

# The DATRAN Database

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## Overview

There are many tables in the DATRAN database but the main ones, shown below can be roughly split in to three categories:

### Point and Operator Information

tblPoints	
iPointId	
⚡ strSite	
strEquipType	
⚡ strEquipName	
⚡ strPoint	
strUnits	
strSystem	
StationNo	
strDomain	
iMax	
iMin	

tblOperator	
⚡ iOperatorID	
strName	

tblAlias	
⚡ iAliasId	
strName	

### Logging

tblDigital	
⚡ iPointId	
⚡ dtStart	
dtStop	
dtAcknowledged	
strAcknowledgedBy	

tblAnalog	
⚡ iPointId	
⚡ dtTime	
fltValue	

tblEvent	
⚡ dtTimeStamp	
⚡ strType	
⚡ iPointId	
strCause	
iOperatorID	

### Paging

tblSMSMessaging	
⚡ iSMSMessageId	
dtTimeStamp	
strType	
iPointId	
dtSMSMessageTimeStamp	
strSMSMessageState	
iOperatorID	
strResponse	
iAliasID	
iAlarmId	
strAlarmClass	

When data is logged to the database from DATRAN, depending on the type of data it will be stored in either *tblDigital*, *tblAnalog* or *tblEvent*. These tables contain as little information as possible as they usually contain many million entries. *iPointId* is the foreign key used for linking to the *tblPoints* table. This table provides the detail about each logged point.

When SMS alarms occur (and if the *SMS Message with Logging* annunciator has been used) the alarm detail is logged to *tblSMSMessaging*. This table contains foreign keys to be able to obtain the detail of the point, the operator and the operator alias. E.g. the SMS may have been sent to the Duty Supervisor (the alias) who at the time was Joe (the operator). The alarm class (as specified in the DATRAN TBD) is also main available which can assist in grouping of your alarms by priority or contractual obligations.

## Table Detail

### Points Detail - tblPoints

Column Name	Data Type	Allow Nulls
iPointId	int	<input type="checkbox"/>
strSite	varchar(150)	<input type="checkbox"/>
strEquipType	varchar(150)	<input type="checkbox"/>
strEquipName	varchar(150)	<input type="checkbox"/>
strPoint	varchar(150)	<input type="checkbox"/>
strUnits	varchar(20)	<input checked="" type="checkbox"/>
strSystem	varchar(150)	<input checked="" type="checkbox"/>
StationNo	int	<input checked="" type="checkbox"/>
strDomain	varchar(10)	<input checked="" type="checkbox"/>
iMax	decimal(18, 6)	<input checked="" type="checkbox"/>
iMin	decimal(18, 6)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

The Points table (tblPoints) stores additional information about any points that are logged to the database. The function of the table columns, are as follows:

- Point ID (iPointId) - This is the ID of the Datran point for which the information in this table relates. The Datran point, which this ID is for, is specified in the Point table.
- Site Name (strSite) - This specifies the site name for the Datran point.
- Equipment Type (strEquipType) - This column is meant to store the equipment type for the Datran point (i.e. Pump), but what is actually stored depends on the setup of the logging. Often its contents are the same as the column strEquipName.
- Equipment Name (strEquipName) - This column stores the name of equipment under which the Datran point exists (i.e. Pump No1, or Reservoir).
- Point Name (strPoint) - This stores the name of the Datran point that is being logged (i.e. Fault, or Comms Fail).
- Point Units (strUnits) - This stores the units for the data being logged. This is only relevant for analogues, and is left null for digitals.
- System Name (strSystem) - This generally stores the name of the system that is logging the data.
- Station Address (StationNo) - This stores the address of the station at which the point exists.
- Point Type (strDomain) - This stores the type of point i.e. analogue, alarm or event.
- Point Maximum Value (iMax) - This stores the maximum value of the point. This does not actually restrict the maximum value of the point being logged, but is used by historical trending to determine the maximum value to be used on the Y-axis.
- Point Minimum Value (iMin) - This stores the minimum value of the point. This does not actually restrict the minimum value of the point being logged, but is used by historical trending to determine what minimum value to use on the Y-axis.

## Operator Detail - tblOperator

Column Name	Data Type	Allow Nulls
iOperatorID	int	<input type="checkbox"/>
strName	varchar(50)	<input type="checkbox"/>

The Operators table (tblOperator) associates a unique ID to every operator that it used within the database. Elsewhere in the database, any reference to an operator uses this operators unique ID rather than their name. The function of the table columns are as follows:

- Operator ID (iOperatorID) - This stores the unique ID assigned to an operator.
- Operator Name (strName) - This stores the name of the operator.

