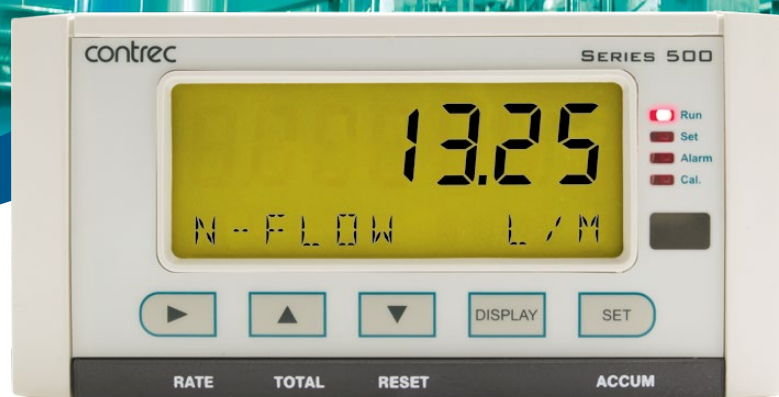


515
series

**PROVIDING CLARITY,
ACCURACY AND
RELIABILITY TO THE OIL
AND GAS INDUSTRIES**



CONTREC – YOUR OIL & GAS PARTNER



We are Contrec.

World leaders in flow instrumentation.

Highly accurate field controllers for the oil and gas industry.

This industry provides one of the most diverse and challenging environments for instrumentation to operate in. The constantly changing demands and the need to provide solutions which will not only return faultless reliability in the most harsh operating conditions, but also deliver the high accuracy and performance expected when measuring these valuable commodities.

Contrec has been taking care of oil and gas applications for over 30 years and was one of the first electronic preset controller manufacturers to gain custody transfer approvals for the loading of oil products onto road tankers, rail and barge applications.

The 515 Series utilises a common, advanced hardware and the functionality is determined by software which is specifically tailored to individual applications. With over 50 applications already created, and a wealth of input types available, our ability to linearise these flowmeter inputs ensures Contrec help to make good flowmeters even better.

The 515 Series is easy-to-use, easy to understand and offers exceptional flexibility over many applications.

This controller is the most advanced model in the 500 Series range. It has more inputs and outputs of higher accuracy, giving it greater capability and configurability to suit a wide range of applications.

There are multiple frequency and analog inputs which makes the controller suitable for applications that require extra external sensors for temperature, pressure, density, level devices, and many other applications.

The 515 Series is capable of operating in a wide temperature ranges and its 'plug and play' option card makes enhancements easy to undertake without reprogramming. The behaviour of the instrument is determined by the function software which is selected from an increasing list of applications in the 500 Series Program Manager.

Instruments can be used for the following functions:



FLOW

Contrec flow computers are designed to operate with either liquid or gas flows. Accepting either analog or pulse signals from flowmeters with additional inputs from temperature, pressure and density transmitters, the 515 has inbuilt correction tables for most fluids or custom fluids can easily be handled. All models give rate, total and accumulated total and have a variety of output options.



BATCH

We offer a broad range of batch control options. From single product batching using simple on/off valves, to dual stream blending controllers with temperature correction to API/ASTM standards to give precise nett and gross volumes. Our batch controllers can provide flow control using modulating valves or variable speed pumps, and can be used for ratio control of two flows. All our batch controllers are suitable for use in hazardous areas.

