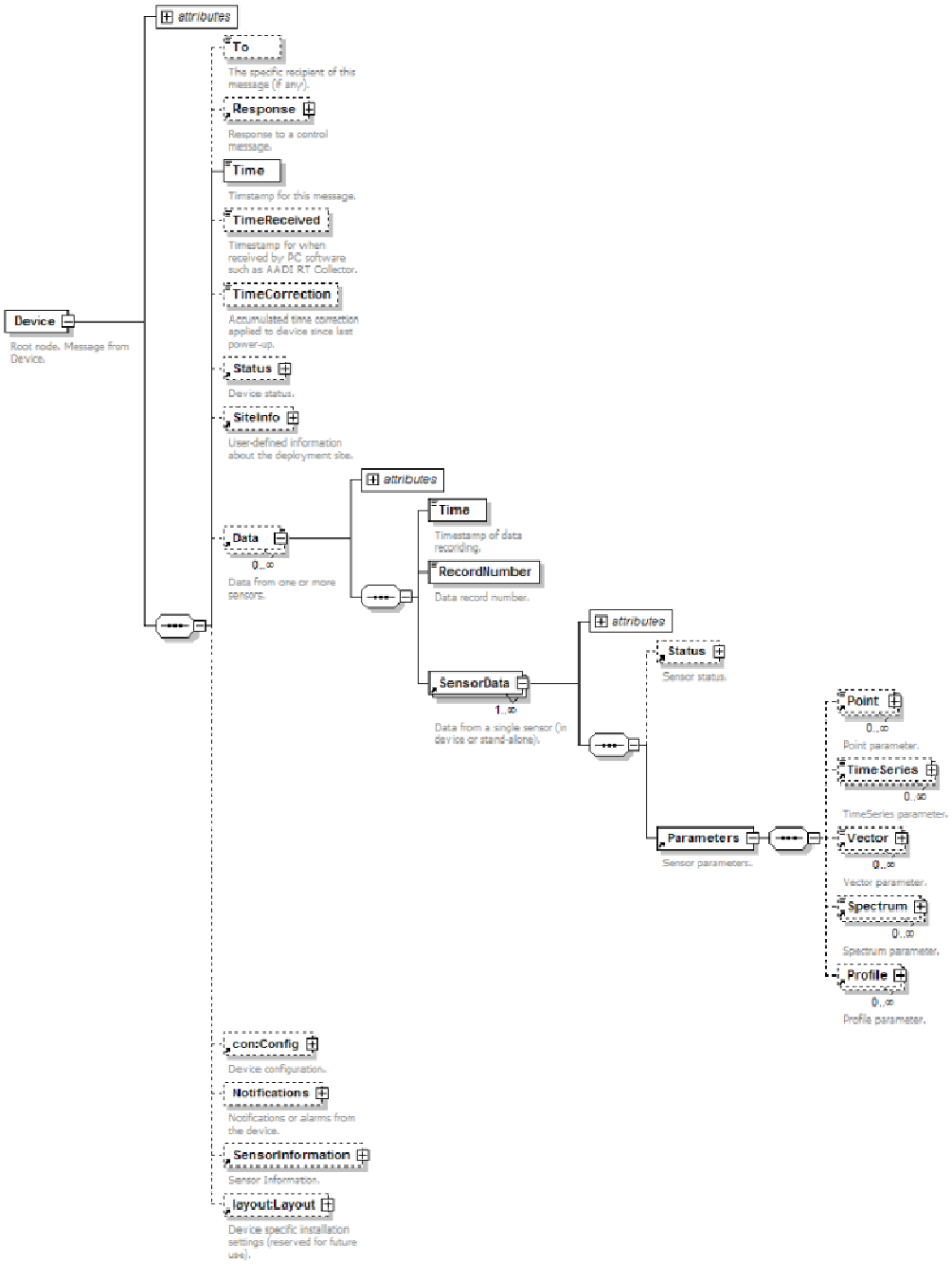
TD 267a AADI Real-Time Output Protocol



AANDERAA DATA INSTRUMENTS

1st Edition	30 September 2007	PRELIMINARY EDITION
2nd Edition	9 October 2007	PRELIMINARY EDITION
3rd Edition	16 November 2007	
4th Edition	21 February 2008	
5th Edition	6 June 2008	
6th Edition	15 January 2009	
7th Edition	18 May 2010	

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Introduction

Purpose and scope

The purpose of this document is to describe the AADI Real-Time Output Protocol for

- The application engineer who will use this protocol to obtain and use the data transmitted from compliant AADI devices.
- The manager who needs to know the features and principles of the protocol down to the detail he or she chooses.

The descriptions in this document focus on Real-Time output messages from an AADI SEAGUARD® Platform.

Document overview

CHAPTER 1 Gives a brief introduction to the protocol.

CHAPTER 2 Describes the protocol in detail.

Appendix 1 Describes the message frame format.

Appendix 2 Lists the CRC16 source code used to generate and verify message checksums.

Appendix 3 Lists an example output message.

Applicable documents

TD267b AADI Real-Time Output Protocol – Diagram View

TD268 AADI Real-Time Collector Users Manual

TD271 AADI Real-Time Communication

TD272 AADI Real-Time Control Protocol – Diagram View

TD278 AADI Real-Time Programming Reference

References

XML: http://w3schools.com/xml/default.asp

XML Schema: http://w3schools.com/schema/default.asp

CHAPTER 1 Short Description

The AADI Real-Time Output Protocol is used to transmit data from AADI devices in real-time.

The data messages from the device are framed to secure precise synchronisation. The frame includes a CRC16 value which provides integrity control. Refer to Appendix 1 and Appendix 2 for a detailed description of the frame format.

The data is delivered as an XML formatted message. XML is a markup language designed to describe data and to focus on what data is (http://w3schools.com/xml/default.asp).

XML is an ASCII based format and as such human readable, although XML messages are generally read and interpreted by computer applications.

