

# USING GS1 AC DRIVES WITH AUTOMATIONDIRECT PLCs

---



## APPENDIX

# B

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## COMPATIBLE AUTOMATIONDIRECT PLCs AND MODULES

The following tables show which AutomationDirect PLCs and modules can be used with the GS1 Series AC Drive.

| AutomationDirect PLC Modules for Use with GS1 AC Drives  |  |
|--|--|
| <b>CLICK PLCs *</b>  |  |
| <b>C0-00DD1-D</b>  | CLICK CPU, 8 DC in / 6 sinking DC out; 24 VDC power supply; RS-232C Modbus/ASCII comm port. Discrete <u>Inputs</u> : 8 DC inputs, 24 VDC sink/source, 2 isolated commons. Discrete <u>Outputs</u> : 6 DC outputs, 5–27 VDC sinking, 0.1A/pt, 2 isolated commons. Removable I/O terminal block.   |
| <b>C0-02DD1-D</b>  | CLICK CPU, 4 DC in / 4 sinking DC out; 2 channels analog in / 2 channels analog out (current/voltage selectable); 24 VDC power supply; RS-232C Modbus/ASCII comm port, 3-wire RS-485 Modbus/ASCII comm port. Discrete <u>Inputs</u> : 4 DC inputs, 5–27 VDC sink/source, 1 common. Discrete <u>Outputs</u> : 4 DC outputs, 24 VDC sinking, 0.1A/point, 1 common. Analog <u>Inputs</u> : 2 channels 4–20 mA or 0–5 VDC. Analog <u>Outputs</u> : 2 channels 4–20 mA or 0–5 VDC. Removable I/O terminal block.                              |
| <b>C0-02DD2-D</b>  | CLICK PLC CPU, 4 DC in / 4 sourcing DC out, 2 channels analog in / 2 channels analog out (current / voltage selectable); 24 VDC power supply; RS-232C Modbus/ASCII comm port, 3-wire RS-485 Modbus/ASCII comm port. Discrete <u>Inputs</u> : 4 DC inputs, 24 VDC sink/source, 1 common. Discrete <u>Outputs</u> : 4 DC outputs, 24 VDC sourcing, 0.1A/point, 1 common. Analog <u>Inputs</u> : 2 channels 4–20 mA or 0–5 VDC. Analog <u>Outputs</u> : 2 channels 4–20 mA or 0–5 VDC. Removable I/O terminal block.                        |
| <b>C0-02DR-D</b>   | CLICK PLC CPU, 4 DC in / 4 relay out, 2 channels analog in / 2 channels analog out (current / voltage selectable); 24 VDC power supply; RS-232C Modbus/ASCII comm port, 3-wire RS-485 Modbus/ASCII comm port. Discrete <u>Inputs</u> : 4 DC inputs, 24 VDC sink/source, 1 common. Discrete <u>Outputs</u> : 4 relay outputs, 6–240 VAC / 6–27 VDC Form A (SPST) relays, 1.0A/point, 1 common. Analog <u>Inputs</u> : 2 channels 4–20 mA or 0–5 VDC. Analog <u>Outputs</u> : 2 channels 4–20 mA or 0–5 VDC. Removable I/O terminal block. |
| * "Brick" PLCs may contain some I/O that are not compatible with GS1 drives. Refer to "Typical PLC Connections to GS1 Series AC Drives" (page B-6) to determine specifically which I/O are compatible. |  |
| <b>CLICK DC Output Modules</b>   |  |
| <b>C0-08TD1</b>  | 8-pt. 3.3–27 VDC current sinking <u>output</u> , 2 isolated commons, 0.3A/pt., removable terminals.  |
| <b>C0-16TD1</b>  | 16-pt. 5–27 VDC current sinking <u>output</u> , 2 isolated commons, 0.1A/pt., removable terminals.   |
| <b>DL05 PLCs *</b>   |  |
| <b>D0-05AR</b>   | DL05 CPU, 8 AC in / 6 Relay out, 110/220VAC Power Supply. <u>Inputs</u> : 8 AC inputs, 90–120 VAC, 2 isolated commons. <u>Outputs</u> : 6 Relay outputs, 6–27 VDC, 6–240 VAC, 2A/pt. max., 2 isolated commons.   |
| <b>D0-05DD</b>   | DL05 CPU, 8 DC in / 6 DC out, 110/220VAC 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, 1.0A/pt. max.   |
| <b>D0-05DD-D</b>   | DL05 CPU, 8 DC in / 6 DC out, 12/24VDC 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, 1.0A/pt. max.   |
| <b>D0-05DR</b>   | DL05 CPU, 8 DC in / 6 Relay out, 110/220VAC Power Supply. <u>Inputs</u> : 8 DC inputs, 12–24 VDC current sinking/sourcing, 2 isolated commons. <u>Outputs</u> : 6 Relay outputs, 6–27 VDC, 6–240 VAC, 2A/pt. max., 2 isolated commons.   |
| <b>D0-05DR-D</b>   | DL05 CPU, 8 DC in / 6 Relay out, 12/24VDC Power Supply. <u>Inputs</u> : 8 DC inputs, 12–24 VDC current sinking/sourcing, 2 isolated commons. <u>Outputs</u> : 6 Relay outputs, 6–27 VDC, 6–240 VAC, 2A/pt. max., 2 isolated commons.   |
| * "Brick" PLCs may contain some I/O that are not compatible with GS1 drives. Refer to "Typical PLC Connections to GS1 Series AC Drives" (page B-6) to determine specifically which I/O are compatible. |  |
| (table continued next page)  |  |

