

ANNUNCIATOR

SEPTEMBER 1997



SARNIA



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Editor's Notes

ADVERTISERS: Please note that the deadline for the NOVEMBER ANNUNCIATOR is October 15, 1997. Please forward information to the editor by that date in order to have items updated.

THE DINNER MEETINGS FOR THE 1997/98 SEASON WILL BE HELD AT THE SARNIA GOLF AND CURLING CLUB

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Upcoming Executive Meetings

October 27, 1997

April 27, 1998

February 23, 1998

June 29, 1998

All regular meetings will be held at 7:00 p.m. at the Sarnia Golf & Curling Club

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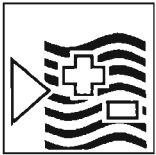
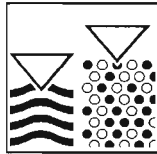
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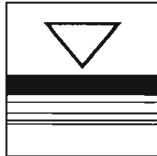
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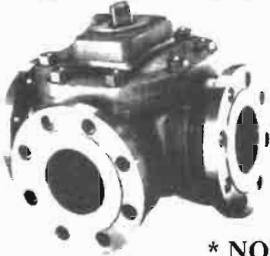
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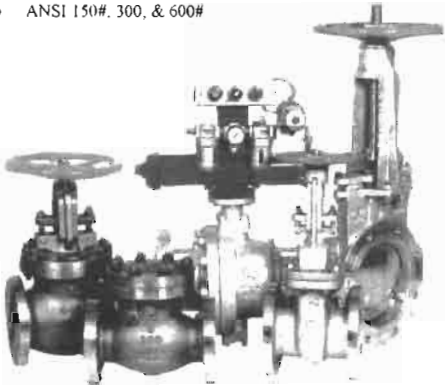
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Incoming President's Message

I am very honoured to have the opportunity to serve as the President of the Sarnia Chapter of the ISA for the coming year. I am confident that the support of the executive group we will be able to successfully serve the membership.

I would like to recognize our outgoing President, Randy Dennie, for the superb job he has done in the past year. I will continue to look for his guidance during the coming year. Unfortunately several members of the previous executive have moved on. These members are Bob Kelly, Dave Gooch, Chuck Douglas, Frank Baugh, and Bill Arundell. The personal commitment of time and effort that these people have given to the Sarnia ISA has been outstanding and the standards that they have set will be a challenge to maintain.

We will be continuing the efforts to increase the Sarnia ISA active membership. Plans are underway to initiate a membership drive to pursue new and old members. Our dinner meetings will be held at the Sarnia Golf and Curling Club and the Program that we have confirmed to date will be focused on providing information on the most recent developments in measurement and controls.

The education committee is finalizing the upcoming education program for our members and we will announce this in the coming weeks.

I would welcome any suggestions and opportunities to meet with our members. I hope this will be an exciting and productive year.

Regards,

Andy Tucker, *President*

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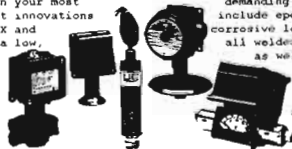
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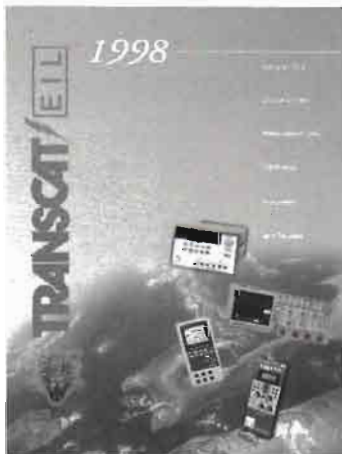
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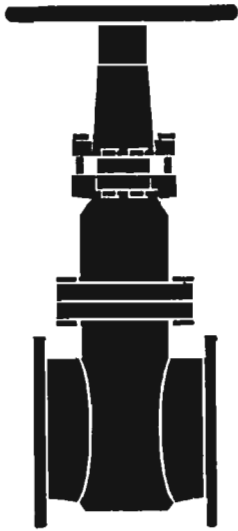
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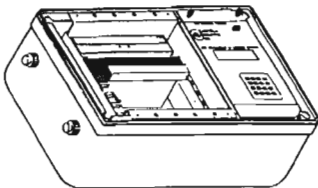
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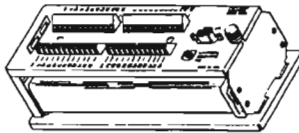


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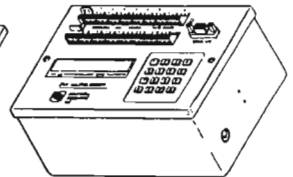
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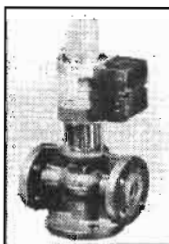
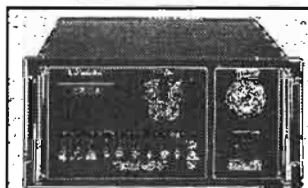
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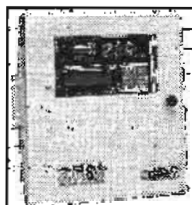


