

**Motion Control**

*Direct*LOGIC DL05 PLC/HSIO Mode 30 Pulse Output to  
*SureStep* Stepper Drive with *C-more* Micro-Graphic Panel (HMI)

Part Feeder Station – Part 1 of 1

VID: L-PC-DL-HSIO-STP-001

**Bill of Materials****PLC:**

(1) DL05 CPU, 8 DC in / 6 DC out, requires external 110-220 VAC power. 6k words total (2048 words ladder - flash, 4096 words V-memory), RLL/RLLPLUS programming, built-in RS-232C programming port and additional RS-232C communications port. Inputs: 8 DC inputs, 12-24 VDC current sinking/sourcing, 2 isolated commons. First 3 inputs are configurable in one of several high-speed I/O features such as 5kHz counter input, pulse catch input, or interrupt input (not available when using pulse output). Outputs: 6 DC outputs, 6-27 VDC current sinking, 1.0A/point max., 1 common. 2 outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (0.5A/point) (not available when using high-speed inputs). One option slot available for I/O or communication module. ADC p/n **D0-05DD**

**4-20mA ANALOG CURRENT INPUT MODULE:**

(1) 4-channel analog input module, 12-bit resolution, range: 4-20 mA or 0-20 mA. ADC p/n **F0-04AD-1**

**OPERATOR INTERFACE (HMI):**

(1) 3.1-inch *C-more* Micro-Graphic Non-Touch Panel with green and red LED backlights. Supports 5 selectable backlight colors (Green, Red, Amber, Yellow and Lime). STN LCD monochrome, 128 x 64 dot display. Has 5 user-defined function keys with LED indicators. Power is supplied to the panel through the serial communication port connection when used with *Direct*LOGIC PLCs having an RJ12 communication port. EA-MG-SP1 (power supply with serial option module) required when connecting to third party PLCs. NEMA 4/4X, IP65 (when mounted correctly; for indoor use only). ADC p/n **EA1-S3ML-N**

**COMMUNICATIONS CABLE – PLC TO HMI:**

(1) Shielded cable to connect DV-1000 or *C-more* Micro-Graphic panels to the DL05, DL06, DL105, DL205, D3-350 or D4-450 CPU phone jacks. Can also connect the *C-more* Micro-Graphic panels to CLICK CPU phone jacks (DV-1000 panels do not operate with CLICK PLCs). 2m (6.56 ft.) RS-232C cable has an RJ12 modular connector on each end. (FA-15HD required if going to 15-pin HD port.). ADC p/n **DV-1000CBL**

**ENCLOSURE:**

(1) Non-metallic JIC series 16 x 14 x 6 inch (HxWxD) NEMA 4X enclosure, gray, hinge with 2 link lock latches, cover with window. Requires HW-MP1614x sub-panel (not included), where x suffix designates sub-panel material. ADC p/n **HW-J161406CHTLW**

(1) Sub-panel for 16 x 14 inch multi-hole pushbutton and JIC non-metallic enclosures, 14.88 x 12.88 inches, aluminum construction. ADC p/n **HW-MP1614A**

(1) Black plastic carrying handle for non-metallic enclosures. ADC p/n **HW-CARRYINGHANDLE**

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**Bill of Materials****STEPPER SYSTEM:**

(1) SureStep microstepping drive, 7.5A per phase, 2-phase bipolar PWM controlled current, 24-65 VDC powered, optically isolated digital inputs for Step, Direction, and Enable. Full step to 1/100 step modes, 0.5-7.5A/phase, idle current cutback, and test mode are all dip switch selectable (no software required), ADC p/n **STP-DRV-6575**

(1) Power supply for SureStep stepping systems, linear, dual output with 32VDC at 4A (at full load) unregulated and 5VDC at 0.5A regulated. 120/240 VAC, 50/60 Hz supply voltage, overcurrent protection, ADC p/n **STP-PWR-3204**

(1) SureStep stepper motor, dual shaft, 125 oz-in holding torque, 2.0 amps/phase, 1.8 degrees / full step (200 steps/revolution), NEMA size 17, bipolar. 12-inch cable contains 4 leads terminated with a connector. ADC p/n **STP-MTR-17060D**

(1) 20 ft. extension cable for use with all SureStep stepping motors less than 5A, terminated with mating connector. Use with STP-MTR-xxxxx motors, ADC p/n **STP-EXT-020**

