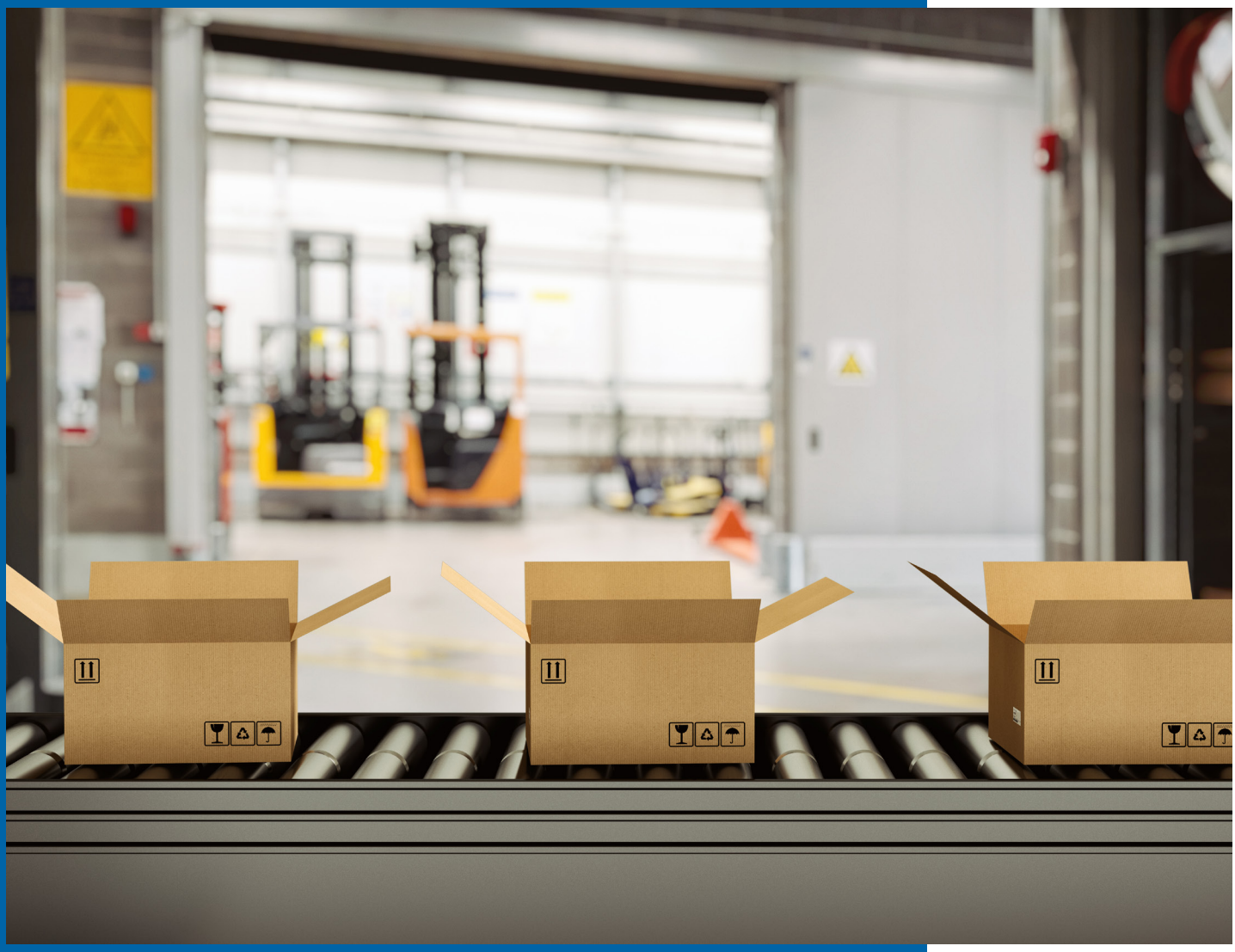
Packaging & Material Handling

The OEM and Installers Guide to Control Components for Packaging & Material Handling Equipment



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Everything under control.

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About c3controls

Since 1976 c3controls (c3controls.com) has provided OEMs and electrical equipment builders a comprehensive portfolio of industrial control products that meet the most demanding applications. By maintaining strict control over the development and manufacturing of all products, c3 can provide customers extraordinary value through unmatched quality, competitive pricing, same-day shipping and a 36-month product warranty. This vertically integrated approach coupled with a direct sales model brings c3 closer to the end-user, fostering a degree of innovation that leads the industry.