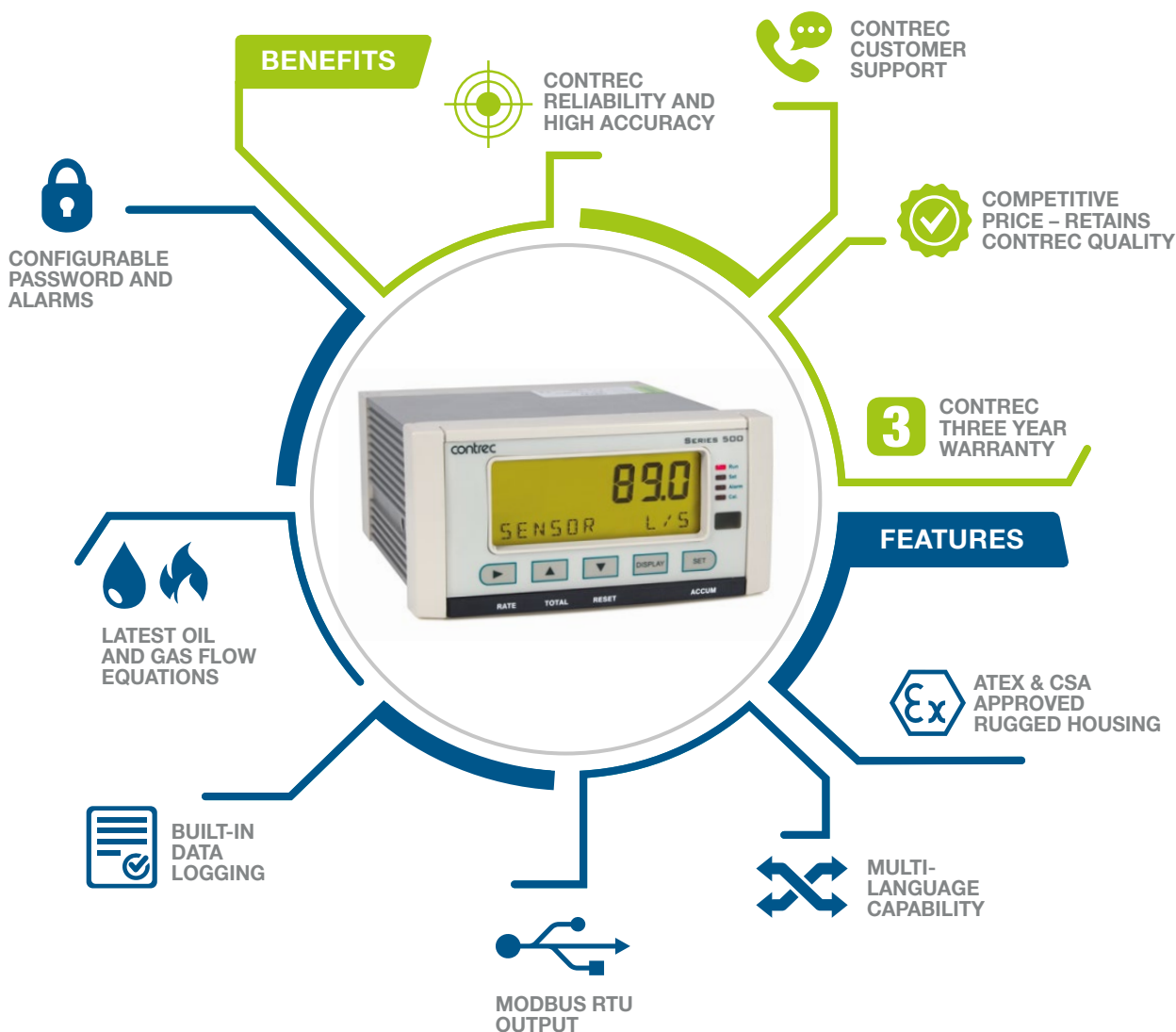


CUSTOM

Our range does not finish at traditional flow and batch applications. Contrec have solved custom requests from many clients including meter proving, density computers, additive injection and gas tariff calculators. If your application doesn't fit one of the many existing application packs, we are happy to carry out an evaluation to look at the possibility of creating a new solution to match your specifications.



Proven in thousands of field installations around the world.



Critical Environments

Contrec instruments are flexible and can be mounted in a variety of ways. For safe area or control room environments, the 515 Series can be supplied as a panel mount device along with a weatherproof IP65 front fascia. For installations where the unit would be exposed to the elements, but not in a designated hazardous area, we can supply a variety of field mount enclosures and supply the Contrec unit fitted and pre-wired ready for installation and commissioning. For conditions where there is a risk of explosion or just when the operating conditions require the ultimate in rugged protection, we can supply the controller mounted in our Zone 1 ATEX/CSA (IECEx pending) enclosure. This housing provides a large viewing area and full operation of all the instrument's features are by large, heavy duty, stainless steel push buttons.



