Uni-COM™ Modules

User Guide
UAC-01RS2 ,UAC-02RS2 ,UAC-02RSC

Uni-COM™ is a family of communication modules that are compatible with the UniStream™ control platform. This guide provides basic installation information for the UAC-01RS2, UAC-02RS2 and UAC-02RSC modules.
Technical specifications may be downloaded from the Unitronics website.

The UniStream™ platform comprises CPU controllers, HMI panels, Communication modules and local I/O modules
that snap together to form an all-in-one Programmable Logic Controller (PLC).

The maximum number of Uni-COM™ modules that can be connected to a single CPU controller is limited. For details, please refer to the specification sheet of the UniStream™ CPU.

Before You Begin

Before installing the device, the installer must:

- Read and understand this document.

- Verify the Kit Contents.

Uni-COM™ modules may only be installed onto a UniStream™ HMI Panel; the Panel must comprise a CPU-for-Panel, installed according to the CPU-for-Panel installation guide.

Alert Symbols and General Restrictions

When any of the following symbols appear, read the associated information carefully.

Symbol	Meaning	Description
⚡	Danger	The identified danger causes physical and property damage.
⚠	Warning	The identified danger could cause physical and property damage.
Caution	Caution	Use caution.

- All examples and diagrams are intended to aid understanding, and do not guarantee operation. Unitronics accepts no responsibility for actual use of this product based on these examples.

- Please dispose of this product according to local and national standards and regulations.

- This product should be installed only by qualified personnel.

⚠
- Failure to comply with appropriate safety guidelines can cause severe injury or property damage.
- Do not attempt to use this device with parameters that exceed permissible levels.
- Do not connect/disconnect the device when power is on.

Environmental Considerations

⚠
- Ventilation: 10mm (0.4") of space is required between the device top/bottom edges and the enclosure's walls.

- Do not install in areas with: excessive or conductive dust, corrosive or flammable gas, moisture or rain, excessive heat, regular impact shocks or excessive vibration, in accordance with the standards and limitations given in the product's technical specification sheet.

- Do not place in water or let water leak onto the unit.

- Do not allow debris to fall inside the unit during installation.

- Install at maximum distance from high-voltage cables and power equipment.
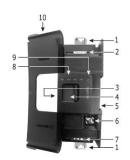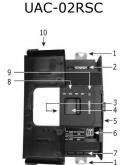
Kit Contents

- 1 Uni-COM™ module
- 1 RS485 terminal block (UAC-02RSC)

Uni-COM™ Diagram

UAC-01RS2, UAC-02RS2   UAC-02RSC

1	DIN-rail clips	Physically hold the module on the back of the panel.
2	Port 1	RS232 Port
3	IO/COM Bus-Left	Left-side Connector
4	Bus Connector Lock	Slide the Bus Connector Lock to the left, to electrically connect the Uni-COM™ module to the CPU or to adjacent Uni-COM™ module.
5	IO/COM Bus-Right	Right-Side Connector, shipped covered.
	Bus Connector Cover	Leave covered when not in use.
6	Functional Ground Terminal	Connect to the system earth (on UAC-01RS2 and UAC-02RS2)
	DIP switch	RS485 termination selection DIP switch (on UAC-02RSC)
7	Port 2	RS232 Port (UAC-02RS2); RS485 Port (UAC-02RSC).
8	Channel LEDs	Green LEDs
9	Status LED	Green LED

NOTE   ▪ Refer to the module's specification sheet for LED indications.

10	Module door	Shipped covered with protective tape to prevent the door from being scratched. Remove tape during installation.

About the IO/COM Bus Connectors

The IO/COM Bus connectors provide the physical and electrical connection points between modules. The right side connector is shipped covered by a protective cover, protecting the connector from debris, damage, and ESD.

The IO/COM Bus - Left (#3 in diagram) can only be connected to either a CPU-for-Panel or another Uni-COM™ module.

The IO/COM Bus - Right (#5 in diagram) can be connected to another Uni-COM™ module, to an I/O module, or to the Base Unit of the Local Expansion Adapter.

Note
- Uni-COM™ modules can only be installed on the back of the UniStream™ HMI Panel.
- Uni-COM™ modules must immediately follow the CPU-for-Panel. No Uni-I/O™ module may be installed between the CPU and a Uni-COM™ module.
- If the Uni-COM™ module is located last in the configuration, and nothing is to be connected to it, do not remove its Bus Connector Cover.
- Uni-COM™ modules cannot be connected on a DIN rail via a Local Expansion Adapter.

Installation

⚠️ ▪ Turn off system power before connecting or disconnecting any module or device.

