GUIDANT

Fusion4 MultiPak

The most advanced additive controller available

Take Control with MultiPak

Committed to innovation for over 90 years, Guidant offers the most advanced additive controller available on the market.

The Fusion4 MultiPak features the highest input/output (I/O) density available, combining exceptional functionality with unrivaled stream control. With enhanced information, precision, and integration capabilities, the Fusion4 MultiPak is part of an extensive portfolio of products that interact seamlessly.

The Fusion4 MultiPak combines the industry standard Mono-Block additive metering and control manifold with the Fusion4 Multi-Stream Controller for Additives (MSC-A). This system is designed to manage chemical injection by continuously monitoring the correct additive volumes across up to 12 streams (with future expandability to 24), ensuring the additive ratio is correct at every point in each transaction.

The MultiPak is the perfect multi-stream additive injection solution for many types of chemical transfer operations, including:

- Truck loading
- Railcar loading
- Aviation refueling
- Storage transfers
- Marine bunkering
- Pipeline transfers
- Transport bunkering
- Mining reagent dosing

A Better Solution

Multiple Language Support

English (US and UK), Mandarin, Japanese, French, Spanish, Portuguese, Italian, Dutch, German, and Polish

Multiple Masters

Communicates with up to six master devices simultaneously, such as load computers, facilitating whole-bay injection management

Rapid Start-Up

The Calibration Wizard provides 60-second configuration

Zero Downtime

Firmware upgrades live in the field with the LAD

Configurable, Expandable I/O

Scalable functionality using MSC-A expansion packs

Huge Transaction Archives

Up to 120,000 transaction records

Advanced Alarm Handling

Monitor nearly twice as many injection control parameters than any other device

Real-Time Diagnostics

From multiple diagnostics dashboards (stream, input/output (I/O) type, system health, Ethernet, and serial communications), plus the Switch Count Register for every I/O

Precision by Design

Using the Fusion4 MSC-A, the MultiPak brings a new dimension to the precision of additive injection applications. Precision is as much about knowing when things are going wrong as it is about controlling when everything is right. The MSC-A monitors more critical operational parameters than any other device, so you know the moment that the precision of your additive operation is threatened.

The Information Age

The MSC-A collects, displays, archives, and distributes an unparalleled level of system information, equipping you to quickly make the right operational and business decisions. Control optimization, transaction traceability, calibration security, and enhanced diagnostic tracking are all facilitated by this advanced level of data, leaving you without a shred of doubt about the effectiveness of your additive operations.

Connectivity Is Key

The need for seamless integration is a core driver for the Fusion4 portfolio and the MultiPak excels in this regard. Three Ethernet ports and seven serial ports enable a variety of connection options. The library of embedded communication protocols enables plug-and-play connectivity to other Guidant solutions, such as terminal automation systems (TAS), load computers, and the Fusion4 Portal software suite, as well as third-party systems using protocols such as Modbus. The pre-installed Mono-Block hardware is fully cabled, flow-tested, and calibrated in the MultiPak's station arrangement, reducing installation costs and pre-commissioning startup time.

Efficient Configuration and Updates

Configure the MultiPak from new in less than 60 seconds with the smart, handheld local access device (LAD) for a fast, efficient startup. Use the LAD again later to update firmware live in the field, boosting productivity. You won't need to power down, open the housing, and exchange EPROMs in the MSC.

Smart Calibration and Diagnostics

The Fusion4 MultiPak includes the Calibration Wizard, which captures every calibration record (including time stamps, calibration volumes, k-factor corrections, and even meter serial numbers) for greater traceability and security. Multiple diagnostics dashboards provide complete hardware and communications monitoring from a single screen, boosting reliability and reducing maintenance time.

Flexible I/O

You can assign functions to any input or output with the configurable I/O.

Interfacing

Flexible interfacing is possible using the LAD, which can copy and paste configuration files to and from any other MSC device. The LAD also facilitates two-way data communication with the Fusion4 MSC, enabling the rapid, secure transfer of transaction data, calibration records, and firmware upgrades.

Remote Visibility

The Fusion4 Portal software suite is supported for remote monitoring and printing of all MSC transactions, alarms, and communication statuses via Ethernet or serial communications.

Powerful Logging

The MSC can store 120,000 transaction logs, 2,000 alarm logs, and 1,200 calibration records. Meanwhile, advanced alarm handling monitors nearly twice as many injection control parameters as any other device, while the MSC's 8-inch QVGA full-color screen clearly displays all alarm conditions across all streams.

