# The ultimate energy meter from Senva

Get in. Get out. Get data.

We set out to make the easiest to install, most accurate meter. We started with flexible Rogowski CTs because they're compact, lightweight, and split-core for easy installation. But we didn't like their accuracy. So we gave them a brain so they can digitally communicate with our meter. And then it dawned on us you'd appreciate not having high voltage at the meter where you make your digital connections. So we made the voltage connection at the CT itself. Suddenly, we were measuring current and voltage in a current transducer.

Available with

ASHRAE BACnet®

Modbus
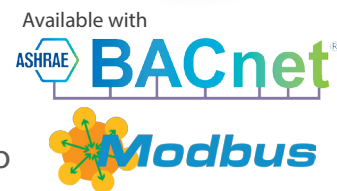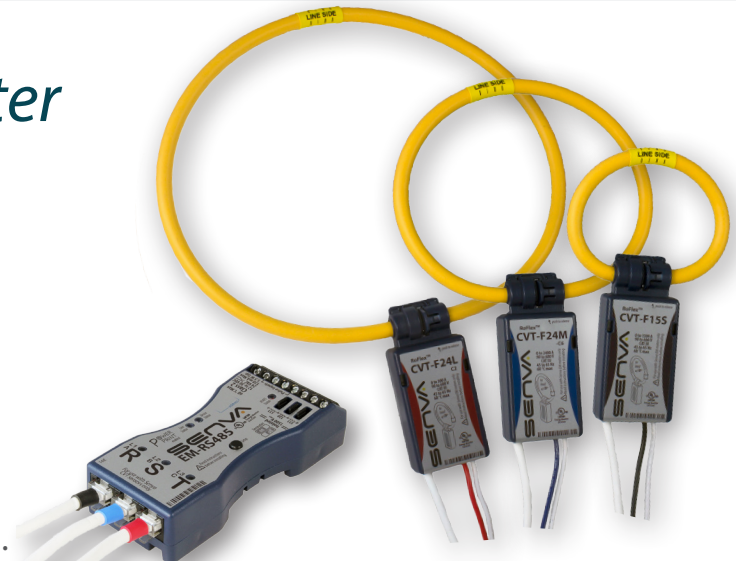
We christened it the "CVT" and called the patent attorney...

The Current/Voltage Transducer™ (CVT™) measures both voltage and current, communicating the data digitally to the meter via plug-in low voltage connections.

N   L1

Data to meter
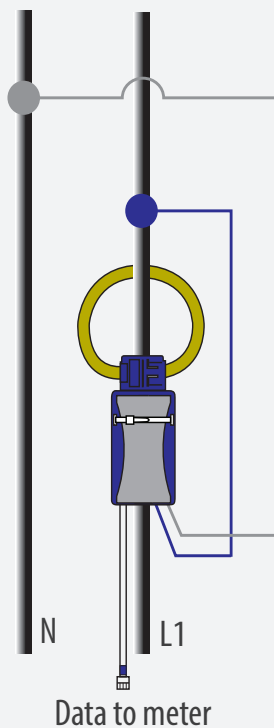
Smart microprocessor enabled CVTs™ boast numerous benefits:

- *Digitally calibrated CVTs™ are extremely accurate*
- *The accuracy is as high as a calibrated system, yet different CVTs™ can be changed from meter to meter and the accuracy is maintained. A big advantage for auditing, since your meter is not size specific.*
- *Plug and play installation— individual CVTs™ are digitally recognized by the meter base and outputs are automatically scaled—no user set up is required.*
- *Digital communication offers superior noise immunity compared to traditional induced low-signal Rogowskis*
- *All the high voltage connections are at the CVT™*
- *Rogowski CVTs™ are available in 4 sizes from 9" to 36" in circumference and include several rating options from 300A to 6000A and are universally rated for 90-600V*

Intelligent Meter Technology auto-detects and self configures on each installation!

The meter recognizes the CVT™ sensors and then scales itself accordingly. If you're using BACnet or Modbus versions (EM-RS485), it even self-configures its baud rate, eliminating additional configuration steps to provide a full data stream of power variables.   Two pulse inputs allows aggregation of additional EM-PULSE meters. With the EM-RS485, the on-board inputs can connect to a variety of pulse output meters (water, gas, steam, etc.) for increased flexibility.

The entire assembly is easily mounted inside the electrical panel. Multiple mounting options including DIN rail adapter, snap-in mounting ears and integrated rare earth magnets to instantly secure on any ferrous enclosure or surface.

Additional features include diagnostics for assistance during installation. User programmable pulse scales, pulse width/alarm options, energy type, balanced load multipliers and PowerPrint power quality alarm.

It all adds up to ease of installation and higher accuracy. Just what you'd expect from Senva.

