



Power Measurement Modules

The Power Transducer Module (PTM) and Power Synchronization and Measurement (PSM) module measure and calculate critical data for control of electrical power systems and synchronization of power grids. Both the PTM and PSM connect to user supplied current and potential transformers, which translate power grid signals to proportionate, low-level signals for measurement and analysis. The PTM module is not intended to provide a protective relay function or be used for energy billing purposes. The PSM module provides ANSI protective relay calculations and revenue grade monitoring for a complete genset, paralleling switchgear or infrastructure management solution. Both the PTM and PSM consist of a processing module that plugs into the PLC backplane, an interface module for field wiring connections, and cables to interconnect the two modules. The PTM and PSM can be used with Wye or Delta type three-phase power or with single-phase power systems.

	IC693PTM101	IC694PSM001
Product Name	Power Transducer Module Processing Module interface board (a panel mounted circuit board). This board interfaces between the Power Transducer module and the input transformers (current and potential), 1.0 meter Interface cable that connects the module to the Interface board.	Power Synchronization and Measurement Module and Interface Module (a panel mounted terminal block). The interface module translates power grid signals from external, user supplied potential and current transformers (PT's and CT's) to low voltage signals suitable for the processing module. 2.0 meter Interface cables connect the processing module to the Interface module.
Lifecycle Status	Mature	Active
Module Type	Power Transducer Modules	Power Synch and Measurement Module
Input Voltage Range	10-120 VAC (nominal)	20-600 VAC (nominal)
Power Measurement Configurations	Grids 1 0 Circuits 0 up to 4	Grids 2 1 0 Circuits 0 up to 3 up to 6
Current Input Range	0 to 7.5 Amps RMS (5 A RMS nominal)	0 to 7.5 Amps RMS (5 A RMS nominal)
Frequency Range	35Hz to 70Hz	40Hz to 70Hz
Output Rating	N/A	150 VAC/VDC, 1 A
Number of Outputs	0	1 (provided as redundant, isolated, solid-state contacts)
Data	- Data availability - Data calculation rate: 20ms @ 50Hz, 16.67ms @ 60Hz - Data latency: 15ms @ 50Hz, 16.67ms @ 60Hz Measured Data - RMS voltage of phase A, B, and C (in Volts x 10) - RMS currents of phase A, B, C, and Neutral (in Amperes x 1000) for each grid - DC component of measured RMS voltages (in Volts x 10) - Frequency of phase A grid 1 (in Hz x 100) - Phase angle between phase A grid 1 and phase A grid 2 (in degrees x 10) Power and Energy Data - Active and reactive power reported per phase and total in Watts, Volt-Amperes-Reactive (VAR) - Active and reactive total energy consumption in Watt-Seconds and Volt-Amperes-Reactive-Seconds (updated once per second), re-settable by the user - Total power factor - Average real and reactive power consumption (sliding 15 minute window updated once per second)	- Data availability - Data measurement rate: 20ms @ 50Hz, 16.67ms @ 60Hz. - Data latency: 8ms Measured Data - RMS voltage of phase A, B, and C (in Volts x 10) - RMS currents of phase A, B, C, and Neutral (in Amperes x 1000) for each grid - DC component of measured RMS voltages (in Volts x 10) - Frequency of phase A grid 1 and phase A grid 2 (in Hz x 100) - Phase angle between phase A grid 1 and phase A grid 2 (in degrees x 10) Calculated Data - Real and reactive power reported per phase and total in Watts, Volt-Amperes-Reactive (VAR) - Real and reactive total energy consumption, integrated over the past 1-second, in Kilo Watt-Hours (kWh) and Kilo Volt-Amperes-Reactive-Hours (kVARh) - Total power factor - Average real and reactive power consumption (sliding 15 minute window updated once per second)
Status and Diagnostics	- Module Heartbeat (indicates module health) - Utility Phase A voltage present - Phase polarity valid - Voltage measurements valid - Current measurements valid	- Module Heartbeat (indicates module health) - Field connection OK - Any grid alarm (single bit indication of power grid health) - Grid Voltage fault - Grid Current fault - Mixed Polarity fault - ANSI Protection Relay Calculations - Grid Synchronization (ANSI 25) - Phase Shift OK - Voltage Difference OK - Frequency Difference OK - Close Relay OK - Under Voltage alarm (ANSI 27) - Reverse Power alarm (ANSI 32) - Negative Sequence alarm (ANSI 46) - Over Current alarm (ANSI 50) - Over Voltage alarm (ANSI 59) - VA Imbalance alarm (ANSI 60) - Under Frequency alarm (ANSI 81U) - Over Frequency alarm (ANSI 81O)
Internal Power Used	400 mA @ 5 VDC	190 mA @ 5 VDC



