



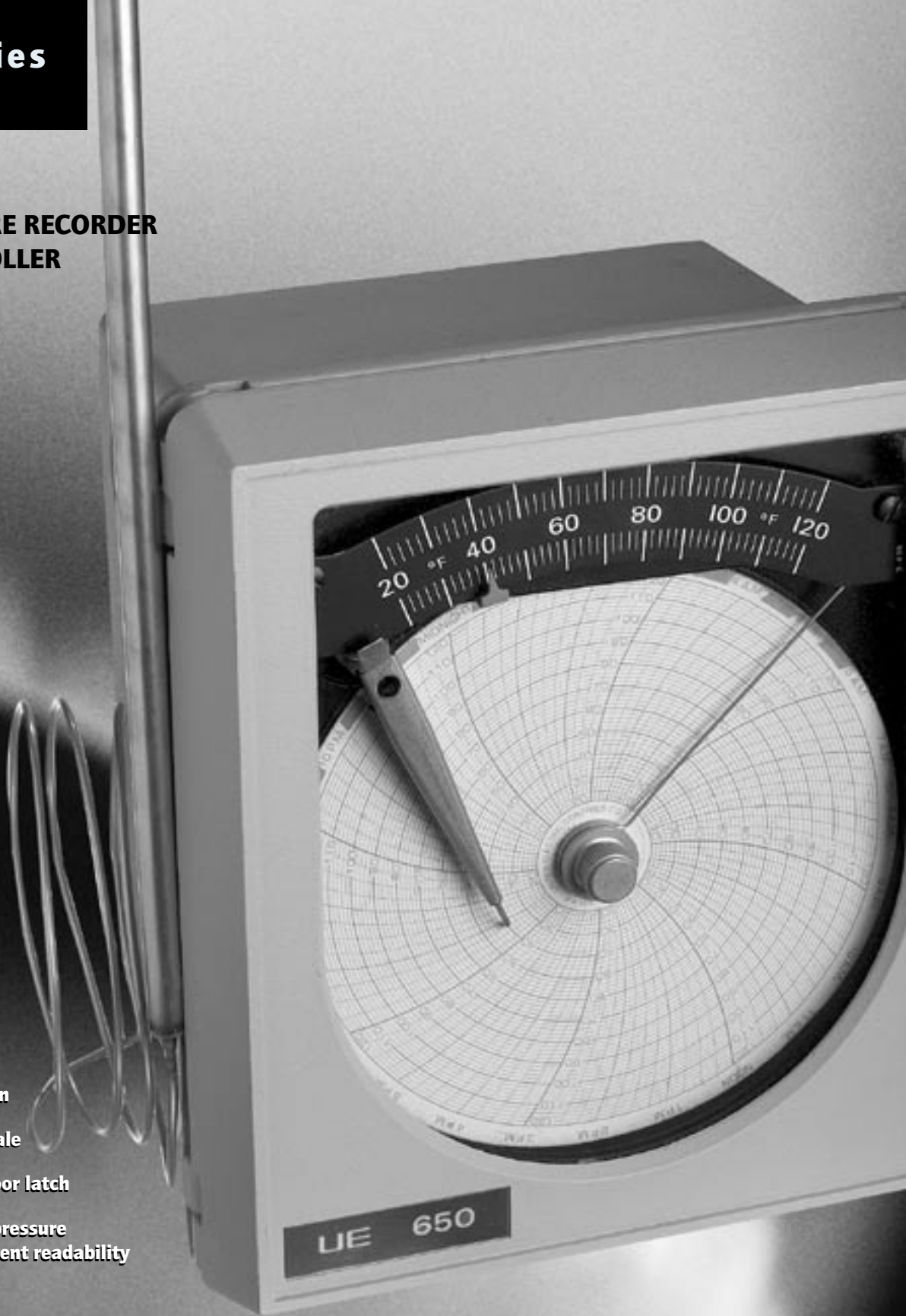
650 Series

650 Series

**TEMPERATURE RECORDER
AND CONTROLLER**

FEATURES

- 7 day or 24-hour rotation
- Single or dual SPDT outputs
- Recording thermometer version
- $\pm 1\%$ process and set point scale
- Positive action push-button door latch
- Single pen inkless writing on pressure sensitive chart provides excellent readability
- Die cast aluminum enclosure
- "Swing-out" chart plate for simplified wiring and calibrating





