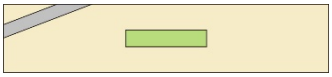
The PowerOne Driver



The PowerOne driver connects to a Power-One DC power control system. Available for Commander and ObSys.

This document relates to PowerOne driver version 1.0

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

Contents

Compatibility with the Power-One System

The PowerOne driver allows North to interface with a Power-One DC power system. It is possible to monitor values from either an Aspiro or Guardian system.

The driver connects to a Power-One (previously Powec) compatible controller with a DB9 serial connection (Fig. 1).

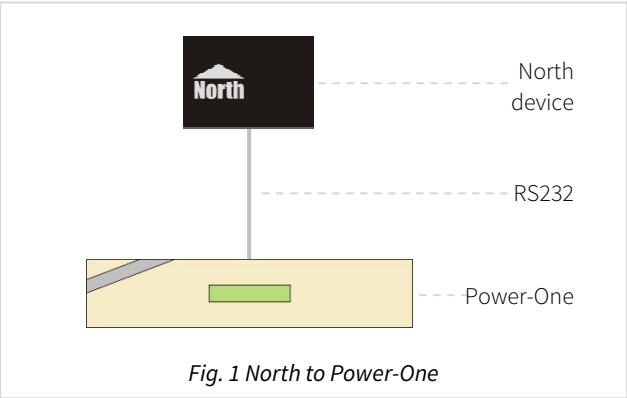


Fig. 1 North to Power-One

Equipment

Power-One controllers compatible with the driver:

- PCC
- ACC
- PCS
- PCU

Values

Depending on the type of rectifiers, each can typically have the following values available:

- System voltage
- Battery voltage
- Rectifier voltage
- System current
- Battery current
- Rectifier current
- Alarm state
- Active state
- Test information

Prerequisites

Each Power-One controller must be configured with an address. Also check the baud rate is set (default 9600 baud).

Using the Driver

On ObSys and Commander, the PowerOne driver is pre-installed. On all of these North devices, you can use the driver to create an interface to a Power-One DC power system. Once started, you will need to set up the driver before it can communicate with the Power-One system.

Making the Cable

Using the RS232 cable specification (Fig. 2), connect the North device COM port to the Power-One controller. Connector types at each end of the cable are shown.

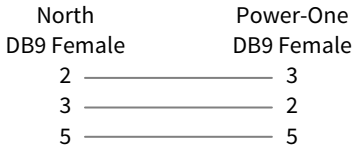


Fig. 2 North to Power-One cable

The maximum RS232 cable length is 15m and should be as short possible.

Cables are available from North, order code CABLE/POWERONE.

Starting the Interface

To start an interface using the PowerOne driver, follow these steps:

- **Start Engineering** your North device using ObSys
- Navigate to **Configuration, Interfaces,** and set an unused **Interface** to 'PowerOne' to start the particular interface
- Navigate to the top-level of your North device and re-scan it

The driver setup object (Mc), labelled **PowerOne Setup**, should now be available. If this object is not available, check an interface licence is available and the driver is installed.

Setting up the Driver

To set up the driver, follow these steps:

- Navigate to the **PowerOne Setup** object (Mc). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'
- Set **RS232 Com Port** to the port number of the North device you are connecting to
- Set the **RS232 Baud Rate** to match that of the Power-One system, typically this is 9600

Checking Communications

You can check that the interface is communicating by scanning the Power One system; all of the connected control units and rectifier modules should be available.

Object Specifications

Once an interface is started, one or more extra 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 being 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 Power-One System (S1) contains a Control Unit at address 1 (A1), a connected Rectifier Module at address 1 (M1) with an associated System Voltage (F0.B1.W100) – therefore the complete object reference is 'A1.M1.F0.B1.W100'.

An example of a reference to an object in a different device: the IP network object (IP) contains Default Commander object (CDIP), which contains the object above (A1.M1.F0.B1.W100) – therefore the complete object reference is 'IP.CDIP.A1.M1.F0.B1.W100'.