**AMPERAGE MONITORING:**

(1) AcuAMP DC current transducer, fixed core, 0-50, 0-75, or 0-100A jumper-selectable input ranges, 24 VAC/DC powered, 4-20mA output, UL 508 listed. ADC p/n **DCT100-42-24-F**

**ENCODER & HARDWARE:**

(1) Koyo encoder, incremental (quadrature), miniature, light duty, 100 pulses per revolution, 4mm solid shaft, 1 inch diameter body, 12-24 VDC, NPN open collector, IP50 (dust proof), 2-meter (6.5 ft.) cable exit. Encoder mounting screws included. ADC p/n **TRD-MX100BD**

(1) Coupling, 4mm to 5mm, aluminum alloy, for TRD-MX series encoders and NEMA size 17 stepper motors. ADC p/n **ARM-075-5-4D**

(1) Right angle bracket, metal, for TRD-MX series encoders. Encoder mounting screws and bracket mounting screws included. ADC p/n **MT-030D**

**24VDC POWER SUPPLY:**

(1) RHINO switching power supply, 24VDC (adjustable), 2.5A (60W) output; 85-264 VAC / 85-375 VDC universal input; foldback short circuit protection, overvoltage protection; slim-line UL 94V-0 rated plastic case with integral 35mm DIN rail mounting adapter, removable screw terminal plugs; status indication LED; voltage output for operation monitoring. UL 508 listed, UL 60950 recognized and CE marked. Plastic 35mm DIN rail insert provided for easy panel mounting. ADC p/n **PSP24-060S**

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**Bill of Materials****Relay, Socket, Surge Suppressor:**

(1) Octal control relay, 120 VAC coil voltage, DPDT, 12A contact rating, 8-pin configuration, with LED indicator and push-to-test button. Purchase 750-2C-SKT mounting socket separately. ADC p/n **750-2C-120A**

(1) Relay socket for 750-2C and H750-2C series octal relays, 8-pin configuration, 35mm DIN-rail or panel mount. ADC p/n **750-2C-SKT**

(1) MOV module for 783, 784 and 750 series relays that operate at 120VAC coil voltage. Package includes 5 modules. ADC p/n **AD-ASMM-120**

**Push Buttons:**

(1) Pushbutton, 22mm metal, twist-to-release, red 40mm mushroom operator, 1 N.C. contact block. Typically used in Emergency Stop applications. ADC p/n **GCX1131**

(1) Pushbutton, 22mm metal, momentary, LED illuminated, clear, 120 VAC/DC, extended operator, 1 N.O. contact block. ADC p/n **GCX1215-120L**

(1) Legend plate, aluminum, with red field, engraved 'EMERG. STOP'. ADC p/n **E22NS13**

(1) Legend plate, aluminum, with black field, engraved 'POWER ON'. ADC p/n **E22NS80**

**FIBER OPTIC PHOTOELECTRIC SENSOR:**

(1) Fiber amplifier with teach-in sensitivity adjustment, for use with plastic cuttable fibers, 18mm diameter plastic housing, 10-30 VDC, NPN, selectable Light-on/Dark-on output, M12 quick-disconnect (purchase cable separately). ADC p/n **SSF-0N-0E**

(1) Optical fiber, cuttable, luminous through-beam, 2 meter length, M4 head, 900mm sensing distance, 2 per pack. ADC p/n **CF-TB3-20**

(1) M12 cable for quick-disconnect sensors, 12mm axial female plug, 4-pole, 2 meter length, gray PVC outer jacket. ADC p/n **CD12L-0B-020-A0**

(1) Mounting bracket, for 18mm sensors, metal, right angle. ADC p/n **ST18C**

**CAPACITIVE PROXIMITY SENSOR:**

(1) Capacitive proximity sensor, 48 x 20 mm rectangular, 10-36 VDC, 3-wire, PNP/NPN autodetect, unshielded, 12mm nominal sensing distance, selectable (N.O. or N.C.) output, 10Hz switching frequency, 2-meter cable exit. ADC p/n **CR1-00-2A**

(1) Mounting adapter for CR1 series capacitive proximity sensors. Mounting screws included. ADC p/n **CR1-ADPTR**

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**Bill of Materials****MULTI-WIRE INDUSTRIAL CONNECTOR:**

