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JISKOOT InSpec

Sampling system controller

JISKOOT InSpec Sampling System Controller

The function-specific JISKOOT InSpec* sampling system controller reduces measurement uncertainty while delivering ease of use. Whether handling a single continuous batch or multiple cyclic batches, the sampling controller can operate in flow- or time-proportional sampling modes, gathering all generated data and monitoring the performance of the sampling system.

The JISKOOT InSpec sampling system controller enables the user to easily configure, operate, monitor trends of, and ensure the optimal performance of the sampling system. Multicolored LEDs, configurable bar graphs, and a web-based HTML interface enable the user to quickly determine the status of the sampling system, process conditions, alarm status, and receiver levels.

The intuitive system software guides the operator in entering the batch information or automatically receives it from a supervisory system via a serial or Ethernet communication link. The controller can be configured for single, dual, or multireceiver feedback systems, including the JISKOOT CanWeigh* sample-receiver weighing system, or to operate in single, duty, continuous, or standby modes.

The JISKOOT InSpec controller's standard I/O configuration is ideal for simple sampling systems in which only a few inputs and outputs are required. Remote I/O expansion modules enable significant expansion of the JISKOOT InSpec controller's I/O capabilities, giving the controller all of the I/O capabilities of a programmable logic controller (PLC) system with 40 years of JISKOOT* sampling and blending products intelligence built in.

Configurable usernames and passwords enable secure and traceable access that safeguards critical settings and operational files. Alarms and warnings can be announced via the front panel or sent via digital output, network communications, e-mail, or the JISKOOT InSpec controller webpage.

Safe and hazardous areas

Whether in the control room or in the field, the JISKOOT InSpec sampling controller for safe areas or JISKOOT Inspec EX hazardous area sampling controller enable users to control, configure, and monitor the sampling system.

Expandable I/O functionality

The addition of remote I/O makes the JISKOOT InSpec sampling system controller one of the most powerful and flexible sampling control systems on the market. Expandable plug-and-play modules equip the controller for the demanding requirements of today's data-driven oil and gas industry. Preconfigured register mapping, simple configuration, and Ethernet connectivity make it easy to add I/O to any new or existing installation. This scalable offering provides a powerful and cost-effective means of collecting the real-time data required to make educated business decisions and reduce the operational and financial risk associated with measurement uncertainty in custody transfer sampling applications.

ISO, API, and EI performance factors

Along with a JISKOOT CanWeigh system or volume sensor system, the JISKOOT InSpec controller monitors sampling system performance factors to validate sample representativeness according to API, ISO, and Energy Institute (EI) sampling standards. The controller's interface shows the levels within the receivers, the sample-grab performance factor, and batch-performance factor to ensure performance to the lowest-possible measurement uncertainty. An alarm will sound when maintenance is required.

If a high fluid level condition occurs within the selected sample receiver, the continuous monitoring and control function within the JISKOOT InSpec controller will send a signal to a switching valve, which automatically reroutes the sample into an empty receiver. This function provides sample continuity over the entire batch and also reduces the risk of a spill occurring due to the sample receiver overflowing.

Line-fill sampling functions

Line-fill sampling functions are used in applications where there is a significant line pack between the sampling system and the point of custody transfer. The volume is monitored by the controller in relation to the line-fill sampling configuration. The sampling controller will either allow the fluid to pass unsampled or will sample the line-fill volume into a separate receiver to ensure that the line-fill volume of fluid does not contaminate the displacing fluid that is intended for sampling.

Grab sensing and alarms

The grab-sensing feature enables the output from a grab-sensing device to provide additional feedback to the sampling controller, ensuring that checks have occurred on each individual grab. In the event of a disparity between when a grab is requested but not taken, an alarm will sound.

Auxiliary control

This feature provides automated control of a mixing or fast-loop pump motor or other auxiliary equipment. The actuation can be by mainline flow detection or the controller entering active phases.

Modbus networking

Modbus networking enables full remote access for monitoring and controlling the sampling process. Main and subsidiary modes are available for supporting function codes 03, 04, 06, and 16 using a serial port or the RJ45 Ethernet connection for Modbus TCP or web interface.

Sampling system reporting

The sampling system monitoring and performance reporting functionality automatically generates a report for each batch that has gone through the sampling system. The report contains all pertinent batch information, including the start and end times of a batch, expected and delivered batch volumes, total sample volume taken, number of grabs taken, and the system's performance factor, which is used to plan preventive maintenance, as well as the physical properties of the sampled fluid such as density, viscosity, and water cut.

