Reference source selection | [1] Keyboard analog potentiometer – operator panel potentiometer |
| F01.22 | Acceleration time | sec. - Determined individually onsite |
| F01.23 | Braking time | sec. - Determined individually onsite |
| F01.10 | Maximum output frequency | Hz - Determined individually (default 50 Hz) |
| F01.12 | Upper frequency limit setting | Hz - Determined individually (default 50 Hz) |
| F01.13 | Lower frequency limit setting | Hz - Determined individually (default 0 Hz) |
| F05.41 | AI signal type | [0] Voltage - 0...10V |
| F05.50 | AI signal lower limit | [0]% - AI lower range (0V) |





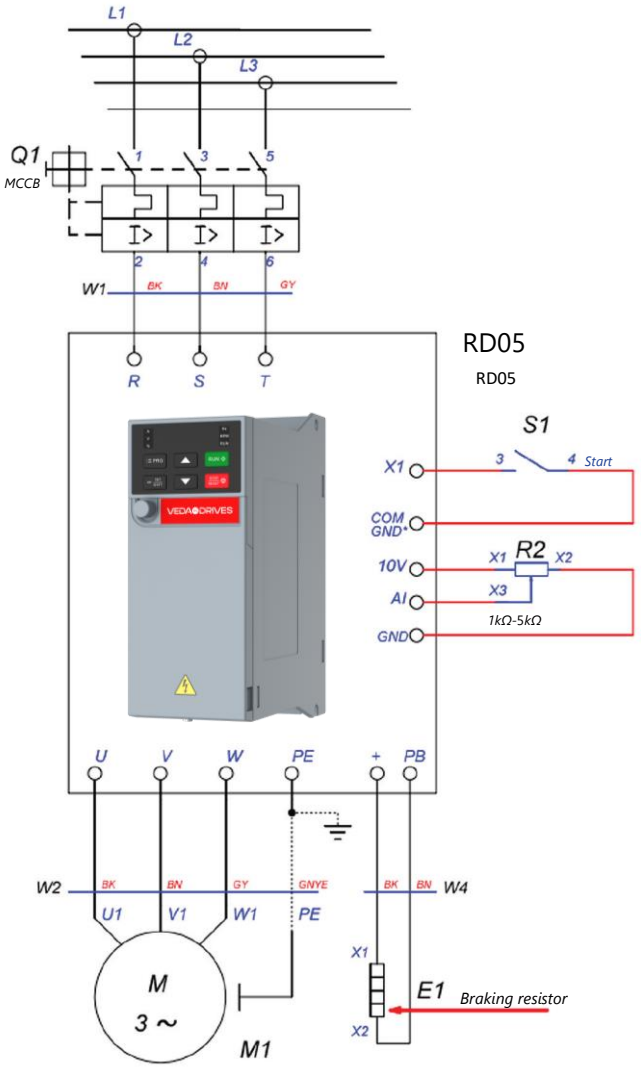

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*380-400 VAC, 50/60Hz*

## Starting the Drive from a Toggle Switch with Smooth External Potentiometer Adjustment

Start/Stop using a toggle switch.
Speed adjustment via external potentiometer.

| Parameter ID | Parameter | Set value |
|---|---|---|
| F00.03 | Parameter reset | [22] Initialization - Reset to factory settings |
| F02.01 | Number of motor poles | pcs. - From motor nameplate |
| F02.02 | Rated power | kW - From motor nameplate |
| F02.03 | Rated frequency | Hz - From motor nameplate |
| F02.04 | Rated speed | rpm - From motor nameplate |
| F02.05 | Rated voltage | V - From motor nameplate |
| F02.06 | Rated Current | A - From motor nameplate |
| F01.01 | Command source selection | [1] Terminal control - Commands via control terminals |
| F01.02 | Channel A reference source | [2] Analog AI - Analog input AI |
| F01.22 | Acceleration time | sec. - Determined individually onsite |
| F01.23 | Braking time | sec. - Determined individually onsite |
| F01.10 | Maximum output frequency | Hz - Determined individually (default 50 Hz) |
| F01.12 | Upper frequency limit setting | Hz - Determined individually (default 50 Hz) |
| F01.13 | Lower frequency limit setting | Hz - Determined individually (default 0 Hz) |
| F05.00 | Digital input function X1 | [1] Forward running - Start forward command |
| F05.41 | AI signal type | [0] Voltage - 0...10V |
| F05.50 | AI signal lower limit | [0]% - AI lower range (0V) |
| F10.14 | Braking mode | [1] - Resistive braking activation |




