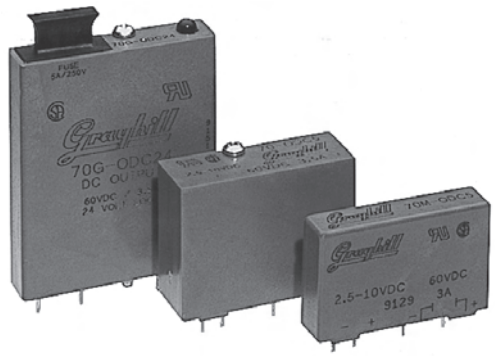
62C2211-02-020C
62C1511-02-020C
62C1515-02-020C

62C1111-01-P
62C1111-02-P

SERIES 62C OPTICAL ENCODERS
CONCENTRIC

Economical size. Combined functionality. Compatible with CMOS, TTL, and HCMOS logic. Used to set Radio Frequency, Drill Depth, RPM, Menu Selection, Parameter Selection for Patient Monitoring Devices, etc. Operating voltage: 5.0 ±.250 Vdc. Supply current: 50 mA max. at 5.0 Vdc. Logic high: 3.8V min. (5.0 Vdc). Logic low: 0.8V max. (5.0 Vdc). Actuation life: 3,000,000 operations. Rotation life: 1,000,000 cycles of operation. Operation speed: 100 RPM maximum. Operating temperature range: –40˚C to 85˚C. Bushing: Zinc casting. Shaft: aluminum. Shaft retaining ring: Stainless steel. Terminals: Brass, tin-plated. Mounting hardware: brass, nickel-plated nut and lockwasher. Switch housing: Thermoplastic. Pushbutton dome: Stainless steel. Pushbutton contacts: Brass, nickel-plated.

Cat. No.	Description	Termination	Net Price
OPTICAL ENCODER			
62C1111-01-P	Deck A, 32 positions, Deck B, 32 positions	Switch pins	**$82.23**
OPTICAL ENCODER WITH PUSHBUTTON SWITCH			
62C1111-02-P	Deck A, 32 positions, Deck B, 32 positions	Switch pins	**86.05**
62C2211-02-020C	Deck A, 16 positions, Deck B, 32 positions	2˝ cable and connector	**86.05**
62C1511-02-020C	Deck A, 24 positions, Deck B, 32 positions	2˝ cable and connector	**86.05**
62C1515-02-020C	Deck A, 24 positions, Deck B, 24 positions	2˝ cable and connector	**86.05**



STANDARD, MINI, AND G5 PINOUT

SERIES 70 DIGITAL INPUT/OUTPUT MODULES
I/O MODULES

Provide an optically isolated interface between logic systems and external AC and DC power devices. UL recognized and CSA certified. G5 modules are CE approved. Logic compatible, all listed modules operate at 5 Vdc nominal (2.5 to 9.0 Vdc). SPST N.O. with industry standard pinouts, superior noise immunity, transient protection of 4000 V/microsecond, 4000 volts of isolation, and high blocking voltages of 400 volts (120 Vac) and 600 volts (240 Vac). G5 modules have built-in status LEDs and 5 × 20 mm glass fuses. Immune to mechanical shock and vibration. Operating temperature range of –40˚C to +100˚C. AC types have zero crossing switching. Meet IEEE 472–1974 and ANSI C37.90 transient withstanding tests, and Electrical Noise Immunity Test per NEMA ISC 2-230.

Standard I/O Modules (part numbers begin 70–) form, fit, function replacements for competitive product; output modules switch up to 3.5 Amps. Standard modules measure 1.7˝ L (43,18 mm), .6˝ W (15,24 mm), and 1.25˝ H (31,75 mm).

Miniature I/O Modules (part numbers begin 70M–) require only .68˝ sq. board area, and switch up to 3.0 Amps. Mini modules measure 1.7˝ L (43,18 mm), .4˝ W (10,16 mm), and 1.0˝ H (25,4 mm).

