







PHASOR MEASUREMENT UNIT (PMU) - 2019 CATALOG

DESCRIPTION	PART NUMBER	SUMMARY	PICTURE
1 -Phasor Measurement Unit			
<p>VIZIMAX's advanced Phasor Measurement Unit not only measures the magnitude, frequency and phasors but also allows for advanced power system monitoring, protection and control. VIZIMAX's PMU offers real-time access to power system's key measurements, providing situational awareness and improves the reliability on the control actions, reducing uncertainty in the decision-making. As an essential element of the Wide Area Measurement System, VIZIMAX's PMU exceeds C37.118 requirements for both M and P class accuracy. It offers several options related to communication including GOOSE messaging and time synchronization via PPS, PTP1588 or via its optional internal GPS receiver (please refer to section 2 -Phasor Measurement Unit - Optional Communications). VIZIMAX's PMU is suitable for new or advanced RAS, automation systems and projects of all scales in transmission substations and interconnections, distribution substations, power generation, energy storage facilities and renewable energy sources. VIZIMAX's PMU has the following benefits:</p> <ul style="list-style-type: none"> ▶ Fast, reliable and accurate ROCOF availability ▶ Reliable and effective for rejecting harmonics: including sub-harmonics caused by series compensation ▶ Excellent performance in stressed and distributed power systems ▶ Very high resilience to harmonics: making it an ideal solution for single-phase applications, microgrids and power islanding ▶ Post-event analysis: through sequence of event recorder and waveform analyzer <p>The PMU must be ordered by first filling out the Smart Coding System that specifies the exact configuration of the product based on the customer's requirements. Please refer to PMU Smart Coding (PMU010000-SC-en). PMU is available in three different mounting:</p> <ul style="list-style-type: none"> ▶ Standard: Mounts directly inside enclosure and includes movable mounting brackets for multiple mounting positions (horizontal or vertical). ▶ Panel Mount: Mounts within a rectangular cut-out on any enclosure and includes dual control panels. Panel footprint: 105 x 305 mm (4.1 x 12.0 in), pinch brackets provided. ▶ Rack Mount: Mounts to standard 19 in rack and includes dual control panels. Ethernet port is accessible from the front. Panel size: 3U standard panel (5.219 x 19 in). <p>The VIZIMAX Tools Suite is a user interface allowing the configuration and operation of the PMU. This multi-language software is composed of: a PC Based Configuration tool for operation parameters and a Web-based Event Logger for event journals and alarms. VIZIMAX provides the VIZIMAX Tools Suite on a CD-ROM with PMU. Please refer to the related technical manuals for detailed specifications.</p>			
<p>Phasor Measurement Unit PMU, -40°C to +85°C base unit (smart coding to be confirmed) with 2xRJ45 Ethernet communication ports and with internal time base synchronization using 1588 Ethernet clock or PPS input.</p>	<p>PMU010000</p>	<p>VIZIMAX's Phasor Measurement Unit features:</p> <ul style="list-style-type: none"> ▶ Fast, reliable and accurate ROCOF availability ▶ Adjustable Reporting rate: up to 200/240 frames per second for 50/60 Hz ▶ Supports C37.118, IEC 61850-90-5, GOOSE messaging ▶ Total Vector Error (TVE) of less than 0.50% in steady conditions ▶ High precision clock base <100 ns ▶ CT inputs support saturation current up to 160 A ▶ Time synchronization: IEEE 1588 PTP, NTP, IRIG un-modulated or PPS Synchronization and optional internal GPS receiver (please refer to section 2 - Phasor Measurement Unit - Optional Communications) ▶ Interface: 2x serial ports (RS-232 and RS-485 or RS-232) with 2x copper Ethernet connections 100BASE-T with RJ45 connector (other communication ports available, please refer to section 2 Phasor Measurement Unit - Optional Communications) ▶ Power supply: 48Vdc, 125Vdc or 220Vdc ▶ 4x Signalling outputs ▶ 4x CT inputs: 1 or 5 amps RMS nominal ▶ 4x PT inputs ▶ Optional: 10x digital inputs (48Vdc, 125Vdc or 220Vdc) and 6x digital outputs - please refer to section 2 -Phasor Measurement Unit - Optional Communications ▶ PMU-RTS for real-time simulation environments also available, please enquire. 	

DESCRIPTION	PART NUMBER	SUMMARY	PICTURE
2 -Phasor Measurement Unit - Optional Communications			
Replace 2xRJ45 ports by 2x Fiber Optic ST multimode Ethernet communication ports	PMC010000	Replace 2xRJ45 Ethernet communication ports by 2x Fiber Optic ST multimode ports.	
Replace 2xRJ45 ports by 2x Fiber Optic LC single mode Ethernet communication ports	PMC020000	Replace 2xRJ45 Ethernet communication ports by 2x Fiber Optic LC single mode ports.	
Replace 2xRJ45 ports by 2x Fiber Optic LC multimode Ethernet communication ports	PMC021000	Replace 2xRJ45 Ethernet communication ports by 2x Fiber Optic LC multimode ports.	
10x Digital inputs and 6x additional high current Digital Outputs	PMC001000	Ten (10) digital inputs and six (6) additional high current Digital Outputs.	
GPS receiver for time based synchronization	PMC000100	GPS receiver for time based synchronization. (Antenna and mounting accessories not included)	
Sampled Values (SV) Option to publish data complying with IEC 61850-9-2LE or IEC 61869-9 standard	PMC000200	Analog values published in the form of sampled values (SV) that comply with IEC 61850-9-2LE and IEC 61869-9 standards	

DESCRIPTION	PART NUMBER	SUMMARY	PICTURE
3 - PMU - Training & Services			
<p>VIZIMAX offers services that cover all aspects of its PMU unit. VIZIMAX offers in-house and remote support provided by one (1) specialist. Training is provided on an 8h/ week-day basis by one (1) specialist for up to five (5) attendees. An extra will be charged for each additional participant, up to a total of 10. Trainer’s travelling time & living expenses are excluded. Services and Training modules are exclusive of all applicable taxes / duties (such as, without limitation, all sales, export or import duties, reservations, travelling costs and time, hotels & living expenses, vehicle rentals, mileage fees). Extra-costs may apply for special requests (overtime, week end, overnight working activities) Trainer’s travelling and living expenses such as reservations, travelling costs, hotels, vehicle or equipment rentals, mileage fees will be invoiced on a cost +15% basis Prices and conditions herein do not constitute a formal offer. Limitations of liability apply, please contact our application specialists by filling in the support form on our website for any PMU related inquiry or assistance for product definition.</p>			
PMU - In-house Support	PMV0100AK	IN-HOUSE SUPPORT Per day fee, per involved specialist	
PMU – Training	PMV0100AD	TRAINING Price is for up to 5 participants. 500\$ extra will be charged for each additional participant, up to a total of 10. Travelling time & living expenses excluded Per day fee, per involved specialist	
PMU - Remote support	PMV0100AS	REMOTE SUPPORT Per hour fee, per involved specialist Individual calls will be charged at a minimum of 30 minutes	
PMU - Travelling time	PMV0100AM	TRAVELLING TIME Travel and living expenses excluded. For more details, please consult VIZIMAX's General Sales Terms and Conditions. Per-day fee, per involved specialist	