Compatible systems

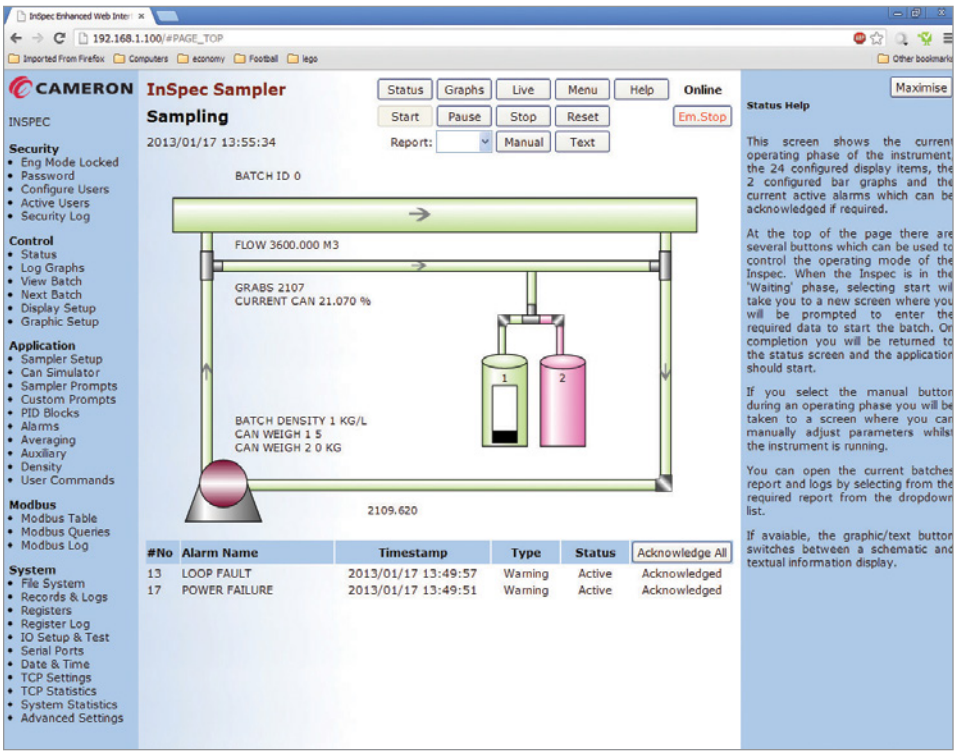
- Sampling and analysis stations
- Bypass loop sampling
- JISKOOT CoJetix* mixing and fast-loop sampling system
- Probe or cell sampling systems
- Gas sampling systems

Equipment applications

- Crude oils
- Bunker fuels
- LNG and liquefied petroleum gas (LPG)
- Refined products
- Condensates
- Gases

