

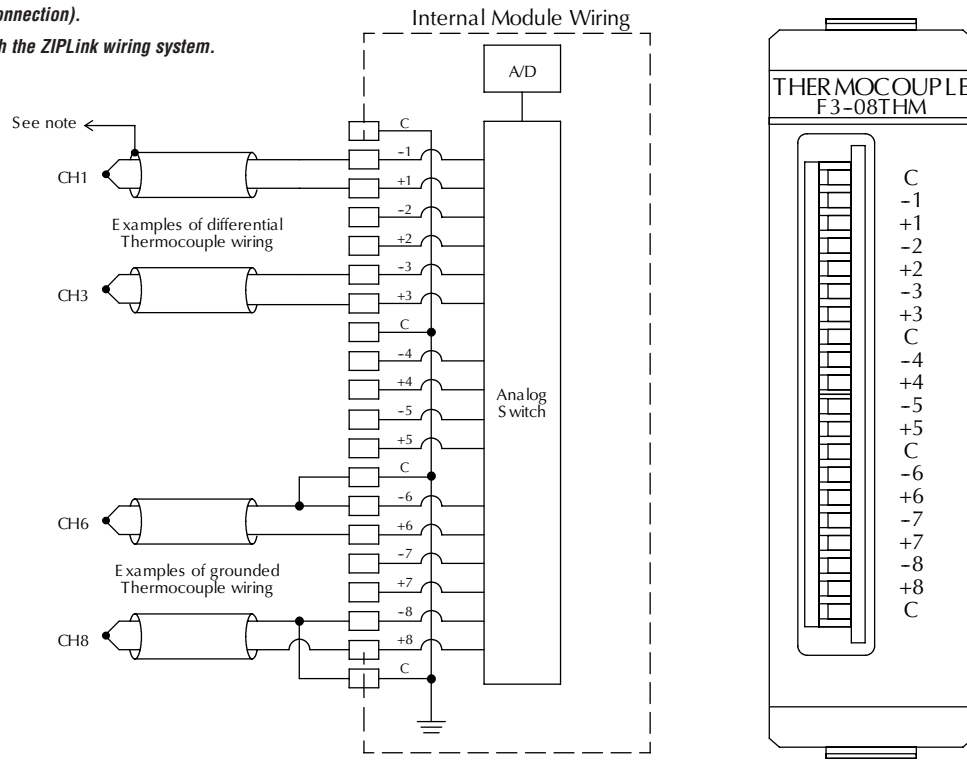
# Temperature Input Modules

<b>F3-08THM-J 8-Channel Thermocouple Input \$780.00</b>	
<b>F3-08THM-K 8-Channel Thermocouple Input \$642.00</b>	
<i>Note: When you order the module, replace the "n" with the type of thermocouple needed. For example, to order a Type J thermocouple module, order part number F3-08THM-J; J is a stock item.</i>	
<b>Input Ranges</b>	Type J: -210/760°C, -350/1390°F -1: 0–50 mV -2: 0–100 mV
<b>Resolution</b>	12 bit (1 in 4096)
<b>Input Impedance</b>	27K ohm DC
<b>Absolute Maximum Ratings</b>	Fault protected input, 130 Vrms or 100VDC
<b>Cold Junction Compensation</b>	Automatic
<b>Conversion Time</b>	15ms per channel, minimum 1 channel per CPU scan

<b>Converter Type</b>	Successive approximation, AD574
<b>Linearity Error</b>	±1 count (0.03% of full scale) maximum
<b>Maximum Inaccuracy at 77°F (25°C)</b>	0.35% of full scale
<b>Accuracy vs. Temperature</b>	57ppm/°C maximum full scale
<b>Power Budget Requirement</b>	50mA @ 9VDC, 34mA @ 24VDC
<b>External Power Supply</b>	None required
<b>Operating Temperature</b>	32° to 140°F (0° to 60°C)
<b>Storage Temperature</b>	-4° to 158°F (-20° to 70°C)
<b>Relative Humidity</b>	5 to 95% (non-condensing)
<b>Environmental Air</b>	No corrosive gases permitted
<b>Vibration</b>	MIL STD 810C 514.2
<b>Shock</b>	MIL STD 810C 516.2
<b>Noise Immunity</b>	NEMA ICS3-304

**Notes:**

1. Terminate shields at the respective signal source.
2. Leave unused channel open (no connection).
3. This module is not compatible with the ZIPLink wiring system.



# Power Budget

## Managing your power resource

The I/O configuration depends on your choice of I/O modules, bases and I/O location. When determining the types and quantity of I/O modules you will be using, it's important to remember there is a limited amount of power available from the power supply.

The chart on the next page indicates the power supplied and used by each DL305 device. The adjacent chart shows an example of how to calculate the power used by your particular system. These two charts should make it easy for you to determine if the devices you have chosen fit within the power budget of your system configuration.

If the I/O you have chosen exceeds the maximum power available from the power supply, you can resolve the problem by shifting some of the modules to an expansion base.

**WARNING:** It is extremely important to calculate the power budget correctly. If you exceed the power budget, the system may operate in an unpredictable manner, which may result in a risk of personal injury or equipment damage.

## Example: How to calculate your power usage

The following example shows how to calculate the power budget for the DL305 system. The examples are constructed around a single 5-slot base using the devices shown. It is recommended you construct a similar table for each base in your DL305 system.