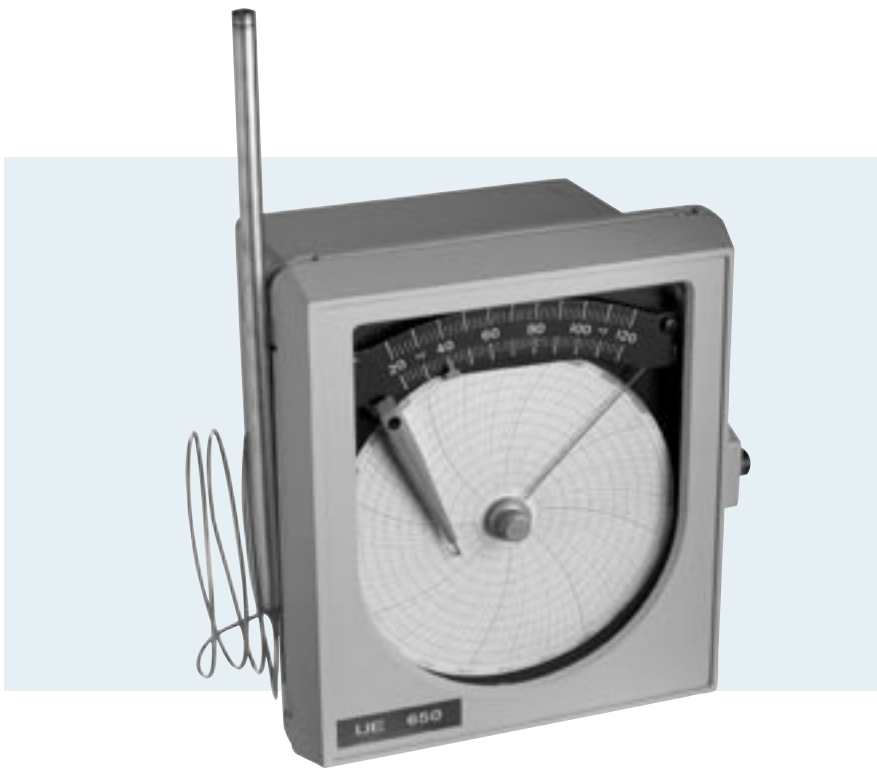
650 Series

650 Series

OVERVIEW

The 650 Recorder/Controller has set the standard for many years in applications such as sterilizers, blood storage equipment and other critical areas.

Providing an outstanding combination of temperature control, set point/process indication and alarm and recording within one compact, rugged, cast aluminum enclosure, the 650 Series is designed for cost and space savings. Its recording mechanism ensures that min/max readings are captured even on power-loss.



FEATURES

- 7 day or 24-hour rotation
- Single or dual SPDT outputs
- Recording thermometer version
- $\pm 1\%$ process and set point scale
- Positive action push-button door latch
- Single pen inkless writing on pressure sensitive chart provides excellent readability
- Die cast aluminum enclosure
- "Swing-out" chart plate for simplified wiring and calibrating