The most compact meter ever! Simply plug in CVT™ connections for easy installation
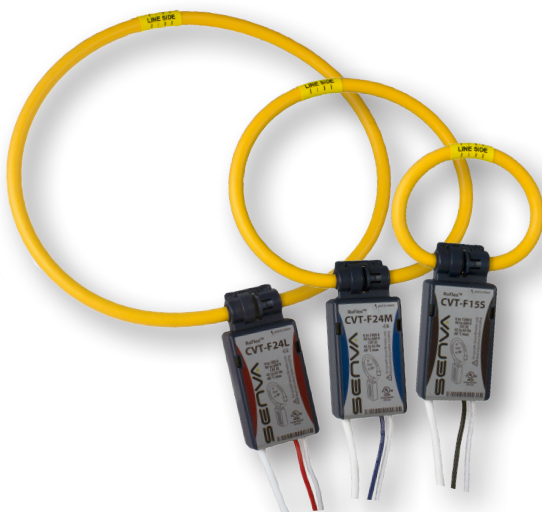
Flexible Rogowski CVT™ sensors are available in four sizes from 9" to 36" in circumference (approximately 2.8" to 11.4" in diameter) and include rating options from 300A to 6000A
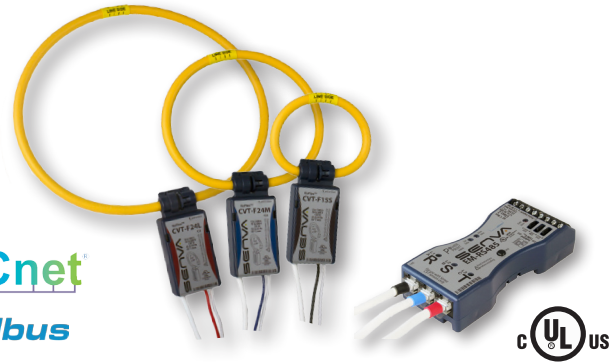
Flexible split-core CVT™ sensors are easy to install and more accurate than traditional CTs

BACnet® is a registered trademark of ASHRAE.

SENVA

EM Series
Energy Meters

Pulse Version: kWh, KVAR, kVA
Protocol Version: BACnet & Modbus
Flexible Split-core Rogowski CVT™ Sensors
Monitor loads from 30-6000A & 90-600V

ASHRAE **BACnet**®

Modbus

c(UL)us

DESCRIPTION

The EM Series is the safest and fastest meter to install on the market. The perfect product for retrofits as the high voltage components are embedded in the Current/Voltage Transducer™ (CVT™). The entire assembly is easily mounted inside the electrical panel eliminating labor and space required to install a separate transducer box. Each CVT™ uses digital communication with the meter for superior noise immunity--ideal for applications where accuracy matters! The CVTs™ are individually calibrated and measurement accuracy is independent of the transducer. To complement the CVT™, our metering platform offers two meter options (EM-PULSE & EM-RS485) which are small enough to fit in the palm of your hand, yet powerful enough to self-configure during install, removing all manual configuration!

APPLICATIONS

- Energy Management and performance contracting
- Monitoring for commercial tenants
- Activity-based costing in commercial and industrial facilities
- Real-time power monitoring
- Load shedding
- Audits/temporary monitoring
- Distributed generation

Designed and Assembled
In the U.S.A

7 warranty *7 year limited warranty*

FEATURES

Intelligent Meter Technology

- EM Series meters auto-detect and self configure for electrical service, CVT™ size, communication protocol (BACnet/Modbus), baud rate and more for simple and efficient installation
- Calibration is at the CVT™ level so any CVT™ from the product family will maintain its accuracy with any EM Series meter

Ultimate Flexibility

- One universal meter supports all CVT™ options in the product family
- 2 pulse inputs for summing multiple meters on the EM-PULSE or for general (configurable) pulse counting on the EM-RS485 (from any pulse meter - water, gas, steam, etc.)
- 2 pulse outputs on the EM-PULSE for separately tracking positive and negative energy usage, additional power metrics or power quality alarms
- Flexible Mounting Options
  - Supports mounting on either horizontal or vertical PR30 (TS 35/F6) DIN rail
  - Snap-in mounting ears allow screwing to any suitable surface
  - Integrated rare earth magnets secure the EM meter to any ferrous enclosure or surface-- Get In. Get Out. Get Data.
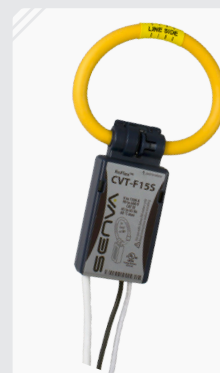
Split-core Rogowski CVT™

- Easiest in the industry to install
- Senses both voltage & current
- High accuracy...digitally calibrated; interchangeable
- Available in multiple sizes & ratings to meet any project requirements
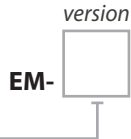
Quick Start Auto-detection

- Meter base recognizes the CVT™ sensors and scales itself accordingly
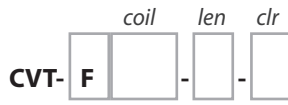- No manual configuration necessary

Compact Size

- Most compact meter ever - fits in the palm of your hand!

