



# Slice I/O

## Hardware Specification



*Helping you build a better machine, faster.*

## Slice I/O

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SynqNet®



#### Key Benefits

- **Reduced Development Time**  
Use one machine application and network for motion and I/O. Distributed network architecture allows flexible placement of I/O modules.
- **Increased Machine Performance**  
Tight coordination between motion and I/O with real-time data analysis updated every network cycle (2kHz or more).
- **Reduced Setup Time**  
SynqNet I/O nodes are self-discovering and enumerating. Topology management quickly discovers installation errors.
- **Fast Position Capture**  
Time based capture techniques allow fast inputs at any network node.

#### Standard I/O for SynqNet Systems

Slice I/O is a convenient and modular I/O package for SynqNet systems. SynqNet supports over 16,000 bits of digital I/O and over 1,000 points of analog I/O with ultra-fast I/O response.

#### Supported Features

- Convenient, modular I/O for all SynqNet networks
- Guaranteed SynqNet interoperability with no network programming
- Each SynqNet network adapter allows up to 256 digital inputs, 256 digital outputs, 16 analog inputs, and 16 analog outputs
- Full range of digital and analog Slices available
- Easy to add or change Slices
- Mounts on standard 35mm DIN rails
- Compatible with all SynqNet controllers and software products
- Single network for motion and I/O
- Use a single programming environment for I/O and motion application development
- CANOpen network adapter available upon request

#### SynqNet Platform Overview

Launched in 2001, SynqNet is a digital machine control network specifically designed to meet the flexibility, performance, and safety requirements of today's demanding machine control applications. Built on the 100BT physical layer, SynqNet provides a synchronous real-time connection between motion controllers, servo drives, stepper drives, I/O modules, and custom devices.

#### FAST

- Network bandwidth for servo updates up to 48 kHz
- Supports up to 32 nodes with 32 axes\*
- Over 16,000 bits of digital I/O and 1,000 points of analog I/O
- Real-time diagnostics over SynqNet

#### SAFE

- "Self-Healing" fault tolerant operation using ring topology
- "HotReplace" allowing replacement of node without network shutdown

#### PROVEN

- Over 350,000 motion axes installed worldwide
- Multi-vendor interoperable network

SynqNet®  
www.synqnet.org



Motion  
Controllers



Drives and  
Motors



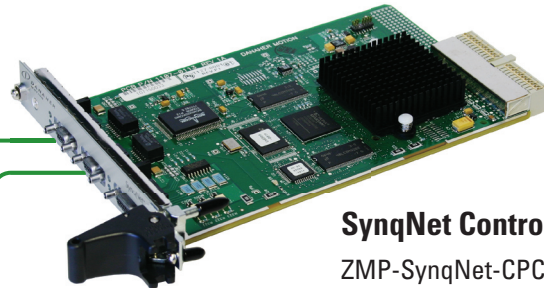
I/O



Custom  
Nodes

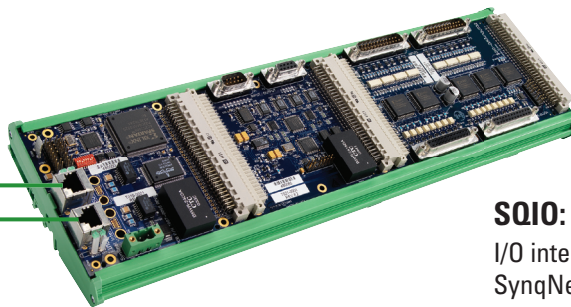
## SynqNet Connectivity Diagram

### SynqNet Drive and Motor



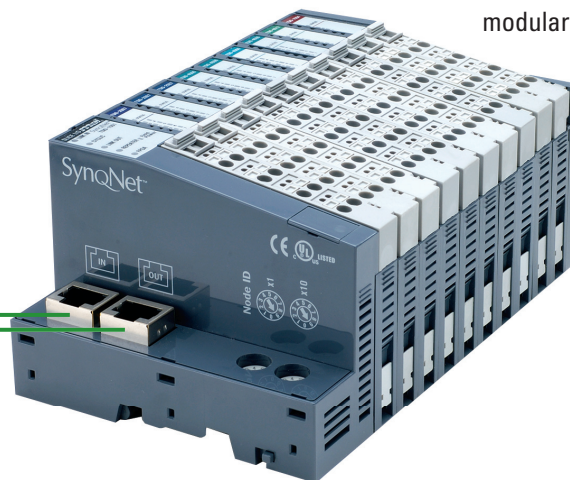
**SynqNet Controller**  
ZMP-SynqNet-CPCI-3U

