Scanivalve

REPLACING A DSA3200 WITH A DSA5000 SERIES PRESSURE SCANNER

OVERVIEW

The DSA3200 multi-channel pressure scanner series was introduced in 1995 and discontinued in 2023. Over the long and successful life of one of the most well-known intelligent pressure measurement devices, the DSA evolved several times to include advancements in technology, and to meet the demand of pressure measurement applications. Thousands of these scanners are still operating in the field today.

The new DSA5000 pressure scanner was designed around the knowledge and use of the DSA3200 series, adding many advanced features including software, hardware, and improved electronics to provide better accuracy, reliability, longevity, and versatility for changing industry requirements.

To help with the transition from DSA3200 to DSA5000 scanners, an embedded DSA3200 Emulator mode was integrated into the DSA5000 firmware. In tandem with supporting accessories, this allows the DSA5000 to be used in many existing systems that support DSA3200 pressure scanners.

DSA3217 (left) and DSA5000 (right)

DSA3200 EMULATOR OVERVIEW

The embedded DSA5000 firmware supports a DSA3200 software emulation mode. When enabled, the DSA5000 will communicate and operate using a limited set of native DSA3200 commands and data output formats. Many of the standard functions including scanning and zero-offset corrections are supported to be used in software environments built around the DSA3200 series.

While in emulation mode, some native DSA5000 commands and functions are still available. Some of these functions are the only means to carry out certain procedures such as modifying the IP address or boot parameters, calibrations (excluding CALZ/CALB), or firmware and coefficients updates. Other native DSA5000 features such as scan rates in excess of 850Hz, SSEP (daisy-chain), scan triggering and auto-scan are not available.

EMULATOR FUNCTIONALITY

- Maintains DSA5000 features including:
  - Valve configuration via software
  - Heater control via software
  - Synchronized internal scanning
- Supports internal and external frame triggering
- Supports most ASCII and Binary data output formats
- Supports all timestamp options
- Maintains IEEE1588-2008v2 PTP compatibility
- Supported Software Packages:
  - ScanTel
  - DSALink4

See page 2 for more details

HARDWARE COMPATIBILITY

- Wide power input requirements (9-36VDC)
- Expanded pressure ranges and accuracies
- Matching pneumatic configurations such as common differential, dual-range, true-differential, and absolute
- Pneumatic input options to match DSA3200 series inputs
- Gas and liquid configurations
- Internal valving for isolate, calibrate, purge

SUPPORTING ACCESSORIES

DSA5000 accessories have been created to help ease the installation of the DSA5000 in DSA3200 environments.

DSA5000 to DSA3200 Power Adaptor Cable

This adaptor cable allows the use of the legacy 3-pin power connector/cable to adapt to the DSA5000 power input. Options include power only, or power/serial/trigger for applications where external triggering is used. Scanivalve part number 156152 or 156153.

DSA5000 Shock Mount Kit

The optional shock mount kit add-on uses the same mounting holes and footprint as the DSA3218 series scanners, allowing the DSA5000 to be mounted in the same location. Scanivalve part number 21555-01.

DSA5000 Ethernet Adaptor

An Ethernet adaptor cable is available to convert the DSA5000 Ethernet connection to a female RJ45 for DSA3217 environments. Scanivalve part number 156157. For DSA3218/3207/3307 modules with the 4-pin connector, use Scanivalve part number 156163.

OVERVIEW OF SUPPORTED COMMANDS, VARIABLES AND OUTPUT

The emulator was targeted to support most scanning, data collection, and zero-offset correction operations. This includes associated variables that control the behavior of these functions. Several functions or processes may not be supported if there is no relation to general data collection. The following tables express the supported functions, communications, and commands available. Full, partial and none are the level of support or operation (full being fully backward compatible, none meaning no support). Notes will be provided for partial implementations. If a command or variable does not exist in one of these tables, it is not supported.

COMMUNICATION AND DATA TRANSFER

TYPE	FULL	PARTIAL	NOTES
TCP	X		Telnet Server, Binary and ASCII Data Output
UDP		X	Binary Data Output Only
FTP		X	Binary Data Output Only

CONFIGURATION VARIABLES

GROUP	VARIABLES	FULL	PARTIAL	NONE	NOTES
LIST S	PERIOD	X			
	AVG	X			
	FPS	X			
	XSCANTRIG	X			
	FORMAT	X			DSA3200 and DSAPTP
	TIME	X			DSA3200 and DSAPTP
	EU	X			DSA3200 and DSAPTP
	ZC	X			
	BIN	X			
	SIM			X	
	QPKTS			X	
	UNITSCAN	X			
	CVTUNIT	X			
	PAGE			X	
LIST I	ECHO			X	
	MODEL		X		Will display 5000 series
	PORT			X	
	HOST	X			
LIST PTP	PTPEN		X		0 or 1 (2 not supported)
	STAT		X		0 or 1 (2 not supported)
	SST	X			
	SSD	X			
	UTCOFFSET	X			
LIST FTP	USERFTP	X			
	PASSFTP	X			
	ENFTP	X			
	PATHFTP	X			
	IPFTP	X			
	FILEFTP	X			

FUNCTION COMMANDS

COMMAND	FULL	NOTES
SCAN	X	
CALZ	X	Command will change internal valve as per DSA5000 operation.
CALB		
STOP	X	
SET	X	Used to configure supported configuration variables.
ERROR	X	
CLEAR	X	
TRIG	X	Only accepted in SCAN mode
STATUS	X	When BIN=0, response is ASCII. When BIN=1, response is binary. When BIN=1, ENFTP=1, response is ASCII.
LIST S	X	Output is formatted to match DSA3200.
LIST I	X	
LIST PTP	X	
LIST FTP	X	
GETTIME	X	Date/time includes leading zeros
SETTIME	X	
GETUTCO	X	

DATA OUTPUT FORMATS

PACKET NAME	PACKET ID	FULL	NONE	NOTES
SCAN	1Hex		X	
SCAN RAW	4Hex		X	
SCAN EU	5Hex	X		
SCAN RAW W/TIME	6Hex		X	
SCAN EU W/TIME	7Hex	X		Time Stamps in millisec-onds or microseconds
SCAN EU FPT	9Hex	X		Floating Point Temperatures, No Time
SCAN - PTP	AHex	X		EU with PTP Time
ASCII	20Hex	X		Supports FORMAT 0, 1, 2

The DSA3200 emulator was designed based on the latest firmware version of the DSA3200 series scanners: DSA3200 version 1.23 and DSA3200-PTP version 2.01. All previous versions of DSA3200 software cannot be validated against the DSA3200 Emulator to be 100% operational. Older versions of DSA3200s may be missing features, contain software issues, have timing differences, or may not function the same as the latest firmware version. Please see the DSA5000 User Manual for more details and information.