Control, Flexibility and Visibility

Contrec provides complete solutions to the oil and gas instrumentation market. Working with virtually every flowmeter type available, we will monitor, measure and control all your precious commodities. Utilising our unique 515 hardware platform we have created a diverse range of programmes to suit your application, from additive injection and net oil measurement on offshore production facilities, to batch and blending solutions at the refinery, right through to off-truck delivery and gate access systems at local depots and customers' sites. Contrec's unique 515 Series instruments give you the control, flexibility and visibility necessary to ensure every drop is accounted for.

UPSTREAM

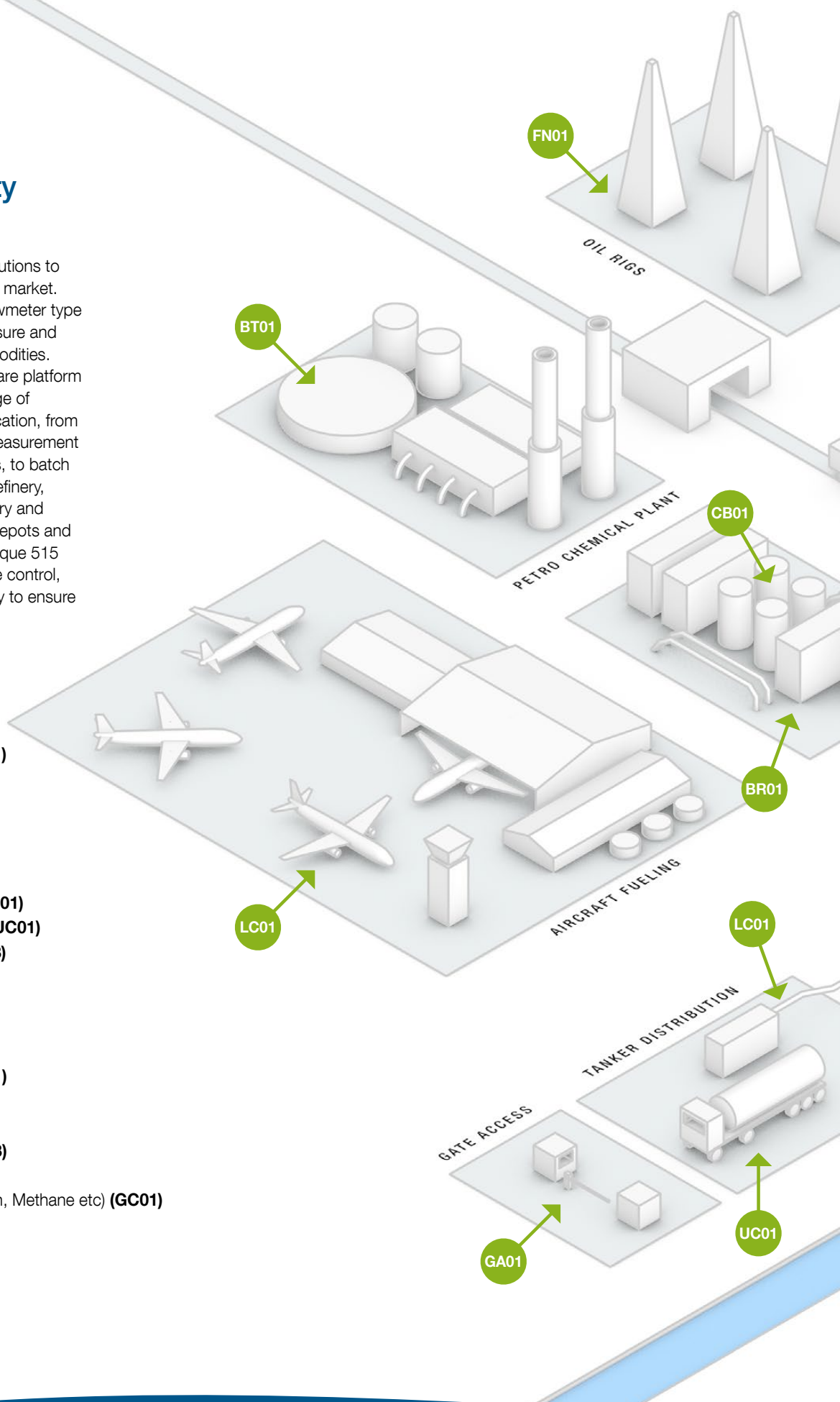
Net Oil/Water Cut (**FN01**)
Additive Injection (**AI01**)
Nitrogen Cooling System (**AI01**)
Pipeline Flooding (**AI01**)

