The Embedded I/O Company

TPIM006

PIM for Gigabit Ethernet PMCs

Version 1.0

User Manual

Issue 1.0.1

January 2022

TPIM006-10R

PIM for four Channel 10/100/1000 Mbit/s Ethernet PMCs, RJ45

(RoHS compliant)

Issue	Description	Date
1.0.0	Initial issue	December 2010
1.0.1	Issue after release of TPMC895 and TPMC395	January 2022

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1 Product Description

The TPIM006 is a PMC I/O Module (PIM) compatible module providing easy access to the PMC back I/O lines of PMC carriers when used on a PIM carrier.

The TPIM006 distributes the Ethernet signals of TEWS' Gigabit Ethernet PMC modules with P14 back I/O to RJ45 connectors located in the front panel of the PIM module.

Impedance mismatches, caused by CMC connectors and backplane connectors, lead to signal distortion of the Ethernet signals. To reduce these effects, the routing on the TPIM006 is optimized for differential Ethernet signals.

Additionally, common mode choke filters are placed into the Ethernet signal lines to improve signal quality by suppressing common mode noise on the Ethernet signal lines.

The TPIM006-10R reproduces the front I/O signal mapping of TEWS' four channel 10/100/1000 Mbit/s Ethernet adapter PMC in its RJ45 connectors when used with the TPMC895-11R or TPMC395-10R for example.

The module meets the requirements to operate in extended temperature range from -40°C to +85°C.
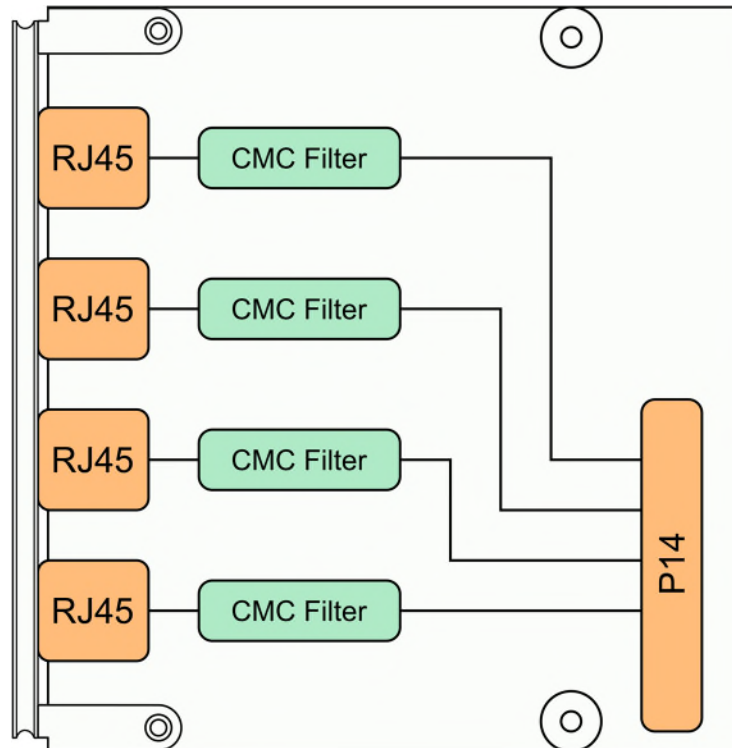

Figure 1-1 : Block Diagram

2 Technical Specification

PIM Interface	
Mechanical Interface	PMC I/O Module (PIM) Interface conforming to VITA 36 – 199X Draft 0.1 Standard single-width (69 mm x 74 mm)

On Board Devices	
Common Mode Choke Filters	For each interface: LG01-0356N2 (Halo)

I/O Interface	
Number of Channels	4
I/O Connector	RJ45 (TE Connectivity 406732 or compatible)

Physical Data		
Power Requirements	none	
Temperature Range	Operating	-40°C to +85°C
	Storage	-40°C to +85°C
MTBF	758000 h MTBF values shown are based on calculation according to MIL-HDBK-217F and MIL-HDBK-217F Notice 2; Environment: G_B 20°C. The MTBF calculation is based on component FIT rates provided by the component suppliers. If FIT rates are not available, MIL-HDBK-217F and MIL-HDBK-217F Notice 2 formulas are used for FIT rate calculation.	
Humidity	5 – 95 % non-condensing	
Weight	44 g	

