

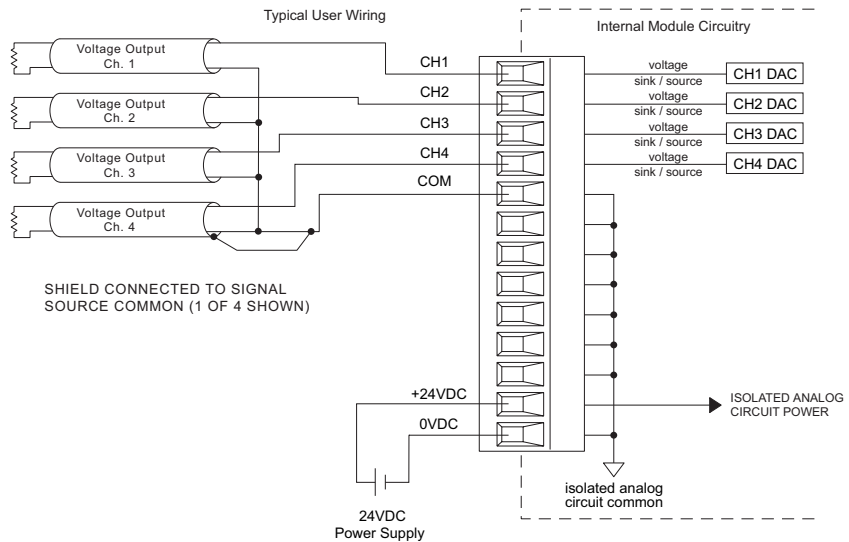
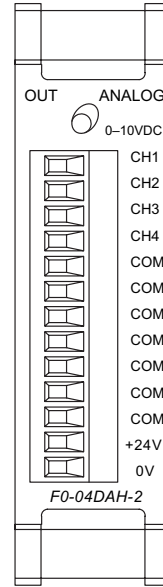
# DL05/06 Option Modules



## F0-04DAH-2 <--->

4-channel analog voltage output module, high resolution

Output Specifications	
<b>Number of Channels</b>	4
<b>Output Range</b>	0-10VDC
<b>Resolution</b>	16-bit, 152µV/bit
<b>Output Type</b>	Voltage sourcing/ sinking at 5mA max.
<b>PLC Data Format</b>	16-bit, Unsigned Int., 0-FFFF (binary) or 0-65535 (BCD) (Both require 2 words of V-memory)
<b>Output value in program mode</b>	0V
<b>Output Impedance</b>	0.5 Ohms typical
<b>Load Impedance</b>	>2000 Ohms
<b>Maximum Capacitive Load</b>	0.01 µF maximum
<b>Allowed load type</b>	Grounded
<b>Maximum Inaccuracy</b>	0.2% of range (including temperature changes)
<b>Maximum Full Scale Calibration Error (including offset error)</b>	±0.025% of range max.
<b>Maximum Offset Calibration Error</b>	±0.025% of range max.
<b>Accuracy vs. Temperature</b>	±50 ppm/ °C max. full scale calibration change
<b>Maximum Crosstalk</b>	±10 counts
<b>Linearity Error (End to End)</b>	±16 count max. (±0.025% of full scale) Monotonic with no missing codes
<b>Output Stability and Repeatability</b>	±10 counts after 10 min. warm-up typical
<b>Output Ripple</b>	.05% of Full Scale
<b>Output Settling Time</b>	.5 ms max., 5 µs min. (full scale change)
<b>All Channel Update Rate</b>	100µs
<b>Maximum Continuous Overload</b>	Outputs current limited to 40mA typical. A continuous short circuit will damage the output.
<b>Type of Output Protection</b>	24VDC Peak Output Voltage (capacitor transient voltage suppressor)
<b>Output signal at power-up and power-down</b>	0V
<b>Terminal Type (Included)</b>	Removable: D0-ACC-4
<b>External 24VDC Power Required</b>	30mA
<b>Base Power Required (5.0V)</b>	25mA



CPU	Firmware Required	DirectSOFT Required
<b>DL05</b>	Version 5.20 or later	DirectSOFT32 Version 3.0c or later
<b>DL06</b>	Version 2.30 or later	DirectSOFT32 Version 4.0, Build 16 or later

See Wiring Solutions for part numbers of ZIPLink cables and connection modules compatible with this I/O module.