| <b>AutomationDirect PLC Modules for Use with GS1 AC Drives (continued)</b>   |   |
|--|---|
| <b>DL06 PLCs *</b>   |   |
| <b>D0-06AR</b>   | DL06 CPU, 16 AC in / 20 Relay out, 110/220VAC power supply, with 0.3A 24VDC auxiliary device power supply. <u>Inputs:</u> 20 AC inputs, 90–120 VAC, 5 isolated commons (4 inputs per common). <u>Outputs:</u> 16 Relay outputs, 6–27 VDC, 6–240 VAC, 2A/pt. max., 4 isolated commons (4 pt/common).                                       |
| <b>D0-06DD1</b>  | DL06 CPU, 20 DC in / 16 DC out, 110/220VAC Power Supply, with 0.3A 24VDC 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 pt/common).         |
| <b>D0-06DD1-D</b>  | DL06 CPU, 20 DC in / 16 DC out, 12/24VDC 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 pt/common).  |
| <b>D0-06DR</b>   | DL06 CPU, 20 DC in / 16 Relay out, 110/220VAC Power Supply, with 0.3A 24VDC 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 Relay outputs, 6–27 VDC, 6–240 VAC, 2A/pt. max., 4 isolated commons (4 pt/common).               |
| <b>D0-06DR-D</b>   | DL06 CPU, 20 DC in / 16 Relay out, 110/220VAC 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 Relay outputs, 6–27 VDC, 6–240 VAC, 2A/pt. max., 4 isolated commons (4 points per common).  |
| * "Brick" PLCs may contain some I/O that are not compatible with GS1 drives. Refer to "Typical PLC Connections to GS1 Series AC Drives" (page B-6) to determine specifically which I/O are compatible. |   |
| <b>DL05/DL06 DC Input/Output Modules</b>   |   |
| <b>D0-08CDD1</b>   | 4-pt. 12–24VDC current sinking/sourcing <u>input</u> , 1 common, 4-pt. 12–24VDC sinking <u>output</u> , 0.3A/point, 1.2A/module, removable terminal, no fuse.   |
| <b>DL05/DL06 DC Output Modules</b>   |   |
| <b>D0-10TD1</b>  | 10-pt. 12–24 VDC current sinking <u>output</u> module, 2 commons non-isolated (5 pts. per common), 0.3A/point, 1.5A/common, removable terminal, no fuse.  |
| <b>D0-16TD1</b>  | 16-pt. 12–24 VDC current sinking <u>output</u> module, 2 commons non-isolated (5 pts. per common), 0.3A/point, 1.5A/common, removable terminal, no fuse.  |
| <b>DL05/DL06 Analog Modules</b>  |   |
| <b>F0-04DAH-1</b>  | 4-channel current analog <u>output</u> module; 4–20 mA; 16-bit resolution.  |
| <b>F0-04DAH-2</b>  | 4-channel voltage analog <u>output</u> module; 0–10V; 16-bit resolution.  |
| <b>F0-08DAH-1</b>  | 8-channel current analog <u>output</u> module; 4–20 mA; 16-bit resolution.  |
| <b>F0-08DAH-2</b>  | 8-channel voltage analog <u>output</u> module; 0–10V; 16-bit resolution.  |
| <b>F0-2AD2DA-2</b>   | 2-channel <u>in</u> , 2-channel <u>output</u> voltage analog option card; 0–5V, 0–10V.  |
| <b>F0-4AD2DA-1</b>   | 4-channel <u>in</u> , 2-channel sourcing <u>output</u> current analog option card; 4–20mA.  |
| <b>F0-4AD2DA-2</b>   | 4-channel <u>in</u> , 2-channel <u>output</u> voltage analog option card; 0–5V, 0–10V.  |
| <b>DL105 PLCs *</b>  |   |
| <b>F1-130DD</b>  | DL130 CPU, 10 DC in / 8 DC out, 110/220VAC Power Supply. <u>Inputs:</u> 10 DC inputs, 12–24 VDC current sinking/sourcing, 3 isolated commons. <u>Outputs:</u> 8 DC outputs, 5–30VDC current sinking, 0.5A/pt. max, 3 internally connected commons.  |
| <b>F1-130DR</b>  | DL06 CPU, 20 DC in / 16 DC out, 110/220VAC Power Supply, with 0.3A 24VDC 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). |
| <b>F1-130DD-D</b>  | DL130 CPU, 10 DC in / 8 DC out, 12/24VDC Power Supply. <u>Inputs:</u> 10 DC inputs, 12–24 VDC current sinking/sourcing, 3 isolated commons. <u>Outputs:</u> 8 DC outputs, 5–30VDC current sinking, 0.5A/pt. max, 3 internally connected commons.  |
| <b>F1-130DR-D</b>  | DL130 CPU, 10 DC in / 8 Relay out, 12/24VDC Power Supply. <u>Inputs:</u> 10 DC inputs, 12–24 VDC current sinking/sourcing, 3 isolated commons. <u>Outputs:</u> 8 relay outputs, 12–30 VDC, 12–250VAC, 7A/pt. max., 4 isolated commons.  |
| * "Brick" PLCs may contain some I/O that are not compatible with GS1 drives. Refer to "Typical PLC Connections to GS1 Series AC Drives" (page B-6) to determine specifically which I/O are compatible. |   |
| <b>DL205 DC Output Module</b>  |   |
| <b>D2-16TD1-2</b>  | 16-pt. 12–24 VDC current sinking <u>output</u> module, 1 common (2 common terminals), 0.1A/point, 1.6A/module, no fuse, European type removable terminal.   |
| <b>D2-32TD1</b>  | 32-pt. 12–24 VDC current sinking <u>output</u> module. 1 common (4 common terminals), 0.1A/point, 3.2A/module, no fuse.   |
| (table continued next page)  |   |

