

GLOBAL POWER PRODUCTS

VT-2 Metering Specifications

April 22, 1998

SPECIFICATIONS:

1. Digital Meter

- | | | | |
|-----|---|---|------------------------------|
| 1.1 | Accuracy | <u>Unity Power Factor</u> | <u>50% Power Factor</u> |
| | 1.1.1. Test Amps/10 | 0.2% | 0.5% |
| | 1.1.2. Test Amps | 0.1% | 0.4% |
| 1.2 | Services | | |
| | <u>One Meter with an Autoranging Power Supply</u> that is capable of monitoring the following Services: | | |
| | 3 Phase 4 Wire Wye | Any Voltage | |
| | 3 Phase 3 Wire Delta | Any Voltage | |
| | 3 Phase 4 Wire Delta | | |
| | Network, 1 Phase 2 or 3 Wire | | |
| 1.3 | Operating Range | | |
| | Voltage: | 96-528 Volts (absolute) | |
| | Current: | See Current Transformers | |
| | Frequency: | 47Hz to 63 Hz | |
| | Temperature: | -40° C to +85° C | |
| | Humidity: | 0 to 95% non-condensing | |
| 1.4 | Burdens | | |
| | Current Circuit: | Phase A, B, C | 1VA maximum |
| | Voltage Circuit: | Phase A | 8.6 VA maximum power circuit |
| | | Phase B, C | 0.24 VA maximum |
| 1.5 | Insulation, Surge Protection and Performance | | |
| | Conforms to ANSI C12.1, | | |
| | ANSI C12.16 | | |
| | ANSI/IEEE C37.90.1 – 1989 | | |
| | IEC 801-4 (4kV) 1988 | | |
| | FCC Part 15 and FCC | | |
| | Type: | Metal Oxide Varistors | |
| | | Line to neutral and neutral to ground | |
| | Ratings: | 480 VAC RMS continuous | |
| | | 4400V peak fast transient | |
| | | 4000A peak transient | |
| 1.6 | Functionality | | |
| | 1.6.1. | Meter shall be capable of displaying kWh, KW, Time of Use, and kVAR Or KVA metering parameters depending on the model type ordered. | |
| | 1.6.2 | Meter shall have the ability to function as a stand-alone metering device For kWh, KW, Time of Use and kVAR or KVA so that in the event the central processing station would fail, all data parameters could be collected at the meters themselves. | |
| | 1.6.3 | Demand type meters shall have a utility accepted demand reset mechanism and can be accessed from the front of the meter. The reset mechanism shall meet ANSI C12.1 Section 4.12.2.8 | |

- 1.6.4 Meter shall have the ability to act as a Data Recorder if necessary, capable of storing up to 370 days of consumption data.
- 1.6.5 Meter shall maintain readings in the event of a power failure utilizing non-volatile memory on kWh and KW meters and the on board real time clock will remain powered through the use of a sealed Lithium battery on Time of Use meters.
- 1.6.6 Meter shall be compatible with Utility Translation Systems, Inc. Software package. MV-90™ and RO-90, Ameren's Ability Software as well as Schlumberger EnergyTrac™ and PCPRO+™ applications.
- 1.7. Meter shall have a LCD display
 - 1.7.1. Meter shall display Potential and Consumption annunciators.
 - 1.7.2. Meter will be capable of displaying an error condition if inverted a current transformer or cross phase of the installation wiring is detected.
 - 1.7.3. Meter will have a visible consumption indicator that will flash or move at a rate proportional to the rate of consumption.
 - 1.7.4. Meter shall have the ability to display individual Voltage, Current and Phase angle values.
 - 1.7.5. Meter shall have the ability to display the number of demand resets that have taken place since the meters installation.
 - 1.7.6. Meter shall have the ability to number the times it has been powered down since its original installation.

2. Enclosure

- 2.1 Enclosure shall be in-door or out-door type and provide protection to a NEMA 4X rating.
- 2.2 Enclosure material shall be Flame Retardant GE Lexan with a UL rating of 5V
- 2.3 Meter shall be seal able using a wire type meter seal.
- 2.4 A 1 1/16" pre-drilled hole shall be in the bottom of the meter enclosure to accommodate (3/4" conduit)
- 2.5 Enclosure shall also have integrated mounting flanges.
- 2.6 Stainless Steel hardware shall be used for securing the lid to the base

3. Current Transformers

- 3.1 Meter shall use 100 mA secondary current transformers that allow for the paralleling of up to 4 sets of CTs.
- 3.2 Secondary of the transformer shall output current to ensure the accuracy of the service being metered.
- 3.3 Current Transformers shall be available in ranges from 50 Amps to 5000 Amps.
- 3.4 Current Transformers shall be available in solid or split core configurations.
- 3.5 Current Transformers shall be capable of measuring current up to 2500 feet away from the metering point.

4. TESTING

- 4.1 Meter shall provide the ability to be tested in place using a utility standard testing procedure which utilizes an accessible infrared Test LED.
- 4.2 Meter shall provide the ability to be tested in place without utility test equipment using a disk emulator and counting pulses proportional to the programmed Kh.
- 4.3 Meter shall have a Test Mode capable of displaying instantaneous Voltage, Current and the Phase Angle between each vector as referenced from phase A Voltage.

5. SOFTWARE

- 5.1 Software shall be capable of interrogating meters directly from the front of the meter with out removing the meter seal or opening the front cover.
- 5.2 System level software shall be able to perform the following functionality”
 - Poll each meter individually or sequentially
 - Provide an instantaneous vector diagram for each meter.
 - Provide kWh, KW, TOU and KVAR or KVA register reading for each meter.

6. OPTIONS

- 6.1 Pulse Output
Meter shall provide two pulse outputs. One being a utility standard Form C KYZ output, and the second being a Form A solid-state contact. The Form A contact can be wired as a Demand Threshold Output.
- 6.2 RS485 Communications
RS485 communications will be provided on an option board located inside the meter's enclosure capable of supporting up to 250 metering points. This multi-drop network will have a running distance of up to 5000 feet.
- 6.3 Modem Communications
Each meter shall have the ability to be equipped from the manufacturer or field retrofitted with an autobaud sensing modem. This modem shall communicate at 300/1200/2400 baud and have the ability of initiating a phone call on an event or calling on a schedule. Five modems can share the same phone line.
- 6.4 Data Recorder
Meter shall have the option of being equipped with an additional 32KB of random access memory for either one or two channels of interval load profile data.

6.4.1 Data Recording duration in days shall be according to the following table:

Interval Length in Minutes	Days Recording for 1 Channel	Days Recording for 2 Channels
1	12	6
2	25	13
3	37	19
4	50	29
5	62	33
6	75	39
10	125	6
12	151	79
15	188	99
20	251	132
30	377	198
60	755	397

The system and all its components must receive the approval of all agencies having jurisdiction **prior to installation of any equipment or wiring.**

The system supplier shall guarantee his ability to provide off-site diagnostic analysis of the system via telephone lines, as well as his ability to provide off-site preparation of bills in the required format, if required by the Owner. The supplier shall provide on-site diagnostics analysis of the system (if needed) Installation assistance in the form of telephone assistance or on-site visits, including one year's free diagnostic service (including on-site, or off-site repairs and adjustments) and preparation of bills.

The meters shall be the VT-2 manufactured by North American Power Products, Inc. or equal.