## Wiring Solutions using the ZIPLink Wiring System

ZIPLinks eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN rail mount connector modules. It's as simple as plugging in a cable connector at either end or terminating wires at only one end. Prewired cables keep installation clean and efficient, using half the space at a fraction of the cost of standard terminal blocks. There are several wiring solutions available when using the ZIPLink System ranging from

PLC I/O-to-ZIPLink Connector Modules that are ready for field termination, options for connecting to third party devices, GS, DuraPulse and SureServo Drives, and specialty relay, transorb and communications modules. Pre-printed I/O-specific adhesive label strips for quick marking of ZIPLink modules are provided with ZIPLink cables. See the following solutions to help determine the best ZIPLink system for your application.

### Solution 1: DirectLOGIC, CLICK and Productivity3000 I/O Modules to ZIPLink Connector Modules

When looking for quick and easy I/O-to-field termination, a ZIPLink connector module used in conjunction with a prewired ZIPLink cable, consisting of an I/O terminal block at one end and a multi-pin connector at the other end, is the best solution.

Using the PLC I/O Modules to ZIPLink Connector Modules selector tables located in this section,

1. Locate your I/O module/PLC.
2. Select a ZIPLink module.
3. Select a corresponding ZIPLink cable.



### Solution 2: DirectLOGIC, CLICK and Productivity3000 I/O Modules to 3rd Party Devices

For connecting I/O to another device within close proximity of the I/O modules, no extra terminal blocks are necessary when using the ZIPLink Pigtail Cables. ZIPLink Pigtail Cables are prewired to an I/O terminal block with color-coded pigtail with soldered-tip wires on the other end.

Using the I/O Modules to 3rd Party Devices selector tables located in this section,

1. Locate your PLC I/O module.
2. Select a ZIPLink pigtail cable that is compatible with your 3rd party device.



### Solution 3: GS Series and DuraPulse Drives Communication Cables

Need to communicate via Modbus RTU to a drive or a network of drives?

ZIPLink cables are available in a wide range of configurations for connecting to PLCs and SureServo, SureStep, Stellar soft starters and AC drives. Add a ZIPLink communications module to quickly and easily set up a multi-device network.

Using the Drives Communication selector tables located in this section,

1. Locate your drive and type of communications.
2. Select a ZIPLink cable and other associated hardware.



## Solution 4: Serial Communications Cables

ZIPLink offers communications cables for use with *Direct*LOGIC, CLICK, and Productivity3000 CPUs, that can also be used with other communications devices. Connections include a 6-pin RJ12 or 9-pin, 15-pin and 25-pin D-sub connectors which can be used in conjunction with the RJ12 or D-Sub Feedthrough modules.

Using the **Serial Communications Cables** selector table located in this section,

1. Locate your connector type.
2. Select a cable.



## Solution 5: Specialty ZIPLink Modules

For additional application solutions, ZIPLink modules are available in a variety of configurations including stand-alone relays, 24VDC and 120VAC transorb modules, D-sub and RJ12 feedthrough modules, communication port adapter and distribution modules, and *SureServo* 50-pin I/O interface connection.

Using the **ZIPLink Specialty Modules** selector table located in this section,

1. Locate the type of application.
2. Select a ZIPLink module.



## Solution 6: ZIPLink Connector Modules to 3rd Party Devices

If you need a way to connect your device to terminal blocks without all that wiring time, then our pigtail cables with color-coded soldered-tip wires are a good solution. Used in conjunction with any compatible ZIPLink connector modules, a pigtail cable keeps wiring clean and easy and reduces troubleshooting time.