G5 Modules (part numbers begin 70G–) include a replaceable glass cartridge fuse in the output modules and a status LED indicator. These modules switch up to 3.5 Amps. G5 modules are 1.9˝ L (48,26 mm), .46˝ W (11,68 mm), and 2.5˝ H (63,5 mm).

TERMINAL NUMBER AND CONNECTION

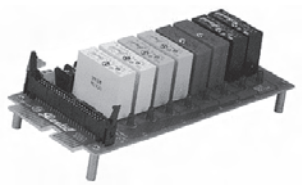
Type	#5	#4	#3	#2	#1
OAC	N/A	DC–IN	DC+In	AC Out	AC Out
ODC	N/A	DC–IN	DC+In	DC–Out	DC+Out
IAC	Ground	Output	+Vcc	AC In	AC In
IDC	Ground	Output	+Vcc	DC–In	DC+In

Only output terminals have terminal #5.

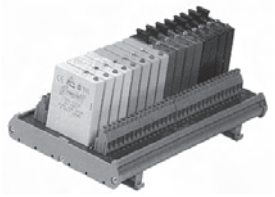
I/O MODULES

Cat. No.	Description	Net Price
LOAD VOLTAGE/OUTPUT MODULES		
70-OAC5	120 Vac	**$11.03**
70-OAC5A	240 Vac	**12.20**
70G-0AC5	120 Vac	**12.78**
70G-0AC5A	240 Vac	**13.90**
70M-OAC5	120 Vac	**11.03**
70M-OAC5A	240 Vac	**12.20**
70G-ODC5	60 Vdc	**12.78**
70G-ODC5A	200 Vdc	**20.34**
70M-ODC5	60 Vdc	**11.03**
70M-ODC5A	200 Vdc	**18.58**
INPUT VOLTAGE/INPUT MODULES		
70-IAC5	120 Vac	**11.03**
70-IAC5A	240 Vac	**11.03**
70G-IAC5	120 Vac	**11.62**
70G-IAC5A	240 Vac	**11.62**
70M-IAC5	120 Vac	**11.03**
70M-IAC5A	240 Vac	**11.03**
70-IDC5	5 Vdc	**11.03**
70G-IDC5	5 Vdc	**11.62**
70M-IDC5	5 Vdc	**11.03**

Additional types available from stock; random crossing, normally closed,non-polarized DC input, 90-140 Vdc input, or 180-280 Vdc input.



8 CHANNEL RACK



16 CHANNEL RACK

24 CHANNEL RACK

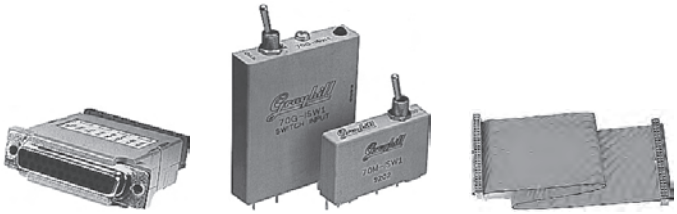
MODULE MOUNTING RACKS

Standard racks **type 70RCK** for standard modules; **types 70MRCK or 70MRCQ** for mini modules; **types 70GRCK, 70GRCQ and 70GRCM** for G5 modules. Racks accept input and output modules interchangeably. All racks have resident pull up resistors. Standard and mini racks have replaceable fuses and status indicating LEDs at each module location. Mini racks include hold down bars to retain modules. **No suffix** or **-EC suffix** denotes board edge connector. **-HS suffix** denotes 50 pin header connector for 50 pin ribbon connector with no strain relief. **-HL suffix** denotes 50 pin header connector for 50 pin ribbon connectors with strain relief or ProMux plug-in. All racks use negative true logic except **70RCK4R** which uses positive or negative true logic.

Continued on next page....

