TEWS
TECHNOLOGIES

THE EMBEDDED I/O COMPANY

PRODUCT OVERVIEW ISSUE 4

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ABOUT TEWS TECHNOLOGIES

TEWS TECHNOLOGIES is a leading solutions provider of embedded I/O and CPU products based on open architecture standards such as PMC, IndustryPack® (IP), CompactPCI, standard PCI, VME, and AMC. TEWS has more than 30 years of experience designing and building turn-key embedded interface solutions using the philosophy to listen and respond to our customers' needs.

Using this 'customer first' approach, TEWS has developed a large number of standard and custom products for applications in industrial control, telecommunication infrastructure, medical equipment, traffic control and aerospace/defense. TEWS' line of embedded I/O solutions is available worldwide through a global network of distributors.

QUALITY ASSURANCE / WARRANTY

TEWS operates three subsidiaries to meet global demand for pre and post sales support, reduced development time, long term product availability, and complete product life-cycle management. TEWS is committed to continuously

improving the quality of our products and services.
As a reflection of our commitment to quality, TEWS has implemented and received ISO9001:2008 certification.
All TEWS' products feature a five-year limited warranty.

SOFTWARE SUPPORT

Software support is a critical and defining component of the TEWS' I/O product offering. Our modular hardware designs are coupled with extensive software drivers and support for most major real-time and server operating systems such as VxWorks, Windows XP/XPE/2000, Linux, LynxOS, Integrity, and QNX6. Supported CPU architectures are Intel, PowerPC and 68k (for IndustryPack only). For IndustryPack carriers and modules, TEWS has developed a layered driver concept that

includes both a carrier driver layer and an IP module driver layer.
All TEWS' IndustryPack carriers are supported directly by the carrier driver, and a generic driver is included for integration of third party products.
A key element of our software is our support staff. All TEWS' support engineers are professionally trained to ensure in-depth support for software drivers and integration.

CPU CARRIERS

TEWS' PowerPC based VME Single Board Computers with IndustryPack and PMC sites deliver both high-performance processing and configurable I/O solutions in a single VME slot. In addition, TEWS' SBCs provide the ideal upgrade path for current 68K-based IndustryPack carriers.

| CPU CARRIERS	Form Factor	Processor	-40°C to 85°C	Debug PROM	SDRAM	Flash	Ethernet	Serial Ports	I/O Support	I/O Connector	Software
TVME8240A[1]	VME	MPC8245 300 MHz		2 MB	64 MB/ 256 MB	8 MB/ 32 MB	●	2	4 x IP	50pin ribbon	1) 2) 3) 4)
TVME8300[1]	VME64x	MPC8245 300 MHz		1 MB	64 MB	8 MB	●	2	4 x IP	P0/P2	1) 2) 3)
TVME8400[1]	VME64x	MPC8245 300 MHz	(●)	1 MB	64 MB	8 MB	●	2	2 x PMC	P2	1) 2) 3)
Notes	[1] Local PCI expansion connector			Software: 1) Linux 2) VxWorks 3) LynxOS 4) OS-9							
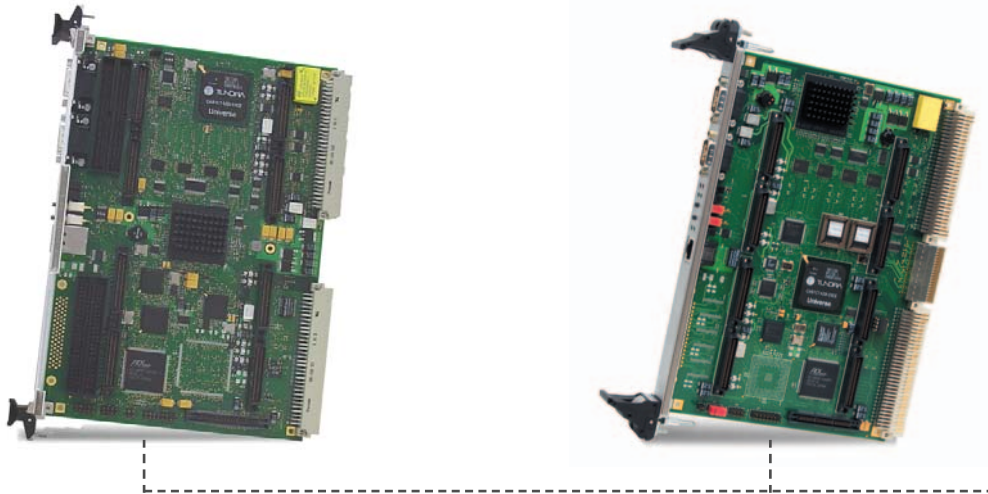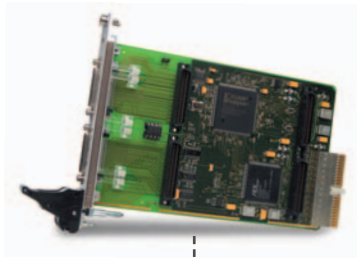
IP CARRIERS

When combined with our extensive line of IndustryPack modules, TEWS' IndustryPack carriers offer maximum I/O density for VME, CompactPCI, PCI, and AMC systems. The ability to mix and match IndustryPack modules on TEWS' carriers customizes I/O and saves valuable slot space.

