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ECONO SERIES

DMC-18x2 PCI BUS

FEATURES

MOTION

- Modes of motion include jogging, point-to-point positioning, contouring, linear and circular interpolation, electronic gearing and ECAM
- Servo loop update rates as low as 62.5 microsecond/axis—faster rates available as an option
- Encoder frequencies up to 12 MHz; Step motors up to 3 MHz
- Software PID control with velocity and acceleration feedforward, offsets and integration limits
- Motion smoothing to eliminate jerk
- Linear and circular interpolation includes ellipse scaling, slow-down around corners, infinite segment feed, feedrate override
- Two sets of coordinated axes can execute at the same time

INPUTS/OUTPUTS

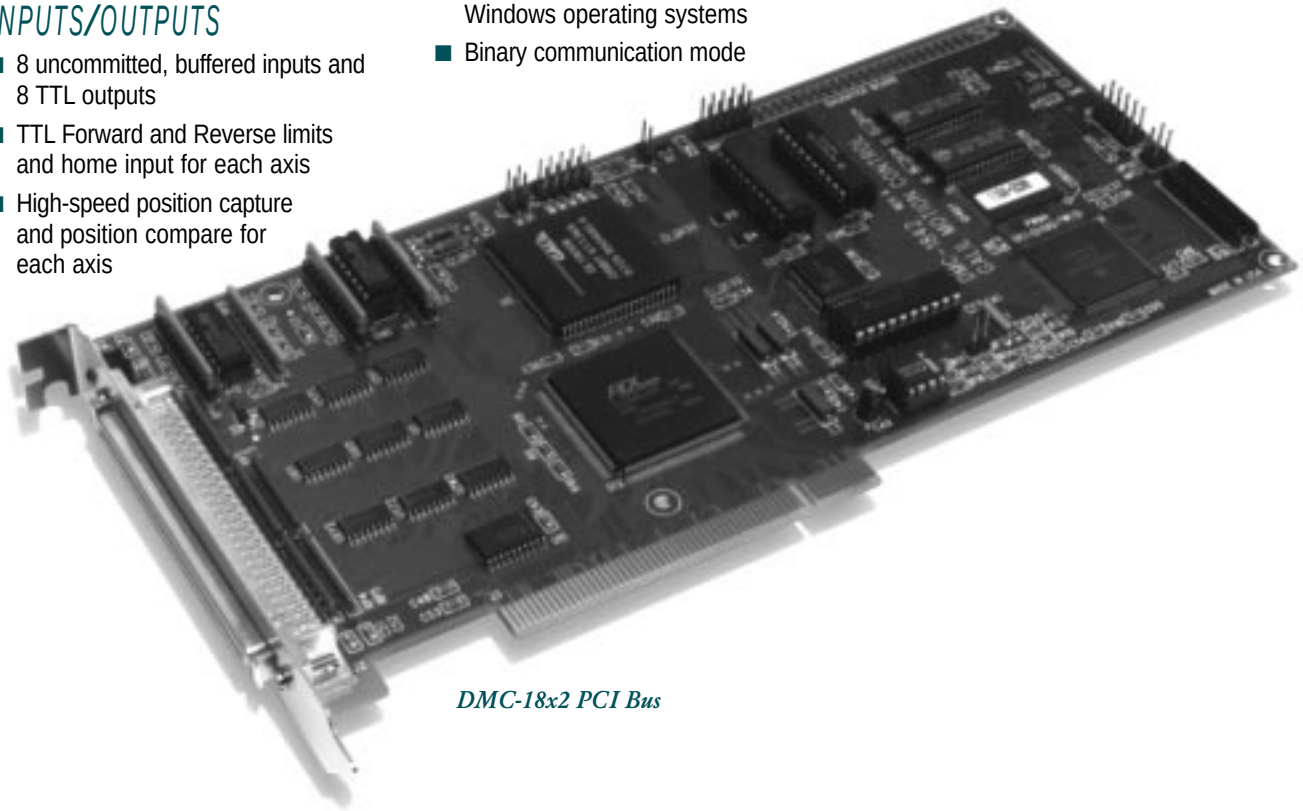
- 8 uncommitted, buffered inputs and 8 TTL outputs
- TTL Forward and Reverse limits and home input for each axis
- High-speed position capture and position compare for each axis

