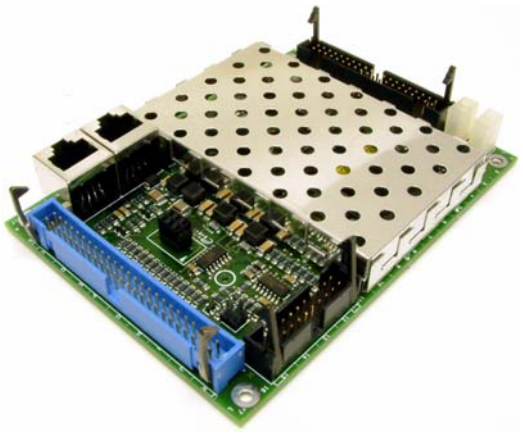
The IOC-540 is a dedicated device for high performance input and output functionality intended for areas of high I/O concentration.



The IOC-540 is simple to integrate, scalable and easily distributed. It has a dedicated DSP, delivering microsecond-level internal response time as well as high-speed coordination linked to other devices, including motion devices. The IOC-540 has a list of features such as built-in SSRs, inductive clamping, courtesy power, programmable logic, digital filters, and full optical isolation intended to reduce cost and space needs while increasing machine manufacturability. These features also give the IOC-540 the flexibility to interface to virtually any digital or analog I/O device from any manufacturer, so OEMs are not limited in their design choices.

The IOC-540 is compatible with ControlPoint™—Teknic's distributed, open-architecture machine control system. ControlPoint™ offers the OEM machine designer a wide array of control components to allow interconnectivity to just about any digital or analog sensor, stepper motor, digital servo drive, brushless servo motor, and other machine control components.

EXCEPTIONAL I/O CAPABILITY

The IOC-540 combines exceptional capability with a robust implementation that will save money, machine real estate and production time.

Programmable Digilog™ Inputs

The inputs are actually analog with programmable high and low thresholds with settable hysteresis. Digital filtering is also user-definable. This provides excellent noise immunity, allows for detection of marginal sensor, permits robust use of low cost sensors, and allows direct reading of analog sensors.

Programmable Logic Array for High Performance

The PLA offers microsecond level coordination between I/O *and* motion nodes and I/O. It provides for capability such as configurable high speed logic functions, autonomous variable processing based on event generation to create triggers, etc.

High Power Outputs

The six general purpose outputs have high-power circuits equivalent to solid-state relays. There are also clamp diodes built in to prevent damage from inductive voltage spikes. This allows wiring directly to actuators and solenoids without custom break-out boards and additional circuitry. The IOC-540 can comfortably drive devices such as 10 watt solenoids.

Active Voltage Clamping

Each output has a clamping catch diode to handle voltage spikes from inductive loads.

Direct Wiring

Each I/O point can directly interface to TTL logic or optical sensors without extra wires. Moreover, each point has multiple pins, eliminating the problem of crimping multiple wires to one pin, and the development time, cost and ongoing demands of custom transition boards.

Noise Immunity

All logic signals are fully optically isolated from power, and cable shields are easily connected to chassis ground. A Faraday cage lowers EMI radiation and boosts RF immunity.

Courtesy Power & Input Courtesy Pins

Local, courtesy +5V and +12V power is provided for all logic I/O. Additionally, external 10-24VDC power is routed to each output and has courtesy pins making it daisy chainable to other I/O nodes. This drastically simplifies wiring needs.

SCALABLE DESIGN

IOC-540s (with IEX-808 expansion cards) allow OEMs to scale from a few I/O points to a few thousand. And the IOC-540 is performance scalable as well.

Physical Scalability

IOC-540 nodes virtually eliminate the concern of running out of I/O or paying for unused points. Each IOC-540 natively provides 10 inputs and 6 outputs. By adding IEX-808 expansion cards, I/O is expandable to 42 in and 38 out *per* node. OEMs can use up to 31 nodes per network controller.

