

## PACTware™

### Process Automation PC Software

**Description:** PACTware™ (Process Automation Configuration Tool) is a device-independent software program that communicates with all approved DTMs (Device Type Managers).

**Measurement Principle:**  
N/A (Software)

#### Applications:

Use with device specific software drivers – DTMs

#### Features:

- Device diagnosis and Troubleshooting
- Online/offline parameterization
- Multiple languages supported, including English, German and French

#### Options:

HART® or FOUNDATION fieldbus™ interface



## Eclipse®

### Model 706 GWR Transmitter

**Description:** An advanced 24 VDC loop powered transmitter with proactive diagnostics and superior signal strength. Not affected by foam, turbulence, and varying media conditions.

**Measurement Principle:**  
Guided Wave Radar Time Domain Reflectometry (TDR)

#### Applications:

Ideal for difficult, low dielectric, high temperature process applications, high pressure steam, or simple storage applications.

#### Features:

- All features of the Model 705, in addition to:*
- Increased signal strength
  - Superior Signal-to-Noise Ratio
  - Proactive Diagnostics
  - Broad offering of Overflow-capable probes
  - Full vacuum to 6250 psig (431 bar); -320 to +850 °F (-196 to +454 °C)
  - SIL 2 capable with SFF = 93% (FMEDA available upon request)

#### Options:

Graphic LCD allows the viewing of waveforms; HART, FOUNDATION™ fieldbus and Modbus digital communications; Broad probe offering with numerous process connections



## Eclipse®

### Model 705 GWR Transmitter

**Description:** A 24 VDC, loop-powered transmitter. Not affected by foam, turbulence, and varying media conditions.

**Measurement Principle:**  
Guided Wave Radar Time Domain Reflectometry (TDR)

#### Applications:

Boilers, high temperature and high pressure, steam, chemical, and hydrocarbon process vessels

#### Features:

- Two-wire, loop-powered
- 4–20 mA with HART
- Push-button setup
- No calibration necessary
- General Purpose, Intrinsically Safe, Explosion Proof and Non-Incendive approvals
- Full vacuum to 6250 psig (431 bar); -320 to +800 °F (-196 to +427 °C)
- SIL 2/3 Certified

#### Options:

2-line × 8-character liquid crystal display; HART, FOUNDATION™ fieldbus and PROFIBUS PA™ digital output, numerous process connections



## Pulsar®

### Model RX5 Radar Transmitter

**Description:** A loop-powered 4–20 mA level transmitter provides accurate measurement even in heavy vapors, shifting dielectric and varying media.

**Measurement Principle:**  
Pulse Burst Radar

#### Applications:

Liquids and slurries, hydrocarbons to water-based media, process or storage vessels

#### Features:

- 6 GHz frequency
- 24 VDC, loop-powered
- 4–20 mA with HART®
- 65' measurement range
- Full vacuum to 750 psig; -40 to +400 °F
- Quick connect/disconnect antenna coupling allows vessel to remain sealed
- Intuitive false target setup
- General purpose, Intrinsically Safe, Explosion Proof, Intrinsically Safe, Explosion Proof and Non-Incendive approvals

#### Options:

Horn or dielectric rod antenna configuration, all-plastic antenna, antenna extensions



## Radar

### Model R82 Radar Transmitter

**Description:** An economical loop-powered 4–20 mA level transmitter in a compact single compartment housing.

**Measurement Principle:**  
Pulse Burst Radar

#### Applications:

Liquids and slurries, hydrocarbons to water-based media, process or storage vessels

#### Features:

- 26 GHz frequency
- 24 VDC, loop-powered
- 4–20 mA with HART
- 40' (12.2 m) measurement range
- Full vacuum to 200 psig (14 bar); -40 to +200 °F (-40 to +93 °C)
- Configure with 2-line × 16-character display, 4-push-button keypad
- Adjustable beam pattern without removing the transmitter from vessel
- General Purpose and Intrinsically Safe

#### Options:

Cast aluminum or Lexan enclosure, 2" or 8" antenna extension, polypropylene or Tefzel® antenna material



## Kotron®

### Model 805 Smart Transmitter

**Description:** High performance, loop-powered, 4–20 mA, RF Capacitance transmitter.

**Measurement Principle:**  
RF Capacitance

#### Applications:

Clean or dirty liquids, viscous slurries, high-temperature and high-pressure fluids