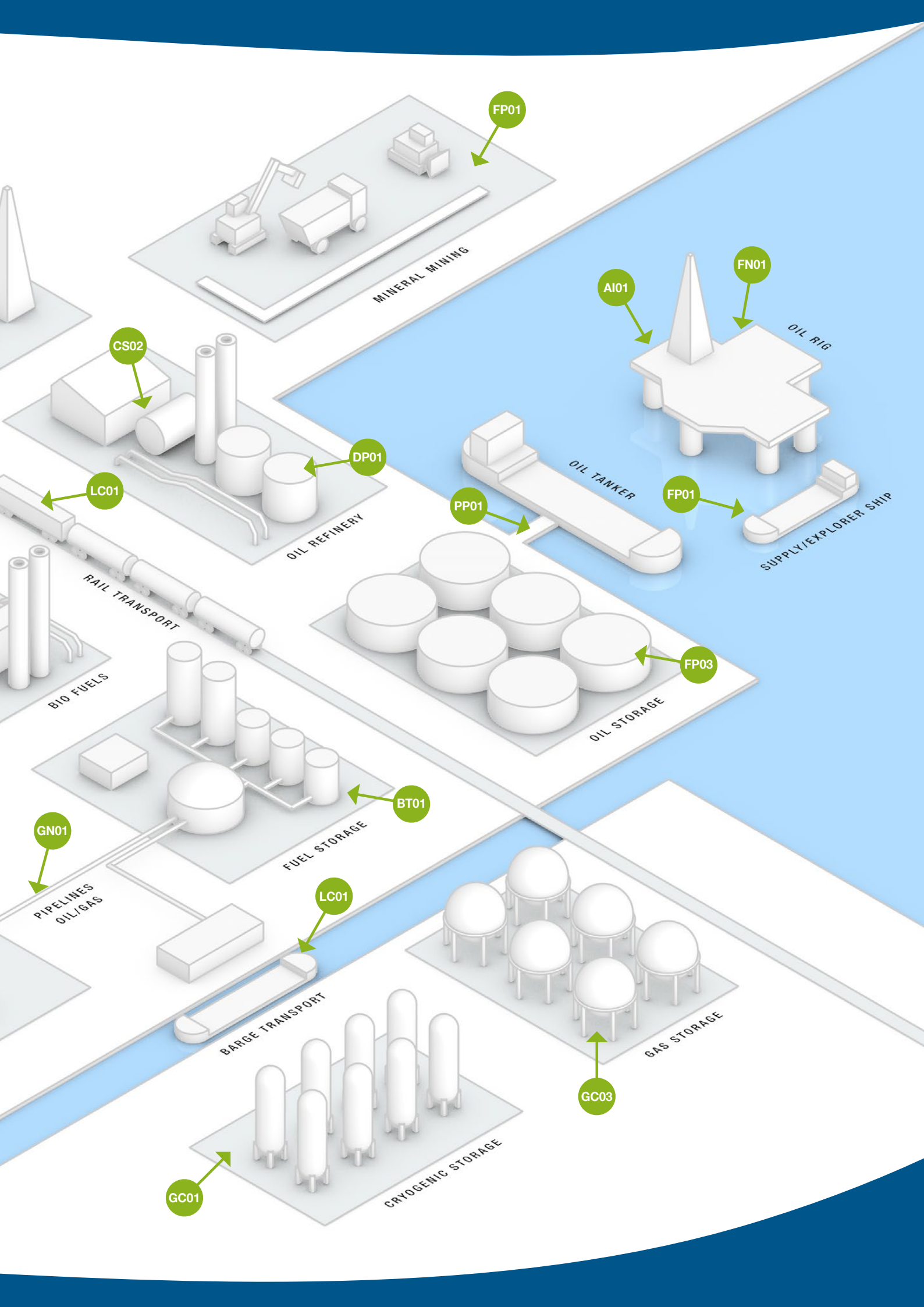
MIDSTREAM

Petroleum Pipelines (**PP01**)
Gas Pipelines (**GN01**)
Tanker/Barge/Rail Loading (**LC01**)
Tanker/Barge/Rail Unloading (**UC01**)
LPG/LNG Measurement (**FP03**)
Bunkering (**PP01**)
Tank to Tank Transfer (**FP01**)

