BridgeWay™

Common Parameters Configurations for J1939 Equipment

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PYRAMID SOLUTIONS

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TABLE OF CONTENTS

1. <u>Overview</u>

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.

2. <u>Configurations</u>

The collection of configurations provides a file for each type of BridgeWay.

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.

The following table lists the configuration files and the type of BridgeWay and controller required by each.

Configuration File	Description	BW Type	Controller Type
CommonParmEIP.cfg	Common J1939 parameters configuration for EtherNet/IP	AB7645	ControlLogix, Pyramid Solutions EIPScan, or other EtherNet/IP scanner
CommonParmTCP.cfg	Common J1939 parameters configuration for Modbus TCP	AB7645	Modbus TCP master (ethernet)
CommonParmRTU.cfg	Common J1939 parameters configuration for Modbus RTU	AB7606	Modbus RTU master (rs485)
CommonParmPDP.cfg	Common J1939 parameters configuration for PROFIBUS DP	AB7614	PROFIBUS DP master

3. <u>Using the Common Parameters Configuration</u>

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

3.1 Configure the BridgeWay Module

1. Power on the BridgeWay module.
2. Connect the serial connector to a PC and start BWConfig.
3. Load the desired configuration file into BWConfig using the File->Open menu.
4. Set the master network configuration (Modbus, Ethernet, or PROFIBUS) as required for the BridgeWay to communicate with the controller being used to monitor the system.
5. Download the configuration into the BridgeWay.

3.2 Connect the BridgeWay to the Controller

1. Make any network connections required to attach the BridgeWay to the controller network (Modbus, Ethernet, or PROFIBUS).
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.

3.3 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).

3.4 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.

4. 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 capablility with 3 addresses.

NAME

Industry Group	0 (Global)
Function	255
Function Instance	1
Vehicle System	0
Vehicle System Instance	1
ECU Instance	1
Manufacturer Code	2047
Identity Number	255
Arbitrary Address Capable	Yes

Network Addresses

128
129
130

5. Transmitted Parameter Data

The Common Parameters configuration does not include any transmitted parameters.

6. 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 AB7606	Modbus Register AB7645	Data Table Offset AB7614 (bytes)	Data Table Offset AB7645-EIP (bytes)	PGN	Offset (byte.bit)	Length (byte.bit)	Rx Timeout	Scaling
Percent Load at Current Speed	30001	30003	0	4	61443	2.0	1.0	0	1 %/bit 0 % offset
Engine Speed	30002	30004	2	6	61444	3.0	2.0	0	0.125 RPM/bit 0 RPM offset
Actual Engine Percent Torque	30003	30005	4	8	61444	2.0	1.0	0	1 %/bit -125 % offset
Fan Speed	30004	30006	6	10	65213	0.0	1.0	0	0.4 %/bit 0 % offset
Total Engine Hours	30005-30006	30007-30008	8	12	65253	0.0	4.0	5s	0.05 hours/bit 0 hours offset
Total Fuel Used	30007-30008	30009-30010	12	16	65257	4.0	4.0	2s	0.5 L/bit 0 L offset
Engine Coolant Temperature	30009	30011	16	20	65262	0.0	1.0	0	1 DegC/bit -40 DegC offset
Fuel Temperature	30010	30012	18	22	65262	1.0	1.0	0	1 DegC/bit -40 DegC offset
Engine Oil Temperature	30011	30013	20	24	65262	2.0	2.0	0	0.03125 DegC/bit -273 DegC offset
Engine Intercooler Temperature	30012	30014	22	26	65262	6.0	1.0	0	1 DegC/bit -40 DegC offset
Engine Oil Level	30013	30015	24	28	65263	2.0	1.0	0	0.4 %/bit 0 % offset

Parameter	Modbus Register AB7606	Modbus Register AB7645	Data Table Offset AB7614 (bytes)	Data Table Offset AB7645-EIP (bytes)	PGN	Offset (byte.bit)	Length (byte.bit)	Rx Timeout	Scaling
Coolant Level	30014	30016	26	30	65263	7.0	1.0	0	0.4 %/bit 0 % offset
Fuel Delivery Pressure	30015	30017	28	32	65263	0.0	1.0	0	4 kPa/bit 0 kPa offset
Engine Oil Pressure	30016	30018	30	34	65263	3.0	1.0	0	4 kPa/bit 0 kPa offset
Coolan Pressure	30017	30019	32	36	65263	6.0	1.0	0	2 kPa/bit 0 kPa offset
Throttle Position	30018	30020	34	38	65266	6.0	1.0	0	0.4 %/bit 0 % offset
Fuel Rate	30019	30021	36	40	65266	0.0	2.0	0	0.05 L/hr / bit 0 L/hr offset
Barometric Pressure	30020	30022	38	42	65269	0.0	1.0	0	0.5 kPa/bit 0 kPa offset
Ambient Air Temperature	30021	30023	40	44	65269	3.0	2.0	0	0.03125 DegC/bit -273 DegC offset
Air Inlet Temperature	30022	30024	42	46	65269	5.0	1.0	0	1 DegC/bit -40 DegC offset
Boost Pressure	30023	30025	44	48	65270	1.0	1.0	0	2 kPa/bit 0 kPa offset
Intake Manifold Temperature	30024	30026	46	50	65270	2.0	1.0	0	1 DegC/bit -40 DegC offset
Air Filter Differential Pressure	30025	30027	48	52	65270	4.0	1.0	0	0.05 kPa/bit 0 kPa offset
Exhaust Gas Temperature	30026	30028	50	54	65270	5.0	2.0	0	0.03125 DegC/bit -273 DegC offset
Electric Potential Voltage	30027	30029	52	56	65271	4.0	2.0	0	0.05 V/bit 0 V offset
Battery Potential Voltage (switched)	30028	30030	54	58	65271	6.0	2.0	0	0.05 V/bit 0 V offset
Transmission Oil Pressure	30029	30031	56	60	65272	3.0	1.0	0	16 kPa/bit 0 kPa offset

Parameter	Modbus Register AB7606	Modbus Register AB7645	Data Table Offset AB7614 (bytes)	Data Table Offset AB7645-EIP (bytes)	PGN	Offset (byte.bit)	Length (byte.bit)	Rx Timeout	Scaling
Transmission Oil Temperature	30030	30032	58	62	65272	4.0	2.0	0	0.03125 DegC/bit -273 DegC offset
Water In Fuel Indicator	30031	30033	60	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.

7. <u>Support</u>

7.1 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: "BridgeWay Support Request"
> Provide a detailed explanation of your question or issue in the email text.

You can also obtain BridgeWay related files and information online at the following URL:
> http://support.pyramidsolutions.com/support-nc-bridgeway-projects.html

7.2 Contact Information

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