red lion®

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MODEL G304K2 - KADET 2 OPERATOR INTERFACE WITH 4" TFT DISPLAY

- CONFIGURED USING CRIMSON® 3 SOFTWARE
- TWO SERIAL COMMUNICATIONS PORTS
  (1 RS-485 AND 1 RS-232/422/485)
- 10 BASE-T/100 BASE-TX ETHERNET PORT COMMUNICATES WITH UP TO FOUR PROTOCOLS SIMULTANEOUSLY
- UNIT'S CONFIGURATION IS STORED IN NON-VOLATILE FLASH MEMORY
- BRIGHT 4.3-INCH TFT ACTIVE MATRIX 32K COLOR 480 X 272 PIXEL DISPLAY
- THREE FRONT PANEL LED INDICATORS
- NEMA 4/IP65 FRONT PANEL
- POWER UNIT WITH 24 VDC ± 20%
- RESISTIVE ANALOG TOUCHSCREEN

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GENERAL DESCRIPTION

The 4.3-inch G3 Kadet 2 was designed for applications in which available mounting space is at a premium. Though diminutive in size, the G304K2 boasts a bright TFT display with 32K-color support. With a resolution of 480 x 272, the Kadet 2's 4.3-inch display has a higher resolution and better image clarity than most 6-inch HMIs.

The G304K2 performs the functions of a multiple protocol converter, using two high-speed RS-232/422/485 communications ports and a 10 Base-T/100 Base-TX Ethernet port. The Ethernet port supports up to four protocols simultaneously, allowing dissimilar Ethernet based products to communicate with one another.

The G3 Kadet 2 range of HMIs is programmed with Red Lion's free Crimson 3 software. Crimson 3 offers easy to use drag and drop communications configuration, while the embedded image library allows the programmer to create intuitive screens and prompts for the operator.

SAFETY SUMMARY

All safety related regulations, local codes and instructions that appear in the manual or on equipment must be observed to ensure personal safety and to prevent damage to either the instrument or equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Do not use the controller to directly command motors, valves, or other actuators not equipped with safeguards. To do so can be potentially harmful to persons or equipment in the event of a fault to the unit.

⚠	⚠
CAUTION: Risk Of Danger. Read complete instructions prior to installation and operation of the unit.	**CAUTION:** Risk of electric shock.

CONTENTS OF PACKAGE

- G304K2 Operator Interface.
- Hardware packet for mounting unit into panel.
- Terminal block for connecting power.
- Spare fuse.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
G304K2	4.3" TFT Operator Interface	G304K200
CBL	Communications Cables and Adaptor [2]	CBLxxxxx
G3FILM	Protective Film	G3FILM4K

[1] Download for free from www.redlion.net.
[2] Contact your Red Lion distributor or visit our website for selection of adapters and cables.

Note: If replacing Model G304K000, see Tech Note TNG3K4.

SPECIFICATIONS

1. **POWER REQUIREMENTS**:
   Must use Class 2 or SELV rated power supply.
   Power connection via removable three position terminal block.
   Supply Voltage: 24 VDC ±20%, Class 2
   Maximum Power: 250 mA @ 24 VDC
   Fused: Fast-blow 1.25 A, 5x20 mm
2. **LCD DISPLAY**:

SIZE	4.3-inch
TYPE	TFT
COLORS	32K
PIXELS	480 X 272
BRIGHTNESS	500 cd/m^2
BACKLIGHT TYPE	LED
BACKLIGHT LIFE	30,000 HR TYP.

3. **TOUCHSCREEN**: Four-wire resistive analog
4. **MEMORY**: 128 MB of non-volatile flash memory
5. **COMMUNICATIONS**: Two Serial Ports - One RS-485 port, one RS-232/422/485
   Serial Ports: Format and Baud Rates for each port are individually software programmable up to 115,200 baud.

