

AN704 – LSS Protocol with Axiomatic CANopen® Products

Introduction

LSS stands for Layer-setting service. The LSS protocol can be used to configure Node ID and/or the baud rate for Axiomatic CANopen® products.

Setting Node ID:

- 1) Set the module to state LSS-Configuration by sending the following message:

Item	Value
COB-ID	0x7E5
Length	2
Data 0	0x04
Data 1	0x01

- 2) Set the node ID by sending the following message:

Item	Value
COB-ID	0x7E5
Length	2
Data 0	0x11
Data 1	Node-ID

*Node ID is the desired Node ID as a hexadecimal number.

- 3) The module will send the following response (unless there is an error):

Item	Value
COB-ID	0x7E4
Length	3
Data 0	0x11
Data 1	0x00
Data 2	0x00

- 4) Save the configuration by sending the following message:

Item	Value
COB-ID	0x7E5
Length	3
Data 0	0x17

- 5) The module will send the following response (unless there is an error):

Item	Value
COB-ID	0x7E4
Length	3
Data 0	0x17
Data 1	0x00
Data 2	0x00

- 6) Set the module to state LSS-operation by sending the following message (Note - the module will reset itself):

Item	Value
COB-ID	0x7E5
Length	2
Data 0	0x04
Data 1	0x00

Setting Baud rate with LSS:

- 1) Set the module to state LSS configuration by sending the following message:

Item	Value
COB-ID	0x7E5
Length	2
Data 0	0x04
Data 1	0x01

- 2) Set the baud rate by sending the following message:

Item	Value
COB-ID	0x7E5
Length	3
Data 0	0x13
Data 1	0x00
Data 2	Baud rate Index

- 3) Where the baud rate index is one of the following:

Index	Baud rate	Index	Baud rate
0x00	1000 kbps	0x04	125 kbps
0x01	800 kbps	0x06	50 kbps
0x02	500 kbps	0x07	20 kbps
0x03	250 kbps	0x08	10 kbps

- 4) The module will send the following response (unless there is an error):

Item	Value
COB-ID	0x7E4
Length	3
Data 0	0x13
Data 1	0x00
Data 2	0x00

- 5) Activate the bit timing parameters:

Item	Value
COB-ID	0x7E5
Length	3
Data 0	0x15
Data 1	<delay lsb>
Data 2	<delay msb>

There will be a delay of <delay> milliseconds before the bit timing is changed, and another such delay before communications are enabled.

- 6) Send the following message to set the module to state LSS operation (Note - the module will reset itself):

Item	Value
COB-ID	0x7E5
Length	2
Data 0	0x04
Data 1	0x00

- 7) Set the module to state LSS operation:

Item	Value
COB-ID	0x7E5
Length	2
Data 0	0x04
Data 1	0x00

LSS Command and Responses:

	ID	Length	D0	D1	D2	D3	D4	D5	D6	D7	
Send	000	2	80	00	00	00	00	00	00	00	Preop. All Nodes
Send	7E5	8	04	01	00	00	00	00	00	00	Configuration State
Send	7E5	8	11	03	00	00	00	00	00	00	Set Node ID to 3
Response	7E4	8	11	00	00	00	00	00	00	00	Response: OK
Send	7E5	8	17	00	00	00	00	00	00	00	Store Configuration
Response	7E4	8	17	00	00	00	00	00	00	00	Response: OK
Send	7E5	8	04	00	00	00	00	00	00	00	Waiting State
Send	000	2	81	00							Reset Node - ID

Setting Configuration Tool to 250kbps:

Item	Value
COB-ID	0x7E5
Length	1
Data 0	0x17
Data 1	0x00

Resetting the Module:

Item	Value
COB-ID	0x7E5
Length	2
Data 0	0x04
Data 1	0x00

Version	Date	Authors	Comments
1.00	February 14, 2020	Antti Keranen / Sue Thomas	Initial Release
1.01	March 25, 2020	Gustavo Del Valle / Sue Thomas	Updated 'CAN open' to 'CANopen' ('CANopen' was later updated to 'CANopen®')
1.02	December 16, 2020	Gustavo Del Valle / Sue Thomas	Updated baud rate to 2 words.
1.03	July 6, 2023	Kiril Mojsov	Legacy Updates & Marketing Review

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