

USING
SureStep[™] WITH
AUTOMATIONDIRECT
PLCs



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Compatible DirectLOGIC PLCs and Modules

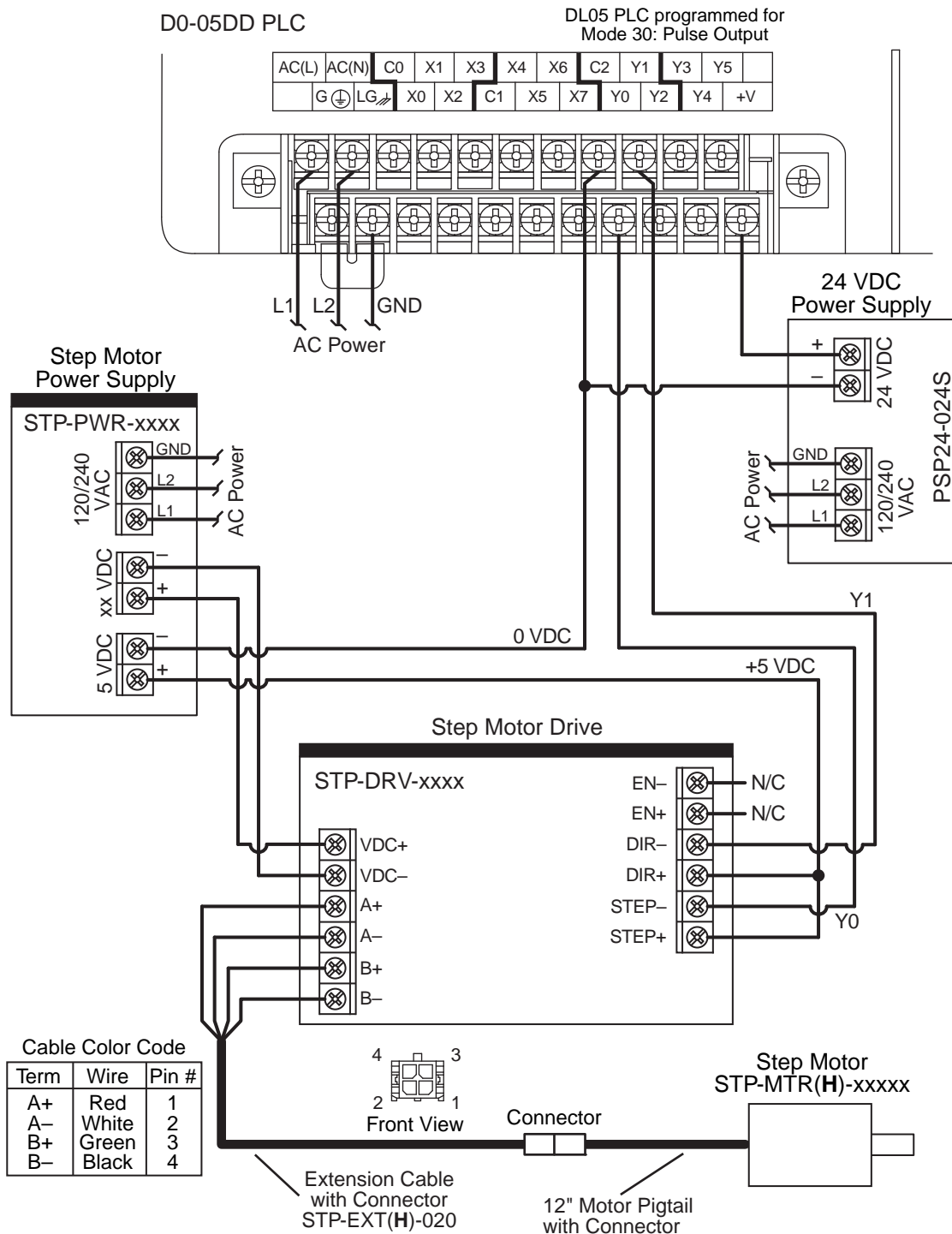
The following tables show which high-speed pulse-output DirectLOGIC PLCs and modules can be used with the SureStep Microstepping Motor Drives.