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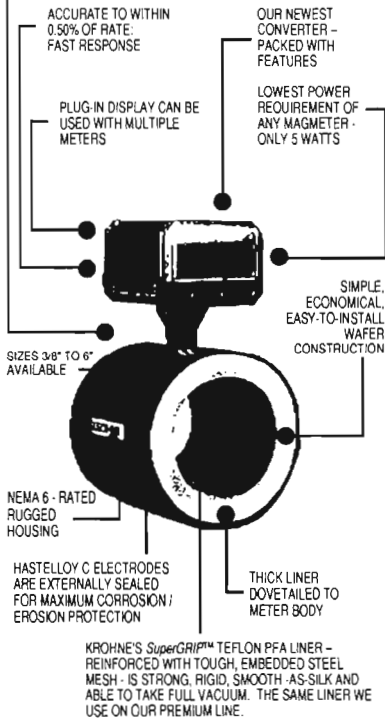
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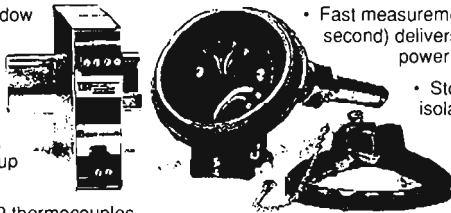
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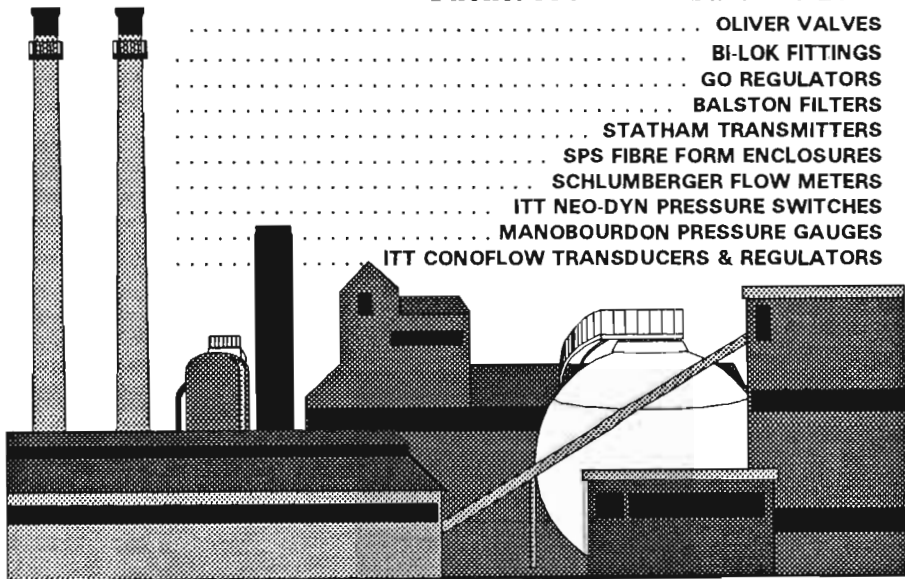
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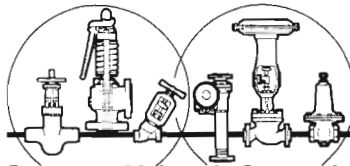
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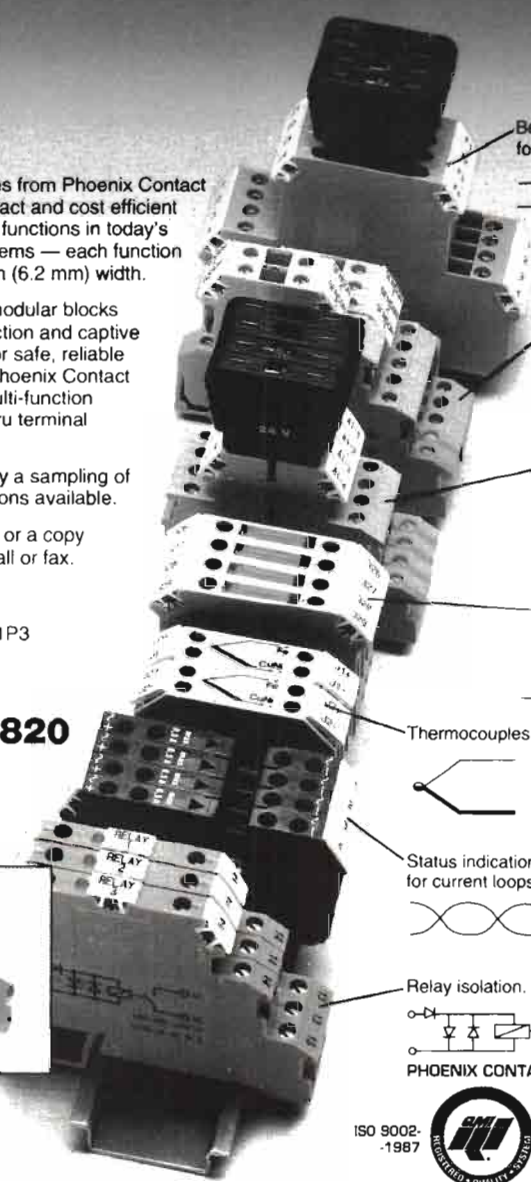
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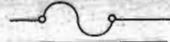
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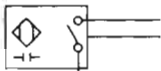
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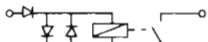
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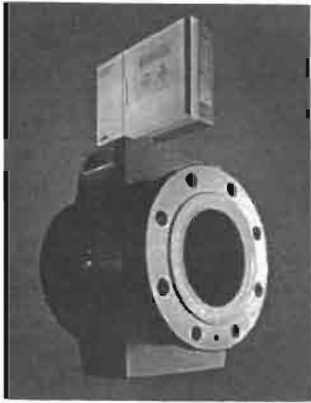
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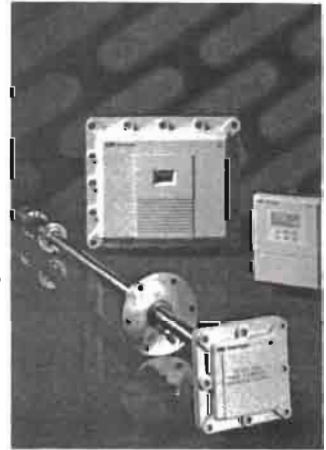
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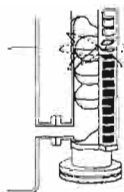


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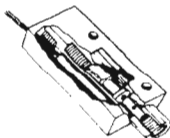
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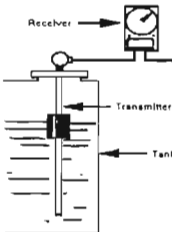
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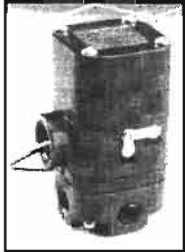
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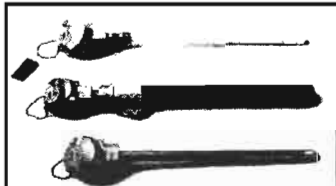
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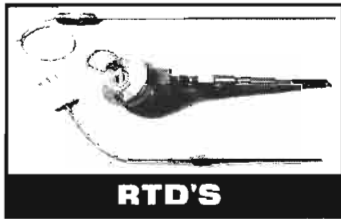
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Magnetic Level Gauges

Magnetic level gauges may be used for applications where a level gauge glass may be unsafe, an environmental risk or to increase the visibility of the level indication. High pressures, high and low temperatures, toxic and corrosive services can be risky applications for level gauge glasses. Some chemical services can attack the glass material causing breakage or discoloration. Liquid-liquid Interfaces can be very difficult to read in a gauge glass. Magnetic level gauges can also be fitted with level switches and transmitters.

Selecting a magnetic level gauge needs to be done carefully, because there are a number of problems that can develop. After installing a variety of brands of magnetic level gauges a local plant developed some undesirable experiences. The basic problem was incorrect level indication during process upsets and rapid changes in liquid level.

Magnetic level gauges utilize a float that contains one or more magnets. As the float rises and falls its magnetic field passes up and down the level column. The level indicator follows the magnetic field. There are two general types of indicators used. The bullet type is a single point indicator that travels up and down a tubular guide while being attracted by the float magnet. The flag type is a strip of many small colored flags which rotate when the float magnet passes them as shown in Figure 1. If the magnetic attraction between the float magnet and indicator is broken or incorrect, the level reading will be false. This sounds like a simple principle but false readings can easily occur. The strength of the magnetic attraction must be kept high during all situations. Generally, floats have one strong magnet or a number of magnets to provide a strong magnetic field in all horizontal directions. The magnetic field must also remain strong when exposed to high temperatures and may require special high temperature magnets.