Features

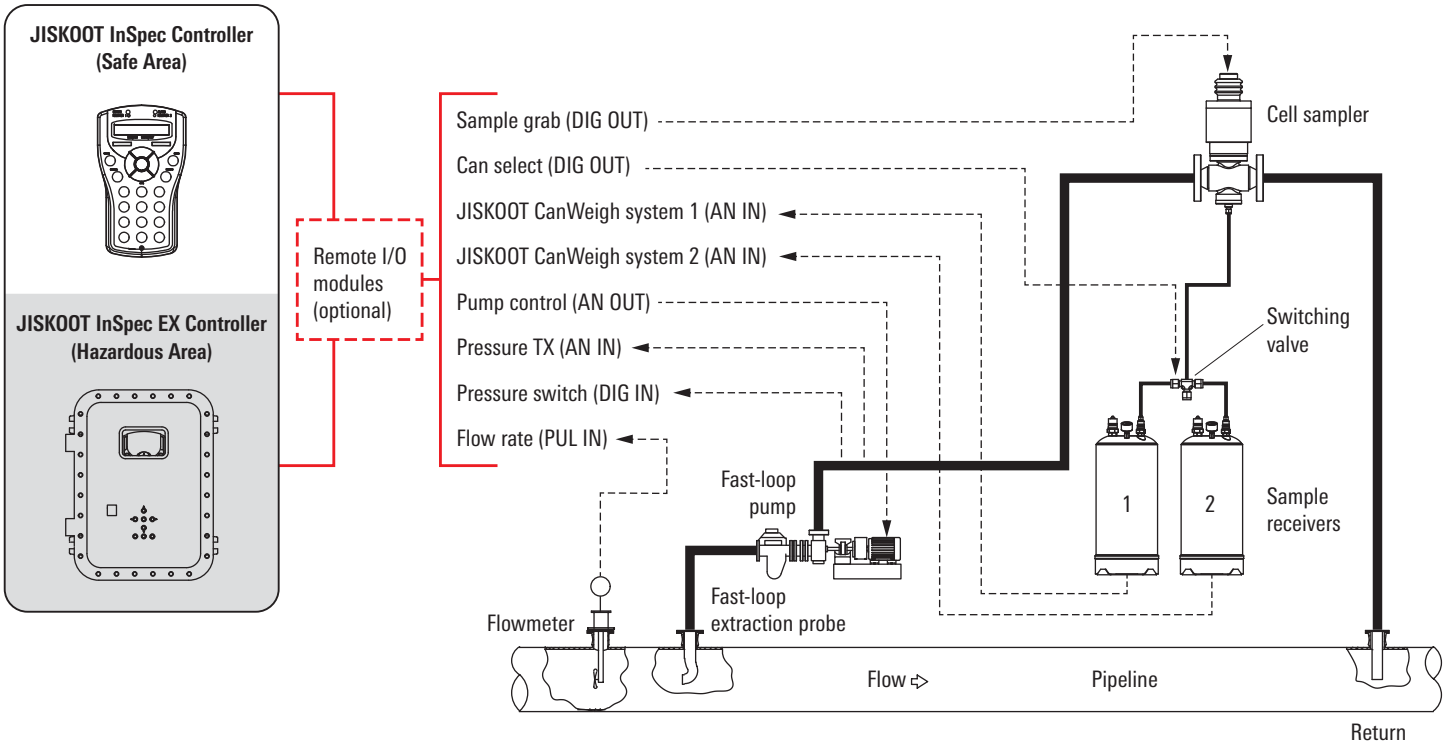
- Full compliance with ISO, API, EI, and ASTM International standards
- Easy-to-read scrolling display with configurable bar graphs
- User-friendly ergonomic front panel that can be remotely mounted
- Menu-driven wizard for configuration setup
- Configuration backup and restore
- Flow- or time-proportional sampling
- Integrated remote auxiliary control
- Configurability for use with any vendor's samplers or receivers
- User-configurable logic that enables programming extra tasks
- Proportional integral-derivative blocks for user control loops
- Storage of configurable reports and logs using text and comma-separated-value files
- FTP file access
- Network Time Protocol time synchronization
- E-mail support for reports and notifications
- Remote support using Telnet
- Flow-weighted averaging
- Secure logins and record of actions (configurable usernames and passwords)
- Easy in-system reprogramming
- HTTP web interface
- Configurable reports
- Secure Digital (SD) card
- Animated system schematic available on web interface with fully configurable color scheme and labels



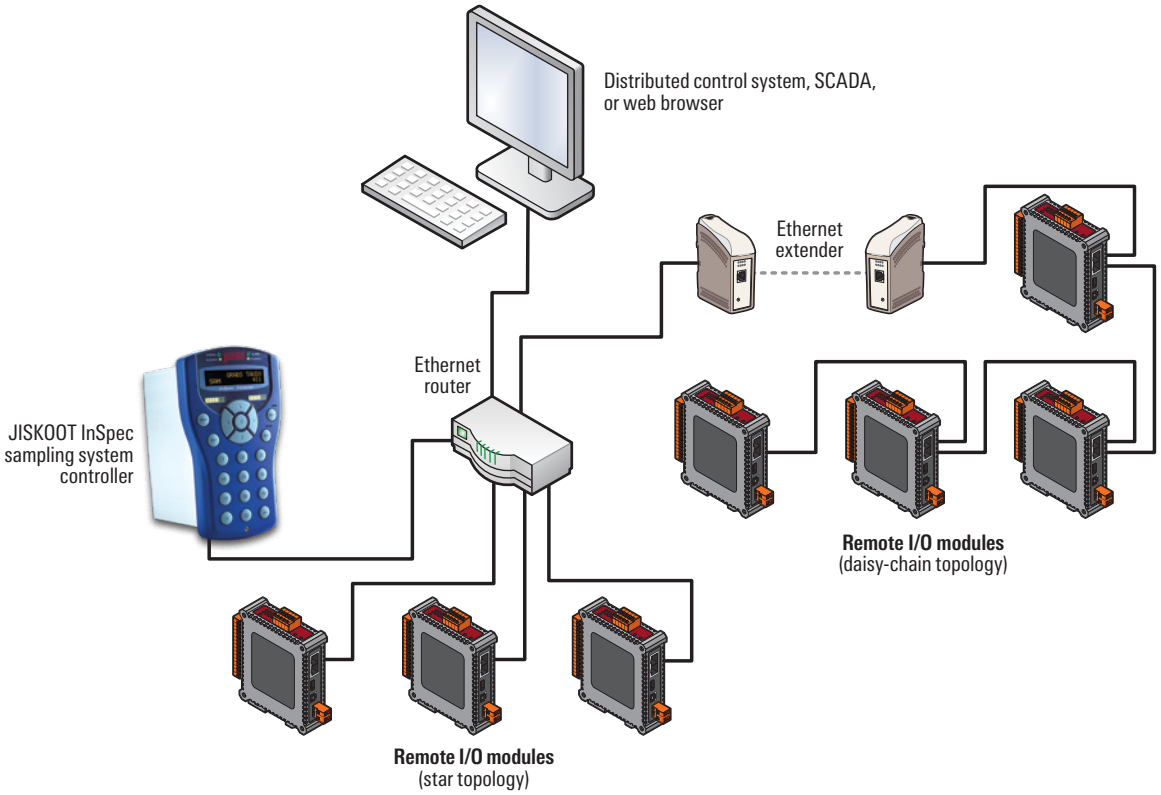
Web interface.