The precise definition of the message format is given by the XML schema file *RTOutSchema.xsd*, which is available for download on www.aadi.no. Customers can register to get a user name and password required to gain access to manuals, technical notes and software. Please contact info@aadi.no for guidance.

Modern development tools such as *Microsoft Visual Studio* or *Altova XML Spy* provide several ways for quick and easy access to data in XML format using the defining schema file.

1.1 Message Types

There are three main scenarios in which data can be received from a connected device. The output from the device is always formatted using the AADI Real-Time Output Protocol, regardless of the content.

1.1.1 Non-polled data

A device can be set up to automatically transmit data recordings at regular intervals, i.e. non-polled mode. Each message contains all necessary information to identify the measured parameters and to be fully traceable down to every physical unit involved in the measurement.

The message content automatically adapts to the current configuration of the device.

1.1.2 Response to Control Messages

If the connected device supports the AADI Real-Time Control Protocol, it can be used to control a deployed device. This includes starting and stopping the recorder, and changing the device configuration. Any response from the device will be formatted using the AADI Real-Time Output Protocol, but will usually just contain relevant return values rather than recording data.

1.1.3 Notification Messages

A notification message is an asynchronous message sent by the device to notify about an event on the instrument. This notification message contains a *Notification* element, specifying the notification event, but can also contain associated *Data*, *Config* or *SensorInformation*.

1.2 The AADI Real-Time Collector

AADI provides the AADI Real-Time Collector application for Microsoft Windows.

The AADI Real-Time Collector is able to:

- Receive messages from multiple connected devices.
- Transfer incoming messages to files for storage.
- Provide the messages to multiple connected user applications through dedicated, device specific message queues.
- Provide an extensive log of all incoming messages and any errors on the connection.
- Send control messages to connected devices using the AADI Real-Time Control Protocol.
- Plot data in basic charts.

The Real-Time Collector also provides a user interface for configuration and operation of the device (AADI Real-Time Control Panel).

Please refer to TD268 for more information about the AADI Real-Time Collector.

CHAPTER 2 Message content

The message body is a precisely defined XML structure. The primary reference must always be the XML schema file *RTOutSchema.xsd*, which is available for download on www.aadi.no.

This chapter explains in details the complete message structure, including element attributes and content.

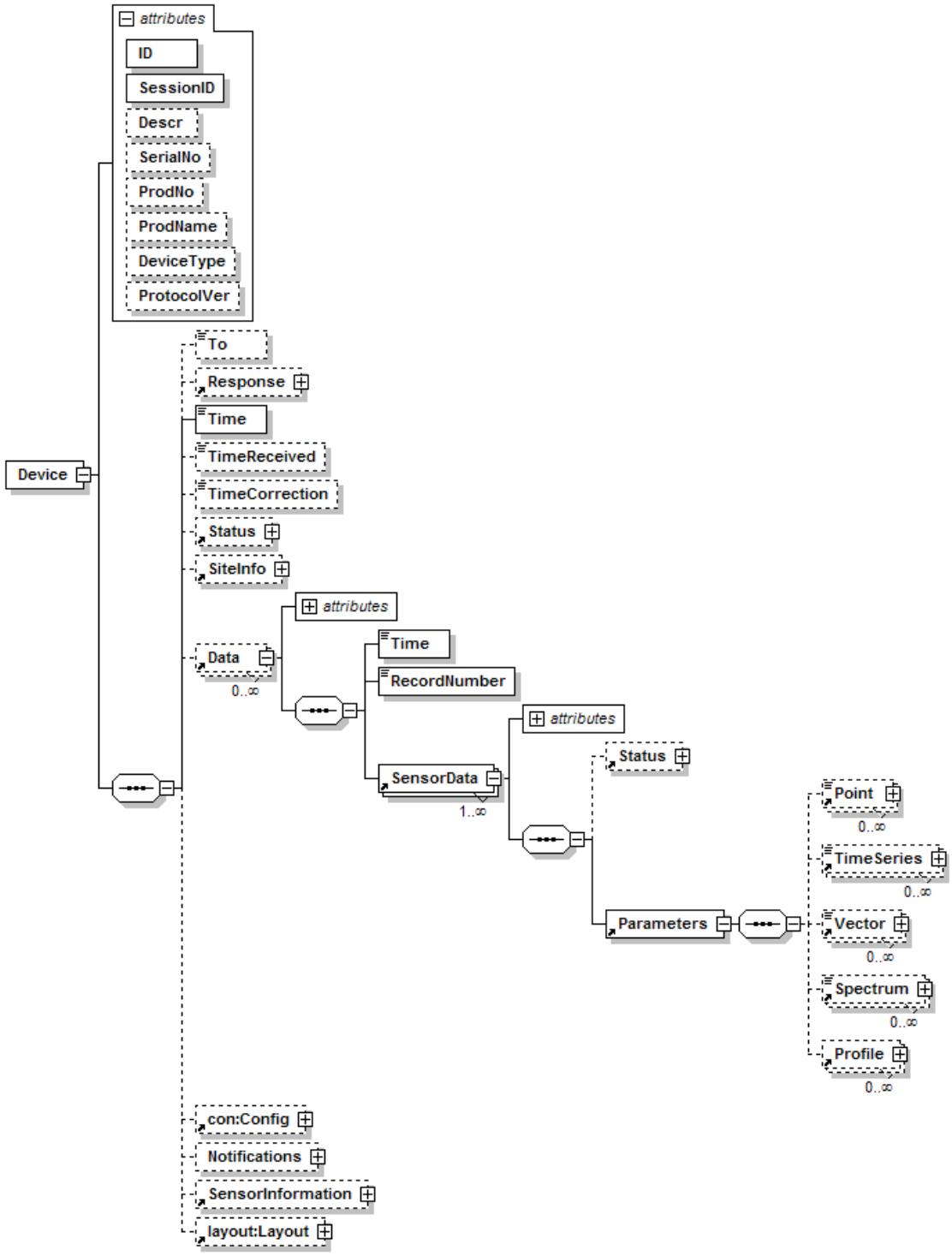

Figure 2-1 Overview of the *AADI Real Time Output* message structure.