Operating Principles

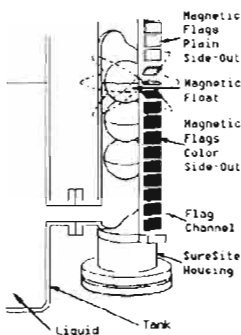


Figure 1

Profile View

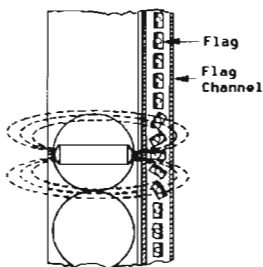


Figure 2

Flag Channel Assembly (Partial Close-up)

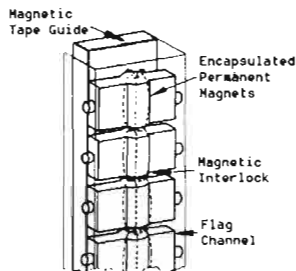


Figure 3

Flag type indicators need to be designed to only have one area where the flags are turning colors as shown in Figure 2. This should be where the float is. Flags should all be the same color below the float magnet. Red, orange and yellow are highly visible colors that are often used. Fluorescent colors are best, especially for reading in the dark with a flashlight. There are a number of methods used to keep the flags from turning back when they are not supposed to, as shown in Figure 3. Some indicators have magnets in each flag or mechanical tabs to hold the flags in position when exposed to vibration or bouncing floats. Test a sample unit by moving the float rapidly up and down the chamber. If the indicator needs to be corrected an external magnet can be used to position the indicator back to where it should be. A compass can be used to locate the float magnet when there is a question about its location.

(Continued on Page 47)

The indicator should cover the entire measurement height. The case may be hermetically sealed to avoid contamination. It is usually a casing with a window which holds the flags or a clear plastic tube for bullet indicators. Individual flags pivot on small shafts. It is best that all parts are made of the same materials, preferably stainless steel for high temperatures and to avoid corrosion and to avoid binding due to different rates of thermal expansion. Some flag indicators are made up of multiple interconnecting sections to allow easy repair without replacing the entire indicator. Indicating scales may be used to provide accurate indication in various measurement units and percentage.

The column contains the process fluid and float. Check that the float is designed for a minimum specific gravity that suits your application. If specific gravity varies ask the supplier to provide an estimate of the float heights at the minimum, normal and maximum specific gravities. This will show how much error may be caused by the specific gravity changes.

There are many process connections and orientations available. The bottom of the chamber must be able to be opened to allow removal of the float. Top and bottom flanges may be used in dirty applications to provide access for cleaning. Each flanged connection should include a shock spring attached to the blind mating flange. This spring protects the float from damage during rapid movements. Drain and vent valves should also be installed by the supplier or user. Full bore gate valves, per piping specifications, are preferred. ANSI/ASME B31.1 or B31.3 construction may be requested to meet plant piping standards. The column must be made from non-magnetic materials such as 316 Stainless Steel, Monel, Carpenter 20 (Alloy 20), Inconel and Copper-Nickel. Schedule 40 pipe is preferred for strength. NACE construction may also be required for corrosion resistance. The level column should also have a Canadian Registration Number (CRN).

Most suppliers provide accessories such as transmitters and level switches that operate from the float magnet. Check if there are any restrictions in the mounting positions of these accessories. Transmitter sensors are usually magnetorestrictive or resistive. The resistive units operate by closing reed switches across fixed resistors. The total resistance represents the liquid level and is transmitted as a 4-20 mA signal. The resistive units signals are incremental based on the length of each resistor. The incremental steps in output may cause bumps in level control loops. Request that all electronic circuit boards are epoxy coated to military specs to prevent moisture and corrosion problems. All transmitters and switches should be certified by Canadian Standards Association (CSA) for the electrical classification they are to be installed in.

Some manufacturers provide flexible insulation for the chamber, as an option. This option allows easy removal for maintenance access.

Magnetic level gauge manufacturers Websites:

IMO Gems Sensors at: <http://imo-industries.com/html/gems-sensors.html>

Jerguson at: <http://www.clark-reliance.com/jerguson.html>

Krohne: <http://www.krohne.com>

K-Tek Corporation at: <http://www.ktekcorp.com>

Magnetrol <http://www.magnetrol.com>

For a list of manufacturers of Magnetic Level Gauges, check the ISA Directory of Instrumentation book or Internet at: <http://www.isa.org/directory/>

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ISA Sarnia Section “Dinner Meeting Notice”

Monday, September 29, 1997

Sarnia Golf & Curling Club

500 Errol Road West, Sarnia

Phone: (519) 336-2201

Cocktails 6:00 p.m. Dinner 7:00 p.m.

All Guests are Welcome!



GUEST SPEAKER

Rob Riley, DEVICE NET

Topic: WHAT IS DEVICE NET 3?

DEVICE NET... is an open, global industry-standard communication network designed to provide an interface through a single cable from a programmable controller directly to “smart” devices.

M • E • N • U

Back Ribs

Tossed Salad

Scalloped Potatoes,
Yellow & Green Beans

Cherry Cheesecake



** For special dietary needs contact Hilda White at the Sarnia Golf and Curling Club 48 hours prior to meeting date.*

NOTE: KINDLY BOOK BEFORE DEADLINE INDICATION

Please phone in your reservation by Thursday, September 25

to either Gayle at Provincial Controls... 336-7301

or Maureen at Willer Engineering... 336-3006

Members \$10 • Guests \$15

Note: ALL Members and guests are requested to reserve in advance. Please oblige... we need your support to plan your evening!

			LINE PROCESS CONTROLS

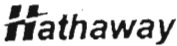
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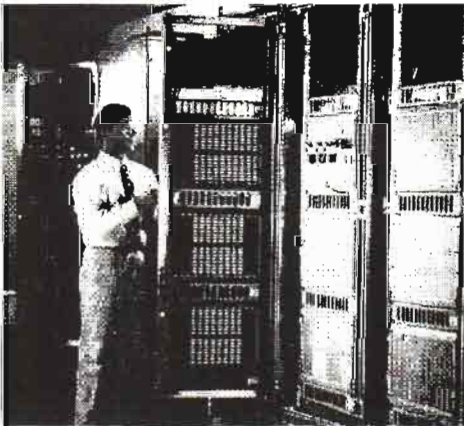