IP CARRIERS	Form Factor	IP Slots	-40°C to 85°C	I/O Connector	32 MHz Support
TVME200	VME 6U	4	●	stacked 50pin ribbon	
TVME201	VME 6U	4	●	HD50	
NEW **TVME202**	VME	4	●	50pin ribbon	
TVME220	VME64x 6U	4	●	P0/P2	
TVME230[1]	VME 6U	4	●	HD50	●
TVME210	VME 3U	2	●	50pin ribbon	
TVME211	VME 3U	2	●	stacked 50pin ribbon	
TCP201	cPCI 6U	4	●	HD50	●
TCP220	cPCI 6U	4	●	J4/J5	●
TCP211	cPCI 3U	2	●	stacked 50pin ribbon	●
TCP212	cPCI 3U	2	●	CHAMP-50	●
TCP213	cPCI 3U	2	●	J2	●
TPCI200	PCI	4	●	50pin ribbon	●
TPCI100	PCI	2	●	50pin ribbon	●
NEW **TAMC200**	AMC	3	●	VHD68	●
TAMC100	AMC	1	●	HD50	●
Notes	[1] Local PCI expansion card for CPU boards				
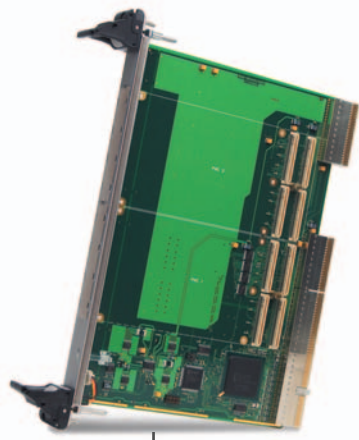
P M C   C A R R I E R S

TEWS offers a complete line of PMC carrier boards for 3U and 6U CompactPCI, standard PCI as well as AMC.
Our PMC carriers provide high-performance and high-density I/O solutions in addition to simplifying
the integration process.

PMC CARRIERS	Form Factor	PMC Slots	-40°C to 85°C	I/O Connector	PCI I/O Signaling Voltage	Hot Swap Capability	Bridge	Bus Frequency	Bus Width
TCP260	cPCI 6U	2	(●)	PMC front cPCI J3 / J5	3.3 V 5 V	●	21154	33 / 66 MHz	32 / 64 bit
TCP261	cPCI 6U	2	(●)	PMC front cPCI J3 / J4	3.3 V 5 V	●	21154	33 / 66 MHz	32 / 64 bit
TCP270	cPCI 3U	1	●	PMC front J2	3.3 V 5 V			33 MHz	32 bit
TPCI270	PCI	1	●	PMC front rear I/O	3.3 V 5 V			33 MHz	32 bit
NEW **TAMC260**	AMC	1	●	PMC front rear I/O	3.3 V 5 V	●	PEX8112	33 / 66 MHz	32 bit
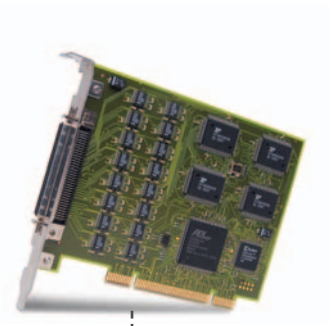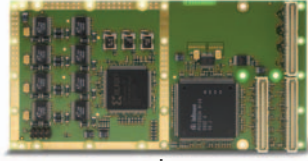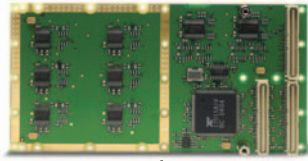
COMMUNICATION

As part of our growing commitment to the embedded I/O marketplace, TEWS continues to extend its product range of I/O and CPU solutions based on IndustryPack, PMC, CompactPCI, VME and AMC standards. The modules are designed for applications in transportation, military/aerospace, communications, and process control. Solutions are available with a large choice of channel count, throughput, form factor, and operating temperatures.