Device Top-Level Objects

When an interface is started using the PowerOne 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
PowerOne Setup Set up the PowerOne driver, started on interface *c* (*c* is the interface number)	M*c*	Fixed Container: On the Commander platform this will be *[CDM v20\PowerOne v10]* On the ObSys platform this will be *[OSM v20\PowerOne v10]*
Power-One System Access Power-One system connected to interface *c* (*c* is the interface number)	S*c*	Variable Container: *[PowerOne v10]*

PowerOne Driver Setup

Object Type: *[OSM v20\PowerOne v10]*
Object Type: *[CDM v20\PowerOne v10]*

The PowerOne driver contains the following objects:

Description	Reference	Type
RS232 COM Port	RS.COM	Obj\Num; Range: 1…8; Adjustable
RS232 Baud Rate	RS.BR	Obj\Num; Adjustable Values: 2400, 4800, 9600
System Label	DL	Obj\Text: 20 chars

Power-One System

Object Type: *[PowerOne v10]*

The Power-One system can contain a network of controllers:

Description	Reference	Type
Address *x* The controller address, *x*, can be in the range 1…255.	A*x*	Fixed Container: *[PowerOne v10\Address]*

Address

Object Type: *[PowerOne v10\Address]*

A Power-One control unit can have up to 128 rectifier modules, each of which is able to serve data on itself, as well as on the control unit as a whole:

Description	Reference	Type
Module *y* The rectifier module, *y,* can be in the range 1…128	M*y*	Fixed Container: *[PowerOne v10\Module]*

Module

Object Type: *[PowerOne v10\Module]*

A rectifier module contains the following objects. Not all objects may be available for all models.

Description	Reference	Type
System Voltage	F0.B1.W100	Obj\Float: Range -300…300
System Voltage 2	F0.B3.W100	Obj\Float: Range -300…300
System Current Status	F0.B5.V00	Obj\Enum: 0…1 Values: 0=Negative, 1=Positive
System Current	F0.B6.W10	Obj\Float: Range 0…300
Battery Current Status	F0.B9.V0	Obj\Enum: 0…1 Values: 0=Negative, 1=Positive
Battery Current	F0.B9.W10	Obj\Float: Range 0…300
Rectifier Current Status	F0.B11.V0	Obj\Enum: 0…1 Values: 0=Negative, 1=Positive
Rectifier Current	F0.B11.W10	Obj\Float: Range 0…300
Fuse Alarm Flag	F0.B30.V0	Obj\Num: Range 0…1
Battery Fuse Alarm Flag	F0.B31.V0	Obj\Num: Range 0…1
Mains Failure Flag	F0.B32.V0	Obj\Num: Range 0…1
Temperature (degC)	F0.B33.V0	Obj\Num: Range 0…255
Input Voltage OK	F0.B45.S0	Obj\NoYes
Low Voltage Alarm	F0.B45.S1	Obj\NoYes
Module Alarm	F0.B45.S2	Obj\NoYes
OverVoltage Shutdown	F0.B45.S3	Obj\NoYes
Current Limiting	F0.B45.S4	Obj\NoYes
Power On	F0.B45.S5	Obj\NoYes
OVP Enabled	F0.B45.S6	Obj\NoYes
OVP Enabled	F0.B46.V0	Obj\NoYes
Module Voltage	F0.B47.W100	Obj\Float: Range -300…300
Module Current	F0.B49.W10	Obj\Float: Range -300…300
Module Mean Current	F0.B47.W10	Obj\Float: Range -300…300
No of Batteries	F0.B53.V0	Obj\Num: Range 0…12
Control of Load Discon	F0.B89.S2	Obj\Enum: 0…1 Values: 0=Voltage, 1=Time
Not Load/Battery Discon	F0.B89.S3	Obj\NoYes
Partial load Discon Extst	F0.B89.S4	Obj\NoYes
Time Control Partial discon	F0.B89.S5	Obj\NoYes
Battery Current Limit	F0.B89.S6	Obj\NoYes
OVP	F0.B89.S7	Obj\NoYes
Battery Current Measured	F0.B90.S0	Obj\NoYes
Load Current Measured	F0.B90.S0	Obj\NoYes
Rectifier Current Measured	F0.B90.S0	Obj\NoYes
3 Block Symmetry	F0.B90.S0	Obj\NoYes
2 Block Symmetry	F0.B90.S0	Obj\NoYes
Rectifier Active 1	F0.B36.S0	Obj\NoYes
Rectifier Active 2	F0.B36.S1	Obj\NoYes
Rectifier Active 3	F0.B36.S2	Obj\NoYes
Rectifier Active 4	F0.B36.S3	Obj\NoYes
Rectifier Active 5	F0.B36.S4	Obj\NoYes
Rectifier Active 6	F0.B36.S5	Obj\NoYes
Rectifier Active 7	F0.B36.S6	Obj\NoYes
Rectifier Active 8	F0.B36.S7	Obj\NoYes
Rectifier Active 9	F0.B37.S0	Obj\NoYes
Rectifier Active 10	F0.B37.S1	Obj\NoYes

