

Power Supplies

Power Supplies

The CLICK PLC family offers two 24VDC power supplies. They are identical except for the output current.

It is not mandatory to use one of these CLICK power supplies for the CLICK/CLICK PLUS PLC system. You can use any other 24VDC power supply that AutomationDirect.com offers, including the PSP24-DC12-1 12 to 24 VDC converter shown below.

CO-00AC Power Supply

Limited auxiliary AC power supply allows you to power the 24VDC CLICK C0 and C2 series PLCs with 100–240 VAC supply power. The 0.5 A DC power supply is capable of controlling the PLC plus a limited configuration based on the power budget of each I/O module. The CO-00AC is a low-cost solution for applications requiring only minimal I/O and power consumption. This power supply will not support a fully-populated CLICK PLC system with all possible I/O module combinations.



CO-00AC

| CLICK 24VDC Power Supply Ratings | | |
|----------------------------------|----------------|---------|
| Part Number | Output Current | Price |
| CO-00AC | 0.5 A | \$31.00 |
| CO-01AC | 1.3 A | \$42.50 |

| CO-00AC Power Supply Input Specifications | | |
|---|-----------------------------------|-----------------------------------|
| Part Number | CO-00AC | CO-01AC |
| Input Voltage Range | 85–264 VAC | |
| Input Frequency | 47–63 Hz | |
| Input Current (typical) | 0.3 A @ 100VAC, 0.2 A @ 200VAC | 0.9 A @ 100VAC, 0.6 A @ 200VAC |
| Inrush Current | 30A | |
| Efficiency | 80% typical | |

| CO-00AC Power Supply Output Specifications | | |
|--|------------------------------------|---------------------------------|
| Part Number | CO-00AC | CO-01AC |
| Output Voltage Range | 23–25 VDC | |
| Output Current | 0.5 A | 1.3 A |
| Ripple | 200mV p-p max (0–55°C) | |
| Ripple Noise | 300mV p-p max (0–55°C) | |
| Over Current Protection | @ 0.65 A (automatic recovery) | @ 1.6 A (automatic recovery) |
| Over Voltage Protection | @ 27.6 V (clamped by Zener diode) | |
| Start-up Time | 1000ms max at rated input and load | |
| Hold-up Time | 10ms minimum at 85VAC, I=max | |

CO-01AC Power Supply

Expanded auxiliary AC power supply allows you to power the 24VDC CLICK C0 and C2 series PLCs with 100–240 VAC supply power. The 1.3 A DC power supply is capable of supporting a fully-populated CLICK PLC system with all possible I/O module combinations, with no concerns for exceeding the power budget.



CO-01AC

| CO-00AC Power Supply General Specifications | | |
|---|--|---------------|
| Part Number | CO-00AC | CO-01AC |
| Ambient Operating Temperature | 32–131°F [0–55°C] | |
| Storage Temperature | –4–158°F [–20–70°C] | |
| Humidity | 30–95%, non-condensing | |
| Vibration Resistance | JIS C60068-2-6, sine wave vibration | |
| Shock Resistance | JIS C60068-2-27 | |
| Voltage Withstand | 1500VAC, 5mA cutoff current | |
| Input-Output | 1500VAC, 5mA cutoff current | |
| Input-Ground | 500VAC, 5mA cutoff current | |
| Output-Ground | 10MΩ minimum, 500VDC | |
| Insulation Resistance | 10MΩ minimum, 500VDC | |
| Input-Output | 5MΩ minimum, 500VDC | |
| Input-Ground | FCC Class A, EN55022:1998 Class A | |
| Output-Ground | 5P terminal block, Fujicon UF2362AX series or equivalent | |
| Noise Immunity | UL508, UL1604, EN61010-1 (IEC 1010-1), CAN/CSA E60079-15:02, JIS C0025 | |
| Input/Output Interface | 5.3 oz [150g] | 6.0 oz [170g] |
| Agency Approvals | Weight | |