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IC693PTM101

Product Name	Power Transducer Module Processing Module interface board (a panel mounted circuit board). This board interfaces between the Power Transducer module and the input transformers (current and potential), 1.0 meter Interface cable that connects the module to the Interface board.	
Lifecycle Status	Mature	
Module Type	Power Transducer Modules	
Input Voltage Range	10-120 VAC (nominal)	
Power Measurement Configurations	Grids 1 0	Circuits 0 up to 4
Current Input Range	0 to 7.5 Amps RMS (5 A RMS nominal)	
Frequency Range	35Hz to 70Hz	
Output Rating	N/A	
Number of Outputs	0	
Data	Data availability • Data calculation rate: 20ms @ 50Hz, 16.67ms @ 60Hz • Data latency: 15ms @ 50Hz, 16.67ms @ 60Hz Measured Data • RMS voltage of phase A, B, and C (in Volts x 10) • RMS currents of phase A, B, C, and Neutral (in Amperes x 1000) for each grid • DC component of measured RMS voltages (in Volts x 10) • Frequency of phase A grid 1 (in Hz x 100) • Phase angle between phase A grid 1 and phase A grid 2 (in degrees x 10) Power and Energy Data • Active and reactive power reported per phase and total in Watts, Volt-Amperes-Reactive (VAR) • Active and reactive total energy consumption in Watt-Seconds and Volt-Amperes-Reactive-Seconds (updated once per second), re-settable by the user • Total power factor • Average real and reactive power consumption (sliding 15 minute window updated once per second)	
Status and Diagnostics	• Module Heartbeat (indicates module health) • Utility Phase A voltage present • Phase polarity valid • Voltage measurements valid • Current measurements valid	
Internal Power Used	400 mA @ 5 VDC	

Product Number	Product Name	Page Number
IC693CPU374 PLUS	CPU (Model 374 PLUS with built-in 10/100 Mbps Ethernet and WEB Enabled). Requires High Capacity Power Supply	1.87
IC693DNM200	Series 90-30 Communications Module, DeviceNet, Master	1.110
IC693DNS201	Series 90-30 Communications Module, DeviceNet, Slave	1.110
IC693DSM314	Series 90-30 Digital Servo Module, 4-Axis (Fiber Optic Interface to Amplifiers)	1.117
IC693DSM324	Series 90-30 Digital Servo Module, 4-Axis	1.117
IC693MAR590	AC/DC Voltage I/O Module, AC In/Relay Out N.O.	1.99
IC693MDL230	AC Voltage Input Module, 120 VAC Isolated, 8 Point Input	1.91
IC693MDL231	AC Voltage Input Module, 240 VAC Isolated, 8 Point Input	1.91
IC693MDL240	AC Voltage Input Module, 120 VAC, 16 Point Input	1.91
IC693MDL241	AC/DC Voltage Input Module, 24 VAC/VDC	1.92
IC693MDL250	PACSystems RX3i AC Voltage Input Module, 120 VAC Isolated, 16 Point Input	1.91
IC693MDL260	AC Voltage Input Module, 120 VAC, 32 Point Input	1.92
IC693MDL310	AC Voltage Output Module, 120 VAC, 0.5 A, 12 Point Output	1.96
IC693MDL330	AC Voltage Output Module, 120/240 VAC, 1 A, 8 Point Output	1.96
IC693MDL340	AC Voltage Output Module, 120 VAC, 0.5 A, 16 Point Output	1.96
IC693MDL350	AC Voltage Output Module, 120 VAC Isolated, 2 A, 16 Point Output	1.96
IC693MDL390	AC Voltage Output Module, 120/240 VAC Isolated, 2 A, 5 Point Output	1.96
IC693MDL632	DC Voltage Input Module, 125 VDC Pos/Neg Logic, 8 Point Input	1.92
IC693MDL634	DC Voltage Input Module, 24 VDC Pos/Neg Logic, 8 Point Input	1.92
IC693MDL645	DC Voltage Input Module, 24 VDC Pos/Neg Logic, 16 Point Input	1.92
IC693MDL646	DC Voltage Input Module, 24 VDC Pos/Neg Logic, FAST, 16 Point Input	1.93
IC693MDL648	DC Voltage Input Module, 48 VDC Pos/Neg Logic, FAST, 16 Point Input	1.93
IC693MDL654	DC Voltage Input Module, 5/12 VDC (TTL) Pos/Neg Logic, 32 Point	1.93
IC693MDL655	DC Voltage Input Module, 24 VDC Pos/Neg Logic, 32 Point Input	1.93
IC693MDL660	DC Voltage Input Module, 24 VDC Pos/Neg Logic, 32 Point Input	1.93
IC693MDL730	DC Voltage Output Module, 12/24 VDC Positive Logic, 2 A, 8 Point Output	1.96
IC693MDL731	DC Voltage Output Module, 12/24 VDC Negative Logic, 2 A, 8 Point Output	1.97
IC693MDL732	DC Voltage Output Module, 12/24 VDC Positive Logic, 0.5 A, 8 Point Output	1.97
IC693MDL733	DC Voltage Output Module, 12/24 VDC Negative Logic, 0.5 A, 8 Point Output	1.97
IC693MDL734	DC Voltage Output Module, 125 VDC Pos/Neg Logic, 6 Point Output	1.97
IC693MDL740	DC Voltage Output Module, 12/24 VDC Positive Logic, 0.5 A, 16 Point Output	1.97
IC693MDL741	DC Voltage Output Module, 12/24 VDC Negative Logic, 0.5 A, 16 Point Output	1.97