2.1 Description of the Real-Time Output Schema

Some of the attributes and elements in the Real-Time Output Protocol are optional; these attributes/elements are written inside dotted frames in the schema. Required attributes/elements are written inside solid line frames.

Some elements have the symbol 0..∞ attached, this indicate that the element can be absent or can occur in one or more parallel instances.

Some elements have the symbol 1..∞ attached, this indicate that the element will occur in at least one instance and possibly in several parallel instances.

The protocol definition is prepared for messages to be compiled in a full form version including optional content or as a reduced format including only the strictly required content.

A reduced format will consist of the required attributes/elements only, while the full form version also holds optional attributes and elements. Note that depending on the deployment context, not all optional attributes and elements will be present even in the full format version.

2.2 XML declaration

Each message starts with the standard XML declaration:

<?xml version="1.0" encoding="UTF-8"?>

This line defines the XML version (1.0) and the encoding used (UTF-8).

2.3 Device element (root element)

Each and every message transmitted from the device uses the Device element as root, while the child elements below Device will vary depending on context.

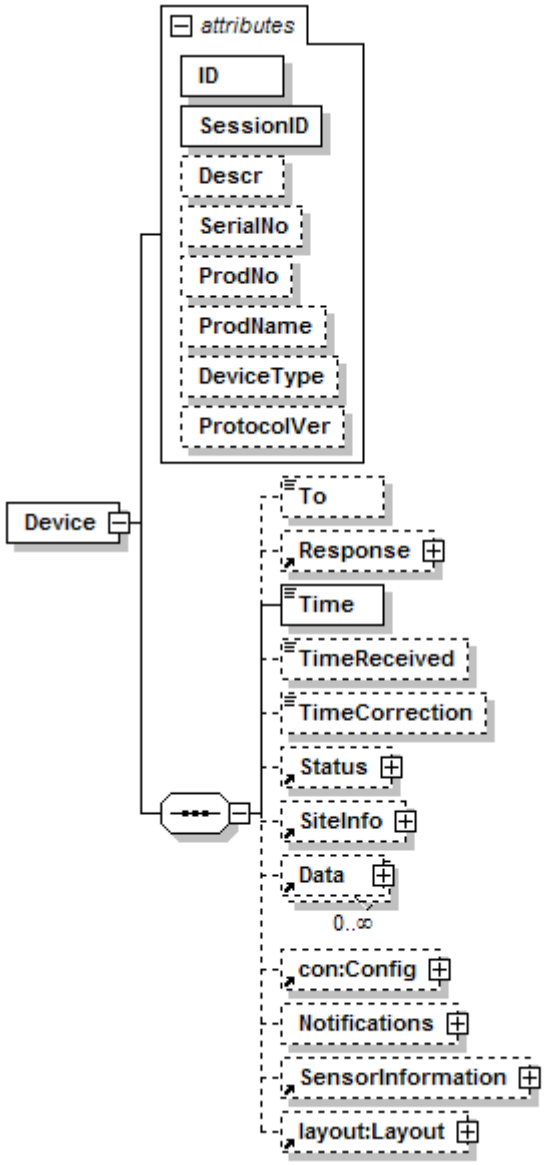

Figure 2-2 The Device element

2.3.1 Attributes

Name	Description	Required
ID	A unique ID, built from the device product number and serial number.	Yes
SessionID	An ID to identify the specific session in which all configuration settings remain unchanged.	Yes
Descr	The user defined description of the device.	No
SerialNo	The device serial number.	No
ProdNo	The device product number.	No

ProdName	The device product name.	No
DeviceType	Enumerated type: Instrument or Sensor.	No
ProtocolVer	The version number of the AADI Real-Time Output Protocol.	No

2.3.2 Child elements

Name	Description	Required
To	Enables addressing if or when required. Typically used when the device sends a response to a control message.	No
Response	Response information to a command or request to the device. Refer to TD272 for more information.	No
Time	The time when the current message was compiled for transmission.	Yes
TimeReceived	Timestamp added by the receiving software, e.g. the AADI Real-Time Collector.	No
TimeCorrection	The accumulated time correction applied to the device since the last power-up. Only relevant for devices that support time adjustment commands.	No
Status	The current device status (see chapter 2.4). Usually not present if everything is OK.	No
SiteInfo	User-specified information about the deployment site (see chapter 2.5).	No
Data	Sensor data (see chapter 2.6).	No
Config	Device configuration. Only relevant during remote configuration of the device. Not described in this document.	No
Notifications	Notifications from the device.	No
SensorInformation	Sensor information. Only relevant during remote configuration of the device. Not described in this document.	No
Layout	Device layout. Only relevant during remote configuration of the device. Not described in this document.	No

2.4 Status element

The Status element is used at several locations in the schema, and provides basic status information on the element it belongs to.

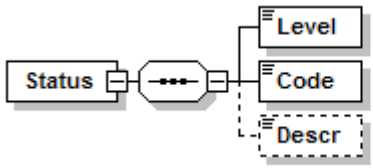

Figure 2-3 The Status element.

2.4.1 Child elements

Name	Description	Required
Level	Status level (0 = OK, 10 = Warning, 20 = Error).	Yes
Code	Status code.	Yes

Descr	Status description/explanation.	No

2.5 SiteInfo element

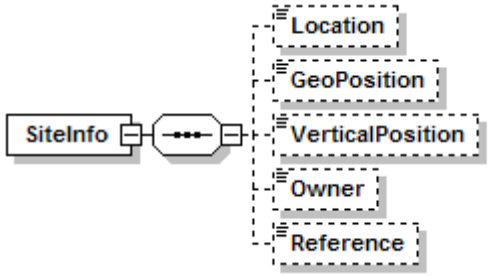

Figure 2-4 The SiteInfo element.

