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Revision	Object	Author	Date
0.0 RO	First draft based on specifications	A.Millet	2008/08/21
0.4 R1	Updates. Version for the product's commercial launching.	V. Vanderschaeve	2009/06/19

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1 Introduction

This document applies to SOMFY RS485 RTS TRANSMITTER as described in SDEV-CDCF 176:

Product perimeter

The RS485 RTS transmitter is a 16 channels U80 RTS transmitter that enables a 3rd party (home automation control system) to control SOMFY RTS motors and receivers.

Applications

The interface is compatible with all RTS applications:

- Roller shutters
- Awnings
- Black-out shades
- Internal & External Screens
- Curtains
- Interior venetian blinds
- Lighting receivers
- Projection screens.



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2 Functions

The following table shows functions available from the network (according to SDV-CDCF 176 ANNEXE 6) and the corresponding messages:

Command Type	Function	Message	In / Out
	Affect specific behavior by channel	SET_CHANNEL_MODE (90h)	>> In
	Fix number of frames for TILT	SET_TILT_FRAMECOUNT (91h)	>> In
	Fix number of frames for DIM	SET_DIM_FRAMECOUNT (92h)	>> In
	SUN Auto On	SET SUN AUTO (93h)	>> In
Setting	SUN Auto Off	3E1_30N_A010 (93H)	>> III
	"lock/unlock" dry contact	SET_DCT_LOCK (94h)	>> In
	Prog	SET_CHANNEL (97h)	>> In
	Open prog Mode	SET_OPEN_PROG (98h)	>> In
	RECORD/DELETE AN IP	SET_IP (9Ah)	>> In
	Move UP / Light ON		
	Move DOWN / Light OFF		
	STOP Movement	CTRL_POSITION (80h)	>> In
Control	Move to favorite position / ON with favorite light position		
	Tilt +	CTRL_TILT (81h)	>> In
	Tilt -	CIRL_HEI (6111)	// 111
	DIM +	CTRL DIM (82h)	>> In
	DIM -	CTRE_DIM (OZII)	// //

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	Retrieve Mode of channels	GET_CHANNEL_MODE (A0h)	>> In		
	Retrieve mode of charmets	POST_CHANNEL_MODE (B0h)	Out >>		
	Retrieve Tilt FrameCount	GET_TILT_FRAMECOUNT (A1h)	>> In		
Status	Retrieve Titt Framecount	POST_ TILT_FRAMECOUNT (B1h)	Out >>		
Status	Retrieve Dim FrameCount	GET_DIM_FRAMECOUNT (A2h)	>> In		
	Retrieve biiii Framecount	POST_ DIM_FRAMECOUNT (B2h)	Out >>		
	Retrieve Lock Status	GET_DCT_LOCK(A4h) >> In			
	Retileve Lock Status	POST_ DCT_LOCK (B4h)	Out >>		

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3 Applicable Standards

3.1 Functional Standards

■ n/a

3.2 Technical Standards

GME-STD-062
 GME-STD-063
 GME-STD-064
 GME-STD-065
 ILT Protocol overview
 RS485 Physical Layer
 ILT@ Data-Link Layer
 ILT Standard Messages

Product designation	NodeType / ApplD	Node Family
RS485 RTS TRANSMITTER	05h	SLAVE

Address Range				
05:80:00	05:FF:FF			

Typical Response time of the transmitter is from 5 to 10 ms. Regarding Specific frames, mainly the ones that trigger an RTS Transmission (80h, 81h, 82h), the typical response time is from 100 to 110 ms.

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4 Table of Supported Messages

4.1 Mandatory Messages

Mandatory messages are used for basic networking features: address / group / acknowledgment / diagnosis / software information. Definition of these messages can be found in GME-STD 065 "ILT Standard Messages".