(2) Female insert for ZIPport multi-wire industrial connector, size 10A, 15 poles plus ground connection, crimp contacts, 10 amp, 600 VAC/DC. Poles are numbered 1 to 15. Requires 10 amp female contacts ZP-MC-CC-F10A-xxx. ADC p/n **ZP-MC10A-1-FC015**

(2) Male insert for ZIPport multi-wire industrial connector, size 10A, 15 poles plus ground connection, crimp contacts, 10 amp, 600 VAC/DC. Poles are numbered 1 to 15. Requires 10 amp male contacts ZP-MC-CC-M10A-xxx. ADC p/n **ZP-MC10A-1-MC015**

(2) Base for ZIPport multi-wire industrial connector, size 10A, single lever, bulkhead, heavy-duty die cast aluminum. Use with all size 10A connector housings with 2 pegs. ADC p/n **ZP-MC10A-2-SBHM**

(1) Hood for ZIPport multi-wire industrial connector, size 10A, 2-peg, top entry, (1) Pg 21 threaded hole, high construction, heavy-duty die cast aluminum. Use with all size 10A connector housings with a single lever. ADC p/n **ZP-MC10A-2-STE21ML**

(1) Hood for ZIPport multi-wire industrial connector, size 10A, 2-peg, side entry, (1) Pg 21 threaded hole, high construction, heavy-duty die cast aluminum. Use with all size 10A connector housings with a single lever. ADC p/n **ZP-MC10A-2-SSE21ML**

(1) Cable gland, Pg 21 x 1.5 mm thread, 1 elastomer gasket accommodates a cable diameter range of 0.433 to 0.708 in. (11 to 18 mm), IP68 protection level, metal housing. 5 per package. ADC p/n **ZP-MC-CG-21M8**

(2) Cover for ZIPport multi-wire industrial connector, size 10A, 2-peg, heavy-duty die cast aluminum. Use with all size 10A connector housings with a single lever. ADC p/n **ZP-MC10A-2-SCVPM**

(2) Cover for ZIPport multi-wire industrial connector, size 10A, single lever, heavy-duty die cast aluminum. Use with all size 10A connector housings with 2 pegs. ADC p/n **ZP-MC10A-2-SCVLM**

(1) Machined crimp contact, male, 10A, 18AWG (0.75mm sq.), silver plated copper alloy; use with any ZIPport multi-wire male inserts rated for 10A; 100 contacts per package, ADC p/n **ZP-MC-CC-M10A-18**

(1) Machined crimp contact, female, 10A, 18AWG (0.75mm sq.), silver plated copper alloy; use with any ZIPport multi-wire female inserts rated for 10A; 100 contacts per package, ADC p/n **ZP-MC-CC-F10A-18**

(1) Machined crimp contact, female, 10 amp, 26 - 22 AWG (0.14 - 0.37 mm sq.), silver-plated copper alloy. Use with any ZIPport multi-wire female inserts rated for 10 amps. 100 contacts per package. ADC p/n **ZP-MC-CC-F10A-22**

(1) Machined crimp contact, male, 10 amp, 26-22 AWG (0.14 - 0.37 mm sq.), silver-plated copper alloy. Use with any ZIPport multi-wire male inserts rated for 10 amps. 100 contacts per package. ADC p/n **ZP-MC-CC-M10A-22**

(1) Precision crimping tool with locator for 10A and 16A machined contacts, used with the ZIPport multi-wire connectors, crimps both male and female machined contacts, wire ranges 26-11 AWG, contact pin diameters 1.6, 2.4 and 2.5 mm, includes hand crimping tool, die set, and locator. ADC p/n **ZP-MC-CT1**

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**Bill of Materials**

(1) Removal tool for 10A machined crimp contacts, used with the ZIPport multi-wire crimp contacts, green metal handle, nickel plated tip, ADC p/n **ZP-MC-RT1**

**MULTI-CONDUCTOR CONTROL CABLE:**

(1) Flexible multi-conductor control cable, 18 conductors including ground, 18AWG, 16/30 stranding, black PVC/Nylon insulation with white numbers, green/yellow ground, unshielded, flexible copolymer gray jacket, 100 foot reel. ADC p/n **V40178-100**

