Additional Features

The AC15 Series supports the following functions and features:

µSD Card Slot:

For application cloning and firmware updates in the field.

Built-in Ethernet Comms:

Modbus TCP/IP as standard.

Program the drive through DSELite configuration tool or access the drive webpage.

Optional Cable Screening Bracket:

Optional brackets offer support to power cables and a means of grounding them.

6901 Keypad Support:

Connect an optional remote 6901 keypad to the RJ11 port.

Associated Literature

DOC-0017-03:

AC15 Series Hardware Installation Manual

DOC-0017-05:

AC15 Series Software Reference Manual

ENGINEERING YOUR SUCCESS.

AC15 Series

Variable Speed Drive

Frame 1

(0.37 - 1.5kW)

Quick Start Manual
English

DOC-0017-01-EN-C
04-Apr-2023

Before You Start

This document covers the basic start up of the AC15 Series drive. Drive start ups should be performed by qualified electrical technicians who are familiar with AC drives and their applications. For detailed installation and safety information, refer to the Hardware Installation Manual. For advanced features and applications, refer to the Software Reference Manual.

Ensure that all local electric codes are met while installing the drive. Check that all live parts are covered to protect against electric shock and that unexpected rotation of the motor will not result in bodily harm or injury.

This document expects that the drive is already installed in its intended location and that all relevant installation procedures have been followed. Please ensure that the drive has adequate ventilation so that ambient temperature does not exceed 40°C (104°F) under normal operating conditions.

Frame Ratings

The AC15 Series is available in 230V single phase, 230V three phase, and 400V three phase line input voltage versions, covered by Frame sizes 1 - 5. The Frame 1 ratings, as covered by this Quick Start, are shown below:

230V, 1ø Supply	
Frame 1	0.37 - 1.5kW

230V, 3ø Supply	
Frame 1	0.37 - 1.5kW

400V, 3ø Supply	
Frame 1	0.37 - 1.5W

Compatible Motors

This product supports both Induction and Permanent Magnet (PMAC) motor types.

## Control Modes

The AC15 Series offers two control modes:

1. Volts/Hertz Mode (V/Hz): Basic open-loop operation used in fan/pump and multi-motor applications. **Note: Induction Motors only.**

2. Sensorless Vector (SLV) Mode: Tight speed regulation with good transient torque capability, without the need for speed feedback.

Power Connections

Vs = AC Voltage Source:
- 1ø, 220-240V
- 3ø, 220-240V
- 3ø, 380-480V

AC Line Fuses

Dynamic Braking Resistor

3ø Induction or PMAC Motor
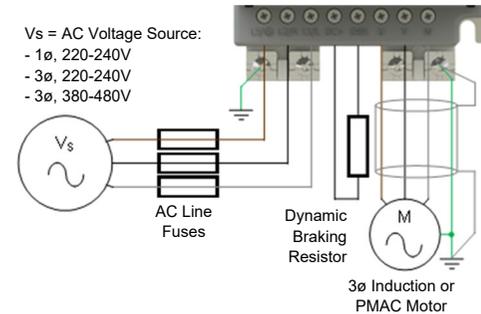
| Label	Description
L3 / PE	Supply Input Phase L3 / Protective Earth
L2 / N	Supply Input Phase L2 / Neutral
L1 / L	Supply Input Phase L1 / Live
DC+	DC+ / Dynamic Brake Resistor '+'
DBR	Dynamic Brake Resistor '-'
U	Motor Output Phase U
V	Motor Output Phase V
W	Motor Output Phase W

PE Connections: The Chassis PE connection points are connected internally to the PE terminal. Please follow proper grounding and shielding methods as described in the Hardware Installation Manual.

Dynamic Brake Resistor (DBR): If the stop time required by the end application is less than the natural coasting time of the load, connect a suitably rated Braking Resistor between the DC+ and DBR terminals.

