



# KIC-SERIES INSTRUCTION MANUAL

## INTRODUCTION

The KIC-Series of Concentration Controls use a conductivity probe to monitor and control the amount of chemical in a solution. Once a predetermined amount of chemical is set, the KIC-140 circuit board will notify operational personnel when the chemical concentration falls below the setpoint. When valves and pumps are activated to permit chemical to enter the solution, adjustments on the KIC-140 can control the feed mode (pulse feed or continuous) and stop the feeding after a predetermined time period.

The KIC-Series of Concentration Control Systems matched with the KIC-140 Circuit board and the Knight peristaltic pumps. Other options (i.e. remote warning indicators, temperature compensation) are available; consult your nearest Knight representative for details.

## INSTALLATION

- (1) Mount the unit on a wall in a convenient location near the chemical container and power source. CAUTION: Do not mount the unit in the direct path of steam. This can short circuit and permanently damage your system.
- (2) Check main supply voltage with a voltmeter and compare with the voltage input of the unit before mounting. Application of incorrect voltage will permanently damage unit and is not covered under warranty.
- (3) Install power leads in compliance with your local electrical codes. Rigid or flexible conduit should be used to ensure safety and continued operation. The green ground wire must be applied to ground. Failure to do so will void warranty.
- (4) Install the probe into the chemical tank below the water level, away from incoming water supplies, and 3 to 4 inches from corners, heating elements, or the bottom of the tank. Use 7/8" hole saw or punch to do this. Mount the probe as close to the chemical injection point as possible.
- (5) Connect the probe to the probe terminals on the circuit board.

## CHEMICAL PUMP (IF SO EQUIPPED)

NOTE: A 7/8" hole is required for installing the chemical injection fitting, preferably above the water line. If the tank does not already have a hole (may have a knock-out plug) create one using a 7/8" punch or hole saw.

- (1) Install the injection fitting on the wall of the tank. Use the provided gaskets to seal the connection — place one gasket on each side of the tank.
- (2) Install discharge tubing between the discharge (right) side of the pump and the injection fitting.
- (3) Install suction tubing between suction (left) side of the pump and the pickup tube provided. Be sure to draw tubing through the end of the pickup tube.



CAUTION: The KIC series has high voltage connected to the transformer and circuit board. Always disconnect main power when servicing the unit.