2.5.1 Child elements

Name	Description	Required
Location	The deployment location.	No
Position	The coordinates of the deployment location.	No
VerticalPosition	The depth or altitude of the deployed device.	No
Owner	The name of the device owner, e.g. company name.	No
Reference	A project reference or similar.	No

2.6 Data element

The data element contains output data (values) from one or more sensors.

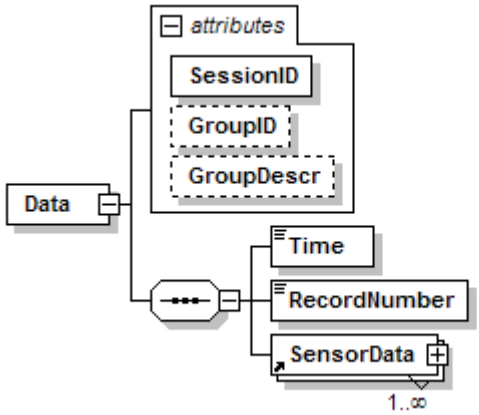

Figure 2-5 The Data element.

2.6.1 Attributes

Name	Description	Required
SessionID	The sessionID is set when the instrument starts recording, and remains unchanged until the recording is stopped.	Yes
GroupID	Specifies which recording group that generated this data message. Only relevant on devices with multi-group recorders.	No

GroupDescr	The name/description of the recorder group. Only relevant on devices with multi-group recorders.	No

2.6.2 Child elements

Name	Description	Required
Time	The time when the data were actually collected from the sensors. This may differ from the timestamp in the Device element (see chapter 2.3.2).	Yes
RecordNumber	The record number starts at 0 and increments by 1 for each new record. The upper limit is 2^{31} (signed 32bit integer), at which point the sequence starts from 0 again.	Yes
SensorData	List of SensorData elements (see chapter 2.7).	Yes

2.7 SensorData element

The SensorData element contains output data (values) from a single sensor.

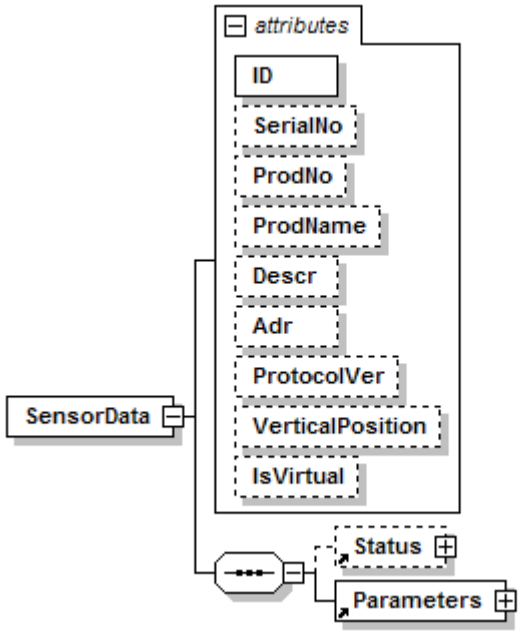

Figure 2-6 The SensorData element.

2.7.1 Attributes

Name	Description	Required
ID	A unique ID, built from the sensor product number and serial number.	Yes
SerialNo	The sensor serial number.	No
ProdNo	The sensor product number.	No
ProdName	The sensor product name.	No
Descr	User-defined description of the sensor.	No
Adr	The sensors internal address used by the AiCaP system.	No
ProtocolVer	The sensors protocol version.	No
VerticalPosition	The deployment depth or altitude of this particular sensor (user-defined).	No

IsVirtual	True if the sensor is virtual, otherwise false or empty. Reserved for future use.	No

2.7.2 Child elements

Name	Description	Required
Status	The current device status (see chapter 2.4). Usually not present if everything is OK.	No
Parameters	Measuring parameters/values (see chapter 2.8).	Yes

2.8 Parameters element

The Parameters element within SensorData contains a list of sensor output values (measurements). A single output value is referred to as a parameter. There are five types of parameters.

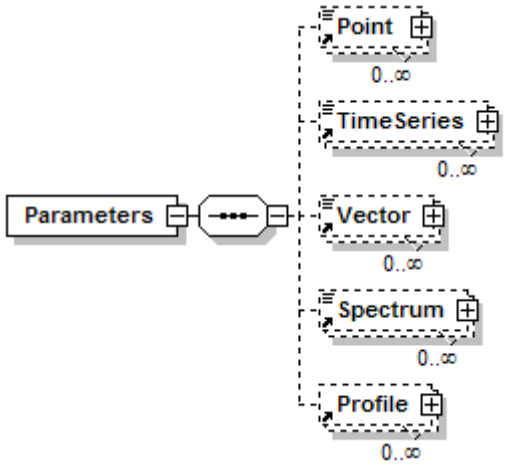

Figure 2-7 There are five type of parameters; Point, TimeSeries, Vector, Spectrum and Profile.

2.8.1 Child elements

Name	Description	Required
Point	A list of single value point parameters (see chapter 2.10).	No
TimeSeries	A list of time series value parameters (see chapter 2.11); values measured over a period of time.	No
Vector	A list of vector value parameters (see chapter 2.12).	No
Spectrum	A list of spectrum value parameters (see chapter 2.13).	No
Profile	A list of profile value parameters (see chapter 2.14).	No

2.9 Parameter type

The Parameter type has attributes common to the various parameter elements. The Point, TimeSeries, Vector and Spectrum parameter elements are all of type Parameter, but with some individual additions.

