Aztec 600

Colorimetric and ion-selective analyzers

Profibus supplement

Measurement made easy

—
Reliable on-line colorimetric and ion-selective analyzers

Overview

The Aztec 600 analyzers from ABB are a range of compact, yet reliable, on-line colorimetric and ion-selective (ISE) analyzers for monitoring the key parameters in water treatment.

This supplementary user guide contains information specific to Profibus® DP-enabled Aztec 600 and Aztec ISE analyzers and must be read in conjunction with the user guide relevant to each model.

For more information

Further publications for the Aztec 600 series analyzers are available for free download from:

www.abb.com/analytical

(see links and reference numbers below) or by scanning this code:

	Search for or click on
Data Sheet Aztec 600 Aluminium Aluminium analyzer	DS/AZT6AL-EN
Data Sheet Aztec 600 Ammonia Ammonia analyzer	DS/AZT6AM-EN
Data Sheet Aztec 600 Color Color analyzer	DS/AZT6C-EN
Data Sheet Aztec 600 Iron Iron analyzer	DS/AZT6IR-EN
Data Sheet Aztec 600 Manganese low range Low range manganese analyzer	DS/AZT6ML-EN
Data Sheet Aztec 600 Manganese Manganese analyzer	DS/AZT6MN-EN
Data Sheet Aztec 600 Phosphate Phosphate analyzer	DS/AZT6P-EN
Operating Instruction Aztec 600 aluminium, ammonia, color, iron, manganese, phosphate Single- and multi-stream colorimetric analyzers	IM/AZT6CR-EN
Data Sheet AAM631 Aztec 600 ISE ammonia analyzer	DS/AAM631-EN
Data Sheet AFM631 Aztec 600 ISE flouride analyzer	DS/AFM631-EN
Operating Instruction Aztec 600 ISE ammonia and flouride Single-stream ion-selective analyzers	OI/AXM630-EN

Electrical safety

One or more of the following symbols may appear on the equipment labeling:

	**Warning** – Refer to the manual for instructions
	**Caution** – Risk of electric shock
	Protective earth (ground) terminal
	Earth (ground) terminal
	Direct current supply only
	Alternating current supply only
	Both direct and alternating current supply
	The equipment is protected through double insulation

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of the Technical Publications Department.

Health and safety

To ensure that our products are safe and without risk to health, the following points must be noted:

- The relevant sections of these instructions must be read carefully before proceeding.
- Warning labels on containers and packages must be observed.
- Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given.
- Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
- Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
- When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

Contents

1 Introduction

Note. This Supplementary User Guide contains information specific to PROFIBUS DP-enabled Aztec 600 and Aztec ISE analyzers and must be read in conjunction with the User Guide relevant to each model.

1.1 PROFIBUS

PROFIBUS is a manufacturer-independent, open Fieldbus standard for a wide range of applications in manufacturing, process and building automation. Manufacturer independence and openness are ensured by the international standard EN 50170.

Using the PROFIBUS protocol, devices from different manufacturers exchange information on the same communications bus without the need for special interface equipment.

The PROFIBUS family comprises three types of protocol, PROFIBUS DP, PROFIBUS FMS and PROFIBUS PA, each of which is used for different tasks. Of these three protocols, the most important for process automation are PROFIBUS DP and PROFIBUS PA.

Further information on PROFIBUS can be found at www.profibus.com.

1.1.1 PROFIBUS DP

PROFIBUS DP is designed for high-speed data exchange and is commonly used by complex or externally-powered devices. The central controller or 'master' device (e.g. PLC or PC) utilizes PROFIBUS DP as a fast serial connection with distributed (slave) field devices such as PROFIBUS-enabled Aztec 600 analyzers.

DP-V0 is the basic stage of the PROFIBUS DP communication protocol. DP-V0 provides cyclic data exchange between master and slave devices.

The Aztec 600 analyzers also support the DP-V1.0 extension that enables additional acyclic communication between master and slave devices.

1.1.2 PROFIBUS PA

PROFIBUS PA is designed to accommodate process automation field devices that require power via the network with the option to use intrinsic safety for hazardous areas. Typical devices using this protocol include transmitters and positioners.

A DP/PA coupler or link device is used to connect the PROFIBUS PA network to the PROFIBUS DP network.

1.2 PROFIBUS and ABB Products

Aztec 600 analyzers utilize PROFIBUS DP as this is the protocol optimized for high speed and low connection costs (see www.abb.com/fieldbus and follow the PROFIBUS link).

1.3 PROFIBUS DP Transmission Technology

The transfer method of PROFIBUS DP is RS485 – a proven technology. A twisted, shielded, two-wire copper cable is used as the transfer medium.

The bus structure enables addition and removal of stations or step-by-step commissioning of the system without affecting other stations. Later expansion has no influence on stations already in operation.

Transmission speeds of between 9.6 kbit/s and 12 Mbit/s are available. One uniform transmission speed is selected for all devices on the bus when the system is commissioned.

2 Installation

2.1 Installation Overview

All devices are connected in a bus structure ('line'). Up to 32 stations (master or slaves) can be linked to create one 'segment'.

Each end of a segment must be terminated by an active bus terminating resistor. Both bus terminators must always be powered to ensure fault-free operation therefore it is strongly recommended that they are connected to a back-up power supply.

Up to three line bus amplifiers (repeaters) can be used to extend the network to a total of four segments, allowing a maximum of 125 devices to be installed in the system.

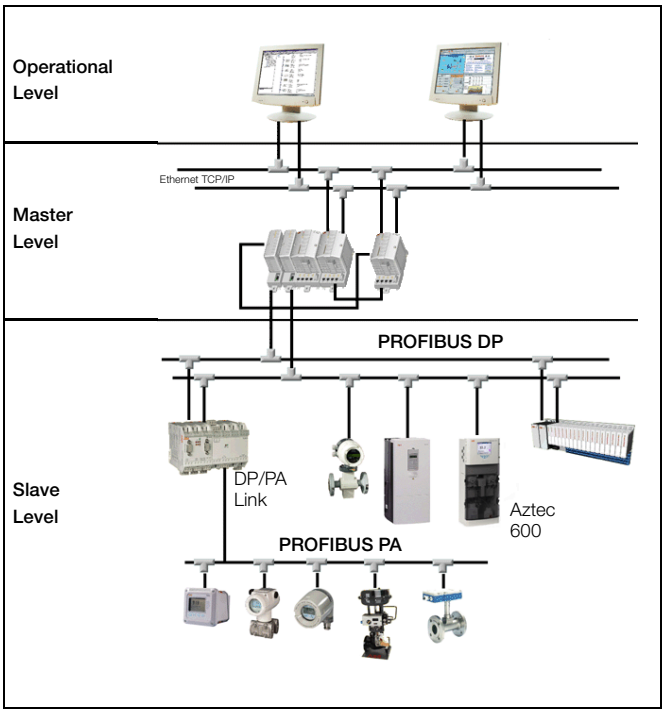

Fig. 2.1 Typical PROFIBUS Network

2.2 Cable Length

The maximum cable length of a segment is determined by the transmission speed – see Table 2.1. The cable length specified can be extended by using repeaters but it is recommended that no more than three repeaters are connected in series.

