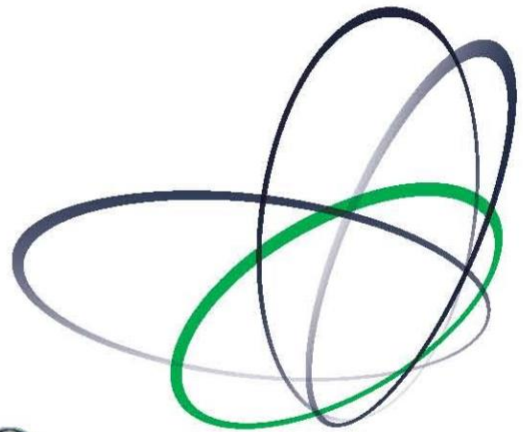# SOCKET VISION METER FAMILY INSTALLATION AND USER MANUAL

**i-meter®**
Innovative Metering Solutions

# Table of Contents

**Intellimeter Inc.**
Tel: (905) 839-9199

**WARNING**

Field electrical installers must follow proper safety precautions and all local electrical code requirements during electrical installation, meter wiring, and CT installation. During normal operation of this device, hazardous voltages are present which can cause severe injury or death. It is strongly recommended that only qualified, properly trained personnel should perform installation and servicing.

**DISCLAIMER**

The information presented in this publication has been carefully checked; however, Intellimeter  Inc. (ICI) assumes no responsibility for inaccuracies. The information provided in this document is subject to change without notice.

**CUSTOMER SUPPORT**

To report any issue, please contact ICI at 905.839.9199. Prior to returning any merchandise to ICI, a return material authorization (RMA) number should be obtained from ICI.

**INSTALLATION CHECKLIST**

Make sure you have received the right meter as per your order and packing list.

**INSTALLATION DISCLAIMER**

INTELLIMETER does not accept any responsibility and will not be liable for any loss or damage or expense of any kind whatsoever and howsoever caused by improper installation of its products, be it indirect, special, incidental or consequential damages (including but not limited to damages for loss of business, loss of profits, interruption or the like). Please refer to Intellimeter's Terms and Conditions of Sale available at https://intellimeter.us/pages/terms-of-service-privacy-statement-terms-conditions-of-sale

**ELECTRICAL CODE**

Installer is responsible for ensuring that all safety and local electrical codes are followed.

# INTRODUCTION

The Vision Meter Family consists of a variety of single phase and poly phase meters with network connectivity options. Meters can be ordered to include either Data on Demand ™, Airpoint ™, or both hardware options. All Vision meters are programmed through the Vision 20/20 software which is included in all Vision meters. All meters are designed with a lifetime to exceed 20 years, meeting or exceeding ANSI standards, using digital measurement technology.

## 1. PRODUCT DESCRIPTION



The Vision Metering family of meters includes single phase (ST) meters and poly phase (XT) meters.

### 1.1. ST Single Phase Meter

The standard (ST) model meter has been designed with cost in mind.
The ST single phase meter can be configured for a number of options:

- Available in 120V, 240V, or 480V rated Voltage.
- Displays kWh, instantaneous demand, volts, and amperes
- Standard functions include Time of Use, Load Profile, Demand.
- Comes in Class 320, Class 200, 100, and transformer rated types.
- Optional 15 Year Battery
- Optional radio with Data On Demand or ERT transmission capabilities
- ERC and FCC/NTC Approved

## 1.2. XT Poly Phase Meter

The XT Poly Phase meter is equipped with the features present in the ST meter model with the following features in addition:

- ▪ Available in ANSI Forms:
- ▪ Voltage Input capable of handling 120VAC – 480VAC
- ▪ Optional KYZ output for additional pulse generation capabilities

The XT meter has been designed to accommodate all metering forms and to provide a platform for AMR/AMI manufacturers to add communication hardware as needed to the meter unit.  Literature is available to assist customers.