| <b>AutomationDirect PLC Modules for Use with GS1 AC Drives (continued)</b> |   |
|--|---|
| <b>DL205 Relay Output Modules</b>  |   |
| <b>D2-04TRS</b>  | 4-pt. 5–30 VDC or 5–240 VAC isolated relay <u>output</u> module, 4 Form A (SPST) relays, 4 commons, 4A/point, 8.0A/module, replaceable fuse, removable terminal.                                    |
| <b>D2-08TR</b>   | 8-pt. 5–30 VDC or 5–240 VAC <u>output</u> module, 8 Form A (SPST) relays, 1 common (2 common terminals), 1A/point, 4.0A/module, replaceable fuse, removable terminal.                               |
| <b>F2-08TR</b>   | 8-pt relay <u>output</u> , 10A/common, 5–30VDC or 5–240VAC.   |
| <b>F2-08TRS</b>  | 8-pt. 12–28 VDC or 12–240 VAC <u>output</u> module, 5 Form A (SPST) relays, 3 Form C (SPDT) relays, 8 isolated commons, 7A/point max., no fuses, removable terminal.                                |
| <b>D2-12TR</b>   | 12-pt. 5–30 VDC or 5–240 VAC relay <u>output</u> module, 12 Form A (SPST) relays, 2 commons, 1.5A/point max., 3.0A/common, 2 replaceable fuses, removable terminal.                                 |
| <b>DL205 DC Input/Output Modules</b>                                       |   |
| <b>D2-08CDR</b>  | 4-pt. 24VDC sinking/sourcing <u>input</u> , 1 common, 4 pt. relay <u>output</u> , 1A/pt., 4A/module, 1 common, replaceable fuse.  |
| <b>DL205 Analog Output Module</b>  |   |
| <b>F2-02DA-2</b>   | 2-channel analog <u>output</u> module; 12 bit resolution, ranges: 0–5V, 0–10V, -5 to +5V, -10 to +10V. Designed to operate with 24 VDC user-supplied power supply.                                  |
| <b>F2-02DAS-1</b>  | 2 channel, analog <u>output</u> module; 16-bit resolution, Isolated 4–20mA sourcing (2 isolated commons). Designed to operate with 24 VDC user-supplied power supply.                               |
| <b>F2-02DAS-2</b>  | 2-channel analog <u>output</u> module; 16 bit resolution, isolated, range: 0–5V, 0–10V (2 isolated commons). Designed to operate with 24 VDC user-supplied power supply.                            |
| <b>F2-08DA-1</b>   | 8-channel analog <u>output</u> module; 12 bit resolution, range: 4–20mA, sink or source output configurable. Designed to operate with 24 VDC user-supplied power supply.                            |
| <b>F2-08DA-2</b>   | 8-channel analog <u>output</u> module; 12 bit resolution, ranges: 0–5V, 0–10V. Designed to operate with 24 VDC user-supplied power supply.  |
| <b>DL305 Relay Output Modules</b>  |   |