Full-System Control

With modular expansion pack upgradability, the MSC-A has the I/O capability to manage all your peripheral system elements, such as pump starting and monitoring, tank-level monitoring, block valve control, and system pressure and temperature monitoring.

Fusion4 LAD

The Fusion4 LAD increases the functionality of the MSC in the field, providing intuitive navigation of the device's menus. Hazardous-area approved, two-way data communication between the MSC and the LAD facilitate rapid downloading of transactional data, alarm logs, and calibration records to the LAD's removable secure digital (SD) card.

Calibration records can then be remotely loaded into a dedicated report generator for optimum traceability. The LAD also enables rapid upload of configuration files for faster setup or downloading to copy to other devices or a secure system backup. Firmware upgrading to live devices in the field, uploading of language packs, assignable shortcut keys, and a backlight for nighttime operation are just some of the LAD's many features.

Fusion4 LAD

Proven Expertise

- Over 90 years of experience in terminal operations
- Over 100,000 MSC-A injectors installed worldwide
- A pioneer in smart additive injection
- Solutions for every application
- Local support with global expertise
- Single-source provider with wide product portfolio

Technical Features

Additive Supply

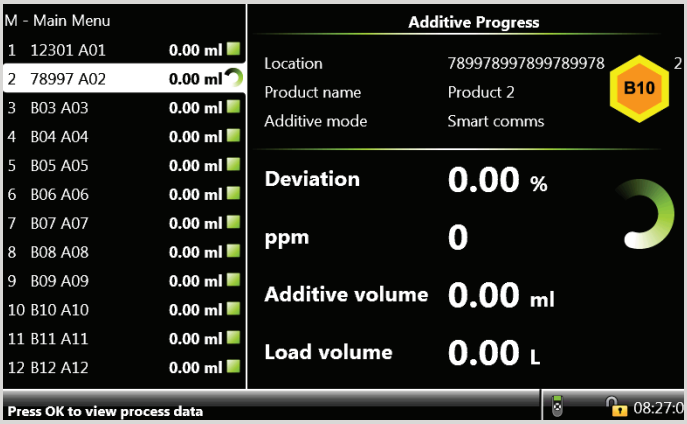
Suitable for typical additive supply pressures of 1 megapascal (MPa) (10 bar/145 pound-force per square inch (psi)). A minimum of 300 kilopascal (kPa) (3 bar/45 psi) differential is required between the additive supply pressure and the main product flow pressure.

Mounting Arrangements

The Fusion4 MultiPak is available in Station and Modular formats. The Station format consists of pre-integrated additive injector panels with the Fusion4 MSC-A on a free-standing frame, providing rapid installation and commissioning. The Modular format provides the additive injector panels and the MSC-A individually for a flexible field installation. Both formats are available with one or two 6-way injector panels.

Expansion Packs (EXP)

Enable the modular enhancement of MSC-A functionality. Each EXP consists of a hardware and a licensing element, which incrementally scales up the control capability of the MSC-A. Each EXP can be upgraded in the field.



Running screen

Injector Mounting

Mono-Blocks mounted on the rear panel of the Fusion4 MultiPak Station are inverted, ensuring that all injector inlets and outlets are at the same side of the station for both sets of injectors.

Standard/Low/Extended Flow Injectors

Standard and low-flow versions are designed and approved to OIML standards, and the extended-flow versions are designed/approved to FM/CSA standards. Based on typical loading flow rates of 2,400 liters per minute (l/min) or 600 gallons per minute (GPM), standard and extended-flow injectors accommodate applications between 100 and 3,000 parts per million (ppm), with a typical shot size between 15 and 200 cubic centimeters (cc). Low-flow injectors accommodate applications between 20 and 600 ppm, with a typical shot size between 3 and 40 cc.

Ryton (Polymer) Gears

Fitted as standard, with stainless steel available when Ryton is chemically incompatible.

Blocking Solenoids

Increase the security of any additive operation by providing a secondary isolation capability to every additive stream, minimizing the potential for large additive losses due to mechanical failures.

Inlet and Outlet Isolation Ball Valves

Available pre-installed on either side of the Mono-Block for manual isolation.

Quick Release Flushing Connections

Fitted between the isolation ball valves and the block to enable decontamination of the Mono-Block prior to maintenance.