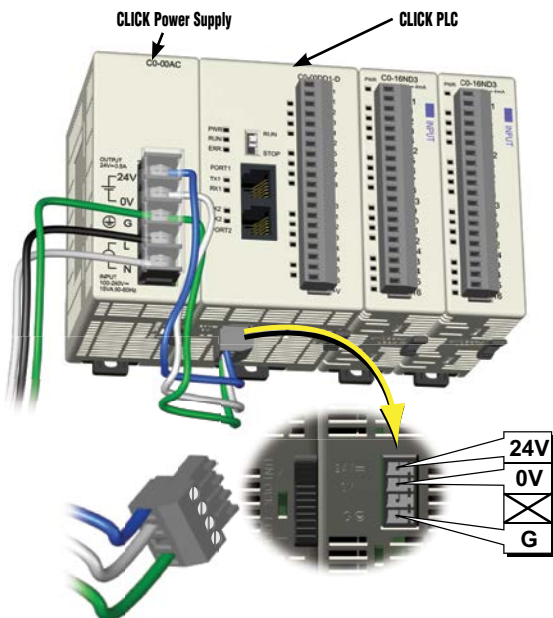
PSP24-DC12-1 DC-DC Converter

With this DC-DC converter you can operate the CLICK/CLICK PLUS PLC with 12VDC input power.



PSP24-DC12-1

| PSP24-DC12-1 DC-DC Converter Specifications | |
|---|---------------------------------|
| Input Voltage Range | 9.5–18 VDC |
| Input Power (no load) | 1.0 W max. |
| Startup Voltage | 8.4 VDC |
| Undervoltage Shutdown | 7.6 VDC |
| Output Voltage Range | 24–28 VDC (adjustable) |
| Output Current | 1.0 A |
| Short Circuit Protection | Current limited at 110% typical |
| Weight | 7.5 oz (213g) |



24VDC power is supplied to the PLC unit through wiring connected from the power supply output to the 4-pin 24VDC input connector located on the bottom of the PLC unit.

Power Budgeting

Power Budgeting

There are two areas to be considered when determining the power required to operate a CLICK PLC system. The first area is the power required by the PLC, along with the internal logic side power that the CPU provides to its own I/O and any connected I/O modules that are powered through the PLC expansion port; plus any device, such as a C-more Micro-Graphic panel, that is powered through one of the communications ports.

The second area is the power required by all externally connected I/O devices. This should be viewed as the field side power required. The field side power is dependent on the voltage used for a particular input or output device as it relates to the wired I/O point, and the calculated load rating of the connected device.

It is strongly recommended that the power source for the logic side be separate from the power source for the field side to help eliminate possible electrical noise.

Power budgeting requires the calculation of the total current the 24VDC power source needs to provide to CLICK's logic side, and also a separate calculation of the total current required for all devices operating from the field side of the PLC system.

Refer to the Power Budgeting example shown on the following page. The table shows required current for a CLICK PLUS PLC, two I/O modules, and a C-more Micro. Use the total amperage values to select the properly sized power supply.



CLICK 24VDC Power Supply
CO-00AC or CO-01AC



Other 24VDC Power Supply
Example: PSP24-060S

Power Consumption for CLICK PLC Units

Power Consumption for CLICK PLUS PLC Units

| PLC Current Consumption (mA) | | |
|------------------------------------|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| Basic PLC Units | | |
| CO-00DD1-D | 120 | 60 |
| CO-00DD2-D | 120 | 0 |
| CO-00DR-D | | |
| CO-00AR-D | | |
| Standard PLC Units | | |
| CO-01DD1-D | 140 | 60 |
| CO-01DD2-D | 140 | 0 |
| CO-01DR-D | | |
| CO-01AR-D | | |
| Analog PLC Units | | |
| CO-02DD1-D | 140 | 60 |
| CO-02DD2-D | 140 | 0 |
| CO-02DR-D | | |
| Ethernet Basic PLC Units | | |
| CO-10DD1E-D | 120 | 60 |
| CO-10DD2E-D | 120 | 0 |
| CO-10DR-E-D | | |
| CO-10ARE-D | | |
| Ethernet Standard PLC Units | | |
| CO-11DD1E-D | 140 | 60 |
| CO-11DD2E-D | 140 | 0 |
| CO-11DR-E-D | | |
| CO-11ARE-D | | |