## Alias Detail - tblAlias

Column Name	Data Type	Allow Nulls
iAliasId	int	<input type="checkbox"/>
strName	varchar(50)	<input type="checkbox"/>

Like the operators table, each alias has a unique identifier. If an alarm is sent to a DATRAN alias e.g. Duty Manager, then the associated iAlias Id is store with the Alarm details. The function of the table columns are as follows:

- Alias ID (iAliasID) - This stores the unique ID assigned to an alias.
- Alias Name (strName) - This stores the human readable alias name such as "After Hours"

## tblDigital

Column Name	Data Type	Allow Nulls
iPointId	int	<input type="checkbox"/>
dtStart	datetime	<input type="checkbox"/>
dtStop	datetime	<input checked="" type="checkbox"/>
dtAcknowledged	datetime	<input checked="" type="checkbox"/>
strAcknowledgedBy	varchar(50)	<input checked="" type="checkbox"/>

The Digitals table (tblDigital) stores the sequence of events relating to a particular digital event, or alarm. This sequence involves the digital turning on, turning off, and being acknowledged (for alarms). The function of the table columns, are as follows:

- Point ID (iPointId) - This is the ID of the Dattran point for which the digital event relates. The Dattran point, which this ID is for, is specified in the Point table.
- On Time (dtStart) - This is the time at which the digital turned on.
- Off Time (dtStop) - This is the time at which the digital turned off. Note for newer data this field may be NULL e.g. if the digital is still on and hasn't turned off yet.

- Acknowledgement Time (dtAcknowledged) - This is the time at which the digital event was acknowledged (for alarms).
- Acknowledgement Operator (strAcknowledgedBy) - The name of the operator that acknowledged the alarm.

## tblAnalog

	Column Name	Data Type	Allow Nulls
▶	iPointId	int	<input type="checkbox"/>
▶	dtTime	datetime	<input type="checkbox"/>
	fltValue	float	<input type="checkbox"/>
			<input type="checkbox"/>

The Analogues table (tblAnalog) stores information relating to analogue points in DATRAN. The function of the table columns, are as follows:

- Point ID (iPointId) - This is the ID of the DATRAN point for which the analogue value relates. The DATRAN point, which this ID is for, is specified in the Points table.
- Log Time (dtTime) - This is the time at which the analogue point was logged.
- Value (fltValue) - This is the value of the analogue at the time the point was logged.

## tblEvent

	Column Name	Data Type	Allow Nulls
▶	dtTimeStamp	datetime	<input type="checkbox"/>
▶	strType	varchar(20)	<input type="checkbox"/>
▶	iPointId	int	<input type="checkbox"/>
	strCause	varchar(20)	<input type="checkbox"/>
	iOperatorID	int	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

The Events table (tblEvent) stores information about a digital event. The function of the table columns, are as follows:

- Event Occurrence Time (dtTimeStamp) - Stores the time at which the digital event occurred.
- Event Type (strType) - Stores the type of digital event that is being logged. It is usually ALM, RTN, or ACK.
- Point ID (iPointId) - This is the ID of the Datran point for which the digital event relates. The Datran point, which this ID is for, is specified in the Points table.
- Cause Of Event (strCause) - This stores the cause of the digital event as specified in DATRAN as one of the alarm properties.
- Operator ID (iOperatorID) - The value in this column indicates the unique ID for an operator. The operator, for which this ID is for, is specified in the Operators table.

## tblSMSMessaging

Column Name	Data Type	Allow Nulls
iSMSMessageId	int	<input type="checkbox"/>
dtTimeStamp	datetime	<input type="checkbox"/>
strType	varchar(20)	<input type="checkbox"/>
iPointId	int	<input type="checkbox"/>
dtSMSMessageTimeSt...	datetime	<input type="checkbox"/>
strSMSMessageState	varchar(50)	<input type="checkbox"/>
iOperatorID	int	<input type="checkbox"/>
strResponse	varchar(50)	<input checked="" type="checkbox"/>
iAliasID	int	<input checked="" type="checkbox"/>
iAlarmId	int	<input checked="" type="checkbox"/>
strAlarmClass	varchar(50)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

The SMS Messaging table (tblSMSMessaging) stores information about any text messages that have been sent out from DATRAN to the Datashed Gateway due to any alarm, acknowledgement or return to normal event. The function of each of the table columns, are as follows:

- SMSMessageId - An autoincremented value representing a unique identifier for this table entry (and for a single SMS Message state).
- Event Occurrence Time (dtTimeStamp) - Stores the time at which the alarm, acknowledgement or return to normal event occurred for which the text message was sent.
- Event Type (strType) - Stores whether the text message was for an alarm (ALM), an acknowledgement (ALMAck) or a return to normal (RTN) event.
- Operator ID (iOperatorID) - The value in this column indicates the unique ID for an operator. The operator, for which this ID is for, is specified in the Operators table.
- Point ID (iPointId) - The value in this column indicates the unique ID for the point for which the event occurred. The point for which this ID belongs to is specified in the Point table.
- Response (strResponse) - First introduced for Selwyn District Council to store the response type of the alarm e.g. "Routine", "Urgent" or "2 hour". This is specified in DATRAN as a parameter to the Alarm.
- SMS Message State (strSMSMessageState) - This stores whether the text message was successfully sent or not.
- SMS Message Time (dtSMSMessageTimeStamp) - This is the time at which the text message was sent.
- Alias ID (iAliasId). If the alarm was sent to an Alias then this will be the Id that can be used to retrieve the alias name from the tblAlias table.
- Alarm Id (iAlarmId). This table may contain multiple entries regarding the same Alarm. For instance when an SMS was sent regarding an alarm, someone acknowledged the alarm, the alarm returned to normal etc. All of these entries will have the same Alarm Id which means that they can be grouped together for when creating any reports. *Note this is a v6.68SP2 feature.*
- Alarm Class (strAlarmClass). This shows the Alarm Class as specified in DATRAN that was used to generate the Alarm. This can be useful

for creating reports whereby you only wish to list, say, critical or priority alarms. *Note this is a v6.68SP2 feature.*

The above table contains many foreign keys to obtain information from other tables. To simplify this a new view has been created (as of DATRAN v6.68SP2) called vwSMSAlarmInfo.

An example output from this view is as follows:

	AlarmId	AlarmClass	AlarmTime	AlarmType	PointId	DatanSite	EquipName	EquipType	SMSTime	SMSState	OperatorName	AliasName
1	10	Waste Water - Urgent	2014-02-19 13:55:47.633	ALM	2	Kaka Point Park Sewer	Pump No 1	Pump No 1	2014-02-19 13:55:47.650	Sending to Datashed	Ivan	Duty
2	10	Waste Water - Urgent	2014-02-19 13:55:47.633	ALM	2	Kaka Point Park Sewer	Pump No 1	Pump No 1	2014-02-19 13:56:08.397	Delivered to Handset	Ivan	Duty
3	10	Waste Water - Urgent	2014-02-19 13:55:57.353	ALM Ack	2	Kaka Point Park Sewer	Pump No 1	Pump No 1	2014-02-19 13:55:57.383	Sending to Datashed	Ivan	Duty
4	10	Waste Water - Urgent	2014-02-19 13:55:57.353	ALM Ack	2	Kaka Point Park Sewer	Pump No 1	Pump No 1	2014-02-19 13:56:17.817	Delivered to Handset	Ivan	Duty
5	10	Waste Water - Urgent	2014-02-19 13:56:03.100	RTN	2	Kaka Point Park Sewer	Pump No 1	Pump No 1	2014-02-19 13:56:23.613	Delivered to Handset	Ivan	Duty
6	10	Waste Water - Urgent	2014-02-19 13:56:03.100	RTN	2	Kaka Point Park Sewer	Pump No 1	Pump No 1	2014-02-19 13:56:03.133	Sending to Datashed	Ivan	Duty
7	11	Waste Water - Urgent	2014-02-19 13:56:09.147	ALM	2	Kaka Point Park Sewer	Pump No 1	Pump No 1	2014-02-19 13:56:09.163	Sending to Datashed	Ivan	Duty
8	11	Waste Water - Urgent	2014-02-19 13:56:09.147	ALM	2	Kaka Point Park Sewer	Pump No 1	Pump No 1	2014-02-19 13:56:29.740	Delivered to Handset	Ivan	Duty

Note. The above example was created using the following SQL which also orders the results:

```
select * from vwSMSAlarmInfo
where AlarmTime > '2014-02-01' and AlarmTime <= '2014-03-01'
order by AlarmId, AlarmTime
```

## General Notes

### Primary Keys

Fields in the tables above that show a key icon next to them represent the Primary Key(s) for that table. This imposes restrictions on the database tables that all entries must have unique primary keys. For tblSMSMessaging there is a single primary key which is automatically incremented for every table entry so there will be no issue here. However, for tblAnalog the primary key is a combination of the point id and the timestamp. The timestamp resolution is governed by how quick DATRAN can process the data. i.e. if two logs on the same point were to occur on the same 100th second then the second log would be lost.

### AlarmId and Alarm Class

The tblSMSMessaging has two new fields iAlarmId and strAlarmClass that can be used for filtering and ordering historic alarms at the time of producing reports. These new columns are only available with the DATRAN v6.68 SP2 release.