For more precise drive control, vector control mode is recommended.
To do this, activate it in parameter F01.00 - [1] and additionally carry out an auto-adaptation procedure on the motor to measure the additional values.
The auto-adaptation can be launched via parameter F02.07 - [2]. After selection, press "Start" and wait for the procedure to complete.

Attention!
In drives of 0.4–5.5 kW, the common point for inputs/outputs is "GND."
In drives of 7.5–22 kW, the common point for inputs/outputs is "COM."

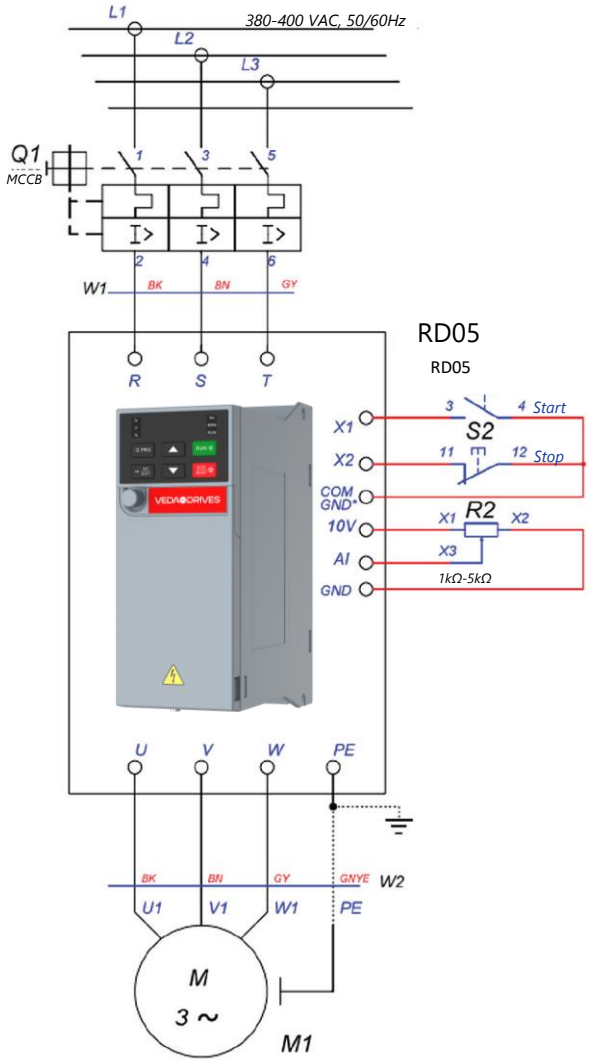


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**Three-Wire Control Scheme Starting with External Potentiometer Adjustment**

Starting using Start/Stop buttons.
Three-wire control system.
Speed adjustment using an external potentiometer.

| Parameter ID | Parameter | Set value |
|---|---|---|
| F00.03 | Parameter reset | [22] Initialization - Reset to factory settings |
| F02.01 | Number of motor poles | pcs. - From motor nameplate |
| F02.02 | Rated power | kW - From motor nameplate |
| F02.03 | Rated frequency | Hz - From motor nameplate |
| F02.04 | Rated speed | rpm - From motor nameplate |
| F02.05 | Rated voltage | V - From motor nameplate |
| F02.06 | Rated Current | A - From motor nameplate |
| F01.01 | Command source selection | [1] Terminal control - Commands via control terminals |
| F01.02 | Channel A reference source | [2] Analog AI - Analog input AI |
| F01.22 | Acceleration time | sec. - Determined individually onsite |
| F01.23 | Braking time | sec. - Determined individually onsite |
| F01.10 | Maximum output frequency | Hz - Determined individually (default 50 Hz) |
| F01.12 | Upper frequency limit setting | Hz - Determined individually (default 50 Hz) |
| F01.13 | Lower frequency limit setting | Hz - Determined individually (default 0 Hz) |
| F05.00 | Digital input function X1 | [1] Forward running - Start forward command |
| F05.01 | Digital input function X2 | [3] 3-Wire control (X1) - Stop command |
| F05.20 | Control scheme type | [2] Three wire system |
| F05.41 | AI signal type | [0] Voltage - 0...10V |
| F05.50 | AI signal lower limit | [0]% - AI lower range (0V) |