Product Number	Product Name	Page Number
IC693MDL742	DC Voltage Output Module, 12/24 VDC Positive Logic ESCP, 1 A, 16 Point Output	1.98
IC693MDL748	DC Voltage Output Module, 48/24 VDC Positive Logic, 0.5 A, 8 Point Output	1.98
IC693MDL752	DC Voltage Output Module, 5/24 VDC (TTL) Negative Logic, 0.5 A, 32 Point	1.98
IC693MDL753	DC Voltage Output Module, 12/24 VDC Positive Logic, 0.5 A, 32 Point Output	1.98
IC693MDL754	DC Voltage Output Module, 12/24 VDC Positive Logic, 0.75 A with ESCP protection, 32 Point Output	1.98
IC693MDL760	RX3i Solenoid Module	1.56
IC693MDL760	Series 90-30 Solenoid Module	1.114
IC693MDL916	AC/DC Voltage Output Module, Relay, N.O., 4 A Isolated, 16 Point Output	1.99
IC693MDL930	AC/DC Voltage Output Module, Relay, N.O., 4 A Isolated, 8 Point Output	1.98
IC693MDL931	AC/DC Voltage Output Module, Relay, N.C. and Form C, 8 A Isolated, 8 Point Out	1.99
IC693MDL940	AC/DC Voltage Output Module, Relay, N.O., 2 A, 16 Point Output	1.99
IC693MDR390	AC/DC Voltage Output Module, 24 VDC Input, Relay Output, 8 In/8 Out	1.99
IC693MLX000	Spare Series 90-30 I/O Modules Label Kit (various quantities)	1.121
IC693NIU004	Series 90-30 Ethernet Remote I/O Expansion (Slave)	1.57
IC693NIU004	Ethernet Remote I/O Expansion (Slave)	1.118
IC693PBM200	Communications Module, Profibus-DP Module (Master)	1.109
IC693PBS201	Communications Module, Profibus-DP Module (Slave)	1.109
IC693PCM301	Series 90-30, Programmable Coprocessor Module, 192 KB (47 KB Basic Prgm)	1.115
IC693PCM311	Series 90-30, Programmable Coprocessor Module, 640 KB (190 KB Basic Prgm)	1.115
IC693PTM101	Power Transduce Module Processing Module interface board	1.55
IC693PTM101	Power Transduce Module Processing Module interface board	1.113
IC693PWR321	Power Supply, 120/240 VAC, 125 VDC	1.89
IC693PWR328	Power Supply, 48 VDC	1.18
IC693PWR328	Power Supply, 48 VDC	1.90
IC693PWR330	Power Supply, 120/240 VAC, 125 VDC	1.89
IC693PWR331	Power Supply, 24 VDC	1.89
IC693PWR332	Power Supply, 12 VDC	1.17
IC693PWR332	Power Supply, 12 VDC	1.89
IC693TCM302	RX3i Temperature Control Module, (8) T/C, (1) RTD and (8) 24 VDC Output	1.43
IC693TCM302	Series 90-30 Temperature Control Module, (8) T/C, (1) RTD and (8) 24 VDC Output	1.106
IC693TCM303	RX3i Temperature Control Module, Extended Range, (8) T/C, (1) RTD and (8) 24 VDC Output	1.43
IC693TCM303	Temperature Control Module, Extended Range, 8 T/C, 1RTD and 8 24 VDC Output	1.106
IC694ACC300	RX3i DC Voltage Input Simulator, 8/16 Points	1.19
IC694ACC310	Filler Module, Blank Slot	1.58
IC694ACC311	Terminal blocks, 20 terminals (qty 6) for IC694xxx low density modules	1.58
IC694ALG220	RX3i Analog Input, Voltage, 4 Channel	1.25