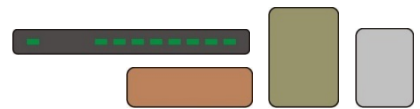




The ExtraData Driver



The ExtraData driver extends the Essential Data capabilities of a North device, and therefore extends the capabilities of drivers that use Essential Data, such as the JSONData, BACnetIP and ModbusTCP drivers. Available for Commander and ObSys.

This document relates to ExtraData driver version 1.0 and 1.1

Please read the *Commander Manual* or *ObSys Manual* alongside this document, available from www.northbt.com

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Purpose of ExtraData Driver

The ExtraData driver extends the Essential Data capabilities of a North device, and therefore extends the capabilities of drivers that use Essential Data, such as web server, JSONData, BACnetIP and ModbusTCP drivers.

Use the ExtraData driver, like Essential Data, to collect data from the attached systems. This data is then available to use from other drivers – for example, the BACnetIP driver makes the values available to other BACnet devices, and the ModbusTCP driver makes the values available to other Modbus devices.

Extra Data differs from Essential Data in its configuration. Extra Data contains 16 pages, with each page configured using an object definition formula to collect a sequence of up to 64 values. Using this formula is ideal for collecting values from a fire or other addressable system.

Values

Extra Data contains 1024 values, arranged in 16 pages of up to 64 objects.

Like Essential Data, configure Extra Data to hold the following types of value:

- Text
- Digital (off-on and no-yes)
- Number (integer and floating point)
- Time profile (on-off times and time-value pairs)
- Date and Time
- Enumerated

The ExtraData driver can monitor the values collected and send alarms to the North system.

Prerequisites

Only one ExtraData driver is supported per North device.

Operation

Essential Data

North devices have an Essential Data module, into which the engineer can collect data from the attached systems. The Essential Data consists of pages of related information; each page contains a different set of objects, with each object holding a value. Once defined, the engineer or user can view the Essential Values using the web server.

The database of Essential Values is available to other drivers – for example, the BACnetIP driver makes the values available to other BACnet devices, and the ModbusTCP driver makes the values available to other Modbus devices.

Essential Data collects a different number of values depending on the North device – 640 values on Commander, and 1280 values on ObSys.

Extra Data

The ExtraData driver performs the same operation as Essential Data, with the data collected made available to the same range of drivers.

Extra Data extends the number of values collected by the North device, providing an additional 1024 values.

Page Definition

The engineer defines pages in Extra Data in a similar way to Essential Data. Each page has a label, and read access security to control which users can view values in a page. Each page also has a summary state to indicate whether any objects within the page are in alarm.

Extra Data contains 16 pages, with each page containing up to 64 object values.

Object Definition

In Essential Data, objects within a page are defined individually, including the value type, label, high and low limits, and so on.

In Extra Data, the objects within a page are all defined collectively using a single object definition. Value type, units, high and low limits, and alarm priority is the same for all objects in that page. The label and remote object, however, can be defined using variables.

Using this method, individual object labels, values, and alarm states may differ at any particular time, even though they share the same object definition.

This method of defining a sequence of objects is different, but complimentary, to the built-in Essential Data. Overall it is less flexible but quicker to set up.

Variables

Within the object definition, two variables determine how many objects are actually available.

The engineer selects the start, end, and increment values of variables \$(1) and \$(2), and Extra Data makes a sequence of objects available based on those limits. The first object uses variable \$(1) at its start and variable \$(2) at its start, the second object uses variable \$(1) at its start and variable \$(2) at its start+increment value, and so on. The final object uses variable \$(1) at its end limit and variable \$(2) at its end limit.

The total number of objects available is equal to the range of \$(1) divided by the increment, multiplied by the range of \$(2) divided by the increment – unless this exceeds the objects-per-page limit of 64.

The engineer defines the Label of the objects using symbols \$(1) and \$(2) within the label definition text, and these symbols are replaced with the variable values for the individual objects .

The engineer defines the Remote Object reference using a similar method.

