# Vision350™ Color OPLC™

*... The world's smallest PLC with an integrated Color Touchscreen ...*

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## Color Vision350™ Series Featuring:

### HMI

- 1024 user-designed screens and 250 images per application
- HMI graphs— color-code Trends
- Built-in alarm screens
- Text String Library— easy localization
- Troubleshoot via the HMI panel— no PC needed

### PLC

- I/O options include high-speed, temperature & weight measurement
- Auto-tune PID, up to 24 independent loops
- Recipe programs and datalogging via Data Tables
- Micro SD card - log, backup, clone, & more
- Time-based control in 3 clicks

### Communication

- GPRS/GSM/CDMA enabled
- Ethernet via TCP/IP
- Web server: Use built-in HTML pages, or design complex pages to view and edit PLC data via the Internet
- SMS messaging, Send e-mail function
- Remote Access utilities
- MODBUS protocol support
- CANbus: CANopen, UniCAN, SAE J1939 & more
- DF1 Slave
- Ports: supplied with1 RS232/RS485; 2 ports may be added: 1 Serial/Ethernet and 1 CANbus




[1] In these models certain inputs are adaptable, and can function as either digital, analog, and in certain models also as thermocouple or PT100. Using adaptable inputs reduces the amount of free digital inputs. For example, V350-35-RA22 offers 12 digital inputs. Implementing 2 TC inputs requires 4 digital inputs, leaving 8 free.

[2] Certain inputs can function as high-speed counters, shaft-encoder inputs, or normal digital inputs.

[3] This specification depends on cable length.

[4] This specification depends upon driver type.

* V350-35-TR34 & V350-35-TRA22 are not yet UL certified.