Description	Reference	Type
Rectifier Active 11	F0.B37.S2	Obj\NoYes
Rectifier Active 12	F0.B37.S3	Obj\NoYes
Rectifier Active 13	F0.B37.S4	Obj\NoYes
Rectifier Active 14	F0.B37.S5	Obj\NoYes
Rectifier Active 15	F0.B37.S6	Obj\NoYes
Rectifier Active 16	F0.B37.S7	Obj\NoYes
Rectifier Active 17	F0.B38.S0	Obj\NoYes
Rectifier Active 18	F0.B38.S1	Obj\NoYes
Rectifier Active 19	F0.B38.S2	Obj\NoYes
Rectifier Active 20	F0.B38.S3	Obj\NoYes
Rectifier Active 21	F0.B38.S4	Obj\NoYes
Rectifier Active 22	F0.B38.S5	Obj\NoYes
Rectifier Active 23	F0.B38.S6	Obj\NoYes
Rectifier Active 24	F0.B38.S7	Obj\NoYes
Rectifier Active 25	F0.B39.S0	Obj\NoYes
Rectifier Active 26	F0.B39.S1	Obj\NoYes
Rectifier Active 27	F0.B39.S2	Obj\NoYes
Rectifier Active 28	F0.B39.S3	Obj\NoYes
Rectifier Active 29	F0.B39.S4	Obj\NoYes
Rectifier Active 30	F0.B39.S5	Obj\NoYes
Rectifier Active 31	F0.B39.S6	Obj\NoYes
Rectifier Active 32	F0.B39.S7	Obj\NoYes
Dis Current 1+n	F0.B14.W10	Obj\Float: Range -300…300
Dis Current 2+n	F0.B16.W10	Obj\Float: Range -300…300
Dis Current 3+n	F0.B18.W10	Obj\Float: Range -300…300
Dis Current 4+n	F0.B20.W10	Obj\Float: Range -300…300
Dis Current 5+n	F0.B22.W10	Obj\Float: Range -300…300
Dis Current 6+n	F0.B24.W10	Obj\Float: Range -300…300
Dis Current 7+n	F0.B26.W10	Obj\Float: Range -300…300
Dis Current 8+n	F0.B28.W10	Obj\Float: Range -300…300
Symmetry Voltage 1+n	F0.B54.W100	Obj\Float: Range -300…300
Symmetry Voltage 2+n	F0.B56.W100	Obj\Float: Range -300…300
Symmetry Voltage 3+n	F0.B58.W100	Obj\Float: Range -300…300
Symmetry Voltage 4+n	F0.B60.W100	Obj\Float: Range -300…300
Symmetry Voltage 5+n	F0.B62.W100	Obj\Float: Range -300…300
Symmetry Voltage 6+n	F0.B64.W100	Obj\Float: Range -300…300
Symmetry Voltage 7+n	F0.B66.W100	Obj\Float: Range -300…300
Symmetry Voltage 8+n	F0.B68.W100	Obj\Float: Range -300…300
Symmetry Voltage 9+n	F0.B70.W100	Obj\Float: Range -300…300
Symmetry Voltage 10+n	F0.B72.W100	Obj\Float: Range -300…300
Symmetry Voltage 11+n	F0.B74.W100	Obj\Float: Range -300…300
Symmetry Voltage 12+n	F0.B76.W100	Obj\Float: Range -300…300
Symmetry Voltage 13+n	F0.B78.W100	Obj\Float: Range -300…300
Symmetry Voltage 14+n	F0.B80.W100	Obj\Float: Range -300…300
Symmetry Voltage 15+n	F0.B82.W100	Obj\Float: Range -300…300
Symmetry Voltage 16+n	F0.B84.W100	Obj\Float: Range -300…300
Low Voltage Alarm	F0.B86.S0	Obj\NoYes
High Voltage Alarm	F0.B86.S1	Obj\NoYes
Low Voltage Discon	F0.B86.S2	Obj\NoYes
Mains Failure	F0.B86.S3	Obj\NoYes
Distrib Fuse Failure	F0.B86.S4	Obj\NoYes
Earth Failure	F0.B86.S5	Obj\NoYes
Battery Failure	F0.B86.S6	Obj\NoYes
Rectifier Alarm	F0.B86.S7	Obj\NoYes