Example

Configure the page's object definition as follows:

Formula Variable \$(1): start '1', end '3', increment '1'

Formula Variable \$(2): start '1', end '4', increment '1'

Label: 'Device \$(1) Input \$(2)'

Remote Object: 'S1.D\$(1).I\$(2).S'

Extra Data then creates 12 objects with the following Label and Remote Object reference:

Object	S(1)	\$(2)	Label	Remote Object
O1	1	1	Device 1 Input 1	S1.D1.I1.S
O2	1	2	Device 1 Input 2	S1.D1.I2.S
O3	1	3	Device 1 Input 3	S1.D1.I3.S
O4	1	4	Device 1 Input 4	S1.D1.I4.S
O5	2	1	Device 2 Input 1	S1.D2.I1.S
O6	2	2	Device 2 Input 2	S1.D2.I2.S
O7	2	3	Device 2 Input 3	S1.D2.I3.S
O8	2	4	Device 2 Input 4	S1.D2.I4.S
O9	3	1	Device 3 Input 1	S1.D3.I1.S
O10	3	2	Device 3 Input 2	S1.D3.I2.S
O11	3	3	Device 3 Input 3	S1.D3.I3.S
O12	3	4	Device 3 Input 4	S1.D3.I4.S

Notice how variable \$(2) cycles faster and variable \$(1) cycles slower.

If only one variable is required, leave the other variable's start and end values equal (so their range is 1).

Using the Driver

On ObSys and Commander, the ExtraData driver is pre-installed. You can use the driver to create a database of values to complement Essential Data. Once started, you will need to set up the Extra Data driver before values become available to other drivers.

Only one ExtraData driver may be started per North device.

Starting the Interface

- 📖 To start using the ExtraData driver, follow these steps:
 - **Start Engineering** your North device using ObSys
 - Navigate to **Configuration, Interfaces**, and set an unused **Interface** to 'ExtraData' to start the particular interface
 - Navigate to the top-level of your North device and re-scan it

The driver setup object (Mc) labelled **Extra Data**, and the system objects (Sc) labelled **Extra Values**, should now be available.

Setting up the Driver

- 📖 To set up the driver, follow these steps:
 - Navigate to the **Extra Data** object (Mc). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'
 - Navigate to **Page 1** (P1) and set the **Page Label** (L)
 - Navigate to **Object Definition** (OD) and set the **Formula Variables**, **Label** (L), **Type** (T), **Remote Action** (RA), and **Remote Object** (RO) objects
 - Repeat for each page of data required.

Checking Communications

For each Extra Data page, navigate to the individual Object (Mc.Px.Oy) to check the **Current Value** (V) and **Last Updated** (VT).

Alarms

When Extra Data detects an alarm condition, the driver sends a North-format alarm to the device's alarm processing.

Format

North-format alarms contain six text fields. The ExtraData driver places the following information into these fields:

System – copied from Extra Data Label object (DL) within driver setup

Point – Set in the format: *Page Label – Object Label*

Condition – 'Alarm' or 'Ok'

Priority – set using Value Alarm Priority object (P) within Object Definition

Date & Time – from North device

Examples

System	Point	Condition	Priority	Date	Time
Extra Values	Page 1 - Object 5	Alarm	3	14/10/15	15:30:25
Extra Values	Page 1 - Object 5	Ok	3	14/10/15	15:35:39
Extra Values	Fire - Zone 3	Alarm	1	14/10/15	16:08:03

Object Specifications

Once an interface is started, one or more objects become available within the top-level object of the device. As with all North objects, each of these extra objects may contain sub-objects, (and each of these may contain sub-objects, and so on) – the whole object structure is a multi-layer hierarchy. It is possible to navigate around the objects using the ObSys Engineering Software.

Each object is specified below, along with its sub-objects.

Example Object Reference

An example of a reference to an object in the same device: the ExtraData system (S1) contains a Page (P1), which contains an Object (O5). Therefore, the object reference will be 'S1.P1.O5'.

An example of a reference to an object in a different device: the IP network object (IP) contains a Default Commander object (CDIP), which contains the object above (S1.P1.O5) – therefore the complete object reference is 'IP.CDIP.S1.P1.O5'.

Device Top-Level Objects

When an interface is started using the ExtraData driver, the objects below become available within the top-level object of the device. For example, if Interface 1 is started, then the object with references 'M1' and 'S1' become available.