Table 2-1 : Technical Specification

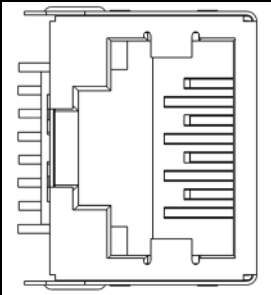# 3 Handling and Operation Instructions

3.1 ESD Protection

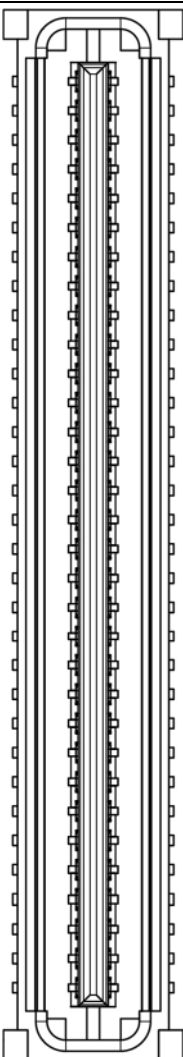|	
	This PIM module is sensitive to static electricity. Packing, unpacking and all other module handling has to be done with appropriate care.

4 Pin Assignment – I/O Connectors

4.1 RJ45 Connector

Pin	Signal (1000Base-T)	Signal (100Base-TX/10Base-T)
1	TX0/RX0+	TX+
2	TX0/RX0-	TX-
3	TX1/RX1+	RX+
4	TX2/RX2+	not used
5	TX2/RX2-	not used
6	TX1/RX1-	RX-
7	TX3/RX3+	not used
8	TX3/RX3-	not used

Table 4-1 : RJ45 Connector

4.2 P14 Connector

Signal	Pin	Pin	Signal
TERM_PLANE	2	1	TERM_PLANE
ETHERNET_3_TX3/RX3+	4	3	ETHERNET_4_TX3/RX3+
ETHERNET_3_TX3/RX3-	6	5	ETHERNET_4_TX3/RX3-
TERM_PLANE	8	7	TERM_PLANE
ETHERNET_3_TX2/RX2+	10	9	ETHERNET_4_TX2/RX2+
ETHERNET_3_TX2/RX2-	12	11	ETHERNET_4_TX2/RX2-
TERM_PLANE	14	13	TERM_PLANE
ETHERNET_4_TX1/RX1+	16	15	ETHERNET_4_TX0/RX0+
TERM_PLANE	18	17	TERM_PLANE
ETHERNET_4_TX1/RX1-	20	19	ETHERNET_4_TX0/RX0-
TERM_PLANE	22	21	TERM_PLANE
TERM_PLANE	24	23	TERM_PLANE
ETHERNET_3_TX1/RX1+	26	25	ETHERNET_3_TX0/RX0+
TERM_PLANE	28	27	TERM_PLANE
ETHERNET_3_TX1/RX1-	30	29	ETHERNET_3_TX0/RX0-
TERM_PLANE	32	31	TERM_PLANE
TERM_PLANE	34	33	TERM_PLANE
ETHERNET_2_TX1/RX1+	36	35	ETHERNET_2_TX0/RX0+
TERM_PLANE	38	37	TERM_PLANE
ETHERNET_2_TX1/RX1-	40	39	ETHERNET_2_TX0/RX0-
TERM_PLANE	42	41	TERM_PLANE
TERM_PLANE	44	43	TERM_PLANE
ETHERNET_1_TX1/RX1+	46	45	ETHERNET_1_TX0/RX0+
TERM_PLANE	48	47	TERM_PLANE
ETHERNET_1_TX1/RX1-	50	49	ETHERNET_1_TX0/RX0-
TERM_PLANE	52	51	TERM_PLANE
ETHERNET_1_TX2/RX2+	54	53	ETHERNET_2_TX2/RX2+
ETHERNET_1_TX2/RX2-	56	55	ETHERNET_2_TX2/RX2-
TERM_PLANE	58	57	TERM_PLANE
ETHERNET_1_TX3/RX3+	60	59	ETHERNET_2_TX3/RX3+
ETHERNET_1_TX3/RX3-	62	61	ETHERNET_2_TX3/RX3-
TERM_PLANE	64	63	TERM_PLANE

Table 4-2 : P14 Connector