Transmission Rate (bits/sec)	Maximum Segment Length (m)	Maximum Total Network Length (m)
9.6 to 93.75k	1200	4800
187.5k	1000	4000
500k	400	1600
1.5M	200	800
3 to 12M	100	400

Table 2.1 Cable Length

2.3 Cable Specification

The cable lengths in Table 2.1 refer to the following cable type:

Characteristic impedance	135 to 165Ω
Capacitance per unit length	<30 pf/m
Loop resistance	110Ω/km
Core diameter	0.64mm
Core cross section	>0.34mm^2

Suitable PROFIBUS cable, part nos. PCA010, PCA 011 and PCA 012, can be obtained from ABB. Refer to Data Sheet 10/63-6.46 EN.

2.4 Device Integration – the GSD File

PROFIBUS devices differ with respect to available functionality and parameters and these vary individually for each device type and manufacturer. In order to obtain 'Plug-and-Play' configuration for PROFIBUS, characteristic device communication features such as manufacturer name, device name, hardware/software versions, baud rate and the number and nature of inputs/outputs are defined in an electronic device data sheet known as a GSD file.

A GSD file is readable ASCII text file that contains both general and device-specific specifications for communication. Each of the entries describes a feature supported by a device. By the means of keywords, a configuration tool reads the device identification, the adjustable parameters, the corresponding data type and the permitted limit values for the configuration of the device from the GSD. Some keywords are mandatory, e.g. Vendor_Name; others are optional, e.g. Sync_Mode_supported.

The GSD file (ABB_OAD4_1001.gsd) for PROFIBUS-enabled Aztec 600 analyzers conforms to the PROFIBUS standard.

3 Network Connection and Configuration

Warning. When connecting a PROFIBUS-enabled Aztec 600 analyzer to a PROFIBUS-DP network:

- Use shielded data lines and ensure they are not reversed.
- Ensure all data lines are routed clear of the source of any strong electrical and magnetic fields.
- Refer to the User Guide for all other installation and connection details.

3.1 Network Connections

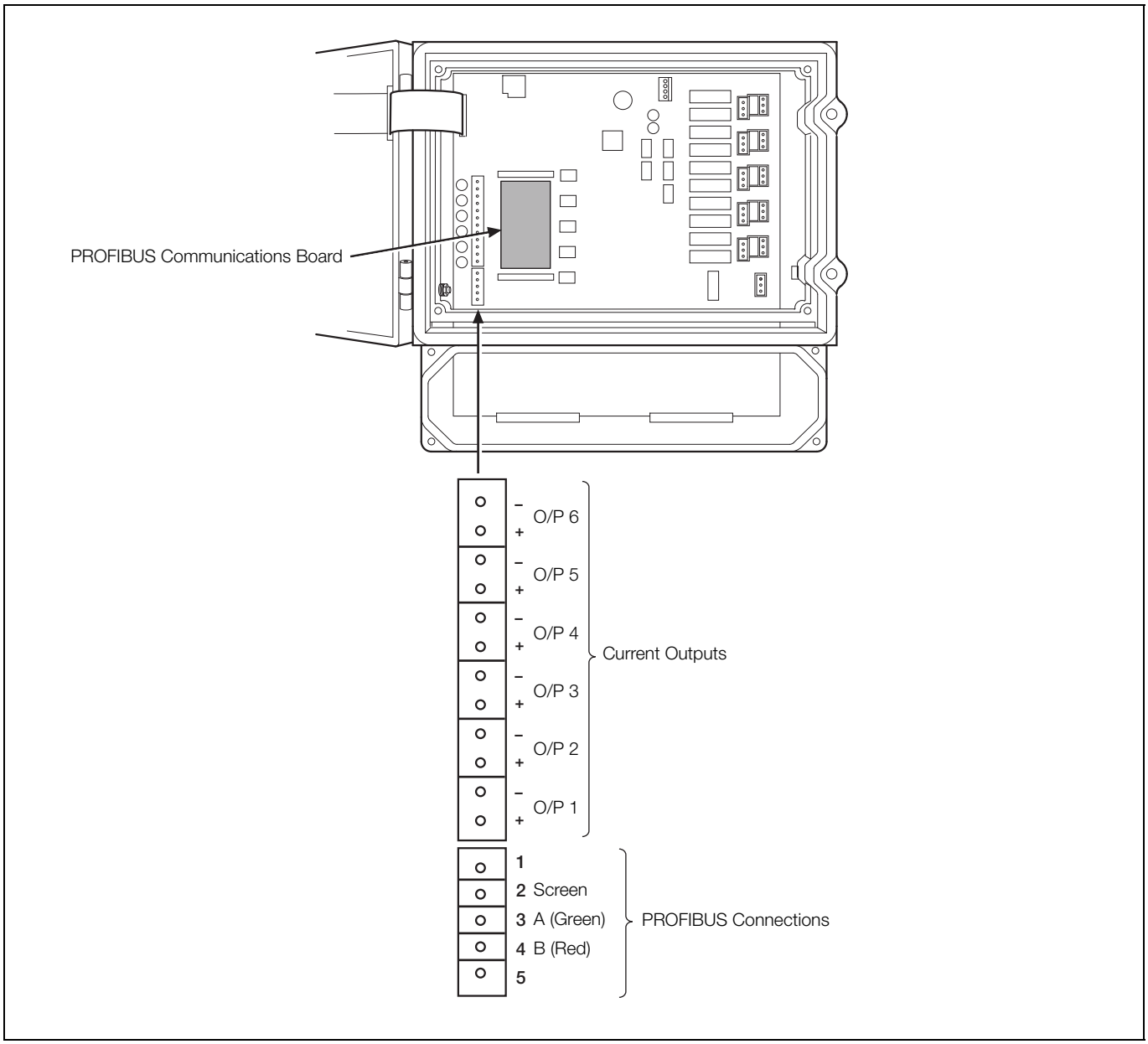

Fig. 3.1 Network Cable Connections

3.2 Network Configuration

Note. An Aztec 600 analyzer is not configured using PROFIBUS commands but via the analyzer's keypad and menu system.

To configure PROFIBUS communications, refer to Section 5.7 of the User Guide relevant to the analyzer model and access the **PROFIBUS** tab:

Fields	Description
Slave Address	A unique identifying number for the analyzer from 1 to 126. A default address of 6 is set in the factory before shipping. This address can be changed to any value from 1 to 125 to enable the analyzer to be visible on a PROFIBUS system.

Appendix A – GSD File Module

Note.

- Float = Floating point number – requires 4 bytes
- Char = Character – requires 1 byte
- Int = Integer – requires 2 bytes

A.1 Module 01

Table A.1 defines the Module 01 data available from an Aztec 600 analyzer via PROFIBUS cyclic transfer:

Byte	Type	Description
1 to 4	Float	Stream 1 value
5	Char	Stream 1 status
6 to 9	Float	Stream 2 value
10	Char	Stream 2 status
11 to 14	Float	Stream 3 value
15	Char	Stream 3 status
16 to 19	Float	Stream 4 value
20	Char	Stream 4 status
21 to 24	Float	Stream 5 value
25	Char	Stream 5 status
26 to 29	Float	Stream 6 value
30	Char	Stream 6 status

Table A.1 Module 01 Data

A.2 Status Byte Definition

Table A.2 defines the meaning of the contents of an Aztec 600 analyzer's status byte.