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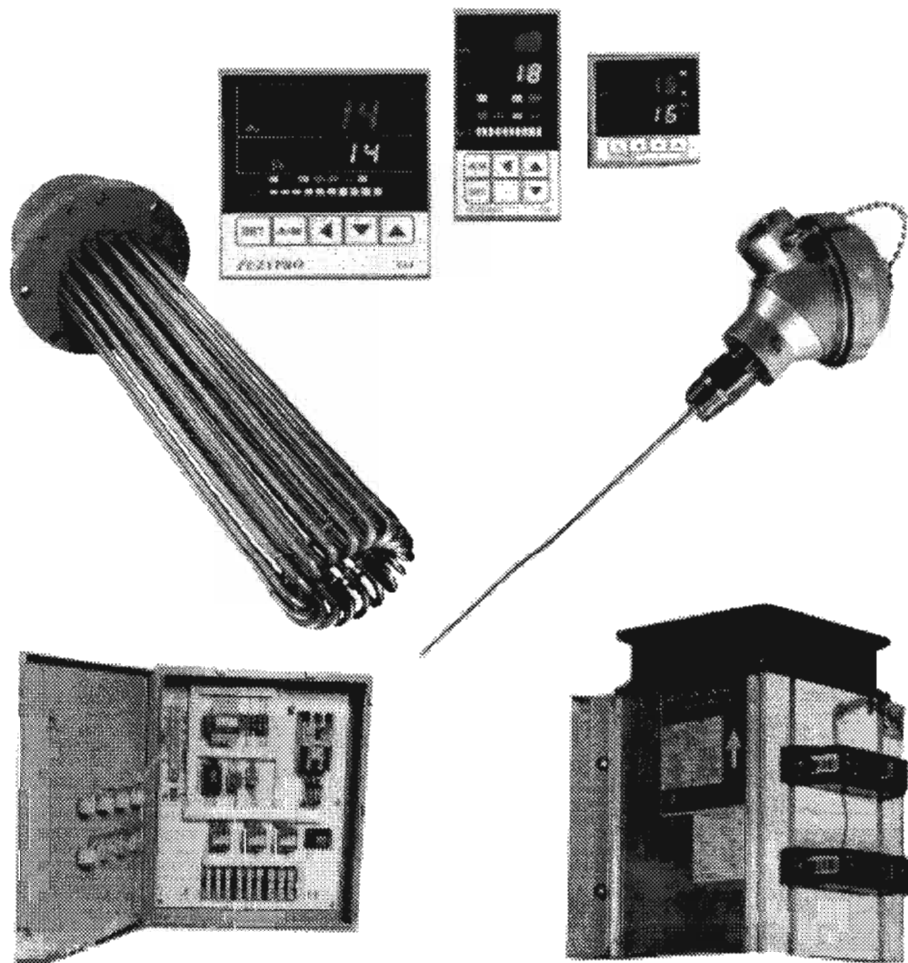
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NEW ISA GROUP INTERNET RATES

Our group account at Electro-Byte is finished. They do have a \$10/month for 10 hours with \$2/hour overcharge. Accounts are 3 months prepaid. A new Sarnia Industrial Professionals Group account is now in effect at Xcelco. This group includes all ISA members and others. There are a number of packages available. See below.

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 ICS - Industrial Computing Society
 PMAC - Purchasing Management Association of Canada
 IEEE - The Institute Of Electrical And Electronics Engineers Inc
 OACETT - Ontario Association of Certified Engineering Technicians and Technologists

ISA - Instrument Society of America
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(Continued on page 65)

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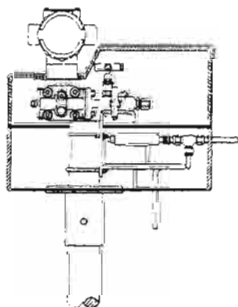


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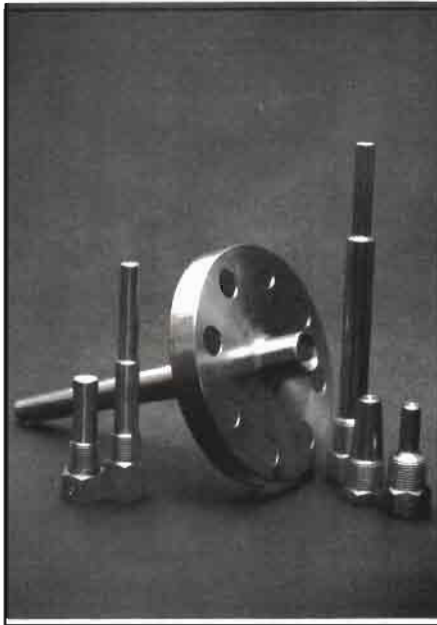
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 Badger Meter
 Bailey
 Bailey/Fischer & Porter
 Baldwin Environmental Inc.
 Balluff
 Balston Filters
 Barber Eng.
 Barber-Colman
 Barksdale
 Barnant
 Barnant
 Barton
 Baumann
 Beacon Electronics
 Beames
 Bebcos Industries
 Beede
 Beha
 BEI
 Bellofram
 Benedict Computer
 Benke
 Bestobell Steam, Div. of Richards Ind.
 Bestobell Valves
 Beta
 Beta
 Biccotest
 Biddle
 Biddle/Avo
 Bi-Lok Fittings
 Binmaster
 Bin-Master
 BJM
 BLH Electronics
 Bodenseewerk/Perkin Elmer
 Boiler-Gard
 Bomem
 Bourdon-Sedeme (Manobourdon) Gauges
 Brandt
 Bristol Babcock
 Brooklyn Thermometer
 Brooks
 Brown & Sharpe
 Brultech
 BS & B
 BTG Inc.
 BTG Polymetron
 Burkert
 Burkert
 BW
 Cajon Pipe Fittings
 Cal
 Calculated Instrumnets
 California Analytical
 Canadian Meter
 Can-Ross
 Cantech Systems
 Carle Chromatography
 Carlo Gavazzi
 Cash-Acme
 Cashco Canada, Inc.
 Cashco Canada, Inc.
 Castell Interlocks
 Cel Instruments
 Cellex
 Cellex
 Celtek Electronics
 Cemco
 Centre Line
 Century Instrument
 Century Valve
 Cerabar
 CEWE

Local Sales Representative

Transcat
 Transcat
 Transcat
 Floval Equipment Ltd.
 Ovantum Sales Inc.
 Transcat
 Great Lakes Industrial Controls
 J & M Engineering & Sales Ltd.
 Summit Controls Ltd.
 Tubetech Ltd.
 Tubetech Ltd.
 Novatech
 Davis Controls
 Sarnia Piping Specialties
 Ovantum Sales Inc.
 Davis Controls
 Tubetech Ltd.
 Heaters Controls & Sensors Ltd.
 Transcat
 Armatek Controls
 Lakeside Process Controls
 R.A. Kirby Sales Inc.
 Transcat
 Cantrols
 Transcat
 Transcat
 Willer Engineering
 Romatec
 Transcat
 Westech Industrial Ltd.
 BEP Bestobell Canada Ltd.
 BEP Bestobell Canada Ltd.
 Armatek Controls
 Transcat
 Transcat
 Transcat
 Sarnia Piping Specialties
 Cancoppas Limited
 Regional Process Equipment
 Transcat
 CB Engineering
 CEM Specialties Inc.
 Lisle-Matrix Ltd.
 Prosigma Analytics Inc.
 Sarnia Piping Specialties
 Willer Engineering
 Sharp Valve & Instrumentation
 Transcat
 Great Lakes Industrial Controls
 Transcat
 Transcat
 Romatec
 Summit Controls Ltd.
 Prosigma Analytics Inc.
 Ovantum Sales Inc.
 Summit Controls Ltd.
 Brian Controls
 Huron Valve & Fittings
 Davis Controls
 Transcat
 Brian Controls
 BSP Instruments
 Spec Sarnia Limited
 Cantech Controls
 R.A. Kirby Sales Inc.
 Heaters Controls & Sensors Ltd.
 Westburne Lytle
 Cambridge Controls
 Provincial Controls
 Great Lakes Industrial Controls
 Transcat
 Armatek Controls
 Spec Sarnia Limited
 Cantrols
 Cantech Controls
 Matheson Valves
 Sarnia Piping Specialties
 Brian Controls
 Endress + Hauser
 Cancoppas Limited