SynqNet®



### SQIO: Custom SynqNet I/O Solution

I/O interfaces and reference designs to bring SynqNet connectivity to customer-designed I/O



### Slice I/O: Modular I/O Solution

Standard I/O for SynqNet systems in a convenient, modular package

Each SynqNet Network Adapter supports up to:

- 256 Digital Inputs
- 256 Digital Outputs
- 16 Analog Inputs
- 16 Analog Outputs

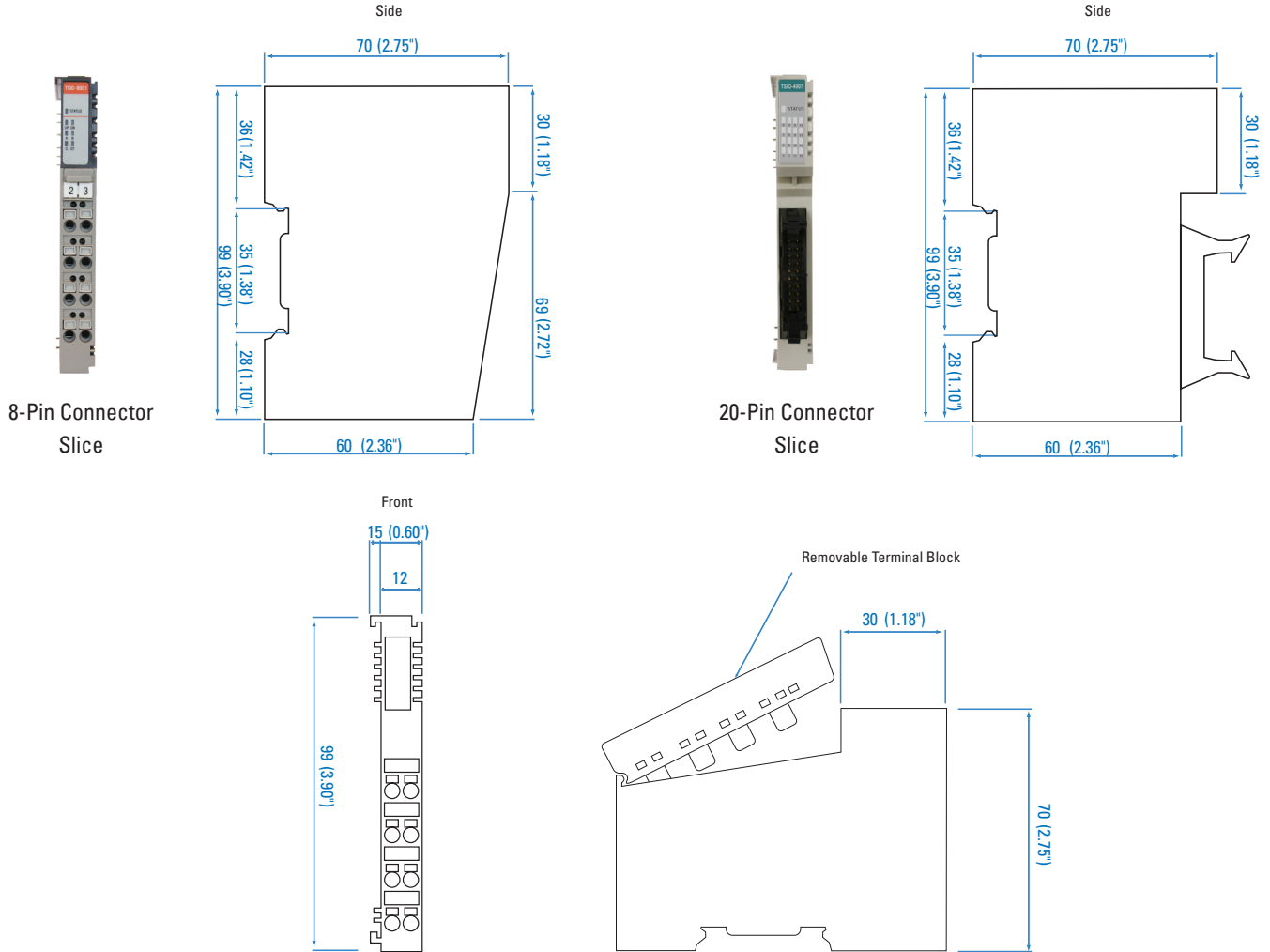
A SynqNet network supports over:

