Vision™ PLC+HMI

V130/V130J-TR20
V350/V350J-TR20
V430J-RH2
Technical Specifications

Order Information

Item	
V130-33-TR20	PLC with Classic panel, Monochrome display 2.4"
V130-J-TR20	PLC with Flat panel, Monochrome display 2.4"
V350-35-TR20	PLC with Classic panel, Color touch display 3.5''
V350-J-TR20	PLC with Flat panel, Color touch display 3.5''
V430-J-RH2	PLC with Flat panel, Color touch display 4.3''

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

Power Supply

Item	V130-TR20 V130J-TR20	V350-TR20 V350J-TR20	V430J-RH2
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	240mA@24VDC	280mA@24VDC
pnp inputs	190mA@24VDC	215mA@24VDC	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)
V130/J	10mA	35mA	8mA
V350/J/V430J	20mA	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 3
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 (8mA@24VDC for V430J-RH2)
Input impedance	I0-I5: 4.5KΩ
	I6-I11: 6.5KΩ (3KΩ for V430J-RH2)
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	Succesive 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 *Increasing Contact Life Span* in the product's Installation Guide)

Transistor Outputs
(TR20 Only)

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	$1\mu s$
Maximum delay ON to OFF	$10\mu s$
HSO freq. range with resistive load	5Hz-200kHz (at maximum load resistance of $1k\Omega$)
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

Item	V130-TR20 V130J-TR20	V350-TR20 V350J-TR20	V430J-RH2
LCD Type	STN, LCD display	TFT, LCD display	TFT, LCD display
Illumination backlight	White LED	White LED	White LED
Display resolution	128x64 pixels	320x240 pixels	480x272 pixels
Viewing area	2.4"	3.5"	4.3"
Colors	Monochrome	65,536 (16-bit)	65,536 (16-bit)
Screen Contrast	Via software (Store value to SI 7, values range: 0 to 100%)	Fixed	Fixed
Touchscreen	None	Resistive, analog	Resistive, analog
'Touch' indication	None	Via buzzer	Via buzzer
Screen brightness control	Via software (Store value to SI 9, 0 = Off, 1 = On)	Via software (Store value to SI 9, values range: 0 to 100%)	
Virtual Keypad	None	Displays virtual keyboard when the application requires data entry.	

Keypad

Item	V130-TR20 V130J-TR20	V350-TR20 V350J-TR20	V430J-RH2
Number of keys	20 keys,including 10 user-labeled 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 *V130 Keypad Slides.pdf*. A complete set of blank slides is available by separate order	Slides may be installed in the operating panel faceplate to custom-label the keys. Refer to *V350 Keypad Slides.pdf*. Two sets of slides are supplied with the controller: one set of arrow keys, and one blank set.	None

Program

Item	V130-TR20 V130J-TR20	V350-TR20 V350J-TR20	V430J-RH2
Memory size			
Application Logic	512KB	1MB	1MB
Images	128KB	6MB	12MB
Fonts	128KB	512KB	512KB

Operand type	Quantity		Symbol	Value
Item	V130-TR20 V130J-TR20	V350-TR20 V350J-TR20 V430J-RH2		
Memory Bits	4096	8192	MB	Bit (coil)
Memory Integers	2048	4096	MI	16-bit signed/unsigned
Long Integers	256	512	ML	32-bit signed/unsigned
Double Word	64	256	DW	32-bit unsigned
Memory Floats	24	64	MF	32-bit signed/unsigned
Fast Bits	1024	1024	XB	Fast Bits (coil) – not retained
Fast Integers	512	512	XI	16 bit signed/unsigned (fast, not retained)
Fast Long Integers	256	256	XL	32 bit signed/unsigned (fast, not retained)
Fast Double Word	64	64	XDW	32 bit unsigned (fast, not retained)
Timers	192	384	T	Res. 10 ms; max 99h, 59 min, 59.99s
Counters	24	32	C	32-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	15µs 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:

6. User must format via Unitronics SD tools utility.

Communication Ports

Port 1   1 channel, RS232/RS485 and USB device (V430/V350/V350J only). 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
USB device
(V430/V350/V350J only)
   Port type   Mini-B, See Note 9
   Specification   USB 2.0 complaint; full speed
   Cable   USB 2.0 complaint; up to 3m
Port 2 (optional)   See Note 8
CANbus (optional)   See Note 8

Notes:

7. 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.

8. 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.

9. Note that physically connecting a PC to the controller via USB suspends RS232/RS485 communications
   via Port 1. When the PC is disconnected, RS232/RS485 resumes.

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 (up to a total of
                                  512 I/Os). 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

Item		V130-TR20 V130J-TR20	V350-TR20 V350J-TR20	V430J-RH2
Size	Vxxx	109 x 114.1 x 68mm (4.29 x 4.49 x 2.67"). See Note 10	109 x 114.1 x 68mm (4.29 x 4.49 x 2.67"). See Note 10	
	Vxxx-J	109 x 114.1 x 66mm (4.92 x 4.49 x 2.59"). See Note 10	109 x 114.1 x 66mm (4.92 x 4.49 x 2.59"). See Note 10	136 x 105.1 x 61.3mm (5.35 x 4.13 x 2.41"). See Note 10
Weight		297g (10.47 oz)	317g (11.18 oz)	350g (12.34 oz)

Notes:

10. 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 (IP65/66/NEMA4X)
	DIN-rail mounted (IP20/NEMA1)
Operating Altitude	2000m (6562 ft)
Shock	IEC 60068-2-27, 15G, 11ms duration
Vibration	IEC 60068-2-6, 5Hz to 8.4Hz, 3.5mm constant amplitude, 8.4Hz to 150Hz, 1G acceleration.

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