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VC-2010 CANopen Converter

VC-2020 ASCII over RS485 Converter

VC-2030 MODBUS RTU over RS485 Converter

VC-2040 ASCII over RS232 Converter

VC-2050 4 - 20 mA Converter

Description

The SenGenuity VisConnect® VC-20xx series of Converters are DIN rail mountable devices which provide viscosity and temperature readings from the SenGenuity ViSmart® VS-2000, VS-2500, and VS-2600 series of Viscosity Sensors. Supported protocols and interfaces include: CANopen, ASCII, MODBUS RTU, and 4-20mA. The CAN, RS485, and RS232 Converters have field configurable Node IDs and Bit Rates, plus a TBUS connector which reduces installation time. The 4-20mA Converter has a field configurable viscosity range to optimize output current resolution in narrow viscosity ranges.

Performance Specifications

Parameter	Value
Physical IO	
Physical Layer, per OSI Model	CAN, RS485, RS232, 4-20mA
Network Layer, per OSI Model	CANopen, MODBUS RTU, ASCII, 4-20mA
Converter Data Outputs	Viscosity (AV)
	Temperature (°C)
	Sensor and Converter Status
Electronic	
Power Supply Voltage (Vdc)	9 to 36
Power Supply Current (mA)	<100
Environmental	
Ambient Operating / Storage Temperature	0 to 60°C / -40 to 85°C
Relative Humidity	95%, no condensation
Mechanical	
Housing Dimensions	70.4mm (height) x 85mm (depth) x 22.5mm (width)
Mounting	DIN rail, 35mm, TBUS connector (optional)
Connector Type	PCB Terminal Blocks, 5mm
Vibration	EN60068-2-6 & EN60068-2-64
Shock	EN60068-2-27
Protection Degree	IP20
Approvals	
EMC Immunity/Emission	EN 55000, EN 61000-4-2, EN 61000-4-3, EN 61000-4-6
CANopen Protocol	CIA Certificate #: CIA201206-301V402/20-0153
MODBUS RTU Protocol	MODBUS Conformance Test Policy v3.0

VC-2010 CANopen Converter

Terminal	Signal	Terminal	Signal
1	nc	9	MOSI
2	CANL	10	SCK
3	nc	11	A0
4	CANH	12	A1
5	Ground	13	GND
6	Power	14	V+
7	Ground	15	MISO
8	Power	16	GND

TBUS Electrical Connections

Terminal	Signal
1	Power
2	Ground
3	nc
4	CANH
5	CANL

nc = no connect

VC-2020 ASCII over RS485 Converter

Terminal	Signal	Terminal	Signal
1	B	9	MOSI
2	nc	10	SCK
3	A	11	A0
4	nc	12	A1
5	Ground	13	GND
6	Power	14	V+
7	Ground	15	MISO
8	Power	16	GND

TBUS Electrical Connections

Terminal	Signal
1	Power
2	Ground
3	nc
4	B
5	A

nc = no connect

VC-2030 MODBUS RTU over RS485 Converter

Terminal	Signal	Terminal	Signal
1	B	9	MOSI
2	nc	10	SCK
3	A	11	A0
4	nc	12	A1
5	Ground	13	GND
6	Power	14	V+
7	Ground	15	MISO
8	Power	16	GND

TBUS Electrical Connections

Terminal	Signal
1	Power
2	Ground
3	nc
4	B
5	A

nc = no connect

VC-2040 ASCII over RS232 Converter

Terminal	Signal	Terminal	Signal
1	TxD	9	MOSI
2	nc	10	SCK
3	Ground	11	A0
4	RxD	12	A1
5	Ground	13	GND
6	Power	14	V+
7	Ground	15	MISO
8	Power	16	GND

TBUS Electrical Connections

Terminal	Signal
1	Power
2	Ground
3	nc
4	nc
5	nc

nc = no connect

VC-2050 4 - 20 mA Converter

Terminal	Signal	Terminal	Signal
1	VISC. I _{OUT}	9	MOSI
2	Visc Loop Supply	10	SCK
3	Temp Loop Supply	11	A0
4	TEMP. I _{OUT}	12	A1
5	Ground	13	Earth/Chassis GND**
6	Power	14	V+
7	Ground	15	MISO
8	Power	16	Signal GND*

TBUS Electrical Connections

Terminal	Signal
1	Power
2	Ground
3	nc
4	nc
5	nc

nc = no connect

Note*: Pin 16 must have both sensor ground wires installed for proper operation.

Note**: Pin 13 is used for the ground braid/drain from the sensor cable for reduction in EMI. It is grounded to the DIN rail clip.