SPECIFICATIONS

STORAGE TEMPERATURE	-65 to 160°F (-54 to 71°C)
CHART DRIVE	115 VAC 60 Hz, 1 rotation per 24 hours (optional 7-day)
CHART	6" diameter; recorder trace is black over red printed charts (inkless); high end of range at outer diameter of chart except model 1BSR which is reverse reading
PEN STYLE	Ground sapphire tip; single pen only; push to lift pen
PROCESS SET POINT SCALE	± 1% of range
RECORDING ACCURACY	± 1% of range
ENCLOSURE CLASSIFICATION	Complies with NEMA 1 requirements
SET POINT REPEATABILITY	± 1% of adjustable range
SWITCH OUTPUT	One or two SPDT; dual switches may be separated up to 100% of range; switches may be wired "normally open" or "normally closed"
ELECTRICAL RATING	15 A 125/250 VAC resistive
ENCLOSURE	Die cast aluminum with glass window and door latch, light grey baked enamel finish
WEIGHT	Approximately 8 1/4 lbs.
ELECTRICAL CONNECTIONS	Two 1 3/32" knockouts and one 7/8" diameter knockout
BULB AND CAPILLARY	4 ft. 304 stainless steel; Model S18BC: Copper
TEMPERATURE FILL	Model 1BSR: solvent; Models 2-8BS: non-toxic oil; Models S18BC, S18BS: designed for full stroke, high cycle service (eg. sterilizers); consult factory on service life
MOUNTING	Counter-bored holes for panel mount on flanged enclosure front, three mounting ears provided for surface mounting (optional). See dimensional drawings for details.

APPROVALS



UL 873 listed, File # E10667



CSA certified C22.2 no. 24, File # LR7814



CE Compliance to Low Voltage Directive (LVD)



650 Series

650 Series

MODEL CHART

Model	Adjustable Set Point Range		Max. Temp.		Scale Div.		Chart Div.		Bulb Size
	°F	°C	°F	°C	°F	°C	°F	°C	OD x Length (inches)

4 ft. 304 stainless steel bulb and capillary

1BSR*	-180 to 120	-115 to 50	170	75	5	5	5	5	3/8 x 3 3/4
2BS	-125 to 350	-85 to 175	400	200	10	5	10	5	3/8 x 2 5/8
3BS	-125 to 500	-85 to 260	550	285	10	10	10	10	3/8 x 2 1/8
16BS	-20 to 100	-30 to 40	150	65	2	1	2	1	3/8 x 8 1/2
14BS	20 to 120	-5 to 50	170	75	2	1	2	1	3/8 x 10 1/4
6BS	0 to 250	-20 to 120	300	145	5	2	5	2	3/8 x 4 1/2
7BS	0 to 400	-20 to 200	450	230	10	5	10	5	3/8 x 3
8BS	50 to 650	10 to 340	700	370	10	10	10	10	3/8 x 3 1/4
S18BS**	160 to 280	70 to 135	330	165	2	1	2	1	3/8 x 6 3/8

Copper bulb and capillary

S18BC**	160 to 280	70 to 135	330	165	2	1	2	1	3/8 x 6 1/2
---------	------------	-----------	-----	-----	---	---	---	---	-------------

*Reverse reading: low temperature limit at outer portion of chart.

**Models S18BS and S18BC not available with type T650.

HOW TO ORDER

BUILDING A PART NUMBER

Select a type

Refer to the "Type" section below
Determine type number based on switch output, enclosure, adjustment and reference.

Fill in the type portion of your part number with the corresponding number.

Select a Model

Refer to the "Model Charts"
Determine model or stock number based on adjustable range and capillary material.

Fill in the model portion of your part number with the corresponding number.

Select an Option

Refer to the "Options" section
Determine option number based on switch output, optional materials or other product enhancements.

Fill in the option portion of your part number with the corresponding number. Leave "option" portion a blank if no options are needed.

FOR MULTIPLE OPTIONS: Call United Electric Controls.

TYPE	DESCRIPTION
650	One SPDT output
652	Two SPDT outputs
T650	Recording only with process indicator

RECORDER OPTIONS

M002	60Hz 115 VAC 7 day chart drive. NOT AVAILABLE MODELS 3BS, S18BS & S18BC
M002C	60Hz 115 VAC 7 day chart drive with Celsius indication. NOT AVAILABLE MODELS S18BS & S18BC
M003C	50 Hz 115 VAC 7 day chart drive with Celsius indication. NOT AVAILABLE MODEL S18BS & S18BC
M005	50 Hz 230 VAC 24 hr. chart drive

