

# V120-22-T38

## Graphic Operator Panel & Programmable Logic Controller

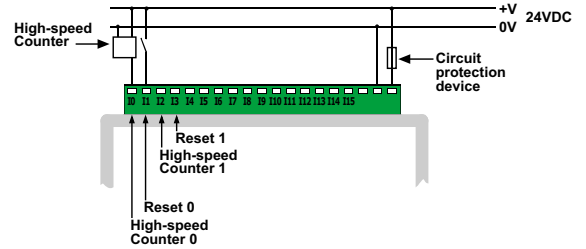
24VDC, 22 pnp/npn digital inputs, 2 high-speed counter/shaft encoder inputs, 16 transistor outputs, I/O expansion port, 2 RS232/RS485 ports

<b>Power supply</b>	24VDC
Permissible range	20.4VDC to 28.8VDC with less than 10% ripple
Maximum current consumption	110mA@24VDC (pnp inputs) 300mA@24VDC (npn inputs)

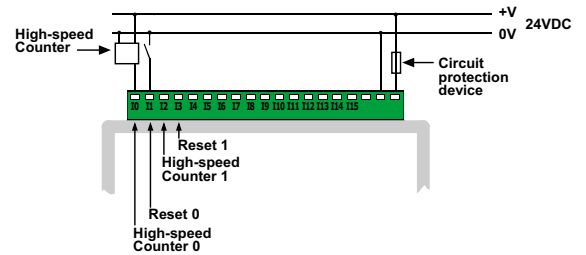
<b>Digital inputs</b>	22 pnp (source) or npn (sink) inputs. See Note 1.
Nominal input voltage	24VDC. See Note 2.
Input voltages for pnp (source):	0-5VDC for Logic '0' 17-28.8VDC for Logic '1'
Input voltages for npn (sink):	17-28.8VDC/<2mA for Logic '0' 0-5VDC/>6mA for Logic '1'
Input current	8mA@24VDC
Input impedance	3KΩ
Response time (except high-speed inputs)	10mS typical
Galvanic isolation	None
Input cable length	Up to 100 meters, unshielded

<b>High-speed counter</b>	Specifications below apply when inputs are wired for use as a high-speed counter input/shaft encoder. See Notes 3 and 4.
Resolution	32-bit
Input frequency	10kHz max.
Minimum pulse	40μs

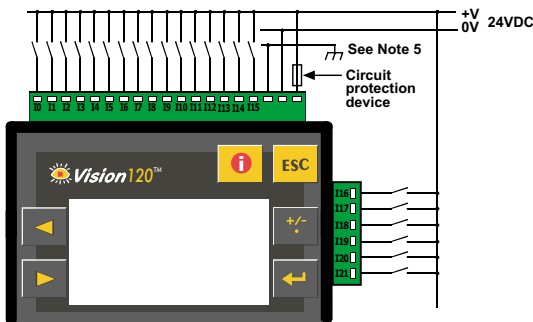
### pnp (source) high-speed counter



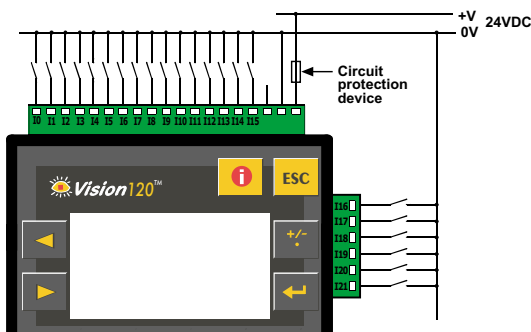
### npn (sink) high-speed counter



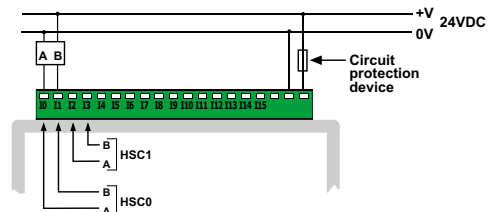
### Power supply, pnp (source) inputs



### npn (sink) inputs



### Shaft encoder



### Notes:

1. All 22 inputs can be set to pnp (source) or npn (sink) via a single jumper and appropriate wiring.
2. npn (sink) inputs use voltage supplied from the controller's power supply.
3. Inputs #0 and #2 can each function as either high-speed counter or as part of a shaft encoder. In each case, high-speed input specifications apply. When used as a normal digital input, normal input specifications apply.
4. Inputs #1 and #3 can each function as either counter reset, or as a normal digital input; in either case, specifications are those of a normal digital input. These inputs may also be used as part of a shaft encoder. In this case, high-speed input specifications apply.
5. To avoid electromagnetic interference, mount the controller in a metal panel/cabinet and earth the power supply. Earth the power supply signal to the metal using a wire whose length does not exceed 10cm. If your conditions do not permit this, do not earth the power supply.

### Warnings:

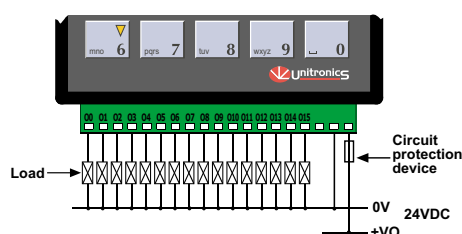
- Unused pins should not be connected. Ignoring this directive may damage the controller.
- Improper use of this product may severely damage the controller.
- Refer to the controller's User Guide regarding wiring considerations.
- Before using this product, it is the responsibility of the user to read the product's User Guide and all accompanying documentation.