Manufacturer / Tradename

Chandler
Chatam Controls
Checkpoint Systems
Chemical Systems
Chemline
Chemtrol
Chemtrol
Chessel
Chessell
Clif Mock
Colder
CompuFlo III
Computer Keyboard Systems (CKS)
Conant Controls Inc.
Conant Valves
Conders
Conerstone
Conoflow ITT
Consolidated
Consolidated Controls
Con-Tek
Control Instruments Corp.
Control Microsystems
Controlair
Controlair Inc.
Cooke
Cooper Instruments
Cosa
Cosa
CRL
Crowcon
Crowcon Gas Detection
Crystal
CSI - Microloggers
Cunico
Custom Control Sensors
Cutler-Hammer
Cybex
Dahl
Danaher Controls
Danfoss
Danfoss Mfg. Co. Ltd. - Denmark
Daniel Industries
Data Industrial Corporation
Data Precision
Datacom Technologies
Datatest
Datatran
Datexel
Davenport
Dekoron
Delavan
Delphian
Delta Controls
Delta F Corporation
Deltabar
Delta-M
Deltapilot
Deltavalve
Detector Electronics (Detronics)
Devar
Devar
DewPro
Dewrance
DeZurik
DGH
Dickson
Digitec
Digitec
Digitron
Dixson
Dixson Inc.
Dopak
Dover Gas Technologies
Dow Plastic Lined Piping Products
DPL Plus
Drainall
Druck
Ducon Environmental Systems
Durakool
Dwyer

Local Sales Representative

Transcat
Heaters Controls & Sensors Ltd.
Cantech Controls
R.A. Kirby Sales Inc.
Flovat Equipment Ltd.
U & I Supply
WESCO
TubeTech Ltd.
Willer Engineering
Westburne Lytle
Davis Controls
Milltronics Limited
CB Engineering
Industrial Projects Ltd.
Provincial Controls
Transcat
Transcat
Matheson Valves
Contro Valve Inc.
Transcat
Lakeside Process Controls
Willer Engineering
Brian Controls
WESCO
Cambridge Controls
Transcat
Transcat
Brian Controls
Transcat
Cancoppas Limited
Cancoppas Limited
Regional Process Equipment
Transcat
Campbell Scientific (Canada) Corp.
BSP Instruments
Willer Engineering
WESCO
CB Engineering
Armatek Controls
J & M Engineering & Sales Ltd.
Davis Controls
Lisle-Matrix Ltd.
Cantrols
Cambridge Controls
Transcat
Transcat
R.A. Kirby Sales Inc.
Transcat
Transcat
Omnitronix
Great Lakes Industrial Controls
Armatek Controls
Romatec
CTH Industrial Controls
Prosigma Analytics Inc.
Endress + Hauser
Brian Controls
Endress + Hauser
Summit Controls Ltd.
CB Engineering
Cantech Controls
Transcat
Endress + Hauser
Contro Valve Inc.
Flovat Equipment Ltd.
Alpha Controls & Instrumentation
Transcat
Brian Controls
Durham Instruments
Transcat
Transcat
CTH Industrial Controls
Westburne Lytle
Veronics Inc.
Sarnia Piping Specialties
Milltronics Limited
Great Lakes Industrial Controls
Transcat
R.A. Kirby Sales Inc.
Davis Controls
Cantech Controls

Manufacturer / Tradename

Dwyer
Dwyer
Dwyer
Dwyer DP Gauges/Switches
Dylon
Dynamation
Dynapar
E.G. & G. Chandler
E.I.L. Instruments
Eagle Signal
EAI
Eaton IDT
ECD
EchoMax
Echotel Ultrasonic
ECOM America Ltd.
Edgetech
EG & G Berthold
EG & G Flow Technology Inc.
EIT
Elasto-Valve
Elcometer
Eldridge
Electromatic
Electromatic
EI-O-Matic
Eiremco Timers - England
Elsag Bailey
Elsag Bailey Analytical Division
EMCO
Empro Shunts
Endress + Hauser
Enerlort Shock Absorbers
Engineered Valves International (E.V.I.)
Enraf Inc.
ENU
Environmental Technologies Group Inc.
EPD Technology
Epic
Erdco
Erhard Valves - Germany
Ernst Flow & Level
ETC
Etcon
Euchner
Eurotherm
Eurotherm
Exergen
Exotherm
Expertune
Expo Safety Systems
Exttech
F.B. Leopold - USA
F.W. Bell
F.W. Murphy
Fairchild
Farris
Farris Relief Valves
FCI
Fieldview
Fike
Fike Canada Inc.
Fischer & Porter
Fischer & Porter
Fisher Controls
Fisher Reseach
Fisher Service
Fisher-Rosemount Systems
Flexibox
Flow Meter Co. - England
Flowdata Inc.
Flow-Lin
Flowline
Flowseal
Flow-Tek
Fluid Data/Amcor
Fluke
Foxboro
Foxcroft
FPP
Frontline

Local Sales Representative

Davis Controls
Hardie Industrial Services Inc.
Transcat
Provincial Controls
Great Lakes Industrial Controls
Transcat
Davis Controls
R.A. Kirby Sales Inc.
Transcat
Davis Controls
Transcat
Cantech Controls
Novatech
Milltronics Limited
Provincial Controls
R.A. Kirby Sales Inc.
Alpha Controls & Instrumentation
Westech Industrial Ltd.
CB Engineering
Novatech
WESCO
Transcat
Cancoppas Limited
Davis Controls
Heaters Controls & Sensors Ltd.
Westburne Lytle
Lisle-Metrix Ltd.
Tubetech Ltd.
Prosigma Analytics Inc.
Davis Controls
Transcat
Regional Process Equipment
Provincial Controls
Westburne Lytle
Willer Engineering
Durham Instruments
Novatech
Transcat
Cancoppas Limited
BEP Bestobell Canada Ltd.
Lisle-Metrix Ltd.
Provincial Controls
Transcat
Transcat
Davis Controls
Heaters Controls & Sensors Ltd.
Transcat
Heaters Controls & Sensors Ltd.
Heaters Controls & Sensors Ltd.
Summit Controls Ltd.
Syber Systems Inc.
Transcat
Lisle-Metrix Ltd.
Transcat
Cantech Controls
Regional Process Equipment
Flovat Equipment Ltd.
Provincial Controls
Willer Engineering
Lakeside Process Controls
Sharp Valve & Instrumentation
Brian Controls
Elsag Bailey
TubeTech Ltd.
Lakeside Process Control
Transcat
Lakeside Process Controls
Lakeside Process Controls
U & I Supply
Lisle-Metrix Ltd.
J & M Engineering & Sales Ltd.
BSP Instruments
Davis Controls
Matheson Valves
Summit Controls Ltd.
Armatek Controls
Transcat
Spec Sarnia Limited
Cancoppas Limited
Cancoppas Limited
Transcat