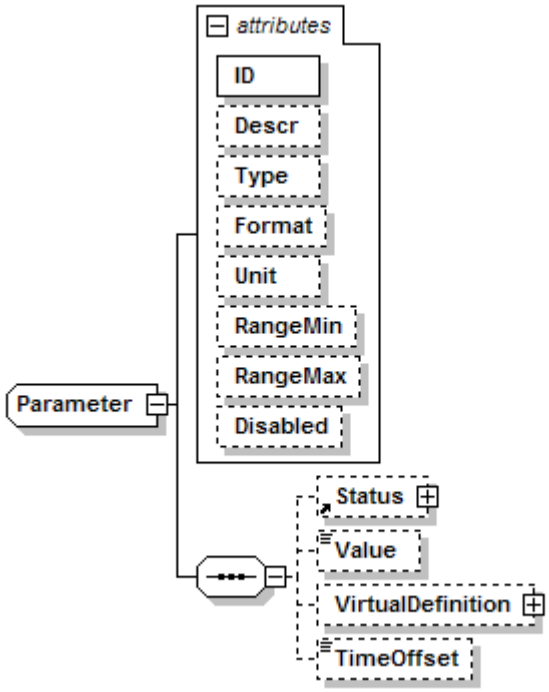

Figure 2-8 The Parameter type is used as a basis for the Point, TimeSeries, Vector and Spectrum elements.

2.9.1 Attributes

Name	Description	Required
ID	A unique ID (within the sensor) for this specific parameter.	Yes
Descr	Parameter description, e.g. pressure or temperature.	No
Type	The data type of the parameter value.	No
Format	The number format of the parameter value.	No
Unit	The physical unit of the parameter value, e.g. kPa or DegC.	No
RangeMin	The minimum parameter value.	No
RangeMax	The maximum parameter value.	No
Disabled	True if parameter is disabled, otherwise false or empty. Reserved for future use.	No

2.9.2 Child elements

Name	Description	Required
Status	The current parameter status (see chapter 2.4). Usually not present if everything is OK.	No
Value	The actual parameter value (measurement). The value may be missing or empty, depending on the device configuration and context.	No
VirtualDefinition	Reserved for future use.	No
TimeOffset	If the value was recorded at another time than the timestamp in the Data element, this offset will reflect that (in milleseconds). Not present if offset is zero.	No

2.10 Point element

The Point element is based on the Parameter type (chapter 2.9), and has no further attributes or elements.

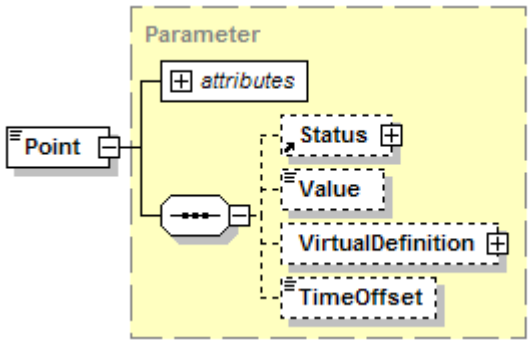

Figure 2-9 The Point element (based on Parameter type).

2.11 TimeSeries element

The TimeSeries element is based on the Parameter type (chapter 2.9), and also defines two additional attributes. The value element contains a semicolon separated list of timeseries values.

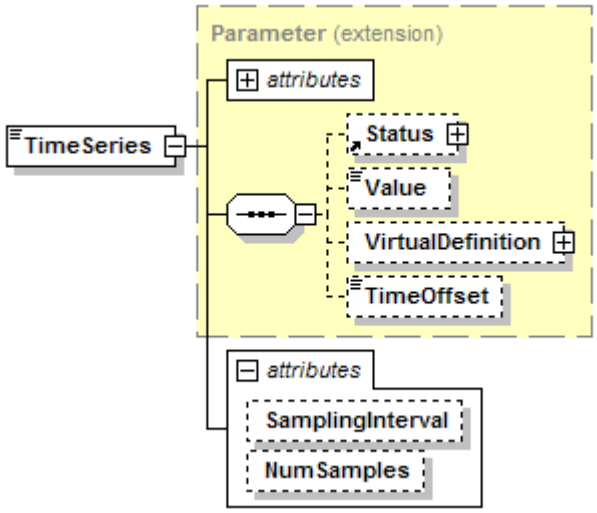

Figure 2-10 The TimeSeries element (based on Parameter type).

2.11.1 Attributes

Name	Description	Required
SamplingInterval	The time between each value in the series, measured in seconds.	No
NumSamples	The total number of values in the series.	No

2.12 Vector element

The Vector element is based on the Parameter type (chapter 2.9), and also defines one additional attribute. The value element contains a semicolon separated list of vector values.

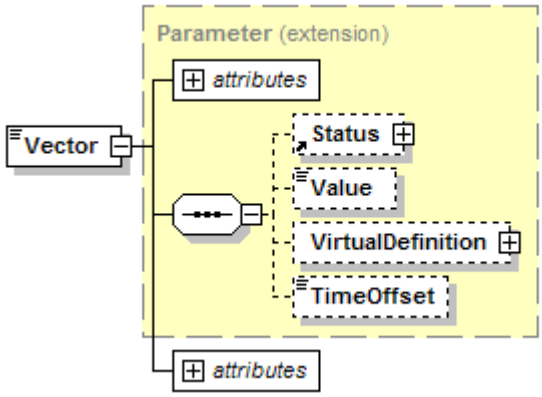

Figure 2-11 The Vector element (based on Parameter type).

2.12.1 Attributes

Name	Description	Required
Dimension	The vector dimension (number of values).	No

2.13 Spectrum element

The Spectrum element is based on the Parameter type (chapter 2.9), and also defines four additional attributes. The value element contains a semicolon separated list of spectrum values.

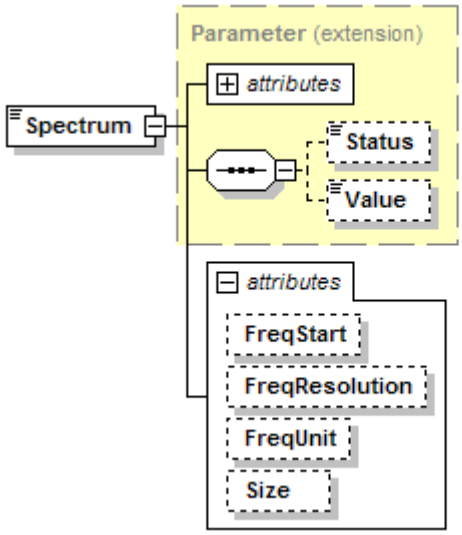

Figure 2-12 The Spectrum element (based on Parameter type).