- 16,000 bits of Digital I/O
- 1,000 bits of Analog I/O

# Dimensions

## Slice I/O: Slice

All terminal Slices have identical enclosure dimensions.  
The removable insert may vary depending on Slice specification.



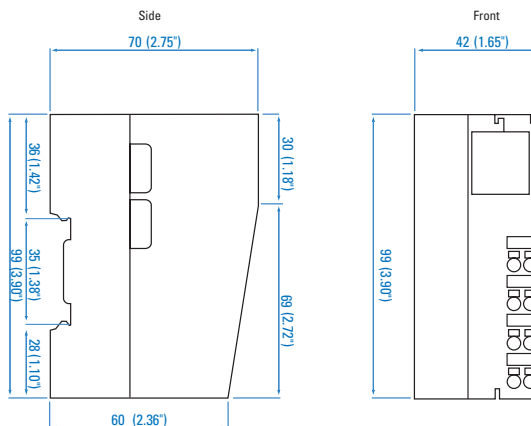
## Slice I/O: SynqNet Network Adapter

A CANOpen Network Adapter is also available upon request.

### SynqNet Network Adapter



TSIO-1001

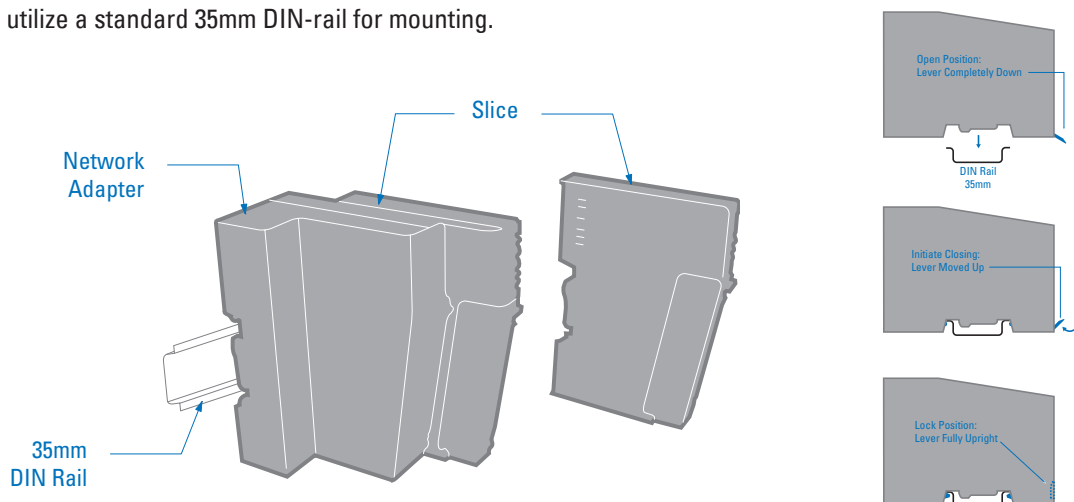


## Part Numbers and Descriptions

Part Number	Description	Part Number	Description
<b>Network Adapters- Includes Bus End Terminal</b>		<b>Analog Input</b>	
TSIO-1001	Network Adaptor, SynqNet I/O	TSIO-6005	4AI, Current, 0~20mA, single ended, 12bit
TSIO-1002	Network Adaptor, CANopen	TSIO-6006	4AI, Current, 4~20mA, single ended, 12bit
<b>Digital Input DC</b>		TSIO-6007	4AI, Current, 0~20mA, single ended, 14bit
TSIO-2001	4DI, sink, 5VDC	TSIO-6008	4AI, Current, 4~20mA, single ended, 14bit
TSIO-2002	4DI, source, 5VDC	TSIO-6009	4AI, Voltage, 0~10VDC, single ended, 12bit
TSIO-2003	4DI, sink, 24VDC	TSIO-6010	4AI, Voltage, -10~10VDC, single ended, 12bit
TSIO-2004	4DI, source, 24VDC	TSIO-6011	4AI, Voltage, 0~10VDC, single ended, 14bit
TSIO-2005	4DI, sink, 48VDC	TSIO-6012	4AI, Voltage, -10~10VDC, single ended, 14bit
TSIO-2006	4DI, source, 48VDC	TSIO-6017	2AI, RTD: PT100, JPT100 3000hm (10mOhm/bit)
TSIO-2007	8DI, sink, 24VDC	TSIO-6018	4AI, Voltage, 0~5VDC, Single Ended, 12bit
TSIO-2008	8DI, source, 24VDC	TSIO-6019	2AI, Thermocouple: 30mV (1uV/bit)
TSIO-2009	16DI, sink, 24VDC, 20pin	TSIO-6020	4AI, Voltage, 0~5VDC, Single Ended, 14bit
TSIO-2010	16DI, source, 24VDC, 20pin	<b>Analog Output</b>	