ORDERING INFORMATION

Cat. No.	Positions	L×W×H	Net Price
70RCK4	4	4.5x3.5x2.2	**$36.69**
70RCK4R	4	4.5x3.5x2.2	**38.62**
70RCK8	8	8.4x3.5x2.2	**72.74**
70RCK8-HS	8	8.4x3.5x2.2	**79.81**
70RCK16	16	14.4x3.5x2.2	**117.78**
70RCK16-HS	16	14.4x3.5x2.2	**124.87**
70RCK16-HL	16	14.4x3.5x2.2	**124.87**
70RCK24	24	18.8x4.5x2.2	**195.66**
70RCK24-HS	24	18.8x4.5x2.2	**203.40**
70RCK24-HL	24	18.8x4.5x2.2	**203.40**
70MRCK8-EC	8	6.4x3.5x2.2	**79.16**
70MRCK8-HS	8	6.4x3.5x2.2	**83.68**
70MRCK8-HL	8	6.4x3.5x2.2	**83.68**
70MRCK16-EC	16	10.4x3.5x2.2	**124.87**
70MRCK16-HS	16	10.4x3.5x2.2	**132.58**
70MRCK16-HL	16	10.4x3.5x2.2	**132.58**
70MRCK24-EC	24	13.45x4.15x2.2	**213.04**
70MRCK24-HS	24	13.45x4.15x2.2	**220.78**
70MRCK24-HL	24	13.45x4.15x2.2	**220.78**
70MRCQ24-EC	24	8.4x6.0x2.2	**204.03**
70MRCQ24-HS	24	8.4x6.0x2.2	**211.12**
70MRCQ24-HL	24	8.4x6.0x2.2	**211.12**
70GRCK8-HS	8	6.0x3.25x3.4	**83.68**
70GRCK8-HL	8	6.0x3.25x3.4	**83.68**
70GRCK16-HS	16	10.0x3.25x3.4	**124.87**
70GRCK16-HL	16	10.0x3.25x3.4	**124.87**
70GRCQ24-HS	24	7.5x6.25x3.4	**211.12**
70GRCQ24-HL	24	7.5x6.25x3.4	**211.12**
70GRCM32-HS	32	10.0x6.5x3.4	**260.04**
70GRCM32-HS	32	10.0x6.5x3.4	**260.04**

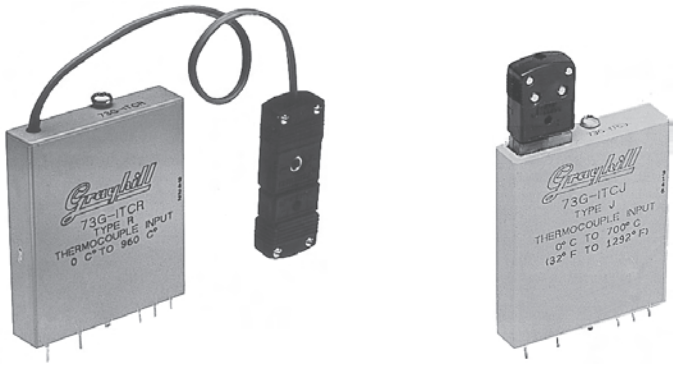


ACCESSORIES

Types 72-CNV-1, 72-CNV-2 and 72-CNV-3 are RS-232 to RS-422/485 converters which are configured for DTE to DCE operation. They plug into any male RS-232 DB-25 connector and convert signals to RS-485 (RS-422) levels. Power Supply required Voltage (Vps) **72-CNV-1 and 72-CNV-2:** +8 to +15 VDC, **72-CNV-3:** 5 VDC. Current (Ips): 62mA plus output loads. **Types 72-CHH-2, -4, and -6** are 50-pin header-to-header ribbon cable assemblies for connecting controller boards to I/O module racks. **Types 70M-ISW1 and 70M-OSW1** modules fit miniature or standard module mounting racks. **Type 70G-ISW1** fits G5 module mounting rack. See the I/O Modules for pin locations and functions. **Type 70M-OSW1** manually switches external loads of up to 3 amperes.