2.13.1 Attributes

Name	Description	Required
FreqStart	The absolute frequency of the first value.	No
FreqResolution	The frequency difference between each value.	No
FreqUnit	The frequency unit, e.g. Hz.	No
Size	The number of values in the spectrum.	No

2.14 Profile element

The Profile element is a more complex type of parameter, and is not based on the Parameter type. It is used to represent profiler data.

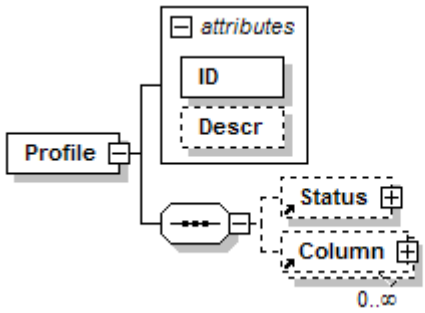

Figure 2-13 The Profile element.

2.14.1 Attributes

Name	Description	Required
ID	A unique ID (within the sensor) for this specific parameter.	Yes
Descr	Parameter description.	No

2.14.2 Child elements

Name	Description	Required
Status	The current parameter status (see chapter 2.4). Usually not present if everything is OK.	Yes
Column	List of columns in this profile (see chapter 2.15).	No

2.15 Column element

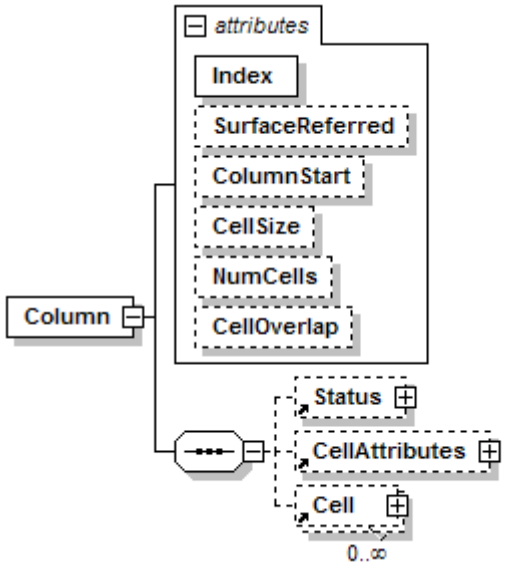

Figure 2-14 The Column element.

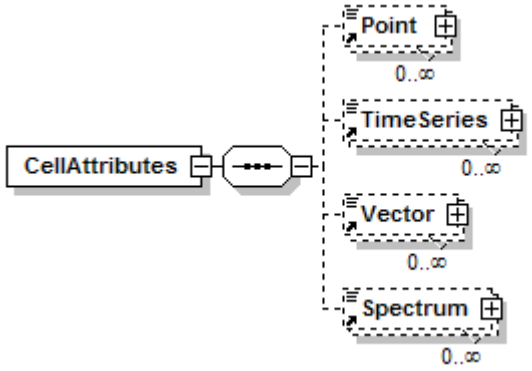

Figure 2-15 CellAttribute types.

2.15.1 Attributes

Name	Description	Required
Index	The column index (unique in this profile).	Yes
SurfaceReferred	True if the column is surface referred, otherwise false or empty.	No
ColumnStart	The distance from the reference (surface or device) in meters.	No
CellSize	The cell size in meters.	No
NumCells	The number of cells in the column.	No
CellOverlap	The cell overlap in percent.	No

2.15.2 Child elements

Name	Description	Required
Status	The current column status (see chapter 2.4). Usually not present if everything is OK.	No
CellAttributes	List of parameters contained in each cell in the column. The attributes of these parameters (description, type etc.) are specified in this structure, whereas the parameter elements in each Cell element has only the ID attribute. The CellAttributes structure can in other words be seen as a dummy Cell element. Since each cell must have the exact same properties, there can be only one CellAttributes element.	No
Cell	List of column cells (see chapter 2.16).	No

2.16 Cell element

Each cell contains one or more parameters. Each of these parameters are linked to the matching CellAttributes parameter by the parameter ID. The ID is the only attribute used for parameters below the Cell element. The number of cells must always equal the NumCells attribute in the Column element.

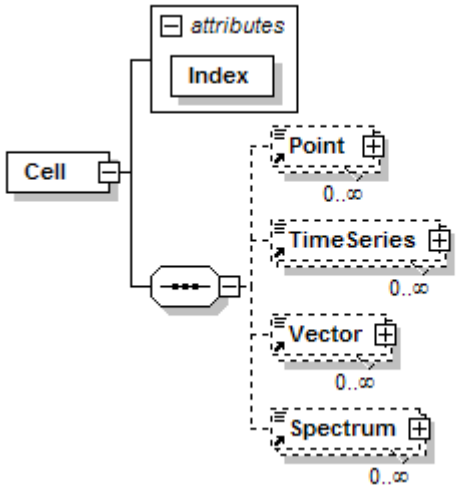

Figure 2-16 The Cell element.

2.16.1 Attributes

Name	Description	Required
Index	The cell index in the current column. The index values spans from 0 to Column→NumCells – 1. Index 0 refers to the cell closest to the reference.	Yes

2.16.2 Child elements

Name	Description	Required
Point	A list of single value point parameters (see chapter 2.10).	No
TimeSeries	A list of time series value parameters (see chapter 2.11); values measured over a period of time.	No
Vector	A list of vector value parameters (see chapter 2.12).	No
Spectrum	A list of spectrum value parameters (see chapter 2.13).	No

Appendix 1 Frame Format

In the AADI Real-Time Protocol, a *packet* is the primary or outer envelope for the transmitted information. The packet uses ASCII characters in all fields, except the actual message, which is encoded using UTF-8.