## Color it beautiful!

### Power PLC, Color Touchscreen & onboard, expandable I/Os (up to 512)

| Article Number | V350-35-B1 | V350-35-R2 | V350-35-R34 | V350-35-TR34 | V350-35-R6 | V350-35-RA22 | V350-35-TRA22 | V350-35-T2 | V350-35-T38 | V350-35-TA24 |
|---|---|---|---|---|---|---|---|---|---|---|
| | No onboard I/Os | **10** Digital<br>**2** D/A Inputs[1]<br>**6** Relay Outputs | **20** Digital<br>**2** D/A Inputs[1]<br>**12** Relay Outputs | **20** Digital<br>**2** D/A Inputs[1]<br>**8** Relay<br>**4** High-speed Transistor Outputs | **6** Digital, **2** D/A<br>**4** Analog Inputs[1]<br>**6** Relay Onputs | **8** Digital<br>**2** D/A,<br>**2** PT100/TC/ Digital[1] Inputs<br>**8** Relay<br>**2** Analog Outputs | **8** Digital, **2** D/A<br>**2** PT100/TC/ Digital[1] Inputs<br>**4** Relay, **2** Analog<br>**4** High-speed Transistor Outputs | **10** Digital<br>**2** D/A Inputs[1]<br>**12** Transistor Outputs | **20** Digital<br>**2** D/A Inputs[1]<br>**16** Transistor Outputs | **8** Digital<br>**2** D/A, **2** PT100/ TC/Digital[1] Inputs<br>**10** Transistor<br>**2** Analog Outputs |
| **Inputs** | | | | | | | | | | |
| Digital | None | **12** | **22** | **22** | **8** | **12** | **12** | **12** | **22** | **12** |
| HSC/Shaft-Encoder/ Max Freq. Measurer[2&3] | | **3** 30kHz 32-bit | **3** 30kHz 32-bit | **3** 200kHz[4] 32-bit | **1** 30kHz 32-bit | **1** 30kHz 32-bit | **1** 200kHz[4] 32-bit | **3** 30kHz 32-bit | **2** 30kHz 32-bit | **1** 30kHz 32-bit |
| Analog | | **2** 10-bit, 0-10V 0-20mA 4-20mA | **2** 10-bit, 0-10V 0-20mA 4-20mA | **2** 10-bit, 0-10V 0-20mA 4-20mA | **6** 10-bit **2** 0-10V 0-20mA, 4-20mA **and 4** 0-20mA 4-20mA | **2** 14-bit 0-10V, 0-20mA 4-20mA | **2** (2 modes) Normal: 14-bit Fast: 12-bit 0-10V, 0-20mA 4-20mA | **2** 10-bit 0-10V 0-20mA 4-20mA | **2** 10-bit 0-10V, 0-20mA 4-20mA | **2** 14-bit 0-10V, 0-20mA 4-20mA |
| Temperature Measurement | | None | None | None | None | **and as** **2** PT100/TC | **and as** **2** PT100/TC | None | None | **and as** **2** PT100/TC |
| **Outputs** | | | | | | | | | | |
| Digital | | **6** relay | **12** relay | **8** relay | **6** relay | **8** relay | **4** relay | **12** pnp | **16** pnp | **10** pnp |
| High-speed Outputs/PWM | | None | None | **4** npn (3 PTO) 200kHz max | None | None | **4** npn (2 PTO) 200kHz max | **7** 0.5kHz | **7** 0.5kHz | **5** 0.5kHz |
| Analog | | None | None | None | None | **2** 12-bit 0-10V, 4-20mA | **2** 12-bit 0-10V, 4-20mA | None | None | **2** 12-bit 0-10V, 4-20mA |
| **I/O Expansion** | | | | | | | | | | |
| | Local or Remote I/Os may be added via expansion port or via CANbus | | | | | | | | | |
| **Program** | | | | | | | | | | |
| Application Memory | Application Logic: 1MB • Images: 6MB • Fonts: 512K | | | | | | | | | |
| Scan Time | 15$\mu$ sec per 1K of typical application | | | | | | | | | |
| Memory Operands | 8192 coils, 4096 registers, 512 long integers (32-bit), 256 double words (32-bit unsigned), 64 floats, 384 timers (32-bit), 32 counters<br>Additional non-retainable operands: 1024 X-bits, 512 X-integers, 256 X-long integers, 64 X-double words | | | | | | | | | |
| Data Tables | 120K dynamic RAM data (recipe parameters, datalogs, etc.), up to 256K Flash data | | | | | | | | | |
| SD card (Micro) | Store datalogs, Alarm History, Data Tables, Trend data, export to Excel • Back up Ladder, HMI & OS, clone PLCs | | | | | | | | | |
| Enhanced Features | Trends: graph any value and display on HMI • String Library: instantly switch HMI language | | | | | | | | | |
| **Operator Panel** | | | | | | | | | | |
| Type & Colors | TFT LCD • 65,536 colors, 16-bit resolution • Brightness- Adjustable via touchscreen or software | | | | | | | | | |
| Display | Resolution: 320 x 240 pixels (QVGA) • Size: 3.5" | | | | | | | | | |
| Touchscreen | Resistive, Analog | | | | | | | | | |
| Keys | 5 programmable keys. Labeling options- function keys, arrows, or customized | | | | | | | | | |
| **General** | | | | | | | | | | |
| Power Supply | 24VDC, except for V350-35-B1, which is 12/24VDC | | | | | | | | | |
| Battery | 7 years typical at 25°C, battery back-up for all memory sections and RTC | | | | | | | | | |
| Environment | IP65/NEMA4X (when panel mounted) | | | | | | | | | |
| Clock | Real-time clock functions (date and time) | | | | | | | | | |

# I/O Expansion Modules

Expand your system with local or remote I/O expansion modules[1].Vision series support both local & remote I/O modules. M90/M91[2] support local modules only.

