Advantage
VARIABLE SPEED DRIVES

S-Flex™ – Enclosed drives

The S-Flex™ enclosed drive, designed with input from HVAC consultants and contractors, was developed specifically for commercial pump applications, providing the most effective solution with the quickest payback.

Taco
systems made easy®

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Features & Benefits

The best drive for commercial pump applications

Save Time

Because specifying drives can be timeconsuming, the S-Flex drive includes the most common requirements in HVAC specifications for pump and fan applications, such as:

- Simple start-up including preprogrammed parameters for pump and fan applications
- Windows-based PCSoft software that allows you to:
  - — Adjust parameters
  - — Store and transfer drive configuration files
  - — Monitor drive performance, including historical data
  - — Configure, adjust and control remotely
  - — Store drive configuration programs
- Quick installation with EZ-M mounting
- Easy wiring conduit knock-outs on the enclosure
- Dedicated wiring terminal block
- Stock availability so that the S-Flex drive is ready when you are

Save Money

Offering unmatched value in installed cost and functionality, the S-Flex drive allows building owners, consulting engineers and contractors to focus on the essentials of demanding commercial building applications.

More than dollars and cents, you'll save with:

- Industry-leading reduced harmonic technology – eliminating the need for line reactors and DC chokes
- Energy savings – designed with energy economizing motor algorithms that maximize energy savings by reducing electricity usage
- Internal PID regulator – allowing flow rates to be adjusted for actual needs without additional hardware
- Reduced equipment maintenance cost and downtime
- 24/7 live technical support

Save Space

The most slender design in the Flex drive family, the S-Flex enclosed drive offers a compact product with just the right features for most HVAC applications. When space is a concern, we've got you covered with:

- Slender design for minimal wall space
- Minimal space requirements between drives for side-by-side wall mounting
- Retrofitting of HVAC systems in existing mechanical rooms

Think Green

The S-Flex enclosed drive assists with Leadership in Energy and Environmental Design (LEED™) certification. Green buildings enhance occupant comfort and health, decrease vacancy rates, increase building valuation, and improve the bottom line by reducing operating costs. A building that runs smoothly ensures comfortable tenants and comfortable tenants mean less vacancy.

Going green with the S-Flex drive offers:

- Building owners the ability to take advantage of state and local government energy incentives
- More marketable buildings to tenants seeking energy efficient/ sustainable facilities
- Retrofitting to existing systems
- The most efficient method of partial load control

Industry-leading Reduced Harmonic Technology (RHT)

The S-Flex drive revolutionizes harmonic mitigation with its innovative reduced harmonic technology. Significant harmonic reduction is achieved within the diode capacitor and power conversion section of the variable frequency drive, eliminating the need for a line reactor or bus reactor, which results in:

- Higher equipment efficiency
- Reduced equipment cost
- Fewer points of electrical failure
- Smaller enclosure size
- Lighter weight

Harmonics can be present in voltage, current or both. Any power source that converts AC to DC can generate harmonics. Typical sources include:

- Office equipment
- Computers
- Medical equipment
- Microprocessors
- Uninterruptible power supplies
- Fluorescent lamp ballasts

Harmonic currents do not add additional power to the electrical system, but additional current flows through electrical wires. Effects may include:

- Overheating of electrical distribution system wiring
- Shortened transformer life
- Decreased power factor
- Disturbance of power measuring systems

Horsepoer Range:
- 1–40 hp at 208 Vac and 230 Vac
- 1–100 hp at 460 Vac

Built-in EZ-M mounting feature for quick and easy parallel alignment and mounting

S-Flex drive uses an Advantage 212 drive power converter with reduced harmonic technology and IGBT inverter with pulse width modulated output

Optional LCD text keypad

Built-in Modbus™, BaCnet, Metasys N2, Apogee P1 communication capability and options for LonWorks

Programming and diagnostics in plain English with PCSoft Superscript™ software

Adjustable frequency controller (AFC) – off – bypass selector switch

Optional drive input disconnect switch provides an input line power disconnect switch between the main power disconnect and the power converter

Optional line contactor provides an electrically interlocked line contactor between the main power disconnect and the power converter