Byte (Hex)	Definition
1C	OOS (Out of service)
80	Good
89	Low alarm limit advisory alarm
8A	High alarm limit advisory alarm
8D	Low-low alarm limit critical alarm
8E	High-high alarm limit critical alarm

Table A.2 Status Byte Definition

Appendix B – Acyclic Parameter Mapping

[1]Store Definitions:

C Constant – the value held in an Aztec 600 analyzer does not change
D Dynamic – a value or state calculated by an Aztec 600 analyzer
N Non-volatile – typically a configuration parameter stored in an Aztec 600 analyzer's non-volatile memory

[2]Access Definitions:

R – Read only
R/W – Read/Write

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Physical Block Parameters										
Software revision	0	24	Simple	VisibleString	16	C	R	Current revision	ASCII string	Low-level version number
Hardware revision	0	25	Simple	VisibleString	16	C	R	Current revision	ASCII string	
Manufacturer Identification	0	26	Simple	Unsigned16	2	C	R	26 (ABB)		
Device Identification	0	27	Simple	VisibleString	16	C	R	AZTEC 600	AZTEC 600	ASCII string
Device serial number	0	28	Simple	VisibleString	16	C	R	Units serial number	ASCII string	
Device diagnosis information	0	29	Simple	OctetString	4	D	R			
Additional device diagnosis Information	0	30	Simple	OctetString	6	D	R			AW600 specific errors
Diagnosis definition	0	31	Simple	OctetString	4	C	R			
Extended diagnosis definition	0	32	Simple	OctetString	6	C	R			
Device certification	0	33	Simple	VisibleString	32	C	R			
Device descriptor	0	36	Simple	OctetString	32		R/W			
Device message	0	37	Simple	OctetString	32		R/W			
Number of streams fitted	0	64	Simple	Unsigned8	1		R		1 to 3	
Instrument tag	0	65	Simple	VisibleString	20		R/W	Iron monitor	ASCII string	
HMI software revision	0	66	Simple	VisibleString	16	C	R	Current revision	ASCII string	
OS software revision	0	67	Simple	VisibleString	16	C	R	Current revision	ASCII string	
Instrument type	0	68	Simple	Unsigned8	1		R	5	0 = Aluminium 1 = Ammonia ISE 2 = Ammonia 3 = Fluoride ISE 5 = Iron 7 = Manganese 8 = Manganese LR 10 = Phosphate 14 = Color 17 = Unknown sensor	

Table B.1 Data Structure (Sheet 1 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Transducer Block Parameters										
Enable streams	8	145	Array	Unsigned8	3		RW		0 = Disabled 1 = Enabled	
Stream sequence	8	146	Array	Unsigned8	8		RW	1,2,3,0,0,0,0,0	1 to 3	
Measurement rate	8	147	Simple	Unsigned8	1		RW	6	1 to 12	Samples per hour
Temperature units	8	148	Simple	Unsigned8	1		RW	0	0 = C 1 = F	Control temperature units
Cell rinse sequences	8	149	Simple	Unsigned8	1		RW		1 to 4	
Cleaning mode	8	150	Simple	Unsigned8	1		RW		0 = None 1 = Measure 2 = Calibrate	
Cleaning valve	8	151	Simple	Unsigned8	1		RW		0 = None 1 to 3 = Reagent 1 to 3 4 to 6 = Sample1 to 3 7 to 10 = Standard, DI, Air, Waste	
Clean cell mode	8	152	Simple	Unsigned8	1		RW		0 = Cell 1 = Cell and lines	
Cleaning frequency	8	153	Simple	Unsigned8	1		RW		1 to 24 Hours	
Calibration limit	8	154	Simple	Float	4		RW		Optimal m calibration coefficient	
Calibration low standard	8	155	Simple	Float	4		RW		Low calibration standard	
Calibration high standard	8	156	Simple	Float	4		RW		High calibration standard	
Turbidity calibration limit	8	157	Simple	Float	4		RW		Optimal m calibration coefficient	
Turbidity calibration low standard	8	158	Simple	Float	4		RW		Low calibration standard	
Turbidity calibration high standard	8	159	Simple	Float	4		RW		High calibration standard	
Level switches	8	168	Simple	Unsigned16	2		R			3 Sample 4 Reagent Standard DI Water

Table B.1 Data Structure (Sheet 2 of 36)

[1] *See 'Store Definitions' on page 7*
[2] *See 'Access Definitions' on page 7*

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Calibration information	8	169	Record		28		R			
			Simple	Float	4				Optical density low (Colorimetric analyzers only) mV low (Ion-selective analyzers only)	
			Simple	Float	4				Optical density high (Colorimetric analyzers only) mV high (Ion-selective analyzers only)	
			Simple	Float	4				Last calibration gradient	
			Simple	Float	4				Last calibration constant	
			Simple	Float	4				Last gradient coefficient	
			Simple	Unsigned32	4				Time and date of last calibration	Seconds since 1/1/2000
			Simple	Unsigned32	4				Time and date of next calibration	
Turbidity calibration information	8	170	Record		28		R			
			Simple	Float	4				Optical density low	
			Simple	Float	4				Optical density high	
			Simple	Float	4				Last calibration gradient	
			Simple	Float	4				Last calibration constant	
			Simple	Float	4				Last gradient coefficient	
			Simple	Unsigned32	4				Time and date of last calibration	Seconds since 1/1/2000
			Simple	Unsigned32	4				Time and date of next calibration	

Table B.1 Data Structure (Sheet 3 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Calibration type	8	171	Simple	Unsigned8	1		R			
Calibration state	8	172	Simple	Unsigned8	1		R			
Calibration percent complete	8	173	Simple	Unsigned8	1		R			
Current state	8	174	Simple	Unsigned8	1		R			
Current step	8	175	Simple	Unsigned8	1		R			
Detector/Probe mV	8	176	Simple	float	4		R			
Detector concentrate	8	177	Simple	float	4		R			
Colour LED current	8	178	Simple	float	4		R			
Turbidity LED life	8	179	Simple	Unsigned16	2		R			
Current stream	8	180	Simple	Unsigned8	1		R			
Language	1	181	Simple	Unsigned8	1		R	0	0 = English 1 = German 2 = French 3 = Italian 4 = Spanish	
LED status	8	182	Simple	Unsigned8	1		R		Color/turbidity	
Schedule	8	185	Record		5		RW			
			Simple	Unsigned8	1			0	0 = Off 1 = 3 Hours 2 = 6 Hours 3 = 18 Hours 4 = 1 Day 5 = 2 Days 6 = 3 Days 7 = 4 Days 8 = 5 Days 9 = 6 Days 10 = 7 Days	Calibration frequency
			Simple	Unsigned32	4			0	Seconds since 1/1/2000	Next date and time

Table B.1 Data Structure (Sheet 4 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Turbidity schedule	8	186	Record		5		RW			
			Simple	Unsigned8	1			0	0 = Off 1 = 3 Hours 2 = 6 Hours 3 = 18 Hours 4 = 1 Day 5 = 2 Days 6 = 3 Days 7 = 4 Days 8 = 5 Days 9 = 6 Days 10 = 7 Days	Calibration frequency
			Simple	Unsigned32	4			0	Seconds since 1/1/2000	Next date and time
Measurement units	8	187	Simple	Unsigned8	1		RW	0	0 = mg/l 1 = ppm 2 = ppb 3 = µg/l 4 = degrees 5 = NTU	
Mode of operation	1	189	Simple	Unsigned8	1		R	0	0 = Normal 1 = Demonstration 2 = Test	
Archive definition	1	190	Record		6		RW			
			Simple	Unsigned8	1			0	0 = Text 1 = Binary	Archive format
			Array	Unsigned8	3			0,0,0	Data alarm event audit 0 = Off 1 = On	Archive enable
			Simple	Unsigned8	1			2	0 = Off 1 = Hour 2 = Day 3 = Month	New file interval
			Simple	Unsigned8	1			0	0 = Off 1 = On	File wrapping

