

SOMFY Digital Network Integration Guide

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1 Introduction

This document describes the “SOMFY Digital Network” (SDN) protocol which is implemented in all SOMFY RS485 products.

The provided content brings all technical information needed to establish a bi-directional communication with SOMFY RS485 devices.

- ⇒ Targeted audience: system integrators / developers
- ⇒ Pre-requisite: devices should already be set (i.e., Up/Down/Tilting limits, rotation direction and application mode already set)

↪ If devices are not configured, please use available tools:

<i>Product</i>	<i>Type</i>	<i>Application Mode</i>
 RS485 Setting Tool	Handheld Battery powered Single motor connection	
 Set Pro by Somfy	PC Software Bus connection with discovery feature	

Set Pro by Somfy can be downloaded from the SOMFY Projects website under the “Somfy Digital Network (RS485)/Software” section:



<https://www.somfy.com/projects/downloads>

↪ Limits setting and motor rotation direction are not covered in this document.

For information about bus topology, cable length and other wiring instructions, please refer to DOC114316 “SDN Bus Wiring Guide” available separately.

The following symbols can be found in the document:



Warning ⇒ Indicating a key point to be taken in consideration.
(Usually a common source of problems).

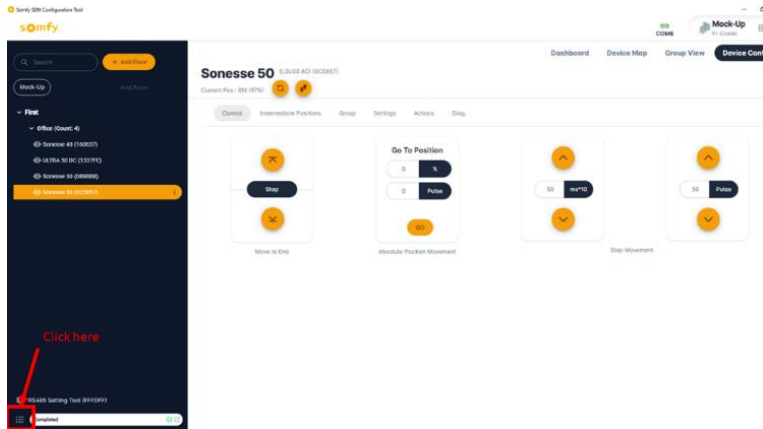


Example ⇒ Giving detailed help on how to implement a feature.

2 SDN Frame Builder

Inside Set Pro by Somfy, SOMFY provides a tool that helps encoding and decoding messages:

- Automatically generates messages for every device
- Automatically decodes messages (copy/paste from external software/terminal)



The screenshot shows the 'Somfy SDN Configuration Tool' interface with the 'Frame Decoder' tab selected. A red box highlights the 'Frame Decoder' tab, and a red arrow points to it with the text 'Develop here'. Below the tab is a table with the following columns: No, Date, Source Node Type, Dest Node Type, Source, Dest, Command, and Title.

No	Date	Source Node Type	Dest Node Type	Source	Dest	Command	Title
7	03/07/24 14:07:14.012	RS485 Setting Tool	LBU20AC	010000	013657	CTRL_MOVE_TO	80000000
8	03/07/24 14:07:14.176	LBU20AC	RS485 Setting Tool	0C3837	010000	ACK	
9	03/07/24 14:07:15.068	RS485 Setting Tool	LBU20AC	010000	0C3837	CTRL_STOP	01
10	03/07/24 14:07:15.074	LBU20AC	RS485 Setting Tool	0C3837	010000	ACK	
11	03/07/24 14:07:16.047	RS485 Setting Tool	LBU20AC	010000	0C3837	GET_MOTOR_POSITION	
12	03/07/24 14:07:16.166	LBU20AC	RS485 Setting Tool	0C3837	010000	POST_MOTOR_POSITION	3030FFFF
13	03/07/24 14:07:17.019	RS485 Setting Tool	LBU20AC	010000	0C3837	GET_MOTOR_POSITION	
14	03/07/24 14:07:17.005	LBU20AC	RS485 Setting Tool	0C3837	010000	POST_MOTOR_POSITION	3030FFFF
15	03/07/24 14:07:17.045	RS485 Setting Tool	LBU20AC	010000	0C3837	GET_MOTOR_POSITION	
16	03/07/24 14:07:17.233	LBU20AC	RS485 Setting Tool	0C3837	010000	POST_MOTOR_POSITION	3030FFFF
17	03/07/24 14:07:18.014	RS485 Setting Tool	LBU20AC	010000	013657	GET_MOTOR_POSITION	
18	03/07/24 14:07:18.097	LBU20AC	RS485 Setting Tool	0C3837	010000	POST_MOTOR_POSITION	3030FFFF
19	03/07/24 14:07:18.056	RS485 Setting Tool	LBU20AC	010000	0C3837	GET_MOTOR_POSITION	
20	03/07/24 14:07:18.223	LBU20AC	RS485 Setting Tool	0C3837	010000	POST_MOTOR_POSITION	3030FFFF
21	03/07/24 14:07:19.022	RS485 Setting Tool	LBU20AC	010000	0C3837	GET_MOTOR_POSITION	
22	03/07/24 14:07:19.006	LBU20AC	RS485 Setting Tool	0C3837	010000	POST_MOTOR_POSITION	3030FFFF
23	03/07/24 14:07:19.045	RS485 Setting Tool	LBU20AC	010000	0C3837	GET_MOTOR_POSITION	
24	03/07/24 14:07:19.234	LBU20AC	RS485 Setting Tool	0C3837	010000	POST_MOTOR_POSITION	3030FFFF
25	03/07/24 14:07:20.023	RS485 Setting Tool	LBU20AC	010000	013657	GET_MOTOR_POSITION	
26	03/07/24 14:07:20.010	LBU20AC	RS485 Setting Tool	0C3837	010000	POST_MOTOR_POSITION	3030FFFF