**Note: Additional Brake Resistor protection is recommended.**

Control Connections

'LOCAL' Operation: Below is an example of the minimum hardware connections required to run the drive in 'Local' operator mode through the onboard keypad:
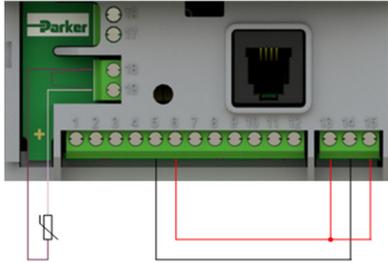
Label	Description
18	Motor thermistor '+' (or link to TH2)
19	Motor thermistor '-'
13, 14, 15	STO **DISABLED** (drive operational)

'REMOTE' Operation: Below is an example of the hardware connections required to run the drive in the 'Standard' (Basic Speed Mode) macro in 'Remote' operator mode:
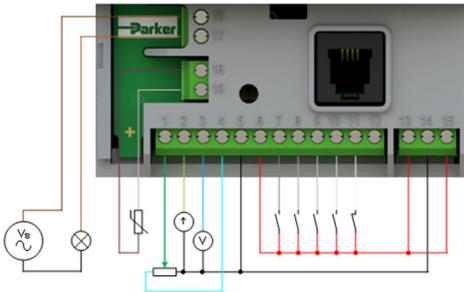

Label	Description
16	110-230Vac / 24Vdc Supply
17	**Healthy**: Relay output (to lamp)
18	Motor thermistor '+'
19	Motor thermistor '-'
1	**Setpoint (%)**: 0-10V input
2	**Setpoint Trim (%)**: 4-20mA input
3	**Speed Demand (%)**: 0-10V output
4	**Value = 100%**: +10V fixed output
7	**Run Forward**: 24V input
8	**Remote Reverse**: 24V input
9	**Jog**: 24V input
10	**Not Stop**: 24V input
11	**Not Coast Stop**: 24V input
13, 14, 15	STO **DISABLED** (drive operational)

APPLY POWER TO UNIT

Display Keypad

AC15 Series

- SVC Mode 'Active'
- Drive 'Running' Status
- Parameter Number / Value
- Parameter Units
- Comms Control 'Active'
- Local Control 'Active'

- Enter
- Up / Increase Value / Dir: Fwd
- Run
- Escape
- Down / Decrease Value / Dir: Rev
- Stop / Reset
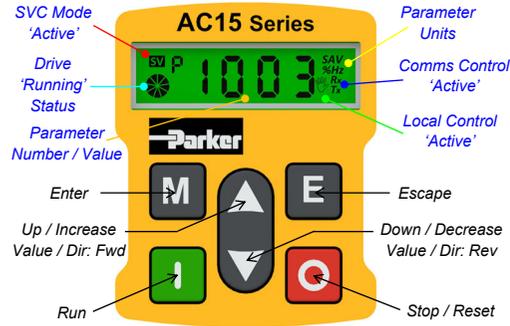
Menu Navigation:
- M = Enters sub-menu
- E = Exits sub-menu
- ▲▼ = Scrolls up and down through menu list

Edit Parameter Value:
- M = Enters into parameter
- E = Exits parameter
- ▲▼ = Increases or decreases value

Note: By default, parameter value changes are saved automatically.

On drive power-up, the display will revert to the '**Oper**' menu. Press the '**E**' key three times to exit to the top menu level, so "**r x.x**" is shown on the display (where '**x.x**' is firmware version).

Initial Drive Setup

1. Control Strategy Settings: The following parameters in the '**Ctrl**' setup menu must first be set:

| Parameters: Set > Ctrl > Ctrl		
No.	**Name**	**Value**
0892	Thermistor Type	0 (PTC) / 1 (NTC)
0030	Motor Type	0 (Induction) / 1 (PMAC)
0031	Control Strategy	0 (Volts-Hertz) / 1 (Vector)

2. Motor Nameplate Settings: Next, motor parameters must be set in the '**nPLA**' setup menu *(Induction motor parameters shown for illustration)*:

Parameters: Set > Ctrl > nPLA		
No.	**Name**	**Default Value**
0224	Base Frequency	50 (Hz)
0223	Base Voltage	400 (V)
0227	Motor Power	0.75 (kW)
0226	Nameplate Speed	1450 (rpm)
0228	Power Factor	0.71
0222	Rated Current	1.56 (A)
0182	IM Wiring	0 (FALSE)

Note: Setting 'IM Wiring' to '1' (TRUE) swaps phases V & W - inverting motor direction.

'Local' Operation

To run the drive in 'Local' operation using the onboard keypad:

1. Enable 'Local' Control Mode: Hold the '**Stop**' key for approx. 3 seconds, until the hand icon appears on the display:

Hold '*Stop*' key.   *"L … O … C"*   3 seconds...   '*Local*' mode.
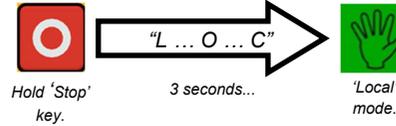
2. 'Autotune' Routine (SVC Mode only): If parameter **0031** (**Control Strategy**) is set to '**1**' (**Vector Control**), then an autotune routine must be performed prior to running the drive. A '**Rotating**' autotune on an uncoupled motor is always the preferred '**Atn Mode**', whenever possible .