Description	Reference	Type
Extra Data Set up the Extra Data driver, started on interface c (c is the interface number)	Mc	Fixed Container: On the Commander platform this will be <i>[CDM v20\ExtraData v11]</i> On the ObSys platform this will be <i>[OSM v20\ExtraData v11]</i>
Extra Values Access the extra values available on interface c (c is the interface number)	Sc	Variable Container: <i>[ExtraData\PageList]</i>

Extra Data

Object Type: *[OSM v20\ExtraData v11]*

Object Type: *[CDM v20\ExtraData v11]*

Object Type: *[OSM v20\ExtraData v10]*

Object Type: *[CDM v20\ExtraData v10]*

The Extra Data setup contains the following objects:

Description	Reference	Type
Extra Data Label Label used as title for values within Extra Data	L	Obj\Text: Max chars 20; Adjustable
Summary Alarm State Summary of Page Alarm States, indicating whether alarms exist in Extra Data	S	Obj\Enum; Range 0..3 Values: 0=Ok, 1=Alarm, 2=Comms, 3=Alarm&Comms
Page x Configure database Page x, where x is a number in the range 1..16	Ux	Fixed Container: On the Commander platform this will be <i>[CDM v20\ExtraData v11\PageDef]</i> On the ObSys platform this will be <i>[OSM v20\ ExtraData v11\PageDef]</i>
Task Control Used to enable and monitor the Extra Data driver	TI	Fixed Container: On the Commander platform this will be <i>[CDM v20\ExtraData v11\TaskInfo]</i> On the ObSys platforms this will be <i>[OSM v20\ ExtraData v11\TaskInfo]</i>

Page Setup

Object Type: *[CDM v20\ExtraData v11\PageDef]*

Object Type: *[OSM v20\ExtraData v11\PageDef]*

Object Type: *[CDM v20\ExtraData v10\PageDef]*

Object Type: *[OSM v20\ExtraData v10\PageDef]*

The Page Setup object is used to configure a page within the database. A page can contain up to 64 object values.

Description	Reference	Type
Label	L	Obj\Text: 20 chars; Adjustable
Read Access Security	AS	Obj\Num; Range 0, 10..87; Adjustable
Page Alarm State Summary of object alarm states	S	Obj\Enum; Range 0..3 Values: 0=Ok, 1=Alarm, 2=Comms, 3=Alarm&Comms
Object Definition Used to define all objects within the page	OD	Fixed Container: On the Commander platform this will be <i>[CDM v20\ExtraData v11\ObjDef]</i> On the ObSys platform this will be <i>[OSM v20\ExtraData v11\ObjDef]</i>
Object x Object x value status information, where x is in the range 1..64	Ox	Fixed Container: On the Commander platform this will be <i>[CDM v20\ExtraData v11\Obj]</i> On the ObSys platform this will be <i>[OSM v20\ExtraData v11\Obj]</i>

Object Definition

Object Type: [CDM v20\ExtraData v11\ObjDef]

Object Type: [OSM v20\ExtraData v11\ObjDef]

Object Type: [CDM v20\ExtraData v10\ObjDef]

Object Type: [OSM v20\ExtraData v10\ObjDef]

Object Definition is used to describe the objects within a page of the database. Up to 64 objects can be defined by including the formula variables , \$(1) and \$(2), with the Label and Remote Object.

Type, adjustability, units, high/low limits, etc. remain the same for each object in the page.

Description	Reference	Type
Formula Variable \$(1) Start The start and end values set the range of variable '\$(1)', used with the Label and Remote Object	S1	Obj\Num; Adjustable
Formula Variable \$(1) End	E1	Obj\Num; Adjustable
Formula Variable \$(1) Increment Amount to increment variable '\$(1)'	I1	Obj\Num; Adjustable
Formula Variable \$(2) Start The start and end values set the range of variable '\$(2)', used with the Label and Remote Object. If the variable is not required, set start and end to the same value.	S2	Obj\Num; Adjustable
Formula Variable \$(2) End	E2	Obj\Num; Adjustable
Formula Variable \$(2) Increment Amount to increment variable '\$(2)'	I2	Obj\Num; Adjustable
Label (Formula) Label of the page's objects. Use variables \$(1) and \$(2) – see Note 1 below	L	Obj\Text: 20 chars; Adjustable
Type Specifies the type of value that the object holds	T	Obj\Enum; Range 0..8; Adjustable Values: 0=Text, 1=NoYes, 2=OffOn, 3=Number, 4=Float, 5=Times, 6=DateTime, 7=Date, 8=Enum, 9=Profile
Adjustable Specifies whether the user can adjust the value from services such as web pages	A	Obj\NoYes; Adjustable
Units Text representing value units, if applicable	U	Obj\Text; Max chars 8
Type Enum Alternatives If Type is set to Enum, then store a comma-separated list of enumerated values	EA	Obj\Text; Max chars 20; Adjustable
Type Float Dps/Time Periods If type is set to Float, then set the number of decimal places the value should be displayed. If the type is Times or Profile, then set the number of switching time periods	D	Obj\Num; Range 0..6; Adjustable
Value High Limit Used as alarm limits, if alarms are enabled, and used as limits when adjustments are made	VH	Obj\Float, Decimal Places=4; Adjustable
Value Low Limit Used as alarm limits, if alarms are enabled, and used as limits when adjustments are made	VL	Obj\Float, Decimal Places=4; Adjustable