Table B.1 Data Structure (Sheet 5 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Filter type	1	191	Simple	Unsigned8	1		RW	0	0 = Instantaneous	
Sample rate	1	192	Simple	Unsigned32	4		RW	300000 (Colorimetric analyzers only) 30000 (Ion-selective analyzers only)	1000 to 43200000	Sample rate in ms
Chart view definition	1	193	Record		7		RW			
			Simple	Unsigned8	1			1	0 = Horizontal 1 = Reversed horizontal 2 = Vertical	Chart type
			Simple	Unsigned8	1			0	0 = None 1 = Alarms 2 = Alarms and messages	View annotation
			Simple	Unsigned8	1			5	1 to 10	Major chart divisions
			Simple	Unsigned8	1			2	1 to 10	Minor chart divisions
			Simple	Unsigned8	1			1	0 = Off 1 = On	Trace pointers
			Simple	Unsigned8	1			8	0 = 18 Seconds 1 = 90 Seconds 2 = 3 Minutes 3 = 6 Minutes 4 = 9 Minutes 5 = 12 Minutes 6 = 15 Minutes 7 = 30 Minutes 8 = 1 Hour 9 = 4 Hour 10 = 8 Hour 11 = 12 Hour 12 = 1 Day 13 = 2 Day 14 = 3 Day 15 = 7 Day	Screen interval
			Simple	Unsigned8	1			1	1 to 3	Trace width

Table B.1 Data Structure (Sheet 6 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Chemical units	8	194	Simple	Unsigned8	1		RW	4	0 = Al 1 = NH3 2 = NH3asN 3 = NH4+ 4 = Fe 5 = Mn 6 = PO4 7 = P 8 = Si 9 = SiO2 10 = NO2 11 = NO2asN 12 = ClO2 13 = Hazen 14 = PtCo 15 = NTU	
Control temperature	8	195	Simple	Float	4		RW	45	10 to 50	
Screen saver wait time	1	196	Simple	Unsigned8	1		R/W	0	0 = Saver disabled 1 = 5 Minutes 2 = 15 Minutes 3 = 30 Minutes 4 = 1 Hour 5 = 2 Hour 6 = 4 Hour 7 = 1 Day	
Screen capture	1	197	Simple	Unsigned8	1		R/W	0	0 = Disabled 1 = Enabled	
Brightness	1	198	Simple	Unsigned8	1		R	60	0 to 100	
Date and time	1	199	Record		7		R/W			
			Simple	Unsigned16	2			2000	Year	
			Array	Unsigned8	5			1,1,0,0,0	Month Day Hour Minute second	

Table B.1 Data Structure (Sheet 7 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Daylight saving	1	200	Record		9		R/W			
			Simple	Unsigned8	1			0	0 = Off 1 = USA 2 = Europe 3 = Custom	Start and end data used for custom
			Array	Unsigned8	4			2,5,1,3	Hour Occurrence Day of week 1 = Sun Month 1 = Jan	Occurrence is 1st, 2nd, 3rd, 4th or last occurrence of the day in the month
			Array	Unsigned8	4			2,5,1,10	Hour Occurrence Day of week 1 = Sun Month 1 = Jan	
Date format	8	201	Simple	Unsigned8	1		R/W	0	0 = ddmmyy 1 = mmddyy 2 = ddmmmyy	
Time format	8	202	Simple	Unsigned8	1		R/W	0	0 = hhmm 1 = hhmmss	
Main view timer	8	203	Simple	Unsigned8	1		R/W	0	0 = Off 1 = 1 Minute 2 = 2 Minutes 5 = 5 Minutes 10 = 10 Minutes 15 = 15 Minutes 30= 30 Minutes 60 = 60 Minutes	
Statistics reset time and date	8	204	Simple	Unsigned32	4		R/W		Seconds since 00:00:00 1/1/2000	
Operator commands	8	205	Simple	Unsigned8	1		R/W		0 = Stop 1 = Start 2 = Flush 3 = Calibrate 4 = Calibrate and prime lines	
Reset statistics	1	208	Simple	Unsigned8	1				Send non-zero value to reset	

Table B.1 Data Structure (Sheet 8 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Stream 1 Function Block Parameters										
Stream 1 Output	1	26	Record	DS-33	5	D	Cyclic / R			
Output Scale	1	28	Record	DS-36	11	S	RW			
High Range			Simple	Float	4	S	RW	5000 ppb		
Low Range			Simple	Float	4	S	RW	0ppb		
Units			Simple	Unsigned16	2	S	RW	mg/l	1423 = ppm 1424 = ppb 1558 = mg/l 1559 = ug/l 1521 = ug/kg 1522 = mg/kg degrees NTU	Common units setting for all streams
Decimal point			Simple	Integer8	1	S	RW	0	0 or 1	
Alarm hysteresis	1	35	Simple	Float	4	S	RW	0		
High-high alarm limit	1	37	Simple	Float	4	S	RW	5000 ppb		
High alarm limit	1	39	Simple	Float	4	S	RW	50000 ppb		
Low alarm limit	1	41	Simple	Float	4	S	RW	0 ppb		
Low-low alarm limit	1	43	Simple	Float	4	S	RW	0 ppb		
Simulate	1	50	Record	DS-50	6	S	RW			This affects only the PROFIBUS output and not the value displayed on the analyzer's local display
Simulate status				Unsigned8	1	S	RW	0x80		
Simulate value				Float	4	S	RW	0		
Simulate enable/disable				Unsigned8	1	S	RW	0	0 = Disabled Not 0 = Enabled	
Stream 1 tag	1	61	Simple	OctetString	20	S	RW	Sample 1 Tag		Tag displayed on the analyzer's display

Table B.1 Data Structure (Sheet 9 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Stream 1 statistics	1	62	Record		12		R			
			Simple	Float	4					Maximum
			Simple	Float	4					Minimum
			Simple	Float	4					Average
Alarm relay 1	1	63	Record		24		RW			
			Simple	Unsigned8	1			0	0 = Off 1 to 3 = Stream number	Alarm source
			Simple	Unsigned8	1				1 = High process 2 = Low process 3 = High latch 4 = Low latch 5 = High annunciate 6 = Low annunciate 7 = Out of sample	Alarm type
			Simple	VisibleString	20			Alarm A	ASCII string	
			Simple	Unsigned8	1				0 = False 1 = True	Fail safe
			Simple	Unsigned8	1				0 = False 1 = True	Log enable
Current output 1	1	64	Record		13		RW			
			Simple	Unsigned8	1				0 = None 1 to 3 = Stream 1 to 3	Output source
			Simple	Unsigned16	2					Output range high
			Simple	Unsigned16	2					Output range low
			Simple	Unsigned16	2					Output type low * 1000
			Simple	Unsigned16	2					Output type high * 1000
			Simple	Unsigned8	1				0 = False 1 = True	Calibration hold
			Simple	Unsigned8	1				0 = False 1 = True	Out of Sample indication
			Simple	Unsigned16	2					Default output *1000 when out of sample