Manufacturer / Tradename

Kreyenborg
 Krohne
 K-Sun
 K-Tek
 KTM
 Kuebler Control Eng.
 Kurz
 Kurz
 Kyoritsu
 Kyowa
 L & J Technologies
 L.J. Star Inc.
 LAGCO Flumes - USA
 Land
 Larad
 Laurel Electronics
 Laurence
 LC Meters
 LCI-Luwa
 Leader
 Leaderline
 Lee-Dickens Ltd. - England
 Leica
 Leine & Linde
 Lem
 LEOPOLD
 Leslie
 LFE API Instruments
 LFE Instruments - USA
 LI-COR
 Limitorque
 Linatex
 Liquid-O-Ring
 Liquiphant
 Lloyd
 LMI
 LMI
 Logic Beach
 Logic Bench
 Lucas Novasensor
 Lufran
 Lumenite Electronic Company
 M & C Products
 M point
 M&G Check Valves
 M. System
 M.T.S.
 MaCWeld
 Madison
 Madison Co.
 Madur Electronics
 Magnetrol
 Magnetrol Level & Flow
 Maihak
 Manobourdon
 Marine Moisture Co.
 Martel Electricronics
 Masoneilan
 Massa
 Master Appliance
 Max
 McCrometer
 MCS
 MDA Scientific
 MDI
 Measurement Systems
 Meeco Inc.
 Mensor
 Mercoid
 Meriam Instrumnets
 Merian
 Mesa Laboratories
 Met One
 Metratek
 Metrix
 Metrix Timers
 Metrohm
 Mettler Toledo
 Micon
 Micro Motion
 Micro Wire

Local Sales Representative

Great Lakes Industrial Controls
 Moore Products Co. (Canada) Inc.
 Transcat
 CB Engineering
 Regional Process Equipment
 Ovantum Sales Inc.
 Brian Controls
 Transcat
 Omnitronix
 Omnitronix
 Sharp Valve & Instrumentation
 J & M Engineering & Sales Ltd.
 Lisle-Metrix Ltd.
 Transcat
 Syber Systems Inc.
 Transcat
 Great Lakes Industrial Controls
 Spec Sarnia Limited
 Great Lakes Industrial Controls
 Transcat
 Honeywell
 Lisle-Metrix Ltd.
 Transcat
 Durham Instruments
 Transcat
 Lisle-Metrix Ltd.
 Great Lakes Industrial Controls
 Transcat
 Lisle-Metrix Ltd.
 Campbell Scientific (Canada) Corp.
 Sharp Valve & Instrumentation
 Floval Equipment Ltd.
 Great Lakes Industrial Controls
 Endress + Hauser
 Omnitronix
 Novatech
 U & I Supply
 Durham Instruments
 Transcat
 Durham Instruments
 Heaters Controls & Sensors Ltd.
 J & M Engineering & Sales Ltd.
 CEM Specialties Inc.
 Endress + Hauser
 Matheson Valves
 Alpha Controls & Instrumentation
 R.A. Kirby Sales Inc.
 Heaters Controls & Sensors Ltd.
 BEP Bestobell Canada Ltd.
 Ovantum Sales Inc.
 Novatech
 Floval Equipment Ltd.
 Provincial Controls
 Westech Industrial Ltd.
 Sarnia Piping Specialties
 R.A. Kirby Sales Inc.
 Transcat
 Contro Valve Inc.
 Durham Instruments
 Transcat
 Willer Engineering
 Brian Controls
 Heaters Controls & Sensors Ltd.
 Westech Industrial Ltd.
 Heaters Controls & Sensors Ltd.
 Durham Instruments
 Novatech
 Transcat
 Davis Controls
 Brian Controls
 Transcat
 Armatek Controls
 Campbell Scientific (Canada) Corp.
 Transcat
 Transcat
 Lisle-Metrix Ltd.
 Transcat
 Westech Industrial Ltd.
 Cantech Controls
 Rosemount Instruments
 Spec Sarnia Limited

Manufacturer / Tradename

Micropilot
MicroRanger
Mid-West Instrument
Mid-West Instrument
Mihjets
Mikron
Mikron
MillFlo
Milltronics
Milton Roy - Liquid Metronics Division
Milwaukee
MiniRanger Plus
Mini-X Purge Systems
Mini-Z Purge Systems
Mitac
Mitsubishi
Mitutoyo
MKS
Mobrey
Modutec
Molecular Analytics LLC
Monarch
Monitek
Monitor Labs
Monitor Labs
Moore
Moore Industries
Moore Products
M-Tek
MTL
MTL Intrinsic Safe Barriers
Mueller
Multicap
Multiglass
MultiRanger Plus
Mycro
Myron L
Nassau Instrument
National Meter
NBS
NDT International
Neilsen-Kuljian
Neles-Jamesbury
NemaSoft
Neotronics
NICE
Nil-Cor
Nivocompact
Nivosonic
Norriseal Butterfly Valves
Norstat
Northern Vibrator
Noshok
Novatech Engineering Group
Numatics Cylinders
Numatics F/R/Ls
Numatics Solenoid Valves
Nupro Valves
Nusonics
Oakton
O'Brien Corporation
OCM III
Ogden
Ogden
Ogden
Ogontz
Oil Gear
Oilgear
Oldham
Olin Instruments
Oliver Valves
Optek
Optex
Orange Research DP Switch
Orion
OSI Semitronic
Pace
Pacer Industries
Pamark Manifolds
Panalarm
Panalarm
Panametrics PCI Division

Local Sales Representative

Endress + Hauser
Milltronics Limited
Brian Controls
Hardie Industrial Services Inc.
Spec Sarnia Limited
Armatek Controls
Transcat
Milltronics Limited
Milltronics Limited
U & I Supply
Floval Equipment Ltd.
Milltronics Limited
Syber Systems Inc.
Syber Systems Inc.
CTH Industrial Controls
Davis Controls
Transcat
Transcat
BEP Bestobell Canada Ltd.
Transcat
Novatech
Transcat
Willer Engineering
Brian Controls
Romatec
Moore Products Co. (Canada) Inc.
Armatek Controls
Transcat
Transcat
Syber Systems Inc.
Provincial Controls
Great Lakes Industrial Controls
Endress + Hauser
Great Lakes Industrial Controls
Milltronics Limited
Moore Products Co. (Canada) Inc.
Transcat
Transcat
Transcat
Transcat
Transcat
Summit Controls Ltd.
Davis Controls
Cantech Controls
Cancoppas Limited
Contro Valve Inc.
Endress + Hauser
Endress + Hauser
Sarnia Piping Specialties
Davis Controls
Floval Equipment Ltd.
IMO Industries
Novatech
Provincial Controls
Provincial Controls
Provincial Controls
Huron Valve & Fittings
Armatek Controls
Transcat
CB Engineering
Milltronics Limited
Durham Instruments
Heaters Controls & Sensors Ltd.
Cantech Controls
Armatek Controls
BEP Bestobell Canada Ltd.
Cantech Controls
Veronics Inc.
Sarnia Piping Specialties
R.A. Kirby Sales Inc.
Heaters Controls & Sensors Ltd.
Provincial Controls
Transcat
CTH Industrial Controls
Transcat
Transcat
Provincial Controls
Cambridge Controls
Willer Engineering
Veronics Inc.

