

The Unitronics V130-33-TR20/V130-J-TR20 offers the following onboard I/Os:

- 12 Digital Inputs, configurable via wiring to include 2 Analog (current/voltage) and 3 HSC/Shaft-encoder Inputs
- 6 Relay Outputs
- 2 high-speed npn Transistor Outputs

I/O configurations can be expanded to include up to 256 I/Os via Expansion Modules. Available by separate order: Ethernet, additional RS232/RS485, CANbus, Profibus Slave.

You can find additional information, such as wiring diagrams, in the product's installation guide located on the Unitronics' Setup CD and in the Technical Library at www.unitronics.com.

Technical Specifications

Power Supply

| | |
|--------------------------|--|
| Input voltage | 24VDC |
| Permissible range | 20.4VDC to 28.8VDC with less than 10% ripple |
| Max. current consumption | See Note 1 |
| npn inputs | 215mA@24VDC |
| pnp inputs | 190mA@24VDC |

Notes:

1. To calculate the actual power consumption, subtract the current for each unused element from the maximum current consumption value according to the values below:

| Backlight | Ethernet card | Relay Outputs (per output) |
|------------------|----------------------|---------------------------------------|
| 10mA | 35mA | 8mA |

Digital Inputs

| | | |
|-----------------------|--|--|
| Number of inputs | 12. See Note 2 | |
| Input type | See Note 2 | |
| Galvanic isolation | None | |
| Nominal input voltage | 24VDC | |
| Input voltage | Normal digital input | High Speed Input. See Note 2 |
| pnp (source) | 0-5VDC for Logic '0' 17-28.8VDC for Logic '1' | 0-3VDC for Logic '0' 20.4-28.8VDC for Logic '1' |
| npn (sink) | 17-28.8VDC for Logic '0' 0-5VDC for Logic '1' | 20.4-28.8VDC for Logic '0' 0-3VDC for Logic '1' |
| Input current | I0-I5: 5.4mA@24VDC I6-I11: 3.7mA@24VDC | |
| Input impedance | I0-I5: 4.5KΩ I6-I11: 6.5KΩ | |
| Response time | 10mS typical, when used as normal digital input | |
| Input cable length | | |
| Normal digital input | Up to 100 meters | |
| High Speed Input | Up to 50 meters, shielded, see Frequency table below | |

High speed inputs Specifications below apply when wired as HSC/shaft-encoder.
See Note 2

Frequency, HSC

| Driver type | pnp/npn | Push-pull |
|---------------------|---------------|----------------|
| Cable length (max.) | | |
| 10m | 95kHz maximum | 200kHz maximum |
| 25m | 50kHz maximum | 200kHz maximum |
| 50m | 25kHz maximum | 200kHz maximum |

Frequency, Shaft-encoder

| Driver type | pnp/npn | Push-pull |
|---------------------|---------------|----------------|
| Cable length (max.) | | |
| 10m | 35kHz maximum | 100kHz maximum |
| 25m | 18kHz maximum | 100kHz maximum |
| 50m | 10kHz maximum | 100kHz maximum |

Duty cycle 40-60%

Resolution 32-bit

Notes:

2. This model comprises a total of 12 inputs. Input functionality can be adapted as follows:
All 12 inputs may be used as digital inputs. They may be wired, in a group, and set to either npn or pnp via a single jumper.

In addition, according to jumper settings and appropriate wiring:

- Inputs 10 and 11 can function as either digital or analog inputs.
- Inputs 0, 2, and 4 can function as high-speed counters, as part of a shaft-encoder, or as normal digital inputs.
- Inputs 1, 3, and 5 can function as either counter reset, as part of a shaft-encoder, or as normal digital inputs.
- If inputs 0, 2, 4 are set as high-speed counters (without reset), inputs 1, 3, 5 can function as normal digital inputs.

3. pnp/npn maximum frequency is at 24VDC.

Analog Inputs (current/voltage)

| | | |
|----------------------------|--|---------|
| Number of inputs | 2, according to wiring as described above in Note 2 | |
| Input type | Multi-range inputs: 0-10V, 0-20mA, 4-20mA | |
| Input range | 0-20mA, 4-20mA | 0-10VDC |
| Input impedance | 243Ω | >150KΩ |
| Maximum input rating | 25mA, 6V | 15V |
| Galvanic isolation | None | |
| Conversion method | Successive approximation | |
| Resolution (except 4-20mA) | 10-bit (1024 units) | |
| Resolution (at 4-20mA) | 204 to 1023 (820 units) | |
| Conversion time | One configured input is updated per scan. See Note 4 | |
| Precision | 0.9% | |
| Status indication | Yes – if an analog input deviates above the permissible range, its value will be 1024. | |

Notes:

4. For example, if 2 inputs are configured as analog, it takes 2 scans to update all analog values.

Relay Outputs

| | |
|--------------------|---|
| Number of outputs | 6 relay |
| Output type | SPST-NO (Form A) |
| Isolation | By relay |
| Type of relay | Fujitsu, JY-24H-K or compatible |
| Output current | 5A maximum (resistive load) |
| Rated voltage | 250VAC / 30VDC |
| Minimum load | 10mA, 5VDC |
| Life expectancy | 50k operations at maximum load |
| Response time | 10ms (typical) |
| Contact protection | External precautions required (see <i>Increasing Contact Life Span</i> in the product's Installation Guide) |