| PLC Current Consumption (mA) | | |
|----------------------------------|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| Ethernet Analog PLC Units | | |
| CO-12DD1E-D | 140 | 60 |
| CO-12DD2E-D | | |
| CO-12DR-E-D | 160 | 0 |
| CO-12ARE-D | | |
| CO-12DD1E-1-D | | |
| CO-12DD2E-1-D | 140 | 60 |
| CO-12DR-E-1-D | 160 | 0 |
| CO-12ARE-1-D | | |
| CO-12DD1E-2-D | 140 | 60 |
| CO-12DD2E-2-D | 160 | 0 |
| CO-12DR-E-2-D | | |
| CO-12ARE-2-D | 140 | 0 |

| CLICK PLUS PLC and Option Slot Modules Current Consumption (mA) | | |
|---|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| CLICK PLUS PLCs | | |
| C2-01CPU | 110 | 0 |
| C2-02CPU | 105 | 0 |
| C2-03CPU | 130 | 0 |
| Option Slot I/O Modules | | |
| C2-14D1 | 50 | 60 |
| C2-14D2 | 50 | 0 |
| C2-14DR | 75 | 0 |
| C2-14AR | 75 | 0 |
| C2-08D1-4VC | 80 | 60 |
| C2-08D2-4VC | 80 | 0 |
| C2-08DR-4VC | 100 | 0 |
| C2-08AR-4VC | 100 | 0 |
| C2-08D1-6C | 80 | 60 |
| C2-08D2-6C | 80 | 0 |
| C2-08DR-6C | 100 | 0 |
| C2-08AR-6C | 100 | 0 |
| C2-08D1-6V | 80 | 60 |
| C2-08D2-6V | 80 | 0 |
| C2-08DR-6V | 100 | 0 |
| C2-08AR-6V | 100 | 0 |

Power Budgeting

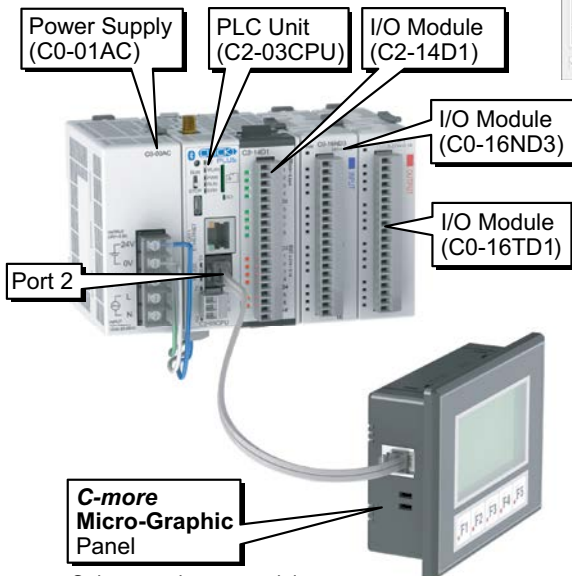
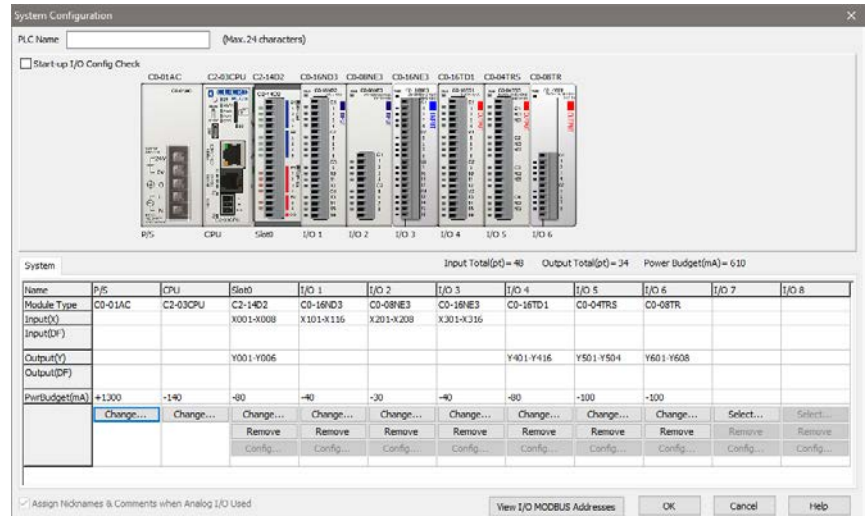
Power Consumption for CLICK Stackable I/O Modules