The screenshot shows the 'Somfy SDN Configuration Tool' interface with the 'Addressing Mode' section. It includes fields for 'Destination Node Type' (set to 'All Devices'), 'Addressing Mode' (set to 'Point to point'), 'Source Address' (set to '010000'), 'Destination Address' (set to '013657'), and 'Acknowledge Request'. Below these fields is a 'Command' field with the value 'CTRL_STOP' and a 'Send' button.

3 SDN Basics

3.1 General information

“SOMFY Digital Network” protocol handles only half-duplex communication between a MASTER and SLAVES:

- MASTER nodes can send commands at any time to one or more SLAVES on the bus.
- SLAVE nodes can only execute commands or report status when requested by a MASTER.
 - There’s only one exception to this rule where some devices can send their address when requested by the user (generally using a pushbutton located on the device) without any MASTER request.

3.2 Device Identification

3.2.1 NodeID

Every RS485 device has a built-in 3-bytes NodeID which is the address of the device on the bus and is used in every communication to identify the transmitter and the receiver(s).

This NodeID is programmed during product manufacturing and cannot be changed. It can be found on the device labels in both plain text and barcode format.

Addresses are recycled on a 3 to 5 years basis, depending on the product sales.




⇒ On a given installation, the NodeID can be considered as unique.

3.2.2 NodeType

Every RS485 device has a built-in 4-bits value called NodeType which is used to identify the product family.

The NodeType can be used in bus communication to send messages only to a selected range of products.

The following table lists the current reserved NodeType, corresponding devices and supported application modes.

NodeType	Device	Supported Application Modes		
				
02h	Ø30 DC Serie RS485	✓		
05h	RS485 RTS transmitter	✓		
06h	Glydea RS485			✓
07h	Ø50 AC Serie RS485	✓		
08h	Ø50 DC Serie RS485	✓		
09h	Ø40 AC Serie RS485	✓	✓	

3.3 Groups

Every device can be part of up to 16 groups, defined by a GroupID.

A GroupID has the exact same format as the NodeID and can be:

- The NodeID of an existing device on the bus (generally the case when this device acts as the only controller of the group)
- Any other NodeID, provided it's not used by any other devices on the bus (when more than one device can control the group)

To use group commands, every product belonging to a group must contain the GroupID in one of the 16 group table entries (i.e. GroupIndex).

⇒ See related messages [§6.1.2](#)

3.4 Addressing Modes

The protocol provides 3 different addressing modes:

- Point to point: communication from a transceiver to one and only one device
- Group: communication from a transmitter to a group of devices
- Broadcast: communication from a transmitter to all the devices

In addition, messages can be addressed to a dedicated device type using its NodeType.

3.5 Message Types

Messages are split into 3 categories:

- Settings:
 - Name = SET_xxx
 - Change the configuration of the device
- Controls:
 - Name = CTRL_xxx
 - Send a command to execute
- Status:
 - Name = GET_xxx
 - Request information from the device (settings values or status)
 - SLAVE(s) will respond with the corresponding POST_xxx message

3.6 Acknowledgments

Every message sent by a MASTER can be associated with an acknowledgment request. This optional acknowledgment will give feedback on message processing, according to the following table:

	ACK is sent when...	NACK
Settings	Parameters are saved	Cannot execute see §6.1.3 for a list of errors
Controls	Execution is started, but not necessarily finished	
Status	n/a	

No ACK is sent after a status request, as the feedback is given by the status report itself.