Power-on mode red LED indicator

Bypass mode green LED indicator

Terminal block for customer's control connections terminal block

Full voltage bypass contactors

100 kAIC UL 508C rating and full voltage bypass

Square D circuit breaker for disconnect and over current protection

Hinged door with latches for quick and easy interior access

Conduit knockouts on bottom of enclosure for quick and easy wiring

Selection Guide

208 V	HP	Full Load	Height		Width		Depth		Weight	
Catalog Number		A	in.	mm	in.	mm	in.	mm	lbs	kgs
DSC2Y00	1	4.6	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSD2Y00	2	7.5	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSE2Y00	3	10.6	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSF2Y00	5	16.7	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSG2Y00	7.5	24.2	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSH2Y00	10	30.8	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSJ2Y00	15	46.2	45.142	1146.6	12.215	310.3	8.725	221.6	111	50.349
DSK2Y00	20	59.2	45.142	1146.6	12.215	310.3	8.725	221.6	111	50.349
DSL2Y00	25	74.8	45.142	1146.6	12.215	310.3	8.727	221.6	111	50.349
DSM2Y00	30	88	62.006	1575.0	12.532	318.3	10.916	277.3	140	63.503
DSN2Y00	40	114	64.900	1648.5	15.243	387.5	11.915	302.7	206	93.440

230 V	HP	Full Load	Height		Width		Depth		Weight	
Catalog Number		A	in.	mm	in.	mm	in.	mm	lbs	kgs
DSC3Y00	1	4.2	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSD3Y00	2	6.8	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSE3Y00	3	9.6	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSF3Y00	5	15.2	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSG3Y00	7.5	22	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSH3Y00	10	28	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSJ3Y00	15	42	45.142	1146.6	12.215	310.3	8.725	221.6	111	50.349
DSK3Y00	20	54	45.142	1146.6	12.215	310.3	8.725	221.6	111	50.349
DSL3Y00	25	68	45.142	1146.6	12.215	310.3	8.727	221.6	111	50.349
DSM3Y00	30	80	62.006	1575.0	12.532	318.3	10.916	277.3	140	63.503
DSN3Y00	40	104	64.900	1648.5	15.243	387.2	11.915	302.7	206	93.440

460 V	HP	Full Load	Height		Width		Depth		Weight	
Catalog Number		A	in.	mm	in.	mm	in.	mm	lbs	kgs
DSC4Y00	1	2.1	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSD4Y00	2	3.4	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSE4Y00	3	4.8	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSF4Y00	5	7.6	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSG4Y00	7.5	11	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSH4Y00	10	14	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSJ4Y00	15	21	40.375	1025.5	8.714	221.3	7.895	200.5	52	23.587
DSK4Y00	20	27	45.142	1146.6	12.215	310.3	8.725	221.6	111	50.349
DSL4Y00	25	34	45.142	1146.6	12.215	310.3	8.725	221.6	111	50.349
DSM4Y00	30	40	62.006	1575.0	12.532	318.3	10.916	277.3	140	63.503
DSN4Y00	40	52	62.006	1575.0	12.532	318.3	10.916	277.3	140	63.503
DSP4Y00	50	65	62.006	1575.0	12.532	318.3	10.916	277.3	140	63.503
DSQ4Y00	60	77	62.006	1575.0	12.532	318.3	10.916	277.3	140	63.503
DSR4Y00	75	96	64.900	1648.5	15.243	387.2	11.915	302.7	206	93.440
DSS4Y00	100	124	64.900	1648.5	15.243	387.2	11.915	302.7	206	93.440