(1) KNIPEX cable dismantling tool with closing spring and replaceable blade, removes outer cable sheath, capacity 1/4 inch (6mm) to 1-1/8 inch (29mm) diameter. ADC p/n **1630135SB**

**MULTI-WIRE INDUSTRIAL POWER CONNECTOR:**

(1) Male insert for ZIPport multi-wire industrial connector, size 3A, 3 poles plus ground connection, screw terminals accepts 14-20 AWG, 600 VAC/DC, 10A, ADC p/n **ZP-MC03A-1-MS003**

(1) Female insert for ZIPport multi-wire industrial connector, size 3A, 3 poles plus ground connection, screw terminals accepts 14-20 AWG, 600 VAC/DC, 10A, ADC p/n **ZP-MC03A-1-FS003**

(1) Hood for ZIPport multi-wire industrial connector, size 3A, 2-peg, top entry, (1) Pg 11 threaded hole, heavy duty die cast aluminum; use with all size 3A single lever metal housings, ADC p/n **ZP-MC03A-2-STE11M**

(1) Base for ZIPport multi-wire industrial connector, size 3A, single lever, right angled bulkhead, heavy duty die cast aluminum; use with all size 3A 2-peg metal housings, ADC p/n **ZP-MC03A-2-SBHAM**

(1) Cable gland, Pg 11 x 1.5 mm thread, (1) elastomer gasket accommodate a cable diameter range of 0.157 to 0.393 in. (4 to 10 mm), IP68 protection level, metal housing, 10 per package, ADC p/n **ZP-MC-CG-11M8**

(1) Straight blade electrical plug, 15A, 125VAC, 2-pole, 3-wire, NEMA 5-15, internal self-centering cord clamp, accepts cord diameters 0.30 to 0.655 in. (7.6 to 16.6 mm), high-impact chemical-resistant black/white nylon housing, transparent terminal cover, quick-thread assembly screws, integrated thermoplastic elastomer dust seal, ADC p/n **BRY5266NP**

(1) Type SJEOW flexible portable cord, 18AWG / 3 conductors, 300V maximum, -50 to 105 degrees C, fully annealed stranded copper conductors, black outer jacket, rated for outdoor use, oil-resistant and water-immersible, 250 ft. spool, ADC p/n **SJEOW-18-3BK250**

**JIC BOX MOUNTED ON PART FEEDER:**

(1) Non-metallic Slimline series 3 x 3 x 2 inch (HxWxD) NEMA 4X junction enclosure, gray, 4 cover screws, opaque cover. Sub-panel not required. ADC p/n **HW-N4X332**

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**Bill of Materials****FUSE:**

(1) MEN Midget Class time-delay fuse, 2A, 250VAC, 13/32 inch x 1-1/2 inches, 10 fuses per pack. ADC p/n **MEN2**

**FUSE HOLDER:**

(1) Fuse holder, non-indicating, for Midget Class 13/32 inch x 1-1/2 inch fuses, 600 VAC/VDC, 30A, 18-4 AWG, 1-pole, 35mm DIN rail mount. 1 holder per pack. ADC p/n **EHMIDU**

**TERMINAL BLOCKS AND ACCESSORIES:**

(1) Konnect-It single-level terminal block, 26-12 AWG, **gray**, 20A, 600V rated (UL). Works with jumpers KN-2J12, KN-3J12, KN-4J12 and KN-10J12. 100 pieces per package. ADC p/n **KN-T12GRY**

(1) Konnect-It terminal block end cover, **gray**. Use with any KN-T12 to KN-T6 series block. 100 pieces per package. ADC p/n **KN-ECT6GRY**

(1) Konnect-It terminal block separator, **gray**. Use with any KN-T12 to KN-T6 series block. 25 pieces per package. ADC p/n **KN-ST1GRY**

(1) Konnect-It grounding terminal block, **green and yellow**, 26-12 AWG. Use to mechanically and electrically connect wires to 35mm DIN rail through the snap-on clamping foot. 10 pieces per package. ADC p/n **KN-G12SP-10**

(1) Konnect-It single-level terminal block, 26-12 AWG, **red**, 20A, 600V rated (UL). Works with jumpers KN-2J12, KN-3J12, KN-4J12 and KN-10J12. 100 pieces per package. ADC p/n **KN-T12RED**

(1) Konnect-It terminal block end cover, **red**. Use with any KN-T12 to KN-T6 series block. 10 pieces per package. ADC p/n **KN-ECT6RED**