Field Entry Plugs

Ex d blanking plugs can be supplied to secure all unused cable entries following installation.

Enclosure Venting with Optional Drain

Enclosure venting with an optional breather drain for use where an installation is subject to fluctuations in temperature that can lead to condensation and moisture buildup.

EXP Paks

	FUSION4 MULTIPAK	FUSION4 MULTIPAK + EXP1	FUSION4 MULTIPAK + EXP2	FUSION4 MULTIPAK + EXP3
Typical Application	Cost effective communication-based control with no field IO requirements; includes multiple serial communications	Mid-level capability permitting 'Inject Now' pacing and basic field I/O requirements, plus multiple serial communications and Ethernet	Advanced capability permitting enhanced field I/O requirements, including analogue and RTD, plus multiple serial communications and Ethernet	Superior capability permitting full high-frequency pacing and optimum field I/O functionality for total system control and redundancy
	Up to 12 injectors when using communications pacing, up to six injectors using high frequency pulse input pacing, self pace mode	Up to 12 injectors when using communications pacing, up to six injectors using high frequency pulse input pacing, up to 12 injectors using hardwired Inject Now pacing, self pace mode	Up to 12 injectors when using communications pacing, up to six injectors when using high frequency pulse input pacing, up to 12 injectors using hardwired Inject Now pacing, self pace mode, up to seven injectors analogue pacing	Up to 12 injectors using communications pacing, up to 12 injectors using high frequency pulse pacing, up to 12 injectors using hardwired Inject Now pacing, Self Pace mode, Up to 12 injectors analogue pacing
Hardware Included	One backplane 1 One CAN-PSF One CAN-ARM One fuse board	One backplane One CAN-PSF One CAN-ARM One fuse board One CAN-IN-OUT	One backplane One CAN-PSF One CAN-ARM One fuse board Two CAN-IN-OUT	One backplane One backplane Two CAN-PSF Two CAN-ARM Two fuse board Two CAN-IN-OUT
Notes: · Each injector requires one pulse input and one alternating current (AC) output. · Each optional blocking solenoid requires an additional AC output.				
Ethernet Ports	0	1	1	3
Serial Ports	3	3	5	7
Pulse Inputs (High Frequency)	12	12	12	24
Solid-State Relay (SSR)	12	16	20	32
Electromechanical Relay (EMR) AC/DC Outputs	0	10	20	20
AC Inputs	0	3	6	6
DC Inputs	0	15	30	30
Analog Outputs	0	0	3	4
Analog Inputs	0	0	7	14
Resistance Temperature Detectors (RTDs)	0	0	3	6
Pulse Outputs	2	2	2	4

Technical Specifications

APPROVALS	MSC	SENSOR	SOLENOID
ATEX	II 2 G Ex d [ia] IIB T6 Gb	II 2 G Ex d IIC T6 Gb	II 2 G Ex m II T3/T5 Gb
IECEx	Ex d [ia] IIB T6	Ex d IIC T6 Gb	Ex m IIC T3/T5 Gb
FM	Class 1, Division 1 Groups C, D T6	Class 1, Division 1, Groups C, D T6	Class 1, Division 1, Groups C, D T3A/B
CMA/CUL	Class 1, Division 1, Groups C, D T6	Class 1, Division 1, Groups C, D T6	Class 1, Division 1, Groups C, D T3A/B
PESO/CCOE	Zone 1, Ex d [ia] IIB T6 Gb	Zone 1, EEx d IIC T6	Zone 1, Ex mb

	ATEX/IECEX/PESO	FM/CSA
Flow		
Nominal K-Factor	Standard flow: 760 pulses per liter (p/L) Low flow: 1,460 p/L	Extended flow: 5,000 pulses per gallon (PPG)
Meter Accuracy	0.50%	0.50%
Meter Repeatability	0.25%	0.25%
Max Flow Rate	11 liters per minute (l/min)	2.5 US gallons per minute (USGPM)
Min Flow Rate	0.1 l/min	0.1 USGPM
Max Pressure	1.6 megapascal (MPa)	400 pound-force per square inch (psi)
Max Viscosity	300 centistoke (cSt)	300 cSt
Environmental		
Operating Temperature	-20 to 65 °C (MSC -40 to 65 °C)	-4 to 149 °F (MSC -40 to 149 °F)
Storage Temperature	-40 to 85 °C	-40 to 185 °F
Protection Class	IP66	IP66
Humidity	5 to 95% non-condensing	5 to 95% non-condensing
Materials		
Frame	Galvanized steel	Galvanized steel
Backplate	304 stainless steel	Aluminum
Enclosure	Aluminum, anodized	Aluminum, anodized
Manifold	303 stainless steel	303 stainless steel
Meter Gears	538 Ryton (stainless steel optional)	538 Ryton (stainless steel optional)
Connections		
Cable Entries	Six M40 Six M32 Two M20	Four 1 ¼ inch National Pipe Thread (NPT) Four 1 inch NPT
Manifold Connections	⅜ inch NPT	⅜ inch NPT
Isolation Valves (optional)	½ inch NPT	½ inch NPT

