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Common Parameter Configurations for J1939 Equipment

Part No. BW2031

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Pyramid Solutions, Inc.

30200 Telegraph Road, Suite 440

Bingham Farms, MI 48025

www.pyramidsolutions.com | P: 248.549.1200 | F: 248.549.1400

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Overview

The “Common Parameters” configurations are designed to provide a configuration that will cover most of the typically monitored J1939 parameters. The configuration provides monitoring of a collection of commonly used J1939 parameters that are available in most heavy-duty equipment systems.

Configurations

The Common Parameter configurations are generated by BWConfig, no additional configuration files are provided with this document.

The specific parameters that are monitored in the configurations are listed in the Produced and Consumed Parameter Data sections at the end of this document.

Using the Common Parameters Configuration

Running a BridgeWay with a Common Parameters configuration is as simple as generating and loading the configuration into a BridgeWay module and establishing communications to it from the required controller.

Configure the BridgeWay Module

1. Power on the BridgeWay module.
2. Connect the USB configuration cable from the PC to the BridgeWay and start BWConfig 2.0.
3. Generate the configuration in BWConfig:
 - a. Select *File* → *New*
 - b. Select the Common Parameters configuration for the Bridgeway type
4. Set the network configuration (EtherNet/IP, Modbus TCP or Modbus RTU) as required for the BridgeWay to communicate with the controller being used to monitor the system.
5. Download the configuration into the BridgeWay module.
6. Reboot the BridgeWay module.

Connect the BridgeWay to the Controller

1. Make any network connections required to attach the BridgeWay to the controller network (EtherNet/IP, Modbus TCP or Modbus RTU).
2. Establish communications with the BridgeWay from the controller. Refer to the *Interfacing to J1939 with... .pdf* document for examples and tips on how to set up communications for the controller that is being used.

Connect the BridgeWay to the J1939 Network

1. Make the network connections required to attach the BridgeWay to the J1939 network.
2. Verify that the module is online with no errors (Green J1939 status LED and no errors shown in BWConfig 2.0).

Monitoring the J1939 Data

1. Using the controller, monitor the input data at the data table locations or register addresses specified in the Consumed Parameter Data section below. This will be the data that has been transmitted in the associated PGN messages by the devices on the J1939 network.

Common Parameters Configuration NAME and Address

The J1939 NAME and address is set in the Common Parameters configuration to allow the BridgeWay to join the J1939 network with little probability of address contention with other devices. The configuration uses Arbitrary Address capability with 3 addresses.

NAME

Industry Group	0 (Global)
Function	28 (Off-Vehicle Gateway)
Function Instance	0
Vehicle System	0
Vehicle System Instance	0
ECU Instance	0
Manufacturer Code	2047
Identity Number	1
Arbitrary Address Capable	Yes

Network Addresses

128
129
130

Transmitted Parameter Data

The Common Parameters configuration does not include any transmitted parameters.

Received Parameter Data

The following table lists the parameters that will be received by the Common Parameters configuration along with the data table locations and register addresses where the parameter data can be monitored by the various controllers.

Parameter	Modbus Register BW2031	Modbus Register BW4031	Data Table Offset BW4031 (bytes)	PGN	Offset (byte.bit)	Length (byte.bit)	Rx Timeout	Scaling
Percent Load at Current Speed	30001	30003	4	61443	2.0	1.0	0	1 %/bit 0 % offset
Engine Speed	30002	30004	6	61444	3.0	2.0	0	0.125 RPM/bit 0 RPM offset
Actual Engine Percent Torque	30003	30005	8	61444	2.0	1.0	0	1 %/bit -125 % offset
Fan Speed	30004	30006	10	65213	0.0	1.0	0	0.4 %/bit 0 % offset
Total Engine Hours	30005-30006	30007-30008	12	65253	0.0	4.0	5s	0.05 hours/bit 0 hours offset
Total Fuel Used	30007-30008	30009-30010	16	65257	4.0	4.0	2s	0.5 L/bit 0 L offset
Engine Coolant Temperature	30009	30011	20	65262	0.0	1.0	0	1 DegC/bit -40 DegC offset
Fuel Temperature	30010	30012	22	65262	1.0	1.0	0	1 DegC/bit -40 DegC offset
Engine Oil Temperature	30011	30013	24	65262	2.0	2.0	0	0.03125 DegC/bit -273 DegC offset
Engine Intercooler Temperature	30012	30014	26	65262	6.0	1.0	0	1 DegC/bit -40 DegC offset
Engine Oil Level	30013	30015	28	65263	2.0	1.0	0	0.4 %/bit 0 % offset