<i>DirectLOGIC PLCs/Modules for Use with SureStep Drive (1)</i>	
DL05 PLCs	
D0-05AD	DL05 CPU, 8 AC in / 6 DC out, 110/220 VAC power supply. <u>Inputs:</u> 8 AC inputs, 90-120 VAC, 2 isolated commons. <u>Outputs:</u> 6 DC outputs, 6-27 VDC current sinking, 1.0 A/pt max, 1 common. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (0.5 A/pt.).
D0-05DD	DL05 CPU, 8 DC in / 6 DC out, 110/220 VAC power supply. <u>Inputs:</u> 8 DC inputs, 12-24 VDC current sinking/sourcing, 2 isolated commons. <u>Outputs:</u> 6 DC outputs, 6-27 VDC current sinking, 1.0 A/pt max, 1 common. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (0.5 A/pt) (not available when using high-speed inputs).
D0-05DD-D	DL05 CPU, 8 DC in / 6 DC out, 12/24 VDC power supply. <u>Inputs:</u> 8 DC inputs, 12-24 VDC current sinking/sourcing, 2 isolated commons. <u>Outputs:</u> 6 DC outputs, 6-27 VDC current sinking, 1.0 A/pt max, 1 common. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (0.5 A/pt.) (not available when using high-speed inputs).
DL06 PLCs	
D0-06DD1	DL06 CPU, 20 DC in / 16 DC out, 110/220 VAC power supply, with 0.3A 24 VDC auxiliary device power supply. <u>Inputs:</u> 20 DC inputs, 12-24 VDC current sinking/sourcing, 5 isolated commons (4 inputs per common). <u>Outputs:</u> 16 DC outputs, 12-24 VDC current sinking, 1.0A/pt max, 4 commons non-isolated (4 points per common). Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 10 kHz (0.5 A/pt) (not available when using high-speed inputs).
D0-06DD2	DL06 CPU, 20 DC in / 16 DC out, 110/220 VAC power supply, with 0.3A 24 VDC auxiliary device power supply. <u>Inputs:</u> 20 DC inputs, 12-24 VDC current sinking/sourcing, 5 isolated commons (4 inputs per common). <u>Outputs:</u> 16 DC outputs, 12-24 VDC current sourcing 1.0A/pt max, 4 commons non-isolated (4 points per common). Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 10 kHz (0.5 A/pt) (not available when using high-speed inputs).
D0-06DD1-D	DL06 CPU, 20 DC in / 16 DC out, 12/24 VDC power supply. <u>Inputs:</u> 20 DC inputs, 12-24 VDC current sinking/sourcing, 5 isolated commons (4 inputs per common). <u>Outputs:</u> 16 DC outputs, 12-24 VDC current sinking, 1.0 A/pt max, 4 commons non-isolated (4 pts/common). Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 10 kHz (0.5 A/pt) (not available when using high-speed inputs).
D0-06DD2-D	DL06 CPU, 20 DC in / 16 DC out, 12/24 VDC power supply. <u>Inputs:</u> 20 DC inputs, 12-24 VDC current sinking/sourcing, 5 isolated commons (4 inputs per common). <u>Outputs:</u> 16 DC outputs, 12-24VDC current sourcing, 1.0A/pt max, 4 commons non-isolated (4 pts/common). Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 10 kHz (0.5 A/pt) (not available when using high-speed inputs).
DL05/DL06 High Speed Counter I/O Module	
H0-CTRIO	DL05/06 High Speed Counter I/O Interface Module, 4 DC sink/source inputs 9-30 VDC, 2 isolated sink/source DC outputs, 5-30 VDC, 1A per point. <u>Inputs supported:</u> 1 quadrature encoder counters up to 100 kHz, or 2 single channel counters up to 100 kHz, and 2 high speed discrete inputs for Reset, Inhibit, or Capture. <u>Outputs supported:</u> 2 independently configurable high speed discrete outputs or 1 channel pulse output control, 20Hz-25kHz per channel, pulse and direction or CW/CCW pulses.
<i>Table continued next page.</i>	