	ATEX/IECEX/PESO	FM/CSA
Electrical		
Voltage	88 to 264 volts alternating current (VAC) (50 to 60 hertz (Hz))	88 to 264 VAC (50 to 60 Hz)
Flow Meter Inputs	Twelve 5-kilohertz (kHz) dual input Configurable as 24 single pulse inputs	Twelve 5-kHz dual input Configurable as 24 single PI
Maximum DC Inputs	60	60
Maximum AC Inputs	12	12
Maximum DC Outputs	4	4
Maximum EMR DC/AC Outputs	40	40
Maximum SSR AC Outputs	40	40
Maximum Analogue Inputs	14	14
Maximum Analogue Outputs	6	6
Maximum RTDs	6	6
Maximum RS 485 Communication Ports	7	7
Ethernet Ports	3	3
Interfacing		
Serial Interfaces	RS 485, FlexConn, Modbus RTU, Modbus Legacy, Slip+, Smith Meter	
Ethernet Protocols	FlexConn TCP/IP, Modbus TCP/IP	
Display	8-inch wide video graphics array (WVGA) color thin-film transistor (TFT) liquid crystal display (LCD) screen	
Languages	English (US and UK), French, German, Spanish, Dutch, Mandarin, Japanese, Polish, Italian, and Portuguese	
Handheld Devices	Fusion4 LAD Fusion4 Infrared (IR) Controller	
Weight		
Six-Way Panel	~70 kilograms (kg)	~155 pounds (lb)
MSC-A	~53 kg	~115 lb
Station (Full)	~210 kg	~460 lb

Identification Code

The following guide defines the correct product for a given application and the respective identification code. This code is part of the product's ordering information and should be included in purchase orders.

CV 1 - 6	PRODUCT FAMILY
H	HELA50 Fusion4 MultiPak ATEX/IECEx
H	HELO70 Fusion4 MultiPak FM/UL
CV 7	**MOUNTING**
A	Fusion4 MultiPak Station MSC-A comes with One Backplate (6)
B	Fusion4 MultiPak Station MSC-A comes with Two Backplates (12)
E	Fusion4 MultiPak Modular + MSC-A comes with One Backplate (6)
F	Fusion4 MultiPak Modular + MSC-A comes with Two Backplates (12)
CV 8	**I/O EXPANSION**
A	Fusion4 MultiPak
B	Fusion4 MultiPak + Expansion Pack 1
C	Fusion4 MultiPak + Expansion Pack 2
D	Fusion4 MultiPak + Expansion Pack 3

