RS485 communication standard

All signals on the physical link between devices should comply with EIA/TIA-485-A standard.
Recommended cable : Shielded , two twisted- pair type 22 - 24 AWG (120 Ω)
Communication mode : half-duplex
Between two messages, leave 100 ms approx.

Each character is coded as follow :

Character coding		
Baud Rate	4800	+/-2%
Start bit	Logical Level 0	
Data bits	8	Less significant bit transmitted first
Parity	Odd	
Stop bit	Logical Level 1	

Byte Number	Name	Value	Description
1	MSG	See Message Table	Refer to 'MSG' column in the table below for a list of available messages.
2	LEN		Refer to 'LEN' column to have the correct value depending on message.
3	Reserved	05h / 50h	Always 05h when message sent to RS485 RTS transmitter Always 50h when message received from RS485 RTS transmitter
4 - 6	SRC@ (*)(**)	Node dependant (refer to product label)	NodeID of the transmitter (SouRCe address)
7 -9	DEST@(**)		NodeID of the receiver (DESTination address)
...	DATA	See Message Table	Information on DATA fields can be found below : - Length of DATA part (in byte count) - Type of every DATA fields - Available values for each DATA fields
Byte n-1	CHECKSUM	Byte 1 + … + Byte (n-2)	CHECKSUM is one's complement of sum of bytes 1 to byte (n-2) If CHECKSUM not correct, message is ignored.
Byte n			

(*) When the host is not a SOMFY product, its source address shall be included in the following values : FF FF 00 <= SCR@ <= FF FF FE
(**) Address values are LSBF.

Messages table

Command Type	Command Description	Message Name (MSG)
Setting	Configure application modes : - CE/US ergonomics - Rolling / Tilting mode - MODULIS mode	SET_CHANNEL_MODE (90h)
	Set number of RTS frames to send on a CTRL_TILT order	SET_TILT_FRAMECOUNT (91h)
	Set number of RTS frames to send on a CTRL_DIM order	SET_DIM_FRAMECOUNT (92h)
	Sun Auto ON / OFF	SET_SUN_AUTO (93h)
	Lock / Unlock dry contacts inputs	SET_DCT_LOCK (94h)
	Send PROG command	SET_CHANNEL (97h)
	Open the programmation mode	SET_OPEN_PROG (98h)
	Save favorite position as Intermediate Position	SET_IP (9Ah)

LEN	DATA Length	DATA Type	DATA Value
0Fh	4	8-bits	0 to 15 = RTS channel selection
		8-bits	0 = CE Mode 1 = US Mode (Default)
		8-bits	0 = Rolling Mode (Default) 1 = Tilting Mode
		8-bits	0 = Normal Mode 1 = Modulis Mode (Default)
0Eh	3	8-bits	0 to 15 = RTS channel selection
		8-bits	US mode (range = 4 to 255)
		8-bits	CE mode (range = 2 to 13)
0Dh	2	8-bits	0 to 15 = RTS channel selection
		8-bits	Range = 4 to 255
0Dh	2	8-bits	0 to 15 = RTS channel selection
		8-bits	0 = ON 1 = OFF
0Ch	2	8-bits	0 = all 1 to 5= DCT 1 to 5
			0 = Unlock 1= Lock
0Ch	1	8-bits	0 to 15 = RTS channel selection
0Ch	1	8-bits	0 to 15 = RTS channel selection
0Ch	1	8-bits	0 to 15 = RTS channel selection

Command Type	Command Description	Message Name (MSG)
Control	Move UP / Light ON Move DOWN / Light OFF STOP movement Move to favorite position / Switch light ON with favorite light level	CTRL_POSITION (80h)
	Tilt + / -	CTRL_TILT (81h)
	Dim + / -	CTRL_DIM (82h)

LEN	DATA Length	DATA Type	DATA Value
0Dh	2	8-bits	0 to 15 = RTS channel selection
		8-bits	1 = UP / ON 2 = DOWN / OFF 3 = STOP 4 = Favorite position / light level
0Eh	3	8-bits	0 to 15 = RTS channel selection
		8-bits	0 = Tilt + 1 = Tilt -
		8-bits	Tilting value (1 to 127)
0Eh	3	8-bits	0 to 15 = RTS channel selection
		8-bits	0 = Dim + 1 = Dim -
		8-bits	Diming value (1 to 127)

Command Type	Command Description	Message Name (MSG)
Status	Read application modes configuration	GET_CHANNEL_MODE (A0h)
	Answer to GET_CHANNEL_MODE	POST_CHANNEL_MODE (B0h)
	Read RTS frame count for CTRL_TILT order	GET_TILT_FRAMECOUNT (A1h)
	Answer to GET_TILT_FRAMECOUNT	POST_TILT_FRAMECOUNT (B1h)
	Read RTS frame count for CTRL_DIM order	GET_DIM_FRAMECOUNT (A2h)
	Answer to GET_DIM_FRAMECOUNT	POST_DIM_FRAMECOUNT (B2h)
	Read dry contacts lock configuration	GET_DCT_LOCK (A4h)
	Answer to GET_DCT_LOCK	POST_DCT_LOCK (B4h)

Warning: All messages named POST_Something are messages sent by the product as an answer to the corresponding GET_Something request.
If POST_Something message is sent to the product, it will be ignored.