Node ID Addressing Table

Address	DIP 1	DIP 2	DIP 3	DIP 4
10	OFF	OFF	OFF	OFF
11	OFF	OFF	OFF	ON
12	OFF	OFF	ON	OFF
13	OFF	OFF	ON	ON
14	OFF	ON	OFF	OFF
15	OFF	ON	OFF	ON
16	OFF	ON	ON	OFF
17	OFF	ON	ON	ON
18	ON	OFF	OFF	OFF
19	ON	OFF	OFF	ON
20	ON	OFF	ON	OFF
21	ON	OFF	ON	ON
22	ON	ON	OFF	OFF
23	ON	ON	OFF	ON
24	ON	ON	ON	OFF
25	ON	ON	ON	ON

CANopen Bit Rate Settings

DIP	Switch
5	OFF = 125 kbps
5	ON = 250 kbps

Bus Termination Settings

DIP	Switch
6	ON = 120Ω termination enabled
6	OFF = 120Ω termination disabled

ASCII & MODBUS RTU Bit Rate Settings

DIP	Switch
5	OFF = 9600 bps
5	ON = 19200 bps

4 - 20 mA Converter DIP Switch Settings

High Viscosity Setpoint, 20 mA

Viscosity, V_{HSP}	DIP 1	DIP 2	DIP 3
5AV	OFF	OFF	OFF
10AV	OFF	OFF	ON
25AV	OFF	ON	OFF
50AV	OFF	ON	ON
100AV	ON	OFF	OFF
250AV	ON	OFF	ON
500AV	ON	ON	OFF
2,000AV	ON	ON	ON

Low Viscosity Setpoint, 4 mA

Viscosity, V_{LSP}	DIP 4	DIP 5	DIP 6
0AV	OFF	OFF	OFF
5AV	OFF	OFF	ON
10AV	OFF	ON	OFF
25AV	OFF	ON	ON
50AV	ON	OFF	OFF
100AV	ON	OFF	ON
250AV	ON	ON	OFF
500AV	ON	ON	ON

OUTPUT CURRENT TO VISCOSITY CONVERSION

Use the following equation to convert the viscosity output current on the VC-2050 to units of AV:

$$\text{Viscosity (AV)} = \left[\frac{I_{\text{measured}} - 4\text{mA}}{20\text{mA} - 4\text{mA}} \times (V_{HSP} - V_{LSP}) \right] + V_{LSP}$$

where I_{measured} is the milliamper current measured by the PLC or other process equipment and V_{HSP} and V_{LSP} are the values given in the DIP switch Setpoint tables above.