Description	Reference	Type
Value Alarm Enable/Priority Set to non-zero to enable alarm checking and sending	P	Obj\Num; Range 0..9; Adjustable
Remote Action Determines whether Remote Object should be read, written or neither. If set to read and the value is adjustable, then the value will be written only when it is changed.	RA	Obj\Enum; Range 0..2; Adjustable Values: 0=None, 1=Read, 2=Write
Remote Object (Formula) Remote object reference of the page's objects. Use variables \$(1) and \$(2) – see Note 1 below	RO	Obj\Obj; Adjustable
Remote Rate Set the rate to read from the Remote Object, or perform background write to the Remote Object	RR	Obj\Enum; Range 0..9; Adjustable Values: 0=ASAP/COV, 1=1s, 2=5s, 3=15s, 4=1m, 5=5m, 6=15m, 7=1h, 8=4h, 9=12h
Adjust Access Security	AS	Obj\Num; Range 0..87; Adjustable

Notes

1. These values may contain variables '\$(1)' and '\$(2)' which are replaced by numbers defined in Formula Variable \$(x) Start and End. Refer to *Operation* for further details.

Object Information

Object Type: [CDM v20\ExtraData v11\Obj]

Object Type: [OSM v20\ExtraData v11\Obj]

Object Type: [CDM v20\ExtraData v10\Obj]

Object Type: [OSM v20\ExtraData v10\Obj]

The Object Information object shows the current state of a particular object within a page.

Description	Reference	Type
Label	L	Obj\Text; Max chars 20
Current Value	V	Obj\Text; Max chars 32; Adjustable (if adjustable in Object Definition)
Alarm State	S	Obj\Enum; Range 0..3 Values: 0=Ok, 1=Alarm, 2=Comms, 3=Alarm&Comms
Value Last Updated	VT	Obj\DateTime
Remote Fail Count	RF	Obj\Num; Range 0..9

Task Control

Object Type: [CDM v20\ExtraData v11\TaskInfo]

Object Type: [OSM v20\ExtraData v11\TaskInfo]

Object Type: [CDM v20\ExtraData v10\TaskInfo]

Object Type: [OSM v20\ExtraData v10\TaskInfo]

The Task Control object is used to control and monitor operation of the ExtraData module.

Description	Reference	Type
Enable	E	Obj\Enum: Range 0..2 ; Adjustable; Where 0=Disable, 1=Enable, 2=Enable Reading
Value being read Current page and object being read by the driver	RT	Obj\Text
Value being written Current page and object being written by the driver	WT	Obj\Text

Extra Values

Object Type: [ExtraData\PageList]

The Extra Values contains the list of pages that have been set up in the Extra Data module. It can be scanned, and contains the following objects:

Description	Reference	Type
Page Label Where <i>Page Label</i> is specified for the page, and <i>x</i> is a number in the range 1..16	Px	Variable Container: [ExtraData\Page]

Extra Value Page

Object Type: [ExtraData\Page]

The Page shows the list of values that have been set up within the page . It can be scanned, and contains zero or more of the following objects:

Description	Reference	Type
Object Label Where <i>Object Label</i> is specified for the object, and <i>x</i> is a number in the range 1..64, depending on the variable formula for the page	Ox	Value objects of various types depending on the Object Definition of the page

Version History

Version	Build Date	Details
1.0	01/09/15	Released for ObSys and Commander platform
1.1	27/10/16	Added increment option for variables

Next Steps...

If you require help, contact support on 01273 694422 or visit www.northbt.com/support



North Building Technologies Ltd
+44 (0) 1273 694422
support@northbt.com
www.northbt.com

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Author: TM
Checked by: JF

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