Transistor Outputs

| | |
|---|---|
| Number of outputs | 2 npn (sink). See Note 5 |
| Output type | N-MOSFET, (open drain) |
| Galvanic Isolation | None |
| Maximum output current (resistive load) | 100mA per output |
| Rated voltage | 24VDC |
| Maximum delay OFF to ON | 1 μ S |
| Maximum delay ON to OFF | 10 μ S |
| HSO freq. range with resistive load | 5Hz-200kHz (at maximum load resistance of 1k Ω) |
| Maximum ON voltage drop | 1VDC |
| Short-circuit protection | None |
| Voltage range | 3.5V to 28.8VDC |

Notes:

5. Outputs 6 and 7 share a common 0V signal.
The 0V signal of the output must be connected to the controller's 0V.

Graphic Display Screen

| | |
|------------------------|---|
| LCD Type | STN, LCD display |
| Illumination backlight | White LED, software-controlled |
| Display resolution | 128x64 pixels |
| Viewing area | 2.4" |
| Screen contrast | Via software (Store value to SI 7) Refer to VisiLogic Help topic <i>Setting LCD Contrast</i> |

Keypad

| | |
|----------------|---|
| Number of keys | 20 keys, including 10 user-labeled keys |
| Key type | Metal dome, sealed membrane switch |
| Slides | Slides may be installed in the operating panel faceplate to custom-label the keys and logo picture. A complete set of blank slides is available by separate order. Refer to <i>V130 Keypad Slides.pdf</i> |

Program

| | | | |
|--------------------|---|--------|---|
| Memory size | Application Logic – 512kb, Images – 256 kb, Fonts – 128 kb | | |
| Operand type | Quantity | Symbol | Value |
| Memory Bits | 4096 | MB | Bit (coil) |
| Memory Integers | 2048 | MI | 16-bit signed/unsigned |
| Long Integers | 256 | ML | 32-bit signed/unsigned |
| Double Word | 64 | DW | 32-bit unsigned |
| Memory Floats | 24 | MF | 32-bit signed/unsigned |
| Fast Bits | 1023 | XB | Fast Bits (coil) – not retained |
| Fast Integers | 512 | XI | 16 bit signed/unsigned (fast, not retained) |
| Fast Long Integers | 256 | XL | 32 bit signed/unsigned (fast, not retained) |
| Fast Double Word | 64 | XDW | 32 bit unsigned (fast, not retained) |
| Timers | 192 | T | Res. 10 ms; max 99h, 59 min, 59.99 s |
| Counters | 24 | C | 16-bit |
| Data Tables | 120K dynamic data (recipe parameters, datalogs, etc.) 192K fixed data (read-only data, ingredient names, etc.) Expandable via SD card. See Removable Memory below | | |
| HMI displays | Up to 1024 | | |
| Program scan time | 20µS per 1kb of typical application | | |

Removable Memory

| | |
|---------------|---|
| Micro SD card | Compatible with standard SD and SDHC; up to 32GB store datalogs, Alarms, Trends, Data Tables, backup Ladder, HMI, and OS. See Note 6 |
|---------------|---|

Notes:

- User must format via Unitronics SD tools utility.

Communication Ports

| | |
|--------------------|---|
| Port 1 | 1 channel, RS232/RS485. See Note 7 |
| Galvanic isolation | No |
| Baud rate | 300 to 115200 bps |
| RS232 | |
| Input voltage | ±20VDC absolute maximum |
| Cable length | 15m maximum (50') |
| RS485 | |
| Input voltage | -7 to +12VDC differential maximum |
| Cable type | Shielded twisted pair, in compliance with EIA 485 |
| Cable length | 1200m maximum (4000') |
| Nodes | Up to 32 |
| Port 2 (optional) | See Note 8 |
| CANbus (optional) | See Note 8 |

Notes:

- This model is supplied with a serial port: RS232/RS485 (Port 1). The standard is set to either RS232 or RS485 according to jumper settings. Refer to the product's Installation Guide.
- The user may order and install one or both of the following modules:
 - An additional port (Port 2). Available port types: RS232/RS485 isolated/non-isolated, Ethernet.
 - A CANbus port.
 Port module documentation is available on the Unitronics website.

I/O Expansion

| | |
|--------|---|
| | Additional I/Os may be added. Configurations vary according to module. Supports digital, high-speed, analog, weight and temperature measurement I/Os. |
| Local | Via I/O Expansion Port. Integrate up to 8 I/O Expansion Modules comprising up to 128 additional I/Os. Adapter required (P.N. EX-A2X). |
| Remote | Via CANbus port. Connect up to 60 adapters to a distance of 1000 meters from controller; and up to 8 I/O expansion modules to each adapter. Adapter required (P.N. EX-RC1). |

Miscellaneous

| | |
|---------------------|---|
| Clock (RTC) | Real-time clock functions (date and time) |
| Battery back-up | 7 years typical at 25°C, battery back-up for RTC and system data, including variable data |
| Battery replacement | Yes. Coin-type 3V, lithium battery, CR2450 |

Dimensions

| | | |
|--------|--------|--|
| Size | V130 | 109x114.1x68mm (4.29x4.49x2.67"). See Note 9 |
| | V130-J | 109x114.1x66mm (4.29x4.49x2.67"). See Note 7 |
| Weight | | 300g (10.5oz) |

Notes:

9. For exact dimensions, refer to the product's Installation Guide.

Environment

| | |
|-------------------------|---|
| Operational temperature | 0 to 50°C (32 to 122°F) |
| Storage temperature | -20 to 60°C (-4 to 140°F) |
| Relative Humidity (RH) | 10% to 95% (non-condensing) |
| Mounting method | Panel mounted (IP65/66/NEMA4X) DIN-rail mounted (IP20/NEMA1) |

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