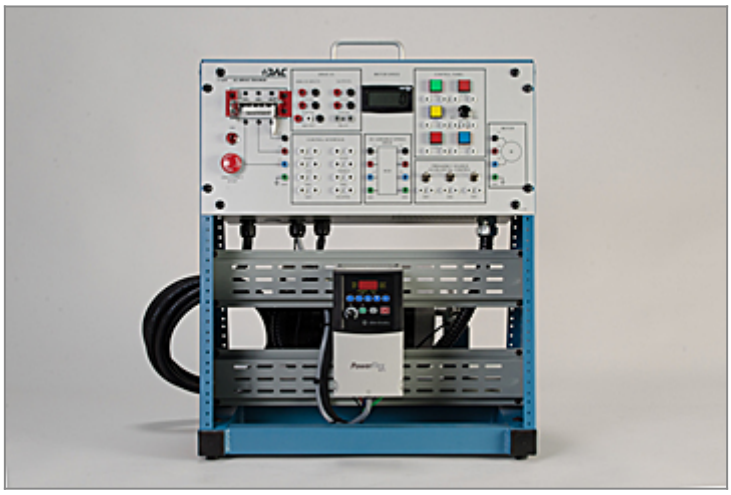
AC Variable Frequency Drive Training System Plus



Model: 429E

DAC Worldwide's AC Variable Frequency Drive Training System Plus (429E) examines AC variable speed drive principles. Learners will explore variable frequency AC solid-state control of 3-phase electric motors in various automation applications. The trainer also covers industry-relevant skills, such as AC drive programming, drive system troubleshooting, and control wiring in a variety of applications.

This AC Variable Frequency Drive Training System includes an industrial 3-phase motor, a three-pole circuit breaker with lock out/tag out, twenty-nine (29) banana jacks, and much more. Learners will use these components to study topics such as minimum and maximum frequencies, plotting the ramping characteristics, programming AC Drive outputs, and troubleshooting.

This system utilizes industry-grade components, providing durability to stand up to frequent use while aiding learners in becoming better prepared for the tasks they will encounter on the job. Whether it's used as a stand-alone training device or in combination with other automation-related training products, this device will help make training in this fundamental technology more informative and productive.

Practice Hands-On Electrical Skills for Various Applications

This AC Variable Frequency Drive Training System features a portable, benchtop mount, including a welded tubular aluminum baseplate with rails for mounting a 56-frame motor. All I/O and control wiring capabilities of the Allen-Bradley, PowerFlex 40 drive are accessed using banana jack connections on the front panel face. Additionally, eight fault switches are provided on the back of the electrical enclosure allowing for drive, motor, and control wiring troubleshooting.

This trainer, however, centers on the Allen-Bradley PowerFlex 40 variable frequency drive, which creates working voltages of 115/220 VAC. It features a remote potentiometer input with adjustable frequency. There are three inputs (voltage, resistance, and amperage), as well as three outputs (voltage, relay, and amperage). It also features eight (8) inputs for PLC data, and a programmable acceleration/deceleration with an on-board PID control loop.

Learners will use these components to practice hands-on skills, such as checking the nameplate data, performing pre-power checks/start up, programming over current safety features, setting acceleration/deceleration timing, and

an introduction into troubleshooting AC motors.

In addition to standard courseware curriculum, the trainer comes with eight (8) instructor fault switches in the rear of the device, allowing students to practice real-time troubleshooting skills.

Hands-On Exercises and Learning Activities Lead to Realistic Results

DAC Worldwide's AC Variable Frequency Drive Training System also features exercises and learning activities that focus more on results and less on secondary academic background information. This comprehensive training system offers learning over specific automation skills, including: Variable Frequency AC Drive Theory, Electrical Connections of the Allen-Bradley PowerFlex 40, Checking and Setting Jog Parameters, Using External Voltage and Current Sources of Motor Control, and much more. The integrated course includes a total of 26 activities, all of which include background information on the topic, hands-on experiments, and related review questions.

Expand Training with Additional Electrical Options

The AC Variable Frequency Drive Training System Plus can be used with optional systems, such as the Motor Load Option (#419-000) and the Piloting Switch Module (#428). Also be sure to check out DAC Worldwide's expansive selection of other electrical motor training products, including the Three-Phase Magnetic Motor Starter Trainer (#423-000), DC Permanent Magnet Motor Control Trainer (#426-000), and the Motor Control Fundamentals Trainer (#420S).