6. **ENVIRONMENTAL CONDITIONS**:
   Operating Temperature Range: 0 to 45°C
   Operating and Storage Humidity: 10-90% relative humidity (non-condensing) from 0 to 45°C.
   Vibration: Operational 10 to 25 Hz in X, Y, Z direction for 30 minutes, 2 g.
7. **CERTIFICATIONS AND COMPLIANCES**:
   SAFETY
   UL Listed: File #E302106
       Type 4 Indoor Enclosure rating (Face only)
   IP65 Enclosure rating (Face only)
   ELECTROMAGNETIC COMPATIBILITY
   Complies with EN 55022: 2006, Class A, EN6100-3-2:2006, EN6100-3-3:1995+A1:2001+A2:2005 standards
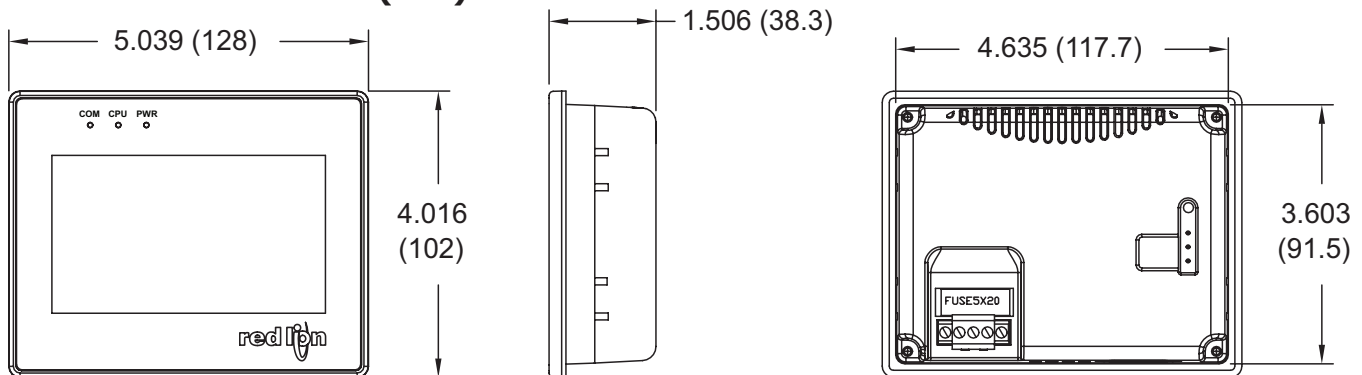8. **CONNECTIONS**: Compression cage-clamp terminal block.
   Wire Gage: 12-28 AWG copper wire
   Communications: DB9M connection
9. **CONSTRUCTION**: Plastic enclosure with NEMA 4/IP65 front panel when properly installed.
10. **WEIGHT**: 9.4 oz (270 g)

DIMENSIONS In inches (mm)

INSTALLING AND POWERING THE G304K2

MOUNTING INSTRUCTIONS

The unit can be mounted into enclosures with a depth of 4". It is recommended that the unit be mounted on the front panel of a steel enclosure. Allow clearance of 1" around the sides of the unit for the mounting hardware. Allow 2.5" along the bottom edge if using Red Lion communication cables.

Place the unit in the panel cutout. Slide clamps into the four holes provided at the top and bottom of the case. Tighten the clamping screws in an even pattern until the unit is secured in the panel. Caution: Do not over tighten the clamps. To seal to NEMA4 specifications, all supplied mounting clamps must be used. (Torque is 2.6 – 3.5 in/lb.) The panel must not flex more than 0.010".
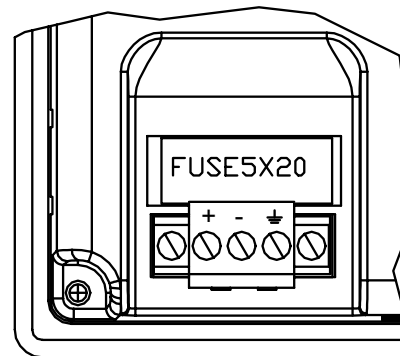
POWER SUPPLY REQUIREMENTS

The G304K2 requires a 24 VDC ±20% power supply. Please take care to observe the following points:

- The wire used to connect the operator interface's power supply should be at least 22-gage wire. If a longer cable run is used, a heavier gage wire should be used. The routing of the cable should be kept away from large contactors, inverters, and other devices which may generate significant electrical noise.