Warning



It's highly recommended to use acknowledgements to ensure messages are received and properly processed. In this case, a retry strategy can be implemented in the controller when:

- NACK is received (message as received but cannot be processed)
- No ACK is received after a period of time (message was not received)

⇒ See related messages [§6.1.3](#)

3.7 Communication collisions on the bus



Due to the nature of RS485 bus, collisions may happen. As a result, some messages will not reach their destination.

To lower the risk of collisions:

- Avoid requesting feedback in group or broadcast addressing mode
- Avoid requesting acknowledgment in group or broadcast mode

4 Serial Communication

4.1 Configuration

SDN uses an asynchronous serial communication:

Baud Rate	4800
Data bits	8
Parity	Odd
Start Bit	Logical level 0
Stop Bit	Logical level 1
Character coding	NRZ

4.2 Data transmission

- Least significant bit is always sent first



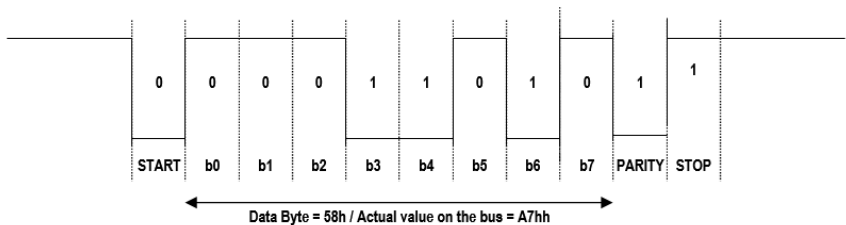
Warning:

To ensure backward compatibility with earliest versions of the protocol, all data bits need to be inverted before transmission.



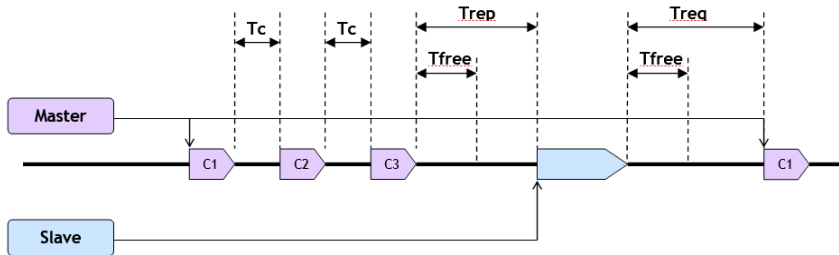
Example:

Transmission of data byte 58h => actual value on the bus = NOT (58h) = A7h



4.3 Timings

The following diagram shows a typical MASTER / SLAVE communication with timing requirements:



Timing	Min	Typical	Max	Description
T_c	N/a		$\leq 1\text{ms}$	Maximum time between two consecutive characters
T_{free}	$> T_c \text{ Max}$	-	$< 3\text{ms}$	Bus free timeout
T_{rep} (Unicast)	$\geq 5\text{ms}$	-	$\leq 255\text{ms}$	Bus inactivity delay for a slave node before sending its reply Unicast = point to point communication Multicast = Group or Broadcast
T_{rep} (Multicast)	30ms	n/a	280ms	
T_{req}	25ms	N/a		Bus inactivity delay for a master before it can send a new request

No synchronization byte is defined in the protocol to detect the beginning or end of a message.

A message is seen as a bundle of bytes ended with bus inactivity.

To guarantee proper communication, the following rules apply:

MASTER requirements

- Before transmitting data:
 - The MASTER device ensures that at least **Treq** has elapsed since the last bus activity.
- While transmitting data:
 - The MASTER device ensures that **Tc** is not exceeded between 2 characters

SLAVE behaviors

- Before transmitting data:
 - Any SLAVE device ensures **Trep** has elapsed since the last bus activity.
 - **Trep** is not a fixed value and can vary within the range indicated in the table above
- While transmitting data:
 - The SLAVE device ensures that **Tc** is not exceeded between 2 characters

5 Messages Structure

All SDN messages are formatted as follow:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	...	Byte n-1	Byte n
<i>MSG</i>	<i>ACK/LEN</i>	<i>NODE TYPE</i>	<i>SOURCE @</i>			<i>DEST @</i>			<i>DATA</i>	<i>CHECKSUM</i>	

- Minimum length = 11 bytes (i.e., without any DATA)
- Maximum length = 32 bytes (i.e., maximum 21 bytes of DATA)

Following sections give detailed explanation for each field.