| <b>D3-08TR</b>   | 8-pt. 5–30 VDC or 5–220 VAC <u>output</u> module, 5A/point DC or 4A/point AC, 8 Form A relays (SPST), 2 commons (isolated), non-removable terminal, 2 user replaceable fuses.                       |
| <b>D3-16TR</b>   | 16-pt. 5–30 VDC or 5–220 VAC <u>output</u> module, 2A/point, 16 Form A relays (SPST), 2 commons (isolated), removable terminal, no internal fuses.  |
| <b>DL305 Analog Output Modules</b>   |   |
| <b>F3-04DAS</b>  | 4-channel isolated analog <u>output</u> module, 12 bit resolution, ranges: 0 to 5V, 0 to 10V, -5 to +5V, -10 to +10V, 4 to 20mA, 0 to 20mA. Channel to channel isolation -750 to +750 VDC.          |
| <b>DL405 DC Output Modules</b>   |   |
| <b>D4-08TD1</b>  | 8-pt. 12–24 VDC current sinking <u>output</u> module, 2 commons (internally connected), 2A/point, 5A/common, removable terminal   |
| <b>D4-16TD1</b>  | 16-pt. 5–24 VDC current sinking <u>output</u> module, 2 commons (internally connected), 0.5A/point, 3A/common, removable terminal   |
| <b>D4-32TD1</b>  | 32-pt. 5–24 VDC current sinking <u>output</u> module, 4 commons (isolated), 0.2A/point, 1.6A/common. Requires one connector, sold separately.   |
| <b>DL405 Relay Output Modules</b>  |   |
| <b>D4-08TR</b>   | 8-pt. 5–30 VDC or 5–250 VAC <u>output</u> module, 8 Form A (SPST) relays, 2 commons (isolated), 2A/point, 5A/common, removable terminal   |
| <b>F4-08TRS-1</b>  | 8-pt. 12–30 VDC or 12–250 VAC isolated <u>output</u> module, 4 Form A (SPST) and 4 Form C (SPDT) relays, 8 commons (isolated), 10A/point, 40A/module, removable terminal.                           |
| <b>F4-08TRS-2</b>  | 8-pt. 12–30 VDC or 12–250 VAC isolated <u>output</u> module, 4 Form A (SPST) relays and 4 Form C (SPDT) relays, 8 commons (isolated), 5A/point, 40A/module, replaceable fuses, removable terminals. |
| <b>D4-16TR</b>   | 16-pt. 5–30 VDC or 5–250 VAC <u>output</u> module, 8 Form A (SPST) relays, 2 commons (isolated), 1A/point, 5A/common, removable terminals.  |
| <b>DL405 Analog Output Modules</b>   |   |
| <b>F4-04DAS-1</b>  | 4-channel analog <u>output</u> module, 16 bit resolution, isolated, range: 4 to 20mA current sourcing.  |
| <b>F4-04DAS-2</b>  | 4-channel analog <u>output</u> module, 16 bit resolution, isolated, range: 0–5V, 0–10V.   |
| <b>F4-08DA-2</b>   | 8-channel analog <u>output</u> module, 12 bit resolution, range: 0–5V or 0–10V.   |
| <b>F4-16DA-2</b>   | 16-channel analog <u>output</u> module, 12 bit resolution, range: 0–5V or 0–10V.  |