<i>DirectLOGIC PLCs/Modules for Use with SureStep Drive (1) (continued)</i>	
DL105 PLCs	
F1-130AD	DL130 CPU, 10 AC in / 8 DC out, 110/220 VAC power supply. <u>Inputs:</u> 10 AC inputs, 80-132 VAC, 3 isolated commons. <u>Outputs:</u> 8 DC outputs, 5-30 VDC current sinking, 0.5A/pt max, 3 internally connected commons. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (@ 0.25 A/pt max).
F1-130DD	DL130 CPU, 10 DC in / 8 DC out, 110/220 VAC power supply. <u>Inputs:</u> 10 DC inputs, 12-24 VDC current sinking/sourcing, 3 isolated commons. <u>Outputs:</u> 8 DC outputs, 5-30 VDC current sinking, 0.5 A/pt max, 3 internally connected commons. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (@ 0.25 A/pt max) (not available when using high-speed inputs).
F1-130DD-D	DL130 CPU, 10 DC in / 8 DC out, 12/24 VDC power supply. <u>Inputs:</u> 10 DC inputs, 12-24 VDC current sinking/sourcing, 3 isolated commons. <u>Outputs:</u> 8 DC outputs, 5-30 VDC current sinking, 0.5 A/pt max, 3 internally connected commons. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (@ 0.25 A/pt max) (not available when using high-speed inputs).
DL205 High Speed Counter I/O Modules	
H2-CTRIO(2)	DL205 High Speed Counter I/O Interface Module, 8 DC sink/source inputs 9-30 VDC, 4 isolated sink/source DC outputs, 5-30 VDC, 1A per point. <u>Inputs supported:</u> 2 quadrature encoder counters up to 100 kHz, or 4 single channel counters up to 100 kHz, and 4 high speed discrete inputs for Reset, Inhibit, or Capture. <u>Outputs supported:</u> 4 independently configurable high speed discrete outputs or 2 channels pulse output control, 20 Hz - 25 kHz per channel, pulse and direction or CW/CCW pulses.
D2-CTRINT	Counter Interface Module, 4 isolated DC inputs, 1 pulse train output (CW) or 2 pulse train outputs (CW/CCW) with DC input restrictions, accepts two up-counters when used with D2-240 or D2-250(-1) (one only with D2-230), or one up/down counter. (not available when using high-speed inputs).
Terminator I/O High Speed Counter I/O Module	
T1H-CTRIO(2)	Terminator I/O High Speed Counter I/O Interface Module, 8 DC sink/source inputs 9-30 VDC, 4 isolated sink/source DC outputs, 5-30 VDC, 1A per point. <u>Inputs supported:</u> 2 quadrature encoder counters up to 100 kHz, or 4 single channel counters up to 100 kHz, and 4 high speed discrete inputs for Reset, Inhibit, or Capture. <u>Outputs supported:</u> 4 independently configurable high speed discrete outputs or 2 channels pulse output control, 20 Hz - 25 kHz per channel, pulse and direction or CW/CCW pulses. (Use with T1K-16B or T1K-16B-1 terminal base.)
DL405 High Speed Counter I/O Module	
H4-CTRIO	DL405 High Speed Counter I/O Interface Module, 8 DC sink/source inputs 9-30 VDC, 4 isolated sink/source DC outputs, 5-30 VDC, 1A per point. <u>Inputs supported:</u> 2 quadrature encoder counters up to 100 kHz, or 4 single channel counters up to 100 kHz, and 4 high speed discrete inputs for Reset, Inhibit, or Capture. <u>Outputs supported:</u> 4 independently configurable high speed discrete outputs or 2 channels pulse output control, 20 Hz - 25 kHz per channel, pulse and direction or CW/CCW pulses.
(1) Any DirectLOGIC PLC capable of RS-232 ASCII communication can write serial commands to the SureStep Advanced Microstepping Drives (STP-DRV-4850 & -80100). These PLCs include DL 05, 06, 250-1, 260, 350, and 450. However, we strongly recommend using DL06 or DL260 PLCs for serial commands due to their more advanced ASCII instruction set which includes PRINTV and VPRINT commands.	
(2) The H2-CTRIO and T1H-CTRIO High Speed Counter I/O Interface Modules can also be used to control the SureStep Stepping System in PC-Based Control systems with Think & Do/Studio, or with our embedded WinPLC/EBC module plugged into the CPU slot of the DL205 base.	