COMMUNICATION	Form Factor	Conduction Cooled	Channel	-40°C to 85°C	RS232	TTL	RS422	RS485	Programmable Interface	FIFO Bytes	max. Data Rate	ESD Protection	Async./Sync.	Isolation	I/O Connector	Software
TIP865	IP		4		●	●	●	●			2 Mbps		●/●			●
TIP866	IP		8	(●)	●	●	●			64	460.8 kbps	●	●/-			●
TIP867	IP		8					●		8	2 Mbps	●	●/●			●
TPMC363	PMC	●	4	●	●		●		●	512	10 Mbps		●/●		P14	●
TPMC371	PMC	●	8	●	●		●			64	5.5 Mbps	●	●/-		P14	●
TPMC372	PMC	●	4	●	●		●			64	5.5 Mbps	●	●/-		P14	●
TPMC375	PMC	●	8	●	●		●	●	●	64	5.5 Mbps	●	●/-		P14	●
TPMC376	PMC	●	4	●	●		●	●	●	64	5.5 Mbps	●	●/-		P14	●
TPMC460	PMC		16	●	●		●			64	5.5 Mbps	●	●/-		HD68, P14	●
TPMC461	PMC		8	●	●		●			64	5.5 Mbps	●	●/-		HD50, P14	●
TPMC462	PMC		4	●	●		●			64	5.5 Mbps	●	●/-		HD50, P14	●
TPMC463	PMC		4	●	●		●			64	5.5 Mbps	●	●/-		RJ45, P14	●
TPMC465	PMC		8	●	●		●	●	●	64	5.5 Mbps	●	●/-		HD50, P14	●
TPMC466	PMC		4	●	●		●	●	●	64	5.5 Mbps	●	●/-		HD50, P14	●
TPMC467	PMC		4	●	●		●	●	●	64	5.5 Mbps	●	●/-		RJ45	●
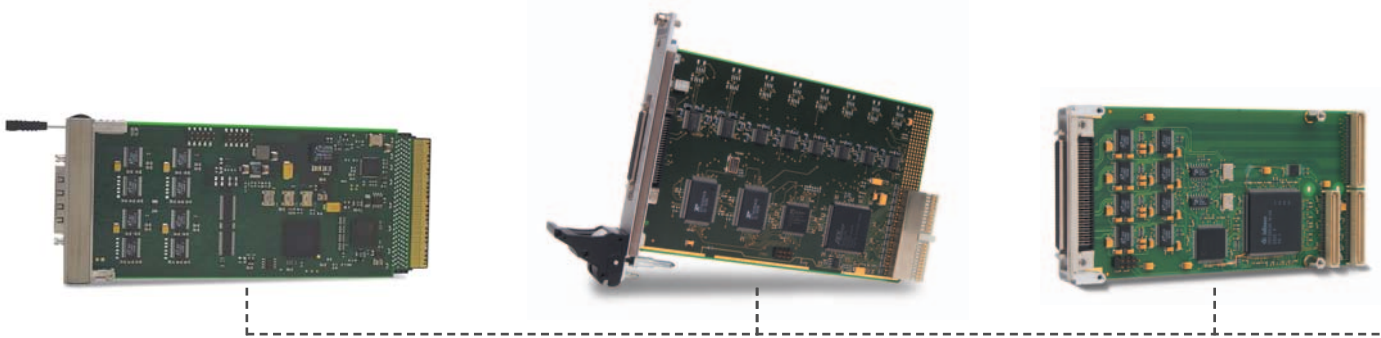
COMMUNICATION (continued)

Some of the modules provide high performance RS232/RS422/RS485 serial channels which can be individually programmed to operate as RS232, RS422 or RS485 full/half duplex interfaces. In addition, programmable termination is provided for the RS422/RS485 interfaces.