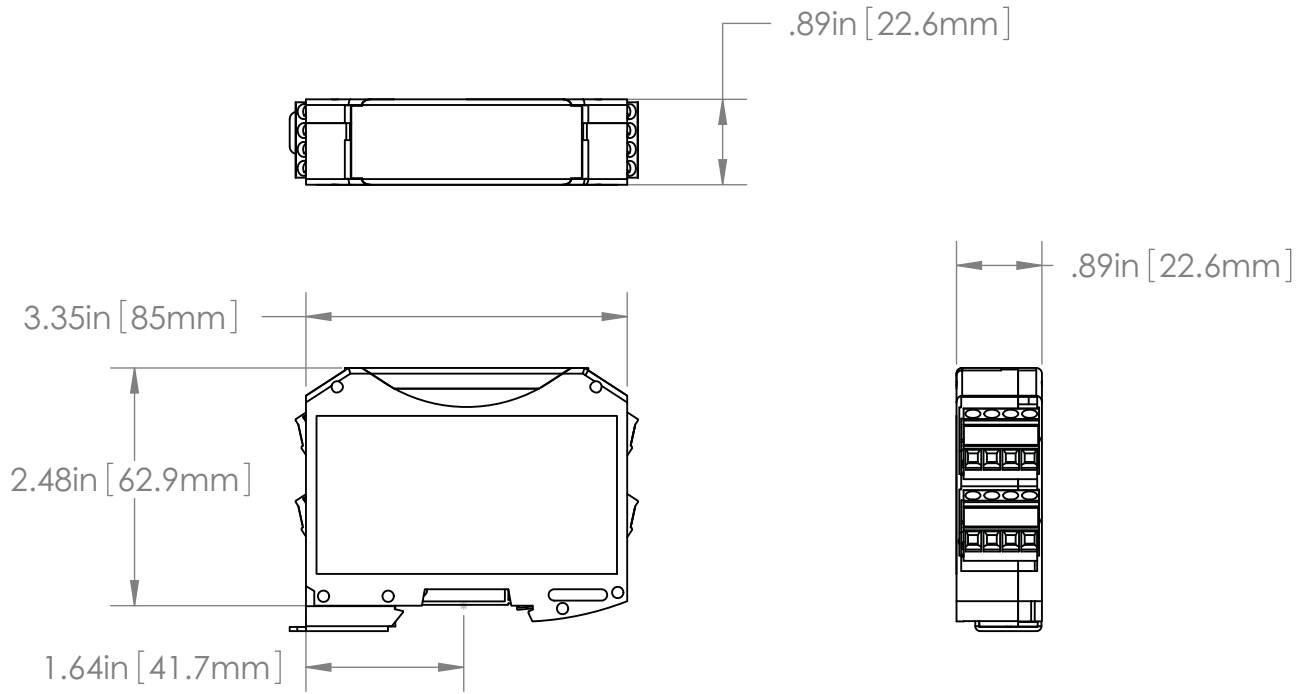
OUTPUT CURRENT TO TEMPERATURE CONVERSION

Use the following equation to convert the temperature output current on the VC-2050 to units of °C:

$$\text{Temperature (°C)} = \left[\frac{I_{\text{measured}} - 4\text{mA}}{20\text{mA} - 4\text{mA}} \times (T_{HSP} - T_{LSP}) \right] + T_{LSP}$$

where I_{measured} is the milliamper current measured by the PLC or other process equipment. The VC-2050 has fixed temperature setpoints of 150°C (T_{HSP}) and -50°C (T_{LSP}).

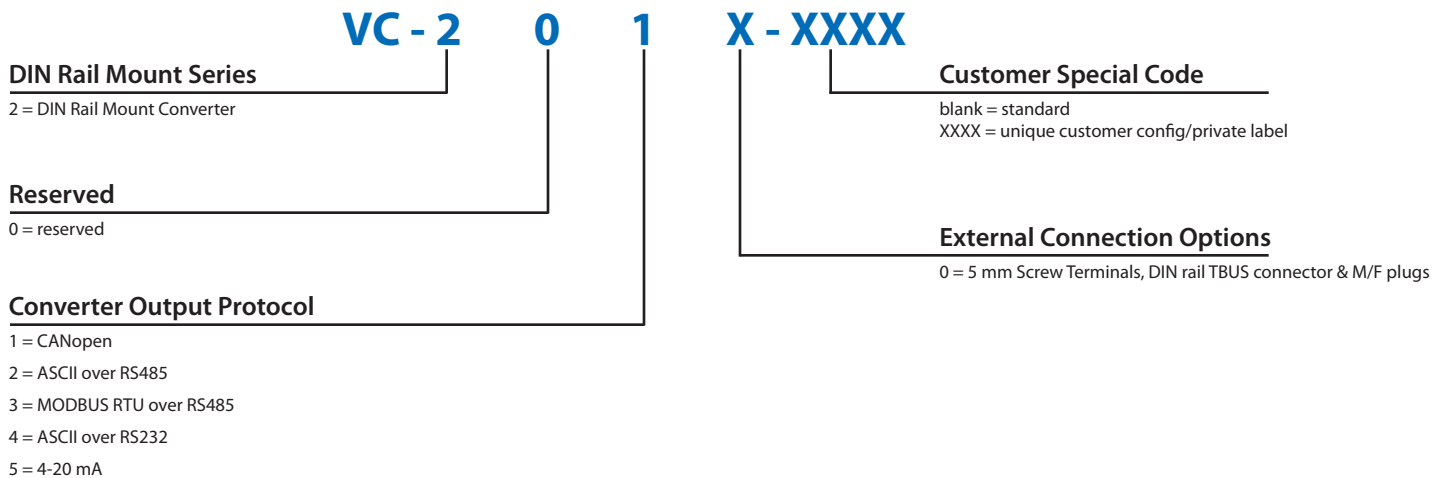
Physical Dimensions



Ordering Information

Part No.	Model	Description
720200018	VC-2010	VC-2010 VisConnect CANopen Converter DIN Rail Mount
720200022	VC-2020	VC-2020 VisConnect ASCII RS485 Converter DIN Rail Mount
720200023	VC-2030	VC-2030 VisConnect Modbus RTU Converter DIN Rail Mount
720200024	VC-2040	VC-2040 VisConnect ASCII RS232 Converter DIN Rail Mount
720200025	VC-2050	VC-2050 VisConnect 4-20mA Converter DIN Rail Mount
	VC-20xx-XXX*	VisConnect Converter with OEM code

*Please contact Vectron International for OEM applications



Please contact SenGenuity at sensors@sengenuity.com for further details.

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