- A power supply with a Class 2 or SELV rating is to be used. A Class 2 or SELV power supply provides isolation to accessible circuits from hazardous voltage levels generated by a mains power supply due to single faults. SELV is an acronym for "safety extra-low voltage." Safety extra-low voltage circuits shall exhibit voltages safe to touch both under normal operating conditions and after a single fault, such as a breakdown of a layer of basic insulation or after the failure of a single component has occurred.

4.685 (119)

R.08 (R2)

3.661 (93)
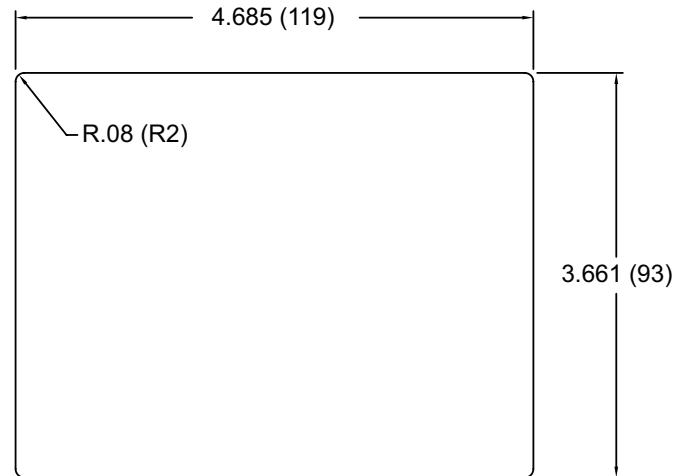
COMMUNICATING WITH THE G304K2

The G304K2 has two serial ports combined into a single DB9-M connector.

PC (RS-232)

5 9

1 6
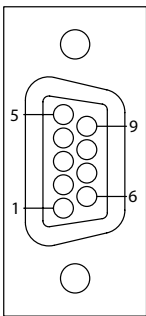
DB9-M

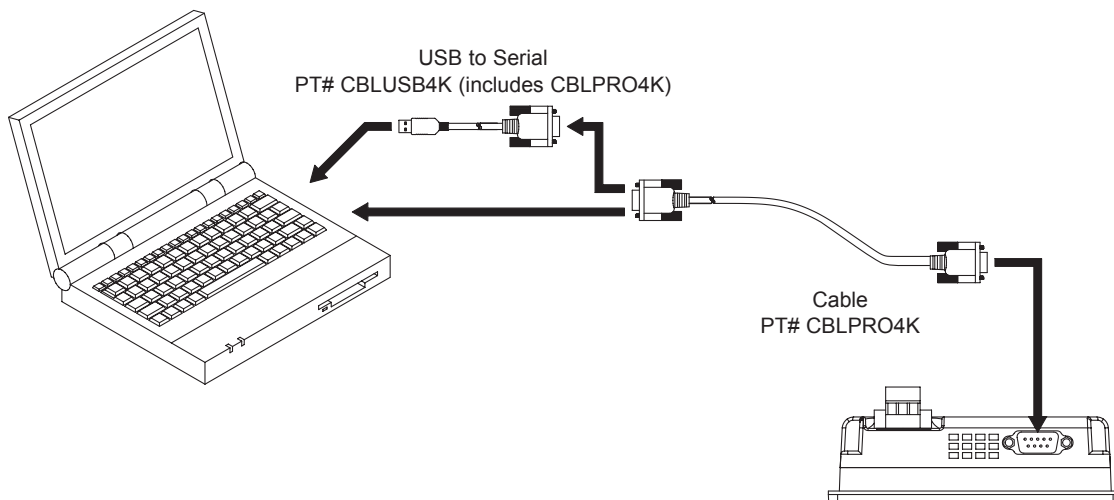| PIN	SYMBOL	COM1 (RS-485) 4 wire	COM1 (RS-485) 2 wire	COM1 (RS-232)	COM3 (RS-485)
1	RxA	Rx-	Data-		
2	RxB	Rx+	Data+		
3	TxA	Tx-			
4	TxB	Tx+			
5	GND	Signal Ground			
6	Tx			Transmit	
7	RxA				Data-
8	RxB				Data+
9	Rx			Receive	