Each packet is framed by a *Start Sync* and an *End Sync*.

Start Sync tag = {{++!!

End Sync tag = !!--}}

Following the Start Sync tag is the *Packet Number* which locates each packet in the sequence of all packets transmitted from a particular device. 4 bytes are used to specify a 4 digit hexadecimal number (0000 through FFFF). Packet number 0000 is a special case, and is only used for the very first message the device transmits after a power-up. When 65 536 packets have been sent, the sequence start again from 0001 (*not* 0000).

The *Type* field denotes the type of message contained in the Message field (1 byte):

- Type 0 is reserved for low level system control messages.
- Type 1 is used for normal XML messages.
- Type 2 is used for compressed messages.
- Type 3 is used for file transfer messages.

The *Message size* is the number of bytes actually contained in the *Message* field. 5 bytes for a hexadecimal number between 00001 and FFFFF allows UTF-8 messages up to 1 048 576 bytes to be transferred in one packet. A *Message size* = 0 is an error.

The *Message* field contains the message to be transferred (1 - 1 048 576 bytes), encoded using UTF-8.

The *CRC* field contains a CRC16 value spanning the *Packet No, Type, Message size* and *Message fields*. The CRC is 4 bytes and is positioned immediately in front of the End Sync tag.

The source code (C++ and C#) for the CRC16 algorithm is listed in Appendix 2.

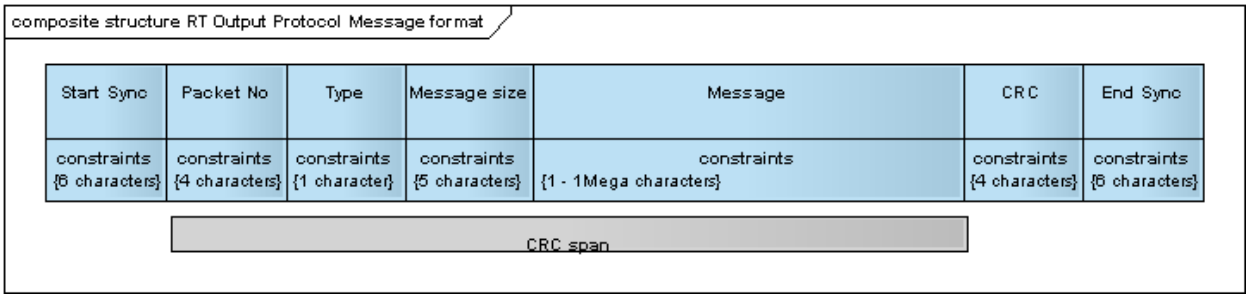

Figure A-2-17 The frame format.

Appendix 2 CRC16 Source Code

C++ CRC16 Source code

```
unsigned short CCRC16_CCITT::GenCRC(unsigned char* pData, long lSize)
{
	unsigned short ccitt_h[] = {
	0x0000, 0x1081, 0x2102, 0x3183, 0x4204, 0x5285, 0x6306, 0x7387,
	0x8408, 0x9489, 0xa50a, 0xb58b, 0xc60c, 0xd68d, 0xe70e, 0xf78f};

	unsigned short ccitt_l[] = {
	0x0000, 0x1189, 0x2312, 0x329b, 0x4624, 0x57ad, 0x6536, 0x74bf,
	0x8c48, 0x9dc1, 0xaf5a, 0xbed3, 0xca6c, 0xdbe5, 0xe97e, 0xf8f7};

	unsigned short n, unCRC;

	unCRC = 0xFFFF;
	while(lSize-- > 0)
	{
		n = *pData++ ^ unCRC;
		unCRC = ccitt_l[n&0x0f] ^ ccitt_h[(n>>4)&0x0f] ^ (unCRC>>8);
	};

	return unCRC;
}
```

C# CRC16 Source Code (CLS compliant)

```
int GenerateCrc(char[] buffer, int offset, int count)
{

	int[] ccitt_h = {
		0x0000, 0x1081, 0x2102, 0x3183, 0x4204, 0x5285, 0x6306, 0x7387,
		0x8408, 0x9489, 0xa50a, 0xb58b, 0xc60c, 0xd68d, 0xe70e, 0xf78f};

	int[] ccitt_l = {
		0x0000, 0x1189, 0x2312, 0x329b, 0x4624, 0x57ad, 0x6536, 0x74bf,
		0x8c48, 0x9dc1, 0xaf5a, 0xbed3, 0xca6c, 0xdbe5, 0xe97e, 0xf8f7};

	int crc = 0xFFFF;

	for (int i = offset; i < (offset + count); i++)
	{
		int n = buffer[i] ^ crc;
		crc = ccitt_l[n & 0x0f] ^ ccitt_h[(n >> 4) & 0x0f] ^ (crc >> 8);
	}

	return crc;
}
```