Scalable Performance

Coordinating responses between I/O events, or between motion and I/O can be accomplished in a multitude of ways with varying levels of simplicity. The simplest method provides deterministic coordination within a couple milliseconds (exact timing is machine lay-out dependant). The most elegant coordination method will deliver microsecond level coordination regardless of machine layout. So as OEM requirements evolve change, the IOC-540 provides the performance flexibility and physical scalability to continue to meet changing needs.

ADDITIONAL IOC-540 BENEFITS...

Powerful Development Environment

The IOC-540 is compatible with the ControlPoint Rapid Prototyping Environment (RPE). This motion and I/O environment allows code to be written by software novices so they can get a machine cycling in a few hours or individual I/O points tested and single axes moving in a few seconds. This reduces software resource drain and allows mechanical and electrical testing to occur independently of software development. The RPE includes a user-friendly motion and I/O interface and a powerful Visual Basic scripting tool.

Extensive Application Development Tools

The IOC-540 contains an array of software tools, including...

- Interrupt generation via the network allows simple, event-driven coding.
- Easy to use, linked machine I/O and motion under a single driver that simplifies development.
- C++ & VB class library support for all functions.
- Dynamically latched inputs with capture of rising and falling edges to ensure fast sensor events are captured.
- Software trace utility helps locate logic errors, reducing debugging time.

CAD Drawings Provided

Teknic provides templates of all cable assembly drawings to minimize engineering effort.

Built-in Solid State Relay Protection

When outputs are powered through IOC-540 courtesy power pins, the outputs are protected against wiring faults and shorts.

SPECIFICATIONS

GENERAL	Dimensions, in (mm):	4.99 (127) x 3.62 (92) x 0.70 (18).
	Weight, oz (g):	4.3 (122).
ENVIRONMENTAL	Temperature:	0-40 Degrees C.
	Humidity:	0-95%, non-condensing.
GENERAL PURPOSE DIGILOG INPUTS	# GPI per IOC:	10 (expandable to 42).
	# Pins per point:	5 (In, +5V, +12V, GND, Chassis).
	Courtesy 12V/5V current:	3 watts (supplied via Cat 5 cable).
	Max output draw per point:	500mA (at 24VDC); 330mA (at 5VDC); 200mA (at 12VDC).
	Resolution:	10 bits.
	Transition range:	0-10VDC (Max +30VDC, Min -5VDC referenced to ground).
	Features:	Digilog with settable threshold, hysteresis and filtering with marginal sensor detection, fully electrically isolated from network and from outputs, courtesy 5V & 12V, daisy chain 24 VDC, optical isolation similar to a solid state relay, direct to sensor wiring, high speed capture, latching in both positive and negative transitions, ESD safe, current-state readable.
GENERAL PURPOSE OUTPUTS	# of GPO per IOC:	6 (expandable to 38).
	# Pins per point:	6 (V+, GPO, PWR RET, Logic RET, V+ RET, Chassis).
	Max current per point:	500mA max (0-25 Degrees C; derate 5mA per every degree C increase above 25ºC.)
	Max cumulative current:	2.4A.
	External voltage range:	10-24VDC.
	Features:	Each point has independent electrical and optical isolation, source or sink compatible, catch diode to handle inductive kick from solenoids and brakes, transistor outputs with active clamping, capable of driving 24V inductive loads directly, outputs can be triggered from counters, built-in solid state relay function.
EXPANSION CAPABILITY	# Expansion IEX nodes per IOC:	Up to 4.
	Points per IEX:	8 GPI, 8 GPO.
	# IOC nodes/network:	Up to 31.
	Max possible GPO/GPI per network:	2,480 points.
COURTESY POWER	+5 VDC current draw:	330mA max.
	+12 VDC current draw:	200mA max.
POWER REQUIREMENTS	Input voltage:	40 VDC (supplied via network Cat 5 cable).
	Input current per TG:	Application dependant. (Depends on I/O use, 125mA unloaded).
COUNTRY OF ORIGIN	Manufactured in:	USA.