---

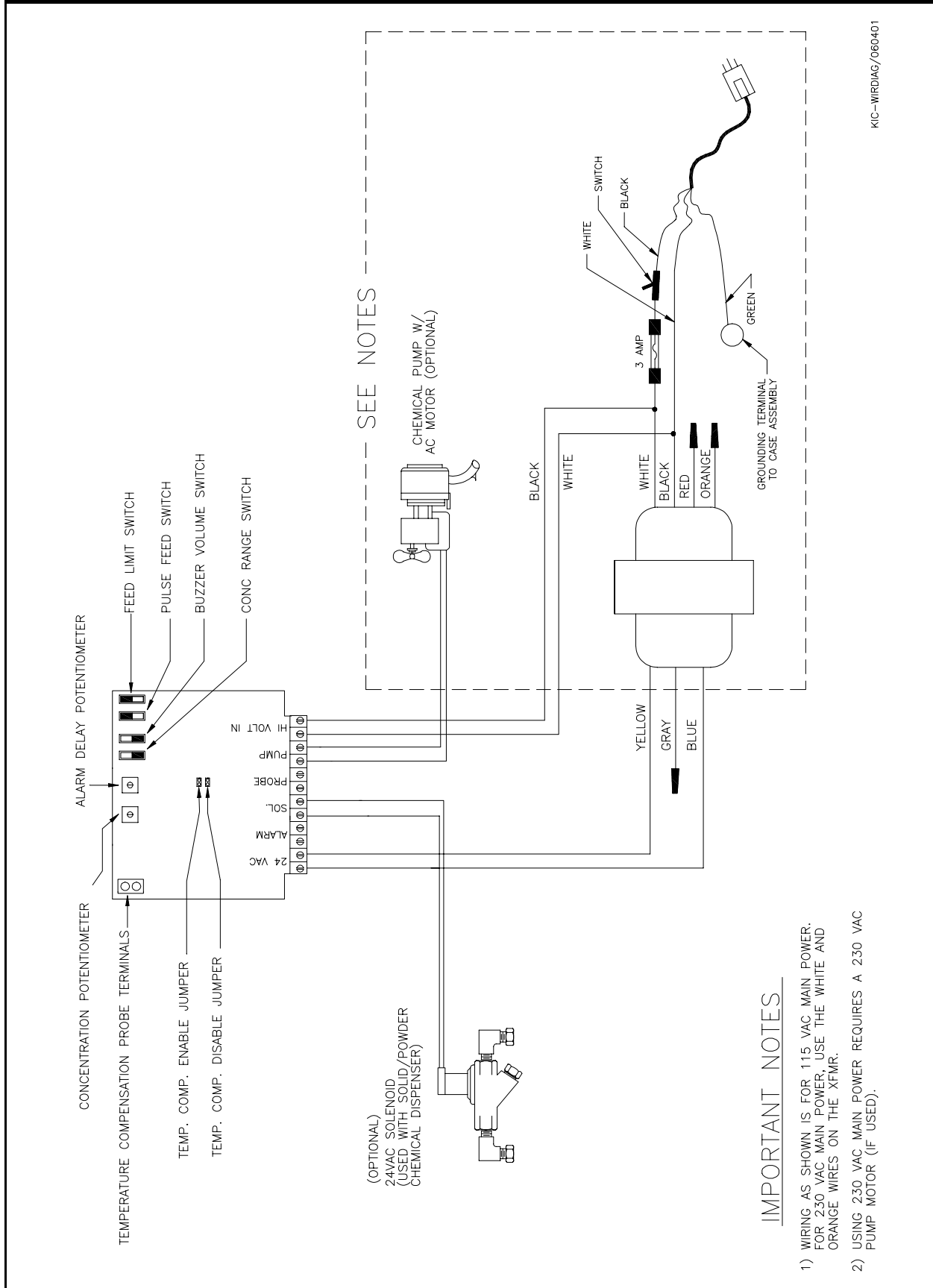
## **SWITCHES AND CONTROLS**

- **Concentration Potentiometer:** Used for adjusting the concentration setpoint.
- **Alarm Delay Potentiometer:** Used for adjusting alarm delay time.
- **Temperature Compensation Probe terminals:** Used with temperature compensating probe only.
- **Temp Comp ENABLE jumper:** Use when temperature compensating probe is used.
- **Temp Comp DISABLE:** Used when temperature compensating probe is NOT used.
- **Feed Limit Switch:** Used to limit feed after DELAY time has expired.
- **Pulse Feed Switch:** Used to enable pulse feed feature.
- **Buzzer Volume Switch:** Used to control buzzer volume.
- **Concentration Range Switch:** Used for sensing a high or low concentration amount.