Table B.1 Data Structure (Sheet 10 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Alarm relay 1 limits	1	65	Record		12		RW			
Trip			Simple	Float	4		RW			Trip
Hysteresis			Simple	Float	4		RW			Hysteresis
Time hysteresis			Simple	Unsigned32	4		RW		In seconds	Time hysteresis
Current output Value	1	66	Simple	Float	4		R		4 to 20	mA
Dilution factor	1	69	Simple	Unsigned16	2		R		0 to 4	
Turbidity dilution factor	1	70	Simple	Unsigned16	2		R		0 to 4	
Date and time	1	71	Simple	Unsigned32	4		R		Seconds since 1/1/1900	
Sample 1 turbidity	1	72	Simple	Float	4		R			
Turbidity date and time	1	73	Simple	Unsigned32	4		R		Seconds since 1/1/1900	
Sample set up	1	74	Record		10		R/W			
Max dilution factor			Simple	Unsigned16	2				0 to 4	
Turbidity range low			Simple	Float	4		R/W		0 to 100	
Turbidity range high			Simple	Float	4		R/W		0 to 100	
Simulate stream 1 turbidity	4	50	Record	DS-50	6	S	RW			This affects only the PROFIBUS output and not the value displayed on the instruments local display
Simulate status				Unsigned8	1	S	RW	0x80		
Simulate value				Float	4	S	RW	0		
Simulate enable/disable				Unsigned8	1	S	RW	0	0 = Disabled Not 0 = Enabled	
Turbidity stream 1 statistics	4	62	Record							
Maximum			Simple	Float	4		R			
Minimum			Simple	Float	4		R			

Table B.1 Data Structure (Sheet 11 of 36)

[1] *See 'Store Definitions' on page 7*
[2] *See 'Access Definitions' on page 7*

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Average			Simple	Float	4		R			
Alarm relay 4	4	63	Record		24		RW			
			Simple	Unsigned8	1			0	0 = Off 1 to 3 = Stream number	Alarm source
			Simple	Unsigned8	1				1 = High process 2 = Low process 3 = High latch 4 = Low latch 5 = High annunciate 6 = Low annunciate 7 = Out of sample	Alarm type
			Simple	VisibleString	20			Alarm D	ASCII string	
			Simple	Unsigned8	1				0 = False 1 = True	Fail safe
			Simple	Unsigned8	1				0 = False 1 = True	Log enable
Current output 4	4	64	Record		13		RW			
			Simple	Unsigned8	1			0	0 = None 1 to 3 = Stream 1 to 3	Output source
			Simple	Unsigned16	2					Output range high
			Simple	Unsigned16	2					Output range low
			Simple	Unsigned16	2					Output type low * 1000
			Simple	Unsigned16	2					Output type high * 1000
			Simple	Unsigned8	1				0 = False 1 = True	Calibration hold
			Simple	Unsigned8	1				0 = False 1 = True	Out of sample indication
			Simple	Unsigned16	2					Default output *1000 when out of sample

Table B.1 Data Structure (Sheet 12 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Alarm relay 4 limits	4	65	Record		12		RW			
			Simple	Float	4					Trip
			Simple	Float	4					Hysteresis
			Simple	Unsigned32	4					Time hysteresis

Table B.1 Data Structure (Sheet 13 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Stream 2 Function Block Parameters										
Stream 2 output	2	26	Record	DS-33	5	D	Cyclic / R			
Output scale	2	28	Record	DS-36	11	S	RW			
High range			Simple	Float	4	S	RW	5000 ppb		
Low range			Simple	Float	4	S	RW	0 ppb		
Units			Simple	Unsigned16	2	S	RW	ppb	1423 = ppm 1424 = ppb 1558 = mg/l 1559 = ug/l 1521 = ug/kg 1522 = mg/kg	Common units setting for all streams
Decimal point			Simple	Integer8	1	S	RW	0	0 or 1	
Alarm hysteresis	2	35	Simple	Float	4	S	RW	0		
High-high alarm limit	2	37	Simple	Float	4	S	RW	5000 ppb		
High alarm limit	2	39	Simple	Float	4	S	RW	50000 ppb		
Low alarm limit	2	41	Simple	Float	4	S	RW	0 ppb		
Low-low alarm limit	2	43	Simple	Float	4	S	RW	0 ppb		
Simulate	2	50	Record	DS-50	6	S	RW			This affects only the PROFIBUS output and not the value displayed on the instruments local display
Simulate status				Unsigned8	1	S	RW	0x80		
Simulate value				Float	4	S	RW	0		
Simulate enable/disable				Unsigned8	1	S	RW	0	0 = Disabled Not 0 = Enabled	
Stream 2 tag	2	61	Simple	OctetString	20	S	RW	Sample 2 Tag		Tag displayed on the analyzer's display

Table B.1 Data Structure (Sheet 14 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Stream 2 statistics	2	62	Record		12		R			
			Simple	Float	4					Maximum
			Simple	Float	4					Minimum
			Simple	Float	4					Average
Alarm relay 2	2	63	Record		24		RW			
			Simple	Unsigned8	1			0	0 = Off 1 to 6 = Stream number 7 = Cleaning	Alarm source
			Simple	Unsigned8	1			1	1 = High process 2 = Low process 3 = High latch 4 = Low latch 5 = High annunciate 6 = Low annunciate 7 = Out of sample	Alarm type
			Simple	VisibleString	20			Alarm B	ASCII string	
			Simple	Unsigned8	1			1	0 = False 1 = True	Fail safe
			Simple	Unsigned8	1			1	0 = False 1 = True	Log enable
Current output 2	2	64	Record		13		RW			
			Simple	Unsigned8	1			0	0 = None 1 to 6 = Stream 1 to 6	Output source
			Simple	Unsigned16	2			2000	0 to 5000	Output range high
			Simple	Unsigned16	2			0	0 to 5000	Output range low
			Simple	Unsigned16	2			4000	0 to 22000	Output type low * 1000
			Simple	Unsigned16	2			20000	0 to 22000	Output type high * 1000
			Simple	Unsigned8	1			0	0 = False 1 = True	Calibration hold
			Simple	Unsigned8	1			0	0 = False 1 = True	Out of Sample indication
			Simple	Unsigned16	2			22000	0 to 22000	Default output *1000 when out of sample

Table B.1 Data Structure (Sheet 15 of 36)

[1] *See 'Store Definitions' on page 7*
[2] *See 'Access Definitions' on page 7*

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Alarm relay 2 limits	2	65	Record		12		RW			
			Simple	Float	4			0	0 to 5000	Trip
			Simple	Float	4			0	0 to 5000	Hysteresis
			Simple	Unsigned32	4			0	0 to 5000	Time hysteresis
Current output value	2	66	Simple	Float	4		R		4 to 20	mA
Dilution factor	2	69	Simple	Unsigned16	2		R		0 to 4	
Turbidity dilution factor	2	70	Simple	Unsigned16	2		R		0 to 4	
Date and time	2	71	Simple	Unsigned32	4		R		Seconds since 1/1/1900	
Sample 2 turbidity	2	72	Simple	Float	4		R			
Turbidity date and time	2	73	Simple	Unsigned32	4		R		Seconds since 1/1/1900	
Sample set up	2	74	Record		10		R/W			
Maximum dilution factor			Simple	Unsigned16	2				0 to 4	
Turbidity range low			Simple	Float	4				0 to 100	
Turbidity range high			Simple	Float	4				0 to 100	
Simulate stream 2 turbidity	5	50	Record	DS-50	6	S	RW			This affects only the PROFIBUS output and not the value displayed on the instruments local display
Simulate status				Unsigned8	1	S	RW	0x80		
Simulate value				Float	4	S	RW	0		
Simulate enable/disable				Unsigned8	1	S	RW	0	0 = Disabled Not 0 = Enabled	
Turbidity stream 2 statistics	5	62	Record							
Maximum			Simple	Float	4		R			