COMMUNICATION	Form Factor	Conduction Cooled	Channel	-40°C to 85°C	RS232	TTL	RS422	RS485	Programmable Interface	FIFO Bytes	max. Data Rate	ESD Protection	Async./Sync.	Isolation	I/O Connector	Software
TPMC860	PMC		4	●	●					64	460.8 kbps	●	●/-	●	DB25, P14	●
TPMC861	PMC		4	●			●	●		128	460.8 kbps	●	●/-	●	DB25, P14	●
TPMC863	PMC		4	●	●		●		●	512	10 Mbps		●/●		HD68, P14	●
TPMC917[1]	PMC		4		●					64	115.2 kbps	●	●/-		DB25, P14	●
TCP460	cPCI		16	●	●		●			64	5.5 Mbps	●	●/-		HD68, J2	●
TCP461	cPCI		8	●	●		●			64	5.5 Mbps	●	●/-		HD50, J2	●
TCP462	cPCI		4	●	●		●			64	5.5 Mbps	●	●/-		HD50, J2	●
TCP463	cPCI		4	●	●		●			64	5.5 Mbps	●	●/-		RJ45, J2	●
TCP465	cPCI		8	●	●		●	●	●	64	5.5 Mbps	●	●/-		HD50, J2	●
TCP466	cPCI		4	●	●		●	●	●	64	5.5 Mbps	●	●/-		HD50, J2	●
TCP467	cPCI		4	●	●		●	●	●	64	5.5 Mbps	●	●/-		RJ45	●
TCP863	cPCI		4	●	●		●		●	512	10 Mbps	●	●/●		HD68, J2	●
TCP866	cPCI		8	●	●		●			64	921.6 kbps	●	●/-		HD50, J2	●
TPCI868	PCI		16		●					64	921.6 kbps		●/-		HD68	●
NEW **TAMC863**	AMC		4	●	●		●		●	512	10 Mbps		●/●		VHD68	●
Notes	[1] Plus 4 MB SRAM with battery backup															
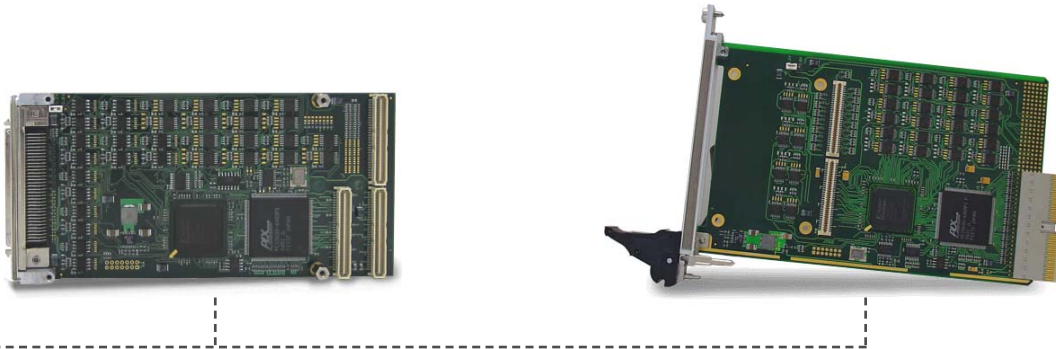
U S E R - P R O G R A M M A B L E   F P G A

TEWS' user-programmable FPGA modules provide a cost effective solution that allows customers to implement their own logic design. TEWS uses the latest high-density FPGAs available, and additionally can customize the products for OEM requirements.
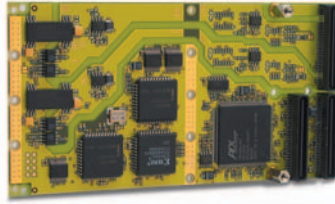
FPGA	Form Factor	-40°C to 85°C	FPGA Family	I/O Channel / Signal Level	I/O
TIP630	IP	●	Spartan-2	48/TTL	
TPMC630	PMC	●	Spartan-2	64/TTL or 32/RS422/485	HD68, P14
TCP630	cPCI	●	Spartan-2E	64/TTL or 32/RS422/485	PIM-Slot /J2
TCP631	cPCI	●	Spartan-3	64/TTL	PIM-Slot /J2
NEW **TAMC631**	AMC	●	Spartan-6	Low pin count	FMC-Slot
NEW **TAMC640**	AMC		Virtex-5	Full pin count	FMC-Slot
NEW **TAMC641**	AMC		Virtex-5	Full pin count	FMC-Slot

E T H E R N E T

TEWS offers a range of PMC modules with up to 4 channels 10/100/1000Mbit/s Ethernet. The conduction cooled version can be used in rugged environments.

ETHERNET	Form Factor	Conduction Cooled	-40°C to 85°C	Channel	Controller	10/100/1000 Mbit/s	Software
TPMC385 NEW	PMC	●	●	4	82574IT	●	●
TPMC883	PMC			1	82545EM	●	●
TPMC884	PMC			2	82546EB	●	●
TPMC885 NEW	PMC		●	4	82574IT	●	●

## FIELDBUS

TEWS supports a wide range of standard fieldbus solutions for CAN, ARCNET, and INTERBUS. These include conduction cooled, high-density CAN interfaces on IndustryPack, PMC, and PC104+.

