How to use the Live List functionality of the Anybus X-gateway CANopen module

History

Revision	Date	Description	Responsible
1.00	2015-05-26	First release	MBL, KAD

Contents

1 Requirements

Description	Name / Type	Version
Firmware version	-	3.1.2

2 Solution Overview

The X-gateway provides a list of the active status of slave nodes attached to the CANopen Master (Manager) to the top level network. The list is forwarded to the top level network during each network cycle.

This functionality is disabled by default, and can be enabled through the CANopen network configuration software (see Enable Live List in the Anybus Configuration Manager CANopen software).

Note: for more information about specific details presented herein, refer to the user manual of the product.

3 Live List Usage

The Live List consists of 16 bytes and holds bit coded status information for CANopen slave nodes 1-127. A set bit (1) indicates that the corresponding slave is in OPERATIONAL state. Only operational/non-operational state will be presented in the Live List. Error passive state will not be detected but BUSOFF will also result in heartbeat/node guarding errors and will be reflected in the live list.

Note: The Control/Status Word allocates 2 bytes in the IO assembly by default and is always enabled. If the Live List is enabled, an additional 16 bytes will be allocated in the IO assembly starting at the next available address after the Status word.
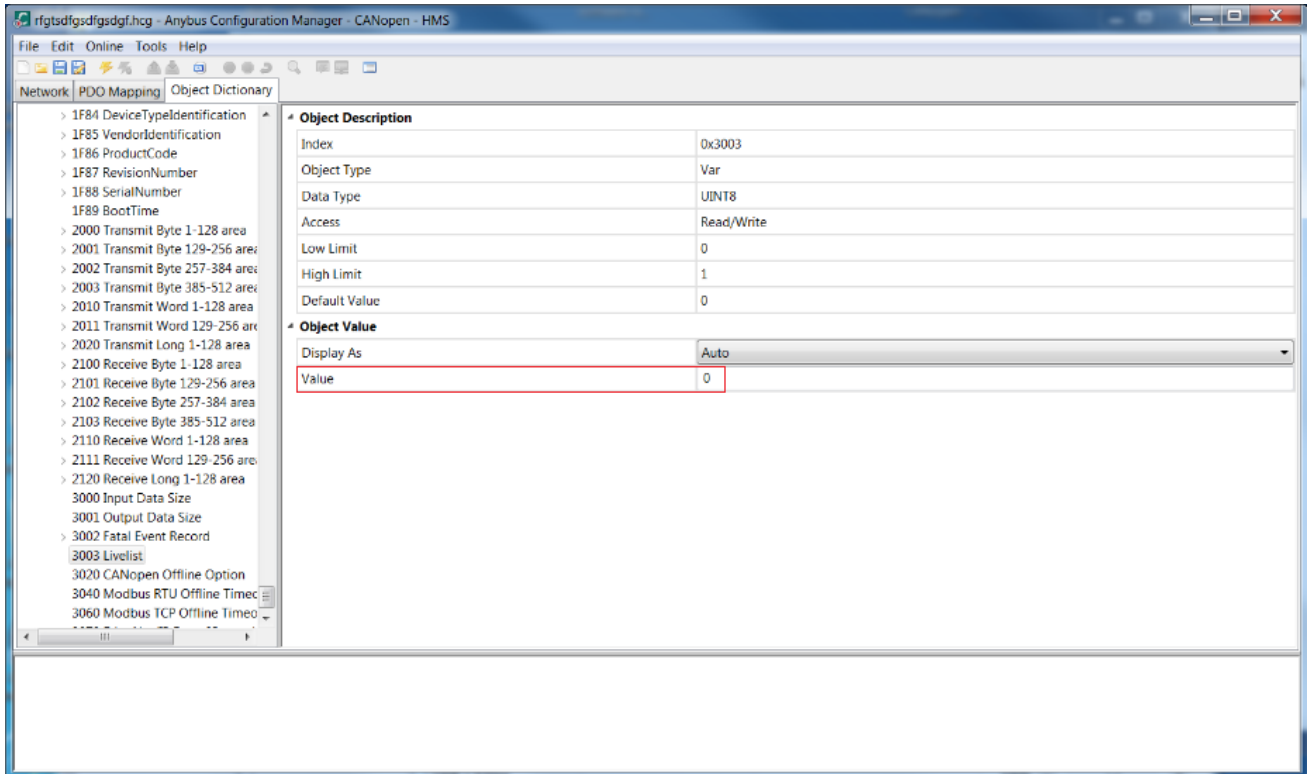
3.1   Live List Contents:

Offset	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Slave 7	Slave 6	Slave 5	Slave 4	Slave 3	Slave 2	Slave 1	All*
1	Slave 15	Slave 14	Slave 13	Slave 12	Slave 11	Slave 10	Slave 9	Slave 8
2	Slave 23	Slave 22	Slave 21	Slave 20	Slave 19	Slave 18	Slave 17	Slave 16
3	Slave 31	Slave 30	Slave 29	Slave 28	Slave 27	Slave 26	Slave 25	Slave 24
4	Slave 39	Slave 38	Slave 37	Slave 36	Slave 35	Slave 34	Slave 33	Slave 32
5	Slave 47	Slave 46	Slave 45	Slave 44	Slave 43	Slave 42	Slave 41	Slave 40
6	Slave 55	Slave 54	Slave 53	Slave 52	Slave 51	Slave 50	Slave 49	Slave 48
7	Slave 63	Slave 62	Slave 61	Slave 60	Slave 59	Slave 58	Slave 57	Slave 56
8	Slave 71	Slave 70	Slave 69	Slave 68	Slave 67	Slave 66	Slave 65	Slave 64
9	Slave 79	Slave 78	Slave 77	Slave 76	Slave 75	Slave 74	Slave 73	Slave 72
10	Slave 87	Slave 86	Slave 85	Slave 84	Slave 83	Slave 82	Slave 81	Slave 80
11	Slave 95	Slave 94	Slave 93	Slave 92	Slave 91	Slave 90	Slave 89	Slave 88
12	Slave 103	Slave 102	Slave 101	Slave 100	Slave 99	Slave 98	Slave 97	Slave 96
13	Slave 111	Slave 110	Slave 109	Slave 108	Slave 107	Slave 106	Slave 105	Slave 104
14	Slave 119	Slave 118	Slave 117	Slave 116	Slave 115	Slave 114	Slave 113	Slave 112
15	Slave 127	Slave 126	Slave 125	Slave 124	Slave 123	Slave 122	Slave 121	Slave 120

*) Bit 0 in Offset 0 indicates 1 if **all** monitored nodes are in **OPERATIONAL** state, else it will be **0.**

- **Bit Set (1)**
  Slave active – State OPERATIONAL.

- **Bit Cleared (0)**
  Slave not active – states can be Initialization, Pre-operational or Stopped. Error passive state will not be detected but BUSOFF will also result in heartbeat/node guarding errors and will generate a cleared bit.

## 3.2 Enable Live List in the Anybus Configuration Manager CANopen software

The Live List feature is available in Object 3003 (Livelist). This feature is disabled by default and can be enabled by setting the parameter "**Value**" to 1 within the **Object Value**.

4 I/O Assembly Examples

## 4.1   Data to the top level network with Live List disabled (on byte level)

Byte 0-7	Status word	Status word	Data	Data	Data	Data	Data	Data
Byte 8-15	Data	Data	Data	Data	Data	Data	Data	Data

 Bytes 0-1 = Status word

 Bytes 2… = CANopen Process Data

4.2   Data to the top level network with Live List enabled (on byte level)

Byte 0-7	Status word	Status word	Nodes All*, 1…7	Nodes 8…15	Nodes 16…23	Nodes 24…31	Nodes 32…39	Nodes 40…47
Byte 8-15	Nodes 48…55	Nodes 56…63	Nodes 64…71	Nodes 72…79	Nodes 80…87	Nodes 88…95	Nodes 96…103	Nodes 104…111
Byte 16-23	Nodes 112…119	Nodes 120…127	Data	Data	Data	Data	Data	Data
Byte 24-31	Data	Data	Data	Data	Data	Data	Data	Data

*) All - if **all** monitored nodes are in **operational** state this bit will be set to **1**, else it will be **0**.

 Bytes 0-1 = Status word

 Bytes 2-17 = Live List data

 Bytes 18… = CANopen Process Data