## Digital Modules

| IO-DI8-TO8 | IO-DI8-RO4 | IO-DI8-RO8 | EX90-DI8-RO8[3] | IO-DI16 |
|---|---|---|---|---|
| 24VDC<br>8 Digital Inputs,<br>pnp/npn, including one<br>High-speed Counter<br>8 pnp Transistor Outputs | 24VDC<br>8 Digital Inputs,<br>pnp/npn, including one<br>High-speed Counter<br>4 Relay Outputs | 24VDC<br>8 Digital Inputs,<br>pnp/npn, including one<br>High-speed Counter<br>8 Relay Outputs | 24VDC<br>8 Digital Inputs,<br>pnp, including one<br>High-speed Counter<br>8 Relay Outputs | 24VDC<br>16 Digital Inputs,<br>pnp/npn,<br>including one<br>High-speed Counter |
| **IO-TO16** | **IO-RO8** | **IO-RO16** | **IO-DI8ACH** | |
| 24VDC<br>16 pnp Transistor Outputs | 24VDC (power supply)<br>8 Relay Outputs | 24VDC (power supply)<br>16 Relay Outputs | 110/220 VAC<br>8 AC Inputs | |

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## Analog, Temperature and Weight/Strain Measurements

| IO-AI4-AO2 | IO-PT400 | IO-PT4K |
|---|---|---|
| 24VDC (power supply)<br>4 Analog Inputs<br>12-bit, 0-10V, 0-20mA, 4-20mA,<br>2 Analog Outputs,<br>12-bit+sign, ±10V, 0-20mA, 4-20mA | 4 PT100/NI100/NI120 Inputs<br>Range PT100:<br>-50°C÷460°C (-58°F÷860°F)<br>Range NI100:<br>-50°C ÷232°C (-58°F÷ 449°F)<br>Range NI120:<br>-50°C ÷172°C (-58°F÷ 341°F)<br>12-bit | 4 PT1000/NI1000 Inputs<br>Range PT1000:<br>-50°C÷460°C<br>(-58°F÷860°F)<br>Range NI1000:<br>-50°C÷232°C<br>(-58°F÷449°F)<br>12-bit |
| **IO-AO6X** | **IO-LC1[4] IO-LC3[4]** | **IO-ATC8** |
| 24VDC (power supply)<br>6 Isolated Analog Outputs<br>0-10V, 0-20mA, 4-20mA<br>12-bit | 12/24VDC (Power Supply)<br>1-3 Loadcell / Strain gauge Inputs<br>Input voltage ranges: ±20mV, ±80mV<br>Excitation: AC/DC<br>1 Digital pnp Input<br>2 pnp Outputs<br>Not supported by all OPLCs™ | 8 Thermocouple/ Analog Inputs<br>T/C J, K, T, B, E, N, R, S,<br>0.1° Resolution,<br>0-10V, 0-20mA, 4-20mA,<br>12/14-bit |

| IO-AI8[6] |
|---|
| 8 Analog Inputs<br>0÷10V / 0÷20mA<br>14-bit |

New!

## I/O Expansion Module Adapters

| EX-A2X[1] |
|---|
| Local I/O module adapter. Galvanic isolation. Up to 8 modules may be connected to a single PLC[1]. Supports both 12/24 VDC |

New!

| EX-RC1[5] |
|---|
| Remote I/O module adapter, via CANbus. Multiple adapters may be connected to a single PLC, with up to 8 modules to each adapter[1]. Supports both 12/24 VDC. |

[1] Number of I/Os may vary according to module

[2] Except for M90-19-B1A

[3] The EX90 is housed in an open casing. Only one EX90 can be connected per PLC, as a single expansion module; Expansion adapter not required.

[4] IO-LCx models are supported by the M91 & Vision series. Not supported by the M90 series.

[5] EX-RC1 is supported by Vision series. Not supported by M91 series.

[6] Not yet UL certified.

* Additional 12VDC models are listed on Unitronics web site.