## 1.3. Network Connectivity

The XT meter when ordered, includes an internal RF radio that operates on the 900 MHz band transmitting SCM data.

## 1.4. Temperature

Vision meters are specified to perform from -40° C to 85° C. The LCD may cease to function in adverse cold weather below -30 ° C, or excessive heat, above 80° C. Storage temperature should be between -40° C to 85° C.

## 1.5. Catalog Information

| ANSI METER FORM | NUMBER OF JAWS | VOLTAGE | AMPERAGE | ADDITIONAL INFORMATION | OPTIONS | | | ICI PART NUMBER |
| | | | | | PULSE OUTPUT | ICI- MC APPROVAL TO SEAL (FOR REVENUE BILLING PURPOSE IN CANADA) | RADIO | |
|---|---|---|---|---|---|---|---|---|
| 1 S | 4 | 120 L-N | 100 | 1ph 2w | NO | YES | NO | ICI29VM-ST-1S-4J-120V-100A-S |
| | 4 | 120 L-N | 100 | 1ph,2w | NO | CHECK METER (meter is approved but not sealed) | NO | ICI29VM-ST-1S-4J-120V-100A |
| | 4 | 120 L-N | 100 | 1ph, 2w | YES | NO | NO | ICI29VM-ST-1S-4J-120V-100A-PO |
| | 4 | 120 L-N | 100 | 1ph, 2w | NO | CHECK METER (meter is approved but not sealed) | YES | ICI29VM-ST-1S-4J-120V-100A-RF |
| | 4 | 120 L-N | 100 | 1ph, 2w | NO | YES | YES | ICI29VM-ST-1S-4J-120V-100A-RFS |
| | 4 | 120 to 480 L-N | 100 | 1ph 2w | NO | NO | NO | ICI29VM-XT-1S-4J-120TO480V-100A |
| | 4 | 120 to 480 L-N | 200 | 1ph 2w | NO | NO | NO | ICI29VM-XT-1S-4J-120TO480V-200A |
| 2S | 4 | 240 L-L | 200 | 1ph 3w | NO | YES | NO | ICI29VM-ST-2S-4J-240V-200A-S |
| | 4 | 240 L-L | 200 | 1ph 3w | NO | CHECK METER (meter is approved but not sealed) | NO | ICI29VM-ST-2S-4J-240V-200A |
| | 4 | 240 L-L | 200 | 1ph,3w | YES | NO | NO | ICI29VM-ST-2S-4J-240V-200A-PO |
| | 4 | 240 L-L | 200 | 1ph,3w | NO | CHECK METER (meter is approved but not sealed) | YES | ICI29VM-ST-2S-4J-240V-200A-RF |
| | 4 | 240 L-L | 200 | 1ph,3w | NO | YES | YES | ICI29VM-ST-2S-4J-240V-200A-RFS |
| | 4 | 120 to 480 L-N | 200 | Autoranging, 1ph 2w | NO | NO | NO | ICI29VM-XT-2S-4J-120to480V-200A |
| | 4 | 120 to 480 L-N | 200 | Autoranging, 1ph 2w | YES | NO | NO | ICI29VM-XT-2S-4J-120/480V200APO |
| 3S | 5 | 240 L-L | 20 | 2w or 3w (transformer rated) single phase (requires external* CTs) | NO | NO | NO | ICI29VM-ST-3S-5J-240V-20A |
| | 5 | 240 L-L | 20 | 2w or 3w (transformer rated) single phase (requires external* CTs) | YES | NO | NO | ICI29VM-ST-3S-5J-240V-20A-PO |
| | 5 | 120 to 480 L-N | 20 | Autoranging, 2w or 3w (transformer rated) single phase (requires external* CTs) | NO | NO | NO | ICI29VM-XT-3S-5J-120to480V-20A |
| 4S | 6 | 240 L-L | 20 | 3w (Requires external* CTs) | NO | NO | NO | ICI29VM-ST-4S-6J-240V-20A |
| | 6 | 240 L-L | 20 | 3w (Requires external* CTs) | YES | NO | NO | ICI29VM-ST-4S-6J-240V-20A-PO |