5.1 MSG

Byte 1							
b7	b6	b5	b4	b3	b2	b1	b0
MSG							

- **MSG** = Message identifier

Refer to messages list for supported MSG values (see §6)

5.2 ACK/LEN

Byte 2							
B7	b6	b5	b4	b3	b2	b1	b0
ACK	EXT		LEN				

- **ACK** = Acknowledge request – Set to 1 to request acknowledge from the SLAVE(s)
- **EXT** = Always 0 (Reserved)
- **LEN** = Frame length (0 to 31)

5.3 NODE TYPE

Byte 3							
b7	b6	b5	b4	b3	b2	b1	b0
SOURCE Node Type				DEST Node Type			

- **SOURCE NodeType** = NodeType of the transmitter
 - ▶ Always 0h for MASTER devices
- **DEST NodeType** = NodeType of the receiver(s)
 - ▶ Used to implement NodeType filtering which allows to address only selected devices within a broadcast/group message

	DEST Node Type	Description
Any devices	0000	All devices will process the message
Selected devices	See §3.2.2 NodeType table	Only devices with specified NodeType will process the message

5.4 SOURCE@ / DEST@

- **SOURCE@** = NodeID of the transmitter
- **DEST@** = NodeID of the receiver

Different addressing modes are available, depending on the values of SOURCE@ and DEST@ fields.

	Bytes 4 to 6	Bytes 7 to 9	Description
Point to Point	SOURCE@ = NodeID	DEST@ = NodeID	Only the device with NodeID = DEST@ will execute the message
Group	SOURCE@ = GroupID	000000h	All nodes belonging to the group will execute the message (i.e. all nodes with GroupID present in their group table)
Broadcast	SOURCE@ = NodeID	FFFFFFh	All nodes on the bus will execute the message



Warning:

SOURCE@ and DEST@ are LSBF



Example:

If a Point-to-Point communication is initiated by NodeID = 05:04:03 (as shown on the device label) to NodeID = 00:01:02, then the SOURCE@ and DEST@ fields are coded as follow:

Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9
SOURCE@			DEST@		
03h	04h	05h	02	01	00

5.5 DATA

Byte 10	...	Byte n-2
DATA 0	...	DATA x

Chapter §6 gives the DATA structure and length for every message.

Some DATA fields are marked as “*Reserved*”: they must be present in the message and should be set to 00h or FFh.



Warning:

When receiving a message from a device, the actual DATA length can be longer than the value in the “DATA length” cell.

⇒ The “DATA length” should be considered as the *minimum* DATA length.

5.6 CHECKSUM





The checksum is only a basic error detection algorithm, without any error correction capabilities. It's calculated by adding the complement of every byte in the frame.

Byte n-1	Byte n
CHECKSUM	





$$\text{CHECKSUM} = (\text{Byte } 1 + \dots + \text{Byte } n-2)$$

6 Messages

When a MASTER / SLAVE communication is initiated, the following table lists the messages that can be sent by each device:

	SET_XXX	CTRL_XXX	GET_XXX	POST_XXX	ACK / NACK
Used for...	Configuration	Control	Information Request	Information Report	Acknowledgment and Errors
Represented by...					n/a
MASTER	✓	✓	✓	✗	✗
SLAVE	✗	✗	✗	✓	✓

Summary of available messages for the MASTER:

			 + 	Messages
Device Management				
Device NodeID	✗	✗	✓	NODE_ADDR
Group Configuration	✓	✗	✓	GROUP_ADDR
Device Information				
Firmware Revision	✗	✗	✓	NODE_APP_VERSION
User Defined Text Label	✓	✗	✓	NODE_LABEL
Actuator's manufacturing date	✗	✗	✓	NODE_SERIAL_NUMBER
Device Configuration				
HMI management	✓	✗	✓	LOCAL_UI
Intermediate Positions	✓	✗	✓	MOTOR_IP
Speed Adjustment (DC motors)	✓	✗	✓	MOTOR_SPEED
Lock Network Commands	✓	✗	✓	NETWORK_LOCK
Device Control				
Move to Position	✗	✓	✗	MOVETO
Stop	✗	✓	✗	STOP
Wink	✗	✓	✗	WINK

Device Status				
Motor Position	✘	✘	✓	MOTOR_POSITION
Motor Status	✘	✘	✓	MOTOR_STATUS
Device Reset				
Factory default settings	✓	✘	✘	FACTORY_DEFAULT

6.1 Device management

6.1.1 Device NodeID

GET_NODE_ADDR (40h)

MSG	Name	DATA Length
40h	GET_NODE_ADDR	0



Warning:

When a lot of devices are available on the bus, there is no guarantee that replies from all devices will be received.