- Using a chart similar to the one below, fill in column 2.
- Using the tables on the opposite page, enter the current supplied and used by each device (columns 3, 4, and 5). Devices which fall into the "Other" category (Row D) are devices such as the Handheld Programmer or a Data Communication Unit, which also have power requirements, but do not directly plug into the base.

- Add the current used by the system devices (columns 3, 4, and 5), starting with Slot 1, then put the total in the row labeled "Maximum Current Required" (Row E).
- Subtract the row labeled "Maximum Current Required" (Row E), from the row labeled "Current Supplied" (Row B). Place the difference in the row labeled "Remaining Current" (Row F).
- If "Maximum Current Required" is greater than "Current Supplied" in columns 3, 4 or 5, the power budget will be exceeded. It will be unsafe to use this configuration and you will need to restructure your I/O configuration.

## Use ZIPLinks to reduce power requirements

If your application requires a lot of relay outputs, consider using the ZIPLink AC or DC relay output modules. These modules can switch high current (10A) loads without putting a load on your base power budget. Refer to the Wiring Solutions section in this catalog for more information.

This logo is placed next to I/O modules that are supported by the ZIPLink connection systems. See the I/O module specifications at the end of this section.



A	Column 1	Column 2	Column 3	Column 4	Column 5
<b>Base # 0</b>	Device Type	5 VDC (mA)	9VDC (mA)	24V(mA)	
<b>B Current Supplied</b>					
<b>5-slot Base</b>	D3-05BDC	1400	800	500	
<b>C Current Required</b>					
<b>CPU Slot</b>	D3-340	300	50	0	
<b>Slot 0</b>	D3-16NE3	0	130	0	
<b>Slot 1</b>	D3-16NE3	0	130	0	
<b>Slot 2</b>	D3-08TA-1	0	160	0	
<b>Slot 3</b>	D3-08TA-1	0	160	0	
<b>D Other</b>					
	Handheld prog D3-HPP*	50	50	0	
<b>E Maximum Current Required</b>		350	630	0	
<b>F Remaining Current</b>		1050	170	500	

\*Note: D3-HPP is discontinued as of 06/2021.

# DL305 Power Requirements

This section shows the amount of power supplied by the base power supplies and the amount of power used by each DL305 device. Note the base power supplies provide three internal voltages (5V, 9V, 24V). The chart shows how much power from each of these power sources is required for each DL305 device. Use this information when calculating the power budget for your system.

In addition to the three internal power sources, the DL305 bases provide an external power connection. There is 24VDC available from the 24VDC output terminals on the bases (except D3-05BDC and D3-10BDC).

The 24VDC can be used to power external devices or DL305 modules that require external 24VDC. The power used from this external 24VDC output reduces the internal system 24VDC that is available to the modules by an equal amount. When using the 24VDC output at the base terminal, it is recommended that 100mA not be exceeded.

Power Consumed				
Device	5V(mA)	9V(mA)	24V(mA)	Ext req.
<b>CPUs</b>				
D3-340	300	20	0	0
D3-350	500	0	0	0
<b>DC Input Modules</b>				
D3-08ND2	0	10	112	0
F3-16ND3F	0	148	68	0
<b>AC Input Modules</b>				
D3-08NA-1	0	10	0	0
D3-08NA-2	0	10	0	0
D3-16NA	0	100	0	0
<b>AC/DC Input Modules</b>				
D3-16NE3	0	130	0	0
<b>DC Output Modules</b>				
D3-08TD1	0	20	24	0
D3-08TD2	0	30	0	0
D3-16TD1-1	0	40	96	0
D3-16TD2	0	180	0	0
<b>AC Output Modules</b>				
F3-08TAS-1	0	200	0	0
D3-08TA-1	0	160	0	0
D3-08TA-2	0	160	0	0
F3-16TA-2	0	250	0	0
D3-16TA-2	0	400	0	0

Power Supplied				
Device	5V(mA)	9V(mA)	24V(mA)	24 V (mA)
D3-05B-1	900	2000	500	100
D3-08B-1	900	2000	500	100
D3-10B-1	900	2000	500	100
D3-05BDC	900	2000	500	None
D3-10BDC	900	2000	500	None
D3-05B-NR	900	2000	500	100
D3-05BDC-NR	900	2000	500	None
Power Consumed				
Device	5V(mA)	9V(mA)	24V(mA)	External required
<b>Relay Output Modules</b>				
D3-08TR	0	360	0	0
F3-08TRS-1	0	296	0	0
F3-08TRS-2	0	296	0	0
D3-16TR	0	480	0	0
<b>Analog Temperature and Thermocouple Modules</b>				
F3-04ADS	0	183	50	0
F3-08AD-1	0	45	55	0
F3-08THM-n	0	50	34	0
F3-16AD	0	55	65	0
F3-04DA-1	0	144	108	0
F3-04DAS	0	154	145	0
<b>Communications and Networking</b>				
D3-232 DCU	500	0	0	Optional 5V@500mA
D3-422 DCU	500	0	0	Optional 5V@500mA
<b>Specialty Modules</b>				
D3-HSC	0	70	0	0
D3-TCSU	40	5	0	0
<b>Programming</b>				
D2-HPP	200	0	0	0
<b>Specialty CPUs</b>				
F3-OMUX-1*	409	0	0	0
F3-OMUX-2	262	0	150	0
F3-PMUX	455	0	0	0
F3-RTU	416	0	0	0
<b>Operator Interface</b>				
C-more Micro-Graphic	210	0	0	0

\* F3-OMUX-1 -As of 3/2021 CPU is no longer available from supplier.