MSG In	MSG Out	Name	Description
40h		GET_NODE_ADDR	Read NodelD / AppID
	60h	POST_NODE_ADDR	Send NodelD / ApplD on network
41h		GET_GROUP_ADDR	Read NodeID of designated group (1 on 16)
51h		SET_GROUP_ADDRESS	Write NodelD of designated group (1 on 16)
	61h	POST_GROUP_ADDR	Send NodeID of designated group (1 on 16)
45h		GET_NODE_LABEL	Read Label of the node
55h		SET_NODE_LABEL	Write Label of the node
	65h	POST_NODE_LABEL	Send Label of the node
4Ch		GET_SERIAL_NUMBER	Read Serial Number of the node
	6Ch	POST_SERIAL_NUMBER	Send Serial Number of the node
4Dh		GET_NETWORK_ERROR_STAT	Read Error counter of the stack
	6Dh	POST_NETWORK_ERROR_STAT	Send Error counter of the stack
4Eh		GET_NETWORK_STAT	Read network communication diagnosis
5Eh		SET_NETWORK_STAT	Configure and reset diagnosis counters
	6Eh	POST_NETWORK_STAT	Send network communication diagnosis
	6Fh	NACK	Send acknowledgment with error code
70h		GET_NODE_STACK_VERSION	read version of the stack
	71h	POST_NODE_STACK_VERSION	send version of the stack
74h		GET_NODE_APP_VERSION	read version of the software
	71h	POST_NODE_APP_VERSION	send version of the software
	7Fh	ACK	Send acknowledgment

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4.2 ILT Standard Messages Compatibility (40h – 7Fh)

	40h		50h		60h		70h
40	GET_NODE_ADDR	50		60	POST_NODE_ADDR	70	GET_NODE_SW_VERSION
41	GET_GROUP_ADDR	51	SET_GROUP_ADDR	61	POST_GROUP_ADDR	71	POST_NODE_SW_VERSION
42		52		62		72	
43		53		63		73	
44		54		64		74	GET_NODE_APP_VERSION
45	GET_NODE_LABEL	55	SET_NODE_LABEL	65	POST_NODE_LABEL	75	POST_NODE_APP_VERSION
46		56		66		76	
47		57		67		77	
48		58		68		78	
49		59		69		79	
4A		5A		6A		7A	
4B		5B		6B		7B	
4C	GET_NODE_SERIAL_NUMBER	5C		6C	POST_NODE_SERIAL_NUMBER	7C	
4D	GET_NETWORK_ERROR_STAT	5D		6D	POST_NETWORK_ERROR_STAT	7D	
4E	GET_NETWORK_STAT	5E	SET_NETWORK_STAT	6E	POST_NETWORK_STAT	7E	
4F		5F		6F	NACK	7F	ACK

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5 Application-specific Messages

5.1 Messages Table

	80h		90h		A0h		B0h
80h	CTRL_POSITION	90h	SET_CHANNEL_MODE	A0h	GET_CHANNEL_MODE	B0h	POST_CHANNEL_MODE
81h	CTRL_TILT	91h	SET_TILT_FRAMECOUNT	A1h	GET_TILT_FRAMECOUNT	B1h	POST_TILT_FRAMECOUNT
82h	CTRL_DIM	92h	SET_DIM_FRAMECOUNT	A2h	GET_DIM_FRAMECOUNT	B2h	POST_DIM_FRAMECOUNT
		93h	SET _SUN_AUTO				
		94h	SET_DCT_LOCK	A4h	GET_DCT_LOCK	B4h	POST_DCT_LOCK
		97h	SET_CHANNEL				
		98h	SET_OPEN_PROG				
		9Ah	SET_IP				
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5.2 Setting Functions

5.2.1 SET_CHANNEL_MODE (90h)

> Set the modes to use for the selected channel. This mode is used to determine the number of RTS frame to send on CTRL_POSITION and CTRL_TILT Orders.

MSG	Name	DATA Length	FRAME Length	Addressing		
90h	SET_CHANNEL_MODE	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to set
US/CE mode	Byte	0	1	Used for UP/DOWN/TILT
Rolling/Tilting Mode	Byte	0	1	Used for UP/DOWN
Modulis Mode	Byte	0	1	Used for motors/receivers compatible with Modulis =
				tilting or dimming

US/CE mode	Description	Remarks
00h	CE mode	
01h	US Mode	Default

Rolling/Tilting Mode	Description	Remarks
00h	Rolling mode	Default
01h	Tilting Mode	

Modulis Mode	Description	Remarks
00h	Normal mode	
01h	Modulis Mode	Default

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5.2.2 SET_TILT_FRAMECOUNT (91h)

> Set the number of RTS frames the product should send on a CTRL_TILT order.

MSG	Name	DATA Length	FRAME Length	Addressing		
91h	SET_TILT_FRAMECOUNT	3	14	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to set
Number of frames to send for US mode	Byte	4	255*	Default Value: 5
Number of frames to send for CE mode	Byte	2	13	Default Value: 2

^{*}Remark: the number of frames will be effectively limited to 10 seconds of sending.

