Advantage Size 1 with WPONIDNA DeviceNet Module

Freedom AE19 IEC Size D with C395DNA DeviceNet Module

Motor Starters and Contactors

Cutler-Hammer offers two lines of Intelligent Motor Starters — Advantage® and Freedom AE19/AN19 — to start, stop and protect AC motors. Both incorporate accurate solid-state overload protection and communicate over DeviceNet via an add-on module.

Compared with standard AC motor starters, the Advantage and Freedom AE19/AN19 motor starters offer the following:

Reduced Downtime

- **Diagnostics/Remote Troubleshooting** – The starter's status (on, off, tripped), the cause of any trip or alarm and motor current are communicated over DeviceNet. The starters also communicate the percent of motor thermal capacity, enabling the user to make load adjustments and avoid overcurrent trips.
- **Advanced Protection Features** – In addition to solid-state overcurrent protection, both the Freedom AE19/AN19 and Advantage starters offer the following protection features:
  - Phase Loss Trip
  - Phase Unbalance Trip
  - Ground Fault Trip (Advantage only)
  - Adjustable Trip Class 10, 20 or 30

  The Freedom AE19 and AN19 also offer the following:
  - Mechanical Jam Trip to turn off motor if the load is jammed or binding
  - Design E and Custom Trip Class
  - Custom FLA setting
  - Anti-recycle delay on start-up to avoid starting the motor before it or the load has settled

Improved Productivity

- **Remote On/Off and Reset Control** – DeviceNet communications delivers fast, deterministic control of the starters.
- **Process Information** – motor status and current — for each phase and the three phase average — are communicated over DeviceNet for data gathering and monitoring.

Faster Installation

- **Wide, Programmable Current Range** – Rather than stocking and locating the correct heater or overload relay for each motor, each Advantage or Freedom AN19 starter is adjustable to cover an entire NEMA frame size. And for IEC applications, two electronic overload relays cover the following wide ranges with the Freedom AE19: .25 – 19.9A; 10.3 – 35.5A.
- **Remote Programming** – All set points of the Freedom AE19 and AN19 may be programmed over DeviceNet.

Other Benefits

- **Smaller Panel Space, Less Heat, Lower Energy Usage** – The Freedom AE19/AN19 and Advantage Starters are among the most space efficient in the industry. And since their electronic overload protection generates significantly less heat than conventional starters, additional enclosure savings may be realized. Electronic overload protection also consumes less energy than standard bimetallic or eutectic overload relays.
- **Wire and Space-Saving Operator Interface Panels** – Advantage Control Modules (ACMs) provide pilot light and pushbutton features while saving panel space and wiring. Diagnostic LED functions include on, off, alarm and trip.

Enclosed Control

- **Advantage** – Refer to Cutler-Hammer Enclosed Control Catalog #SA-137 for descriptions and pricing of all Advantage Enclosed Control options — including combination starters and pump control panels.
- **Freedom** – Consult factory for availability of NEMA and IEC enclosures, including combination starters.

Application Comparison — Freedom AE19/AN19 and Advantage

Freedom AE19/AN19

Starters: AN19:
NEMA Size 00-1
AE19:
IEC 0.25 through
32 Amperes (20 hp at
460V AC)

Control Voltage
120V AC, 60 Hz
110V AC, 50 Hz

Reversing and Non-reversing
Enclosed
Combination Starters

Non-Combination Starters

Advantage

Starters: NEMA Size 00-6
No IEC
Contactors: NEMA Size 1-6

Control Voltage
120V AC, 60 Hz
110V AC, 50 Hz

Reversing and Non-reversing
Enclosed
Combination Starters

Non-Combination Starters,
Pumping Panels,
Reduced Voltage Starters,
Multi-Speed Starters,
Motor Control Centers

Advantage NEMA Size 1 Starter with WPONIDNA DeviceNet Module

Advantage NEMA motor starters provide accurate electronic overload protection and additional protection features as standard. Advantage starters and contactors use the patented SURE microprocessor to regulate power to the operating coil for increased life. Advantage starters are typically 20% to 80% smaller than conventional NEMA devices, while at the same time achieving longer operational life. With the optional WPONIDNA module, the starters and contactors are capable of being controlled and monitored over DeviceNet.

Refer to Advantage Product Guide Publication Number PG.8E.01.T.E for more information on Advantage contactors and starters.