For more precise drive control, vector control mode is recommended.
To do this, activate it in parameter F01.00 - [1] and additionally carry out an auto-adaptation procedure on the motor to measure the additional values.
The auto-adaptation can be launched via parameter F02.07 - [2]. After selection, press "Start" and wait for the procedure to complete.

Attention! In drives of 0.4–5.5 kW, the common point for inputs/outputs is "GND."
In drives of 7.5–22 kW, the common point for inputs/outputs is "COM."



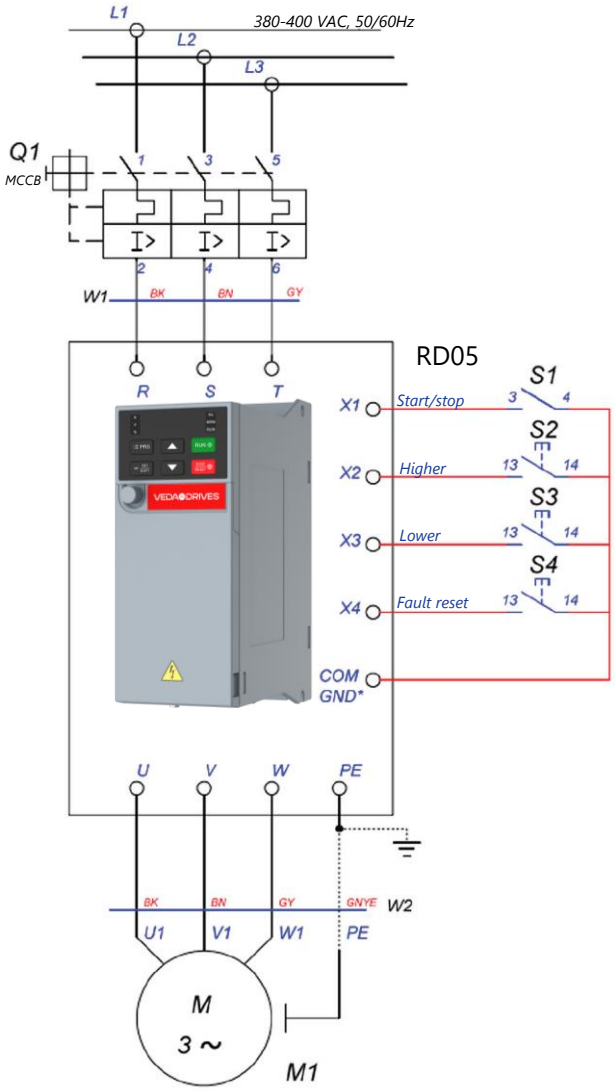
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**Digital Potentiometer Starting and Speed Control**

Start/Stop using a toggle switch.