To do this, set the '**Atn Enable**' parameter **0035** in the '**Ctrl**' menu to '**1**' (**TRUE**), and press the '**Run**' key to start the autotune routine:

Parameters: Set > Ctrl > Autn		
No.	**Name**	**Value**
0036	Atn Mode	0 (Stationary) / 1 (Rotating)
0035	Atn Enable	0 (FALSE) / 1 (TRUE)

⚠ ROTATING MOTOR ⚠

Press '*Run*' key.   Motor 'Running' icon 'rotates' in the direction of the shaft and "AL26" text is displayed.
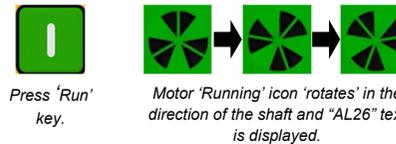
Once the autotune routine has completed, the motor will decelerate to a stop and the drive will disable:

Motor 'Running' icon will continue 'rotating' until the motor has come to a stop.
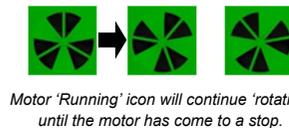
The drive is now ready to run in 'Vector Control' (SVC) mode.

3. Running the Drive: In the '**Oper'** menu, enter a speed setpoint (parameter **0459**), and press the '**Run**' key. The drive will enable, rotating the motor at the speed demanded. Parameter **0105** (**Speed Percent**) provides the speed feedback (%):

Parameters: Oper		
No.	**Name**	**Value**
0459	Local Setpoint	0 -> 100 (%)
0105	Speed Percent	0 - > 100 (%)

Press '*Run*' key.   Motor 'Running' icon 'rotates' in the direction of the shaft.
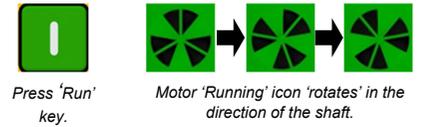
4. Stopping the Drive: Press the '**Stop**' key to bring the motor to a standstill and disable the drive:


Press '*Stop*' key.   Motor 'Running' icon will continue 'rotating' until the motor has come to a stop.
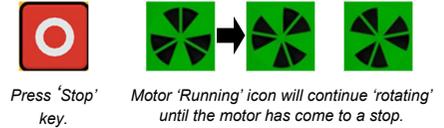
5. To Change the Motor Direction: With the drive stopped, press the '**Stop**' key and either the '**Up**' (Forward), or '**Down**' (Reverse) key simultaneously.

'Remote' Operation

To run the drive in 'Remote' operation using push-buttons, switches or PLC's:

1. Enable 'Remote' Control Mode: Hold the '**Stop**' key for approx. 3 seconds, until the hand icon disappears from the display:

Hold '*Stop*' key.   *"C … O … L"*   3 seconds...   '*Remote*' mode.
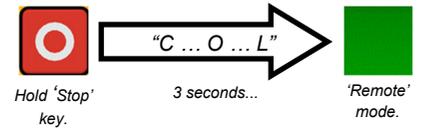
2. Loading a Macro: Pre-defined application macro's have been configured for remote operation. To load an Application macro, navigate to the '**App**' setup menu:

Parameters: Set > App		
No.	**Name**	**Value**
1150	Application	0 (Null) / 1 (Standard) / 2 (Auto/Manual) / 3 (Presets) / 4 (Raise/Lower) / 5 (PID) / 6 (Aux Comms) / 9 (Saved)
1152	Application Lock	0 (FALSE) / 1 (TRUE)
1151	Load Application	0 (FALSE) / 1 (TRUE)

Set parameter **1150** to the desired macro i.e. '**1**' for the **Standard 'Basic Speed Control'** application (as per the 'Remote' Control Connection example).

Set parameter **1151** from '**0**' to '**1**' (**FALSE** to **TRUE**) to load the application.

To 'lock' the application so it can not be changed, set parameter **1152** from '**0**' to '**1**'.

3. Running the Drive: Providing the drive is in 'Remote' operating mode, 'Initial Drive Setup' is completed, and an 'Autotune' has been completed (if in SVC mode), the drive is ready to be run from the remote switches.