| FIELDBUS	Form Factor	Conduction Cooled	Channel	-40°C to 85°C	Fieldbus	Physical Interface	Isolation	I/O Connector	Software
TIP810[1]	IP		1	●	CAN	CAN High Speed, RS485	●		●
TIP815	IP		1		ARCNET	Coax, RS485	●		●
TIP816[2]	IP		1	●	CAN	CAN High Speed, RS485	●		●
TIP903[2]	IP		3		CAN	CAN High Speed			●
TPMC310[1]	PMC	●	2	●	CAN	CAN High Speed	●	P14	●
TPMC316[2]	PMC	●	2	●	CAN	CAN High Speed, RS485	●	P14	●
TPMC810[1]	PMC		2	●	CAN	CAN High Speed	●	DB9, P14	●
TPMC815	PMC		1	●	ARCNET	Coax, RS485	●	BNC, DB9	●
TPMC816[2]	PMC		2	●	CAN	CAN High Speed, RS485	●	DB9, P14	●
TPMC821	PMC		1		INTERBUS	RS422	●	DB9, P14	●
TPMC901[2]	PMC		6		CAN	CAN High Speed		DB25	●
THP815	PC104+		1	●	ARCNET	Coax, RS485	●	BNC, DB9	●
Notes	[1] Based on SJA1000 [2] Based on I82527								
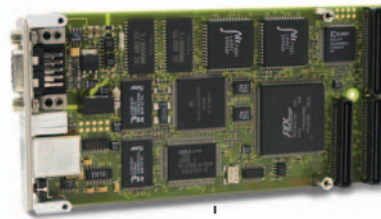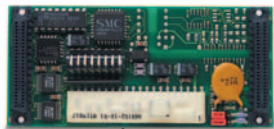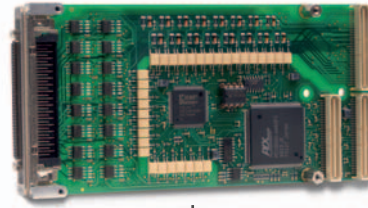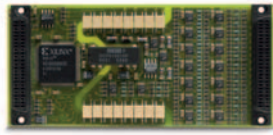
DIGITAL I/O

With one of the largest digital I/O offerings for embedded applications, TEWS is able to provide discrete solutions with interfaces for TTL, differential I/O, FPGA-based reconfigurable I/O, opto-isolated interfaces, and high/low side switches.

| DIGITAL I/O	Form Factor	Channel In/Out	-40°C to 85°C	Signal Level	Output Current	Interrupts	Isolation	I/O Connector	Software
TIP600	IP	16/-		24V		●	●		●
TIP605	IP	16/-	●	24V		●	●		●
TIP606[1]	IP	16/-	●	28V		●	●		●
TIP610	IP	20		TTL		●			●
TIP620[2]	IP	48	●	TTL		●			●
TIP670	IP	8/8		24V	0.5A	●	●		●
TIP672	IP	24	(●)	RS422		●			●
TIP675	IP	48	●	TTL		●			●
TIP700	IP	-/16		6V-48V	0.5A		●		●
TIP710	IP	-/16	●	6V-48V	1.0 A		●		●
TPMC600	PMC	32/-	●	24V		●	●	HD50, P14	●
TPMC670	PMC	16/16	(●)	24V	0.5A	●	●	HD50, P14	●
TPMC671	PMC	16/16	(●)	24V	0.5A	●	●	HD68, P14	●
TPMC680[3]	PMC	64	●	TTL		●		HD68, P14	●
TPMC681[4]	PMC	64	●	TTL		●		HD68, P14	●
TPMC682[5]	PMC	64	●	TTL		●		HD68, P14	●
NEW TPMC683	PMC	32	●	RS422/RS485		●		HD68, P14	●
TPMC700	PMC	-/32	(●)	6V-48V	0.5A		●	HD50, P14	●
Notes	[1] For Avionic Applications		[2] Emulates two MC68230		[3] Byte I/O		[4] Bit I/O		[5] FIFO and Handshake
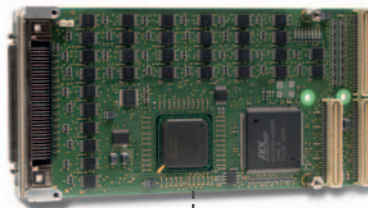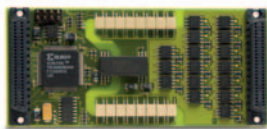
ANALOG I/O

Optimized for applications in industrial, transportation, and military/defense, TEWS' analog I/O offering includes A/D and D/A solutions, up to 16 bit resolutions, opto-isolated interfaces, simultaneous sampling, and sequencer modes for higher performance.
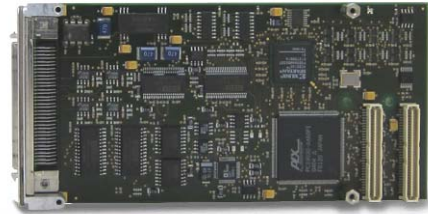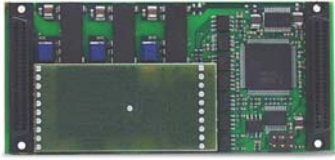
A / D