ORDERING INFORMATION

Cat. No.	Description	Net Price
70M-ISW1	Input Test Module	**$12.15**
70G-ISW1	Input Test Module	**13.25**
70M-OSW1	Output Test Module	**12.15**
ø **72-CNV-1**	Converter	**12.25**
ø **72-CNV-2**	Isolated Converter	**231.87**
ø **72-CNV-3**	Converter +5V	**150.28**
ø **72-CHH-2**	2-Foot Ribbon	**24.86**
ø **72-CHH-4**	4-Foot Ribbon	**27.82**
ø **72-CHH-6**	6-Foot Ribbon	**32.29**



TEMPERATURE INPUT MODULES

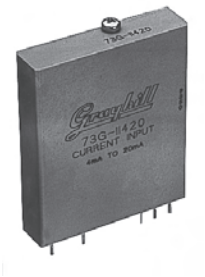
Requires a single 5 Vdc (4.5 to 5.5) power supply for operation. Provides 12 bit (serial data) resolution for all listed ranges. Designed to be intermixed with Grayhill G5 digital I/O modules for 32 point operation by MicroDAC or MicroDAC LT controller. Supply current required is 150 mA @ 5 Vdc. Cold junction temperature compensated connector included (except RTD probe). Temperature modules provide a square wave output (14.4 to 72 Khz) to the controller. The frequency is dependent on the thermocouple or probe output. Thermocouple non-linearity can be compensated by a controller algorithm. Thermocouple connector is supplied and mated to the top of the module. The RTD probe and Type R thermocouple are likewise connected, however a wire lead extends from the top of the module to the connector. Modules measure 0.46″ wide by 1.90″ long by 2.20″ high. Thermocouple connector adds approximately 1″ to overall height. Termination: #1 and #2 are not connected; #3, +5 Vdc supply; #4, square wave output; #5, ground.

Cat. No.	Description	Resolution	Net Price
ø **73G-ITCJ**	J Thermocouple, 0°C to 700°C	0.18°C	**$207.90**
ø **73G-ITCK**	K Thermocouple, –100°C to 924°C	0.25°C	**211.90**
73G-ITCR	R Thermocouple, 0°C to 960°C	0.23°C	**211.90**
ø **73G-ITCT**	T Thermocouple, –200°C to 224°C	0.10°C	**211.90**
ø **73G-ITR100**	100 Ohm Platinum RTD, –50°C to 350°C	0.10°C	**258.96**

OUTPUT VOLTAGE AND CURRENT MODULES

Requires a single 5 Vdc (4.5 to 5.5) power supply for operation. Provides 12 bit (serial data) resolution for all listed ranges. Designed to be intermixed with Grayhill G5 digital I/O modules for 32 point operation by MicroDAC or MicroDAC LT controller. Input voltage high is 2 Vdc min., low 0 to 1 Vdc. Input current requirement 1.4 mA @ 2 Vdc; 4.3 mA @ 5 Vdc. Operating Temperature: 0°C to 60°C. Storage: –25°C to 85°C. Modules measure 0.46″ wide by 1.90″ long by 2.20″ high. Each is provided with a hold down screw and terminal identification. Termination: #1 (+), #2 (–) [voltage module]; #1 and #2 output into a 420 Ohm max. load [current module]; #3, +5 Vdc supply; #4, serial data input; #5, ground.