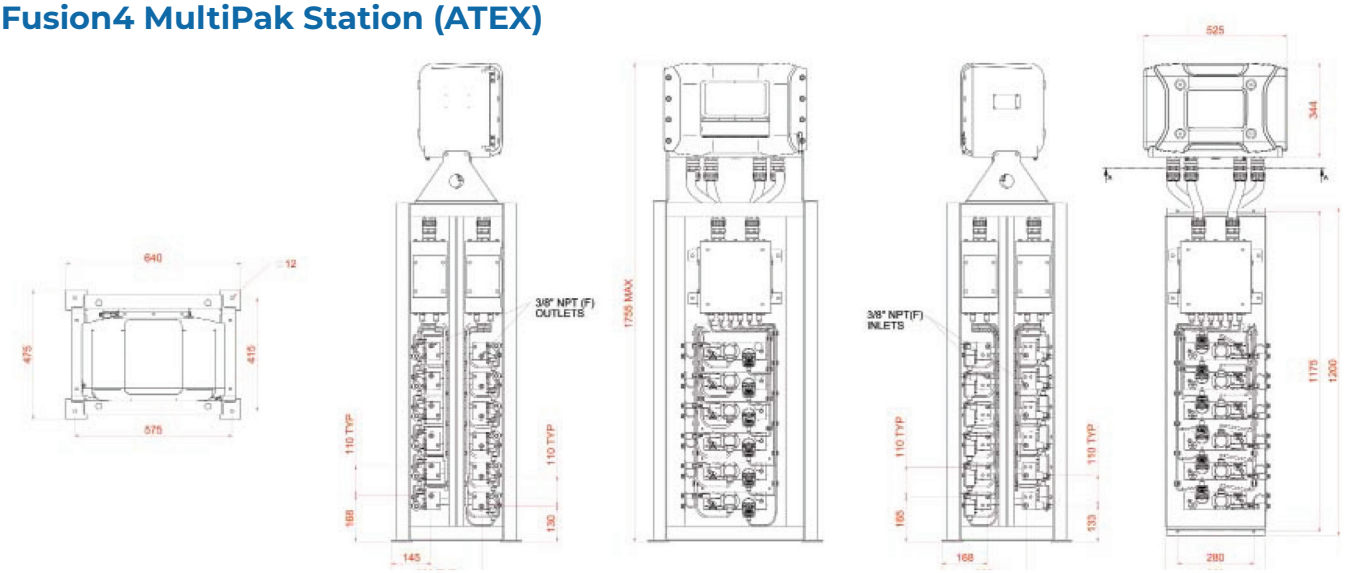
CV 9	SUPPLY VOLTAGE
A	110 VAC - 50 Hz
B	120 VAC - 50/60 Hz
C	230 VAC - 50 Hz
D	240 VAC - 50/60 Hz
CV 10	**BACKPLATE 1**
Position 1	**Number of standard flow injectors—Backplate 1 (6)** 0-1-2-3-4-5-6
Position 2	**Number of low- or extended-flow injectors —Backplate 1 (6)** 0-1-2-3-4-5-6
Position 3	**Standard flow and gear material—Backplate 1** 0—No standard flow injector selected A—Standard flow, Ryton gears (760 p/L) B—Standard flow, stainless steel gears (760 p/L)
Position 4	**Low or extended flow and gear material—Backplate 1** 0—No low-flow injector selected C—Low flow, Ryton gears (1,460 p/L) D—Low flow, stainless steel (1,460 p/L) E—Extended flow, Ryton gears (5,000 PPG) F—Extended flow, stainless steel (5,000 PPG) G—Extended flow, stainless steel gears and HR Elastomers (5,000 PPG)
CV 11	**BACKPLATE 2**
Position 1	**Number of standard-flow injectors—Backplate 2 (12)** 0-1-2-3-4-5-6
Position 2	**Number of low-flow or extended-flow injectors—Backplate 2 (12)** 0-1-2-3-4-5-6
Position 3	**Standard flow and gear material—Backplate 2** 0—No standard flow injector selected A—Standard flow, Ryton gears (760 p/L) B—Standard flow, stainless steel gears (760 p/L)
Position 4	**Low- or extended-flow and gear material—Backplate 2** 0—No low-flow injector selected C—Low flow, Ryton gears (1,460 p/L) D—Low flow, stainless steel (1,460 p/L) E—Extended flow, Ryton gears (5,000 PPG) F—Extended flow, stainless steel (5,000 PPG) G—Extended flow, stainless steel gears and HR Elastomers (5,000 PPG)
CV 12	**BACKPLATE 3**
Position 1	**Number of injectors standard—Backplate 3 (18)** 0—Not yet available
CV 13	**BACKPLATE 4**
Position 1	**Number of injectors standard—Backplate 4 (24)** 0—Not yet available
CV 14	**SOLENOIDS AND VALVES**
Position 1	**Solenoid seat material** 1—Isolat (ATEX standard) 2—PTFE 3—Chemraz (FM standard)
Position 2	**Solenoid temperature class** 0—Not requested A—T3, Exm B—T5, Exm C—T6, Exm