Speed adjustment with the Higher/Lower buttons. Fault reset button.

| Parameter ID | Parameter | Set value |
|---|---|---|
| F00.03 | Parameter reset | [22] Initialization - Reset to factory settings |
| F02.01 | Number of motor poles | pcs. - From motor nameplate |
| F02.02 | Rated power | kW - From motor nameplate |
| F02.03 | Rated frequency | Hz - From motor nameplate |
| F02.04 | Rated speed | rpm - From motor nameplate |
| F02.05 | Rated voltage | V - From motor nameplate |
| F02.06 | Rated Current | A - From motor nameplate |
| F01.01 | Command source selection | [1] Terminal control - Commands via control terminals |
| F01.02 | Reference source selection | [7] Terminal Up/Dw control - Digital potentiometer |
| F01.22 | Acceleration time | sec. - Determined individually onsite |
| F01.23 | Braking time | sec. - Determined individually onsite |
| F01.10 | Maximum output frequency | Hz - Determined individually (default 50 Hz) |
| F01.12 | Upper frequency limit setting | Hz - Determined individually (default 50 Hz) |
| F01.13 | Lower frequency limit setting | Hz - Determined individually (default 0 Hz) |
| F05.00 | Digital input function X1 | [1] Forward running - Start forward command |
| F05.01 | Digital input function X2 | [10] Increasing frequency (Up) |
| F05.02 | Digital input function X3 | [11] Decreasing frequency (Dw) |
| F05.03 | Digital input function X4 | [8] Fault reset |
| F05.25 | Potentiometer control mode | [0] Frequency power off storage - saving the frequency after resetting the power |
| F05.26 | Digital potentiometer response rate | [0.5 Hz/s] – adjustment of the digital potentionmeter's response speed |




For more precise drive control, vector control mode is recommended. To do this, activate it in parameter F01.00 - [1] and additionally carry out an auto-adaptation procedure on the motor to measure the additional values.

The auto-adaptation can be launched via parameter F02.07 - [2]. After selection, press the "Start" key and wait for the procedure to complete.

Attention!

In drives of 0.4–5.5 kW, the common point for inputs/outputs is "GND."

In drives of 7.5–22 kW, the common point for inputs/outputs is "COM."

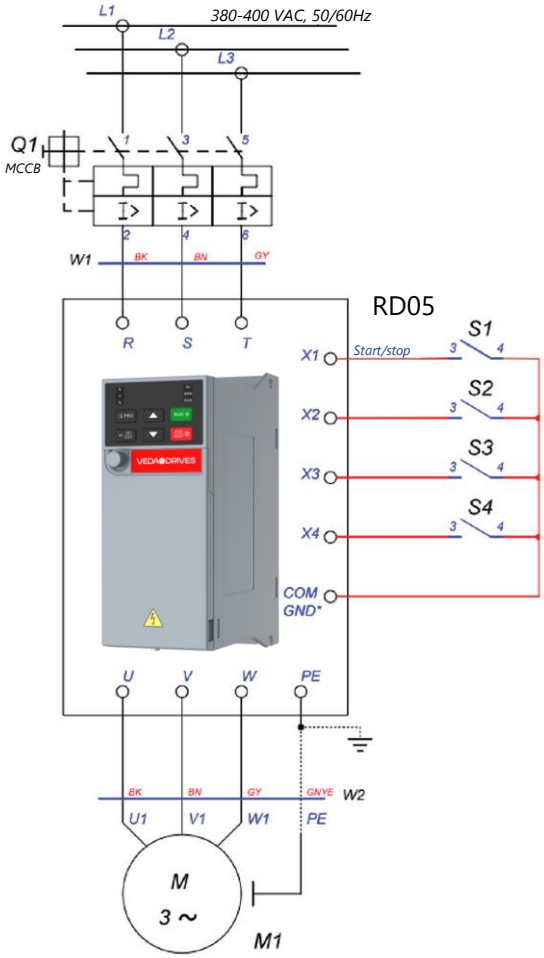


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## Speed adjustment via toggle switch combinations.