SWITCH OPTIONS

0500	Close deadband, 5 A 125/250 VAC resistive
------	---

GENERAL OPTIONS

M201	Factory set one switch; specify increasing or decreasing temperature and set point. NOT AVAILABLE ON TYPES T650, T652
M202	Factory set two switches; specify increasing or decreasing temperature and set point. NOT AVAILABLE ON TYPES 650, T650
M270	Celsius indication for standard 60 Hz 115 VAC 24 hr. models. Not required when specifying option codes with "C" suffix
M444	Paper ID tag
M446	Stainless steel ID tag & wire attachment
M900	Threaded conduit fitting; converts 7/8" hole to 1/2" NPT female fitting

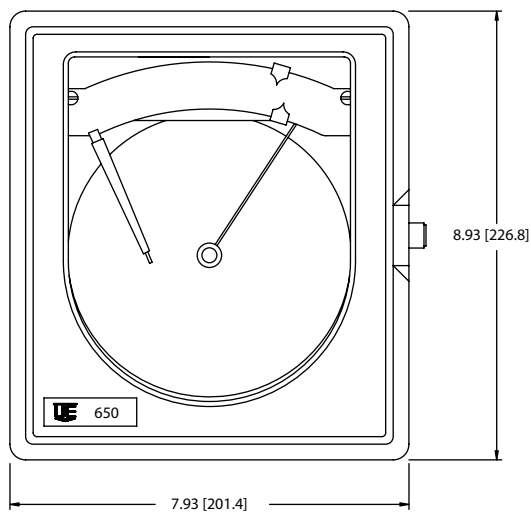
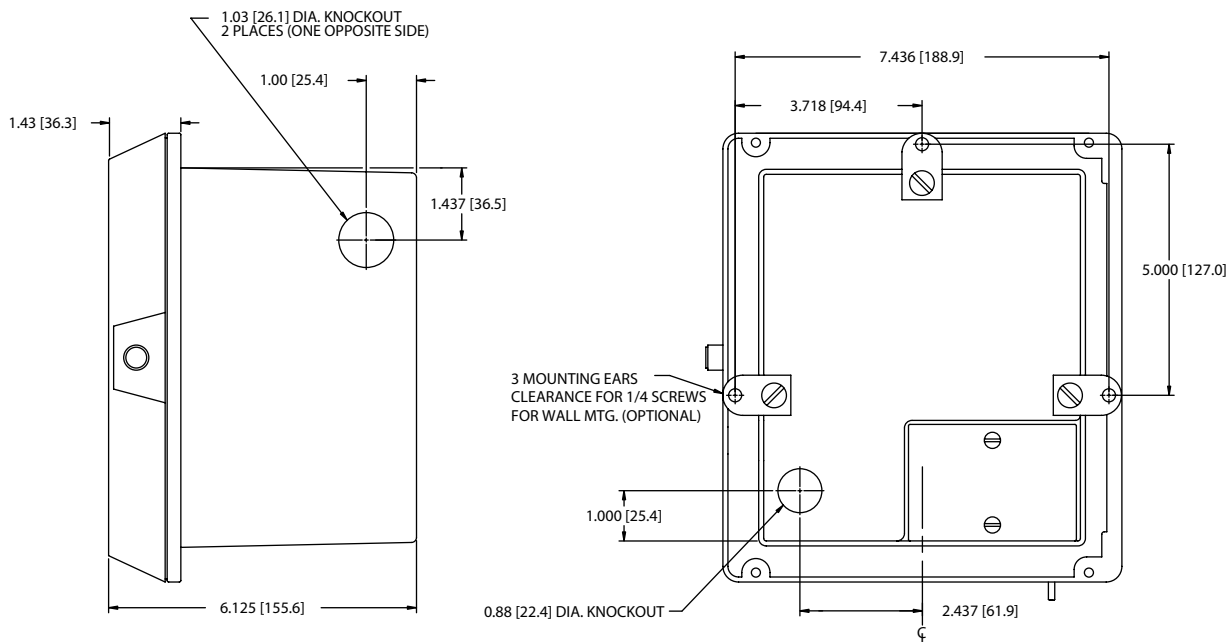