Manufacturer / Tradename

Papailias
 Parker Hannifin
 Partlow
 Paul Mueller
 PCME
 Pelican
 Penberthy
 Penberthy Instruments
 Penny & Giles
 Penny + Giles
 Peppert + Fuchs - USA
 Perma-cal Gauges
 Perma-Pure
 PGI
 PGI Valves & Manifolds
 Phase Dynamics
 Phipps & Bird
 Pick Heaters
 PMV
 PMV
 Polymetron
 Porter Instrument Co. - USA
 Powers Process Control
 Powers Process Controls
 Powertronics
 Precision Digital
 Precision Digital
 Precision Digital
 Precision Digital
 Precision Digital Corp.
 Precision Digital Corporation
 Preso
 Preso
 Pribusin Inc.
 Pribusin Inc.
 Progressive Electronics
 Prolevel
 Promac
 Promac
 Promag
 Promag
 Promass
 Proquip
 Prosonic
 Provincial Instrument Enclosures
 Provox
 Prowirl
 Proximity Controls
 Pulsafeeder
 Purifics
 Pyromation
 QSDM
 QSDM
 Quadtech (Gen Rad)
 Quality Control Equip.
 R.M. Young
 R.P. Adams
 Radiant Heat
 Ralston
 Ralston
 Ramsey Canada
 Raychem
 Raytek
 Raytek
 Raytek
 Raytek
 Raytek
 Raytek/UE
 RC Systems
 RdF
 RdF
 REBS
 Regal
 REK RKC
 Research Control Valves
 Resistoflex
 Rexroth
 Rezplast
 RGS
 RIMCO - Raingauges
 RKC

Local Sales Representative

Great Lakes Industrial Controls
 Tubetech Ltd.
 WESCO
 Great Lakes Industrial Controls
 Westech Industrial Ltd.
 Transcat
 Brian Controls
 Hardie Industrial Services Inc.
 Cantech Controls
 Durham Instruments
 Lisle-Metrix Ltd.
 Provincial Controls
 Great Lakes Industrial Controls
 Regional Process Equipment
 Provincial Controls
 Armatek Controls
 Transcat
 Sharp Valve & Instrumentation
 Cancoppas Limited
 Regional Process Equipment
 Prosigma Analytics Inc.
 Lisle-Metrix Ltd.
 Heaters Controls & Sensors Ltd.
 CTH Industrial Controls
 Transcat
 Alpha Controls & Instrumentation
 Armatek Controls
 CTH Industrial Controls
 R.A. Kirby Sales Inc.
 Ovantum Sales Inc.
 Cambridge Controls
 Floval Equipment Ltd.
 Willer Engineering
 Novatech
 Provincial Controls
 Transcat
 Endress + Hauser
 Armatek Controls
 Transcat
 Endress + Hauser
 Westburne Lytle
 Endress + Hauser
 Spec Sarnia Limited
 Endress + Hauser
 Provincial Controls
 Lakeside Process Control
 Endress + Hauser
 BEP Bestobell Canada Ltd.
 Romatec
 Great Lakes Industrial Controls
 WESCO
 Alpha Controls & Instrumentation
 Willer Engineering
 Transcat
 Ovantum Sales Inc.
 Campbell Scientific (Canada) Corp.
 Great Lakes Industrial Controls
 Heaters Controls & Sensors Ltd.
 Heaters Controls & Sensors Ltd.
 Transcat
 Ovantum Sales Inc.
 Great Lakes Industrial Controls
 Alpha Controls & Instrumentation
 CTH Industrial Controls
 Heaters Controls & Sensors Ltd.
 Transcat
 WESCO
 Great Lakes Industrial Controls
 Cancoppas Limited
 Transcat
 Willer Engineering
 Campbell Scientific (Canada) Corp.
 Cancoppas Limited
 Heaters Controls & Sensors Ltd.
 Lakeside Process Control
 Sharp Valve & Instrumentation
 Great Lakes Industrial Controls
 Great Lakes Industrial Controls
 Syber Systems Inc.
 Campbell Scientific (Canada) Corp.
 Heaters Controls & Sensors Ltd.

Manufacturer / Tradename

Roberts Mfg.
Rochester
Rochester Instrument Systems
Rohrbach Cosasco Systems
Ronan
Roper Pump
Rosemount
Rosemount Analytical
Rosemount Analytical
Rosemount Combustion Control
Rosemount RS3 Systems
Rotek
Rotronic
Rotronic
Rotronic Instruments
Royce
RTP
Ruffneck
Ruskin
Rustrack
Rustrak
S.P.S. Instrument Services
Saab
Saab Tank Radar Level
Samson
Samson
Schaevitz
Schlumberger/Neptune Flow Meters
Schonstedt
Scientific Linings & Coatings
Sealed Unit Parts
Seametrics Inc.
Seepex
Selco / Asahi
Selco / Asahi
Senaco Plus
Senior Flexonics
Sensall
Sensit
Sensorex
Sensorlink
Sensortech Systems Inc.
Sensortronics
Sensycon
Sensycon
Sentry
Serge-Baril
Servomex
Setra
Sfere
Sfere
Shamrock Environmental
Shan Rod Inc.
Shand & Jurs
Shimpo
Showa
Sieger
Siemens Process Analyzers
Sierra Monitor
Signet Scientific
Sigrist-Photometer Co. - Switzerland
Silmometer
Simpson
Sinclair Collins
Skinner
Smar
Smartline
SMC Knifegate
Sno-Trik
Solartron
Solent & Pratt
Soliphant
Solomat
SOR Inc.
South-West Meters
Southwest Valve
Sparling
SPL Plus
SPM
SPS Fibre Form Enclosures
SSI

Local Sales Representative

BSP Instruments
Transcat
Sharp Valve & Instrumentation
Armatek Controls
Industrial Projects Ltd.
U & I Supply
Rosemount Instruments
Rosemount Instruments
Transcat
Romatec
Lakeside Process Control
Transcat
Alpha Controls & Instrumentation
Durham Instruments
Transcat
Cancoppas Limited
Davis Controls
Great Lakes Industrial Controls
BSP Instruments
Transcat
Omnitronix
Sarnia Piping Specialties
Brian Controls
R.A. Kirby Sales Inc.
Ovantum Sales Inc.
Samson Controls
Durham Instruments
Sarnia Piping Specialties
Transcat
Cantech Controls
Transcat
Veronics Inc.
U & I Supply
CTH Industrial Controls
Transcat
Milltronics Limited
Regional Process Equipment
Alpha Controls & Instrumentation
Durham Instruments
Transcat
Transcat
Novatech
Durham Instruments
Elsag Bailey
Tube Tech Ltd.
Fryston Canada Inc.
Great Lakes Industrial Controls
Novatech
Alpha Controls & Instrumentation
Cancoppas Limited
Regional Process Equipment
Prosigma Analytics Inc.
Flovai Equipment Ltd.
Sharp Valve & Instrumentation
Transcat
Durham Instruments
Westech Industrial Ltd.
Willer Engineering
Transcat
Hardie Industrial Services Inc.
Lisle-Matrix Ltd.
Endress + Hauser
Transcat
Summit Controls Ltd.
Cantech Controls
BSP Instruments
Honeywell
Matheson Valves
Huron Valve & Fittings
Westech Industrial Ltd.
BSP Instruments
Endress + Hauser
Transcat
Industrial Projects Ltd.
Sarnia Piping Specialties
Flovai Equipment Ltd.
Brian Controls
Milltronics Limited
Transcat
Sarnia Piping Specialties
Great Lakes Industrial Controls