METER ORDERING

version

EM- ☐

Version
PULSE = Pulse
RS485 = Modbus & BACnet

CVT ORDERING

coil *len* *clr*

CVT- F ☐ **-** ☐ **-** ☐

Type
F = Flex Rogowski

Coil (Amps/Size)
03S = 300A/Small
08S = 800A/Small
08M = 800A/Medium
15S = 1500A/Small
15M = 1500A/Medium
24M = 2400A/Medium
24L = 2400A/Large
60G = 6000A/Grande

Lead Length
Blank = 3' (default)
L06 = 6'
L10 = 10'

Lead Color
Blank = Black (default)
C2 = Red
C6 = Blue
3PH = Three CVT Kit (1 Black, 1 Red, 1 Blue)

SPECIFICATIONS (METER AND CVT™)

Power Supply Input		12-30VDC/24VAC[1], 100mA max.
Pulse Outputs	Dual Outputs	Import and Export Energy Outputs
	Type	Solid state dry contact
	Specifications	N.O., 300mA max, 40V max
	Pulse scaling	0.01, 0.1, 1, 10, 100, 1k Wh/Pulse
RS-485 Output	RS-485	2-wire, BACnet MS/TP, Modbus RTU
	Baud Rates	9600, 19200, 38400, 57600, 76800, 115200
	RS-485 Loading	1/4 unit
Pulse Inputs[2]	Dual Inputs	3.5 +/- 0.5 VDC, short circuit current is 10mA max
	Pulse Rate	50 Hz (default), configurable up to 500 Hz
	Pulse active	<100 ohms
	Pulse Undefined	100-1000 ohms
	Pulse Idle	>1000 ohms
Service Types	Configurations	1Ph, 2Ph, 3Ph Wye (4-Wire), 3Ph Delta (3-Wire)
	Voltages	90V$_{L-N}$ through 600V$_{L-L}$
	Frequency	45-65 Hz
Performance	Accuracy	1% for V, A, kW, kVAR, kVA
Current/Voltage Transducer™	Small Rope Circumference	9"
	Medium Rope Circumference	15"
	Large Rope Circumference	24"
	Grande Rope Circumference	36"
	300A Operating Range[3]	+/-1% 30-300A (+/-3% >10A)
	800A Operating Range[3]	+/-1% 30-800A (+/-3% >10A)
	1500A Operating Range[3]	+/-1% 30-1500A (+/-3% >10A)
	2400A Operating Range[3]	+/-1% 50-2400A (+/-3% >15A)
	6000A Operating Range[3]	+/-1% 120-6000A (+/-3% >40A)
Operating Environment	Temperature	-4 to 140°F (-20 to 60°C)
	Humidity	0-95% non-condensing
Meter Enclosure	Material	Polycarbonate/ABS
	Dimensions	4.1"h x 1.8"w x 0.9"d
CVT™ Enclosure	Material	Polycarbonate/ABS
	Enclosure Dimensions	3.5"h x 1.6"w x 0.8"d

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.
(2) PULSE Meter: Pulse Inputs must have same scale as the Pulse Outputs for accurate accumulation.
*   RS485 Meter: Pulse Inputs are configurable to users needs.*
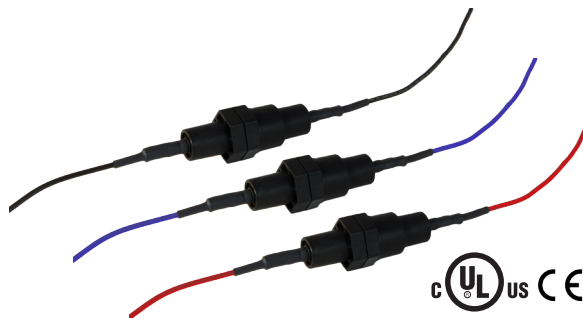*(3) CVT™ Accuracy based on reading, not full scale.*

FUSE ORDERING

Color

CVT-FUSE- ☐

Color
Blank = black (default)
C2 = Red
C6 = Blue
3PH = Three Fuse Kit (1 Black, 1 Red, 1 Blue)

SPECIFICATIONS (FUSES)

Fuse	1/2 Amp, 600VAC slow blow, 200kA AC Interrupting rating
Wire	18AWG, 18" lead on each end of fuse pack, 600VAC rating

CVT-FUSE-3PH pictured

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