## XL Digital/Analog Modules[6]

| IO-D16A3-RO16 | IO-D16A3-TO16 | EX-D16A3-RO8 | EX-D16A3-TO16 |
|---|---|---|---|
| 24VDC,<br>16 Digital Inputs pnp/npn, including two High-speed Counters,<br>3 Analog Inputs,<br>10-bit, 0-20mA, 4-20mA,<br>16 Relay Outputs | 24VDC,<br>16 Digital Inputs pnp/npn, including one High-speed Counter,<br>3 Analog Inputs,<br>10-bit, 0-20mA, 4-20mA,<br>15 pnp + 1 pnp/npn Transistor Outputs including 1 HSO | 24VDC,<br>built-in Expansion Module Adapter,<br>16 Digital Inputs, pnp/npn, including two High-speed Counters,<br>3 Analog Inputs 10-bit,<br>0-20mA, 4-20mA,<br>8 Relay Outputs | 24VDC,<br>built-in Expansion Module Adapter,<br>16 Digital Inputs, pnp/npn, including one High-speed Counter,<br>3 Analog Inputs 10-bit,<br>0-20mA, 4-20mA,<br>15 pnp + 1 pnp/npn Transistor Outputs including 1 HSO |

# Snap-in I/O Modules

Plug a Snap-in module directly into the back of a Vision PLC. Compatible with all V200, V500 and V1040 (V2XX,V5XX, V1040) Vision models.

| Article No. | V200-18-E1B | V200-18-E2B | V200-18-E3XB | V200-18-E4XB | V200-18-E5B | V200-18-E6B[1] | V200-18-E62B[1] (New!) |
|---|---|---|---|---|---|---|---|
| Digital Inputs (isolated) | **16** npn/pnp (including **2** Shaft-encoder inputs) | **16** npn/pnp (including **2** Shaft-encoder inputs) | **18** npn/pnp (including **2** Shaft-encoder inputs) | **18** npn/pnp (including **2** Shaft-encoder inputs) | **18** npn/pnp (including **2** Shaft-encoder inputs) | **18** npn/pnp (including **2** Shaft-encoder inputs) | **30** npn/pnp (including **2** Shaft-encoder inputs) |
| Analog Inputs | **3** 10-bit 0-10V, 0-20mA 4-20mA | **2** 10-bit 0-10V, 0-20mA 4-20mA | **4** isolated 12-14-bit (software dependent) 0-10V, 0-20mA 4-20mA | **4** isolated 12-14-bit (software dependent) 0-10V, 0-20mA 4-20mA | **3** 10-bit 0-10V, 0-20mA 4-20mA | **3** 10-bit 0-10V, 0-20mA 4-20mA & **2** 14-bit 0-10V, 0-20mA 4-20mA | **2** 10-bit 0-10V, 0-20mA 4-20mA |
| Temperature Measurement | None | None | and/or **4** TC/PT100 | and/or **4** TC/PT100 | None | and/or **2** TC/PT100 | None |
| Digital Outputs (isolated) | **4** npn/pnp (including **2** High-speed outputs) | **4** npn/pnp (including **2** High-speed outputs) | **2** npn/pnp High-speed | **17** npn/pnp (including **2** High-speed) | **15** pnp, **2** npn/pnp (including **2** High-speed) | 2 npn/pnp High-speed | **28** pnp **2** npn/pnp High-speed |
| Relay Outputs (isolated) | **10** | **10** | **15** | None | None | **15** | None |
| Analog Outputs | None | **2** 12-bit 0-10V, 0-20mA 4-20mA | **4** 12-bit 0-10V, 4-20mA isolated | **4** 12-bit 0-10V, 4-20mA isolated | None | **2** 12-bit 0-10V, 4-20mA isolated | None |

[1] V200-18-E6B, V200-18-E62B is not yet UL certified


# Additional COM Module

Use these modules to enhance Vision's communication capabilities[1]

| Ethernet | RS232/RS485 | Isolated RS232/RS485 | CANbus |
|---|---|---|---|
| V100-17-ET2 (for V130 and V350 series)<br>V200-19-ET1 (for V200, V500 and V1040 series) | V100-17-RS4 (for V130 and V350 series)<br>V200-19-RS4 (for V200, V500 and V1040 series) | V100-17-RS4X (for V130 and V350 series)<br>V200-19-RS4-X (for V200, V500 and V1040 series) | V100-17-CAN (for V130 and V350 series) |