Start/Stop using a toggle switch. Speed adjustment via toggle switch combinations.

| Parameter ID | Parameter | Set value |
|---|---|---|
| F00.03 | Parameter reset | [22] Initialization - Reset to factory settings |
| F02.01 | Number of motor poles | pcs. - From motor nameplate |
| F02.02 | Rated power | kW - From motor nameplate |
| F02.03 | Rated frequency | Hz - From motor nameplate |
| F02.04 | Rated speed | rpm - From motor nameplate |
| F02.05 | Rated voltage | V - From motor nameplate |
| F02.06 | Rated Current | A - From motor nameplate |
| F01.01 | Command source selection | [1] Terminal control - Commands via control terminals |
| F01.02 | Reference source selection | [11] Multi-stage speed given - Digital multi-speed control |
| F01.22 | Acceleration time | sec. - Determined individually onsite |
| F01.23 | Braking time | sec. - Determined individually onsite |
| F01.10 | Maximum output frequency | Hz - Determined individually (default 50 Hz) |
| F01.12 | Upper frequency limit setting | Hz - Determined individually (default 50 Hz) |
| F01.13 | Lower frequency limit setting | Hz - Determined individually (default 0 Hz) |
| F05.00 | Digital input function X1 | [1] Forward running - Start forward command |
| F05.01 | Digital input function X2 | [16] Multi-speed terminal 1 – Multi-speed mode 0 (see table below) |
| F05.02 | Digital input function X3 | [17] Multi-speed terminal 2 – Multi-speed mode 1 (see table below) |
| F05.03 | Digital input function X4 | [18] Multi-speed terminal 3 – Multi-speed mode 2 (see table below) |
| F01.09 | Panel-set frequency | Hz - Preset speed with S1,S2,S3 off |
| F014.00-F14.06 | Preset frequencies 1-7 (Hz) | Hz - Preset speed with S1, S2, S3 enabled (see table below) |




For more precise drive control, vector control mode is recommended.
To do this, activate it in parameter F01.00 - [1] and additionally carry out an auto-adaptation procedure on the motor to measure the additional values. The auto-adaptation can be launched via parameter F02.07 - [2].
After selection, press the "Start" key and wait for the procedure to complete.
Attention!
In drives of 0.4–5.5 kW, the common point for inputs/outputs is "GND."
In drives of 7.5–22 kW, the common point for inputs/outputs is "COM."

Preset speed selection table depending on the toggle switch on (0-off, 1-on).

| Toggle switches | S3 Bit 2 (X4) | S2 Bit 1 (X3) | S1 Bit 0 (X2) | S0 START (X1) |
|---|---|---|---|---|
| STOP | 0 | 0 | 0 | 0 |
| START (preset speed in F01.09) | 0 | 0 | 0 | 1 |
| F14.00 (1st preset speed) ## Hz | 0 | 0 | 1 | 1 |
| F14.01 (2nd preset speed) ## Hz | 0 | 1 | 0 | 1 |
| F14.02 (3rd preset speed) ## Hz | 0 | 1 | 1 | 1 |
| F14.03 (4th preset speed) ## Hz | 1 | 0 | 0 | 1 |
| F14.04 (5th preset speed) ## Hz | 1 | 0 | 1 | 1 |
| F14.05 (6th preset speed) ## Hz | 1 | 1 | 0 | 1 |
| F14.06 (7th preset speed) ## Hz | 1 | 1 | 1 | 1 |