Glossary of Terms

Accumulator:
A machine at the end of a conveyor line used to gather and sort products or boxes. Common types include flow-in, re-flow, vertical, and rolco accumulators.

Automated Guided Vehicles (AGVs):
Also known as AGVs, these computer operated vehicles use sensors to move large materials safely across a predetermined path.

Bagger:
A machine that inserts products into and seals a bag. Common types include valve, open-mouth, vertical form fill, bulk, and pouch baggers.

Case Erector:
A machine that takes flat boxes and folds and forms them into package-ready boxes.

Controls System:
Critical to any packaging and material handling production line, a controls system includes components that manage, direct, and regulate the behavior of machines and devices throughout a facility. Key function areas include power & actuation, human machine interface, and control logic.

Conveyor:
A material handling apparatus for automatically transporting goods from one location to another. Common types include roller, belt, motorized, and overhead conveyors.

Cranes:
A machine equipped with ropes and chains used to lift, lower, and move extremely large and heavy materials. Common types include aerial, bridge, gantry, and jib cranes.

Diverter:
Used as part of a conveyor system to direct materials and products from one place to another.

Filler:
A machine used to insert a product into a bag or container. Common types include liquid, powder, vibratory weight, capsule, and pump fillers.

Hopper:
A large, funnel-shaped device used to temporarily store material before moving it to another receptacle.

Induction Subsystem:
A material handling subsystem that accepts material from the merge subsystem and spaces it out for inspection and/or sorting.

Labeler:
A machine that applies a label to finished products or boxes to display branding, consumer information, and/or shipping details. Common types include flat, wrap-around, hot glue, and rotary labelers.

Lift:
Equipment used to raise, move, and transport heavy goods from one place to another. Common types include stackers, forklifts, and bucket elevators.

Material Handling:
The movement, protection, and control of materials and products throughout manufacturing, packaging, storage, and distribution. Common equipment includes accumulators, automated guided vehicles, conveyors, cranes, diverters, hoppers, and lifts.

Merge Subsystem:
An initial material handling subsystem where products from multiple conveyors come together in a continuous feed.

Packaging:
The act of enclosing and protecting a product for distribution, identification, and/or storage. Common machines include baggers, erectors, fillers, labelers, sealers, and wrappers.

Robotics:
The use of robots to completely automate different packaging and material handling tasks for increased efficiency and productivity. Common types include articulated (for joint-like motion), cartesian (for lifting), SCARA (for high-speed sorting), and delta (for pick and place) robots.

Sealer:
A machine that seals a bag or box in order to protect and preserve the contents. Common types include heat, band, L bar, vacuum, and carton sealers.

Sort Subsystem:
A material handling subsystem that sorts materials from the induction subsystem and sends them off to packaging or final shipment.

Wrapper:
A machine that encloses a product or group of boxed products with plastic film or paper for protection and secure transfer. Common types include flow, over, shrink, and stretch wrappers.

Industry Outlook

For more than 50 years, c3controls has been a leading manufacturer of quality electrical controls for packaging and material handling equipment. Our experience serving some of the world's largest industries has given us a deep understanding of industry trends and the challenges manufacturers face.

As demand for automated packaging and material handling continues to grow, manufacturers must find ways to meet increasingly demanding requirements, including:

- **Calls for sustainability** that demand product and process innovation.
- **Cost pressures** that insist that more sustainable products are also less expensive.
- **A need for automation** to overcome workforce shortages and improve productivity.
- **Procurement improvements** to reduce downtime from long lead times for critical components.

In this era of continued transformation, having the right products, people, and processes can help your packaging and material handling operation improve productivity, adapt to changing demands, and stay competitive.

c3controls can help you succeed. Our vertically integrated approach allows us to operate efficiently, respond quickly to changing market conditions, and provide reliable electrical control products with fast delivery. We maintain strict control over our manufacturing processes to deliver consistent quality and performance for demanding applications.

Vertical integration also gives us greater control over quality and value. Our products are UL certified, CE marked, and backed by our Best-in-the-Business 36-Month Warranty—providing dependable performance without the premium price.