5.2.3 SET_DIM_FRAMECOUNT (92h)

> Set the number of RTS frames the product should send on a CTRL_DIM order.

MSG	Name	DATA Length	FRAME Length		Addressing	
92h	SET_DIM_FRAMECOUNT	2	13	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to set
Number of frames to send	Byte	4	255*	Default Value: 5

^{*}Remark: the number of frames will be effectively limited to 10 seconds of sending.

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5.2.4 **SET_SUN_AUTO** (93h)

> Send RTS ON/OFF orders to the selected output.

MSG	Name	DATA Length	FRAME Length		Addressing	
93h	SET_SUN_AUTO	2	13	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to use for RTS
Function	Byte	0	1	

Function	Description	Remarks
00h	SET Sun Auto ON	
01h	SET Sun Auto OFF	

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5.2.5 **SET_DCT_LOCK** (94h)

> Signal to product that actions on specified DCT should not be routed through RTS layer.

I	MSG	Name	DATA Length	FRAME Length		Addressing	
	94h	SET_DCT_LOCK	2	13	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
DCT Index	Byte	0x00	0x05	
Function	Byte	0x00	0x01	

DCT Index	Description	Remarks
0x00	All	Lock/Unlock all DCTs
0x01	DCT1	Lock/Unlock DCT1
0x02	DCT2	Lock/Unlock DCT2
0x03	DCT3	Lock/Unlock DCT3
0x04	DCT4	Lock/Unlock DCT4
0x05	DCT5	Lock/Unlock DCT5

Function	Description	Remarks
0x00	Unlock	
0x01	Lock	

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5.2.6 SET_CHANNEL (97h)

> Send RTS Prog frames to a receiver

MSG	Name	DATA Length	FRAME Length		Addressing	
97h	SET_CHANNEL	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel number to set for RTS

5.2.7 **SET_OPEN_PROG** (98h)

> Send RTS Prog frames to a receiver

MSG	Name	DATA Length	FRAME Length		Addressing	
98h	SET_OPEN_PROG	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description		
Channel Number	Byte	0	15	Channel number to set for RTS		

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5.2.8 SET_IP (9Ah)

> Send RTS Record/Delete IP order to the selected output.

MSG	Name	DATA Length	FRAME Length		Addressing	
9Ah	SET_IP	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to use for RTS

Remark:

- if RTS receiver has an IP stored => IP is deleted
- if RTS receiver position is different from stored IP or if there is no IP stored => new position is stored as IP

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5.3 Control Functions

5.3.1 CTRL_POSITION (80h)

- > Send RTS Up/Down/Stop/IP orders to the selected motor output.
- > Send RTS On/Off orders to the selected non motor output.

MSG	Name	DATA Length	FRAME Length		Addressing	
80h	CTRL_POSITION	2	13	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to use for RTS
Function	Byte	1	4	

Function	Description	Remarks
01h	Move to UP Limit / LIGHT ON	See Remark below
02h	Move to DOWN Limit / LIGHT OFF	See Remark below
03h	STOP	No effect for non motor receivers
04h	Move to Intermediate Position / LIGHT ON with	
	favorite light position	

Remark: Number of RTS frames effectively sent depends on CE/US/ROLLING mode of the corresponding channel (see SET_CHANNEL_MODE)

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5.3.2 CTRL_TILT (81h)

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> Send RTS Tilt+/Tilt- orders to the selected motor output.

MSG	Name	DATA Length	FRAME Length		Addressing	
81h	CTRL_TILT	3	14	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to use for RTS
Function	Byte	0	1	
Tilting Amplitude	Byte	1	127	Only significant when the channel is configured as running in « Modulis Mode ». Ignored otherwise

Function	Description	Remarks
00h	TILT+	
01h	TILT-	

Remark:

- If the specified channel is in "Modulis" mode, amplitude of tilting depend on the "Tilting Amplitude" parameter.
- If the specified channel is not in "Modulis" mode but is in "Tilting" mode (see SET_CHANNEL_MODE), amplitude of tilting depend on "Number of frames to send" parameter set according to the current mode (see SET_TILT_FRAMECOUNT).
- If the specified channel is neither in "Modulis" mode nor "Tilting" mode (see SET_CHANNEL_MODE), Command is rejected. (NACK with "CANNOT_TILT_IN_ROLLING_MODE" status)

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5.3.3 CTRL_DIM (82h)

> Send RTS Dim+/Dim- orders to the selected receiver.

