VIBRATING ROD

RF CAPACITANCE

MAGNETOSTRICTION

GUIDED WAVE RADAR

MAGNETIC LEVEL INDICATION

AIR SONAR

THERMAL DISPERSION

BUOYANCY

PULSE BURST RADAR

ULTRASOUND

PRODUCT LINE QUICK REFERENCE

Magnetrol®

Worldwide Level and Flow Solutions℠

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 a 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 Magnetrol's ISO-certified manufacturing environment using leading-edge CNC systems.

MAGNETROL REGISTERED TO ISO 9001 Your Assurance of Quality and Service

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.

Magnetrol®

PACT*ware*™

Process Automation PC Software

Description: PACT*ware* (Process Automation Configuration Tool) is a device-independent software program that communicates with all approved DTMs.

Measurement Principle:
N/A (Software)

Applications:
Use with device specific software drivers - DTMs (Device Type Managers)

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

Options:
RS232-HART® or USB HART interface

Eclipse®

Model 705 GWR Transmitter

Description: A 24 VDC, loop-powered transmitter. Not affected by foam, turbulence, and varying dielectric constant.

Measurement Principle:
Guided Wave Radar (TDR)

Applications:
Boilers, high temperature and high pressure applications, 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; -320 °F to +800 °F

Options:
2-line × 8-character Liquid Crystal Display, HART digital output, process connections

Pulsar®

Model R95 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 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' measurement range
- Full vacuum to 200 psig; -40° to +200° F
- 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, 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
- Liquid crystal display 2-line × 8-character(opt)
- HART Communications (optional)
- Proven RF technology
- Broad range of probes

Options:
LCD display, HART Communications, process connections, 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 failsafe
- 10A DPDT gold flash or 5A 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: These switches have advanced self-test capabilities pulsed signal technology for superior performance in difficult process conditions.

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
- Integral or remote mount electronics

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 60kHz 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
- PACT*ware* PC program
- 20' mesurement 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

Echotel
Models 344/345 Transmitters

Description: A full-featured remote mount indicating transmitter for continuous measurement of level, volume, or open channel flow.

Measurement Principle:
Non-Contact 38kHz ultrasonic

Applications:
Sump and wastewater, slurries, viscous fluids, pulp and paper, power, petrochemical

Features:
- 35' measurement range
- 4–20 mA isolated output
- Four DPDT relays
- False target buffering
- Large 16-character, alphanumeric display
- Configurable for simple alarm to complex control
- Temperature compensation
- Front panel keypad programming
- Password protection
- Self-diagnostics

Options:
Input power, mechanical totalizer, 31-day data logger, heater with thermostat, transducer housing and mounting bracket

Top Mount
Float Type 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 (T21), housing heater

External Cage
Float Type Level Switch

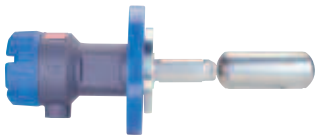
Description: A highly reliable level switch in an external cage and designed to be mounted outside the process vessel.

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 psi and temperatures over +1000° F
- 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 in 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 2625 psi and temperatures to +750° F
- 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 housings

Modulevel®
Model E3 Displacer Level Transmitter

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

Measurement Principle:
Buoyancy/LVDT

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

Features:
- Range spring suppresses effects of turbulence
- Pressures to 5150 psi
- Two-wire, loop-powered, intrinsically safe
- HART compatible
- Field selectable fault signal, 3.6 or 22 mA, or HOLD
- SIL 2, SFF value of 92.3%
- Advanced self-check and diagnostics
- Menu-driven display

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

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 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 roof top service, extended displacer cable, customer specific levels and differential arrangements, pneumatic or variety of electric switches

THERMAL DISPERSION | VIBRATING ROD | VISUAL INDICATION | MAGNETOSTRICTIVE

ORION INSTRUMENTS
A Magnetrol Company

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 both gas and liquids. Level/interface detection between different media.

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
TA2 Mass Flow Transmitter

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

Measurement Principle:
Measures mass flow by detecting heat dissipation from a heated surface.

Applications:
Combustion air, compressed gases, natural gas, aeration lines, digester/bio gas, vent lines/flare headers

Features:
- Direct mass flow measurement of air and gases
- Excellent low flow sensitivity
- High turndown rates
- Fast response time
- Rotatable display provides flow rate, temperature, totalized flow, plus diagnostics messages
- Temperatures up to +400° F (+200° C)

Options:
Two line-16 character display, HART, probe length, process connection, Hot Tap, input power, remote electronics

Solitel®
Vibrating Rod Level Switch

Description: A compact integral switch that is suitable for level detection and plugged chute detection of powders and bulk solids in hoppers or silos.

Measurement Principle:
Vibration dampens with level contact

Applications:
A broad range of solid materials from light powders to heavy granules

Features:
- Single rod construction
- Adjustable sensitivity
- Polished probe
- Self-cleaning cycle minimizes buildup
- Cable lengths to 100" (rigid) or 66' (flexible)
- Field selectable high-low/failsafe
- LED indication of relay status

Options:
Design type, probe type and length, input voltage, high-temperature operation

Aurora®
Magnetic Level Indicator *and Guided Wave Radar Transmitter*

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
- High visibility indication
- Built to ASME B31.1 and B31.3 construction codes
- All metallic pressure boundary materials (no glass)
- Pressures to 4500 psi
- SGs as low as 0.25
- Temperatures to +800° F

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®
Magnetostrictive Transmitter

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

Measurement Principle:
Magnetostrictive wire

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

Features:
- Precision level measurement ±0.015" (.254 mm)
- Two-wire, loop-powered intrinsically safe and explosion proof level transmitter
- 4–20 mA output
- LCD with push-button operation
- LCD local indication is standard
- High repeatability ±0.005" (0.127 mm)

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

Real World Solutions

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

Oil & Gas Production

Petroleum Refining

Chemical

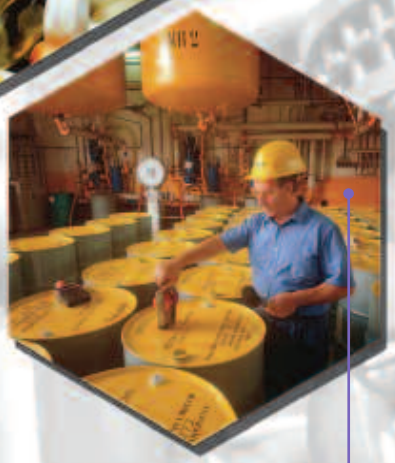
Biotechnology

Pharmaceutical

Power Generation

Water & Wastewater

Food & Beverage



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