PROGRAMMING

- On-board, non-volatile memory for storing application programs, variables and arrays
- Programmable event triggers including At Time, At Position, At Input, At Speed
- Automatic program execution upon power-up
- Intuitive, English-like command language with over 200 commands directly executable by controller
- Multitasking for simultaneous execution of up to eight applications programs
- Flash EEPROM for firmware updates
- Software tools for automatic servo tuning and analysis; ActiveX controls for Visual Basic
- Extensive DLLs and documentation for C/C++ programmers
- Drivers for Linux, QNX, DOS, and all Windows operating systems
- Binary communication mode

FORMATS

- 1- through 4-axis formats
- PCI bus
- Controls step motors and servo motors on any combination of axes
- On-board sinusoidal commutation for brushless motors
- 100-pin high density shielded connector minimizes EMI



DMC-18x2 PCI Bus

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ECONO SERIES

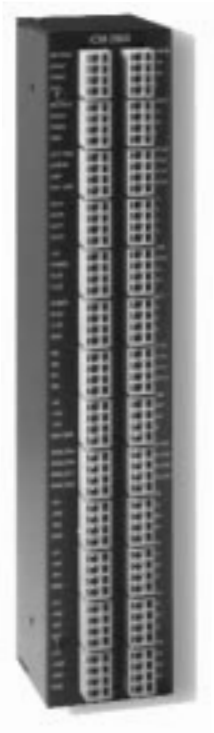
DMC-18x2 PCI BUS

DESCRIPTION

Galil's DMC-18x2 motion controllers for the PCI bus are designed for extremely cost-sensitive applications. Performance specifications are similar to the Optima series, but with some features removed for reduced cost such as uncommitted analog inputs, a secondary FIFO, optoisolation, and auxiliary encoders. However, most high-performance features are standard: program memory with multitasking, symbolic variables and arrays, uncommitted digital I/O and control of both step and servo motors on any combination of axes.

The DMC-18x2 is available in one-, two-, three- and four-axis versions. Modes of motion include linear and circular interpolation, contouring, electronic gearing and ECAM. Consult the Optima series specifications for a complete description of the modes of motion and programming.

The DMC-18x2 uses a single, high-density, 100-pin shielded cable. The ICM-2900 interconnect module breaks out the cable into screw terminals for easy connection to system elements.



ICM-2900 Interconnect Module breaks out 100-pin cable into screw terminals.

CONNECTORS

Axis 1-4 DMC-18x2

100-pin, high density; Connector: Amp# 2-178238-9
Cable: Amp# 2-175677-9; Enclosure: Amp# 176793-9

1	Analog ground	51	NC
2	Ground	52	Ground
3	5 V	53	5 V
4	Error output	54	NC
5	Reset	55	Home W
6	Encoder–compare output	56	Reverse limit W
7	Ground	57	Forward limit W
8	Ground	58	Home Z
9	Motor command W	59	Reverse limit Z
10	Sign W / dir W	60	Forward limit Z
11	PWM W / step W	61	Home Y
12	Motor command Z	62	Reverse limit Y
13	Sign Z / dir Z	63	Forward limit Y
14	PWM Z / step Z	64	Home X
15	Motor command Y	65	Reverse limit X
16	Sign Y / dir Y	66	Forward limit X
17	PWM Y / step Y	67	Ground
18	Motor command X	68	5 V
19	Sign X / dir X	69	NC
20	PWM X / step X	70	Latch X/Input 1
21	Amp enable W	71	Latch Y/Input 2
22	Amp enable Z	72	Latch Z/Input 3
23	Amp enable Y	73	Latch W/Input 4
24	Amp enable X	74	Input 5
25	A+ X	75	Input 6
26	A- X	76	Input 7
27	B+ X	77	Input 8
28	B- X	78	Abort
29	I+ X	79	Output 1
30	I- X	80	Output 2
31	A+ Y	81	Output 3
32	A - Y	82	Output 4
33	B+ Y	83	Output 5
34	B- Y	84	Output 6
35	I+ Y	85	Output 7
36	I- Y	86	Output 8
37	A+ Z	87	5 V
38	A - Z	88	Ground
39	B+ Z	89	Ground
40	B- Z	90	Ground
41	I+ Z	91	NC
42	I- Z	92	NC
43	A+ W	93	NC
44	A - W	94	NC
45	B+ W	95	NC
46	B- W	96	NC
47	I+ W	97	NC
48	I- W	98	NC
49	+12 V	99	-12 V
50	+12 V	100	-12 V