ANALOG IN	Form Factor	-40°C to 85°C	A/D SE/DIFF	Resolution	Voltage Range	Max. Throughput	Simult. Sample	Sequencer	Isolation	I/O Connector	Software
TIP500	IP	●	16/8	12 bit	±10V / ±5V / ±2V / ±1V or ±10V / ±5V / ±2.5V / ±1.25V	100 ks			●		●
TIP501	IP	●	16/8	16 bit	±10V / ±5V / ±2V / ±1V or	69 ks			●		●
TIP830	IP		8/-	12/16 bit	±10V	40 ks	●				●
TIP840	IP	●	16/8	12 bit	±10V / ±1V / ±0.1V or ±10V / ±5V / ±2.5V / ±1.25V	100 ks					●
TIP845	IP	●	48/24	14 bit	±10V / ±5V / ±2.5V / ±1.25V	400 ks		●			●
TPMC500	PMC	●	32/16	12 bit	±10V / ±5V / ±2V / ±1V or ±10V / ±5V / ±2.5V / ±1.25V	100 ks		●	●	HD50, P14	●
TPMC501	PMC	●	32/16	16 bit	±10V / ±5V / ±2V / ±1V or ±10V / ±5V / ±2.5V / ±1.25V	80 ks		●	●	HD50, P14	●
NEW TAMC900	AMC		8	14 bit	depends on Signaling Adapter (+1V ADC)	105Ms	●			120 pin to Signal. Adapter	●
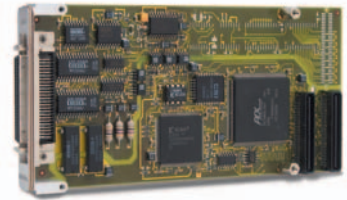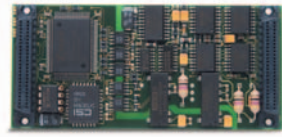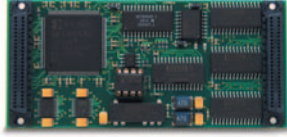
D / A

ANALOG OUT	Form Factor	-40°C to 85°C	D/A	Resolution	Voltage Range	Max. Throughput	Sequencer	Isolation	I/O Connector	Software
TIP550	IP	●	8	12 bit	±10V or 0V to 10V	77 ks	●			●
TIP551	IP	●	4	16 bit	±10V or 0V to 10V	100 ks	●			●
TPMC550	PMC	●	8	12 bit	±10V or 0V to 10V	100 ks	●	●	HD50, P14	●
TPMC551	PMC	●	8	16 bit	±10V or 0V to 10V	100 ks	●	●	HD50, P14	●
NEW TPMC553	PMC	●	32/16	16 bit	0V - +5V, 0V - +10V, 0V - +10.8V, ±5V, ±10V, ±10.8V	100 ks	●		HD68	●
NEW TPMC554[1]	PMC	●	32/16	16 bit	0V - +5V, 0V - +10V, 0V - +10.8V, ±5V, ±10V, ±10.8V	100 ks	●		HD68	●
[1] with FIFOs										

A / D   a n d   D / A

ANALOG I/O	Form Factor	-40°C to 85°C		A/D SE/DIFF	Resolution	Voltage Range	max. Throughput	Sequencer	Isolation	I/O Connetor	Software
TIP570	IP	●	A/D	16/8	12 bit	±10V	100 ks		●		●
			D/A	8	12 bit	±10V	200 ks				
TIP850	IP	●	A/D	16/8	12 bit	±10V / ±1V / ±0.1V or ±10V / ±5V / ±2.5V / ±1.25V	100 ks				●
			D/A	4	12 bit	±10V	100 ks				
TPMC851[1]	PMC	●	A/D	32/16	16 bit	±10V / ±5V / ±2.5V / ±1.25V	250 ks	●		HD68	●
			D/A	8	16 bit	±10V	100 ks	●			
Notes	[1] Plus 16 bit TTL I/O										

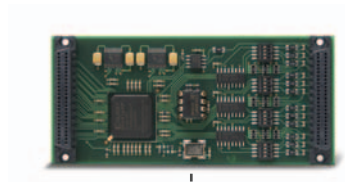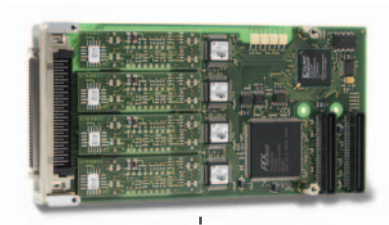## M E M O R Y

TEWS' memory solutions include SRAM and Flash on IndustryPack modules, and SRAM on PMC modules.