Cat. No.	Description	Resolution	Net Price
ø **73G-0V5**	Voltage 0 to 5 Vdc Sourcing current, 20 mA @ 5 Vdc	1.22 mV	**$169.52**
ø **73G-OV5B**	Voltage –5 Vdc to 5 Vdc Sourcing current, 10 mA @ 5 Vdc	2.44 mV	**166.31**
ø **73G-OV10**	Voltage 0 to 10 Vdc Sourcing current, 10 mA @ 10 Vdc	2.44 mV	**169.52**
ø **73G-OV10B**	Voltage –10 Vdc to 10 Vdc Sourcing current, 10 mA @ 10 Vdc	4.8 mV	**169.52**
ø **73G-OI420**	Voltage 4 to 20 mA Output sourcing, 20 mA, 420 Ohm Max.	3.9 µA	**211.90**
ø **73G-OI020**	Voltage 0 to 20 mA Output sourcing, 20 mA, 420 Ohm Max.	4.9 µA	**211.90**



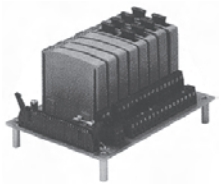
INPUT VOLTAGE AND CURRENT MODULES

Requires a single 5 Vdc (4.5 to 5.5) power supply for operation. Provides 12 bit (serial data) resolution for all listed ranges. Designed to be intermixed with Grayhill G5 digital I/O modules for 32 point operation by MicroDAC or MicroDAC LT controller. Voltage modules have a 1 megaohm input resistance and require a max. of 150 mA @ 5 Vdc. Voltage and current modules provide a square wave output (14.4 to 72 Khz) to the controller. The frequency is dependent onthe voltage or current input level, within the ranges listed in the description. There are two current ranges available, 4 to 20 mA and 0-5 amperes. The low range module has a 133 ohm input and requires 120 mA max. @ 5 Vdc. The high range module has a 0.02 ohm iput and requires 160 mA max. @ 5 Vdc. Modules measure 0.46″ wide by 1.90″ long by 2.20″ high. Each is provided with a hold down screw and terminal identification. Termination: #1 (+), #2 (–), [voltage and low current range]; #1 and #2, input non-polarized [high current range]; #3, +5 Vdc supply; #4, square wave output; #5, ground.

ORDERING INFORMATION

Cat. No.	Description	Resolution	Net Price
73G-IV50M	Voltage 0 to 5 mV	12.2 µV	**$166.31**
73G-IV100M	Voltage 0 to 100 mV	24.4 µV	**166.31**
73G-IV5	Voltage 0 to 5 Vdc	1.22 mV	**169.52**
73G-IV10	Voltage 0 to 10 Vdc	2.44 mV	**169.52**
73G-IV5B	Voltage –5 to 5 Vdc	2.44 mV	**169.52**
73G-IV10B	Voltage –10 to 10 Vdc	4.88 mV	**166.31**
73G-IVAC120	Voltage 28 to 140 Vac	27.34 mV	**184.78**
73G-IVAC240	Voltage 28 to 280 Vac	65.52 mV	**184.78**
73G-II420	Current 4 to 20 mA	3.91 µA	**169.52**
73G-II5000	Current 0 to 5 A	1.22 mA	**211.90**

8 CHANNEL RACK



16 CHANNEL RACK

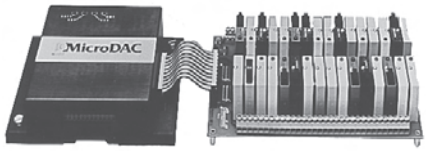
24 CHANNEL RACK

SERIES 70L OPENLINE I/O MODULES

Effortlessly upgrade your G5, G4, C4, Standard, or Mini I/O solution from Grayhill, Opto-22 or Gordos. 50% space-savings over traditional I/O types. Sleek dual-point digital I/O modules offer complete isolation from channel-to-channel and channel-to-field. Mix analog and digital I/O in the same rack. Multiple termination and mounting style options available.