(table continued next page)

| <b>AutomationDirect PLC Modules for Use with GS1 AC Drives (continued)</b> |  |
|--|--|
| <b>Terminator I/O DC Output Modules</b>                                    |  |
| <b>T1K-08TD1</b>   | 8-pt. 12–24 VDC current sinking <u>output</u> module, 4 points per common, 1.0A/point, 2 replaceable fuses (T1K-FUSE-1). (use with T1K-08B or T1K-08B-1 terminal base)   |
| <b>T1K-16TD1</b>   | 16-pt. 12–24 VDC current sinking <u>output</u> module, 4 points per common, 1.0A/point, 4 replaceable fuses (T1K-FUSE-1). (use with T1K-16B or T1K-16B-1 terminal base)  |
| <b>Terminator I/O Relay Output Modules</b>                                 |  |
| <b>T1K-08TR</b>  | 8-pt. 5–30 VDC or 5–240 VAC <u>output</u> module, 8 Form A (SPST) relays, 4 points per common, 2.0A/point max., 2 replaceable fuses (T1K-FUSE-2). (use with T1K-08B or T1K-08B-1 terminal base)                                |
| <b>T1K-16TR</b>  | 16-pt. 5–30 VDC or 5–240 VAC <u>output</u> module, 16 Form A (SPST) relays, 4 points per common, 2.0A/point max., 4 replaceable fuses (T1K-FUSE-2). (use with T1K-16B or T1K-16B-1 terminal base)                              |
| <b>T1K-08TRS</b>   | 8-pt. 5–30 VDC or 5–240 VAC isolated relay <u>output</u> module, 8 Form A (SPST) relays, 1 point per common, 7.0A/point max., 8 replaceable fuses (T1K-FUSE-3). (isolation requires use of T1K-16B or T1K-16B-1 terminal base) |
| <b>Terminator I/O Analog Output Modules</b>                                |  |
| <b>T1F-08DA-2</b>  | 8-channel analog <u>output</u> , 12 bit resolution, range: 0–5VDC, 0–10VDC, +/-5VDC, +/-10VDC. (use with T1K-08B or T1K-08B-1 terminal base)   |
| <b>T1F-16DA-2</b>  | 16-channel analog <u>output</u> , 12 bit resolution, range: 1–5VDC, 1–10VDC, +/-5VDC, +/-10VDC. (use with T1K-16B or T1K-16B-1 terminal base)  |

**TYPICAL PLC CONNECTIONS TO GS1 SERIES AC DRIVES**

The following drawings show some typical connections between the GS1 Series AC Drive and AutomationDirect PLCs and modules.