## **CONTROL SECTION**

- (1) The KIC-140 includes a two-terminal connector for a temperature compensation probe. When used, the KIC-140 will compensate for drifts in normal operating temperature (120°F to 160°F). A jumper on the board labeled TEMP COMP is placed in the ENABLE position to notify the KIC-140 that a temperature compensation probe is being used. The jumper must be placed in the DISABLE position if using a conventional probe.
- (2) The KIC-140 features both pulse and constant feed modes. When the control's concentration setpoint is far below actual tank concentration, the feed mode will be continuous. A switch on the circuit board labeled PULSE FEED determines whether the pulse feed is active or inactive. As desired concentration comes closer to the setpoint, the control will automatically switch to the selected mode. This feed mode (pulse or continuous) will continue until desired concentration is achieved. When the washtank's concentration level becomes diluted slightly below the desired setpoint, the selected feed mode will activate to restore concentration.
- (3) The KIC-140 circuit board includes a switch labeled CONC RANGE for those applications where a titration setting higher than normal is required. The LO switch setting is sufficient for typical warewash applications. Placing the switch in the HI setting allows the board to control higher concentration amounts.
- (4) Activate the KIC-140 electronic controller and adjust the concentration control potentiometer up (clockwise) until the "FEED" light comes "on". Turn the pot back slightly (counter-clockwise) until the light shuts "off". Check concentration with titration test kit and adjust concentration level as necessary. The "POWER" light remains "on" as long as the unit is in operation.
- (5) The KIC-140 has a 24 to 360 second adjustable potentiometer labeled DELAY for low supply warning. For machines with a short cycle time, the alarm delay can be reduced by turning the pot in a counter-clockwise direction. During feed, the "FEED" light and the feed device (pump or solenoid) will activate. Should the concentration level in the tank not be satisfied within the time set on the adjustable delay pot, the "ALARM" light will blink and the micro buzzer will sound intermittently. The feed mode will remain the same. If a second time period, equal to the first delay time period, is reached without desired concentration being achieved, the feed will be limited. The "FEED" light will be off, the feed device (pump or solenoid) will be deactivated, and the "ALARM" light and alarm will switch from an intermittent to a continuous mode.
- (6) The KIC-140 circuit board includes a switch labeled FEED LIMIT which limits the feed as described above. If continued feed is desired, move the switch to the "off" position, and feed will continue even after the delay time has expired.
- (7) The KIC-140 circuit board includes a switch labeled BUZZER VOLUME which decreases the volume of the buzzer. Moving the switch to the LO position will provide sufficient notice to operational personnel in those circumstances where high buzzer volume is not desired.

# WIRING DIAGRAM



KIC-WIRDIAG/060401

## IMPORTANT NOTES

- 1) WIRING AS SHOWN IS FOR 115 VAC MAIN POWER. FOR 230 VAC MAIN POWER, USE THE WHITE AND ORANGE WIRES ON THE XFMR.
- 2) USING 230 VAC MAIN POWER REQUIRES A 230 VAC PUMP MOTOR (IF USED).

---

## **DISCLAIMER**

Knight Inc. does not accept responsibility for the mishandling, misuse, or non-performance of the described items when used for purposes other than those specified in the instructions. For hazardous materials information consult label, MSDS, or Knight Inc.

## **WARRANTY**

All Knight controls and pump systems are warranted against defects in material and workmanship for a period of ONE year. All electronic control boards have a TWO year warranty. Warranty applies only to the replacement or repair of such parts when returned to factory with a Knight Return Authorization (KRA) number, freight prepaid, and found to be defective upon factory authorized inspection. Bearings and pump seals or rubber and synthetic rubber parts such as "O" rings, diaphragms, squeeze tubing, and gaskets are considered expendable and are not covered under warranty. Warranty does not cover liability resulting from performance of this equipment nor the labor to replace this equipment. Product abuse or misuse voids warranty.

### ***KNIGHT INC.*** A Unit of IDEX Corporation

World Headquarters:  
20531 Crescent Bay Dr.  
Lake Forest, CA  
92630-8825 USA  
TEL: (949) 595-4800  
FAX: (949) 595-4801

Atlanta Branch:  
8111 Technology Dr. NE  
Covington, GA  
30014 USA  
TEL: (770) 787-9400  
FAX: (770) 787-1155

Toronto Branch:  
2880 Argentia Road, Unit 6  
Mississauga, Ontario  
LSN 7X8 Canada  
TEL: (905) 542-2333  
FAX: (905) 542-1536

London Branch:  
#15 Brunel Centre  
Newton Road, Crawley  
West Sussex UK RH102UB  
TEL: (44) 1293-615570  
FAX: (44) 1293-615585

Sydney Branch:  
Unit 28, 317-321  
Woodpark Rd., Smithfield  
NSW Australia 2164  
TEL: 61-29-725-2588  
FAX: 61-29-725-2025

Amsterdam Branch:  
Marssteden 68  
7547 TD Enschede  
The Netherlands  
TEL: 31-53-428-58-00  
FAX: 31-53-428-58-09