#### Features:

- Two-wire, loop-powered
- 2-line × 8-character liquid crystal display
- HART Communications
- Proven RF technology
- Broad range of probes

#### Options:

Numerous process connections and probes



## Echotel®

### Model 910 Level Switch

**Description:** Integral mount, low cost ultrasonic level switch with worldwide safety approvals.

**Measurement Principle:**  
Continuous wave ultrasonic

#### Applications:

Clean liquids, wastewater, petrochemical, foods and pharmaceuticals, solvents

#### Features:

- Tip sensitive gap style
- Integral mount unit with dual conduit hubs
- Field selectable high or low level fail-safe
- 10 amp DPDT gold flash or 5 amp DPDT hermetically sealed relay
- Vertical or horizontal mount
- No calibration required
- Two-year warranty

#### Options:

Housings, process connections, input power, relay type, and actuation length



## Echotel®

### Models 940/941 Level Switches

**Description:** Compact integral units that utilize pulsed signal technology to perform high or low level measurement in a wide variety of liquid applications.

**Measurement Principle:**  
Pulsed signal technology

#### Applications:

Small size and simplicity of installation make these units ideal for OEM skids as a low cost, yet high performance level measurement solution

#### Features:

- Pulsed electronics for excellent performance in difficult process conditions
- Tip-sensitive fork-style transducer gap provides reliable operation
- Suitable for SIL loops
- 1 amp SPDT relay output (940), or mA current shift (941) output
- No calibration or configuration necessary

#### Options:

Process connections, output type, units of measure, and actuation length



## Echotel®

### Models 961/962 Level Switches

**Description:** Advanced self-test capabilities, time delay and pulsed signal technology for superior performance in difficult applications. Available for single (961) or dual point (962) liquid level detection.

**Measurement Principle:**  
Pulsed signal technology

#### Applications:

Chemical, bio-technology, food and beverage, water and wastewater, pulp and paper, power and petrochemical

#### Features:

- Suitable for use in Safety Integrity Level (SIL) 2 loops
- Adjustable time delay for turbulent aerated liquids
- Tip-sensitive transducer
- Advanced self-test technology with malfunction alarm output
- Integral or remote mount electronics
- Pulsed signal technology

#### Options:

Housing materials, input power, output signal, integral or remote mounting and actuation length



## Echotel®

### Model 355 Transmitter

**Description:** Loop-powered, integral mount, ultrasonic transmitter for level, volume, or open channel flow.

**Measurement Principle:**  
Non-Contact 60 kHz ultrasonic

#### Applications:

Chemical, food and beverage, water and wastewater, pulp and paper, power and pharmaceutical

#### Features:

- Two-wire, loop-powered
- 4–20 mA with HART
- PACTware PC program
- 20' (6m) measurements range
- Temperature compensated echo rejection profile
- Dynamic baseline noise compensation
- Generic discharge open channel flow equation
- Resettable and non-resettable flow totalizers

#### Options:

Cast aluminum or Lexan enclosure, polypropylene or Kynar® Flex transducer



## Float Type

Top Mount  
Level Switch

**Description:** A simple and reliable float switch designed for top mounting on virtually any process or storage vessel.

**Measurement Principle:**  
Buoyancy

**Applications:**  
Virtually any tank or vessel; condensate receivers, cooling towers, interface detection

- Features:**
- Single or tandem float configurations
  - Rugged reliability
  - Wide selection of switches
  - Actuating depths of up to 48" (1219 mm)
  - Simple operation
  - Maintenance free
  - Variety of process connections

**Options:**  
Single or tandem units, tank connection type and float size, NACE construction, electric or pneumatic switch mechanisms, guide cages



## External Cage Tuffy®

Float Type  
Level Switch

**Description:** A highly reliable level switch in an external cage and designed to be mounted outside the process vessel.

**Measurement Principle:**  
Buoyancy

**Applications:**  
Clean liquids or interface in scrubbers, feedwater heater, flair pots, day tanks, accumulators, knockout drums, etc.

- Features:**
- Sealed or flanged float cages
  - Pressures to 3700 psig (255 bar) and temperatures over +1000 °F (+538 °C)
  - Single or multiple actuation levels
  - Carbon steel or stainless steel cage materials
  - Floats for SGs as low as 0.32

**Options:**  
Electric or pneumatic switches, ASME B31.1, B31.3 or NACE construction, exotic materials of construction, wide variety of process connections



## Tuffy®

Float Type  
Level Switch

**Description:** A compact, highly reliable level switch designed for horizontal mounting into a process vessel or an external cage.