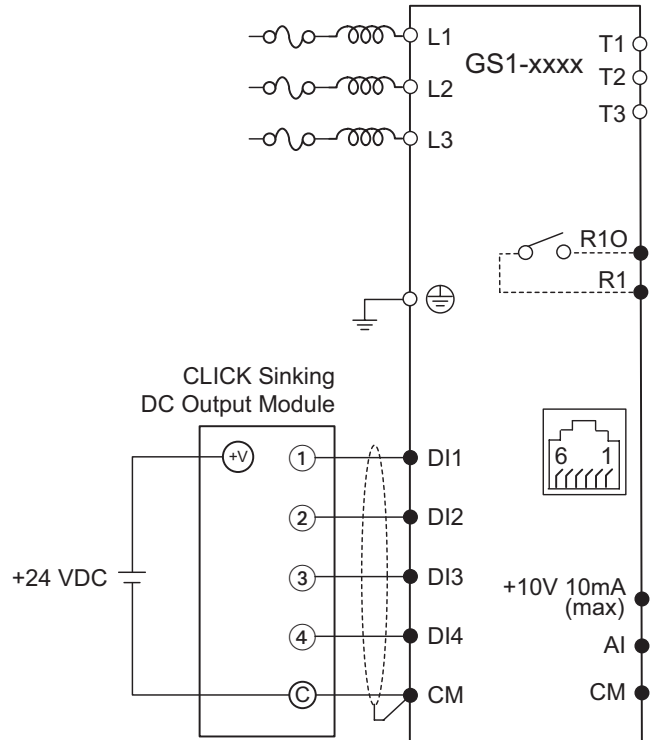
**CLICK CPU AND DC OUTPUT MODULES (SINKING)**

• C0-00-DD1-D

• C0-02-DD1-D

• C0-08-TD1

• C0-16-TD1



○ Main circuit (power) terminals ● Control circuit terminals ⚡ Shielded leads

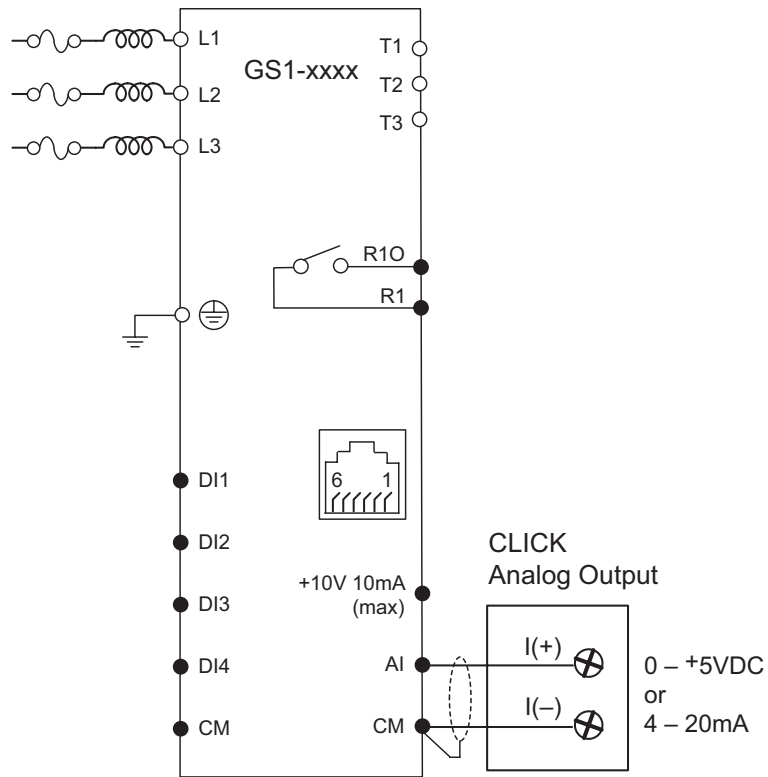
TYPICAL PLC CONNECTIONS TO GS1 SERIES AC DRIVES (CONTINUED)