▪ Use proper precautions to prevent Electro-Static Discharge (ESD).

Installing a Uni-COM™ Module onto a UniStream™ HMI Panel

NOTE The DIN-rail type structure on the back of the panel provides the physical support for the Uni-COM™ module.

1. Check the unit to which you will connect the Uni-COM™ module to verify that its Bus Connector is not covered.
   If the Uni-COM™ module is to be the last one in the configuration, do not remove the cover of its IO/COM Bus-Right connector.

2. Open the door of the Uni-COM™ module and hold it as shown in the accompanying figure.
3. Use the upper and lower guide-tunnels (tongue & groove) to slide the Uni-COM™ module into place.
4. Verify that the DIN-rail clips located at the top and bottom of the Uni-COM™ module have snapped onto the DIN-rail.

5. Slide the Bus Connector Lock all the way to the left as shown in the accompanying figure.
6. If there is already a module located to its right, complete the connection by sliding the Bus Connector lock of the adjacent unit to the left.
7. If the module is the last in the configuration, leave the IO/COM Bus Connector covered.

Removing a Module

8. Turn off the system power.
9. Disconnect the connectors from the COM ports (#2,7 in the Uni-COM™ Diagram on page 2).
10. Disconnect the Uni-COM™ module from the adjacent units: slide its Bus Connector Lock to the right. If there is a unit located on its right, slide the lock of this module to the right as well.
11. On the Uni-COM™ module, pull the top DIN-rail clip up and the bottom clip down.
12. Open the door of the Uni-COM™ and hold it with two fingers as shown in the figure on page 3; then pull it carefully from its place.

Numbering Modules

You can number modules for reference purposes. A set of 20 stickers is provided with every CPU-for-Panel; use these stickers to number the modules.

▪ The set contains numbered and blank stickers as shown in the figure to the left.

▪ Place them on the modules as shown in the figure to the right.

Wiring

⚠️ ▪ All wiring activities should be performed while power is OFF.

▪ Unused points should not be connected (unless otherwise specified). Ignoring this directive may damage the device.

▪ Double-check all wiring before turning on the power supply.

Caution ▪ To avoid damaging the wire, use a maximum torque of 0.5 N·m (5 kgf·cm).

▪ Do not use tin, solder, or any substance on stripped wire that might cause the wire strand to break.

▪ Install at maximum distance from high-voltage cables and power equipment.

Wiring Procedure

Functional ground terminal (⏚) (UAC-01RS2 and UAC-02RS2)

Use a wire of minimum thickness of 14 AWG (2 mm^2); terminate it with a ring or fork crimp terminal, stud size #6.

Tighten the screw enough to make sure the ring/fork crimp terminal is not loose.

RS485 terminal block (UAC-02RSC)

Use crimp terminals for wiring; use 26-12 AWG wire (0.13 mm^2 –3.31 mm^2).

1. Strip the wire to a length of 7±0.5mm (0.275±0.020 inches).

2. Unscrew the terminal to its widest position before inserting a wire.

3. Insert the wire completely into the terminal to ensure a proper connection.

4. Tighten enough to keep the wire from pulling free.

Wiring Guidelines

In order to ensure that the device will operate properly and to avoid electromagnetic interference:

▪ Use a metal cabinet. Make sure the cabinet and its doors are properly earthed.

  ▪ **UAC-01RS2 and UAC-02RS2:**
  Connect the functional ground terminal (⏚) to the earth of the system (preferably to the metal cabinet chassis).
  Use the shortest and thickest wires possible: less than 1m (3.3') in length, minimum thickness 14 AWG (2 mm^2).

▪ **UAC-02RSC:**
  Connect the functional ground terminal (⏚) at the RS485 terminal block to the earth of the system (preferably to the metal cabinet chassis).
  Use the shortest and thickest wires possible: less than 1m (3.3') in length, minimum thickness 14 AWG (2 mm^2).
  Note that the UAC-02RSC must be earthed thru the RS485 terminal block even if only the RS232 is in use.

NOTE   For detailed information, refer to the document System Wiring Guidelines, located in the Technical Library in the Unitronics' website.

<u>**RS232**</u>

⚠ ▪ Turn off power before making any communications connections.

Pin Number	Pin Name	Direction	Description
1	DCD	In	Data Carrier Detect
2	RXD	In	Receive Data
3	TXD	Out	Transmit Data
4	-	-	Not connected (see note)
5	SG	Return	Signal Ground
6	-	-	Not connected (see note)
7	RTS	Out	Request To Send
8	CTS	In	Clear To Send
9	-	-	Not connected (see note)

NOTE   Unused RS232 signals may be connected to these pins.