<b>Digital Input AC</b>		TSIO-7001	2AO, 0~20mA, single ended, 12bit
TSIO-3001	4DI, 110VAC	TSIO-7002	2AO, 4~20mA, single ended, 14bit
TSIO-3002	4DI, 220VAC	TSIO-7003	2AO, Voltage, 0~10V, 12bit
<b>Digital Output DC</b>		TSIO-7004	2AO, Voltage, -10~10V, 12bit
TSIO-4001	4DO, sink, TTL, 5VDC, 20mA	TSIO-7005	2AO, Voltage, 0~5VDC, Single Ended, 12bit
TSIO-4002	4DO, source, TTL, 5VDC, 20mA	<b>Power Modules</b>	
TSIO-4003	4DO, sink, MOSFET, 24VDC, 0.5A	TSIO-8001	System Power Supply, 1.0A, 5VDC
TSIO-4004	4DO, source, MOSFET, 24VDC, 0.5A	TSIO-8002	Power Distributor, 10A, 48VDC, 110/220V
TSIO-4005	8DO, sink, MOSFET, 24VDC, 0.5A	TSIO-8004	Potential Distribution, 8ch, 0V
TSIO-4006	8DO, source, MOSFET, 24VDC, 0.5A	TSIO-8005	Potential Distribution, 8ch, 24V
TSIO-4007	16DO, sink, 24VDC, 0.3A, 20pin	<b>Counter</b>	
TSIO-4008	16DO, source, 24VDC, 0.3A, 20pin	TSIO-9001	Counter, High Speed, 1 Channel, 5V
TSIO-4009	4DO, sink, MOSFET, diag., 24VDC, 0.5A	TSIO-9002	Counter, High Speed, 1 Channel, 24V
TSIO-4010	4DO, source, MOSFET, diag., 24VDC, 0.5A	<b>Misc</b>	
TSIO-4011	4DO, sink, MOSFET, diag., 24VDC, 2.0A	TSIO-8006	Removable Terminal Block, 9ea
TSIO-4012	4DO, source, MOSFET, diag., 24VDC, 2.0A	TSIO-8007	End Module, 7ea
<b>Digital Output AC</b>		TSIO-8008	Marker (0-9 numbering), White, 100ea
TSIO-5001	2DO, Relay, 230VAC, 24VDC, 2.0A	TSIO-8009	Marker (blank), White, 100ea
TSIO-5002	2DO, Triac, 12~125AC, 0.5A	TSIO-8010	DeviceNet / CANopen Connector, 6ea

## Mounting Information

All Slice I/O modules utilize a standard 35mm DIN-rail for mounting.



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