

# CLICK I/O Module Specifications

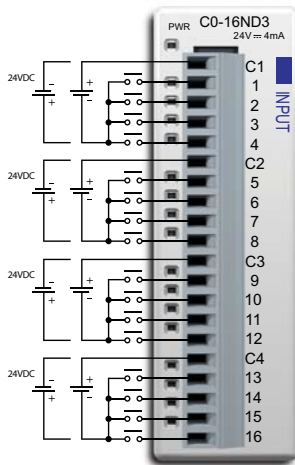
## CO-16ND3



### 16-Point Sink/Source DC Input Module

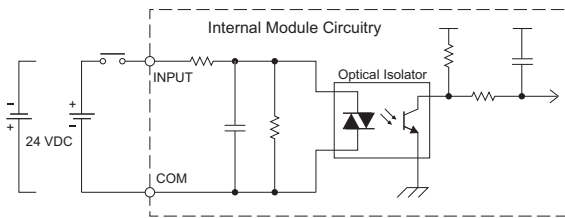
16-pt 24 VDC current sinking or sourcing input module, 4 commons, isolated, removable terminal block included (replacement ADC p/n CO-16TB).

#### Wiring Diagram

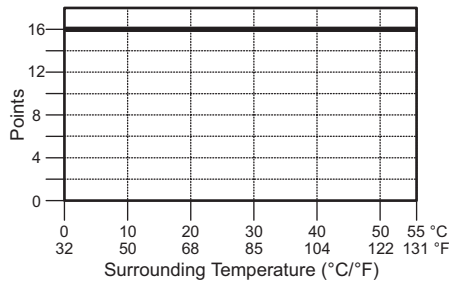


CO-16ND3 Input Specifications	
<b>Inputs per Module</b>	16 (Sink/Source)
<b>Input Voltage Range</b>	21.6-26.4 VDC
<b>Operating Voltage Range</b>	24 VDC
<b>Input Current</b>	Typ 4.0 mA @ 24 VDC
<b>Maximum Input Current</b>	5.0 mA @ 26.4 VDC
<b>Input Impedance</b>	6.8 kΩ @ 24 VDC
<b>ON Voltage Level</b>	> 19 VDC
<b>OFF Voltage Level</b>	< 7 VDC
<b>Minimum ON Current</b>	3.5 mA
<b>Maximum OFF Current</b>	0.5 mA
<b>OFF to ON Response</b>	Max. 10 mS Typ. 2 mS
<b>ON to OFF Response</b>	Max. 10 mS Typ. 3 mS
<b>Status Indicators</b>	Logic Side (16 points, green LED) Power Indicator (green LED)
<b>Commons</b>	4 (4 points/common) Isolated
<b>Bus Power Required (24 VDC)</b>	Max. 40 mA (All Inputs On)
<b>Terminal Block Replacement</b>	ADC p/n CO-16TB
<b>Weight</b>	3.2 oz (90 g)

#### Equivalent Input Circuit



#### Input Module Temperature Derating Chart



#### ZipLink Pre-Wired PLC Connection Cables and Modules for CLICK PLC

- 20-pin connector cable
- ZL-C0-CBL20 (0.5 m length)
- ZL-C0-CBL20-1 (1.0 m length)
- ZL-C0-CBL20-2 (2.0 m length)



ZL-RTB20 20-pin feed-through connector module



ZL-LTB16-24 sensor input module

# 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 CLICK CPU, 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 CPU's expansion port; plus any device, such as a C-more Micro-Graphic panel, that is powered through one of the CPU's communication 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 that the 24 VDC 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.

See the Power Budgeting Example shown to the right. The table shows current requirements for a CLICK CPU, two I/O modules, and a C-more Micro. Use the total amperage values to select a proper sized power supply.

### Power Budgeting Using the CLICK Programming Software

The following example shows the logic side current consumption as calculated in the CLICK Programming software. 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.

**Power budget row turns red if maximum allowable power consumption is exceeded for the power supply selected.**



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



Other 24 VDC Power Supply  
Example: PSP24-60S

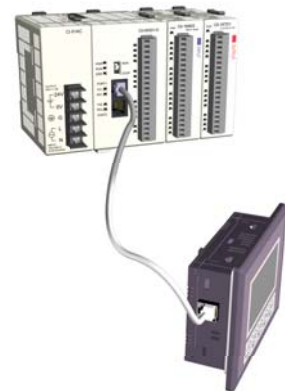
Current Consumption (mA)		
Part Number	Power Budget 24 VDC (logic side)	External 24 VDC (field side)
<b>Basic CPU Modules</b>		
CO-00DD1-D	120	60
CO-00DD2-D	120	0
CO-00DR-D	120	0
CO-00AR-D	120	0
<b>Analog CPU Modules</b>		
CO-02DD1-D	120	60
CO-02DD2-D	120	0
CO-02DR-D	120	0
<b>Input Modules</b>		
CO-08ND3	30	0
CO-08ND3-1	30	0
CO-16ND3	40	0
CO-08NA	30	0