Appendix 3 Example Message

```
<?xml version="1.0" encoding="utf-8"?>
<Device ID="4430-888" SessionID="4430-888-2010-04-23T08:17:48Z" Descr="Seaguard RCM SW" SerialNo="888" ProdNo="4430" ProdName="Seaguard RCM SW"
DeviceType="Instrument" ProtocolVer="4" xmlns="http://www.aadi.no/RTOutSchema">
	<Time>2010-04-23T08:18:45.2004428Z</Time>
	<TimeReceived>2010-04-23T08:18:45.41919Z</TimeReceived>
	<SiteInfo>
		<Location>Nesttun</Location>
		<VerticalPosition>0</VerticalPosition>
		<Owner>AADI</Owner>
	</SiteInfo>
	<Data SessionID="2010-04-23T08:18:27Z">
		<Time>2010-04-23T08:18:45.2004428Z</Time>
		<RecordNumber>9</RecordNumber>
		<SensorData ID="SN100-0" SerialNo="0" ProdNo="SN100" ProdName="System Node" Descr="System Parameters" ProtocolVer="4">
			<Parameters>
				<Point ID="0" Descr="Battery Voltage" Type="VT_R4" Format="" Unit="V" RangeMin="0" RangeMax="15">
					<Value>2.124000</Value>
				</Point>
				<Point ID="1" Descr="Memory Used" Type="VT_I4" Format="" Unit="Bytes" RangeMin="0" RangeMax="12455936">
					<Value>8806400</Value>
				</Point>
				<Point ID="2" Descr="Interval" Type="VT_I4" Format="" Unit="ms" RangeMin="" RangeMax="">
					<Value>1999</Value>
				</Point>
			</Parameters>
		</SensorData>
		<SensorData ID="4060-43" SerialNo="43" ProdNo="4060" ProdName="Temperature Sensor" Descr="Temperature Sensor" ProtocolVer="4">
			<Parameters>
				<Point ID="0" Descr="Temperature" Type="VT_R4" Format="%0.3f" Unit="DegC" RangeMin="-5" RangeMax="40">
					<Value>19.119710</Value>
				</Point>
			</Parameters>
		</SensorData>
		<SensorData ID="4319-62" SerialNo="62" ProdNo="4319" ProdName="Conductivity Sensor" Descr="Conductivity Sensor" ProtocolVer="4">
			<Parameters>
				<Point ID="0" Descr="Conductivity" Type="VT_R4" Format="%0.3f" Unit="mS/cm" RangeMin="0" RangeMax="75">
					<Value>30.072829</Value>
				</Point>
				<Point ID="1" Descr="Temperature" Type="VT_R4" Format="%0.3f" Unit="Deg.C" RangeMin="-5" RangeMax="35">
					<Value>19.122464</Value>
				</Point>
```

```
        </Parameters>
</SensorData>
<SensorData ID="4330-22" SerialNo="22" ProdNo="4330" ProdName="Optode Sensor" Descr="Optode Sensor" ProtocolVer="4">
        <Parameters>
                <Point ID="0" Descr="O2Concentration" Type="VT_R4" Format="%0.3f" Unit="uM" RangeMin="0" RangeMax="500">
                        <Value>271.067333</Value>
                </Point>
                <Point ID="1" Descr="AirSaturation" Type="VT_R4" Format="%0.3f" Unit="%" RangeMin="0" RangeMax="150">
                        <Value>102.774118</Value>
                </Point>
                <Point ID="2" Descr="Temperature" Type="VT_R4" Format="%0.3f" Unit="Deg.C" RangeMin="-5" RangeMax="40">
                        <Value>19.120694</Value>
                </Point>
        </Parameters>
</SensorData>
<SensorData ID="4648-19" SerialNo="19" ProdNo="4648" ProdName="Wave And Tide Sensor" Descr="Wave And Tide Sensor" ProtocolVer="4">
        <Parameters>
                <Point ID="0" Descr="Pressure" Type="VT_R4" Format="%0.3f" Unit="kPa" RangeMin="0" RangeMax="1000">
                        <Value>302.392914</Value>
                </Point>
                <Point ID="1" Descr="Temperature" Type="VT_R4" Format="%0.3f" Unit="DegC" RangeMin="-5" RangeMax="35">
                        <Value>19.118991</Value>
                </Point>
                <Point ID="2" Descr="Rawdata Pressure" Type="VT_I4" Format="%u" Unit="" RangeMin="" RangeMax="">
                        <Value>78093</Value>
                </Point>
                <Point ID="3" Descr="Rawdata Temperature" Type="VT_I4" Format="%d" Unit="" RangeMin="" RangeMax="">
                        <Value>30032</Value>
                </Point>
                <Point ID="29" Descr="Tide Pressure" Type="VT_R4" Format="%0.3f" Unit="kPa" RangeMin="0" RangeMax="700">
                        <Value>302.387763</Value>
                </Point>
                <Point ID="30" Descr="Tide Level" Type="VT_R4" Format="%0.3f" Unit="m" RangeMin="0" RangeMax="300">
                        <Value>20.491166</Value>
                </Point>
                <Point ID="5" Descr="Sign. Height" Type="VT_R4" Format="%0.3f" Unit="m" RangeMin="0" RangeMax="10">
                        <Value>3.392570</Value>
                </Point>
                <Point ID="6" Descr="Max Height" Type="VT_R4" Format="%0.3f" Unit="m" RangeMin="0" RangeMax="10">
                        <Value>4.072667</Value>
                </Point>
                <Point ID="7" Descr="Mean Period" Type="VT_R4" Format="%0.3f" Unit="s" RangeMin="0" RangeMax="10">
                        <Value>6.508045</Value>
                </Point>
                <Point ID="8" Descr="Peak Period" Type="VT_R4" Format="%0.3f" Unit="s" RangeMin="0" RangeMax="10">
```

```
                                        <Value>6.598732</Value>
                                    </Point>
                                    <Point ID="9" Descr="Energy Period" Type="VT_R4" Format="%0.3f" Unit="s" RangeMin="0" RangeMax="10">
                                        <Value>6.698757</Value>
                                    </Point>
                                    <Point ID="10" Descr="Mean Zero Crossing" Type="VT_R4" Format="%0.3f" Unit="s" RangeMin="0" RangeMax="10">
                                        <Value>6.556184</Value>
                                    </Point>
                                    <Point ID="11" Descr="Steepness" Type="VT_R4" Format="%0.3f" Unit="" RangeMin="0" RangeMax="0.2">
                                        <Value>0.091116</Value>
                                    </Point>
                                    <Point ID="12" Descr="Irregularity" Type="VT_R4" Format="%0.3f" Unit="" RangeMin="0" RangeMax="1">
                                        <Value>0.594998</Value>
                                    </Point>
                                    <Point ID="14" Descr="CutOff Index High" Type="VT_I2" Format="" Unit="" RangeMin="0" RangeMax="512">
                                        <Value>303.422027</Value>
                                    </Point>
                                </Parameters>
                            </SensorData>
                        </Data>
                    </Device>
```