# Vision™ OPLC™

**V350-35-T2**
**Technical Specifications**

This guide provides specifications for Unitronics' model V350-35-T2. General features include: 12 pnp/npn Digital, including 2 Analog, 3 HSC/Shaft-encoder Inputs, 12 Transistor Outputs, I/O Expansion Port, built-in RS232/RS485. Available by separate order: Ethernet, additional RS232/RS485, CANbus.

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 | 125mA@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 |
|---|---|
| 20mA | 35mA |

**Digital Inputs**

| | |
|---|---|
| Number of inputs | 12. See Note 2 |
| Input type | See Note 2 |
| Galvanic isolation | None |
| Nominal input voltage | 24VDC |
| Input voltage | |
| pnp (source) | 0-5VDC for Logic '0'<br>17-28.8VDC for Logic '1' |
| npn (sink) | 17-28.8VDC for Logic '0'<br>0-5VDC for Logic '1' |
| Input current | 8mA@24VDC |
| Input impedance | 3KΩ |
| Response time | 10mSec typical, when used as normal digital inputs |
| Input cable length | Up to 100 meters, unshielded |
| High speed inputs | Specifications below apply when wired as HSC / shaft-encoder. See Note 2 |
| Resolution | 32-bit |
| Frequency | 10kHz maximum |
| Minimum pulse width | 40µs |

**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.

**Digital Outputs**

| | |
|---|---|
| Number of outputs | 12 pnp source |
| Output type | P-MOSFET (open drain) |
| Isolation | None |
| Output current (resistive load) | 0.5A maximum per output<br>3A maximum total for common |
| Maximum frequency | 50Hz (resistive load)<br>0.5Hz (inductive load) |
| HSO maximum frequency | 2kHz (resistive load). See Note 3 |
| Short circuit protection | Yes |
| Short circuit indication | Via software |
| On voltage drop | 0.5VDC maximum |
| Power supply for outputs | |
| Operating voltage | 20.4 to 28.8VDC |
| Nominal voltage | 24VDC |

**Notes:**

3. Outputs 0 to 6 can be used as high-speed outputs.

**Analog Inputs**

| | | |
|---|---|---|
| Number of inputs | 2, according to wiring as described 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 | 15 V |
| 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 | Synchronized to cycle time | |
| Precision | 0.9% | |
| Status indication | Yes – if an analog input deviates above the permissible range, its value will be 1024. | |

**Graphic Display Screen**

| | |
|---|---|
| LCD Type | TFT, LCD display |
| Illumination backlight | White LED, software-controlled |
| Display resolution | 320 x 240 pixels |
| Viewing area | 3.5" |
| Colors | 256 |
| Touchscreen | Resistive, analog |
| 'Touch' indication | Via buzzer |
| Screen brightness | Via software (Store value to SI 9). |
| Keypad | Displays virtual keyboard when the application requires data entry. |

**Keys**

| | |
|---|---|
| Number of keys | 5 programmable function keys |
| Key type | Metal dome, sealed membrane switch |
| Slides | Slides may be installed in the operating panel faceplate to custom-label the keys. Refer to V350 Keypad Slides.pdf.<br>Two sets of slides are supplied with the controller: one set of arrow keys, and one blank set. |

**Program**

Memory size: Application Logic – 1Mb, Images – 3Mb, Fonts – 512 Kb

| Operand type | Quantity | Symbol | Value |
|---|---|---|---|
| Memory Bits | 8192 | MB | Bit (coil) |
| Memory Integers | 4096 | MI | 16-bit signed/unsigned |
| Long Integers | 512 | ML | 32-bit signed/unsigned |
| Double Word | 256 | DW | 32-bit unsigned |
| Memory Floats | 64 | MF | 32-bit signed/unsigned |
| Timers | 384 | T | 32-bit |
| Counters | 32 | C | 16-bit |

| | |
|---|---|
| Data Tables | 120K dynamic data (recipe parameters, datalogs, etc.),<br>192K fixed data (read-only data, ingredient names, etc) |
| HMI displays | Up to 1024 |
| Program scan time | 15µS per 1kb of typical application |

**Communication Ports**

| | |
|---|---|
| Port 1 | 1 channel, RS232/RS485. See Note 4 |
| Galvanic isolation | No |
| Baud rate | 300 to 115200 bps |
| RS232 | |
| Input voltage | ±20VDC absolute maximum |
| Cable length | 15m maximum (50 feet) |
| RS485 | |
| Input voltage | -7 to +12VDC differential maximum |
| Cable type | Shielded twisted pair, in compliance with EIA 485 |
| Cable length | 1200m maximum (4000 feet) |
| Nodes | Up to 32 |
| Port 2 (optional) | See Note 5 |
| CANbus (optional) | See Note 5 |

**Notes:**

4. 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.
5. 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 Port**

| | |
|---|---|
| Expansion modules | Via adapter, use up to 8 I/O Expansion Modules comprising up to 128 additional I/Os. Number of I/Os and types vary according to module. |

**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 | 109 x 114.1 x 68mm (4.29 x 4.49 x 2.67"). See Note 6 |
| Weight | 211g (7.44 oz) |

**Notes:**

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

**Environment**

| | |
|---|---|
| Operational temperature | 0 to 50ºC (32 to 122ºF) |
| Storage temperature | -20 to 60ºC (-4 to 140ºF) |
| Relative Humidity (RH) | 10% to 95% (non-condensing) |
| Mounting method | Panel mounted (IP65/NEMA4X)<br>DIN-rail mounted (IP20/NEMA1) |

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