Using the **Universal Connector Modules and Pigtail Cables** table located in this section,

1. Select module type.
2. Select the number of pins.
3. Select cable.





# PLC I/O Modules to ZIPLink Connector Modules - DL05/06

DL05/06 PLC Input Module ZIPLink Selector				
PLC		ZIPLink		
Input Module	# of Terms	Component	Module Part No.	Cable Part No.
D0-10ND3	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
D0-10ND3F	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
D0-16ND3	24	Feedthrough	ZL-RTB20	ZL-D0-CBL24*L
		Sensor	ZL-LTB16-24	ZL-D0-CBL24*L
F0-08NA-1	10	Feedthrough	ZL-RTB20	ZL-D0-CBL10*

DL05/06 PLC Combo In/Out Module ZIPLink Selector				
PLC		ZIPLink		
Combo Module	# of Terms	Component	Module Part No.	Cable Part No.
D0-07CDR	10	Feedthrough	ZL-RTB20	ZL-D0-CBL10*
D0-08CDD1	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*

DL05/06 PLC Analog Module ZIPLink Selector				
PLC		ZIPLink		
Analog Module	# of Terms	Component	Module	Cable
F0-04AD-1	8	Feedthrough	ZL-RTB20	ZL-D0-CBL8*
F0-04AD-2	8	Feedthrough	ZL-RTB20	ZL-D0-CBL8*
F0-08ADH-1	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
F0-08ADH-2	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
F0-04DAH-1	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
F0-08DAH-1	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
F0-04DAH-2	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
F0-08DAH-2	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
F0-2AD2DA-2	8	Feedthrough	ZL-RTB20	ZL-D0-CBL8*
F0-4AD2DA-1	8	Feedthrough	ZL-RTB20	ZL-D0-CBL8*
F0-4AD2DA-2	8	Feedthrough	ZL-RTB20	ZL-D0-CBL8*
F0-04RTD <sup>2</sup>	Matched Only		See Note 2	
F0-04THM <sup>2</sup>	Matched Only		See Note 2	

DL05/06 PLC Output Module ZIPLink Selector				
PLC		ZIPLink		
Output Module	# of Terms	Component	Module Part No.	Cable Part No.
D0-10TD1	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
D0-16TD1	24	Feedthrough	ZL-RTB20	ZL-D0-CBL24*
		Fuse	ZL-RFU20 <sup>3</sup>	ZL-D0-CBL24*
		Relay (sinking)	ZL-RRL16-24-1	ZL-D0-CBL24*
D0-10TD2	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*
D0-16TD2	24	Feedthrough	ZL-RTB20	ZL-D0-CBL24*
		Fuse	ZL-RFU20 <sup>3</sup>	ZL-D0-CBL24*
		Relay (sourcing)	ZL-RRL16-24-2	ZL-D0-CBL24*
D0-08TR	10	Feedthrough	ZL-RTB20	ZL-D0-CBL10*
F0-04TRS <sup>1</sup>	13	Feedthrough	ZL-RTB20	ZL-D0-CBL13*

DL05/06 PLC Fixed I/O ZIPLink Selector				
PLC		ZIPLink		
PLC	# of Terms	Component	Module Part No.	Cable Part No.
DL05	18	Feedthrough	ZL-RTB20	ZL-D05-CBL18*
DL06	20 (Input side only)	Feedthrough	ZL-RTB20	ZL-D06X-CBL20*
	20 (Output side only)	Feedthrough	ZL-RTB20	ZL-D06Y-CBL20*

\* Select the cable length by replacing the \* with: Blank = 0.5m, -1 = 1.0m, or -2 = 2.0m.

<sup>1</sup> Caution: The F0-04TRS relay outputs are derated not to exceed 2A per point when used with the ZIPLink wiring system.

<sup>2</sup> These modules are not supported by the ZIPLink wiring system.

<sup>3</sup> Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits. To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit; ZL-RFU40 = 400 mA per circuit.



NOTE: ZIPLINK CONNECTOR MODULES AND ZIPLINK CABLES SPECIFICATIONS ARE IN THE ZIPLINK CATALOG SECTION.





# Power Budgeting for the DL06

The DL06 has four option module slots. To determine whether the combination of modules you select will have sufficient power, you will need to perform a power budget calculation.

## Power supplied

Power is supplied from two sources: the internal base unit power supply and, if required, an external supply (customer furnished). The D0-06xx (AC powered) PLCs supply a limited amount of 24 VDC power. The 24 VDC output can be used to power external devices.