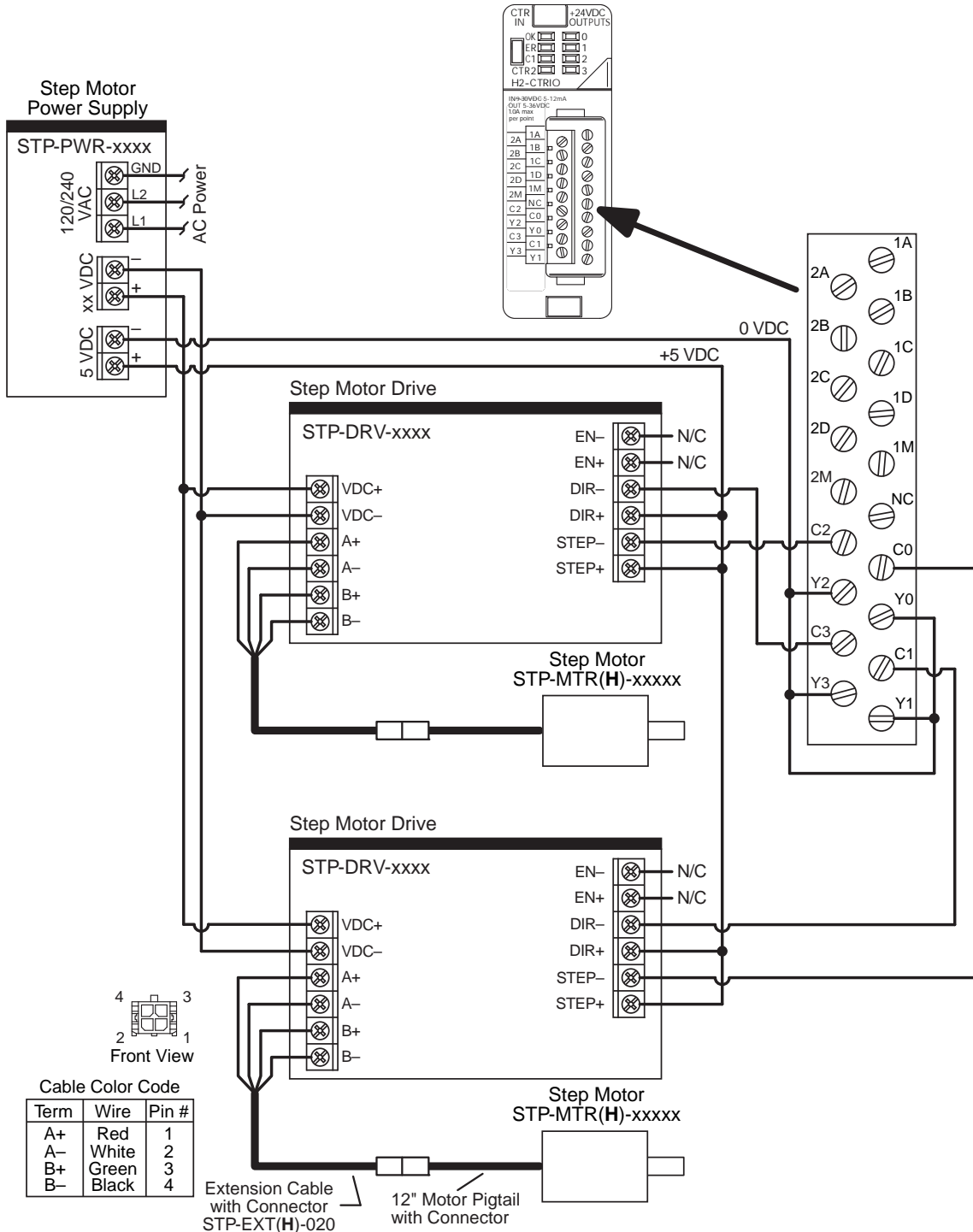
Typical Connections to a DL05 PLC

The following wiring diagram shows typical connections between the SureStep Stepping System components and a DirectLOGIC DL05 PLC. Refer to the DL05 Micro PLC User Manual, p/n D0-USER-M, High-Speed Input and Pulse Output Features chapter, for detailed programming instructions when using the PLC for the Mode 30: Pulse Output function.