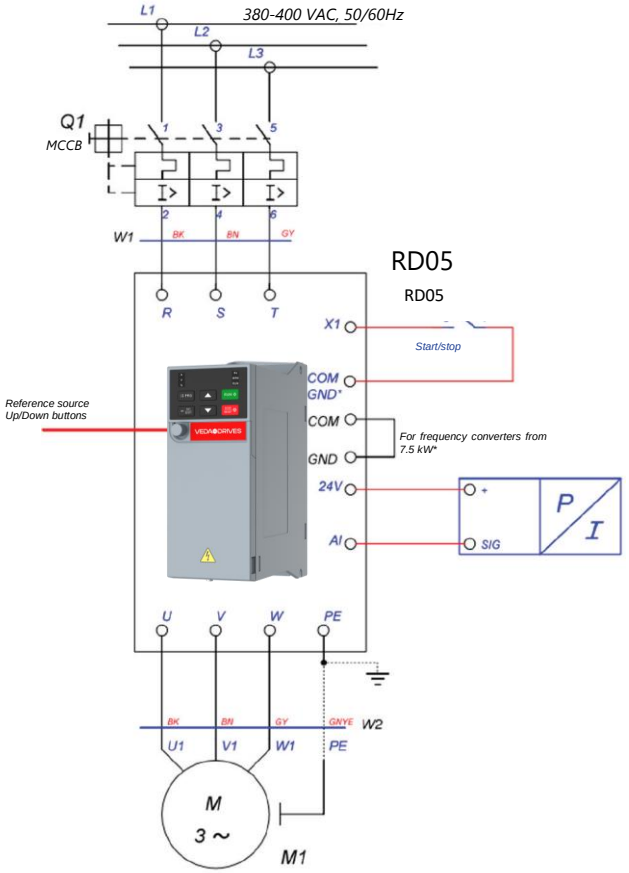


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## Pump Start with Pressure Feedback sensor

PID process control for pressure maintenance.
Setpoint from FC panel.
"Sleep mode" function.

| Parameter ID | Parameter | Set value |
|---|---|---|
| F00.03 | Parameter reset | [22] Initialization - Reset to factory settings |
| F01.00 | Motor control mode | [1] AM open loop vector |
| F02.01 | Number of motor poles | pcs. - From motor nameplate |
| F02.02 | Rated power | kW - From motor nameplate |
| F02.03 | Rated frequency | Hz - From motor nameplate |
| F02.04 | Rated speed | rpm - From motor nameplate |
| F02.05 | Rated voltage | V - From motor nameplate |
| F02.06 | Rated Current | A - From motor nameplate |
| F02.07 | Motor Auto-Tuning | [2] Static self-learning - to start, set [2] and click "Start" in the panel |
| F01.01 | Command source selection | [1] Terminal control - Commands via control terminals |
| F01.02 | Reference source selection | [8] PID control |
| F01.22 | Acceleration time | sec. - Determined individually onsite |
| F01.23 | Braking time | sec. - Determined individually onsite |
| F05.00 | Digital input function X1 | [1] Forward running - Start forward command |
| F05.41 | AI signal type | [1] Current - current loop 0...20 mA |
| F05.50 | AI signal lower limit | [20] % – Lower range of AI (4 mA) |
| F05.52 | Upper limit of AI signal | [100] % – Upper range of AI (20 mA) |
| F11.11 | Display parameter | [0008] - PID setpoint display |
| F13.00 | PID setpoint source | [0] - Panel control |
| F13.01 | PID panel setpoint | [40]%, determined individually on site |
| F13.03 | PID feedback source | [2] AI – AI source |
| F13.11 | P gain (proportional gain) | [0.200] - determined individually, on site |
| F13.12 | I time (integration time) | [2 sec] - determined individually, on site |
| F13.23 | Pump minimum speed limit (Lower limit of PID output signal) | [40] % - set according to pump manufacturer's recommendations |
| F13.29 | Sleep mode activation | [1] - activating sleep mode |
| F13.30 | Sleep activation frequency | [Hz] - activation of the timer when this frequency is reached, determined individually, on site |
| F13.31 | Sleep delay time | [sec] - transition to the sleep mode after expiration of the timer time by place, not lower than the speed in F13.23 parameter |
| F13.32 | Wake-up pressure drop threshold | [%] Set as % of pressure setpoint |
| F13.33 | Wake-up delay | [sec.] - sleep delay after standstill |






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Before connecting pressure sensor, switch AI to current mode.

| In drives of 0.4–5.5 kW | In drives of 7.5–22 kW |
| --- | --- |
|  |  |

Attention!
In drives of 0.4–5.5 kW, the common point for inputs/outputs is "GND."
In drives of 7.5–22 kW, the common point for inputs/outputs is "COM."