For power budgeting, start by considering the power supplied by the base unit. All DL06 PLCs supply the same amount of 5 VDC power. Only the AC units offer 24 VDC auxiliary power.

Be aware of the trade-off between 5 VDC power and 24 VDC power. The amount of 5 VDC power available depends on the amount of 24 VDC power being used, and the amount of 24 VDC power available depends on the amount of 5 VDC power consumed. Determine the amount of internally supplied power from the table to the right.

## Power required by base unit

Because of the different I/O configurations available in the DL06 family, the power consumed by the base unit itself varies from model to model. Subtract the amount of power required by the base unit from the amount of power supplied by the base unit. Be sure to subtract 5 VDC and 24 VDC amounts.

## Power required by option modules

Next, subtract the amount of power required by the option modules you are planning to use. Again, remember to subtract both 5 VDC and 24 VDC.

If your power budget analysis shows surplus power available, you should have a workable configuration.

DL06 Power Supplied by Base Units		
Part Number	5 VDC (mA)	24 VDC (mA)
D0-06xx	1500mA	300mA
	2000mA	200mA
D0-06xx-D	1500mA	none

DL06 Base Unit Power Required		
Part Number	5 VDC (mA)	24 VDC (mA)
D0-06AA	800mA	none
D0-06AR	900mA	none
D0-06DA	800mA	none
D0-06DD1	600mA	280mA*
D0-06DD2	600mA	none
D0-06DR	950mA	none
D0-06DD1-D	600mA	none
D0-06DD2-D	600mA	none
D0-06DR-D	950mA	none

\* Only if auxiliary 24VDC power is connected to V+ terminal.

DL06 Power Consumed by Other Devices		
Part Number	5 VDC (mA)	24 VDC (mA)
D0-06LCD	50mA	none
D2-HPP	200mA	none
DV-1000	150mA	none
C-more Micro-Graphic	210mA	none

Power Budgeting Example		
Power Source	5VDC power (mA)	24VDC power (mA)
D0-06DD1 (select row A or B)	A	1500mA
	B	2000mA
<b>Current Required</b>	<b>5VDC power (mA)</b>	<b>24VDC power (mA)</b>
D0-06DD1	600mA	280mA*
D0-16ND3	35mA	0
D0-10TD1	150mA	0
D0-08TR	280mA	0
F0-4AD2DA-1	100mA	0
D0-06LCD	50mA	0
<b>Total Used</b>	<b>1215mA</b>	<b>280mA</b>
<b>Remaining</b>	A	285mA
	B	785mA

\* Auxiliary 24 VDC used to power V+ terminal of D0-06DD1 sinking outputs.

**Note 1: If the PLC's auxiliary 24 VDC power source is used to power the sinking outputs, use power choice A, above.**

DL05/06 Power Consumed by Option Modules		
Part Number	5 VDC (mA)	24 VDC (mA)
D0-07CDR	130mA	none
D0-08CDD1	100mA	none
D0-08TR	280mA	none
D0-10ND3	35mA	none
D0-10ND3F	35mA	none
D0-10TD1	150mA	none
D0-10TD2	150mA	none
D0-16ND3	35mA	none
D0-16TD1	200mA	none
D0-16TD2	200mA	none
F0-04TRS	250mA	none
F0-08NA-1	5mA	none
F0-04AD-1	50mA	none
F0-04AD-2	75mA	none
F0-08ADH-1	25mA	25mA
F0-08ADH-2	25mA	25mA
F0-04DAH-1	25mA	150mA
F0-08DAH-1	25mA	220mA
F0-04DAH-2	25mA	30mA
F0-08DAH-2	25mA	30mA
F0-2AD2DA-2	50mA	30mA
F0-4AD2DA-1	100mA	40mA
F0-4AD2DA-2	100mA	none
F0-04RTD	70mA	none
F0-04THM	30mA	none
D0-DEVNETS	45mA	none
H0-PSCM	530mA	none
H0-CTRIO	250mA	none
H0-ECOM100	300mA	none
F0-08SIM	1mA	none
D0-DCM	250 mA	none
F0-CP128	150 mA	none
F0-08SIM	1 mA	none