POST_NODE_ADDR (60h)

MSG	Name	DATA Length
60h	POST_NODE_ADDR	0

Remark:

No data needed; address is included in message header.

6.1.2 Group Configuration

SET_GROUP_ADDR (51h)

MSG	Name	DATA Length
51h	SET_GROUP_ADDR	4

DATA	TYPE	MIN	MAX	Description
GroupIndex	8-bits	0	15	Entry in the group table
GroupID	24-bits	N/a	N/a	Associated group address

GET_GROUP_ADDR (41h)

MSG	Name	DATA Length
41h	GET_GROUP_ADDR	1

DATA	TYPE	MIN	MAX	Description
GroupIndex	8-bits	0	15	Entry in the group table

POST_GROUP_ADDR (61h)

MSG	Name	DATA Length
61h	POST_GROUP_ADDR	4

DATA	TYPE	MIN	MAX	Description
GroupIndex	8-bits	0	15	Entry in the group table
GroupID	24-bits	n/a	n/a	Associated group address

6.1.3 Acknowledgement and Errors

↪ ACK (7Fh)

MSG	Name	DATA Length
7Fh	ACK	0

Remark

This message is only sent when ACK bit is set to 1 in the request (CTRL, GET or SET message).

↪ NACK (6Fh)

MSG	Name	DATA Length
6Fh	NACK	1

DATA	TYPE	MIN	MAX	Description
ErrorCode	8-bits	01h	FFh	

ErrorCode	Description	Remarks
01h	Data out of range	DATA fields values are not within expected range
10h	Unknown message	MSG identifier is unknown
11h	Message Length Error	Message length is below minimum value
FFh	Busy – Cannot process message	

Remarks

- This message is sent when ACK is requested but an error is detected during data analysis.
- Above mentioned NACK values are implemented in all products.

6.2 Device Information

6.2.1 Firmware Revision

GET_NODE_APP_VERSION (74h)

MSG	Name	DATA Length
74h	GET_NODE_APP_VERSION	0

POST_NODE_APP_VERSION (75h)

MSG	Name	DATA Length
75h	POST_NODE_APP_VERSION	6

DATA	TYPE	MIN	MAX	Description
App_Reference	24-bits	n/a	n/a	Firmware Part Number
App_IndexLetter	8-bits ASCII	41h	5Ah	Firmware major revision
App_IndexNumber	8-bits	N/a	N/a	Firmware Revision
Reserved	8-bits	N/a	N/a	

Example

Application software reference 5063486A02 is coded as follows:

App_Reference	App_IndexLetter	App_IndexNumber
4Dh 43h 3Eh	41h	02h

6.2.2 User-defined Text Label

- A text label can be assigned to each device for identification purpose. It has no effect on the behavior of products or communications on the bus.

SET_NODE_LABEL (55h)

MSG	Name	DATA Length
55h	SET_NODE_LABEL	16

DATA	TYPE	MIN	MAX	Description
Label	String	n/a	n/a	



Warning:

The DATA length is always 16 characters. Fill with space if the actual string is shorter.

GET_NODE_LABEL (45h)

MSG	Name	DATA Length
45h	GET_NODE_LABEL	0

POST_NODE_LABEL (65h)

MSG	Name	DATA Length
65h	POST_NODE_LABEL	16

DATA	TYPE	MIN	MAX	Description
Label	String	n/a	n/a	

6.2.3 Actuator's manufacturing date

- Each device contains a serial number made of the node ID, a manufacturer ID and the year and week of the year of production

GET_NODE_SERIAL_NUMBER (4Ch)

MSG	Name	DATA Length
4Ch	GET_NODE_SERIAL_NUMBER	0

POST_NODE_SERIAL_NUMBER (6Ch)

MSG	Name	DATA Length
6Ch	POST_NODE_SERIAL_NUMBER	12

DATA	TYPE	MIN	MAX	Description
SerialNumber	String	n/a	n/a	

Coded in ASCII as follows :

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
Node ID						Manufacturer ID		Year		Week	

6.3 Device Configuration

6.3.1 HMI Management

- HMI stands for any local user interface items such as buttons located on motor head, LEDs, DCT inputs and Bluetooth feature.