**Measurement Principle:**  
Buoyancy

**Applications:**  
Clean liquids or interface in virtually any tank or vessel, including storage tanks and process vessels

- Features:**
- Available in narrow and wide adjustable differential models
  - Float and trim parts in 316 SS or Hastelloy C
  - Pressures to 2630 psig (181 bar) and temperatures to +750 °F (+399 °C)
  - Explosion proof enclosure with variety of agency approvals
  - Ease of wiring in enlarged switch housing

**Options:**  
Pneumatic switch model, ASME B31.3 or NACE construction, wide variety of process connections, cast iron and aluminum switch housings



## Modulelevel®

Model E3 Displacer  
Level Transmitter

**Description:** Advanced displacer/range spring actuated intrinsically safe two-wire transmitter.

**Measurement Principle:**  
Buoyancy/Range  
Spring/LVDT

**Applications:**  
Feedwater heaters, scrubbers, receivers, separators, boilers, condensate drip pots, interface measurement

- Features:**
- No calibration required
  - Range spring suppresses effects of turbulence
  - Pressures to 5150 psig (355 bar); +850 °F (+454 °C) non-steam applications; +800 °F (+427 °C) steam applications
  - HART or FOUNDATION fieldbus compatible
  - Field-selectable fault signal, 3.6 or 22 mA, or HOLD
  - SIL 2, SFF value of 92.3%
  - Advanced self-check and diagnostics

**Options:**  
Pneumatic models, ASME B31.1, B31.3 or NACE construction PACTware for enhanced configuration and trending capabilities



**API RP 2350**  
Level Instruments  
for  
**TANK OVERFILL  
PREVENTION**

## Top Mount

Displacer Type  
Level Switch

**Description:** Highly reliable one-, two- or three-stage level switches offering wide and narrow level differentials.

**Measurement Principle:**  
Buoyancy

**Applications:**  
Foaming, surging or agitated liquids, dirty or clean liquids, heavy oils or slurries in sumps, storage tanks or process vessels

- Features:**
- Field-adjustable levels and differential
  - Variety of displacer, cable and wetted parts materials
  - Ease of installation
  - Variety of narrow and wide level differential combinations
  - Suitable for use in liquids with SG from 0.40 to 2.40

**Options:**  
Proof-er® ground-checker, floating rooftop/liquid dual detection, extended displacer cable, customer specific levels and differential arrangements, pneumatic or electric switches



## Thermatel®

### Models TD1/TD2 Flow/Level Switch

**Description:** Reliable flow/level/interface switch detects changes in heat transfer due to changes in media or changes in flow velocity.

**Measurement Principle:**  
Changing temperature difference activates relay

**Applications:**  
Flow switch for liquids and gases. Popular for pump protection to detect low flow rates. Also used for level/interface detection

**Features:**

- Continuous diagnostics with fault detection
- Temperature compensation
- mA output signal on TD2 permits flow monitoring and diagnostics
- Temperatures to +850 °F (+450 °C), pressure to 6000 psig (410 bar)
- Adjustable set point and time delay

**Options:**  
Relay type, input voltage, integral or remote mounting, window to view LEDs, probe types and probe process connections

## Thermatel®

### Model TA2 Mass Flow Transmitter

**Description:** Reliable mass measurement for air and gas flow application. Powerful electronics are contained in a compact explosion proof enclosure.

**Measurement Principle:**  
Measure mass flow by detecting heat dissipation from a heated surface

**Applications:**  
Combustion air, compressed air, natural gas, flare gas, aeration lines, digester/bio-gas/LFG

**Features:**

- Direct mass flow measurement
- Calibration verification in the field prevents sending unit back to the factory
- Strong signal at low flows and low pressures
- High turndown ratio
- Rotatable head and display for ease of viewing and proper installation

**Options:**  
2-line × 16-character display, HART and FOUNDATION™ fieldbus digital communications, probe length, process connection, Hot Tap, temperature output and pulse output, remote electronics

## Polaris™

### Model MA1 Magnetic Flow Meter

**Description:** Flow meter capable of measuring liquids with a conductivity as low as 5 μS/cm in closed pipes

**Measurement Principle:**  
Faraday's law of induction

**Applications:**  
Water-based liquids and sludge flows

**Features:**

- 4–20 mA, pulse and alarm outputs
- Liquid conductivity down to 5 μS/cm
- Forward and reverse flow indication
- HART with PACTware

**Options:**  
Integral or remote transmitter, multiple liner and electrode materials, flanged or wafer style sensors, grounding rings

## Aurora®

### Magnetic Level Indicator

**Description:** Unique combination of magnetic level indication with guided wave radar results in a truly redundant level control instrument.

