Hardware

Touch screen
The Prove-X comes with a built-in touch screen to operate the prover computer conveniently. The following specifications apply for the touch screen unit:

- Windows embedded CE touch controller
- 10.4 inch color TFT touch screen
- 800 x 600 resolution, 260K colors
- Waterproof Front Panel IP65
- Windows Embedded CE 6.0
- SAMSUNG 2450 (533MHz) ARM Processor
- SDRAM 128MB / NAND FLASH 128MB

Flow-X/M: Powerful flow computer module
The core flow computer element of Prove-X is the Spirit^{IT} Flow-X module. This single stream flow computer contains a fast microprocessor, adequate memory (1GB) and all analog and digital inputs and outputs to support a full single metering stream and prover system.

Connectors
Quantity and type of available connectors for field equipment, test meter, master meter, prover system and printers can be customized according to specific requirements.

Case features

Certificates:

- Watertight, dust proof (IP67)
- Unconditional lifetime warrantee

Total weight of Prove-X flight case:
Approximately 18 kg (40 lbs)

Interior dimensions:
520 x 393 x 254 mm (20.5 x 15.5 x 10.0 inch)

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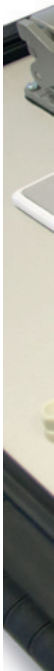
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LL/ProveX Rev. B 10.2017

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Spirit^{IT} Prove-X

Mobile prover solution



Prove-X mobile prover

All-in-one flow computer solution for proving
For mobile proving applications, this heavy duty flight-case with all necessary equipment on board provides the ideal solution. It offers a built-in flow computer, touch screen, 24 V DC power supply and the necessary connectors for field equipment. Both standard and customized prover configurations are supported.

Proving features
The following types of provers are supported:

- Bi-directional sphere (ball) prover (large and small volume)
- Uni-directional sphere (ball) prover (large and small volume)
- Compact piston provers: Flow MD, Brooks, Calibron, Syncrotrak

The flow computer performs both the flow metering and proving functions.



Software

The flow computer software application features:

- All the standard Spirit^{IT} Flow-X features, such as user definable configuration for reports, displays, (Modbus) address lists, units, logic, calculations, and more.
- Support for various meters, including Turbine, PD, ultrasonic, coriolis, orifice, venturi and V-cone flow meters. Support includes any type of flow meter outputting flow rate / total through analog, HART or Modbus signal.
- HART and Modbus option for live inputs or remote transmitters
- Single / twin densitometers
- Process inputs for density, base density and specific gravity
- API MPMS 11.1: 1980 (API-2540), API MPMS 11.2, API MPMS 11.1:2004, GPA-TP15, GPA-TP25 / TP27
- Cross-module I/O sharing
- Prove repeatability in accordance with API MPMS Chapter 4,8 appendix A
- Flow control, pressure control
- Sophisticated PID control with cascading feature
- Valve control including valve sequencing

For all prover types there is an option to apply double chronometry (pulse interpolation), which is required if the proved volume represents less than 10,000 meter pulses (as in accordance with API standards).

The number of prove runs and passes per run are configurable. Repeatability limit can be set either to a fixed value (typically 0.05%) or be determined dynamically in accordance with API MPMS Chapter 4,8 appendix A.

The application supports a both common input as well as two separate inputs for the start and stop detector switches. Also the usage of a 2nd stop detector is supported, leading to two calibrated volumes, one for smaller and one for larger meters. Finally a second start detector may be connected as well providing four separate calibrated prover volumes in total.

Repeatability checks are performed on pulse count or meter factor. Either a fixed or a dynamic repeatability limit can be applied to determine when the required number of successful runs has been reached. The dynamic limit is in accordance with the method described in API 4.8 appendix A.