650 Series

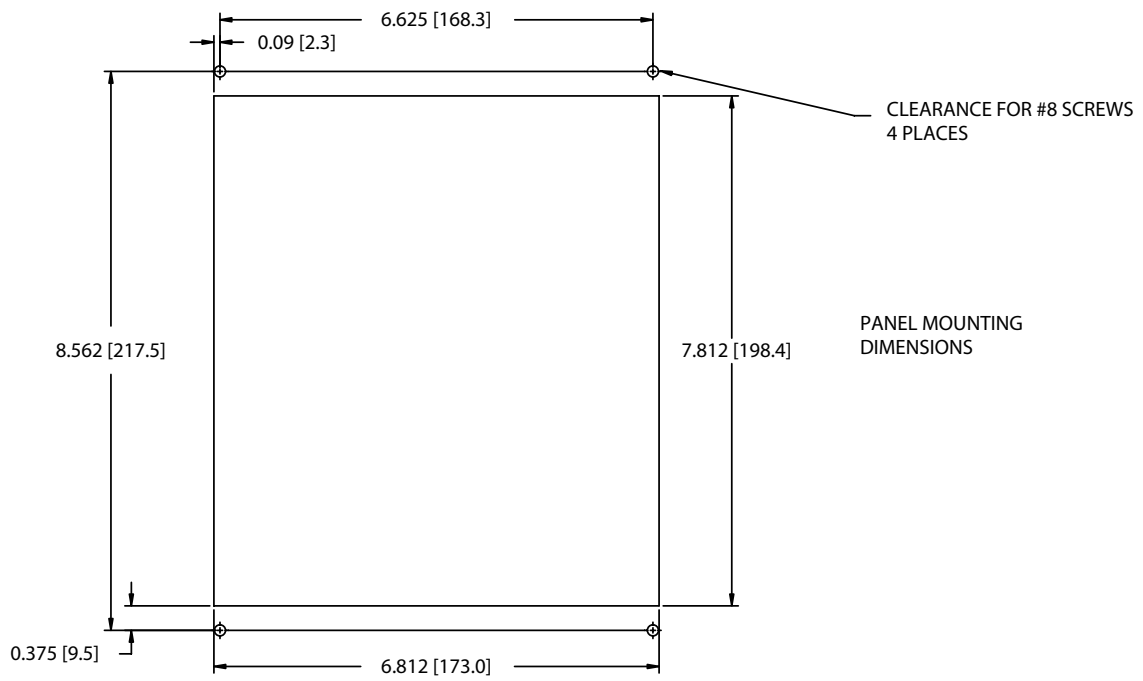
650 Series

DIMENSIONAL DRAWINGS

All dimensions stated in inches (millimeters)



650 Series



RECOMMENDED PRACTICES AND WARNINGS

United Electric Controls Company recommends careful consideration of the following factors when specifying and installing UE pressure and temperature units. Before installing a unit, the Installation and Maintenance instructions provided with unit must be read and understood.

- To avoid damaging unit, proof pressure and maximum temperature limits stated in literature and on nameplates must never be exceeded, even by surges in the system. Operation of the unit up to maximum temperature is acceptable on a limited basis (i.e., start-up, testing) but continuous operation must be restricted to the designated adjustable range. Excessive cycling at maximum temperature limits could reduce sensor life.
- A back-up unit is necessary for applications where damage to a primary unit could endanger life, limb or property. A high or low limit switch is necessary for applications where a dangerous runaway condition could result.
- The adjustable range must be selected so that incorrect, inadvertent or malicious setting at any range point cannot result in an unsafe system condition.
- Install unit where shock, vibration and ambient temperature fluctuations will not damage unit or affect operation. Orient unit so that moisture does not enter the enclosure via the electrical connection. When appropriate, this entry point should be sealed to prevent moisture entry.
- Unit must not be altered or modified after shipment. Consult UE if modification is necessary.
- Monitor operation to observe warning signs of possible damage to unit, such as drift in set point or faulty display. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.
- For all applications, a factory set unit should be tested before use.
- Electrical ratings stated in literature and on nameplate must not be exceeded. Overload on a switch can cause damage, even on the first cycle. Wire unit according to local and national electrical codes, using wire size recommended in installation sheet.
- Use only factory authorized replacement parts and procedures.
- Do not mount unit in ambient temp. exceeding published limits.

