

Anybus[®] X-gateway[™]

Application Note *Quick Start Configurations for J1939* *System Checkout*

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1. Overview

The “Quick Checkout” configurations are designed to provide a small configuration that can be used to easily verify the interconnections in a system. The configuration provides monitoring of a few common J1939 parameters that are typically available in most heavy duty equipment systems.

2. Configurations

The collection of configurations provides a file for each type of X-gateway.

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 X-gateway and controller required by each.

Configuration File	Description	BW Type	Controller Type
QuickStartEIP.cfg	Quick Start configuration for EtherNet/IP	AB7665	ControlLogix, Pyramid Solutions EIPScan, or other EtherNet/IP scanner
QuickStartTCP.cfg	Quick Start configuration for Modbus TCP	AB7665	Modbus TCP master (ethernet)
QuickStartRTU.cfg	Quick Start configuration for Modbus RTU	AB7612	Modbus RTU master (rs485)
QuickStartPDP.cfg	Quick Start configuration for PROFIBUS DP	AB7615	PROFIBUS DP master

3. Using the Quick Start Configuration

Running a X-gateway with a Quick Start configuration is as simple as loading the configuration into a X-gateway module and establishing communications to it from the required controller.

3.1 Configure the X-gateway Module

1. Power on the X-gateway 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 X-gateway to communicate with the controller being used to monitor the system.
5. Download the configuration into the X-gateway.

3.2 Connect the X-gateway to the Controller

1. Make any network connections required to attach the X-gateway to the controller network (Modbus, Ethernet, or PROFIBUS).
2. Establish communications with the X-gateway 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 X-gateway to the J1939 Network

1. Make the network connections required to attach the X-gateway 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 ECU on the J1939 network.

4. Quick Start Configuration NAME and Address

The J1939 NAME and address is set in the Quick Start configuration to allow the X-gateway 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	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 Quick Start configuration does not include any transmitted parameters.

6. Received Parameter Data

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

Parameter	Modbus Register AB7612	Modbus Register AB7665	Data Table Offset AB7615 (bytes)	Data Table Offset AB7665-EIP (bytes)	PGN	Offset (byte.bit)	Length (byte.bit)	Rx Timeout	Scaling
Engine Speed	30001	30003	0	4	61444	3.0	2.0	0	0.125 RPM/bit 0 RPM offset
Coolant Temperature	30002	30004	2	6	65262	0.0	1.0	0	1 DegC/bit -40 DegC offset
Engine Oil Pressure	30003	30005	4	8	65263	3.0	1.0	0	4 kPa/bit 0 kPa offset
Engine Oil Temperature	30004	30006	6	10	65262	2.0	2.0	0	0.03125 DegC/bit -273 DegC offset
Engine Hours	30005-30006	30007-30008	8	12	65253	0.0	4.0	5s	0.05 hours/bit 0 hours offset

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)

The Engine Hours parameter is in a PGN that is not periodically broadcast; it must be requested. The Rx Timeout field has been set to 5 seconds, which will be the time between requests for the data. If the data is not received within 5 seconds, the data will be set to 0xFFFFFFFF. This can be used as an indication that the X-gateway is not communicating with the ECU.

7. Support

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