(1) Konnect-It terminal block separator, **red**. Use with any KN-T12 to KN-T6 series block. 10 pieces per package. ADC p/n **KN-ST1RED**

(1) Konnect-It single-level terminal block, 26-12 AWG, **black**, 20A, 600V rated (UL). Works with jumpers KN-2J12, KN-3J12, KN-4J12 and KN-10J12. 100 pieces per package. ADC p/n **KN-T12BLK**

(1) Konnect-It terminal block end cover, **black**. Use with any KN-T12 to KN-T6 series block. 10 pieces per package. ADC p/n **KN-ECT6BLK**

(1) Konnect-It terminal block separator, **black**. Use with any KN-T12 to KN-T6 series block. 10 pieces per package. ADC p/n **KN-ST1BLK**

(1) Konnect-It single-level terminal block, 26-12 AWG, **green**, 20A, 600V rated (UL). Works with jumpers KN-2J12, KN-3J12, KN-4J12 and KN-10J12. 100 pieces per package. ADC p/n **KN-T12GRN**

(1) Konnect-It single-level terminal block, 26-12 AWG, **white**, 20A, 600V rated (UL). Works with jumpers KN-2J12, KN-3J12, KN-4J12 and KN-10J12. 100 pieces per package. ADC p/n **KN-T12WHT**

(1) Konnect-It single-level terminal block, 26-12 AWG, **yellow**, 20A, 600V rated (UL). Works with jumpers KN-2J12, KN-3J12, KN-4J12 and KN-10J12. 100 pieces per package. ADC p/n **KN-T12YEL**

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**Bill of Materials**

(1) Konnect-It terminal block jumper, 4-pole, screw-down type. Use with any KN-T12 or KN-D12 series block. 15 pieces per package. ADC p/n **KN-4J12**

(1) Konnect-It end bracket, screw-down style, 10mm wide. Use on any 35mm DIN rail. 10 pieces per package. ADC p/n **KN-EB7-10**

**DIN RAIL:**

Steel DIN rail, 35mm x 15mm, slotted, silver, 1 meter (3 feet 3 inches) length. 2 pieces per package. ADC p/n **DN-R35HS1-2**

**Wire Duct:**

(1) Iboco T1E open slot thin finger wire duct, 1.0 in. wide x 2.25 in. high, white, 2 meter length, includes cover, single piece. ADC p/n **T1E-1022W-1**

**WIRE:**

(1) Type MTW wire, 18AWG, 16-strand, 600V, copper, **black**, 500 ft. spool. ADC p/n **MTW18BK**

(1) Type MTW wire, 18AWG, 16-strand, 600V, copper, **white**, 500 ft. spool. ADC p/n **MTW18WH**

(1) Type MTW wire, 18AWG, 16-strand, 600V, copper, **green**, 500 ft. spool. ADC p/n **MTW18GN**

(1) Type MTW wire, 18AWG, 16-strand, 600V, copper, **red**, 500 ft. spool. ADC p/n **MTW18RD**

(1) Type MTW wire, 18AWG, 16-strand, 600V, copper, **blue**, 500 ft. spool. ADC p/n **MTW18BL**

(1) Type MTW wire, 18AWG, 16-strand, 600V, copper, **blue-white stripe**, 500 ft. spool. ADC p/n **MTW18BW**

(1) Type MTW wire, 18AWG, 16-strand, 600V, copper, **orange**, 500 ft. spool. ADC p/n **MTW18OR**

(1) Type MTW wire, 18AWG, 16-strand, 600V, copper, **yellow**, 500 ft. spool. ADC p/n **MTW18YL**

(1) Type MTW wire, 18AWG, 16-strand, 600V, copper, **purple**, 500 ft. spool. ADC p/n **MTW18PL**

**Cable Ties:**

(1) Cable tie, 4 in. long x 0.098 in. wide, 18 lb. load minimum loop tensile strength, 0.709 inch maximum bundle diameter, natural color nylon 6.6, 100 per package. ADC p/n **BM-B1025**

**Cable Tie Mounts:**

(1) Cable tie mount, 0.75 x 0.75 in. wide, for 0.142 inch maximum width cable ties, natural color nylon 6.6, adhesive back mount, 100 per package. ADC p/n **BM-B0901**