Current Consumption (mA)		
Part Number	Power Budget 24 VDC (logic side)	External 24 VDC (field side)
<b>Output Modules</b>		
CO-08TD1	50	15
CO-08TD2	50	0
CO-16TD1	80	100
CO-16TD2	80	0
CO-08TA	80	0
CO-04TRS	100	0
CO-08TR	100	0
<b>C-more Micro-Graphic Panel</b>		
All p/n	90	0

### Power Budgeting Example

Current Consumption (mA) Example		
Part Number	Power Budget 24 VDC (logic side)	External 24 VDC (field side)
CO-00DD1-D	120	60
CO-16ND3	40	0
CO-16TD1	80	100
C-more Micro	90	0
<b>Total:</b>	<b>330</b>	<b>160 *</b>

\* Plus calculated load of connected I/O devices.



The screenshot shows the 'System Configuration Setup' window with a rack of modules including P/S, CPU, and various I/O modules. Below the rack is a table with the following data:

Name	P/S	CPU	I/O 1	I/O 2	I/O 3	I/O 4	I/O 5	I/O 6	I/O 7	I/O 8
Module Type	CO-00AC	CO-00DR-D	CO-16ND3	CO-08ND3	CO-08NA	CO-16TD1	CO-04TRS	CO-08TR		
Input		X001-X008	X101-X116	X201-X208	X301-X308					
Output		Y001-Y006				Y401-Y416	Y501-Y504	Y601-Y608		
PwrBudget(mA)	520	120	40	30	30	80	100	120		

The 'PwrBudget(mA)' row is highlighted in red, indicating that the power budget has been exceeded. The total power budget is 520 mA, and the total power consumption is 520 mA (120 + 40 + 30 + 30 + 80 + 100 + 120).

# Choosing the I/O Type

Two types of CPU modules are available:

- Basic CPUs with discrete-only inputs and outputs.
- Analog CPUs with both discrete and analog inputs and outputs.

All CLICK CPU modules offer the same performance, use the same instruction set, and support all optional I/O modules.

## Basic CPU Modules

The Basic CLICK CPU modules are available with different combinations of built-in I/O types (i.e. DC input/DC output, DC input/relay output, and AC input/relay output). With the 14 built-in I/O points (8 inputs/6 outputs), the CPU can be used as a ready-to-go PLC control system without any additional I/O modules. The CPU module just needs 24 VDC, but it can be expanded in the future if the need arises.

### Built-in I/O (Basic CPUs)

There are 4 different configurations of I/O types available for Basic CLICK CPU modules. The table lists the part numbers showing the various I/O type combinations.

## Analog CPU Modules

The Analog CLICK CPU modules are available with different combinations of DC in, DC sinking, sourcing or relay out, and analog in and out.

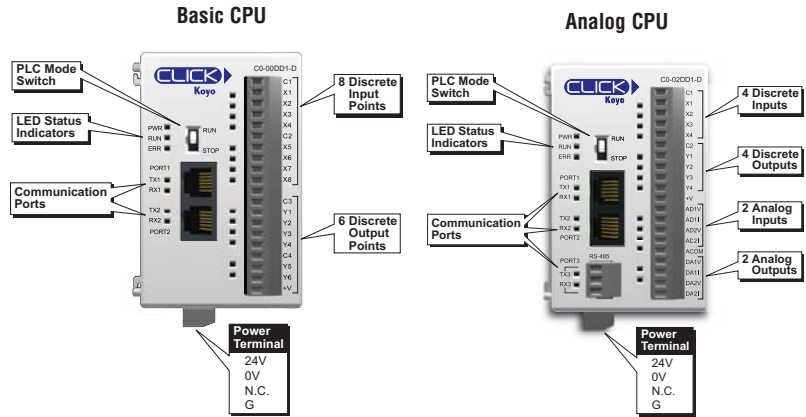
They also have an RS-485 port for Modbus and ASCII communications, and the battery backup feature which will retain the data in SRAM for 5 years.

### Built-in I/O (Analog CPUs)

There are three different configurations of I/O types available for the Analog CLICK CPU modules. The table lists the part numbers showing the various I/O types.

## Discrete I/O Modules

A variety of I/O modules are available for the CLICK PLC System. Up to 8 I/O modules can be connected to a CLICK CPU module to expand the system I/O count and meet the needs of a specific application. Complete I/O module specifications and wiring diagrams can be found later in this section. The table lists the discrete option modules that are supported by the CLICK PLC.