✳ SET_LOCAL_UI (17h)

MSG	Name	DATA Length
17h	SET_LOCAL_UI	3

DATA	TYPE	MIN	MAX	Description
Function	8-bits	00h	01h	
UI_Index	8-bits	00h	See Table	
Priority	8-bits	00h	FFh	Greater number indicates higher priority

Function	Description	Remarks
00h	Enable / Unlock	Enables or Unlocks the feature
01h	Disable / Lock	Disables or Locks the feature
Others	Invalid	Returns NACK (DATA_OUT_OF_RANGE)

UI_Index	Description	Remarks
00h	All Local controls and feedbacks	
01h	DCT input	
02h	Local stimuli (e.g., radio pairing pushbutton)	
03h	Local Radio access (e.g., Bluetooth)	
04h	Touch Motion feature	
05h	LEDs	
Others	Invalid	Returns NACK (DATA_OUT_OF_RANGE)

Remarks

- When an item is disabled, all actions/feedback related to this item are ignored and/or switched off until it's enabled again.
- Each UI can be locked with a different priority level
- Lock may be re-set or removed by another SET_LOCAL_UI message:
 - When UI_Index = 00h, priority shall be equal to or higher than the highest of all lock levels otherwise it shall return a NACK (LOW_PRIORITY).
 - For other UI_Index values, priority shall be equal to or higher than the corresponding lock level otherwise it shall return a NACK (LOW_PRIORITY).
- LOCAL_UI status upon power failure:
 - DCT / Local Stimuli => Not saved / Not restored after power-up
 - All other items => Always saved then restored after power-up.
- Default status (=Factory Default): all UI enabled

① *GET_LOCAL_UI (27h)*

MSG	Name	DATA Length
27h	GET_LOCAL_UI	1

DATA	TYPE	MIN	MAX	Description
Ui_Index	8-bits	01h	UI_MAX	Refer to UI list in SET_LOCAL_UI

② *POST_LOCAL_UI (37h)*

MSG	Name	DATA Length
37h	POST_LOCAL_UI	5

DATA	TYPE	MIN	MAX	Description
Status	8-bits	00h	01h	
Source_Addr	24-bits	000000h	FFFFFFh	NodeID of the device that sent the lock command
Priority	8-bits	00h	Ffh	Greater number indicates higher priority

Status	Description	Remarks
00h	Enabled / Unlocked	
01h	Disabled / Locked	
Others	Ignored	

Remarks

- When Device is enabled / unlocked, both "Source_Addr" and "Priority" are reset to 0x000000 and 0x00 respectively

6.3.2 Intermediate Positions

SET_MOTOR_IP (15h)

MSG	Name	DATA Length
15h	SET_MOTOR_IP	4 to 6

DATA	TYPE	MIN	MAX	Description
Function	8-bits	00h	0Bh	
IP_Index	8-bits	1	16	
Value_Position	16-bits	0000h	See Function Remarks	
Value_Tilting	16-bits	0000h	See Function Remarks	Can be omitted if application is not a venetian blind

Function	Description	Remarks
00h	Delete IP	Value_xxx are ignored If IP doesn't exist, returns NACK (IP_NOT_SET)
01h	Set IP at current position	Value_xxx are ignored
03h	Set IP at the specified position (in %)	Value_Tilting is ignored
04h	Divide the Full range with the given number of IPs	Value_Position contains the IP count IP_Index and Value_Tilting are ignored
05h	Set IP at current position and angle	Value_xxx are ignored
0Ah	Set IP at the specified position (in %) and angle (in %)	
0Bh	Set IP at the specified position (in %) and angle (in degrees)	

Remarks

- Default value for all IPs is FFFFh, meaning they are not yet set.
- Setting an IP out of limits range is not allowed.
- Function 04h set the 'x' first IPs to equally separated positions within limits range from top position to bottom position.
 - Example:
 - Set 2 IPs => IP1 to 33% - IP2 to 66%.
 - Set 3 IPs => IP1 to 25% - IP2 to 50% - IP3 to 75%.
 - Existing IPs are overwritten

GET_MOTOR_IP (25h)

MSG	Name	DATA Length
25h	GET_MOTOR_IP	1

DATA	TYPE	MIN	MAX	Description
IP_Index	8-bits	1	16	

POST_MOTOR_IP (35h)

MSG	Name	DATA Length
35h	POST_MOTOR_IP	4 to 9

DATA	TYPE	MIN	MAX	Description
IP_index	8-bits	1	16	
Reserved	16-bits	n/a	n/a	
IP_position_percentage	8-bits	0	100	FFh if IP position not set
Reserved	16-bits	n/a	n/a	
Reserved	8-bits	n/a	n/a	
IP_angle_degree	16-bits	0	180	8000h if IP angle not set

6.3.3 Speed Adjustment

- Speed adjustment is only available on DC motors.