| | 6 | 120 to 480 L-N | 20 | Autoranging,3w (Requires external* CTs) | NO | NO | NO | ICI29VM-XT-4S-6J-120to480V-20A |
| 5S | 8 | 120 to 480 L-N | 20 | Autoranging, 3w 2 element, (requires external* CTs) | NO | NO | NO | ICI29VM-XT-5S-8J-120to480V-20A |
| | 8 | 120 to 480 L-N | 20 | Autoranging, 3w 2 element, (requires external* CTs) | YES | NO | NO | ICI29VM-XT-5S8J-120/480V-20A-PO |
| 6S | 13 | 120 to 480 L-N | 20 | Autoranging, 4w,(requires external* CTs) | NO | NO | NO | ICI29VM-XT-6S13J-120/480V-20A |
| | 13 | 120 to 480 L-N | 20 | Autoranging, 4w,(requires external* CTs) | YES | NO | NO | ICI29VMXT-6S13J-120/480V-20A-PO |
| 9S | 13 | 120 to 480 L-N | 20 | Autoranging, 4w,(requires external* CTs) | NO | NO | NO | ICI29VM-XT-9S13J-120/480V-20A |
| | 13 | 120 to 480 L-N | 20 | Autoranging, 4w,(requires external* CTs) | YES | NO | NO | ICI29VMXT-9S13J-120/480V-20A-PO |
| 12S | 5J | 120/208 L-N | 200 | 3w 2 element | NO | YES | NO | ICI29VM-ST-12S-5J-120V-200A-S |
| | 5J | 120/208 L-N | 200 | 3w 2 element | NO | CHECK METER (meter is approved but not sealed) | NO | ICI29VM-ST-12S-5J-120V-200A |
| | 5J | 120/208 L-N | 200 | 3w 2 element | YES | NO | NO | ICI29VM-ST-12S-5J-120V-200A-PO |
| | 5J | 120/208 L-N | 200 | 3w 2 element | NO | CHECK METER (meter is approved but not sealed) | YES | ICI29VM-ST-12S-5J-120V-200A-RF |
| | 5J | 120/208 L-N | 200 | 3w 2 element | NO | YES | YES | ICI29VM-ST-12S-5J-120V-200A-RFS |
| | 5J | 120 to 480 L-N | 200 | Autoranging, 3w 2 element | NO | NO | NO | ICI29VM-XT-12S-5J-120/480V-200A |
| | 5J | 120 to 480 L-N | 200 | Autoranging, 3w 2 element | YES | NO | NO | ICI29VM-XT-12S-5J120/480V200APO |
| 16S | 7J | 120 to 480 L-N | 200 | Autoranging, 3ph 4w | NO | YES | NO | ICI29VMXT-16S7J-120/480V-200A-S |
| | 7J | 120 to 480 L-N | 200 | Autoranging, 3ph 4w | NO | CHECK METER (meter is approved but not sealed) | NO | ICI29VMXT-16S-7J-120to480V-200A |
| | 7J | 120 to 480 L-N | 200 | Autoranging, 3ph 4w | YES | NO | NO | ICI29VMXT-16S7J-120/480V-200A-PO |
| | 7J | 120 to 480 L-N | 200 | Autoranging, 3ph 4w | NO | CHECK METER (meter is approved but not sealed) | YES | ICI29VMXT-16S7J-120/480V-200ARF |
| | 7J | 120 to 480 L-N | 200 | Autoranging, 3ph 4w | NO | YES | YES | ICI29VMXT-16S7J-120/480V200ARFS |

**Other forms are available upon request**          **\* external CTs must be instrument CTs.**

# 2. INSTALLATION

**WARNING:** The Vision ST and XT models contain dangerous levels of voltage. The meter should never be disassembled, exposure to electrical connections within an energized meter can result in serious injury or death.