Motor Protection

- Solid State Overload Protection — accurate to 2%
- Phase Loss Trip (may be disabled)
- Phase Unbalance Trip (may be disabled)
- Ground Fault Trip (may be disabled)
- Class 10, 20 or 30 Adjustable Class Settings
- Programmable Manual or Auto Reset on Thermal Trip

Communications Capability ①

- ON/OFF Control
- Trip Reset
- Three Phase Motor Current
- Average Motor Current
- Starter Status (off, power on, running, tripped)
- Percent Thermal Capacity
- Percent Phase Unbalance
- Cause of Trip Indication
- Data at Time of Trip — phase currents, percent motor thermal capacity
- True Contactor Status without additional hard-wire input

① Advantage contactors provide only remote on/off control and on/off status via communications.

Programming

- All program set points set via DIP switches on faceplate

Mounting, Installation and Use

- A full line of snap-on accessories for all sizes
- Straight through wiring — line lugs at top, load lugs at bottom
- Horizontal or vertical mounting on upright panel for application flexibility
- Accessible terminals for easy wiring
- Meets or exceeds all NEMA, UL and CSA standards
- Sizes based on standard NEMA classifications

DeviceNet I/O Assembly Data Attributes

The following DeviceNet input/output assemblies are supported by an Advantage starter with a WPONIDNA communications module. 125 Kbaud master-slave poll (not bit strobe) I/O connections are supported.

Name	Input Data	Size in Bits	Output Data	Size in Bits
ODVA Basic Contactor ②	—	—	Run Status	1
ODVA Basic Overload ②	Tripped	1	Trip Reset	1
ODVA Basic Starter ②	Tripped Running	1 1	Run Status Trip Reset	1 1
Advantage Contactor	Tripped Control from Network	1 1	Run Status	1
Advantage Overload	Tripped Control from Network	1 1	Trip Reset	1
Advantage Starter	Tripped Thermal Warning Running Ready Control from Network	1 1 1 1 1	Run Status Trip Reset	1 1
Advantage Starter with Average Current	Tripped Thermal Warning Running Ready Control from Network Auxiliary Feedback % Thermal Capacity Average Motor Current % Phase Imbalance	1 1 1 1 1 1 8 16 8	Run Status Trip Reset	1 1
Advantage Starter with Three Phase Currents	Tripped Thermal Warning Running Ready Control from Network Auxiliary Feedback Current Phase L1 Current Phase L2 Current Phase L3	1 1 1 1 1 1 16 16 16	Run Status Trip Reset	1 1

② As defined by the Open DeviceNet Vendors Association Starter SIG.

Accessories and Field Modification Kits

DeviceNet Communications Module

The DeviceNet Communications module (Catalog Number WPONIDNA) is designed to plug into the Advantage with the attached cable and plug. The module can be snapped onto the top or bottom of the Advantage unit. It can also be mounted separately using the mounting plate assembly (Catalog Number WPONIBASE). The module provides DeviceNet users with the ability to control and monitor the functions of the Advantage system at 125 Kbaud. A connector is provided so that a hand/off/auto hard contact may be used to selectively enable or disable the output of the control functions from the module without affecting its ability to monitor. A "Feedback" input is provided so that the state of an auxiliary contact may be read over the DeviceNet network.

Three bicolor LEDs indicate:

- DeviceNet address
- Network status (including connected, not connected, not powered)
- Module status (including normal operation, minor fault, needs commissioning)

DeviceNet Interface

Description	Catalog Number
DeviceNet Interface Module	**WPONIDNA**
Mounting Plate Assembly	**WPONIBASE**

Ratings

Voltage	Make	Break
NEMA A600 — 120 – 600V AC	7200 VA	720 VA
NEMA Q300 — 125 – 300V DC	69 VA	69 VA

Auxiliary Contact Modules

Contact Type	Catalog Number
2 NO, 2 NC	**W22**
3 NO, 1 NC	**W31**
4 NO	**W40**
4 NC	**W04**
1 NO, 3 NC	**W13**
1 NO, 1 NC and 2 tie points	**W11T**

Type W Auxiliary Contact Modules

- Provide four separate contact sets which wire vertically and are color coded; black designates NC and silver designates NO
- Up to two auxiliary contact modules can be mounted for a total of up to eight contact sets
- Provide circuit isolation (no polarity restrictions) and single break bifurcated contacts
- Common design fits all sizes 1 – 6

Bell Alarm Module

- Simple snap-on mounting — see mounting examples next page
- Isolated NO and NC contacts (1 each)
- Plugs into Reset port
- Remote electrical Reset wired to Cat. No. WBELL module

Form C Contact Ratings Maximum Amperes — 120V AC		Catalog Number
Make	Break	
2880 VA	480 VA	**WBELL**
Continuous Current Rating: 5 amperes		