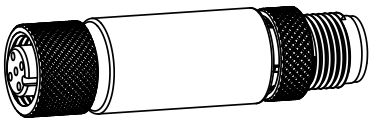
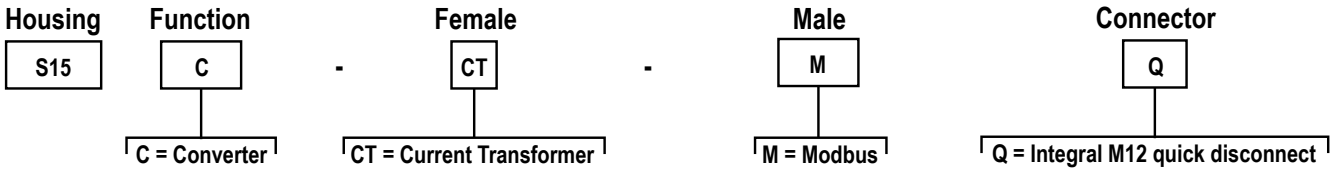
S15C Current Transformer to Modbus® Converter

Datasheet



- Compact current transformer to Modbus® converter that connects to 20 A or 150 A current transformers and outputs the value to modbus registers
- Monitor AC current for various devices using current transformers
- Current transformer input takes a high voltage input and produces a proportional low-voltage, low-current signal for measuring and monitoring
- Rugged over-molded design meets IP65, IP67, and IP68

Models



The converter comes with the following current transformer models included:

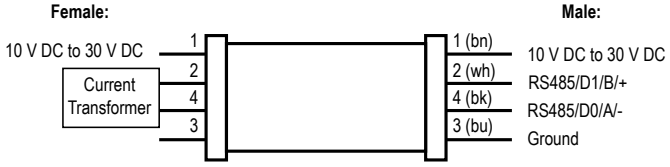
Model Kits	Description	Connection
BWA-CURRENT-TRANSFORMER-20A	Includes CT20A; 20 A Input; 0.333 V Output	1 meter two-wire twisted pair cable
BWA-CURRENT-TRANSFORMER-150A	Includes CT150A; 150 A Input; 0.333 V Output	

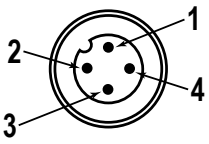
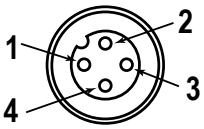
Modbus Configuration

Modbus Register Address	Type	Name	I/O Range	Description	Notes	Default
IO Data Out						
40001	int16, Read Only	IO Data	0-32768	Analog Data output	AC RMS Current (A) = Register Value/100	0-2000
40002	bool, Read Only	IO Alarm State	-	Alarm State for IO based on Min and Max thresholds defined in Analog In Min Value () and Analog In Max Value()	0 = Within threshold range 1 = Out of threshold range	-
40003	int16, Read Only	IO Error Status	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	int16, Read and Write	Sample IO	-	Sample interval time for IO	Minimum rate: 62.5 ms (0x01)	**0x10 (1 sec)**
Minimum Value						
41204	uint16, Read and Write	Minimum Analog 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	**20**
CT Type Input						
41014	uint16, Read and Write	CT mV value	-	Millivolt value of the transformer used	-	333 mV
41015	uint16, Read and Write	CT Amp value	-	Amp value of the transformer used	-	20 A
COMs Settings						

Modbus Register Address	Type	Name	I/O Range	Description	Notes	Default
46101	Baud Rate	-	0 = 9.6k 1 = 19.2k 2 = 38.4k	-	-	1
46102	Parity	-	0 = None 1 = Odd 2 = Even	-	-	None
46103	Modbus Slave Address	-	1 to 247	-	-	1

Wiring Diagrams



Male (Gateway)	Female (Sensor)	Pin	Wire Color
		1	Brown
		2	White
		3	Blue
		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

Important: If using a cable to connect the converter to an analog sensor, use of a shielded M12 cable is recommended, with the shield tied to pin 3.

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/-

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 seconds
- Off = Modbus communications are not present

Specifications

Supply Voltage
18 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

CT20A and CT150A Current Transformer
Electrical:
Rated Input: 0 A - 20 A (CT20A) or 0 A - 150 A (CT150A)
Rated Output: 0.333 V AC
Ratio: ≤ ± 1.0%
Phase Angle: ≤ ± 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)

Indicators
Green power
Amber Modbus communications

Certifications

Banner Engineering Europe Park Lane, Culliganlaan 2F bus 3, 1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House, Blenheim Court, Wickford, Essex SS11 8YT, Great Britain

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)

Required Overcurrent Protection

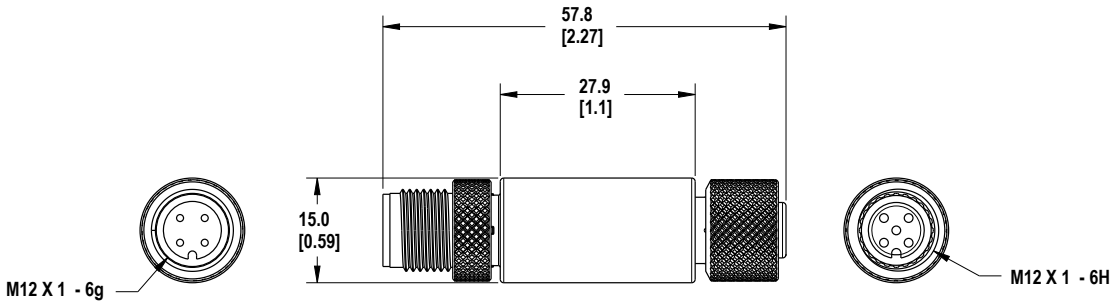
WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

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 (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

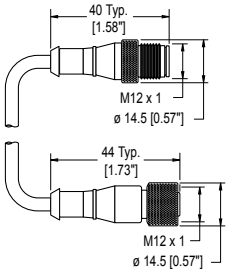
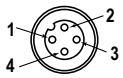
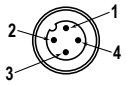
Dimensions

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



Accessories

Cordsets

4-Pin Threaded M12 Cordsets—Double Ended				
Model	**Length**	**Style**	**Dimensions**	**Pinout**
MQDEC-401SS	0.31 m (1 ft)	Male Straight/ Female Straight		Female  Male  1 = Brown 2 = White 3 = Blue 4 = Black
MQDEC-403SS	0.91 m (2.99 ft)			
MQDEC-406SS	1.83 m (6 ft)			
MQDEC-412SS	3.66 m (12 ft)			
MQDEC-420SS	6.10 m (20 ft)			
MQDEC-430SS	9.14 m (30.2 ft)			
MQDEC-450SS	15.2 m (49.9 ft)			

Banner Engineering Corp Limited Warranty

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For patent information, see www.bannerengineering.com/patents.

FCC Part 15

This device complies with Part 15 of the FCC Rules. 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 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.

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.