Both the Vision ST and XT models come in a variety of ANSI standard forms. The physical dimensions of the ST and XT models are different, as are the features on the polycarbonate cover. The XT polycarbonate cover includes a turnkey feature that enables connection with the internal button interface without removing the polycarbonate protective housing.
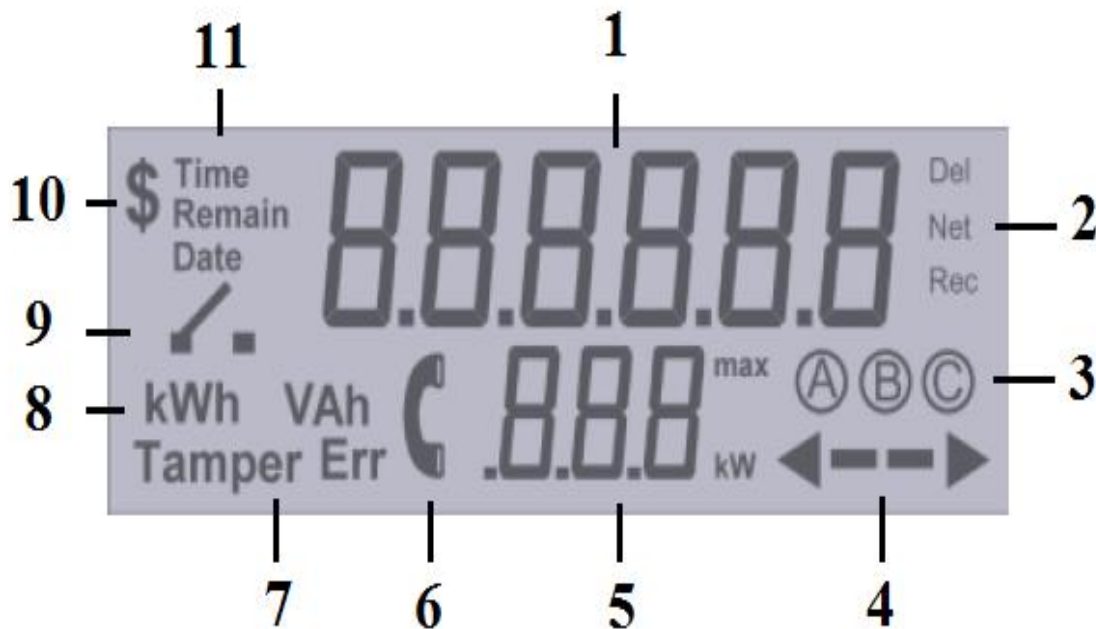
## 2.1. Meter Installation

The installation of the Vision meters should be handled by licensed professionals. The meter is plugged into the meter socket jaws, engaging the terminals and connecting the meter to the grid. Refer to Section 6 for supplementary diagrams of the common ANSI electric meter forms.

Upon powering the meter, verify meter operations by checking the display. As shown below, the LCD display will energize.



The meter settings will already be installed on the meter as tested at the factory. After installation and powering of the meter, the meter settings should be checked for proper operation of the meter.
The LCD display meets or exceeds ANSI C12.1, C12.10, C12.20, C37.90.1 standards.

**LCD displays**



The LCD displays a variety of information:

1. The main six-digit display shows the programmed data as set in Vision 20/20
2. Operating Mode indicator
3. Phase Letter indicator
4. When displayed, the arrow to the right indicates energy is being delivered to the load, the arrow to the left indicates the customer is generating energy to the grid. This set of four symbols is also used to emulate a Watt-hour disk unit.
5. Max Demand displayed in kW
6. Phone Symbol – When displayed, indicates that communication is in progress. If icon is constant, indicates transmission of data, if blinking, indicates data loss.
7. Tamper error indicator
8. kWh/VAh mode for six-digit segment
9. Switch Open indicator – if blinking, indicates a switch failure
10. Dollar Sign – Not Used
11. Time Display Settings

## 2.2. Service

Vision Meters are calibrated at the factory and do not require any maintenance. If there are issues with the meter, contact Intellimeter (www.intellimeter.ca) for assistance.