Web interface on tablet.

System Schematic



Typical system schematic.



JISKOOT InSpec controller remote I/O topology options.

Specifications

Specifications—JISKOOT InSpec and JISKOOT InSpec EX Controllers

	Dimension	JISKOOT InSpec Controller	JISKOOT InSpec EX Controller
Physical	Size (W × H × D), in [mm]	15.1 × 8.7 × 6.7 [130 × 220 × 170]	17.3 × 22.2 × 9.4 [440 × 565 × 240]
	Weight, lbm [kg]	4 [1.8]	110 [50]
Environment	Operating temperature, degF [degC]	41 to 104 [5 to 40]	–4 to 131 [–20 to 55]
Approvals (typical)	CE	Yes	Yes
	ATEX	–	II 2 (1) G Ex d(ia Ga) IIB +H2 T6 Gb Tamb –4 to 131 degF [–20 to 55 degC]
	ETL	Yes—Ordinary locations	Yes—Hazardous locations Class 1, Div 1, Groups C and D, T6 Class 1, Zone 1, IIB, T6 (USD) Tamb –4 to 131 degF [–20 to 55 degC]
Power supplies	AC	100–240 V, 50/60 Hz	100–240 V, 50/60 Hz
	DC	24 V ±10%	24 V ±10%
	Maximum power consumption, W	15	100 (AC) 15 (DC)
Relay outputs	Quantity	Four single-pole single-throw normally open	Four single-pole single-throw normally open
	Maximum switching voltage, V	250 AC, 30 DC	250 AC, 30 DC
	Maximum switching current, A	2	2
Digital I/O points	Quantity	4	4
	Contact form	Solid-state relay	Solid-state relay
Output	Maximum load voltage, V DC	24	24
	Maximum load current, A	0.12	0.12
Input	Input type	Volt-free contact	Volt-free contact
Analog outputs	Quantity	2	2
	Output type, mA	4–20, current source—active output	4–20, current source—active output
	Accuracy, % of full-scale	±0.05	±0.05
Analog inputs	Quantity	3	3
	Input type, mA	4–20	4–20
	Accuracy, % of full scale	±0.05	±0.05
Pulse inputs	Quantity	2	2
	Input type	0–24 V, DC voltage pulse	0–24 V, DC voltage pulse
		4–20 mA, DC current pulse	4–20 mA, DC current pulse
	Maximum frequency, kHz	10	10
	Accuracy	±1 count in any given sampling period	±1 count in any given sampling period
Communication ports	Quantity	5	5
	Type	One-off RS422 port for user interface	One-off RS422 port for user interface
		Two-off configurable RS232, RS422, or RS485 ports	Two-off configurable RS232, RS422, or RS485 ports
		One-off dedicated shell port	One-off dedicated shell port
		One-off Ethernet port	One-off Ethernet port
Mass data storage	Type	Secure digital (SD) card	SD card

Specifications—JISKOOT InSpec Controller Remote I/O Modules

Module Type	Specification	Safe-Area Remote I/O	Hazardous-Area Remote I/O†
Digital I/O module	Maximum number of points	48 (6 modules)	32 (4 modules)
	Contact form	Solid-state relay	Solid-state relay
Analog output module	Maximum number of points	16 (2 modules)	16 (2 modules)
	Output type, mA	4–20, current source—active output	4–20, current source—active output
	Accuracy, % of full scale	±0.05	±0.05
Analog input module	Maximum number of points	32 (4 modules)	32 (4 modules)
	Input type, mA	4–20, passive input	4–20, passive input
	Accuracy, % of full scale	±0.05	±0.05
Pulse input module	Maximum number of points	16 (2 modules)	16 (2 modules)
	Input type, V DC	0–24, voltage pulse	0–24, voltage pulse
	Maximum frequency, kHz	10	10
	Accuracy	±1 count in any given sampling period	±1 count in any given sampling period

†In a hazardous-area installation, a JISKOOT InSpec controller can accommodate up to four modules (for example, two analog input, one analog output, and one digital I/O). Remote I/O hubs are ETL-Listed, CE marked, and ATEX and IECEx certified for use in hazardous areas.

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products.slb.com/measurement

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