Table B.1 Data Structure (Sheet 16 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Minimum			Simple	Float	4		R			
Average			Simple	Float	4		R			
Alarm relay 5	5	63	Record		24		RW			
			Simple	Unsigned8	1			0	0 = Off 1 to 3 = Stream number	Alarm source
			Simple	Unsigned8	1				1 = High process 2 = Low process 3 = High latch 4 = Low latch 5 = High annunciate 6 = Low annunciate 7 = Out of sample	Alarm type
			Simple	VisibleString	20			Alarm E	ASCII string	
			Simple	Unsigned8	1				0 = False 1 = True	Fail safe
			Simple	Unsigned8	1				0 = False 1 = True	Log enable
Current output 5	5	64	Record		13		RW			
			Simple	Unsigned8	1			0	0 = None 1 to 3 = Stream 1 to 3	Output source
			Simple	Unsigned16	2					Output range high
			Simple	Unsigned16	2					Output range low
			Simple	Unsigned16	2					Output type low * 1000
			Simple	Unsigned16	2					Output type high * 1000
			Simple	Unsigned8	1				0 = False 1 = True	Calibration hold
			Simple	Unsigned8	1				0 = False 1 = True	Out of sample indication
			Simple	Unsigned16	2					Default output *1000 when out of sample

Table B.1 Data Structure (Sheet 17 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Alarm relay 5 limits	5	65	Record		12		RW			
			Simple	Float	4					Trip
			Simple	Float	4					Hysteresis
			Simple	Unsigned32	4					Time hysteresis
Current output value	5	66	Simple	Float	4		R		4 to 20	mA

Table B.1 Data Structure (Sheet 18 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Stream 3 Function Block Parameters										
Stream 3 output	3	26	Record	DS-33	5	D	Cyclic / R			
Output scale	3	28	Record	DS-36	11	S	RW			
High range			Simple	Float	4	S	RW	5000 ppb		
Low range			Simple	Float	4	S	RW	0 ppb		
Units			Simple	Unsigned16	2	S	RW	ppb	1423 = ppm 1424 = ppb 1558 = mg/l 1559 = ug/l 1521 = ug/kg 1522 = mg/kg	Common units setting for all streams
Decimal point			Simple	Integer8	1	S	RW	0	0 or 1	
Alarm hysteresis	3	35	Simple	Float	4	S	RW	0		
High-high alarm limit	3	37	Simple	Float	4	S	RW	5000 ppb		
High alarm limit	3	39	Simple	Float	4	S	RW	50000 ppb		
Low alarm limit	3	41	Simple	Float	4	S	RW	0 ppb		
Low-low alarm limit	3	43	Simple	Float	4	S	RW	0 ppb		
Simulate	3	50	Record	DS-50	6	S	RW			This affects only the PROFIBUS output and not the value displayed on the instruments local display
Simulate status				Unsigned8	1	S	RW	0 x 80		
Simulate value				Float	4	S	RW	0		
Simulate enable/disable				Unsigned8	1	S	RW	0	0 = Disabled Not 0 = Enabled	
Stream 3 tag	3	61	Simple	OctetString	20	S	RW	Spaces		Tag displayed on the analyzer's display

Table B.1 Data Structure (Sheet 19 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Stream 3 statistics	3	62	Record		12		R			
			Simple	Float	4					Maximum
			Simple	Float	4					Minimum
			Simple	Float	4					Average
Alarm relay 3	3	63	Record		24		RW			
			Simple	Unsigned8	1			0	0 = Off 1 to 6 = Stream number 7 = Cleaning	Alarm source
			Simple	Unsigned8	1			1	1 = High process 2 = Low process 3 = High latch 4 = Low latch 5 = High annunciate 6 = Low annunciate 7 = Out of sample	Alarm type
			Simple	VisibleString	20			Alarm C	ASCII string	
			Simple	Unsigned8	1			1	0 = False 1 = True	Fail safe
			Simple	Unsigned8	1			1	0 = False 1 = True	Log enable
Current output 3	3	64	Record		13		RW			
			Simple	Unsigned8	1			0	0 = None 1 to 6 = Stream 1 to 6	Output source
			Simple	Unsigned16	2			2000	0 to 5000	Output range high
			Simple	Unsigned16	2			0	0 to 5000	Output range low
			Simple	Unsigned16	2			4000	0 to 22000	Output type low * 1000
			Simple	Unsigned16	2			20000	0 to 22000	Output type high * 1000
			Simple	Unsigned8	1			0	0 = False 1 = True	Calibration hold
			Simple	Unsigned8	1			0	0 = False 1 = True	Out of sample indication
			Simple	Unsigned16	2			22000	0 to 22000	Default output *1000 when out of sample

Table B.1 Data Structure (Sheet 20 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Alarm relay 3 limits	3	65	Record		12		RW			
			Simple	Float	4			0	0 to 5000	Trip
			Simple	Float	4			0	0 to 5000	Hysteresis
			Simple	Unsigned32	4			0	0 to 5000	Time hysteresis
Current output value	3	66	Simple	Float	4		R		4 to 20	mA
Dilution factor	3	69	Simple	Unsigned16	2		R		0 to 4	
Turbidity dilution factor	3	70	Simple	Unsigned16	2		R		0 to 4	
Date and time	3	71	Simple	Unsigned32	4		R		Seconds since 1/1/1900	
Sample 3 turbidity	3	72	Simple	Float	4		R			
Turbidity date and time	3	73	Simple	Unsigned32	4		R		Seconds since 1/1/1900	
Sample set up	3	74	Record		10		R/W			
Maximum dilution factor			Simple	Unsigned16	2				0 to 4	
Turbidity range low			Simple	Float	4				0 to 100	
Turbidity range high			Simple	Float	4				0 to 100	
Simulate stream 3 turbidity	4	50	Record	DS-50	6	S	RW			This affects only the PROFIBUS output and not the value displayed on the analyzer's local display
Simulate status				Unsigned8	1	S	RW	0x80		
Simulate value				Float	4	S	RW	0		
Simulate enable/disable				Unsigned8	1	S	RW	0	0 = Disabled Not 0 = Enabled	
Turbidity stream 3 statistics	6	62	Record							
Maximum			Simple	Float	4		R			
Minimum			Simple	Float	4		R			
Average			Simple	Float	4		R			

Table B.1 Data Structure (Sheet 21 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Alarm relay 6	6	63	Record		24		RW			
			Simple	Unsigned8	1			0	0 = Off 1 to 3 = Stream number	Alarm source
			Simple	Unsigned8	1				1 = High process 2 = Low process 3 = High latch 4 = Low latch 5 = High annunciate 6 = Low annunciate 7 = Out of sample	Alarm type
			Simple	VisibleString	20			Alarm F	ASCII string	
			Simple	Unsigned8	1				0 = False 1 = True	Fail safe
			Simple	Unsigned8	1				0 = False 1 = True	Log enable
Current output 6	6	64	Record		13		RW			
			Simple	Unsigned8	1			0	0 = None 1 to 3 = Stream 1 to 3	Output source
			Simple	Unsigned16	2					Output range high
			Simple	Unsigned16	2					Output range low
			Simple	Unsigned16	2					Output type low * 1000
			Simple	Unsigned16	2					Output type high * 1000
			Simple	Unsigned8	1				0 = False 1 = True	Calibration hold
			Simple	Unsigned8	1				0 = False 1 = True	Out of sample indication
			Simple	Unsigned16	2					Default output *1000 when out of sample

Table B.1 Data Structure (Sheet 22 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Alarm relay 6 limits	6	65	Record		12		RW			
			Simple	Float	4					Trip
			Simple	Float	4					Hysteresis
			Simple	Unsigned32	4					Time hysteresis
Current output value	6	66	Simple	Float	4		R		4 to 20	mA