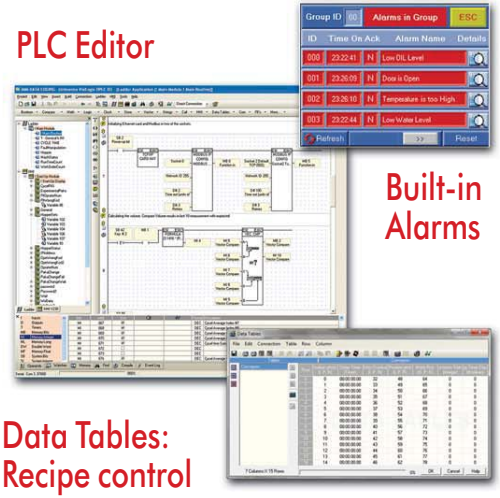
[1] V200/V500/V1040: 1 optional port for serial or Ethernet, V130/V350: 1 optional port for serial or Ethernet & 1 optional port for CANbus

# **A single,** integrated programming environment - Free of charge!

## Easy Hardware Configuration


- Select base PLC
- Configure I/Os

## PLC Editor



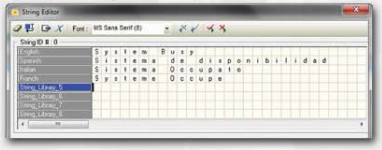

Built-in Alarms

## Data Tables: Recipe control

- Click & drop Ladder elements
- Modular program function: create & call subroutines
- Built-in function blocks save code & simplify tasks

## Intuitive HMI Design


String Library: instantly switch HMI language



## Image Library

- Assign functions to HMI keys
- Create & conditionally display operator messages
- Assign "Touch" properties to any screen element
- Use color images & graph to reflect variable values & trends

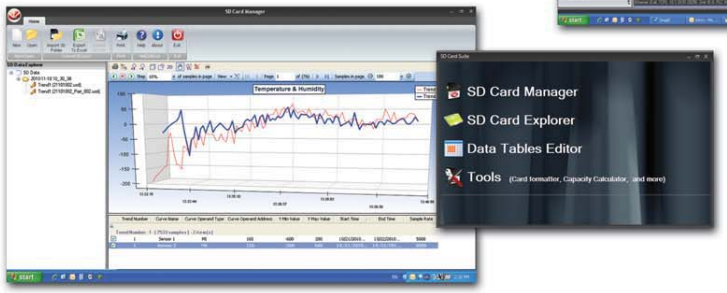
* Note that graphics are supported by the Vision series; (Touch Library, & Alarms are supported by the Enhanced features, String Vision series.)

* Note that software features are PLC model-dependent

# Software Utilities: Added Value - Free of charge!

## Remote Access & Operator:

PC to PLC access/control via modem or network, view multiple operator panels

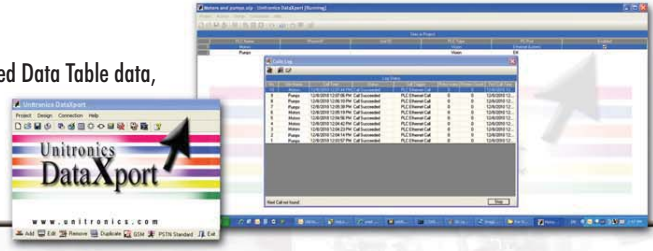



## SD Card Suite:

Manage data— Trends, Alarms, Data Table; remotely read/write data to SD Card

## DataXport:

Log run-time/stored Data Table data, export to Excel




- UniOPC/UniDDE Server: Communicate with SCADA/Windows applications
- UniDownload Manager: Download multiple, compressed PLC applications simultaneously
- UniVision Licensing: Protect your Intellectual Property
- ActiveX & .NET communication driver - Easily implement communication between PLC and PC applications

## Free Technical Support

When you call Unitronics Technical Support, you speak to an actual Support Team expert

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