Advantage
VARIABLE SPEED DRIVES

Water Circulation
Pumps & Circulators

Pump Controller Card – For Advantage 61 Drives

The Advantage VFD Pump Controller Card provides cutting-edge PID control for the Advantage 61, E-Flex, and M-Flex variable speed drive lines. The card is capable of supporting both HVAC and domestic water boosting applications.

For parallel or standby pumping applications, the Advantage VFD Pump Controller Card will modulate, stage, and alternate up to four pumps. Only one controller card is required to deliver all the functionality. Additional VFDs are connected (daisy chained) via standard Ethernet (RJ45) and are automatically 'discovered' (plug and play) by the controller card.

Precision control is achieved by monitoring pressure, differential pressure, or central plant differential temperature. The card receives a signal from the transmitter(s) or probes and then modulates the VFDs according to internal algorithms and user defined setpoints.

For Advantage 61 Drives

Taco
systems made easy®

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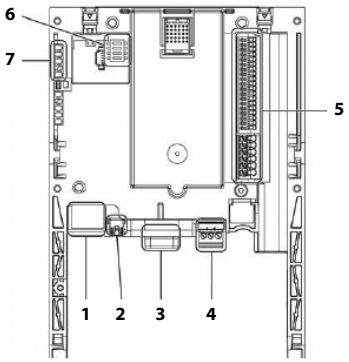
Features & Benefits

- **Multiple System Monitoring Options** – Controls variable speed pumps based on three different user selected metrics for variables including building pressure, three independent zones of differential pressure (Delta P) or central plant supply and return temperature (Delta T).
- **Pump Staging and Duty Sharing for Four Pumps** – Monitors system demands and stages pumps on and off to satisfy demand and optimize energy efficiency. Duty shares to provide either equal run time or skewed run time, delivering preferential loading to owner designated equipment.
- **Differential Pressure Control** – Monitors up to a three zone differential pressure system. The Advantage VFD Pump Controller Card determines the zone with the highest demand based on a predetermined setpoint for each zone. It then regulates speed and staging/destaging based on the requirements of the most critical zone.
- **Flow Reject Function** – Enhances system efficiency with the usage of flow meters. By configuring the flow value for a single pump system in the Delta-P menu, the system will de-stage all other pumps in operation if the flow value drops below the flow capabilities of a single pump. This de-staging provision operates in addition to the standard de-stage function which may be based on feedback error.
- **Fault Tolerant Control** – Ensures that the system can still be satisfied if signal loss occurs from any sensor. The pumps immediately go to a user defined default speed mode (factory preset 45 Hz) and the controller notifies the BMS that a fault has occurred.
- **Life Cycle Optimization** – Improves the pump life cycle by hydraulically stable control, end of curve protection, as well as energy optimization.
- **Drive Parameterization** (Auto-Commissioning) – Reduces drive setup time by transferring master drive/motor parameters to other VFDs in the system.

Parts Description



1 Ethernet port used for programming with SoMachine and for Modbus TCP communication.

2 Mini-USB B port used for programming with SoMachine.

3 9-pin male SUB-D connector for connection to the CANopen® bus.

4 Connector with removable screw terminals, 3 contacts intervals of 3.81 mm (0.15 in.) for the 24 Vdc power supply.

5 10 logic inputs, 6 logic outputs, 2 analog inputs, 2 analog outputs and 5 commons.

6 Block of 4 configuration switches.

7 5 LEDs, comprising:

- 1 LED G/Y ETH (EtherNet activity)
- 1 LED G/R NS (Network Status)
- 1 LED G/R MS (Module Status)
- 1 LED G/R CAN (CANopen®)
- 1 LED G/R USER programmable from the customer

Part Number	Description
VW3A3521S0M	ADVANTAGE 61 VFD PUMP CONTROLLER CARD
VW3M3805R010	Cable #1: DB-9 to RJ45 for CAN tap w term in DB-9
VW3CANCARR1	Cable #2: CANopen cable 1 m
TCSCTN023F13M03	Splitter: RJ45 DAISYCHAIN TAP W 0.3M DROP CABLE
TCSCAR013M120	Termination Resistor RJ45
TDG1026KS-C5E	Category 5E Shielded RJ45 (8x8) Keystone Feed-Thru Coupler

Terminal	Function
24 V	Power supply for the Advantage VFD Pump Controller Card, logic outputs and analog outputs.
COM	Common ground and electrical 0V of the Advantage VFD Pump Controller Card power supply, logic inputs, (LI••), outputs (LO••), analog inputs (AI••) and analog outputs (AO••). This ground and electrical 0 V are common with the drive ground and electrical
LI51 to LI60	24 VDC logic inputs
LO51 to LO56	24 VDC logic outputs
AI51 and AI52	0 ... 20 mA analog inputs
AO51 and AO52	0 ... 20 mA analog outputs

Power	Voltage	V	24 VDC (min. 19, max. 30)
Current Consumption	Maximum	A	2
	No-Load	mA	80
	Using logic output	mA	200 maximum (1)
Analog inputs (1)	AI51, AI52		2 current analog inputs 0…20 mA, impedance 250Ω Resolution: 10 bits Accuracy: ± 1 % for a temperature variation of 60 °C Linearity: ± 0.2 % of the maximum value Common point for all the card I/O (2)
Analog outputs	AO51, AO52		2 current analog outputs 0…20 mA, impedance 500Ω Resolution: 10 bits Accuracy: ± 1 % for a temperature variation of 60 °C Linearity: ± 0.2 % of the maximum value Common point for all the card I/O (2)
Logic inputs (2)	LI51…LI60		10 logic inputs, 2 of which can be used for 2 counters or 4 of which can be used for 2 incremental encoders Impedance 4.4 kΩ Maximum voltage: 30 VDC Switching thresholds: State 0 if Ω 5 V or logic input not wired State 1 if Ω 11 V Common point for all the card I/O (2)
Logic outputs	LO51…LO56		Six 24 VDC logic outputs, positive logic open collector type (source),compatible with level 1 PLC, standard IEC 65A-68 Maximum switching voltage: 30 V Maximum current: 200 mA Common point for all the card I/O (2)
I/O connection	Type of contact		Screw, at intervals of 3.81 mm2
	Maximum wire	mm2	1.5 (AWG 16)
	Tightening torque	Nm	0.25
Lithium battery	Life		8 years approx.

(1) If the power consumption table does not exceed 200 mA, this card can be powered by the drive. Otherwise, an external 24 VDC power supply must be used.

(2) This common point is also the drive 0 V (COM).
Note: When the VW3A3503M Advantage VFD Pump Controller Card is installed, the analogue inputs may be configured for 4-20 mA in screens.

Taco® systems made easy®

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