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ECONO SERIES

DMC-18x2 PCI BUS

SPECIFICATIONS

SYSTEM PROCESSOR

- Motorola 32-bit microcomputer

COMMUNICATIONS INTERFACE

- *DMC-18x2:* PCI with bi-directional FIFO

Commands are sent in ASCII. A binary communication mode is also available as a standard feature

MODES OF MOTION

- Point-to-point positioning
- Jogging
- 2D Linear and Circular Interpolation with feedrate override
- Linear Interpolation
- Tangential Following
- Helical
- Electronic Gearing with multiple masters
- Gantry Mode
- Electronic Cam
- Contouring
- Teach

MEMORY

- Program memory size–1000 lines × 80 characters
- 254 variables
- 8000 array elements in up to 30 arrays

FILTER

- PID (proportional-integral-derivative) with velocity and acceleration feedforward
- Velocity smoothing to minimize jerk
- Integration limits
- Torque limits
- Offset adjustments

KINEMATIC RANGES

- *Position:* 32 bit (±2.15 billion counts per move; automatic rollover; no limit in jog or vector modes)
- *Velocity:* Up to 12 million counts/sec for servo motors
- *Acceleration:* Up to 67 million counts/sec^2

UNCOMMITTED DIGITAL I/O

- 8 buffered inputs
- 8 TTL outputs

HIGH SPEED POSITION LATCH

- Uncommitted inputs 1-4 latch X, Y, Z, W (latches within .1 microsecond)

DEDICATED INPUTS (PER AXIS)

- Main encoder inputs–Channel A, A-, B, B-, I, I- (±12 V or TTL)
- Forward and reverse limit inputs–TTL
- Home input–TTL
- High-speed position latch input

DEDICATED OUTPUTS (PER AXIS)

- Analog motor command output with 16-bit DAC resolution
- Pulse and direction output for step motors
- Amplifier enable output
- Error output
- High-speed position compare output

MINIMUM SERVO LOOP UPDATE RATE

- *1–2 axes:* 125 microsecond
- *3–4 axes:* 250 microsecond

MAXIMUM ENCODER FEEDBACK RATE

- 12 MHz

MAXIMUM STEPPER RATE

- 3 MHz (Full, half or microstep)

POWER REQUIREMENTS

- +5V 750mA
- -12V 20mA
- +12V 20mA

ENVIRONMENTAL

- *Operating temperature:* 0–70° C
- *Humidity:* 20-95% RH, non-condensing

MECHANICAL

- *1-4 axes:* 4.23" × 9"

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ECONO SERIES

DMC-18x2 PCI BUS

ORDERING INFORMATION

PART NUMBER	DESCRIPTION	QUANTITY 1	QUANTITY 100
DMC-1812	1-axis PCI	**$ 795**	**$ 595**
DMC-1822	2-axis PCI	**$ 895**	**$ 665**
DMC-1832	3-axis PCI	**$1045**	**$ 725**
DMC-1842	4-axis PCI	**$1195**	**$ 795**
ICM-2900-FL	Interconnect module with mounting flange. Specify -HAEN for high amp enable or -LAEN for low amp enable	**$ 295**	**$ 195**
ICM-2900-OPTO	ICM with optoisolated digital output circuitry	**$ 345**	**$ 245**
DB-14064	Expansion for 64 I/O	**$ 295**	**$ 195**
Cable-100-1M	100-pin high-density cable in 1 meter length	**$ 125**	**$ 95**
Cable-100-2M	100-pin high-density cable in 2 meter length	**$ 135**	**$ 100**
Cable-100-4M	100-pin high-density cable in 4 meter length	**$ 150**	**$ 105**
AMP-1910	ICM with PWM amplifier for 1 brush-type servo motor	**$ 695**	**$ 470**
AMP-1920	ICM with PWM amplifiers for 2 brush-type servo motors	**$1045**	**$ 695**
AMP-1930	ICM with PWM amplifiers for 3 brush-type servo motors	**$1395**	**$ 920**
AMP-1940	ICM with PWM amplifiers for 4 brush-type servo motors	**$1745**	**$1145**
Galil Utilities	Communication drivers, terminal, DMCWIN, DMCDOS	**$ 20**	
CTOOLKIT	DMCWIN with C/C++ documentation and examples	**Included with Utilities**	
WSDK	Set-up, tuning and analysis software	**$ 195**	
ActiveX Tool Kit	Custom controls for ActiveX software such as Visual Basic	**$ 595**	

Galil offers additional quantity discounts for purchases between 1 and 100. Consult Galil for a quotation.

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