## 2.3. Storage

Vision meters are durable devices, yet they should be stored with care. Extreme temperature and humidity levels should be avoided during storage.

## 2.4. Troubleshooting

Troubleshooting of Vision Meters is accomplished by reading the error codes given by the meter. Contact Intellimeter (www.intellimeter.ca)
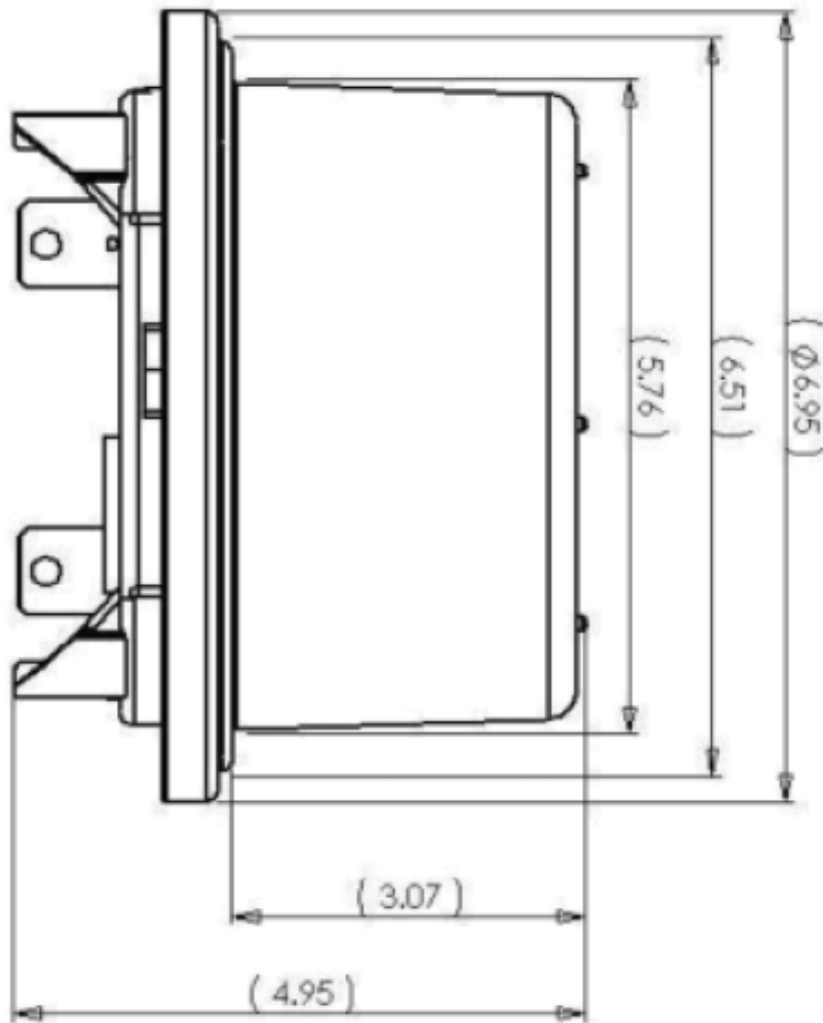
**Table of error codes**