Table B.1 Data Structure (Sheet 23 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Configuration Function Block Parameters										
Security definition	7	145	Record		10		RW			
			Simple	Unsigned8	1			0	0 = Basic 1 = Advanced	Security type
			Simple	Unsigned8	1			0	0 = Password 1 = Switch protected	
			Simple	Unsigned8	1			0	0 = Disabled 1 = Enabled	Logging level security
			Simple	Unsigned16	2			0	0 to 9999	Basic security Logging level password
			Simple	Unsigned8	1			0	0 = False 1 = True	Re-enter password at first use
			Simple	Unsigned8	1			0	0 = Off 1 = 7 days 2 = 14 days 3 = 30 days 4 = 60 days 5 = 90 days 6 = 180 days 7 = 360 days	Password expiry time
			Simple	Unsigned8	1			0	0 = Off 1 = 7 days 2 = 14 days 3 = 30 days 4 = 60 days 5 = 90 days 6 = 180 days 7 = 360 days	Inactive user password expiry time
			Simple	Unsigned8	1			0	0 to 10 0 = Infinite	Number of incorrect password entries allowed
			Simple	Unsigned8	1			4	4 to 20	Minimum password length

Table B.1 Data Structure (Sheet 24 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
User 1 access	7	146	Record		23		RW			
			Simple	VisibleString	20			User 1	ASCII string	User name
			Simple	Unsigned8	1			3	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			1	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			1	0 = False 1 = True	User access to Maintenance and Calibration
User 2 access	7	147	Record		23		RW			
			Simple	VisibleString	20			User 2	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			1	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			1	0 = False 1 = True	User access to Maintenance and Calibration
User 3 access	7	148	Record		23		RW			
			Simple	VisibleString	20			User 3	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			1	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			1	0 = False 1 = True	User access to Maintenance and Calibration

Table B.1 Data Structure (Sheet 25 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
User 4 access	7	149	Record		23		RW			
			Simple	VisibleString	20			User 4	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			1	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			1	0 = False 1 = True	User access to Maintenance and Calibration
User 5 access	7	150	Record		23		RW			Advanced Configuration Only
			Simple	VisibleString	20			User 5	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Maintenance and Calibration
User 6 access	7	151	Record		23		RW			Advanced Configuration Only
			Simple	VisibleString	20			User 6	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Maintenance and Calibration

Table B.1 Data Structure (Sheet 26 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
User 7 access	7	152	Record		23		RW			Advanced Configuration only
			Simple	VisibleString	20			User 7	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Maintenance and Calibration
User 8 access	7	153	Record		23		RW			Advanced Configuration only
			Simple	VisibleString	20			User 8	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Maintenance and Calibration
User 9 access	7	154	Record		23		RW			Advanced Configuration only
			Simple	VisibleString	20			User 9	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Maintenance and Calibration

Table B.1 Data Structure (Sheet 27 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
User 10 access	7	155	Record		23		RW			Advanced Configuration only
			Simple	VisibleString	20			User 10	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Maintenance and Calibration
User 11 access	7	156	Record		23		RW			Advanced Configuration only
			Simple	VisibleString	20			User 11	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Maintenance and Calibration
User 12 access	7	157	Record		23		RW			Advanced Configuration only
			Simple	VisibleString	20			User 12	ASCII string	User name
			Simple	Unsigned8	1			0	0 = No access 1 = Load Only 2 = Limited 3 = Full	User access to Configuration
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Logging
			Simple	Unsigned8	1			0	0 = False 1 = True	User access to Maintenance and Calibration

Table B.1 Data Structure (Sheet 28 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
E-mail 2 recipient 1	7	158	Simple	VisibleString	32		R		ASCII string	1st 32 bytes
E-mail 2 recipient 1	7	159	Simple	VisibleString	8		R		ASCII string	Last 8 bytes
E-mail 2 recipient 2	7	160	Simple	VisibleString	32		R		ASCII string	1st 32 bytes
E-mail 2 recipient 2	7	161	Simple	VisibleString	8		R		ASCII string	Last 8 bytes
E-mail 2 recipient 3	7	162	Simple	VisibleString	32		R		ASCII string	1st 32 bytes
E-mail 2 recipient 3	7	163	Simple	VisibleString	8		R		ASCII string	Last 8 bytes
User 1 passwords	7	169	Record		22		RW			
			Simple	Unsigned16	2			0	0 to 9999	Basic security password
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 2 passwords	7	170	Record		22		RW			
			Simple	Unsigned16	2			0	0 to 9999	Basic security password
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 3 passwords	7	171	Record		22		RW			
			Simple	Unsigned16	2			0	0 to 9999	Basic security password
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 4 passwords	7	172	Record		22		RW			
			Simple	Unsigned16	2			0	0 to 9999	Basic security password
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 5 passwords	7	173	Record		22		RW			Advanced Configuration Only
			Simple	Unsigned16	2			0	0	0
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 6 passwords	7	174	Record		22		RW			Advanced Configuration Only
			Simple	Unsigned16	2			0	0	0
			Simple	VisibleString	20		RW		ASCII string	Advanced security password

Table B.1 Data Structure (Sheet 29 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
User 7 passwords	7	175	Record		22		RW			Advanced Configuration only
			Simple	Unsigned16	2			0	0	0
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 8 passwords	7	176	Record		22		RW			Advanced Configuration only
			Simple	Unsigned16	2			0	0	0
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 9 passwords	7	177	Record		22		RW			Advanced Configuration Only
			Simple	Unsigned16	2			0	0	0
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 10 passwords	7	178	Record		22		RW			Advanced Configuration Only
			Simple	Unsigned16	2			0	0	0
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 11 passwords	7	179	Record		22		RW			Advanced Configuration only
			Simple	Unsigned16	2			0	0	0
			Simple	VisibleString	20		RW		ASCII string	Advanced security password
User 12 passwords	7	180	Record		22		RW			Advanced Configuration only
			Simple	Unsigned16	2			0	0	0
			Simple	VisibleString	20		RW		ASCII string	Advanced security password

Table B.1 Data Structure (Sheet 30 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
Message 1	7	181	Simple	VisibleString	20		RW		ASCII string	
Message 2	7	182	Simple	VisibleString	20		RW		ASCII string	
Message 3	7	183	Simple	VisibleString	20		RW		ASCII string	
Message 4	7	184	Simple	VisibleString	20		RW		ASCII string	
Message 5	7	185	Simple	VisibleString	20		RW		ASCII string	
Message 6	7	186	Simple	VisibleString	20		RW		ASCII string	
Message 7	7	187	Simple	VisibleString	20		RW		ASCII string	
Message 8	7	188	Simple	VisibleString	20		RW		ASCII string	
Message 9	7	189	Simple	VisibleString	20		RW		ASCII string	
Message 10	7	190	Simple	VisibleString	20		RW		ASCII string	
Message 11	7	191	Simple	VisibleString	20		RW		ASCII string	
Message 12	7	192	Simple	VisibleString	20		RW		ASCII string	
Message 13	7	193	Simple	VisibleString	20		RW		ASCII string	
Message 14	7	194	Simple	VisibleString	20		RW		ASCII string	
Message 15	7	195	Simple	VisibleString	20		RW		ASCII string	
Message 16	7	196	Simple	VisibleString	20		RW		ASCII string	
Message 17	7	197	Simple	VisibleString	20		RW		ASCII string	
Message 18	7	198	Simple	VisibleString	20		RW		ASCII string	
Message 19	7	199	Simple	VisibleString	20		RW		ASCII string	
Message 20	7	200	Simple	VisibleString	20		RW		ASCII string	
Message 21	7	201	Simple	VisibleString	20		RW		ASCII string	
Message 22	7	202	Simple	VisibleString	20		RW		ASCII string	
Message 23	7	203	Simple	VisibleString	20		RW		ASCII string	
Message 24	7	204	Simple	VisibleString	20		RW		ASCII string	