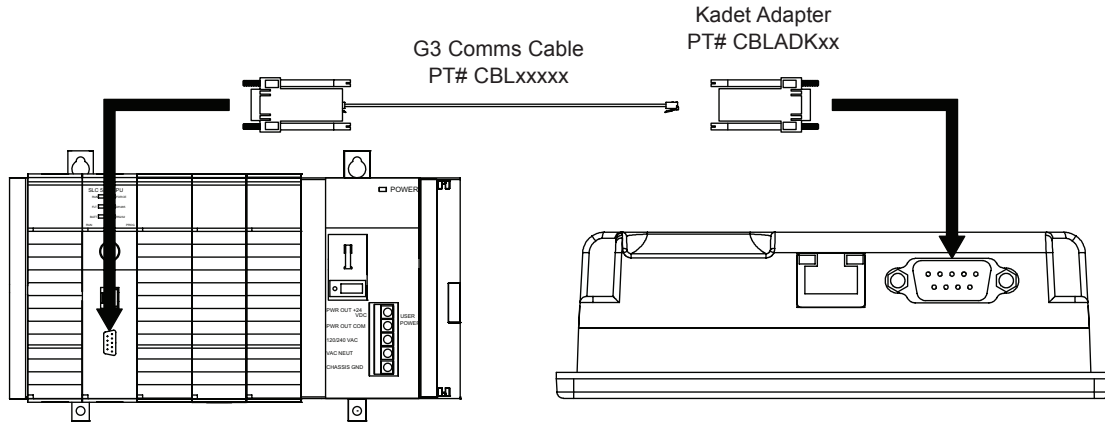## PC CONNECTION

Configuration files are downloaded to the Kadet 2 via the PC port, which can be connected to a computer via various cables.

USB to Serial
PT# CBLUSB4K (includes CBLPRO4K)
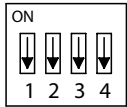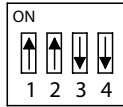
Cable
PT# CBLPRO4K

DEVICE COMMUNICATIONS

Several adapters are available which allow direct connection via Red Lion communications cables. For a list of adapters and cables, please visit http://www.redlion.net/support/downloads.html.

Kadet Adapter
PT# CBLADKxx

G3 Comms Cable
PT# CBLxxxxx

SETTING THE SWITCHES

ON
1 2 3 4

Normal mode.

ON
1 2 3 4

Cycle power or press reset button with the switches as shown in order to display the Clear Database prompt. Touch the left side of the display to clear the database; touch the right side to continue in normal mode.

SOFTWARE/UNIT OPERATION

CRIMSON SOFTWARE

Crimson software is available as a free download from Red Lion's website. The latest version of the software is always available from the website, and updating your copy is free.

FRONT PANEL LEDS

There are three front panel LEDs. Shown below is the default status of the LEDs.

LED	INDICATION
BLUE (COM)	
FLASHING	Communications are active.
GREEN (CPU)	
STEADY	CPU is functioning
ORANGE (PWR)	
STEADY	Power is applied.

TOUCHSCREEN

This operator interface utilizes a resistive analog touchscreen for user input. The unit will only produce an audible tone (beep) when a touch on an active touchscreen cell is sensed. The touchscreen is fully functional as soon as the operator interface is initialized, and can be operated with gloved hands.

TROUBLESHOOTING YOUR G304K2

If for any reason you have trouble operating, connecting, or simply have questions concerning your new G304K2, contact Red Lion's technical support. For contact information, refer to the front page of this bulletin for phone and fax numbers.

EMAIL: techsupport@redlion.net
Web Site: http://www.redlion.net

CAUTION: The circuit board contains static sensitive components. Before handling the operator interface without the rear cover attached, discharge static charges from your body by touching a grounded bare metal object. Ideally, handle the operator interface at a static controlled clean workstation. Also, do not touch the surface areas of the circuit board. Dirt, oil, or other contaminants may adversely affect circuit operation.