<u>**RS485**</u>

⚠ ▪ Turn off power before making any communications connections.

Use the RS485 port to create a multi-drop network.

The UAC-02RSC is shipped with a 4 pin RS485 terminal block. This connector is marked with a pin assignment that is identical to the corresponding marking on the UAC-02RSC.

RS485 Wiring

D+	Tx/Rx+ (B)
D-	Tx/Rx− (A)
SG	Signal Ground
⏚	Functional Ground

▪ Use shielded twisted-pair cable, in compliance with EIA RS485 specifications.

▪ When wiring each node, connect the cable shield to the functional ground point of the RS485 terminal block.

NOTE   The functional ground point of the RS485 terminal block serves also as the module earthing point. Refer to the Wiring Guidelines clause for more details.

RS485 Termination

Use the DIP switches shown in the Uni-COM diagram on page 2 to set the RS485 termination according to the accompanying table.

The device is shipped with both its DIP switches set to ON; change settings if the device is not at one of the ends of the RS485 network.

Position		DIP Switch State
1	2	
ON	ON	Terminated (factory default)
OFF	OFF	Not Terminated

Uni-COM™ Modules

Technical Specifications
UAC-01RS2, UAC-02RS2, UAC-02RSC

This guide provides specifications for Unitronics' Uni-COM™ Modules.

Uni-COM™ modules are compatible with UniStream™ family of Programmable Logic Controllers. They are snapped onto the back of a UniStream™ HMI Panel next to a CPU-for-Panel to add ports to an all-in-one HMI + PLC controller. UAC-01RS2 offers one RS232 port, UAC-02RS2 offers two RS232 ports, UAC-02RSC offers one RS232 port and one RS485 port.
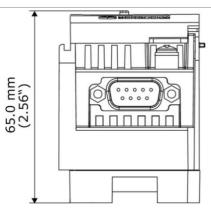
Installation Guides are available in the Unitronics Technical Library at www.unitronics.com

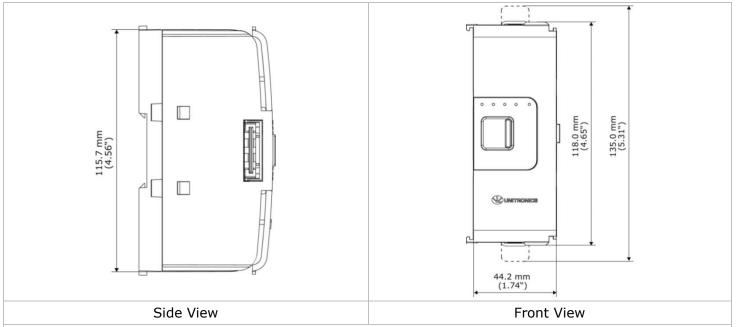| Communication	UAC-01RS2	UAC-02RS2	UAC-02RSC
RS232			
Number of ports	1	2	1
Voltage limits (receiver)	±20 VDC maximum, relative to Signal Ground (SG) pin		
Baud rate range	1,200 – 115,200 bps		
Isolation voltage			
Port to bus	500VAC for 1 minute		
Port to port	-	500VAC for 1 minute	
Connector type	D-Sub 9 pin, male		
Cable type	Shielded		
Cable length	Maximum 15 m (50 ft)		
RS485			
Number of ports	-	-	1
Voltage limits	-	-	-7 to +12 VDC maximum, Common+Differential
Baud rate range	-	-	1,200 – 115,200 bps
Nodes	-	-	Up to 32
Isolation voltage			
Port to bus	-	-	500VAC for 1 minute
Port to port	-	-	500VAC for 1 minute
Cable type	-	-	Shielded twisted pair, in compliance with EIA RS485
Cable length	-	-	Maximum 1,200 m (4,000 ft)

IO/COM Bus			
Bus current consumption	UAC-01RS2	UAC-02RS2	UAC-02RSC
	160mA	250mA	260mA

Indicator LEDs		
Channel LEDs	Green	Blinking when data is Transmitted/Received.
Status LED	Green	**ON**: Normal operation. **OFF**: No power.

Environmental	
Ingress Protection	IP 20, NEMA 1
Operational temperature	-20°C to 55°C (-4°F to 131°F)
Storage temperature	-30°C to 70°C (-22°F to 158°F)
Relative Humidity (RH)	5% to 95% (non-condensing)
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.

Dimensions			
Weight	UAC-01RS2	UAC-02RS2	UAC-02RSC
	0.15 Kg (0.331 lb)	0.15 Kg (0.331 lb)	0.135 Kg (0.298 lb)
Size	As shown in the images below		

Bottom View (UAC-02RS2 is shown)

Side View

Front View

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