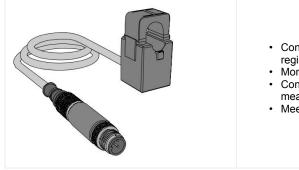
# S15C Current Transformer to Modbus Converter



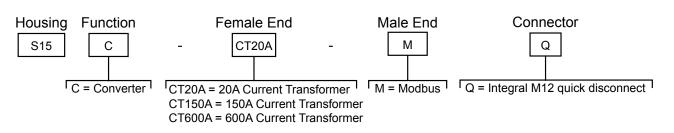
## Features



- Connects to the included current transformer and outputs the value to Modbus registers
- · Monitors AC current for various devices using current transformers
- Converts a high-voltage input to a proportional low-voltage, low-current signal for measuring and monitoring
- Meets IP65, IP67, and IP68 ratings with a rugged overmolded housing

## SNAP SIGNAL

## S15C-CT Models



Split-core current transformers are used to monitor AC current for various devices. The current transformer input takes a high voltage current input and produces a proportional low-voltage, low-current signal for measuring and monitoring. Split-core current transformers are ideal for installing onto existing electrical wiring because they can snap around the individual conductors without having to disconnect any cables.

**NOTE:** Users can use any size current transformer rated up to a 655 A max rating, as long as the current transformer has a 333 mV AC output.

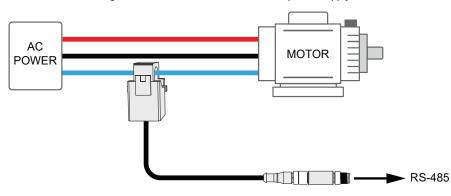
## Installing the Current Transformers

Observe the polarity when installing current transformers. Banner's current transformers indicate **k** as the source side and **I** as the load side, where source refers to the incoming power feed side to the device and the load side is the device side.

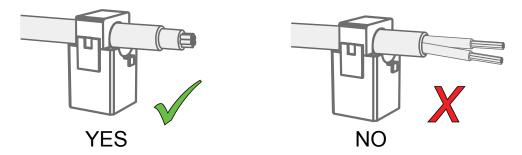
Banner's CTs have an etched arrow to indicate the directionality for installation ( $k \ge 1$ ). As shown in "Installing a current transformer relative to the power supply/motor" on page 2, the source is the AC power supply and the load is the Motor. The CT direction arrow must point toward the load. Banner's current transformers can be installed on any conductor in a 2- or 3-phase AC line. Current transformers should only be installed on a single conductor. For the correct installation, see "Installing a single conductor on the current transformer" on page 2.



Installing a current transformer relative to the power supply/motor

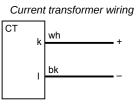


Installing a single conductor on the current transformer



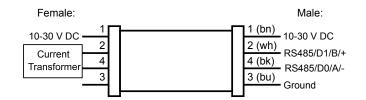
## Wire the Current Transformer

For more information on wiring and installing the current transformer, refer to the Split Core Current Transformer datasheet (p/n 212463).



Wire Color	Description
White	Input from CT (k)
Black	CT ground (I)

## Converter Wiring



Male (Gateway)	Female (Sensor)	Pin	Wire Color
$\bigcirc$ 1		1	Brown
2.	2	2	White
	1-1-2021	3	Blue
3-4-4	4 3	4	Black

Female (Sensor)	Signal Description
Pin 1	10 V DC to 30 V DC
Pin 2	CT Input
Pin 3	Not Used
Pin 4	CT Ground

Male (Gateway)	Signal Description		
Pin 1	10 V DC to 30 V DC		
Pin 2	RS485/D1/B/+		
Pin 3	Ground		
Pin 4	RS485/D0/A/-		

## **Configuration Instructions**

## Sensor Configuration Software

The Sensor Configuration Software offers an easy way to manage converter Modbus settings, retrieve data, and visually show converter data. The Sensor Configuration Software runs on any Windows machine and uses an adapter cable (BWA-UCT-900, p/n 19970) to connect the converter to the computer.

Download the most recent version of the Sensor Configuration Software from the Banner Engineering website: https://info.bannerengineering.com/cs/groups/public/documents/software/b\_3128586.exe.

## S15C-CT Modbus Configuration

Address	Туре	Name	I/O Range	Description	Notes	Default <sup>(1)</sup>
IO Data Out						
40001	uint16, Read Only	IO Data	0-65535	Analog Data output	AC RMS Current (A) = Register Value/100	0-2000, 0-15000, or 0-60000
40002	bool, Read Only	IO Alarm State	-	Alarm State for IO based on Min and Max thresholds defined in Ana- log In Min Value () and Analog In Max Value ()	0 = Within threshold range 1 = Out of threshold range	-
40003	int16, Read Only	IO Error Sta- tus	STATUS_ERROR_TYPE_NO_ERROR = 0 STATUS_ERROR_TYPE_BELOW_MIN = 1 STATUS_ERROR_TYPE_ABOVE_MAX = 2	Status of program	0-2 value	-
			IO Data Rate			
41201	uint16, Read and Write	Sample IO	0-65535	Sample interval time for IO	Increments of 62.5 ms	16 (1 sec- ond)
			Minimum Value			
41204	uint16, Read and Write	Minimum Ana- log Value	-	Minimum analog value for data read	Minimum value: 0	0
			Maximum Value			
41205	uint16, Read and Write	Maximum Analog Value	-	Max analog value for data read	Maximum value	20, 150, or 600
			CT Type Input			