DOWNSTREAM

Petroleum Consumption (**FP01**)
Bio Blending (**BR01**)
Mining Vehicle Fuelling (**FP01**)
Natural Gas Distribution (**GC03**)
Gate Access (**GA01**)
Specialist Gas (Helium, Oxygen, Methane etc) (**GC01**)
Aircraft Refuelling (**LC01**)
Lubricants Batching (**BT01**)
Density Converter (**DP01**)
Steam to Condensate (**CS02**)



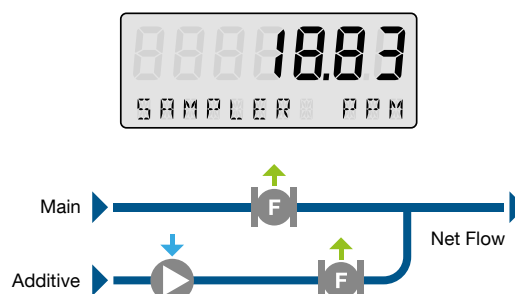


These are some of the 50 Available Applications

Additive Injection Controller (AI01)

This application is designed to control the injection of additive chemicals with respect to a main flow. Tailored for volumetric frequency flowmeters it will operate with positive displacement dosing pumps controlling the dosing rate via either an output pulse or 4-20mA signal.

- Suited for injection ratios from 10 to 10000 PPM
- Adjustable sampling method deals with the inherent problems of measurement and control of pulsating injections
- Continual calculation of main flow and required dosing rates

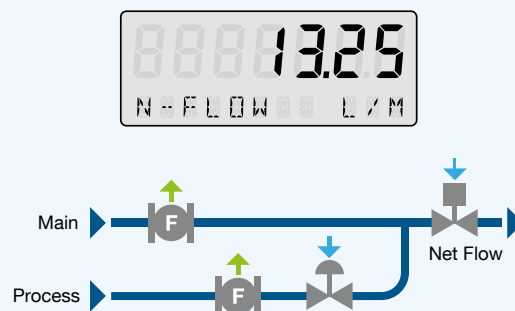


Batch/Ratio Process Controller (BR01)

The BR01 application is a Batching Ratio Controller for delivery of preset quantities at preset ratios using volumetric frequency inputs.

Batch control can operate in preset or on-off modes, while flow control can be set to various loop control modes.

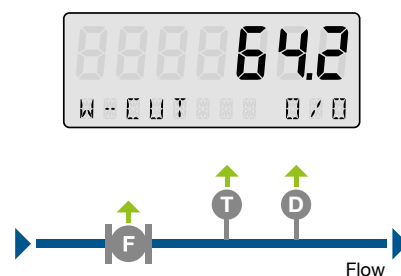
- Single or dual stage control
- No-flow, leakage and overflow error detection
- Remote RUN/STOP/RESET



Net Oil Flow Computer (FN01)

This application calculates the net oil content in petroleum production fluids containing water. The net oil volume is corrected to a reference temperature according to ASTM D1250-04. The instrument uses the frequency signal from a mass flowmeter along with temperature and density analog inputs.

- Calculates the Net Oil content in petroleum production fluids containing water
- Volume correction according to ASTM D1250-04
- Uses temperature and density inputs for volume correction

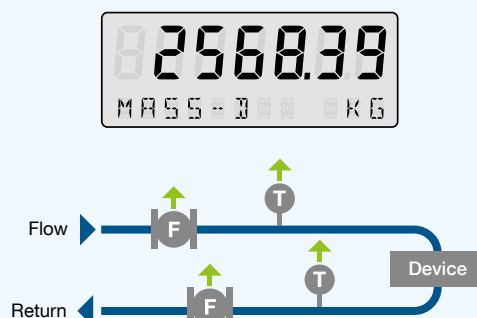


Petroleum Consumption Flow Computer (FP01)

The FP01 application measures the flow and consumption of a petroleum fluid.

The two-channel frequency flow input enables the instrument to calculate the delta net volume that is used by a consuming device.