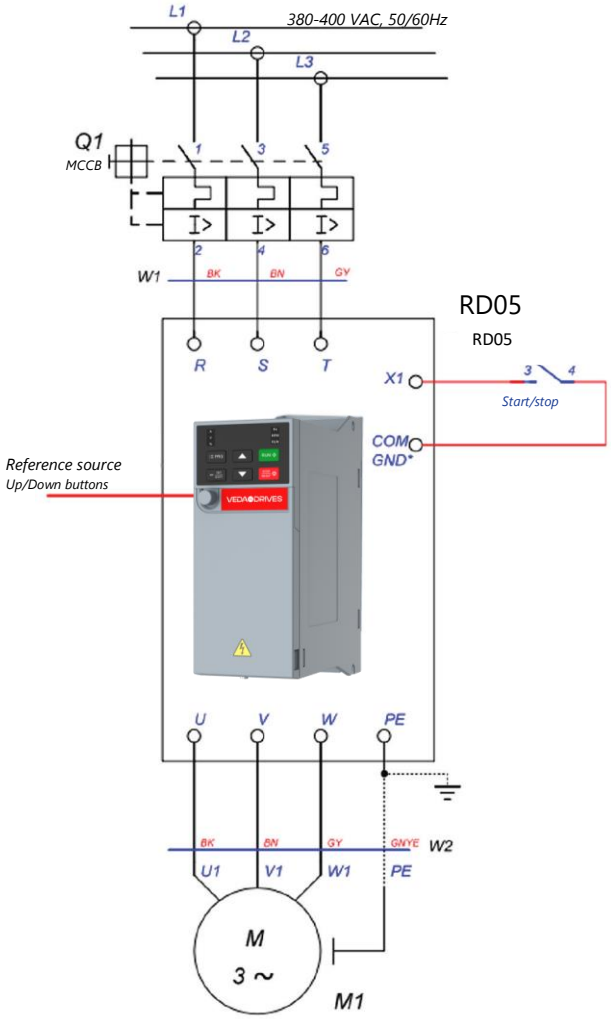


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## Fan Start with Flying Restart Capability

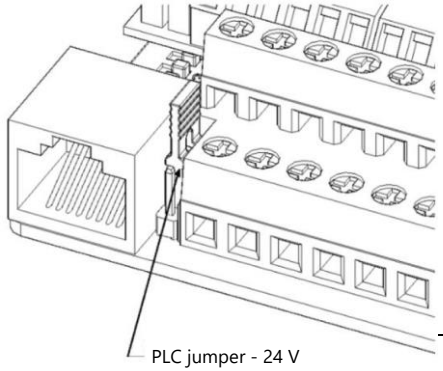
Start/Stop using toggle switch.
Fan coasting stop.
Fan speed adjustment via FC panel Up/Down buttons.

| Parameter ID | Parameter | Set value |
|---|---|---|
| F00.03 | Parameter reset | [22] Initialization - Reset to factory settings |
| F01.00 | Motor control mode | [1] AM open loop vector |
| F02.01 | Number of motor poles | pcs. - From motor nameplate |
| F02.02 | Rated power | kW - From motor nameplate |
| F02.03 | Rated frequency | Hz - From motor nameplate |
| F02.04 | Rated speed | rpm - From motor nameplate |
| F02.05 | Rated voltage | V - From motor nameplate |
| F02.06 | Rated Current | A - From motor nameplate |
| F02.07 | Motor Auto-Tuning | [2] Static self-learning - to start, set [2] and click the Start button on the panel |
| F01.01 | Command source selection | [1] Terminal control - control terminals |
| F01.02 | Reference source selection | [0] Keyboard control - Commands via Up/Down keys |
| F01.22 | Acceleration time | sec. - Determined individually onsite |
| F01.23 | Braking time | sec. - Determined individually onsite |
| F05.00 | Digital input function X1 | [1] Forward running |
| F07.00 | Startup mode | [2] Start after speed tracking - Fan Flying Restart |
| F07.10 | Shutdown mode | [1] Free stop – coasting stop. |




To switch the logic of PNP digital inputs, reposition the jumper near the terminal block.
This method is available for frequency converters of 7.5–22 kW.
In frequency converters of 0.4–5.5 kW, only NPN logic is available.

Attention!
In drives of 0.4–5.5 kW, the common point for inputs/outputs is "GND."
In drives of 7.5–22 kW, the common point for inputs/outputs is "COM."






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This guide does not replace the operating instructions for the RD05 frequency converter.

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Dated 08.05.2024

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