Basic CLICK CPUs			
Part Number	Discrete Input Type	Discrete Output Type	External Power
CO-00DD1-D	8 DC (sink/source)	6 DC (sink)	24VDC (required for all CPUs)
CO-00DD2-D	8 DC (sink/source)	6 DC (source)	
CO-00DR-D	8 DC (sink/source)	6 Relay	
CO-00AR-D	8 AC	6 Relay	

Analog CLICK CPUs			
Part Number	Discrete Input/Output Types	Analog Input/Output Types	External Power
CO-02DD1-D	4 DC in / 4 DC sinking out	2 ch in / 2 ch out (current/voltage selectable)	24VDC (required for all CPUs)
CO-02DD2-D	4 DC in / 4 DC sourcing out	2 ch in / 2 ch out (current/voltage selectable)	
CO-02DR-D	4 DC in / 4 relay out	2 ch in / 2 ch out (current/voltage selectable)	



Part Number	Inputs			Outputs		
	I/O Type/ Number/ Commons	Sink or Source	Voltage Ratings	I/O Type/ Number/ Commons	Sink or Source	Voltage/Current Ratings
CO-08ND3	DC/8/2	Sink or Source	12-24 VDC			
CO-08ND3-1	DC/8/2	Sink or Source	3.3-5 VDC			
CO-16ND3	DC/16/4	Sink or Source	24 VDC			
CO-08NA	AC/8/2	N/A	100-120 VAC			
CO-08TD1				DC/8/2	Sink	3.3-27 VDC, 0.3 A
CO-08TD2				DC/8/1	Source	12-24 VDC, 0.3 A
CO-16TD1				DC/16/2	Sink	5-27 VDC, 0.1 A
CO-16TD2				DC/16/2	Source	12-24 VDC, 0.1 A
CO-08TA				AC/8/2	N/A	17-240 VAC, 0.3 A
CO-04TRS				Relay/4/4	N/A	24 VDC, 7 A 240 VAC, 7 A
CO-08TR				Relay/8/2	N/A	24 VDC, 1 A 240 VAC, 1 A

## Cut your PLC wiring time down to minutes instead of hours

The ZIPLink wiring system eliminates the normally tedious process of wiring PLC I/O to terminal blocks. Simply plug one end of a ZIPLink pre-wired terminal block cable into your CLICK module and the other end into a ZIPLink connector module. It's that easy. ZIPLinks use half the space, at a fraction of the total cost of terminal blocks.

ZIPLinks are available in a variety of styles to suit your needs, including feedthrough connector module. ZIPLinks are available for all basic CLICK CPU modules and all discrete input and output modules.

## Specify your ZIPLink system

Use the Compatibility Matrix table below:



**NOTE: ZIPLINKS ARE ONLY AVAILABLE FOR BASIC CPU MODULES; THEY ARE NOT AVAILABLE FOR ANALOG CPU MODULES.**



<b>Step 1</b>	Locate the CLICK CPU module or I/O module part number.
<b>Step 2</b>	Locate compatible connector module type.
<b>Step 3</b>	Select the cable length by replacing the # symbol with: Blank = 0.5m, -1 = 1.0m, -2 = 2.0m

ZIPLink Wiring System Compatibility Matrix for CLICK PLCs					
Step 2: Connector Module Type		Feedthrough Module	Fuse Module	Relay Modules	Sensor Input Module
Step 1: I/O unit	Number of Terminals	ZL-RTB20	ZL-RFU20	ZL-RRL16-24	ZL-LTB16-24
Step 3: Cables					
CPU Module	CO-00DD1-D	20	ZL-CO-CBL20#		
	CO-00DD2-D	20	ZL-CO-CBL20#		
	CO-00DR-D	20	ZL-CO-CBL20#		
	CO-00AR-D	20	ZL-CO-CBL20#		
I/O Module	<b>Inputs</b>				
	CO-08ND3	11	ZL-CO-CBL11#		
	CO-08ND3-1	11	ZL-CO-CBL11#		
	CO-08NA	11	ZL-CO-CBL11#		
	CO-16ND3	20	ZL-CO-CBL20#		ZL-CO-CBL20#
	<b>Outputs</b>				
	CO-08TD1	11	ZL-CO-CBL11#		
	CO-08TD2	11	ZL-CO-CBL11#		
	CO-08TR	11	ZL-CO-CBL11#		
	CO-08TA	11	ZL-CO-CBL11#		
	CO-16TD1	20	ZL-CO-CBL20#	ZL-CO-CBL20#	ZL-CO-CBL20#
	CO-16TD2	20	ZL-CO-CBL20#	ZL-CO-CBL20#	
	CO-04TRS*	20	ZL-CO-CBL20#		

\*Note: The CO-04TRS relay output is derated not to exceed 2 Amps per point max. when used with the ZIPLink wiring system

ZIPLink Connector Modules and Cable specifications found in Terminal Blocks and Wiring section