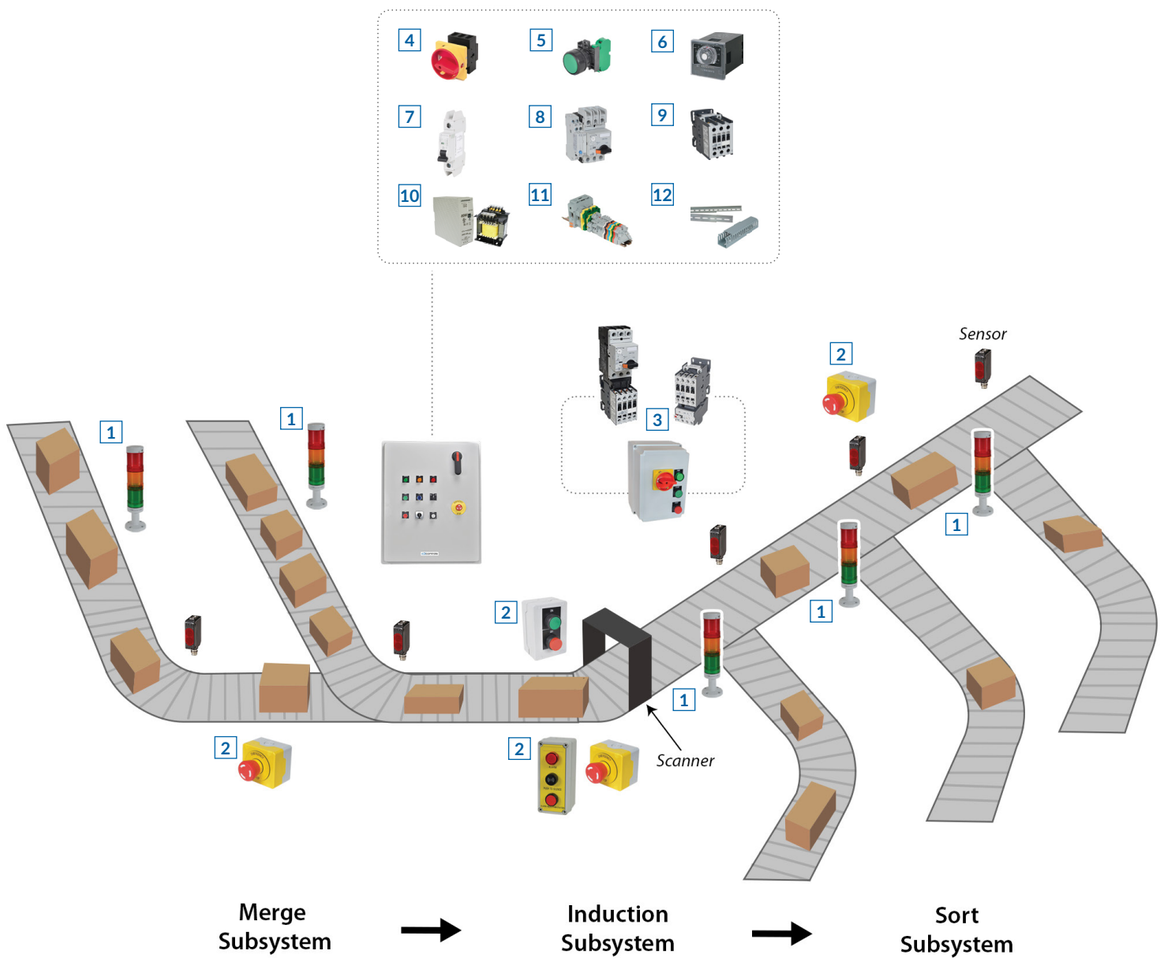
With over seventeen million product configurations from c3controls and custom UL 508A-certified panel solutions from Covenant Panelworks (CPW), you have a trusted source for complete electrical control solutions. Contact us today and discover how our expertise can help you improve productivity, reliability, and efficiency across your packaging and material handling operations.

Packaging & Material Handling Isometric

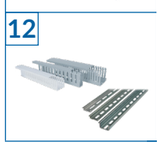
Here's a sample layout of a packaging & material handling application:

Application Overview

c3controls has electrical component solutions for all your packaging and material handling needs!



For illustration purposes only. Other solutions may be applicable depending on your application design requirements.