Typical Connections – Multiple Drives/Motors

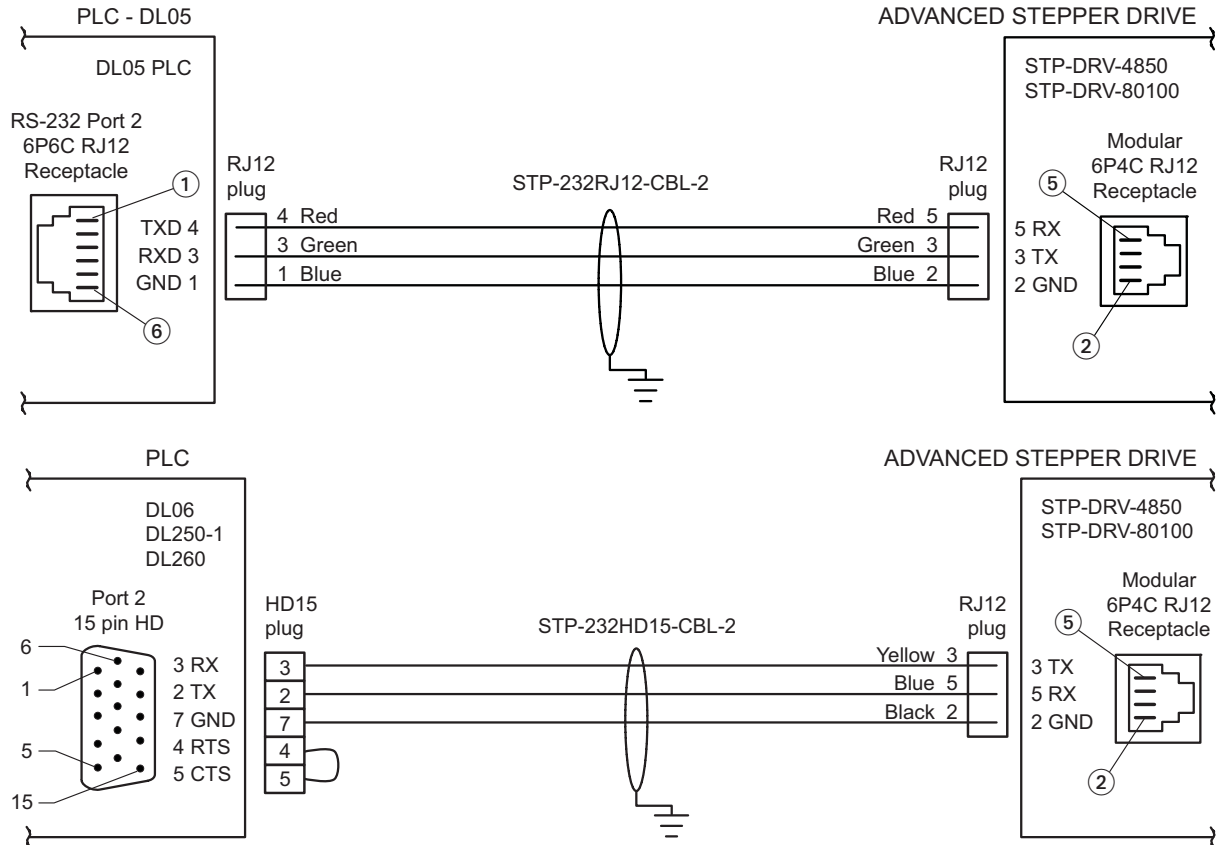
The following wiring diagram shows typical connections between the SureStep Stepping System components and a DirectLOGIC H2-CTRIO High Speed Counter I/O Interface Module installed in a DL205 PLC. Refer to the CTRIO High-Speed Counter Module User Manual, p/n Hx-CTRIO-M, for detailed programming instructions when using the H2-CTRIO module.



