

## Dart Controls Application Note

### Conveyor-Based Equipment



One of the most common applications for Dart products are conveyors / conveyor-based equipment. Advances in automation have been applied to every industry and the equipment used – to increase throughput and efficiency. One of the simplest and most effective solutions is to apply conveyor material handling concepts to food preparation, packaging, printing, heat treating, drying, cleaning, etching, and many other applications. These solutions need to be reliable, repeatable, and ever more (data) accessible by supervisory systems.

A recent search of online information yielded literally thousands of suppliers in hundreds of ‘conveyorized’ OEM equipment categories (see next page). Yet, the application of Dart products across all these scenarios boils down to a few common scenarios:

#### **Basic – No Supervisory Control**

Control is mounted on the equipment frame, or possibly a control box. Many of these have or are moving to AC variable speed, but for DC motors the **15DVE / 253G-E** enclosed models are a good fit. **Enclosed 65 Series** for battery / portable equipment (growing segment!). For food prep / drying / more advanced stand alone ovens, the **MD Series** is desired due to its accurate, repeatable speed and programmable display in rate or time units.

#### **Basic – With Supervisory Control**

With the addition of a local plc/micro-controller, this level of equipment will most likely have a control cabinet in which the conveyor drive may be installed (open chassis). Also typical is the need for the drive to interface with the local controller via analog voltage/mA signal. **125 / 150 / 253 Series** for DC motors with **-5 / -55 options** are commonly used, where the options mount integral with the control being used to provide an isolated (desired speed) signal input.

#### **Advanced**

An advanced application generally includes one or more of the following characteristics:

- Supervisory plc/micro-controller/HMI in the equipment
- Synchronization of two or more motors – changing proportional feed of multiple materials in packaging, plastic injection molding, and mixing/blending using **MD Series** or **ASP Series** in Master/Follower mode
- Drive integration into a cloud-based service – the ability to remotely support and diagnose equipment is a rapidly growing OEM requirement for controls – the Dart **150 (DC SCR)** and **730 (BLDC) Series** control both offer Modbus serial interface options. Control status and command information flows constantly between the Dart control and the Supervisory control – which itself has connectivity to the cloud / OEM developed applications. It is important for the Dart control to act as a ‘sensor’ in these applications, providing information about the equipment not available from any other source

#### **Other Opportunities**

Larger conveyor-based systems will typically use VFD’s with AC motors – there still can be a need for motor synchronization and integration to the cloud. The **ASP40** can accomplish both.

Remember the **DP4** as well – a scalable Rate, Time, % display used with any drive brand or type that accepts a 3-wire speed pot input

Finally, the **PU Series** encoder is a simple yet rugged way for a plc/HMI to monitor actual speed in any equipment.

<b>Category</b>	<b># Suppliers</b>	<b>Category</b>	<b># Suppliers</b>
Conveyorized Benches	10 Suppliers	Hygienic Conveyors	18 Suppliers
Conveyorized Workstations	26 Suppliers	Inclined Conveyors	294 Suppliers
Conveyorized Aqueous Cleaning Systems	17 Suppliers	Infrared Conveyors	13 Suppliers
Conveyorized Component Inspection Equipment	8 Suppliers	Lattice Conveyors	6 Suppliers
Conveyors	1,996 Suppliers	Link Conveyors	13 Suppliers
Accumulating Conveyors	306 Suppliers	Mobile Conveyors	49 Suppliers
Carton & Case Conveyors	97 Suppliers	Modular Conveyors	114 Suppliers
Compact Conveyors	25 Suppliers	Newspaper Conveyors	24 Suppliers
Conveyor Dryers	105 Suppliers	Oven Conveyors	100 Suppliers
Message & Document Conveyors	14 Suppliers	Paintline Conveyors	15 Suppliers
Pharmaceutical Conveyors	175 Suppliers	Pallet Conveyors	266 Suppliers
Power & Free Conveyors	111 Suppliers	Pan Conveyors	58 Suppliers
Table Top Conveyors	173 Suppliers	Parts Conveyors	179 Suppliers
Postal Conveyors	20 Suppliers	Pipe Conveyors	22 Suppliers
Custom & Special Conveyors	613 Suppliers	Plastic Conveyors	81 Suppliers
Cleanroom Conveyors	38 Suppliers	Plating Conveyors	18 Suppliers
Heat Resistant Conveyors	44 Suppliers	Portable Conveyors	405 Suppliers
Heat Treating & Annealing Conveyors	28 Suppliers	Press Conveyors	53 Suppliers
Bakery Conveyors	62 Suppliers	Reciprocating Conveyors	84 Suppliers
Expandable Conveyors	96 Suppliers	Roller Conveyors	795 Suppliers
Extendable Conveyors	55 Suppliers	Sanitary Conveyors	79 Suppliers
Flexible Conveyors	133 Suppliers	Screw Conveyors	372 Suppliers
Prefabricated Conveyors	68 Suppliers	Shuttle Conveyors	49 Suppliers
Swivel Conveyors	13 Suppliers	Slat Conveyors	104 Suppliers
Beverage Container Conveyors	34 Suppliers	Sorting Conveyors	173 Suppliers
Chemical Handling & Processing Conveyors	58 Suppliers	Spindle Conveyors	10 Suppliers
Converging/Dividing Conveyors	33 Suppliers	Spiral Conveyors	130 Suppliers
Conveyor Contract Manufacturing	50 Suppliers	Stacking Conveyors	106 Suppliers
Electronic Assembly & Test Conveyors	15 Suppliers	Sugar Conveyors	16 Suppliers
Food Handling & Processing Conveyors	388 Suppliers	Telescoping Conveyors	69 Suppliers
First-In/First-Out Accumulating Conveyors	34 Suppliers	Tray Conveyors	67 Suppliers
24 Volt Accumulating Conveyors	28 Suppliers	Vibrating Conveyors	237 Suppliers
Induction Heating Conveyors	8 Suppliers	Weighing Conveyors	71 Suppliers
Inkjet Coding Conveyors	14 Suppliers	Flexible Screw Conveyors	28 Suppliers
Printed Circuit Board (PCB) Conveyors	34 Suppliers	Printing Equipment Conveyors	17 Suppliers
Auger Conveyors	38 Suppliers	Stainless Steel Conveyors	323 Suppliers
Automatic Conveyors	323 Suppliers	Drive Roller Motorized Conveyors	57 Suppliers
Baggage Conveyors	50 Suppliers	Printed Circuit Board (PCB) Conveyor Dryers	9 Suppliers
Belt Conveyors	1,560 Suppliers	Airline Baggage Conveyors	15 Suppliers
Bottle Conveyors	120 Suppliers	Assembly Line Conveyor Systems	110 Suppliers
Bucket Conveyors	292 Suppliers	Belt Conveyor Curves	50 Suppliers
Can Conveyors	100 Suppliers	Bolt Handling Conveyors	19 Suppliers
Chip Conveyors	128 Suppliers	Chip Handling Conveyors	52 Suppliers
Circulating Conveyors	18 Suppliers	Chip Processing Conveyors	23 Suppliers
Foodservice Conveyors	78 Suppliers	Heat Treating Conveyors	16 Suppliers
Freezing Conveyors	29 Suppliers	High Speed Conveyors	64 Suppliers
Furnace Conveyors	13 Suppliers	Hinged Steel Belt Conveyors	53 Suppliers
Garment Conveyors	24 Suppliers	Horizontal Motion Conveyors	89 Suppliers
Live Roller Conveyors	176 Suppliers	Light Materials Conveyors	140 Suppliers