Manufacturer / Tradename

SSI Equipment
SSI Strainers
Stahl
Statham
Stewart Instruments
Stonel
Stonel
Storage Battery Systems
Strahman
Superior
Swagelok Tube Fittings
Syscon
Systematix
TA Instruments
Tapecoat Canada
Tate-Andale
Taylor
TBI
TBI-Bailey
TBV
TDC-3000
Tech Spray
Techine
Techmation
Technipower
Technova
Tektronix
Tektronix
Teledyne
Teledyne Analytical
Teledyne-Farris Relief Valves
Telegan
Telematic
Tel-Tru
Tel-Tru
Tel-Tru Thermometers
Tempco
Tenor Industrial Control
Test Probes
Texas Electronics - Raingauges
Texas Sampling
Texas Sampling Inc.
The Electron Machine Corporation
The Probe
Theben
Thermal Instrument Co.
Thermax
Thermo Electric
Thermo Electric
Thermo-Kinetics Temperature Products
Thermon
Thermox
TIF
Time Electronics
TLV
TLV
Tomoe Valves
Torbair Flowmeters Ltd.
Tower-Gard
Trademark Mfg.
Transcat
Transmation
Transmation
Transmation
Transtector Systems
TRC
Trend B-Metal Thermometers
Trerice
Tricentric
Tripplett
Tripp-Lite
Tritron
TSI
Tuffline Valve
Turbo
Tytronics Inc.
U.S. Gauge (Ametek)
United Electric
United Electric
United Electric Controls (Canada) Ltd.
United Sciences Inc.

Local Sales Representative

Floval Equipment Ltd.
Matheson Valves
Alpha Controls & Instrumentation
Sarnia Piping Specialties
Floval Equipment Ltd.
Regional Process Equipment
Summit Controls Ltd.
Transcat
Cantech Controls
Great Lakes Industrial Controls
Huron Valve & Fittings
Heaters Controls & Sensors Ltd.
Willer Engineering
Westech Industrial Ltd.
Sarnia Piping Specialties
Great Lakes Industrial Controls
Transcat
TubeTech Ltd.
Elsag Bailey
Romatec
Honeywell
Transcat
Transcat
Lakeside Process Control
Transcat
Matheson Valves
Omnitronix
Transcat
Transcat
Armatek Controls
Provincial Controls
BEP Bestobell Canada Ltd.
Willer Engineering
Brian Controls
Transcat
Hardie Industrial Services Inc.
Heaters Controls & Sensors Ltd.
Heaters Controls & Sensors Ltd.
Transcat
Campbell Scientific (Canada) Corp.
Great Lakes Industrial Controls
BEP Bestobell Canada Ltd.
Industrial Projects Ltd.
Milltronics Limited
Davis Controls
R.A. Kirby Sales Inc.
Transcat
Armatek Controls
Transcat
Provincial Controls
Spec Sarnia Limited
Willer Engineering
Transcat
Transcat
TubeTech Ltd.
U & I Supply
BEP Bestobell Canada Ltd.
Industrial Projects Ltd.
Lisle-Metrix Ltd.
BSP Instruments
Transcat
Alpha Controls & Instrumentation
Controls
Transcat
Cantech Controls
Transcat
Provincial Controls
Great Lakes Industrial Controls
Westburne Lytle
Transcat
Transcat
Great Lakes Industrial Controls
Willer Engineering
Regional Process Equipment
WESCO
Novatech
Transcat
Brian Controls
Regional Process Equipment
Cambridge Controls
Willer Engineering

Manufacturer / Tradename

Unitherm
Universal
Universal Analyzers
Universal Flow Monitors
Unomat
V.R.C. Positioners
Vaccon Vacuum Products
Vaisala
Vaisala - RH, Barometric Pressure
Valhalla
Validyne
Valtek Controls
Valvtech
Vector-VID
Veeder-Root
Velan
Versatile Instruments
Viatran
Vista Scientific
Viitec
Vogt Valve
Vortec Coolers
Vortisand
Wabco
Wahl
Walker Scientific
Wallace & Tiernan
Wallace & Tiernan
Warren Jones Engineering - England
Warrick
Waterman Industries - USA
Watson, McDaniel
Watts
Watts
Wavetek
Weed
Weidmuller - Conditioners/Power Supplies
Weschler Instruments
West
Westcon
Westech
Westinghouse
Westlock
Westronics
Wey Valve
Whesso Varec
Whipps Inc. - USA
Whitey Valves
Whitman
Wika
Wika
Wika Chemical Seals
Wika Gauges
Wika Gauges
Wika Pressure Transmitters/Transducers
Wilkerson Instrument Co. Inc.
Williams Instrument Co.
Winters
Wood's
Worcester
Worcester Controls
Wright-Austin
WSA
Xomox
XPL Plus
Xytronic
Yanway
Yokogawa
Zellweger Analytics
Zirtek Corporation
Zullig

Local Sales Representative

Great Lakes Industrial Controls
Alpha Controls & Instrumentation
Willer Engineering
Transcat
Transcat
Matheson Valves
Provincial Controls
Transcat
Campbell Scientific (Canada) Corp.
Transcat
Cancoppas Limited
Matheson Valves
Regional Process Equipment
Transcat
Davis Controls
Westburne Lytle
Sharp Valve & Instrumentation
Willer Engineering
Transcat
Transcat
Matheson Valves
Provincial Controls
Great Lakes Industrial Controls
Great Lakes Industrial Controls
BEP Bestobell Canada Ltd.
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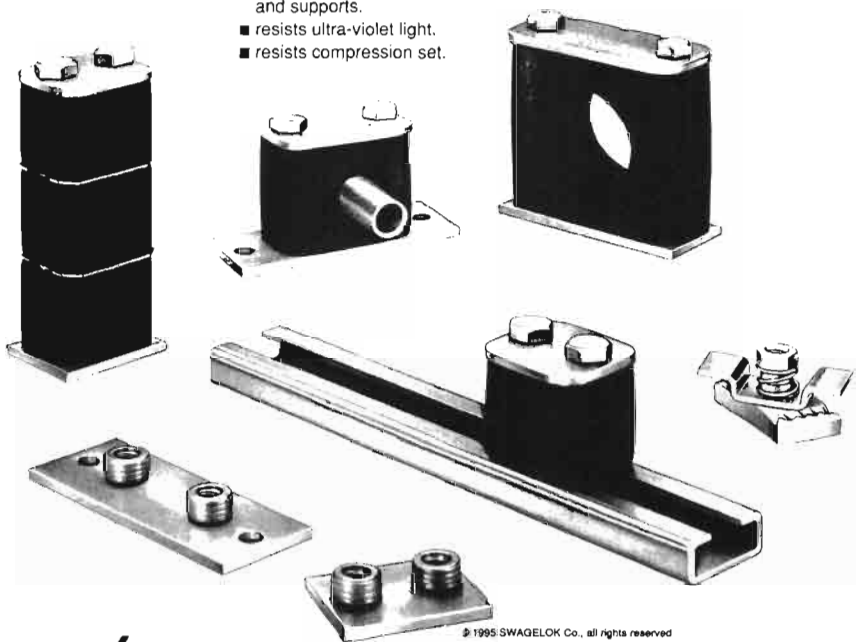


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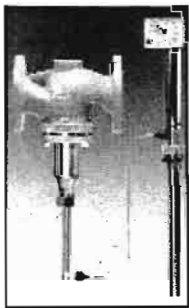
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