Control Terminals Electrical Data

Characteristics of Terminals

NOTE:

- For a description of the terminal arrangement, refer to Arrangement and Characteristics of Control Terminals and Communication And I/O Ports, page 150
- For factory setting I/O assignment, refer to the Programming Manual, page 13.

Terminal	Description	I/O Type	Electrical characteristics
R1A	NO contact of relay R1	O	**Output Relay 1** • Minimum switching capacity: 5 mA for 24 Vdc • Maximum switching current on resistive load: 3 A for 250 Vac (OVC II) and 30 Vdc • Maximum switching current on inductive load: 2 A for 250 Vac (OVC II) and 30 Vdc. Inductive load must be equipped with a voltage surge suppression device according to ac or dc operation with total energy dissipation greater than the inductive energy stored in the load. Refer to sections Output Relay with Inductive AC Loads , page 104 and Output Relay with Inductive DC Loads , page 105. • Refresh time: 2 ms • Service life: 100,000 operations at maximum switching current
R1B	NC contact of relay R1	O	
R1C	Common point contact of relay R1	O	
COM	Analog I/O common	I/O	0 V
AQ1	Analog output	O	AQ: Analog output software-configurable for voltage or current • Voltage analog output 0...10 Vdc. Minimum load impedance 470 Ω, • Current analog output X-Y mA by programming X and Y from 0...20 mA, maximum load impedance 800 Ω • Sampling time: 2 ms • Resolution 10 bits • Accuracy: ◦ ±1 % at 25 °C ± 10 °C (77 °F ± 18 °F) ◦ ±2 % for a temperature variation of 60 °C (108 °F) • Linearity ±0.3 %
COM	Analog I/O common	I/O	0 V
AI3	Current analog input	I	Analog input 0-20 mA (or 4-20 mA, X-20 mA, 20-Y mA). X and Y can be programmed from 0 to 20 mA • Impedance: 250 Ω • Resolution: 10 bits • Accuracy: ◦ ±0.5 % at 25 °C (77 °F) ◦ ±0.7 % for a temperature variation of 60 °C (108 °F) • Linearity ±0.2 % (maximum ±0.5 %) of full scale • Sampling time: 2 ms
AI2	Voltage analog input	I	Bipolar analog input 0 ± 10 Vdc (maximum voltage ± 30 Vdc) **The + or – polarity of the voltage on AI2 affects the direction of the setpoint and therefore the direction of operation.** • Impedance: 30 kΩ • Resolution: 10 bits • Accuracy: ◦ ±0.5 % at 25 °C (77 °F) ◦ ±0.7 % for a temperature variation of 60 °C (108 °F) • Linearity ±0.2 % (maximum ±0.5 %) of full scale • Sampling time: 2 ms
10V	Power supply for reference potentiometer	O	Internal supply for the analog inputs

Terminal	Description	I/O Type	Electrical characteristics
			• + 10 Vdc • Tolerance: 0...10 % • Current: maximum 10 mA
AI1	Voltage analog input	I	Analog input 0 + 10 Vdc • Impedance: 30 kΩ • Resolution: 10 bit converter • Accuracy: ◦ ±0.5 % at 25 °C (77 °F) ◦ ±0.7 % for a temperature variation of 60 °C (108 °F) • Linearity ±0.2 % (maximum ±0.5 %) of full scale • Sampling time: 2 ms
COM	Analog I/O common	I/O	0 V
+24	Digital input power supply	I/O	• +24 Vdc input supply • Tolerance: –15...+20 % • Current: 100 mA
R2A R2C	NO contact of programmable relay R2	O	**Output Relay 2** • Minimum switching capacity: 5 mA for 24 Vdc • Maximum switching current on resistive load: 5 A for 250 Vac (OVC II) and 30 Vdc. • Maximum switching current on inductive load: 2 A for 250 Vac (OVC II) and 30 Vdc. Inductive load must be equipped with a voltage surge suppression device according to ac or dc operation with total energy dissipation greater than the inductive energy stored in the load. Refer to sections Output Relay with Inductive AC Loads , page 104 and Output Relay with Inductive DC Loads , page 105. • Refresh time: 2 ms • Service life: ◦ 100,000 operations at maximum switching power ◦ 1,000,000 operations at 1 A
STO	STO (Safe Torque Off) input	I	• Input: +24 Vdc • Impedance: 1.5 kΩ • Refer to the Wiring Diagrams section, page 101 and the ATV320 Safety Functions Manual (NVE50467) available on www.se.com
P24	Input for an external 24 Vdc supply / Output power supply for digital inputs and STO	I/O	• +24 Vdc • Tolerance: –15...+20 % • Current: maximum 1.1 A
DQ+ DQ–	Digital output	O	Open collector output configurable as sink or source using SW1 switch • Refresh time: 2 ms • Maximum voltage: 30 Vdc • Maximum current: 100 mA
DI6 DI5	Digital inputs	I	If programmed as digital inputs, same characteristics as DI1 to DI4 • DI5 can be programmed as pulse input 20 kpps (pulse per second). • DI6 can be used as PTC (Positive Temperature Coefficient) using SW2 switch, page 150. • Trip threshold: 3 kΩ, reset threshold: 1.8 kΩ • Short-circuit detection threshold < 50 Ω
DI4 DI3 DI2 DI1	Digital inputs	I	4 programmable digital inputs configurable as sink or source using SW1 switch, page 150 • + 24 Vdc power supply (maximum 30 Vdc) • State 0 if < 5 Vdc, state 1 if > 11 Vdc (in source mode) • State 0 if > 16 Vdc, state 1 if < 10 Vdc (in sink mode) • Response time 8 ms at Stop
PE	Protective earth	–	ATV320•••••C protective earth for fast communication. Wiring is detailed in the Control Block Wiring section, page 154