LEN	DATA Length	DATA Type	DATA Value
0Ch	1	8-bits	0 to 15 = RTS channel selection
0Fh	4	8-bits	0 to 15 = RTS channel selection
		8-bits	0 = CE Mode 1 = US Mode
		8-bits	0 = Rolling Mode 1 = Tilting Mode
		8-bits	0 = Normal Mode 1 = Modulis Mode
0Ch	1	8-bits	0 to 15 = RTS channel selection
0Eh	3	8-bits	0 to 15 = RTS channel selection
		8-bits	Frame count in US mode
		8-bits	Frame count in CE mode
0Ch	1	8-bits	0 to 15 = RTS channel selection
0Dh	2	8-bits	0 to 15 = RTS channel selection
		8-bits	Frame count
0Bh	0	n/a	
0Ch	1	8-bits	Bits 1 to 5 control inputs 1 to 5 0 = Unlock 1= Lock

Example

Steps to follow to create a correct data frame :

1. Create frame with values as indicated in the tables above => «raw data»
2. Invert all data bytes => «actual data»
3. Calculate the checksum on «actual data» (sum of all inverted bytes)
4. Data to send are the concatenation of «actual data» and checksum

Steps to follow when receiving data from a product :

1. Received data are the concatenation of «actual data» and checksum
2. Remove the last 2 bytes to isolate the checksum and get «Actual data»
3. Invert all remaining data bytes to get the «raw data»

The following examples show the data to send on the bus for different message types. Examples are given for a communication between a host and a slave using the following addresses :

Host@ = FF:FF:00 (FF FF 00 <= @ <= FF FF FE for a non-SOMFY host)
Slave@ = 05:00:02 (See NodeID label on product)

Messages	Direction	Data
CTRL_POSITION Parameters : (Channel4, DOWN) >> Send DOWN command on channel 4	**Command** Host >> Slave	1. Raw data 80 0D 05 00 FF FF 02 00 05 04 02 2. Actual Data 7F F2 FA FF 00 00 FD FF FA FB FD 3. Checksum 08 58 **4. Data to send** 7F F2 FA FF 00 00 FD FF FA FB FD 08 58
CTRL_TILT Parameters : (Channel8, Tilt-, 30) >> Send a TILT command of -30 pulses	**Command** Host >> Slave	1. Raw data 81 0E 05 00 FF FF 02 00 05 08 01 1E 2. Actual Data 7E F1 FA FF 00 00 FD FF FA F7 FE E1 3. Checksum 09 34 **4. Data to send** 7E F1 FA FF 00 00 FD FF FA F7 FE E1 09 34
GET_CHANNEL_MODE Parameters : (Channel6) >> Read configuration of channel 6	**Request** Host >> Slave	1. Raw data A0 0C 05 00 FF FF 02 00 05 06 2. Actual Data 5F F3 FA FF 00 00 FD FF FA F9 3. Checksum 07 3A **4. Data to send** 5F F3 FA FF 00 00 FD FF FA F9 07 3A
POST_CHANNEL_MODE Parameters : (Channel6, US, Rolling, MODULIS) >> Answer to the previous status request	**Answer** Slave >> Host	1. Received data 4F F0 AF FD FF FA FF 00 00 F9 FE FF FE 09 D7 2. Actual data 4F F0 AF FD FF FA FF 00 00 F9 FE FF FE **3. Raw data** B0 0F 50 02 00 05 00 FF FF 06 01 00 01

RS485 command

for a blind

MOVE UP	Allow to open the blind.
MOVE DOWN	Allow to close the blind.
INTERMEDIATE POSITION	Allow to move the blind to the intermediate position.
STOP	Allow to stop the blind.
TILT +	Allow to move the venitian slats in one way.
TILT -	Allow to move the venitian slats in the other way.
SAVE FAVORITE POSITION AS INTERMEDIATE POSITION	Allow to record, change or delete an intermediate position. (cf : USE / My position p 5).
SUN AUTO ON	Allow to activate the sun automatism.
SUN AUTO OFF	Allow to desactivate the sun automatism.

for light

Light ON	Allow to switch on the light.
Light OFF	Allow to switch off the light.
ON (favourite light position)	Allow to switch on the light to a favorite level.
DIM +	Allow to increase the light intensity.
DIM -	Allow to dicrease the light intensity.