Typical DirectLOGIC PLC Serial Connections to an Advanced SureStep Drive

The following wiring diagrams show typical serial connections between a SureStep Advanced Microstepping Drive and a DirectLOGIC PLC capable of RS-232 ASCII communication. Refer to the particular PLC user manual for instructions for writing ASCII serial commands.

Serial Connection Using Automation Direct Cables



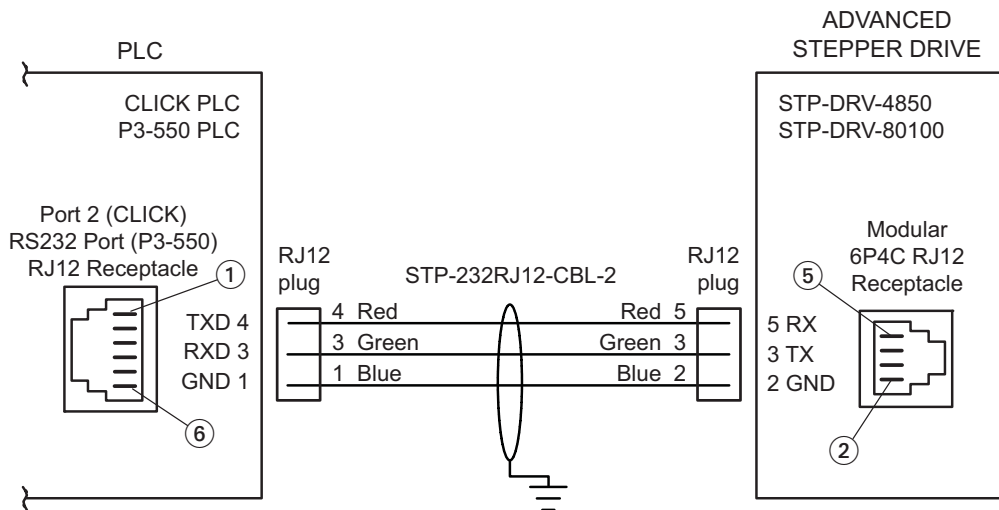
Serial Connection Using Custom Cables

Use Belden 9841 or equivalent cable, and wire according to the Automation Direct cable diagrams shown above (including RTS/CTS jumper for DL06, DL250-1, and DL260).

Typical CLICK & P3000 PLC Serial Connections to an Advanced *SureStep* Drive

The following wiring diagrams show typical serial connections between a *SureStep* Advanced Microstepping Drive and a CLICK PLC or a P3-550 PLC capable of RS-232 ASCII communication. Refer to the particular PLC user manual for instructions for writing ASCII serial commands.

Serial Connection Using Automation Direct Cables



Serial Connection Using Custom Cables

Use Belden 9841 or equivalent cable, and wire according to the Automation Direct STP-232RJ12-CBL-2 diagram shown above.