Parameter	Modbus Register BW2031	Modbus Register BW4031	Data Table Offset BW4031 (bytes)	PGN	Offset (byte.bit)	Length (byte.bit)	Rx Timeout	Scaling
Coolant Level	30014	30016	30	65263	7.0	1.0	0	0.4 %/bit 0 % offset
Fuel Delivery Pressure	30015	30017	32	65263	0.0	1.0	0	4 kPa/bit 0 kPa offset
Engine Oil Pressure	30016	30018	34	65263	3.0	1.0	0	4 kPa/bit 0 kPa offset
Coolant Pressure	30017	30019	36	65263	6.0	1.0	0	2 kPa/bit 0 kPa offset
Throttle Position	30018	30020	38	65266	6.0	1.0	0	0.4 %/bit 0 % offset
Fuel Rate	30019	30021	40	65266	0.0	2.0	0	0.05 L/hr. / bit 0 L/hr. offset
Barometric Pressure	30020	30022	42	65269	0.0	1.0	0	0.5 kPa/bit 0 kPa offset
Ambient Air Temperature	30021	30023	44	65269	3.0	2.0	0	0.03125 DegC/bit -273 DegC offset
Air Inlet Temperature	30022	30024	46	65269	5.0	1.0	0	1 DegC/bit -40 DegC offset
Boost Pressure	30023	30025	48	65270	1.0	1.0	0	2 kPa/bit 0 kPa offset
Intake Manifold Temperature	30024	30026	50	65270	2.0	1.0	0	1 DegC/bit -40 DegC offset
Air Filter Differential Pressure	30025	30027	52	65270	4.0	1.0	0	0.05 kPa/bit 0 kPa offset
Exhaust Gas Temperature	30026	30028	54	65270	5.0	2.0	0	0.03125 DegC/bit -273 DegC offset
Electric Potential Voltage	30027	30029	56	65271	4.0	2.0	0	0.05 V/bit 0 V offset
Battery Potential Voltage (switched)	30028	30030	58	65271	6.0	2.0	0	0.05 V/bit 0 V offset
Transmission Oil Pressure	30029	30031	60	65272	3.0	1.0	0	16 kPa/bit 0 kPa offset

Parameter	Modbus Register BW2031	Modbus Register BW4031	Data Table Offset BW4031 (bytes)	PGN	Offset (byte.bit)	Length (byte.bit)	Rx Timeout	Scaling
Transmission Oil Temperature	30030	30032	62	65272	4.0	2.0	0	0.03125 DegC/bit -273 DegC offset
Water In Fuel Indicator	30031	30033	64	65279	0.0	0.2	0	00 = No 01 = Yes

The data table offsets are set up on 16-bit word boundaries to line up easily with Modbus register addresses. Parameter data that is less than 2 bytes in length will be stored in the first byte of the word. Parameter data less than 1 byte in length will be stored in the low order bits of the first byte.

The parameter data will hold the last value that was received from the J1939 network. If the associated PGN message has not been received, the data will remain at 0. (with the exception of Engine Hours and Total Fuel Used)

The Engine Hours and Total Fuel Used parameters are in PGNs that are not periodically broadcast; they must be requested. The Rx Timeout field has been set to 5 and 2 seconds respectively, which will be the time between requests for the data. If the data is not received, the data will be set to 0xFFFF. This value can be used as an indication that the BridgeWay is not communicating with the ECU.

Support

Technical Product Assistance

If you require BridgeWay product technical support by phone:

- Call 248-549-1200
- Dial 0 for the Operator
- Ask for BridgeWay Support

If you require support by email:

- productsupport@pyramidsolutions.com
- Subject: "BW2031 Support Request"
- Provide a detailed explanation of your question or issue in the email text.

You can also obtain BW2031 files and information online at the following URL:

<http://pyramidsolutions.com/support/network-connectivity-support/>

Contact Information

Pyramid Solutions, Inc.
30200 Telegraph Road
Suite 440
Bingham Farms, Michigan 48025

Phone: 1-248-549-1200
Toll free: 1-888-PYRASOL
Fax: 1-248-549-1400
Website: www.pyramidsolutions.com