MEMORY	Form Factor	-40°C to 85°C	Memory	Size	Battery Backup	Software
TIP250	IP	●	Flash	8 MB		●
TIP255	IP	(●)	SRAM	2 MB	●	●
TPMC917[1]	PMC		SRAM	4 MB	●	●
Notes	[1] Plus 4 channel serial interface (RS232)					

M O T I O N   C O N T R O L

TEWS offers a wide range of embedded motion control solutions for PMC and IndustryPack standards. These include standard servo controllers, absolute encoder (SSI) interfaces, incremental encoder interfaces, quadrature decoders, and synchro/resolver-to-digital solutions.

MOTION CONTROL	Form Factor	Channel	-40°C to 85°C	Incremental	SSI	Synchro/Resolver	DAC	ADC	Digital I/O	Isolation	I/O Connector	Software
TIP102[1]	IP	2/1		●			●	●	●	●		●
TIP111[1]	IP	2/1			●		●	●	●	●		●
TIP114	IP	10			●					●		●
TIP115[3]	IP	5			●					●		●
TIP116[2]	IP	4	●	●								●
TIP119	IP	6		●								●
TIP150	IP	2/1	(●)			●						●
TPMC117[2][3]	PMC	6	●	●	●				●	●	HD68	●
TPMC118	PMC	6		●			●		●	●	HD68	●
TPMC150	PMC	4/3/2/1	●			●			●		HD68	●
NEW TPMC317[2][3][4]	PMC	6	●	●	●				●	●	HD68	●
Notes	[1] Transition Module required		[2] General Purpose Counter			[3] Supports 'Listen Only' Mode						
	[4] Conduction cooled											
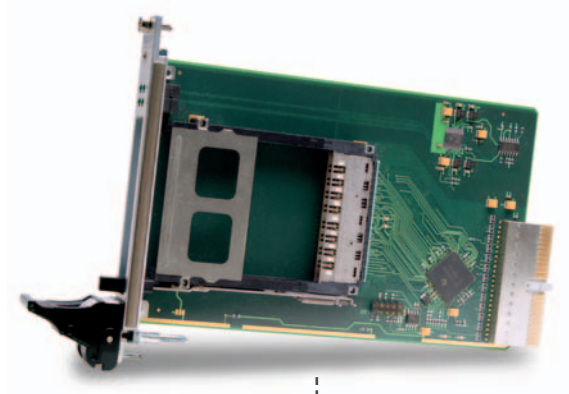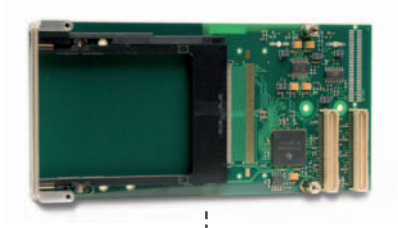
PC CARD/CARDBUS

For embedded applications requiring PC Card (PCMCIA) or CardBus solutions, TEWS offers both PMC-to-PC Card and cPCI-to-PC Card adapters to allow the use of standard PC Cards in VME, CompactPCI, and PCI edge card systems.

PC CARD/CARDBUS	Form Factor	-40°C to 85°C	Sockets/Card Type	PC Card/CardBus Voltage	Software
TPMC871	PMC		1 x Type I/II	3.3V/5V	●
TPMC872	PMC	●	1 x Type I/II and 1 x Type I/II/III	3.3V/5V	●
TCP872	cPCI	●	2 x Type I/II or 1 x Type III	3.3V/5V	●
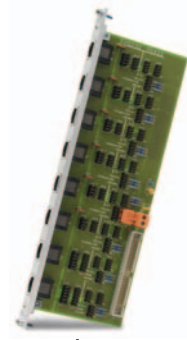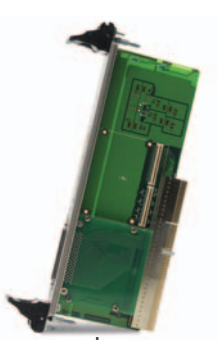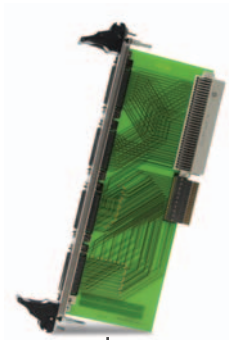
TRANSITION MODULES

For function and IndustryPack/PMC specific connectivity, TEWS offers a wide range of transition modules. These include universal and product-specific transition modules, DIN rail mount modules, and high-density serial transition modules.