- Caters for a wide range of petroleum products including crude, lube, refined and LPG
- Allows for volume correction of general and user fluids

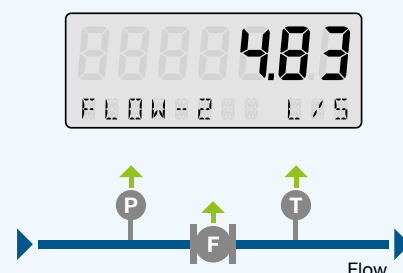


Natural Gas Flow Computer (GN01)

This application measures the volume, mass and gross heat content of natural gas.

The instrument uses a frequency volume flow input and analog temperature and pressure sensor inputs.

- AGA-8 Natural Gas detail characterisation method calculations for gas compositions with up to 21 components
- Allows quadrature flow input for ISO 6551 level B pulse security
- Allows for non-linear correction

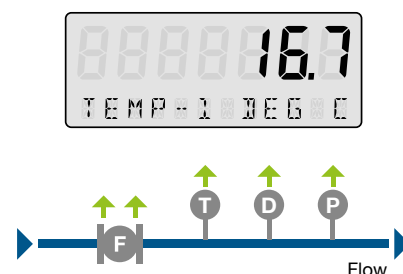


Pressurised Petroleum Flow Computer (PP01)

The PP01 application measures the flow of a pressurised petroleum fluid according to ASTM D1250-04. The frequency flow inputs can accept a quadrature signal for ISO 6551 level B pulse security.

An analog pressure, temperature and/or density input allows for volume correction to reference conditions.

- Pressure and temperature compensation to ASTM D1250-04
- Caters for a wide range of petroleum products including crude, lube, refined and LPG

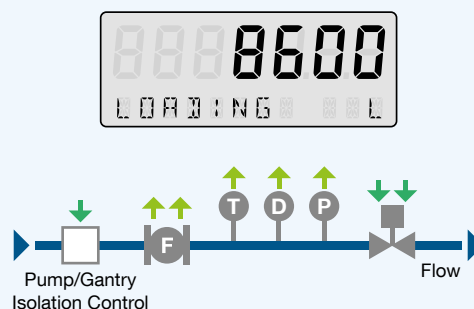


Single Arm Load Computer (LC11)

This application is a Single Arm Load Computer with digital valve control for the reliable and accurate delivery of preset quantities of products measured by mass flowmeters.

The volume frequency flow input can accept a single or quadrature signal for ISO 6551 level B pulse security. The load computer can operate in a Preset or On/Off mode.

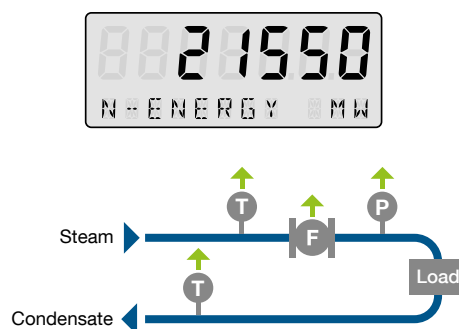
- Tailored for Volumetric flowmeters
- Simple five key operation with easy access to common batch presets
- Allows quadrature flow input to ISO 6551 level B pulse security
- Batches in Volume total
- Preset, On-Off or Release (tuning) batch modes



Steam to Condensate Computer (CS02)

The CS02 application accurately accounts for returning condensate energy when calculating the net energy in a closed 'steam to condensate' system. The volume, mass and energy content of steam and condensate lines are calculated by using an analog volume flow in conjunction with a temperature and/or pressure inputs.

- Tailored for closed 'Steam to Condensate' systems
- Accurately calculates Net Energy by accounting for energy in returning condensate
- Calculations based on 100% steam to condensate conversion
- Programmable condensate pressure value accessible via Modbus



