Samba™ OPLC™

SM35-J-R20 Technical Specifications

The Unitronics SM35-J-R20 offers the following onboard I/Os:

- 12 Digital Inputs, configurable via wiring to include:
 1 HSC/Shaft-encoder Input, 2 Analog inputs (only when the digital inputs are set to pnp)
- 8 Relay Outputs

Available by separate order: Ethernet, additional RS232/RS485 or CANbus ports.

You can find additional information, such as wiring diagrams, in the product's installation guide located 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 235mA pnp inputs 195mA

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)
20mA	35mA	5mA

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'

17-28.8VDC for Logic '1'

npn (sink) 17-28.8VDC for Logic '0'

0-5VDC for Logic '1'

Input current 3.7mA@24VDC

Input impedance $6.5 \text{K}\Omega$

Response time 10ms typical, when used as normal digital inputs

Input cable length

Normal digital input Up to 100 meters

High Speed Input Up to 50 meters, shielded, see Frequency table below

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

See Note 2

Frequency (max) See Note 3

Cable length (max.)	HSC	Shaft-encoder pnp	Shaft-encoder npn
10m	30kHz	20kHz	16kHz
25m	25kHz	12kHz	10kHz
50m	15kHz	7kHz	5kHz

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 via a single jumper as either npn or pnp.

In addition, according to jumper settings and appropriate wiring:

- Inputs 5 and 6 can function as either digital or analog inputs.
 - If the digital inputs function as npn, analog option is not available.
- Input 0 can function as a high-speed counter, as part of a shaft-encoder, or as normal digital inputs.
- Input 1 can function as either counter reset, normal digital input, or as part of a shaft-encoder.
- If input 0 is set as a high-speed counter (without reset), input 1 can function as a normal digital input.
- 3. pnp/npn maximum frequency is at 24VDC.

Analog Inputs

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.

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Digital Outputs

Number of outputs 8 relay (in 2 groups). See Note 5

Output type SPST-NO (Form A)

Isolation By relay

Type of relay Tyco PCN-124D3MHZ or compatible

Output current 3A maximum per output

(resistive load) 8A maximum total per common

Rated voltage 250VAC / 30VDC Minimum load 1mA, 5VDC

Life expectancy 100k operations at maximum load

Response time 10ms (typical)

Contact protection External precautions required (see *Increasing Contact Life Span* in

the product's Installation Guide)

Notes:

Program

Memory size

Timers

Counters

5. Outputs 0, 1, 2 and 3 share a common signal. Outputs 4, 5, 6, and 7 share a common signal.

Graphic Display Screen

LCD Type TFT, LCD display

Illumination backlight White LED, software-controlled

Display resolution 320x240 pixels

Viewing area 3.5"

Colors 65,536 (16-bit)
Touchscreen Resistive, analog

Screen brightness control Via software (Store value to SI 9).

Virtual Keypad Displays virtual keyboard when the application requires data entry.

Wichiony Size	Application	-0910 1121	RB, Illiages TIVIB, I Olito OTERB
Operand type	Quantity	Symbol	Value
Memory Bits	512	MB	Bit (coil)
Memory Integers	256	MI	16-bit signed/unsigned
Long Integers	32	ML	32-bit signed/unsigned
Double Word	32	DW	32-bit unsigned
Memory Floats	24	MF	32-bit signed/unsigned
Fast Bits	64	XB	Fast Bits (coil) - not retained
Fast Integers	32	XI	16 bit signed/unsigned (fast, not retained)
Fast Long Integers	16	XL	32 bit signed/unsigned (fast, not retained)
Fast Double Word	16	XDW	32 bit unsigned (fast, not retained)

Data Tables 32K dynamic data (recipe parameters, datalogs, etc.)

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16K fixed data (read-only data, ingredient names, etc)

32 bit

Res. 10 ms; max 99h, 59 min, 59.99 s

Application Logic - 112KB Images - 1MB Fonts - 512KB

HMI displays Up to 24

Program scan time 15µS per 1K of typical application

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Communication Ports

Port 1 1 channel, RS232

Galvanic isolation No

Baud rate 300 to 115200 bps

RS232

Input voltage ±20VDC absolute maximum

Cable length 15m maximum (50')

Port 2 (optional) See Note 6
CANbus (optional) See Note 6

Notes:

6. The user may order and install one or both of the following modules:

- An additional port (Port 2). Available types: RS232/RS485 isolated/non-isolated, Ethernet

- A CANbus port

Port module documentation is available in the Unitronics website.

Miscellaneous

Clock (RTC) Real-time clock functions (date and time).

Battery back-up 7 years typical at 25 ℃, 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 59.6mm (4.29 x 4.49 x 2.34").

Weight 220g (7.76 oz)

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)

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