<b>Digital outputs</b>	16 pnp (source) outputs
Output type	P-MOSFET (open drain)
Isolation	None
Output current	0.5A max. Total current: 4A max.
Max. frequency for normal outputs	50Hz (resistive load) 0.5Hz (inductive load)
High speed output maximum frequency	2kHz (resistive load) See Note.
Short circuit protection	Yes
Short indication	by software
On voltage drop	0.5VDC maximum
<b>Power supply for outputs</b>	
Operating voltage	20.4 to 28.8VDC
Nominal operating voltage	24VDC

Note:

Output #0 and Output #1 may be used as high-speed outputs.

### Transistor Outputs



<b>Graphic Display</b>	STN, LCD display
Illumination backlight	LED, yellow-green, software-controlled
Display resolution	128x64 pixels

<b>Keypad</b>	Sealed membrane
Number of keys	16

<b>Program</b>	
Application memory	448K
Memory Bits (coils)	2048
Memory Integers (registers)	1600
Long Integers (32 bit)	256
Double Word (32 bit unsigned)	64
Floats	24
Timers	192
Counters	24
Data Tables	120K (RAM) / 64K (FLASH)
HMI displays	Up to 255
Execution time	0.8µs for bit operations

<b>RS232/RS485 serial ports</b>	Used for: <ul style="list-style-type: none"> <li>• Application Download/Upload</li> <li>• Application Testing (Debug)</li> <li>• Connect to GSM or standard telephone modem: <ul style="list-style-type: none"> <li>- Send/receive SMS messages</li> <li>- Remote access programming</li> </ul> </li> <li>• RS485 Networking</li> </ul>
<b>RS232</b> (see note)	2 ports
Galvanic isolation	None
Voltage limits	±20V
<b>RS485</b> (see note)	2 ports
Input voltage	-7 to +12V differential max.
Cable type	Shielded twisted pair, in compliance with EIA RS485
Galvanic isolation	None
Baud rate	110 – 57600 bps
Nodes	Up to 32

Note:

RS232/RS485 is determined by jumper settings and wiring. Refer to the controller's User Guide regarding communications.

<b>I/O expansion port</b>	Up to 128 additional I/Os, including digital & analog I/Os, RTD and more.
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<b>Miscellaneous</b>	
Clock (RTC)	Real-time clock functions (Date and time).
Battery back-up	7 years typical battery back-up for RTC and system data.
Battery	Coin type, 3V lithium battery, CR2450
Weight	270g (9.52 oz.)
Operational temperature	0 to 50°C (32 to 122°F)
Storage temperature	-20 to 60°C (-4 to 140°F)
Relative Humidity (RH)	5% to 95% (non-condensing)
Mounting method	DIN-rail mounted (IP20/NEMA1) Panel mounted (IP65/NEMA4X)

# V120-22-T38 I/O Jumper Setting

The tables below show how to set a specific jumper to change the functionality of the inputs. To open the controller and access the jumpers, refer to the directions at the end of these specifications.

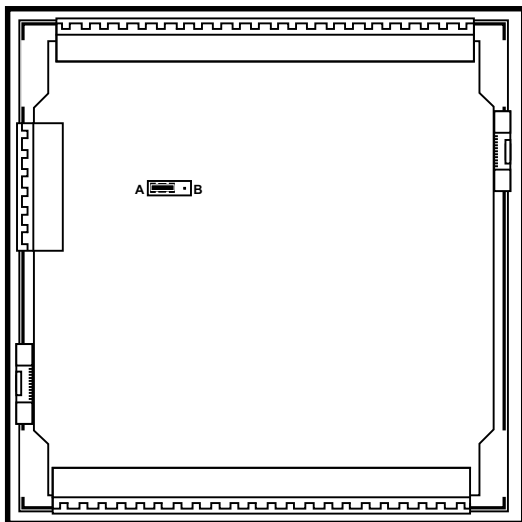
**Important:**

Incompatible jumper settings and wiring connections may severely damage the controller.

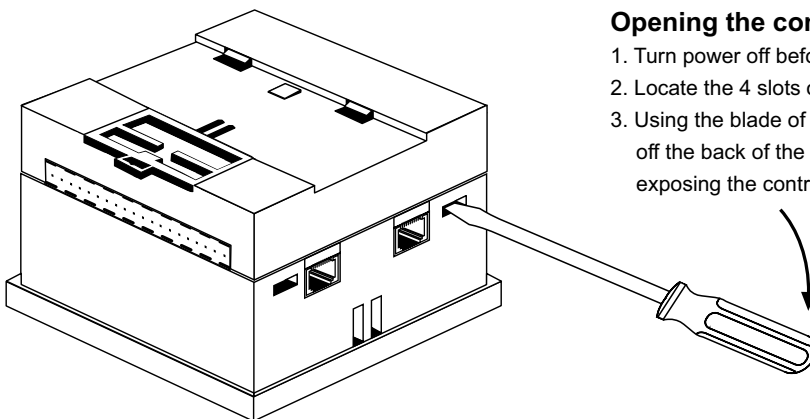
**Input type (for all digital inputs)**

To use as	
pnp (source)*	A
nnp (sink)	B

\*Default factory setting



In this figure, the jumper settings will cause the inputs to function as pnp.



**Opening the controller's enclosure**

1. Turn power off before opening the controller.
2. Locate the 4 slots on the sides of the enclosure.
3. Using the blade of a flat-bladed screwdriver, gently pry off the back of the controller as shown in the figure below, exposing the controller's board.

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