| Name | Code | Display Blocking | Cause |
|---|---|---|---|
| ERR_UNPROGRAMMED | 001 | No | Meter is not programmed or in a factory default state |
| ERR_CONFIG | 002 | Yes | Meter detected a configuration error |
| ERR_SELFCHK | 003 | Yes | Meter detected a self-check error: Meter tried to recover reading data from backup memory after power was up and did not found any good records |
| ERR_RAMFAILURE | 004 | Yes | Meter detected a RAM Memory failure |
| ERR_ROMFAILURE | 005 | Yes | Meter detected a ROM Memory failure |
| ERR_NONVOLMEMFAILURE | 006 | Yes | Meter detected a non-volatile memory failure. Meter tried to save reading data in the EEPROM memory unsuccessfully. |
| ERR_CLOCK | 007 | No | Meter detected a clock error |
| ERR_MEASUREMENT | 008 | Yes | Meter detected a measurement element error |

| | | | |
|---|---|---|---|
| ERR_LOWBATTERY | 009 | No | Meter detected a low battery error |
| ERR_LOWLOSSPOTENTIAL | 010 | No | Meter detected one of the device potential that is below a predetermined value. |
| ERR_DEMANDOVERLOAD | 011 | No | Meter detected a demand threshold overload |
| ERR_POWERFAILURE | 012 | No | Meter detected a power failure. Power register in the computation engine was corrupt |
| ERR_TAMPERDETECT | 013 | Yes | Meter detected tamper activity. Used on meters with the tamper sensors |
| ERR_REVERSEROTATION | 014 | No | Meter detected reverse rotation |
| ERR_RADIO | 101 | Yes | Meter detected an error in the radio chip. Used on meters with the radio communication |
| ERR_POWERSWITCH | 102 | No | Meter detected a power switch error. Used on meters with the connect/disconnect switch. Can be switch board or switch malfunctioning |
| ERR_NOTCALIBRATED | 103 | No | Meter is not calibrated |

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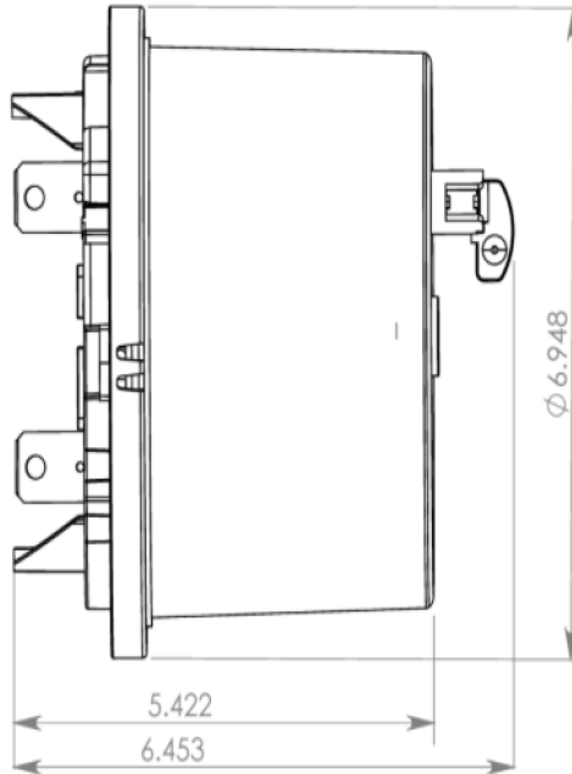Tel: (905) 839-9199

# 3. DIAGRAMS

The physical dimensions of both types of meters are shown below. It may be desired to acquire more information about the different types of form standards, it is recommended to reference a reliable source for this information. Refer to meteringforlinemen.com/diagrams for sample information about ANSI form standards.

## 3.1. ST Single Phase Meter



The ST single phase meter has a different physical layout than the XT model. The ST series of meters do not have as many features available and the exterior housing reflects the difference.

## 3.2. XT Poly Phase Meter



The XT series meters have a different layout which includes an external switch to select the settings for the meter. The XT series are readily available only in a polycarbonate housing.

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Thank you for giving us the opportunity to serve you. We appreciate your business and the confidence you have placed in us.

Please visit us @ https://intellimeter.us/

or call us @ 905-839-9199 if you need any further assistance.