TEWS' IndustryPack carriers for VME and CompactPCI support rear I/O connectivity in tandem with rear transition modules. These transition modules are available with different connector styles and different mechanical dimensions.

TRANSITION MODULES	Form Factor	Supported Products	Interface	I/O Connector	-40°C to 85°C	Front Panel
TVME001-TM	VME64x	IP Carrier 6U	P0/P2	50pin ribbon cable	●	
TVME002-TM	VME64x	IP Carrier 6U	P0/P2	HD50 female	●	●
TCP001-TM	cPCI	IP Carrier 6U	RJ4/RJ5	50pin ribbon cable	●	
TCP002-TM	cPCI	IP Carrier 6U	RJ4/RJ5	HD50 female	●	●
TCP010-TM	cPCI	IP Carrier 3U	RJ2	50pin ribbon cable	●	
TCP011-TM	cPCI	IP Carrier 3U	RJ2	50pin ribbon cable	●	●
TCP012-TM	cPCI	IP Carrier 3U	RJ2	CHAMP-50 female	●	●
TCP030-TM	cPCI	PMC Carrier 3U	RJ2	HD68	●	●
TIP001-TM	Universal	IP	50pin	50pin screw terminal		●
TIP570-IO	DIN Rail Mount	TIP570	50pin	50pin terminal with lever	●	
TIP866-IO	DIN Rail Mount	TIP866/TIP867	50pin	DB9 male		
TIP866-TM-10	6U	TIP866/TIP867	50pin	DB25 female		●
TIP866-TM-20	6U	TIP866/TIP867	50pin	shielded RJ45		●
TIP866-TM-30	6U	TIP866/TIP867	50pin	4pin RJH		●
TPMC866-IO	DIN Rail Mount	Serial PMC[1]	HD50	DB9 male		
TPMC866-TM-10	6U	Serial PMC[1]	HD50	DB25 female		●
TPMC866-TM-20	6U	Serial PMC[1]	HD50	shielded RJ45		●
TPMC866-TM-30	6U	Serial PMC[1]	HD50	4pin RJH		●
Notes	[1] TPMC461,TPMC462, TPMC465, TPMC466					

PIM CARRIERS

The PIM specification simplifies rear I/O for PMC modules that reside on CompactPCI or VME64x carrier cards, connecting via a clearly defined pin-out from PMC connector P14 through the CompactPCI or VME64x backplane, and passing to the PIM mezzanine carrier at the rear of the backplane.
Connections may then be customized with the use of different PIM modules on the PIM carrier.

| PIM CARRIERS	Form Factor	Support	Interface	-40°C to 85°C	Front Panel
TCP020-TM	cPCI	PMC Carrier 6U	RJ3/RJ5	●	●
TCP021-TM	cPCI	PMC Carrier 6U	RJ3/RJ4	●	●
TCP040-TM	cPCI	PMC Carrier 3U	RJ2	●	●
TVME020-TM	VME64x	PMC Carrier 6U	P2	●	●

PIM I/O MODULES

The standard single-width PIM Modules can be used with any PIM carrier. They offer easy access to the PMC back I/O lines of PMC carrier with back I/O.

PIM I/O MODULES	Support	I/O Connector	-40°C to 85°C	Front Panel
TPIM001	General Purpose	HD50 female	●	●
TPIM002	General Purpose	HD68 female	●	●
TPIM003	TPMC460/TPMC630	HD68 female	●	●
TPIM005	TPMC363/TPMC863	HD68 female	●	●
TPIM006	TPMC385/TPMC885	4 x RJ45	●	●

ACCESSORIES

To facilitate system integration, TEWS' offers a variety of accessories such as cable and terminal blocks for PMC, cPCI, PCI and VME modules. For a complete listing visit www.tews.com.
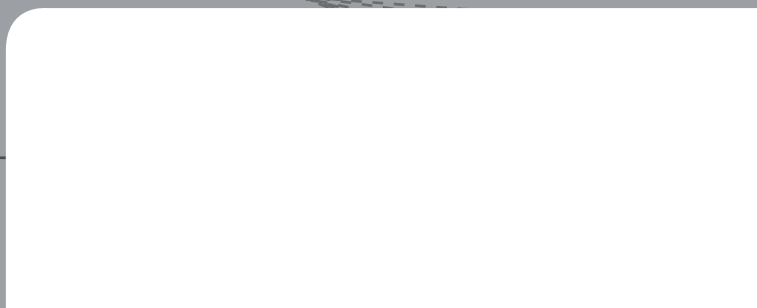
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