Cat. No.	Description	Net Price
70L-OAC	Dual 120 Vac Output	**$23.69**
70L-OACA	Dual 240 Vac Output	**23.69**
70L-ODC	Dual 3-60 Vdc Output	**23.69**
70L-ODCA	Dual 4-200 Vdc Output	**30.80**
70L-IAC	Dual 120 Vac Input	**18.95**
70L-IACA	Dual 240 Vac Input	**18.95**
70L-IDC	Dual 3-32 Vdc Input	**18.95**
73L-II420	Dual 4-20mA Analog Input	**179.40**
73L-IV100M	Dual 100m Vdc Analog Input	**179.40**
73L-IV5	Dual 0-5 Vdc Analog Input	**179.40**
73L-IV10	Dual 0-10 Vdc Analog Input	**179.40**
73L-ITCJ	Dual Type J Thermocouple	**215.28**
73L-ITCK	Dual Type K Thermocouple	**215.28**
73L-ITR100	Dual 100Ω RTD	**233.22**
73L-OI420	Dual 4-20 mA Analog Output	**215.28**
OPENLINE I/O MODULE MOUNTING RACKS		
70LRCK8-HL	8 Channel, 50 Pin Header	**77.69**
70LRCK16-HL	16 Channel, 50 Pin Header	**116.53**
70LRCK24-HL	24 Channel, 50 Pin Header	**184.97**

NOTE: Din rail carrier available. Contact Electro Sonic for part numbers and availability.



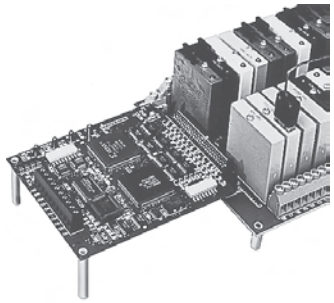
MICRODAC SERIAL CONTROLLER BOARD

Host computer and MicroDAC(s) communicate serially using RS422/485 in a multi-drop or repeat configuration and a standard Optomux[2] messages. Messages permit simple ON/OFF functions monitor voltage, current or temperature signals. Analog inputs can also be scanned for out-of-range alarming, averaging or min/max capture. C programs can be downloaded to onboard MicroDAC memory for execution. MicroDAC measures 7.9″ × 6.4″ × 2.8″ (200.66 × 162.56 × 71.12). Supply voltage: 4.5 to 5.5VDC. Supply current (less modules): 1.0A maximum. Operating temperature range: 0 to 60˚C, 95% relative humidity (non-condensing).

- Stand Alone Control of 32 Analog or Digital Points PC Controlled to Over 2,000 I/O Points
- Download C Programs
- 100% Optomux[2] Compatible, with Expanded Command Set Serial RS 422/485 Communications at 1200 to 115.2 K Baud Auxiliary RS-232 Port
- DIN Rail or Panel Mountable Metal Enclosure

Cat. No.	Description	Net Price
72-MDC-32ADC	Analog/Digital I/O, C Programmable, Real Time Clock	**$1538.10**

[2]Optomux is an industry standard and protocol developed by Opto 22.



MICRODAC LT SERIAL CONTROLLER BOARD

MicroDAC LT provides most of the functionality of a MicroDAC at 1/2 the price. All that is missing are the metal enclosure, auxiliary RS-232 port, real time clock and SXB expansion. C programs can be downloaded to versions with “C” or “P” suffix. Board measures 4.3″ × 5.5″ (109,0 x 140,0). Supply voltage: 4.75 to 5.25 VDC. Supply current (less modules): 0.5A max. Temperature range: 0 to 70˚C, 95% relative humidity (non-condensing).

- Network with MicroDACs and ProMux Boards Stand Alone Control of 32 Analog or Digital Points PC Controlled to over 2,000 I/O Points
- Download C Programs Serial RS 422/485 Communications at 1200 to 115.2 K Baud

Cat. No.	Description	Net Price
72-MDL-32AD	Analog/Digital I/O, Non-Programmable	**$632.22**
72-MDL-32ADC	Analog/Digital I/O, C Programmable	**754.54**

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