Description	Reference	Type
High Temp Alarm	F0.B87.S0	Obj\NoYes
Symmetry Failure	F0.B87.S1	Obj\NoYes
Battery Fuse Failure	F0.B87.S2	Obj\NoYes
High Load Alarm	F0.B87.S3	Obj\NoYes
Battery Fuse Discon	F0.B87.S4	Obj\NoYes
Urgent Module Alarm	F0.B87.S5	Obj\NoYes
Comms Fault	F0.B87.S6	Obj\NoYes
Partial Load Discon Alarm	F0.B87.S7	Obj\NoYes
Temp Probe Failure	F0.B88.S0	Obj\NoYes
Dist Load High	F0.B88.S1	Obj\NoYes
Alarms Blocked	F0.B88.S7	Obj\NoYes
Alarm Relay 1	F0.B34.S0	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 2	F0.B34.S1	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 3	F0.B34.S2	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 4	F0.B34.S3	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 5	F0.B34.S4	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 6	F0.B34.S5	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 7	F0.B34.S6	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 8	F0.B34.S7	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 9	F0.B35.S0	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 10	F0.B35.S1	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 11	F0.B35.S2	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Alarm Relay 12	F0.B35.S3	Obj\Enum: 0…1 Values: 0=Alarm, 1=OK
Rectifier Alarm 1	F0.B40.S0	Obj\NoYes
Rectifier Alarm 2	F0.B40.S1	Obj\NoYes
Rectifier Alarm 3	F0.B40.S2	Obj\NoYes
Rectifier Alarm 4	F0.B40.S3	Obj\NoYes
Rectifier Alarm 5	F0.B40.S4	Obj\NoYes
Rectifier Alarm 6	F0.B40.S5	Obj\NoYes
Rectifier Alarm 7	F0.B40.S6	Obj\NoYes
Rectifier Alarm 8	F0.B40.S7	Obj\NoYes
Rectifier Alarm 9	F0.B41.S0	Obj\NoYes
Rectifier Alarm 10	F0.B41.S1	Obj\NoYes
Rectifier Alarm 11	F0.B41.S2	Obj\NoYes
Rectifier Alarm 12	F0.B41.S3	Obj\NoYes
Rectifier Alarm 13	F0.B41.S4	Obj\NoYes
Rectifier Alarm 14	F0.B41.S5	Obj\NoYes
Rectifier Alarm 15	F0.B41.S6	Obj\NoYes
Rectifier Alarm 16	F0.B41.S7	Obj\NoYes
Rectifier Alarm 17	F0.B42.S0	Obj\NoYes
Rectifier Alarm 18	F0.B42.S1	Obj\NoYes
Rectifier Alarm 19	F0.B42.S2	Obj\NoYes
Rectifier Alarm 20	F0.B42.S3	Obj\NoYes

