Controller Selection Guide

Page	Board	CPU	Size (inches)	DC Power (V)	TTL I/O	High Voltage I/O	UART	12-bit ADC (16-bit ADC)	12-bit DAC (16-bit DAC)	Maximum Speed (MHz)	External Bus Width	Regulator*	Timer/cnts	Ethernet 232/485/422	CF/QD**	Expansion Board
8	**586D**	586	6x3.2	9-30	10+	40	4	[16], (4)	8+	133	16	S	7	ETH+, 232, 485	CF	All
9	**586E**	586	3.6x2.3	5	32		3	19	8	133	16		7	TTL		All
10	**586P**	586	3.6x2.6	9-30	20+		2	(4)	(8)	133	16	S	7	232	CF	All
11	**A104**	188	3.6x3.8	12	60+	14	3	16	4	40	8	L	3	232, 485		All
12	**A104S**	188	3.6x4.0	30	80+		7	11	2	40	8	S/L	3	232, 485		All
13	**AC**	188	2.2x2.3	5/12	20+		2			40	8	L	3	232		i2x
14	**AC86**	186	2.2x2.3	5/12	20+		2	(1)	2	40	16	L	3	232		i2x
15	**AE**	188	3.6x2.3	5	40+		3	11	2	40	8		3	TTL		All
16	**AE86**	186	3.6x2.3	5	50+		3	19	6	40	16		3	TTL		All
17	**AE86D**	186	3.6x2.9	9-30	20+		3	8	8	40	16	S/L	6	232,485		All
16	**AE86P**	186	3.6x2.9	9-30	50+		3	19	6	40	16	S/L	3	232,485		All
15	**AEP**	188	3.6x2.8	12	40+		3	11	2	40	8	L	3	232,485		All
18	**BBA**	188	4.5x3.6	9-30	70+	7	4	11	2	40	8	S/L	3	232,485		All
19	**CEye**	186	4.0x3.0	5-30	10+		2			40	16	S/L	3	232, ETH+	CF	
20	**EE**	186	3.6x2.6	5/9	20+		2	(4)		80	16	USB/L	3	232, ETH+	CF	All
21	**EL**	186	4.2x3.0	9-30	10	7+1	2	[16], (4)	10	40	16	S/L	3	232, ETH+	CF	All
22	**FB**	188	2.4x2.1	6-12	20+		2	(8)	4	40	8	L	3	232	CF	i2x
23	**FN**	186	3.6x2.9	9-30	40+		10	(8)	4	40	16	S/L	3	232,422	CF	All
24	**GE**	186	4.3x3.1	9-30	20+	2	2		2	40	16	S/L	3	232/485 ETH	CF	All
25	**ID**	386	4.5x4.7	9-30	70+		5	22	2	33	16	S/L	3	232,485	2 QD	All
26	**IE**	386	3.6x2.3	5	30+		3	11	4	33	16		3	TTL		All
27	**IEL**	386	3.6x2.8	9-30	50+		3	19	2	32	16	S/L	3	232,485		All
28	**IEM**	386	4.5x2.7	9-30	20+		3	(8)	4	33	16	S/L	3	232,485		All
28	**IEP**	386	4.5x2.7	9-30	20+		3	1		33	16	S/L	3	232,485		All
13	**MD88**	188	3.1x2.6	9-12	35	35	2			40	8	L	3	232		
29	**RA**	186	3.6x3.5	9-30	40+		3	32, (8)	8	80	16	S/L	6	232,422	CF	All
30	**RB**	186	4.0x3.0	9-30	20+	15	3	(8)	8	80	16	S/L	3	232/485	CF	i2x
31	**RD**	186	3.9x3.6	9-30	40+	21	3	8, (8)	8	80	16	S/L	3	232,422,ETH	CF	All
32	**RE**	186	3.6x2.3	5	40+		3	11, (8)	6	80	16		3	TTL		All
33	**RM**	186	4.2x5.2	9-30	40+	21	3	8, (8)	8	80	16	S/L	3	232,422,ETH	CF	All, MODEM
34	**RL**	186	4.9x3.5	9-30	20+	35,20	5			80	16	S/L	3	232,485,ETH†	CF	All
35	**SC**	**186**	4.5x2.0	9-12	8		2	[48]	2	80	16	L	3	232, ETH+	CF	All
35	**SCA**	**186**	4.5x2.0	9-12	10+		2	48		80	16	L	3	232, ETH+	CF	All
36	**SD**	386	6.1x4.5	9-30	70+		11	11	2	32	16	S/L	3	232,485		All
37	**SL**	188	6.5x4.3	9-12	70+	7	3	21	4	40	8	S/L	3	232,485		All
38	**ST**	186	6.5x4.5	9-30	20+	20	5	12	14	40	16	S/L	6	232/485 ETH	CF	All
39	**TD40**	188	4.8x3.4	9-30	50+	35	3	11	2+	40	8	S/L	3	232,485		i2x
40	**TD86**	186	4.8x3.4	9-30	50+	30	4	6	4	40	16	S/L	6	232,422		All