SET_MOTOR_ROLLING_SPEED (13h)

MSG	Name	DATA Length
13h	SET_MOTOR_ROLLING_SPEED	3

DATA	TYPE	MIN	MAX	Description
UP_Speed	8-bits	See Technical Datasheet		Speed during UP movement (rpm)
DOWN_Speed	8-bits	See Technical Datasheet		Speed during DOWN movement (rpm)
Slow_Speed	8-bits	See Technical Datasheet		Speed for adjustment movements (rpm)

Remarks

- Default Speed and speed range are not the same for all motors. Refer to device technical datasheet.

GET_MOTOR_ROLLING_SPEED (23h)

MSG	Name	DATA Length
23h	GET_MOTOR_ROLLING_SPEED	0

POST_MOTOR_ROLLING_SPEED (33h)

MSG	Name	DATA Length
33h	POST_MOTOR_ROLLING_SPEED	3

DATA	TYPE	MIN	MAX	Description
UP_Speed	8-bits	See Technical Datasheet		Speed during UP movement
DOWN_Speed	8-bits	See Technical Datasheet		Speed during DOWN movement
Slow_Speed	8-bits	See Technical Datasheet		Speed for adjustments movements

6.3.4 Lock Network Commands

- Lock feature gives the ability to prevent any commands from the network to operate a device. A priority level is available to allow high-priority controls to execute commands even if devices are locked.

SET_NETWORK_LOCK (16h)

MSG	Name	DATA Length
16h	SET_NETWORK_LOCK	2

DATA	TYPE	MIN	MAX	Description
Function	8-bits	00h	04h	
Priority	8-bits	00h	FFh	Greater number indicates higher priority

Function	Description	Remarks
00h	Unlock	Unlock device
01h	Lock	Lock device at current position
03h	Save NETWORK_LOCK upon power cycle	Priority is ignored
04h	Do not save NETWORK_LOCK upon power cycle	Priority is ignored
Others	Invalid	Returns NACK (DATA_OUT_OF_RANGE)

Remarks

- When network is locked, only CTRL_NETWORK_LOCK control message with equal or higher priority level will be accepted.
 - All other messages involving a movement or changing the limits are rejected: CTRL_XXX functions, SET_MOTOR_LIMITS and SET_TILT_LIMITS
 - NACK (NODE_IS_LOCKED) is returned
- Lock may be re-set or removed by another SET_NETWORK_LOCK or CTRL_NETWORK_LOCK message with equal or higher priority level.
- When SET_NETWORK_LOCK with function 03h (Save) is received by a motor:
 - The highest NETWORK_LOCK (if any) is saved at power off.
 - At power on, the highest NETWORK_LOCK will be restored.
- When SET_NETWORK_LOCK with function 04h (Do not save) is received by a motor:
 - NETWORK_LOCK is not saved at power off
 - At power-on, no NETWORK_LOCK will be restored → CTRL_XXX are always enabled after power-on.
- Default value (=Factory Default): Do Not Save
- Source_Addr is only saved when function 01h (Lock) is received.

① *GET_NETWORK_LOCK (26h)*

MSG	Name	DATA Length
26h	GET_NETWORK_LOCK	0

↳ *POST_NETWORK_LOCK (36h)*

MSG	Name	DATA Length
36h	POST_NETWORK_LOCK	6

	DATA	TYPE	MIN	MAX	Description
Req	Status	8-bits	00h	01h	
Req	Source_Addr	24-bits	000000h	FFFFFFh	NodeID of the device that sent the lock command
Req	Priority	8-bits	00h	FFh	Greater number indicates higher priority
Req	Saved	8-bits	00h	01h	Indicate if lock will be saved and restored upon power cycle

Status	Description	Remarks
00h	Unlocked	
01h	Locked	
Others	Ignored	

Saved	Description	Remarks
00h	Lock will not be restored on power cycle	
01h	Lock will be restored on power cycle	
Others	Ignored	

Remarks

- When Device is unlocked, both “Source_Addr” and “Priority” are reset to 0x000000 and 0x00 respectively

6.4 Device Control

6.4.1 Move to Position

▶ CTRL_MOVE TO (03h)