MSG	Name	DATA Length	FRAME Length		Addressing	
82h	CTRL_DIM	3	14	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to use for RTS
Function	Byte	0	1	
DIM Amplitude	Byte	1	127	Only significant when the channel is configured as running in « Modulis Mode ». Ignored otherwise

Function	Description	Remarks
00h	DIM+	
01h	DIM-	

Remark: If the channel is not a "Modulis" one (see SET_CHANNEL_MODE), amplitude of tilting depend on "Number of frames to send" parameter set (see SET_DIM_FRAMECOUNT).

If the channel is a "Modulis" one, amplitude of tilting depend on the "DIM Amplitude" parameter.

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5.4 Status Functions

5.4.1 GET_CHANNEL_MODE (A0h)

> Get the modes used for the selected channel. This mode is used to determine the number of RTS frame to send on CTRL_POSITION and CTRL_TILT Orders.

MSG	Name	DATA Length	FRAME Length	Addressing		
A0h	GET_CHANNEL_MODE	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to get modes from

5.4.2 GET_TILT_FRAMECOUNT (A1h)

> Get the number of RTS frames the product should send on a CTRL_TILT order.

MSG	Name	DATA Length	FRAME Length	Addressing		
A1h	GET_TILT_FRAMECOUNT	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to set

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5.4.3 GET_DIM_FRAMECOUNT (A2h)

> Get the number of RTS frames the product should send on a CTRL_DIM order.

MSG	Name	DATA Length	FRAME Length	Addressing		
A2h	GET_DIM_FRAMECOUNT	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to set

5.4.4 GET_DCT_LOCK (A4h)

> To know which DCT are locked or unlocked.

MSG	Name	DATA Length	FRAME Length	Addressing		
A4h	GET_DCT_LOCK	0	11	P2P	GROUP	BROADCAST

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5.4.5 POST_CHANNEL_MODE (B0h)

> Post the modes used for the selected channel. This mode is used to determine the number of RTS frame to send on CTRL POSITION and CTRL TILT Orders.

MSG	Name	DATA Length	FRAME Length		Addressing	
B0h	POST_CHANNEL_MODE	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel
US/CE mode	Byte	0	1	Used for UP/DOWN/TILT
Rolling/Tilting Mode	Byte	0	1	Used for UP/DOWN
Modulis Mode	Byte	0	1	Used for motors/receivers compatible with
				Modulis = tilting or dimming

US/CE mode	Description	Remarks
00h	CE mode	
01h	US Mode	Default

Rolling/Tilting Mode	Description	Remarks
00h	Rolling mode	Default
01h	Tilting Mode	

Modulis Mode	Description	Remarks
00h	Normal mode	
01h	Modulis Mode	Default

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5.4.6 POST_TILT_FRAMECOUNT (B1h)

> Post the number of RTS frames the product should send on a CTRL_TILT order.

MSG	Name	DATA Length	FRAME Length		Addressing	
B1h	POST_TILT_FRAMECOUNT	3	14	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to set
Number of frames to send for US mode	Byte	4	255	Default Value: 5
Number of frames to send for CE mode	Byte	2	13	Default Value: 2

5.4.7 POST_DIM_FRAMECOUNT (B2h)

> Post the number of RTS frames the product should send on a **CTRL_DIM** order.

MSG	Name	DATA Length	FRAME Length		Addressing	
B2h	POST_DIM_FRAMECOUNT	2	13	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Channel Number	Byte	0	15	Channel to set
Number of frames to send	Byte	4	255*	Default Value: 5

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5.4.8 POST_DCT_LOCK (B4h)

> Signal which DCT should not be routed through RTS layer.

	MSG	Name	DATA Length	FRAME Length	Addressing		
Ī	B4h	POST_DCT_LOCK	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
DCT LOCK	Byte	0x00	0xFF	Bit field

DCT LOCK	Description	Remarks
b0	Reserved	Ignored
b1	DCT1 Lock status	0:Unlocked / 1: Locked
b2	DCT2 Lock status	0:Unlocked / 1: Locked
b3	DCT3 Lock status	0:Unlocked / 1: Locked
b4	DCT4 Lock status	0:Unlocked / 1: Locked
b5	DCT5 Lock status	0:Unlocked / 1: Locked
b6	Reserved	Ignored
b7	Reserved	Ignored

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