FEATURES & SPECIFICATIONS

- Welded tubular aluminum baseplate with t-slotted mounting rails for mounting a 56-frame motor (allows for attachment to the DAC 419 Motor Loading Device)
- Powder-coated 16-gauge steel electrical wiring enclosure and support frame assembly, which can be mounted directly on the DAC 905 Electromechanical Bench
- Industrial 3-phase inverter-duty, 1/2 hp. motor
- 3-Pole circuit breaker with provision for lock-out/tag-out
- Pilot light and emergency stop switch
- Safety interlock, de-energizing internal wiring upon removal of front panel face
- Silk-screened panel face identifying all components, wiring points and test point locations
- Keyed instructor switch (rear of device)
- Simulated remote operator control panel with pre-wired switches
- Twenty-nine (29) banana jack connections for all drive I/O points and control interface connections
- Thirty-five (35) tip-jack (test) connections for troubleshooting motor, drive and control wiring
- Digital tachometer with magnetic pick-up
- Permanent internal ground wiring

- Eight (8) instructor fault switches *(rear of device)*
- Allows for connection to DAC 464, 428 trainers and within automation arrangements on the 905/210 Electromechanical Bench
- Allen-Bradley PowerFlex 40 variable frequency drive with integral keypad and features as follows:
  • Remote potentiometer input; Adjustable frequency
  • 115 or 220 VAC input; Single or three phase, 50/60Hz
  • Output: 2.3 A; 0.37 kW (0.5HP); Voltage adjustable from 0V to input voltage, 0-400Hz
  • Analog Input: 0-10V, 4-20mA
  • Inputs/Outputs: 3 Inputs; voltage, resistance, and amperage. 3 Outputs; voltage, relay, and amperage
  • PLC Data (8 inputs)
  • Optional DC dynamic braking
  • Current limiting protection
  • Programmable acceleration/deceleration, and on-board PID control loop
  • Integral communication RS485
  • Multiple Languages: English, Spanish, German
- Crating for shipment via motor freight

INCLUDES

- 3-Phase Inverter-Duty Motor
- 3-Pole Circuit Breaker
- Pilot Light and E-Stop Switch
- Safety Interlock
- Keyed Instructor Switch
- Simulated Remote Operator Control Panel
- 29 Banana Jack Connections
- 35 Tip-Jack Connections
- 8 Instructor Fault Switches
- PowerFlex 40 VFD
- #429-500 - Use/Exercise Guide

COURSE CONTENT The standard courseware includes 26 exercises as follows:

- Introduction to the DAC #429E Variable Frequency Drive Trainer, Extended - PowerFlex40
- Variable Frequency AC Drive Theory, Terms and Abbreviations
- Investigating the Electrical Connections of the Allen-Bradley PowerFlex 40 Variable Speed Drive
- Checking the Nameplate Data
- Preforming Pre-Power Checks and Start Up

- Familiarization with the Front Panel Control and Indications
- Resetting the AC Drive Parameters to the Factory Defaults
- Checking and Setting Minimum and Maximum Frequency
- Checking and Setting Acceleration and Deceleration Timing
- Programming Over Current Safety Features
- Familiarization With Nameplate Parameters
- Checking and Setting Jog Parameters
- Observing and Plotting the Ramping Characteristics
- Programming and observing the Skip Frequency and Skip Frequency Bandwidth Controller Functions
- Programming Operating Frequencies (Motor Speeds)
- Programming AC Drive Outputs
- Using External Voltage and Current Sources of Motor Control
- Introduction to Troubleshooting
- Troubleshooting Exercises (8 Exercises Provided)

PRODUCT DIMENSIONS

- **Product Dimensions**
  (L x W x H)
  19in. x 20in. x 24in. (480 x 6508 x 10 mm)
  68lbs. (31kg)

- **Shipping Dimensions**
  (L x W x H)
  21in. x 24in. x 30in. (533 x 609 x 762mm)
  105 lbs. (48 kg)

UTILITIES

- 208-230V/60Hz/3Ph

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