Electrical Specifications	
Input voltage	208 Vac ±10%, 230 Vac ±10%, 460 Vac ±10%
Displacement power factor	Approximately 0.96
Input frequency	60 Hz ±5%
Output voltage	Three-phase output, maximum voltage equal to input voltage
Galvanic isolation	Galvanic isolation between power and control (inputs, outputs and power supplies)
Frequency range of the power converter	0.1 Hz to 500 Hz (factory setting of 60 Hz maximum)
Current limit	150% of nominal drive full load amperage (FLA) for 60 s
Switching frequency	Selectable from 2 kHz to 16 kHz (1)
Speed reference	AI1: 0 V to +10 V, Impedance = 30 kOhms, AI3: 4 mA to 20 mA, Impedance = 250 kOhms 0 mA to 20 mA (reassignable, X–Y range with keypad display) Manual speed control via keypad
Frequency resolution in analog reference	0.1 Hz to 100 Hz (10 bits)
Speed regulation	V/f: determined by motor slip, typically 3% SLFV (sensorless flux vector): 1%
Efficiency	Typically greater than 95%
Inputs and outputs	3 Multi-function programmable Logic Inputs 2 Analog inputs; VIA (4 mA to 20 mA or 0 V to 10 V), VIB (0 V to 10 V) 1 Analog output; X mA to Y mA or 0 V to 10 V, software selectable 2 Assignable output relays; 1 fault relay, 1 assignable relay 1 RJ45 RS485 Modbus port
Acceleration and deceleration ramps	0.1 s to 999.9 s (adjustable in 0.1 s increments)
Motor protection	Class 10 and Class 20 overload protection with bypass in addition to controller internal electronic thermal protection
Keypad display	Self-diagnostics with fault messages in three languages. Also refer to instruction manual, 30072-451-61

Environmental Specification	
Storage temperature	-13° F to +158° F (-25° C to +70° C) with vent cover removed and without derating
Operating temperature	+14° F to +122° F (-10° C to +50° C)
Humidity	95% with no condensation or dripping water, conforming to IEC 60068-2-3
Altitude	3300 ft (100 m) maximum without derating; derate the current by 1% for each additional 330 ft (100 m)
Enclosure	Type 1
Pollution degree	Pollution degree 2 per NEMA ICS-1 and IEC 60664-1
Resistance to vibrations (power converter only)	According to IEC 60068-2-6: 1.5 mm zero to peak from 3 Hz to 13 Hz 1 g from 13 Hz to 150 Hz
Resistance to shocks (power converter only)	According to IEC 60068-2 15 g, 11 ms
Transit test to shock	Conforming to National Safe Transit Association and International Safe Transit Association test for packaging weighing 100 lbs or less
Codes and standards	UL listed per UL 508C as incorporating Class 10 and Class 20 electronic and electromechanical overload protection. Conforms to applicable NEMA ICS, NFPA, IEC and ISO 9001 standards

Accessories Catalog Numbers	
Modbus Cable for PCSoft	VW3A8106
EZ-M mounting channel, 72 in. length	EZM72MC
LonWorks communication card for field mounting	VW3A21312

S-Flex™ Series Callout

1 Keypad display for configuration and monitoring

- Optional LCD keypad

2 Through the door disconnect

- Electrical disconnect circuit breaker handle with electrical lock-out/tag-out

3 Front access selector and lights

- Adjustable Frequency Controller (AFC) – off – bypass selector switch
- Power-on mode red LED indicator
- Bypass mode green LED indicator

4 EZ-M channel mounting

- EZ-M mounting feature interface built into the enclosure makes parallel alignment of multiple drives quick and easy with an EZ-M mounting channel

5 Hinged NEMA 1 rated enclosure

- Hinged door for quick and easy interior access
- Run status LED

6 Conduit knockouts

- Conduit knockouts on bottom of enclosure for quick and easy wiring to line and load terminals and control wiring terminations

7 Short-circuit protection

- Square D circuit breaker offers electrical disconnect and over current protection
- 100,000 A interrupt current (AIC) fully coordinated current rating to UL 508C and NEMA ICS7.1

8 Bypass contactor or optional non-bypass contactor

- Full voltage bypass contactors with electrical interlocks allow for emergency full speed operation

9 Terminal block

- Easy customer control wiring interface with terminal block connections

Notes

In order to provide the most efficient pump solution to our customers, Taco is now working with Schneider Electric.

This collaboration brings together Taco's pump technology with Schneider Electric Variable Frequency Drives and the drive packaging of Square D enclosures to offer the best overall pumping solution for our customers.

SQUARE D

by Schneider Electric

systems made easy®

Taco Inc., 1160 Cranston Street. Cranston, RI 02920 / (401) 942-8000 / Fax (401) 942-2360
Taco (Canada) Ltd., 8450 Lawson Road, Unit #3, Milton, Ontario L9T 0J8 / (905) 564-9422 / Fax (905) 564-9436
www.taco-hvac.com