1	**Tower Lights**	Stackable design for up to 5 modules in a single assembly	Mounting options in three styles: 50mm direct mount, 50mm panel-mount short base, and 50mm panel-mount tall base	Voltage options available in 24V AC/DC, 120V AC, and 240V AC	Three styles of illumination: continuous, flashing and rotary	Continuous or intermittent sound modules with 80dB or 100dB sound output
2	**Control Stations**	Available as standard pre-configured assemblies of 30mm, 22mm IEC and 22mm NEMA	Enclosure constructions in Polycarbonate, Polyester, and Die Cast Aluminum	Operator options in both non-illuminated and illuminated	Each assembly comes with laminated, laser engraved legend plates	Fully assembled and ready to use out of the box
3	**Direct-On-Line Starters** (+enclosed)	Open-style starters consist of either a Contactor & Overload Relay, or a Motor Protection Circuit Breaker & Contactor	Enclosed starters come pre-wired with a variety of pilot device options	Factory assemblies provide the convenience of a single catalog number and shorter control panel bill of material		
4	**UL 508 Disconnect Switches** (+enclosed)	Door mount, panel-base mount, and panel mount with integral operator	Certified for use in Manual Motor Controller applications suitable as Motor Disconnects	16 - 125 Amps in 3, 4, and 5 pole configurations	Variety of operating handle styles and colors rated for Type 1, 2, 3, 3R, 4/4X, 12, and 13, IP55 and IP65	ABS plastic, polycarbonate, and carbon steel enclosures with Type 1, 4X, 12, 13 and IP65 ratings
5	**Pilot Devices**	Modular range of 30mm, 22mm, 16mm, and 13mm	Type 1, 2, 3, 3R, 4/4X, 12, and 13	Non-Illuminated, Illuminated and Keyed Operators in both maintained and momentary operations	Color-coded, snap-on contact blocks with angled captive screws and pressure plates	Full voltage, multi-voltage, resistor, and dual input light units in a wide range of voltages up to 600VAC/VDC
6	**Electronic Timing Relays**	Compact design, sizes in 17.5mm, 22.5mm, and 45mm wide	Single, dual and multi-functions	Easily select operating modes and timing ranges with accessible setting dials and DIP switches.	DIN Rail, Panel, Socket, and enclosure door mountings	Voltage inputs 20-240 VAC and 12-240 VDC
7	**Miniature Circuit Breakers**	UL 489 & UL 1077	1, 2 and 3 Pole combinations	10kA SCCR @ 480Y/277VAC	Current ratings up to 63 Amps	B, C and D curve ratings
8	**Motor Protection Circuit Breakers**	Multi-Function: Manual Motor Controller, Motor Disconnect, Group Motor Installations	50kA SCCR @ 480V	Self-protected Type E up to 50kA @ 460V	FLC up to 32 Amps	Trip Class 10 Thermal and Magnetic Elements
9	**IEC Contactors**	9 to 105 Amps	100kA SCCR @ 480V and 600V with Class J fuses	AC and DC - electronic coil control on DC devices	Integral auxiliary	Up to 75 HP @ 400V (55kW @ 400V)
10	**Power Supplies**	Industrial Power Supplies: Output power range from 60W to 480W, and adjustable voltage options in 12, 24 and 48V	Industrial Power Supplies: DC OK relay contacts are standard on 240W and 480W	Industrial Power Supplies: LED indication for visual of the DC power output	Control Circuit Transformers: 120V to 480V on primary side, 24V on secondary side	Control Circuit Transformers: Ideal for Class 2, Class 3, and general purpose applications
11	**IEC Terminal Blocks**	Screw Clamp, Spring Clamp, and Miniature	5mm - 25mm widths	25 - 230 Amps	Feed Through, Ground, Multi-Conductor, Double & Triple Level, Fuse Holder, Power Distribution, and more	DIN Rail mounting; snap-on, snap-off assembly
12 	**Wire Duct & DIN Rail**	Wire Duct: 13 dimensions from 25mm wide up to 80mm, and up to 2m in length	Wire Duct: Narrow and Wide Slot	DIN Rail: 35mm rails in steel and aluminum	DIN Rail: 1m (3.28ft) or 2m (6.56ft) lengths	DIN Rail: Standard package quantities, or pallet options available

c3controls Product Portfolio

Our 17 million+ product configurations deliver durability and reliability—even in the most punishing environments—meeting and exceeding global standards for quality and safety.