* S=switching regulator, L=linear regulator **CF = CompactFlash, QD = Quadrature Decoder ETH = CS8900 Ethernet Controller
ETH† = 100BT Ethernet Controller with hardware TCP

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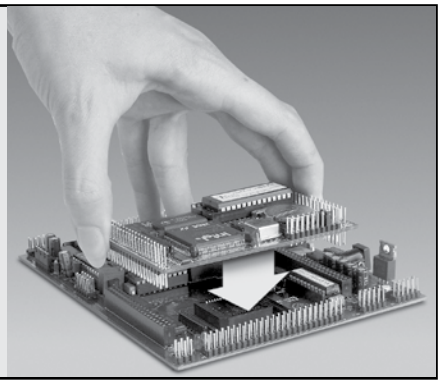
Expansion Board Guide

Processor and controller performance

A simple analogy for controller performance is a highway system. The clock speed is the speed limit at which data can travel. The width of the external data bus is the number of lanes on the freeway. More lanes and a higher moving speed means better performance supported by the highway system. You can think of "186-40 MHz" as cars moving at 40MPH on 16 lanes and "586-133MHz" as cars moving at 133 MPH on 16 lanes.

Mounting a TERN Controller On an Expansion Board

TERN controllers mount directly on top of the expansion board, connecting via high quality gold-plated pins and sockets. These boards can be further secured with fastening screws connected through aligned mounting holes. TERN controllers can be used as components directly soldered into OEM products.



Expansion Board Overview

TERN expansion boards offer features in addition to those provided by TERN CPU controllers. Expansion boards can increase a TERN controller's I/Os and memory storage capabilities. The integrated modular design of the expansion board line allows a fast, easy, and flexible way of upgrading a TERN controller's capabilities.

Page	Expansion Board	Size (inches)	DC Power (V)	Regulator*	RS232/485	Ethernet	TTL I/O	HV I/O	ADC	DAC	Decoder	Special Functions
41	**CUSB**	2.1x1.3	USB									USB Interface
50	**C24**	3.6x2.3	5									24 ch. 16-bit counters
43	**EyeJ**	1.2x2.0	5									Image sensor with JPEG
22	**FC0**	2.4x2.1	5									CompactFlash Interface
44	**Grabber**	3.6x2.3	5						2			Flash ADC, 25-80 MHz, FIFO/Buffer
45	**i2x-D32**	3.2x1.5	5				32					i2x, 32 I/Os, LCD interface
45	**i2x-KP**	5.3x2.6	5-12	L			16	9				I2x, LCD, 8x2 keys, 7 HVs, 2 relays
45	**i2x-R16**	3.3x1.7	5-12	L				16				I2x, 16 relays
46	**LD**	5.7x4.1	9-30	S/L	10			48	22			8 UARTs, 10 RS232, 22 solenoid drivers
47	**MM-B** **MMC**	3.6x2.3 3.6x2.3	5-12 5	L	2	1 ETH+			39 4			CF, Ethernet , 8 MB SRAM 6 24-bit ADC, 33 12-bit ADC, 4 16-bit ADC
48	**MC2140** **MC2540**	4.7x3.8	9-30	S/L	3		24	7	8	4	4	DSP, 4-axis motion control, servo/stepper, DAC, Quad. Decoders
✻	**MC1401** **MC1451**	6.1x4.7	12	S/L	3		24	4		4	4	DSP, 4-axis motion control, servo/stepper, DAC, Quad. Decoders
19	**Eye0**	2.5x1.85	5									CMOS image camera
49	**MCP2140** **MCP2540**	4.6x5.3	9-30	S/L	3		48	40	8	4	4	OPTO, SSR, DSP, 4-axis motion control, servo/stepper, DAC, Quad. Decoders
49	**MCS2340**	4.5x4.8	9-30	S/L	3		24	19	16		4	Brushless, sinusoidal waveform, ADC, DAC, Quad. Decoders
44	**OPA**	2.0x1.6	5-12				3		8			8 ch. +-10V analog inputs, 16-bit ADC
44	**OPS**	2.8x2.4	9-12									4 instrumentation ops, Gain >1000
42	**P50/P52**	4.4x3.1	9-30	S/L	3	ETH+	24	14	8	4	2	16-bit bus, ADC, DAC, Ethernet
46	**P100**	4.4x2.9	9-30	S/L	3		96	7			2	96 I/O, 7HV I/O, 2ch. Quad. Decoder
46	**P300**	7.5x5.0	9-30	S/L	3		264	240				264 TTL I/O or 240 high voltage I/O
✻	**PC-Co**	4.9x4.2	12	L	4		72	7				3 relays, RS232, LCD, DB9/25 connector
✻	**PD**	7.9x5.6	12	L	3		26	13	8	4	2	HP2020 decoders, opto-couplers
41	**QD8**	3.6x2.3	5								8	8 Quadrature Decoders, 3 Counters
44	**Relay7**	4.4x2.2	12					14				7 10A mechanical relays, 7 HV I/O
46	**UR8**	3.6x2.3	12		8							8 RS232 or 4RS232+4 RS485
42	**VE232**	2.3x1.4	12	L	3							5V Regulator, 2 RS232, 1 RS485

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