Continued on page 4

<sup>&</sup>lt;sup>(1)</sup> Based on the model selected

	Continued from page 3					
Modbus Register Address	Туре	Name	I/O Range	Description	Notes	Default
41011	int16, Read and Write	AC Line Fre- quency	1 = 60 Hz 2 = 50 Hz	AC Line Frequency	1 = 60 Hz 2 = 50 Hz	1
41015	uint16, Read and Write	CT Amp value	0-655	Amp value of the transformer used User-defined: 0-655	-	20, 150, or 600
			COMs Settings			
46101	Baud Rate	-	0 = 9.6k 1 = 19.2k 2 = 38.4k	-	-	1
46102	Parity	-	0 = None 1 = Odd 2 = Even	-	-	0
46103	Modbus Slave Ad- dress	-	1 to 247	-	-	1

## Status Indicators

### Power LED Indicator (Green)

Solid Green = Power On

• Off = Power Off

#### Modbus Communication LED Indicator (Amber)

- Flashing Amber (4 Hz) = Modbus communications are active
- Solid Amber for 2 seconds to Off = Modbus communications are lost after connection
- Solid Amber for 2 seconds to Flashing Amber (4 Hz) = Modbus communications momentarily lost, but communication reestablished
- Solid Amber = Modbus communications are intermittent, or communications error occurs more frequently than once every 2 sec-
- onds
- · Off = Modbus communications are not present

## S15C-CT Specifications

#### Supply Voltage

10 V DC to 30 V DC at 50 mA maximum

#### Power Pass-Through Current

4 A maximum

#### Supply Protection Circuitry

Protected against reverse polarity and transient voltages

#### Leakage Current Immunity

400 µA

#### Resolution

12-bits

#### **Current Transformer**

Electrical:

Rated Input: 0-20 A (CT20A), 0-150 A (CT150A), or 0-600 A (CT600A), depending on the model Rated Output: 0.333 V AC Ratio:  $\leq \pm 1.0\%$ Phase Angle:  $\leq \pm 60$  min Dielectric Strength: 2.5 kV/1 mA/1 min Insulation Resistance: DC 500 V/100 MΩ min Mechanical:

Case: PA / UL94-V0 Bobbin: PBT Core: Silicon Steel -25 °C to +75 °C (-13 °F to +167 °F) ≤ 85% maximum relative humidity (non-condensing) For more information, refer to the Split Core Current Transformer datasheet (p/n 212463)

#### **Required Overcurrent Protection**



WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

#### Indicators

Green power Amber Modbus communications

#### Connections

Integral male/female 4-pin M12 quick disconnect

#### Construction

Coupling Material: Nickel-plated brass Connector Body: PVC translucent black

#### Vibration and Mechanical Shock

Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 0.5 mm amplitude, 5 minutes sweep, 30 minutes dwell) Meets IEC 60068-2-27 requirements (Shock: 15G 11 ms duration, half sine wave)

#### **Environmental Rating**

IP65, IP67, IP68 NEMA/UL Type 1

#### **Operating Conditions**

Temperature: -40 °C to +70 °C (-40 °F to +158 °F) 90% at +70 °C maximum relative humidity (non-condensing) Storage Temperature: -40 °C to +80 °C (-40 °F to +176 °F)

Overcurrent protection is required to be provided by end product application per the supplied table. Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply. Supply wiring leads < 24 AWG shall not be spliced. For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	1.0	30	0.5

#### Certifications



Banner Engineering BV Park Lane, Culliganlaan 2F bus 3 1831 Diegem, BELGIUM Turck Banner LTD Blenheim House

Blenheim Court Wickford, Essex SS11 8YT GREAT BRITAIN

## FCC Part 15 Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

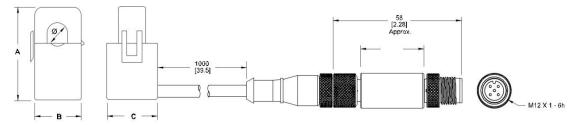
## Industry Canada

This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

## **Current Transformer Dimensions**

All measurements are listed in millimeters [inches], unless noted otherwise.



Model	Diameter	Α	В	С
CT20A	10 mm (0.39 in)	41 mm (1.61 in)	24 mm (0.94 in)	26.5 mm (1.04 in)
CT150A	16 mm (0.63 in)	45.5 mm (1.79 in)	29 (1.14 in)	31.5 mm (1.24 in)
CT600A	35.7 mm (1.41 in)	92.9 mm (3.66 in)	65.25 mm (2.57 in)	42 mm (1.65 in)

## Accessories

## Cordsets

4-Pin Threaded M12 Cordsets—Double Ended						
Model	Length	Style	Dimensions	Pinout		
MQDEC-401SS	0.31 m (1 ft)			Female		
MQDEC-403SS	0.91 m (2.99 ft)			$\sim^2$		
MQDEC-406SS	1.83 m (6 ft)		40 Typ [1.58"]	1 (600) -		
MQDEC-412SS	3.66 m (12 ft)			4 0 3		
MQDEC-420SS	6.10 m (20 ft)		M12 x 1 -	_		
MQDEC-430SS	9.14 m (30.2 ft)	Male Straight/Female	ø 14.5 [0.57"] →	Male		
MQDEC-450SS	15.2 m (49.9 ft)	Straight	44 Typ. [1.73"] M12 x 1 ø 14.5 [0.57"]	2 + 4 $1 = Brown$ $2 = White$ $3 = Blue$ $4 = Black$		

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