- series DS — DISCONNECT SWITCHES — NON-FUSED & ENCLOSED
- series 1100 series 1110 — MINIATURE CIRCUIT BREAKERS
- series 300 non-reversing series 310 reversing — CONTACTORS & CONTROL RELAYS
- series 320 — OVERLOAD RELAYS
- series 620 — DIRECT-ON-LINE STARTERS — CONTACTOR + OVERLOAD RELAY
- series E620 — ENCLOSED DIRECT-ON-LINE STARTERS — CONTACTOR + OVERLOAD RELAY
- series 330 series E330 — MOTOR PROTECTION CIRCUIT BREAKERS — OPEN & ENCLOSED
- series 630 — DIRECT-ON-LINE STARTERS — MOTOR PROTECTION CIRCUIT BREAKER + CONTACTOR
- series E630 — ENCLOSED DIRECT-ON-LINE STARTERS — MOTOR PROTECTION CIRCUIT BREAKER + CONTACTOR
- series 30 industrial series 30 hazardous — 30MM PILOT DEVICES — FOR INDUSTRIAL & HAZARDOUS LOCATION
- series 22 iec series 22 nema — 22MM PILOT DEVICES — IEC & NEMA
- series WTL — WORLD TOWER LIGHTS
- series CS — CAM SWITCHES
- series 16 — 16MM PILOT LIGHTS
- series 13 — 13MM PILOT LIGHTS
- series EC — CONTROL STATION ENCLOSURES
- series ECP 300 — ENCLOSED UL508A COMBINATION MOTOR STARTERS
- series EPS — ENCLOSED POWER SUPPLIES
- series ECP BP — VFD BYPASS PANELS
- series IPS — INDUSTRIAL POWER SUPPLIES
- series CCT — CONTROL CIRCUIT TRANSFORMERS
- series CPT — CONTROL POWER TRANSFORMERS
- series TB — TERMINAL BLOCKS
- series TBR — TERMINAL BLOCK RELAYS
- series ETR — ELECTRONIC TIMING RELAYS
- series 200 series 210 — GENERAL PURPOSE RELAYS
- series WD — WIRING DUCT
- series DIN — DIN RAIL

Industry White Papers

Product professionals AND subject experts!
Check out c3controls' extensive library of white papers:

Benefits of Type E/Type F Motor Protection Circuit Breakers

Benefits of Type E / Type F MPCBs

Adhering to NFPA 70 National Electric Code Article 430 could be a daunting task. Fortunately, manufacturers develop devices that combine these requirements in a singe device known as UL 508 Type E/Type F Combination Motor Controllers. Read our paper to better understand the differences between Type E and Type F.

READ WHITEPAPER

Material Handling Applications Overview

Material Handling - Applications Overview

As a process, material handling incorporates a wide range of manual, semi-automated and automated equipment and systems that support logistics and make the supply chain work. We have written a paper on the ABC's of a material handling conveyor system to help you understand or review the concepts behind this science. We hope you find it moving!

READ WHITEPAPER

Cost Considerations for Industrial Automation

Cost Considerations for Industrial Automation

Automation is taking over, including the industrial world. If you're investing in industrial automation, here are some cost considerations.

READ WHITEPAPER

Selecting and Installing Machine Tower Lights

Selecting and Installing Machine Tower Lights

Tower lights are important when the status of a machine or process needs to be known. Learn about their functions, features, configurations, and more.

READ WHITEPAPER

Replacing VFDs with Motor Starters

Unable to source variable frequency drives (VFDs) and soft starters due to the shortages of raw materials? You have a variety of choices when selecting an electric motor starter. Download our paper to see how you might be able to use standard motor control in place of a VFD.

READ WHITEPAPER

Trends in Consumer Packaged Goods Industry

The Consumer Packaged Goods Industry has always had to deal with the issue of people in close proximity to, or being involved in the packaging process. One impact of COVID-19 has been further automating packaging processes to mitigate the issues. Read to find out how automation and robotics will keep things moving.

READ WHITEPAPER

Why choose c3controls

Integrated Manufacturing

Vertical integration is the cornerstone of c3controls as it places innovation, development, design, manufacturing, testing, and shipping all within our control. With Everything Under Control, we can ensure the highest quality and customer satisfaction.

Innovation

Product innovation is in our DNA. We approach our products as solutions. Unlike our competition, our business model allows us to provide customers with premium controls without the premium price.

Same-Day Shipping

Reduce inventory. Improve cash-flow. Save money. Our customers enjoy peace of mind knowing they'll get what they need, when they need it. Our promise, guaranteed!

36-Month Warranty

With total control over engineering and manufacturing, we are able to guarantee the highest quality products on the market—products free of defects in material, workmanship, and design.

Advantage Pricing

Total control means lower overhead and direct sales. For our customers, this translates to savings of up to 40+% on c3controls premium products.

Customer First

Commitment to the success of our customers is a core value and the driving force behind all we do. We promise concierge style service that makes doing business easy, personalized, and responsive.

Notes

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