Table B.1 Data Structure (Sheet 31 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
IP Address	7	205	Simple	VisibleString	16		R	192.168.1.6	ASCII string	Dotted IP address
Subnet mask	7	206	Simple	VisibleString	16		R	255.255.255.0	ASCII string	
Default gateway	7	207	Simple	VisibleString	16		R		ASCII string	
FTP user 1	7	208	Record		29		R			
			Simple	VisibleString	25				ASCII string	Username:password string
			Simple	Unsigned32	4				Bit1 = Write Bit2 = Read access Bit3 = Operator Bit4 = Configuration access	Access rights
FTP user 2	7	209	Record		29		R			
			Simple	VisibleString	25				ASCII string	Username:password string
			Simple	Unsigned32	4				Bit1 = Write Bit2 = Read access Bit3 = Operator Bit4 = Configuration access	Access rights
FTP user 3	7	210	Record		29		R			
			Simple	VisibleString	25				ASCII string	Username:password string
			Simple	Unsigned32	4				Bit1 = Write Bit2 = Read access Bit3 = Operator Bit4 = Configuration access	Access rights
FTP user 4	7	211	Record		29		R			
			Simple	VisibleString	25				ASCII string	Username:password string
			Simple	Unsigned32	4				Bit1 = Write Bit2 = Read access Bit3 = Operator Bit4 = Configuration access	Access rights

Table B.1 Data Structure (Sheet 32 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
E-mail 1 server address	7	212	Simple	Unsigned32	4		R	16847020	Network address	Network byte order (172.16.1.1)
E-mail 2 server address	7	213	Simple	Unsigned32	4		R	16847020	Network address	Network byte order
E-mail 1 recipient 1	7	214	Simple	VisibleString	32		R		ASCII string	1st 32 bytes
E-mail 1 recipient 1	7	215	Simple	VisibleString	8		R		ASCII string	Last 8 bytes
E-mail 1 recipient 2	7	216	Simple	VisibleString	32		R		ASCII string	1st 32 bytes
E-mail 1 recipient 2	7	217	Simple	VisibleString	8		R		ASCII string	Last 8 bytes
E-mail 1 recipient 3	7	218	Simple	VisibleString	32		R		ASCII string	1st 32 bytes
E-mail 1 recipient 3	7	219	Simple	VisibleString	8		R		ASCII string	Last 8 bytes
E-mail 1 trigger 1	7	222	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 2 trigger 1	7	223	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 1 trigger 2	7	224	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 2 trigger 2	7	225	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	

Table B.1 Data Structure (Sheet 33 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
E-mail 1 trigger 3	7	226	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 2 trigger 3	7	227	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 1 trigger 4	7	228	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 2 trigger 4	7	229	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 1 trigger 5	7	230	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	

Table B.1 Data Structure (Sheet 34 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
E-mail 2 trigger 5	7	231	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 1 trigger 6	7	232	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 2 trigger 6	7	233	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 1 trigger 7	7	234	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 2 trigger 7	7	235	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	

Table B.1 Data Structure (Sheet 35 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Description	Slot	Slot Index	Object Type	Data Type	Bytes	Store[1]	Access[2]	Default	Valid Range	Note
E-mail 1 trigger 8	7	236	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 2 trigger 8	7	237	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 1 trigger 9	7	238	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 2 trigger 9	7	239	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 1 trigger 10	7	240	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	
E-mail 2 trigger 10	7	241	Record		5		R			
			Simple	Unsigned32	4			0	0 = No source	Source name type number reference
			Simple	Unsigned8	1			0	0 = Non-inverted 1 = Inverted	

Table B.1 Data Structure (Sheet 36 of 36)

[1] See 'Store Definitions' on page 7
[2] See 'Access Definitions' on page 7

Octet	Bit	Description	Diagnosis Mask (1 = Enabled)
DIAGNOSIS			
1	0	Hardware failure of the electronics*	1
	1	Not used	0
	2	Not used	0
	3	Electronics temperature too high	1
	4	Memory error	1
	5	Failure in measurement	1
	6	Not used	0
	7	Not used	0
2	0	Not used	0
	1	Power supply failed	1
	2	Configuration not valid	1
	3	Not used	0
	4	Not used	0
	5	Maintenance required**	1
	6	Not used	0
	7	Not used	0
3		Not used	0
4		Not used	0

Table B.2 Diagnostic Data (Diagnosis)

*Hardware failure may be one of the following:
1Head Heating Failure

2 Head Temperature Critical (> 60 °C)

3 Head LED Calibration Failure

4 Head LED Always Dark

5 Head LED Always Light

6 Head Motor/Piston Fault

7 Head LED Origin Fault

8 Head Communications Failure

9 PSU Supply Current Too High

10 Internal Communications Failure

**Maintenance required may be one of the following:
1 Sample Flow Failure – Colorimetric Stream 1

2 Sample Flow Failure – Colorimetric Stream 2

3 Sample Flow Failure – Colorimetric Stream 3

4 Sample Flow Failure – ISE

Octet	Bit	Description	Diagnosis Mask (1 = Enabled)
DIAGNOSIS_EXTENSION			
1	0	Off	1
	1	Stopped	1
	2	Calibrating	1
	3	Priming	1
	4	Flushing	1
	5	Cleaning	1
	6	Override Mode	1
	7	Monitor In Service	1
2	0	No Valid Caliibration	1
	1	Calibration Failed	1
	2	Calibration Attention	1
	3	Calibration Cancelled	1
	4	Sample Recovery Following Calibration (ISE)	1
	5	Probe Stability Failure (ISE)	1
	6	Probe Failure (ISE)	1
	7	Temperature Probe Failure	1
3	0	Reagent 1 empty	1
	1	Reagent 2 empty	1
	2	Reagent 3 empty	1
	3	DI Empty	1
	4	Standard Empty (Colorimetric)	1
	5	High Standard Empty (ISE)	1
	6	Low Standard Empty (ISE)	1
	7	Buffer Reagent Empty (ISE)	1
4	0	Temperature Stabilising	1
	1	Heating Failure	1
	2	Head Temperature Critical (> 60°C)	1
	3	Head LED Calibration Failure	1
	4	Head LED Always Dark	1
	5	Head LED Always Light	1
	6	Head LED Origin Fault	1
	7	Head Communications Failure	1

Table B.3 Diagnostic Data (Diagnosis _Extension)

Octet	Bit	Description	Diagnosis Mask (1 = Enabled)
5	0	Alarm Relay 1	1
	1	Alarm Relay 2	1
	2	Alarm Relay 3	1
	3	Alarm Relay 4	1
	4	Alarm Relay 5	1
	5	Alarm Relay 6	1
	6	Service Due	1
	7	Service Overdue	1
6	0	Internal Communications Error	1
	1	Internal Communications Failure	1
	2	Media Card Full	1
	3	A/D Conversion Error	1
	4	Sample Flow Failure - Stream 1 (Colorimetric)	1
	5	Sample Flow Failure - Stream 2 (Colorimetric)	1
	6	Sample Flow Failure - Stream 3 (Colorimetric)	1
	7	Sample Flow Failure - ISE	1

Table B.3 Diagnostic Data (Diagnosis _Extension)

Notes

Acknowledgements

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IM/AZT6PBS Rev. D 10.2018