Description	Reference	Type
Rectifier Alarm 21	F0.B42.S4	Obj\NoYes
Rectifier Alarm 22	F0.B42.S5	Obj\NoYes
Rectifier Alarm 23	F0.B42.S6	Obj\NoYes
Rectifier Alarm 24	F0.B42.S7	Obj\NoYes
Rectifier Alarm 25	F0.B43.S0	Obj\NoYes
Rectifier Alarm 26	F0.B43.S1	Obj\NoYes
Rectifier Alarm 27	F0.B43.S2	Obj\NoYes
Rectifier Alarm 28	F0.B43.S3	Obj\NoYes
Rectifier Alarm 29	F0.B43.S4	Obj\NoYes
Rectifier Alarm 30	F0.B43.S5	Obj\NoYes
Rectifier Alarm 31	F0.B43.S6	Obj\NoYes
Rectifier Alarm 32	F0.B43.S7	Obj\NoYes
Extra Alarm 1	F0.B92.S0	Obj\NoYes
Extra Alarm 2	F0.B92.S1	Obj\NoYes
Extra Alarm 3	F0.B92.S2	Obj\NoYes
Extra Alarm 4	F0.B92.S3	Obj\NoYes
Extra Alarm 5	F0.B92.S4	Obj\NoYes
Extra Alarm 6	F0.B92.S5	Obj\NoYes
Extra Alarm 7	F0.B92.S6	Obj\NoYes
Extra Alarm 8	F0.B92.S7	Obj\NoYes
Extra Alarm 9	F0.B93.S0	Obj\NoYes
Extra Alarm 10	F0.B93.S1	Obj\NoYes
Extra Alarm 11	F0.B93.S2	Obj\NoYes
Extra Alarm 12	F0.B93.S3	Obj\NoYes
Extra Alarm 13	F0.B93.S4	Obj\NoYes
Extra Alarm 14	F0.B93.S5	Obj\NoYes
Extra Alarm 15	F0.B93.S6	Obj\NoYes
Extra Alarm 16	F0.B93.S7	Obj\NoYes
U1 (Normal Voltage)	F1.B1.W10	Obj\Float: Range -3000…3000; Adjustable
U2 (Boost Voltage)	F1.B3.W10	Obj\Float: Range -3000…3000; Adjustable
U3 (Test Voltage)	F1.B5.W10	Obj\Float: Range -3000…3000; Adjustable
U4 (Spare Voltage)	F1.B7.W10	Obj\Float: Range -3000…3000; Adjustable
Current Limit Ref	F1.B9.W10	Obj\Float: Range -3000…3000; Adjustable
Low Voltage Limit	F1.B11.W10	Obj\Float: Range -3000…3000; Adjustable
High Voltage Limit	F1.B13.W10	Obj\Float: Range -3000…3000; Adjustable
Load Battery Discon Limit	F1.B15.W10	Obj\Float: Range -3000…3000; Adjustable
Load Battery Recon Limit	F1.B17.W10	Obj\Float: Range -3000…3000; Adjustable
High Voltage Discon Limit	F1.B19.W10	Obj\Float: Range -3000…3000; Adjustable
Boost Time (hours)	F1.B21.V10	Obj\Float: Range 0…200; Adjustable
Boost Interval (weeks)	F1.B22.V10	Obj\Float: Range 3…16; Adjustable
Boost Time Factor	F1.B23.V0	Obj\Num: Range 0…255; Adjustable
Boost Limit U1	F1.B24.W10	Obj\Float: Range -3000…3000; Adjustable
Boost Limit U2	F1.B26.W10	Obj\Float: Range -3000…3000; Adjustable
U2 Flag	F1.B28.V0	Obj\Num: Range 0…1; Adjustable
U3 Flag	F1.B29.V0	Obj\Num: Range 0…1; Adjustable
U4 Flag	F1.B30.V0	Obj\Num: Range 0…1; Adjustable
No of Batteries	F1.B31.V0	Obj\Num: Range 0…1; Adjustable
Symmetry Limit	F1.B32.W10	Obj\Float: Range -50…50; Adjustable
Test Stop Voltage	F1.B34.W10	Obj\Float: Range -3000…3000; Adjustable
Test Time Limit (mins)	F1.B36.W10	Obj\Float: Range 0…60; Adjustable
Test AmpHour Limit	F1.B38.W10	Obj\Float: Range 0…5000; Adjustable
Test Comp Factor V/degC	F1.B46.W10	Obj\Float: Range 0…20; Adjustable
Auto Boost Flag	F1.B49.V0	Obj\Num: Range 0…1; Adjustable
Tests per Year	F1.B50.V0	Obj\Num: Range 0…4; Adjustable

Description	Reference	Type
Battery Type	F1.B57.V0	Obj\Enum: 0…4; Adjustable Values: 24 cells, 23 cells +, 23 cells -. 18 cells, 2 blocks
Auto battery Test Hour	F1.B58.V0	Obj\Num: Range 0…23; Adjustable
Temp Limit degC	F1.B59.W10	Obj\Float: Range 0…100; Adjustable
High Load Limit %	F1.B61.V0	Obj\Num: Range 0…100; Adjustable
Shunt Current Rating	F1.B64.W0	Obj\Num: Range 0…65535; Adjustable
Shunt mV Rating	F1.B66.W0	Obj\Num: Range 0…65535; Adjustable
Partial Load Discon	F1.B38.W10	Obj\Float: Range -3000…3000; Adjustable
Battery Current Limit Enable	F1.B70.S0	Obj\NoYes; Adjustable

Driver Versions

Version	Build Date	Details
1.0	13/01/2003	Driver released
1.0	01/12/2011	Driver released for Commander
1.0	14/5/2014	Baud rate now defaults to 9600

Next Steps…

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

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