CLICK CPU MODULES WITH NON-ISOLATED ANALOG OUTPUTS

• C0-02DD1-D

• C0-02DD2-D

• C0-02DR-D



○ Main circuit (power) terminals    ● Control circuit terminal    ⊕ Shielded leads

TYPICAL PLC CONNECTIONS TO GS1 SERIES AC DRIVES (CONTINUED)

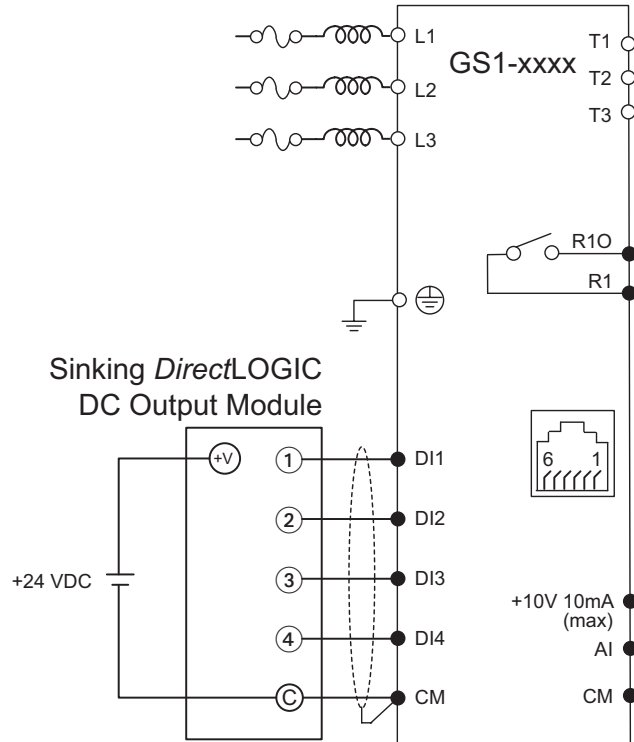
DIRECTLOGIC DC OUTPUT MODULES (SINKING)

- D0-05DD
- D0-05DD-D
- D0-06DD1
- D0-06DD1-D

- D0-10TD1
- D0-16TD1
- D2-16TD1-2

- D2-32TD1
- D4-08TD1
- D4-16TD1

- D4-32TD1
- T1K-08TD1
- T1K-16TD1



○ Main circuit (power) terminals ● Control circuit terminals ⏏ Shielded leads



TYPICAL PLC CONNECTIONS TO GS1 SERIES AC DRIVES (CONTINUED)