**Measurement Principle:**  
Buoyancy, magnetic coupling and micropower impulse radar

**Applications:**  
Feedwater heaters, vacuum tower bottoms, alkylation units, oil water separators, deaerators, boiler drums

**Features:**

- True redundancy through use of two independent technologies
- New Reveal® wide view indicator
- Built to ASME B31.1, B31.3 or NACE construction codes
- All metallic pressure boundary materials
- Pressures to 4500 psig (310 bar)
- SGs as low as 0.25
- Temperatures to +800 °F (427 °C)

**Options:**  
Remote mounted electronics, custom span, process connections, scale units of measure, high temperature and cryogenic insulation, clamp-on reed, micro and pneumatic switches

## Jupiter®

### Magnetostriuctive Transmitter

**Description:** The dual-compartment design allows for separation of wiring and electronics, and helps facilitate simple, easy installation.

**Measurement Principle:**  
Magnetostriuctive wire

**Applications:**  
Separators, surge tanks, gas chillers, alkylation units, propane vessels, process vessels

**Features:**

- Precision level measurement ±0.015" (0.254 mm)
- Two-wire, loop-powered intrinsically safe and explosion proof level transmitter
- 4–20 mA output
- LCD local push-button operation
- High repeatability ±0.005" (0.127 mm)

**Options:**  
HART communications, housing material, mounting & conduit entry, probe length and transmitter housing

# Real World Solutions

**Magnetrol® designs, manufactures, markets and services level and flow instrumentation for the process industries worldwide.**

**Oil & Gas Production**



**Petroleum Refining**



**Chemical**



**Biotechnology**



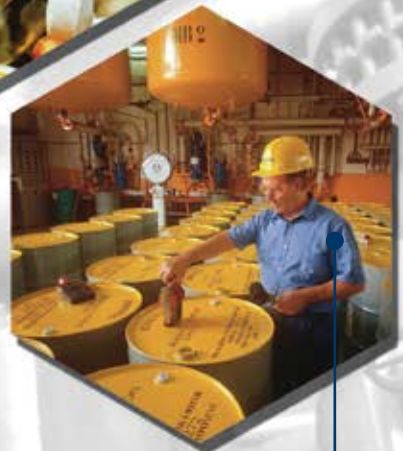
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**Water & Wastewater**



**Food & Beverage**

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# 2015

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# PRODUCT LINE

## QUICK REFERENCE

# 2015



**Magnetrol**<sup>®</sup>

Worldwide Level and Flow Solutions<sup>SM</sup>



## Magnetrol®: A Heritage of Leading-Edge Products Created Through Engineering Excellence

### LEADERSHIP

Since we invented and marketed our first level control in 1932, the Magnetrol® name has become synonymous worldwide with quality and innovation. Today MAGNETROL products serve industries in over 100 countries. Our market leadership is sustained by a strong ongoing commitment to advance the state-of-the-art in level and flow technologies.



### SOLUTIONS

Because process environments are so diverse, MAGNETROL has created numerous technology groups to address the broad range of control challenges. Each technology group features products that are highly configurable enabling our customers to have the most exacting solution for their specific process requirements.



### INNOVATION

We cultivate innovation through sustained R&D commitment. Products are engineered not only to perform accurately and reliably, but to be easy to install, calibrate, and maintain as well. Turning these better ideas into better products is realized in the MAGNETROL ISO-certified manufacturing environment using leading-edge fabrication systems.



### INTERNATIONAL

A key factor in maintaining innovation and market leadership has been our development of a global information and distribution network. It's a network of technology experts poised to lend assistance to our customers anywhere in the world anytime. You can always count on MAGNETROL for products that are engineered to the highest standards of excellence in the industry.