Position 3	**Blocking solenoid, isolation, and flushing options** 0—Not requested 1—Isolation valves, inlet and outlet 2—Isolation valves, inlet and outlet + flushing points ¼-inch quick-release coupling (QRC) 3—Blocking solenoid only 4—Blocking solenoid + inlet and outlet isolation valves 5—Blocking solenoid + inlet and outlet isolation valves flushing points ¼-inch QRC 6—Thermal relief assembly 7—Thermal relief assembly + inlet and outlet isolation valves
CV 15	**FIELD ENTRY PLUGS AND BREATHER**
Position 1	**Breather** 0—Not requested B—Ex d Breather/Drain
Position 2	**Field entry plugs** 0—None 1—ATEX Half Set—Three M40, three M32, one M20 Ex d blanking plugs 2—ATEX Full Set—Six M40, six M32, two M20 Ex d blanking plugs 3—FM Full Set—Four 1 ¼-inch, four 1-inch Ex d blanking plugs
CV 16	**EX APPROVALS**
A	ATEX
B	IECEx
C	CCOE (India)
D	FM
E	CSA

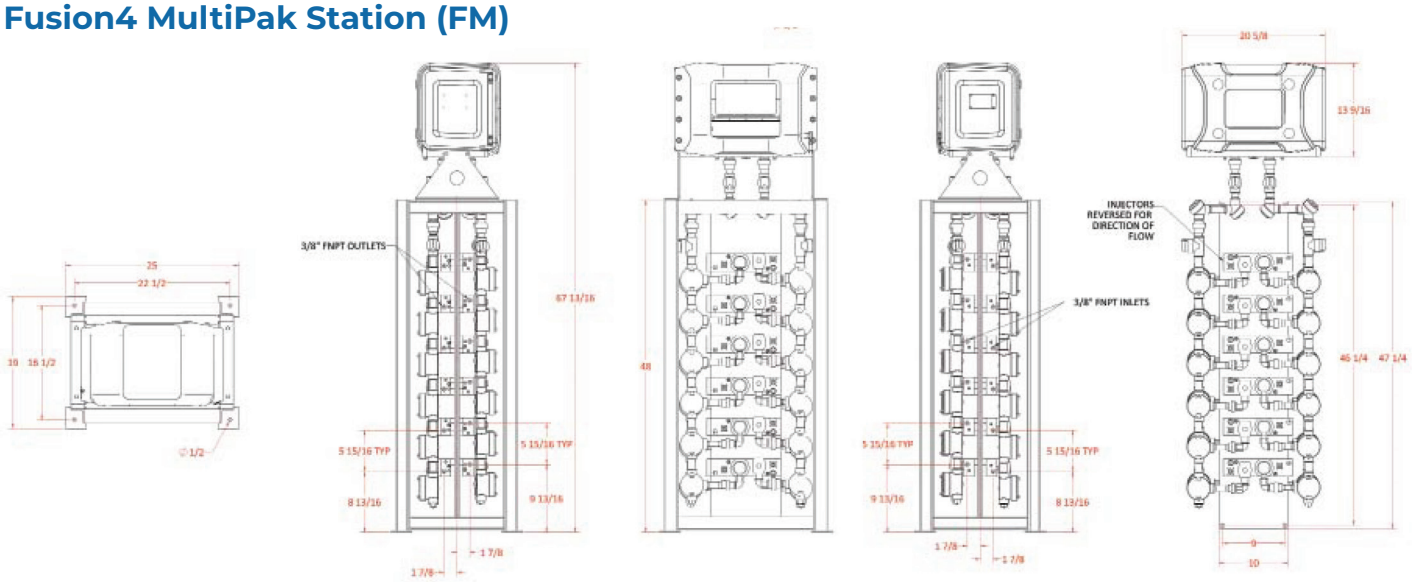
The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacture that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

Dimensional Drawings

Fusion4 MultiPak Station (ATEX)



Fusion4 MultiPak Station (FM)



About Guidant

As the undisputed leader in liquid and gas custody transfer solutions with the largest global install base, Guidant's legacy is built on more than 90 years of expertise, accuracy, reliability, and best-in-class technologies. We are a private company focused on the measurement solutions business, serving emerging and established energy markets across the globe.

Corporate Website
GuidantMeasurement.com

Guidant Knowledge Base
KB.GuidantMeasurement.com

Email
Guidant_Communications@GuidantMeasurement.com

Measurement Products Global Sales
+1 814.898.5000

24/7 Service and Support

- **Eastern Hemisphere**
  ResponseCenter.MS@GuidantMeasurement.com
  +49 4101 304.0
- **Western Hemisphere**
  MS.ResponseCenter@GuidantMeasurement.com
  +1 844.203.4014