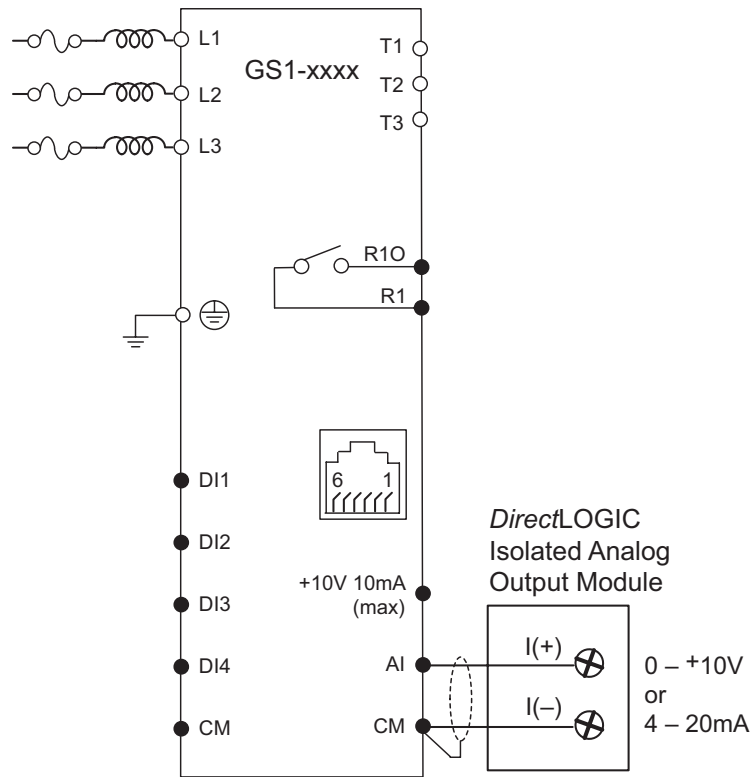
DIRECTLOGIC ISOLATED ANALOG OUTPUT MODULES

• F2-02DAS-1

• F2-02DAS-2

• F4-04DAS-1

• F4-04DAS-2



○ Main circuit (power) terminals ● Control circuit terminal ⊕ Shielded leads

TYPICAL PLC CONNECTIONS TO GS1 SERIES AC DRIVES (CONTINUED)

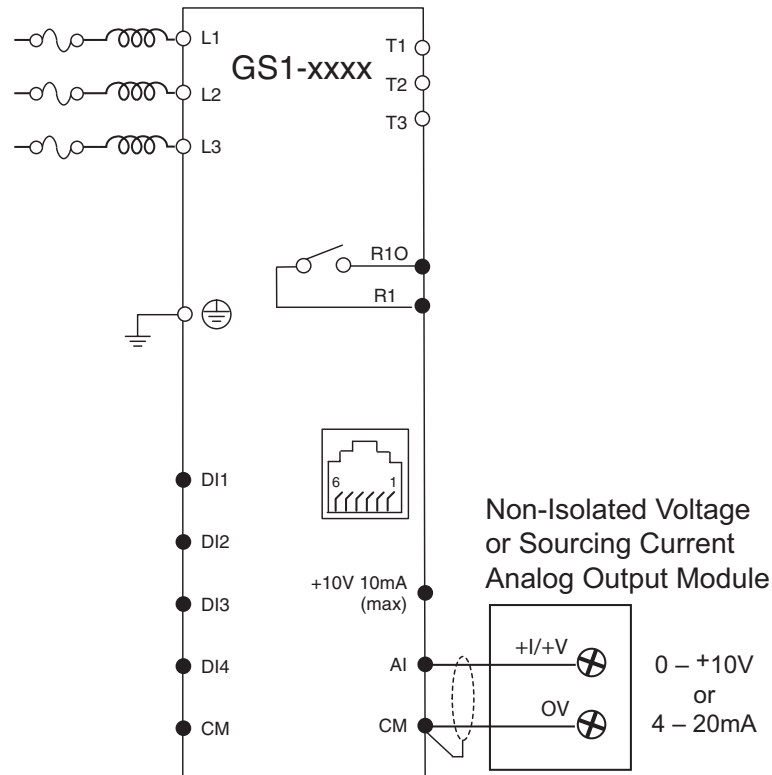
DIRECTLOGIC NON-ISOLATED VOLTAGE OR SOURCING CURRENT ANALOG OUTPUT MODULES

- F0-04DAH-1
- F0-04DAH-2
- F0-08DAH-1
- F0-08DAH-2

- F0-02AD2DA-2
- F0-04AD2DA-1
- F0-04AD2DA-2

- F2-08DA-1
- F2-02DA-2
- F2-08DA-2
- F4-08DA-2
- F4-16DA-2

- T1F-08DA-2
- T1F-16DA-2
- T1F-8AD4DA-1
- T1F-8AD4DA-2



○ Main circuit (power) terminals ● Control circuit terminal ⊕ Shielded leads