| I/O Module Current Consumption (mA) | | |
|-------------------------------------|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| Discrete Input Modules | | |
| <i>CO-08SIM</i> | 50 | 0 |
| <i>CO-08ND3</i> | 30 | 0 |
| <i>CO-08ND3-1</i> | 30 | 0 |
| <i>CO-16ND3</i> | 40 | 0 |
| <i>CO-08NE3</i> | 30 | 0 |
| <i>CO-16NE3</i> | 40 | 0 |
| <i>CO-08NA</i> | 30 | 0 |
| Discrete Output Modules | | |
| <i>CO-08TD1</i> | 50 | 15 |
| <i>CO-08TD2</i> | 50 | 0 |
| <i>CO-16TD1</i> | 80 | 100 |
| <i>CO-16TD2</i> | 80 | 0 |
| <i>CO-08TA</i> | 80 | 0 |
| <i>CO-04TRS</i> | 100 | 0 |
| <i>CO-04TRS-10</i> | 120 | 0 |
| <i>CO-08TR</i> | 100 | 0 |
| <i>CO-08TR-3</i> | 90 | 0 |

| I/O Module Current Consumption (continued) (mA) | | |
|---|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| Discrete Combo I/O Modules | | |
| <i>CO-16CDD1</i> | 80 | 50 |
| <i>CO-16CDD2</i> | 80 | 0 |
| <i>CO-08CDR</i> | 80 | 0 |
| Analog Input Modules | | |
| <i>CO-04AD-1</i> | 20 | 65 |
| <i>CO-04AD-2</i> | 23 | 65 |
| <i>CO-04RTD</i> | 25 | 0 |
| <i>CO-04THM</i> | 25 | 0 |
| Analog Output Modules | | |
| <i>CO-04DA-1</i> | 20 | 145 |
| <i>CO-04DA-2</i> | 20 | 85 |
| Analog Combo I/O Modules | | |
| <i>CO-4AD2DA-1</i> | 25 | 75 |
| <i>CO-4AD2DA-2</i> | 20 | 65 |
| C-more Micro-Graphic Panel | | |
| Monochrome only | 90 | 0 |

Power Budgeting Using the CLICK Programming Software

The CLICK Programming software can also be used for power budgeting. Based on the amperage rating of the power supply selected in the first column, your power budget is calculated by subtracting each consecutive module's power consumption from the total available power budget. If you exceed the maximum allowable power consumption the power budget row is highlighted in red.



Only monochrome models can be powered from port 2.

Power Budgeting Example

| Current Consumption (mA) Example | | |
|----------------------------------|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| <i>C2-03CPU</i> | 130 | 0 |
| <i>C2-14D1</i> | 50 | 60 |
| <i>CO-16ND3</i> | 40 | 0 |
| <i>CO-16TD1</i> | 80 | 100 |
| <i>C-more Micro</i> | 90 | 0 |
| Total: | 390 | 160 * |

* Add in calculated load of connected I/O devices.