LIMITED WARRANTY OF REPAIR AND REPLACEMENT

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (F.O.B. UE Watertown); provided, however, that this warranty applies only to equipment found to be so defective within a period of 18 months from the date of manufacture by the Seller (36 months for the Spectra 12 and One Series products). Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where products are disassembled by anyone other than authorized Seller's representatives.

EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIABILITY LIMITATION

SELLER'S LIABILITY TO BUYER FOR ANY LOSS OR CLAIM, INCLUDING LIABILITY INCURRED IN CONNECTION WITH (I) BREACH OF ANY WARRANTY WHATSOEVER EXPRESSED OR IMPLIED, (II) A BREACH OF CONTRACT, (III) A NEGLIGENT ACT OR ACTS (OR NEGLIGENT FAILURE TO ACT) COMMITTED BY SELLER, OR (IV) AN ACT FOR WHICH STRICT LIABILITY WILL BE IMPUTED TO SELLER, IS LIMITED TO THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED HEREIN. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR OTHER DAMAGES OF A LIKE GENERAL NATURE, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS OR PRODUCTION, OR LOSS OR EXPENSES OF ANY NATURE INCURRED BY THE BUYER OR ANY THIRD PARTY.

UE specifications subject to change without notice.

U.S. SALES OFFICES

United Electric Controls
32 Highland Rd.
South Hampton, NH 03827
Phone: 603-394-0078
FAX: 603-394-0175

United Electric Controls
28 N. Wise Ave.
Freeport, IL 61032
Phone: 815-235-3501
FAX: 815-235-3847

United Electric Controls
1022 Vineyard Drive
Conyers, GA 30013
Phone: 770-483-8400
FAX: 770-929-8716

United Electric Controls
5829 Grazing Court
Mason, OH 45040
Phone: 513-398-3175
FAX: 513-398-3076

United Electric Controls
19335 Hadley
Stilwell, KS 66085
Phone: 913-685-2775
FAX: 913-685-2774

United Electric Controls
1753 Beach Street
San Francisco, CA 94123
Phone: 415-563-5811
FAX: 415-563-5909

INTERNATIONAL OFFICES

AUSTRALIA
United Electric Controls
(Australia) PTY Ltd
Unit 2, 615 Warrigal Road
Locked Bag 600
Ashburton, Victoria
3147, Australia
Phone: 613-9567-0750
FAX: 613-9567-0755

BELGIUM
United Electric Controls-Europe
G. Van Gervenstraat 19A
B-9120 Beveren-Waas, Belgium
Phone: 32-37554-383
FAX: 32-37552-747

CANADA
United Electric Controls
(Canada) Ltd
5320 Bradco Boulevard
Mississauga, Ontario
L4W 1G7 Canada
Phone: 905-625-5082
FAX: 905-625-5709

GERMANY
United Electric Controls
An Der Zentlinde 21
D-64711 Erbach, Germany
Phone: 496-062-7400
FAX: 496-062-7501

INDIA
United Electric Controls
Amar Hill, Saki Vihar Road
Powai, Mumbai 400 072
Phone: 91-22-857-6921
FAX: 91-22-857-1707

MALAYSIA
United Electric Controls, Far East
No. 1-2-2, 2nd Floor
Jalan 4/101C
Cheras Business Centre
Batu 5, Jalan Cheras
56100 Kuala Lumpur, Malaysia
Phone: 603-9133-4122
FAX: 603-9133-4155

MEXICO
United Electric Controls
Chihuahua 129-1 NTE
Unidad Nacional 89410
Madero, TAM
Mexico
Phone: 52-833-210-0646
FAX: 52-833-210-5761



UNITED ELECTRIC
CONTROLS

180 Dexter Avenue, P.O. Box 9143
Watertown, MA 02471-9143 USA
Telephone: 617 926-1000 Fax: 617 926-2568
<http://www.ueonline.com>

EMC050001201

Uncontrolled if printed