515 Series Applications

Pack No.	Description	Comments
BATCH	Batch Controllers	
BS01	Secure Batch Controller – Volumetric Frequency Flow	ID-Tag Interface
BT01	Temperature Compensated Batch Controller	ASTM D1250, etc.
	Batch/Flow Controllers	
BF01	Dual Stage Batch & Flow Control – Volumetric Frequency Flow	PI Flow Control
BF02	" " " – Volumetric Analog Flow	" "
BF03	" " " – Mass Frequency Flow	" "
BF04	" " " – Mass Analog Flow	" "
BR01	Dual Stage Batch & Radio Control – Volumetric Frequency Flow	" "
BR02	" " " – Volumetric Analog Flow	" "
BR03	" " " – Mass Frequency Flow	" "
BR04	" " " – Mass Analog Flow	" "
AI01	Additive Injection Controller – Volumetric Frequency Flow	
LOAD	Load Computer	
LC01	Load Computer – Volumetric Frequency Flow	
CONTROL	Control Computers	
CR01	Blending / Ratio – Volumetric Frequency Flow, Analog Control	PI Flow Control
CR02	" " – Volumetric Analog Flow, Analog Control	" "
CB01	Batch Based Blending – Volumetric Frequency Flow, DCV Control	Control for Digital Valves
CB02	Secure Blending Controller – Frequency Flow (V), DCV Control	ID-Tag Interface
FLOW	Flow Computers	
FA01	Add or Subtract Flow – 2 Input, Freq or Analog (Volumetric)	Flow1 +/- Flow2
FA02	" " – 2 Input, Freq or Analog (Mass)	" "
FA03	" " – 2 Input, Freq or Analog (Energy)	" "
FP01	Petroleum Consumption – 2 Channel Frequency Flow	ASTM D1250, Flow1 – Flow2
FP02	" " – 2 Channel Analog Flow	" " " "
FP03	Petroleum Flow – Quadrature Input, Temperature Correction	ASTM D1250, ISO 6551, LPG
FN01	Net Oil (Water Cut) – Mass Frequency Flow	ASTM D1250-04
PP01	Pressurised Petroleum Flow – Quadrature Input	ASTM D1250-04, ISO 6551
GAS	General Gas Computers	
GC01	General Gas – Single or Quadrature Frequency Flow	Ideal & General Equations
GC02	" " – Analog Flow	" "
GC03	" " – Stacked DP Mass Flowmeter	" "
GC04	" " – Stacked DP Meter (ISO 5167/Cones)	" "
GC06	" " – Stacked DP Volumetric Flowmeter	" "
	Natural Gas	
GN01	Natural Gas (AGA-8) – Single or Quadrature Frequency Flow	
GN02	" " – Analog Flow	
GN03	" " – Stacked DP Mass Flowmeter	
GN04	" " – Stacked DP Meter (ISO 5167/Cones)	
HEAT	Heat/Energy Computers	
HC01	Heat/Energy Calculator – Volumetric Frequency Flow	Water & other fluids
HC02	" " – Volumetric Analog Flow	" "
HC03	" " – DP Meter (Mass Span)	" "
HC04	" " – DP Meter (ISO 5167/Cones)	Water (IAPWS-IF97)
HC06	" " – DP Meter (Volumetric Span)	Water & other fluids
HC12	Heat/Energy Calculator – Mass Analog Flow	" "
LEVEL	Level Monitors	
LM01	Single Tank Level Monitor – Analog level	With strapping table
STEAM	Steam Computers	
SC01	Steam Computer – Volumetric Frequency Flow	IAPWS-IF97
SC02	" " – Volumetric Analog Flow	" "
SC03	" " – DP Meter (Mass Span)	" "
SC04	" " – DP Meter (ISO 5167/Cones)	" "
CS02	Condensate & Steam Computer – Analog Flow	
OTHER	Other Applications	
DG01	Density Converter – Generic Gas Equations	Pulse Density Input
DP01	" " – Generic Liquid and Petroleum	" "
MP01	Mass Flow – Frequency Input With Master Proving	API Manual, Chapter 4.5
OC01	Open Channel – Frequency Velocity, Analog Level	Additional Logging

Communications

There are two communication ports available as follows:

- RS-232 port
- RS-485 port (optional)

These ports can be used for remote data reading, printouts and for initial application loading of the instrument.

Isolated Outputs

The opto-isolated outputs can re-transmit any main menu variable. The type of output is determined by the nature of the assigned variable. Totals are output as pulses and rates are output as 4-20mA signals. One output is standard, a second output is available as an option.

Relay Outputs

The relay alarms can be assigned to any of the main menu variables of a rate type. The alarms can be fully configured including hysteresis. Two relays are standard with additional two relays available as an option.

Software Configuration

The controller can be further tailored to suit specific application needs including units of measurement, custom tags, second language or access levels. A distributor can configure these requirements before delivery.

Instrument parameters including units of measurement can be programmed in the field, according to the user access levels assigned to parameters by the distributor.

A free download is available from our website – www.contrec.co.uk



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