MSG	Name	DATA Length
03h	CTRL_MOVE TO	6

DATA	TYPE	MIN	MAX	Description
Function	8-bits	00h	04h	
Position	16-bits	See table below		
Reserved	8-bits	n/a	n/a	
Angle	16-bits	-90	90	Can be omitted if application mode is not Venetian Blind

Function	Description	Remarks
00h	... DOWN limit	Position is ignored
01h	... UP limit	Position is ignored
02h	... Intermediate Position	Position contains IP index (0 to 15)
04h	... Position (in %)	Position contains % value (0 to 100)
0Ch	... Position (in %) and Angle (in %)	
0Dh	... Position (in %) and Angle (in degrees)	
0Fh	... Current Position and Angle (in %)	Position is ignored (tilt only)
10h	... Current Position and Angle (in degrees)	Position is ignored (tilt only)

6.4.2 Stop

▶ CTRL_STOP (02h)

MSG	Name	DATA Length
02h	CTRL_STOP	1

DATA	TYPE	MIN	MAX	Description
Reserved	8-bits	n/a	n/a	

Remarks

- Motor is immediately stopped without speed ramp-down

6.4.3 Wink

▶ CTRL_WINK (05h)

MSG	Name	DATA Length
05h	CTRL_WINK	0

Remarks

- In Venetian mode, the final angle can't be guaranteed

6.5 Device Status

6.5.1 Motor Position

GET_MOTOR_POSITION (0Ch)

MSG	Name	DATA Length
0Ch	GET_MOTOR_POSITION	0

POST_MOTOR_POSITION (0Dh)

MSG	Name	DATA Length
0Dh	POST_MOTOR_POSITION	5 to 11

DATA	TYPE	MIN	MAX	Description
Position_pulse	16-bits	UP_LIMIT	DOWN_LIMIT	
Position_percentage	8-bits	0	100	
Tilting_Percentage	8-bits	0	100	
IP	8-bits	01h	IP_MAX	
Reserved	16-bits			
Tilting_Degrees	16-bits	0	180	
Reserved	16-bits			

Remarks

- The position is sent even if the motor is running
- If the position does not correspond to any IP, returned value for IP is FFh. Motor may consider to be at an IP position even if it is above or below of a few pulses. Tolerance around this point may be variable and depends on the motor.
- If the position corresponds to several IP, first IP of the matching value on the list is returned.

6.5.2 Motor Status

- Motor status indicates the current state of the motor, the direction of current or previous movement, the origin of the last command and some additional information explaining the status.

① GET_MOTOR_STATUS (0Eh)

MSG	Name	DATA Length
0Eh	GET_MOTOR_STATUS	0

① POST_MOTOR_STATUS (0Fh)

MSG	Name	DATA Length
0Fh	POST_MOTOR_STATUS	4

DATA	TYPE	MIN	MAX	Description
Status	8-bits	See table below		Status of the motor
Direction	8-bits			Last rotation direction
Source	8-bits			Origin of the command
Cause	8-bits			Additional information

Status	Description	Remarks
00h	Stopped	
01h	Running	During movement
02h	Blocked	Cannot move (thermal protection, obstacle)
03h	Locked	Locked by another device (NETWORK_LOCK)

Direction	Description	Remarks
00h	Going DOWN	If motor is stopped, last movement direction is indicated
01h	Going UP	
FFh	Unknown	

Source	Description	Remarks
00h	Internal	Limit/IP/Position reached, Over-current, obstacle detection, thermal protection, ...
01h	Network message	Any message received from the SDN bus
02h	Local UI	DCT, Local stimulus, local wireless

Cause	Description	Remarks
00h	Target reached	Reached limit or IP or already there
01h	Explicit command	Network or Local UI command
02h	Wink	
20h	Obstacle detection	
21h	Over-current protection	
22h	Thermal protection	
30h	Run time exceeded	Continuous runtime exceeded limit
32h	Timeout exceeded	When using CTRL_MOVE and more than 2min. elapsed => canceled adjustment
FFh	Reset / PowerUp	Power recycled / No command after startup

6.6 Device Reset

6.6.1 Factory default settings

- Recall factory default settings.

SET_FACTORY_DEFAULT (1Fh)

MSG	Name	DATA Length
1Fh	SET_FACTORY_DEFAULT	1

DATA	TYPE	MIN	MAX	Description
Function	8-bits	00h	17h	

Function	Description	Remarks
00h	All settings to factory default	
01h	Clear all Group addresses	Group address = 00:00:00
15h	Delete all IPs	IPs = FFFFh
17h	Clear all locks + Lock Save Status	