ST30 RS485

ILTv3 Profile

Version	Revision	Object	Author	Date
0.1		First Draft	A.Millet	2008/06/23
0.2	R0	Update messages following GME-STD-065 v0.4 Add NodeType information Remove ILTv1 messages compatibility	A.Millet	2008/08/08
0.3		New version based on "Sonesse 30 RS485 Commands 20090312"	A.Millet	2009/04/08
0.4		Profile limited to ILTv2 Compatibility messages (SDN backward compatibility) => Minimum requirements for SNABA projects (Summer 2009)	A.Millet	2009/07/10
0.5		Updated Address range (§2) Added ILTv2 compatibility messages SET_MOTOR_LIMITS (§4.2) Added SET_NODE_ADDR and SET_SERIAL_NUMBER for manufacturing process (§4.3) Added new *ILTv3 Motor Profile* messages list (§4.4)	A.Millet	2009/08/03
0.6		Definition of new ILTv3 messages SET_xxx and CTRL_xxx	A.Millet	2009/08/06
0.7		Update following "ST30 Profile Review" meetings W.33 o PROC_xxx + SET_xxx + CTRL_xxx messages	A.Millet	2009/08/14
0.8		Finalized status messages GET_xxx and POST_xxx messages Added diagnostics messages DIAG_xxx list	A.Millet	2009/08/17
0.9		Finalized DIAG_xxx messages Updated Functions list in §3	A.Millet	2009/08/24
0.10		Corrections and additional details of ILTv3 messages	A.Gezalyan	2009/09/25
0.11		Corrections and additional details of ILTv3 messages	A.Gezalyan	2009/10/14
0.12		Corrections and additional details of ILTv3 messages	A.Gezalyan	2009/10/21
0.13	R1	Changed return data for PROC_POST_INT_PARAM message Added a brief general description of Control Messages and motor operation Additional details and corrections	A.Gezalyan	2009/11/5
0.14		Misc updates - FACTORY_DEFAULT: No ACK sent and performs a RESET (§4.4.2.6) - DCT_LOCK status not saved upon power failure (§4.4.2.5)	A.Millet	2009/03/09
0.15		- Added DIAG_ messages and brief descriptions	A. Gezalyan	2010/04/08

		- Added Deviations section under ILT2 Compatibility, listed msgs allowed with lock - Added brief information about bootloader and its startup - Added notes to CTRL_MOVE & CTRL_MOVEOF about operation in Factory mode - Added / clarified detailed descriptions for several messages - Minor formatting fixes		
0.16		- Corrected several message IDs, to match everywhere and to actual values used	A. Gezalyan	2010/04/22
1.17		- Added section 5, AMX implementation details - Added sections 4.7 and 4.8, compatibility information with ILTv2 and DCT - Added remarks for SET_MOTOR_LIMITS, SET_MOTOR_DIRECTION, SET_MOTOR_IP, and SET_DCT_LOCK - Added reference docs to section 2 - Miscellaneous formatting and grammatical fixes	A. Gezalyan	2011/02/11
1.17	002	Teamcenter 8 version.	F. Devis	2011/07/26

TABLE OF CONTENT

1 Introduction

This document applies to SOMFY ***ST30 RS485*** as described in SDEV-CDCF 173. The messages described here and their corresponding functionality are implemented in ST30 RS485 Main Firmware (5063313).

2 Applicable Standard and Classification

2.1 Standards

- GME-STD-062 R0 ILT Protocol overview
- GME-STD-063 R0 RS485 Physical Layer
- GME-STD-064 R0 ILT@ Data-Link Layer
- GME-STD-065 R1 ILTv3 Standard Messages
- GME- AMX Requirements for Somfy Devices

2.2 Other References

- GME-STD-052 R1 ILTv2 Protocol Specification, v2.1
- GME-STD-116 R2 RS485 RTS Transmitter – ILTv3 Profile, v0.5

2.3 Product Classification

Product designation	NodeType / AppID	Node Family
ST30 RS485	02h	SLAVE

Address Range	
06:00:00	07:FF:FF

3 Functions

The following tables show functions available from the network and the corresponding messages:

3.1 Settings

Settings functions are used to change the configuration of the product

Command Type	Function	Message	In / Out
Setting	Set motor limits	SET_MOTOR_LIMITS (11h)	>> In
	Set motor rotation direction	SET_MOTOR_DIRECTION (12h)	>> In
	Set motor speed for rolling applications	SET_MOTOR_ROLLING_SPEED (13h)	>> In
	Set Intermediate Positions (up to 16)	SET_MOTOR_IP (15h)	>> In
	Enable/Disable dry contact inputs	SET_DCT_LOCK (17h)	>> In
	Recall factory settings	SET_FACTORY_DEFAULT (1Fh)	>> In

3.2 Controls

Control functions are used to change the status of the product

Command Type	Function	Message	In / Out
Control	Move in momentary mode	CTRL_MOVE (01h)	>> In
	Stop movement	CTRL_STOP (02h)	>> In
	Move to absolute position (UP/DOWN/IP)	CTRL_MOVETO (03h)	>> In
	Move to relative position (Jog/Next IP)	CTRL_MOVEOF (04h)	>> In
	Feedback	CTRL_WINK (05h)	>> In

3.3 Status

Status functions are used to get information from the product

Command Type	Function	Message	In / Out
Status Request	Read motor position	GET_MOTOR_POSITION (0Ch)	>> In
	Read motor status	GET_MOTOR_STATUSS (0Eh)	>> In
	Read motor limits	GET_MOTOR_LIMITS (21h)	>> In
	Read motor rotation direction	GET_MOTOR_DIRECTION (22h)	>> In
	Read motor speed for rolling applications	GET_MOTOR_ROLLING_SPEED (23h)	>> In
	Read Intermediate Positions	GET_MOTOR_IP (25h)	>> In
	Read DCT status (Enabled / Disabled)	GET_DCT_LOCK (27h)	>> In
	Read factory default status	GET_FACTORY_DEFAULT (2Fh)	>> In
Command Type	**Function**	**Message**	**In / Out**
Status Report	Send motor position	POST_MOTOR_POSITION (0Dh)	Out >>
	Send motor status	POST_MOTOR_STATUSS (0Fh)	Out >>
	Send motor limits	POST_MOTOR_LIMITS (31h)	Out >>
	Send motor rotation direction	POST_MOTOR_DIRECTION (32h)	Out >>
	Send motor speed for rolling applications	POST_MOTOR_ROLLING_SPEED (33h)	Out >>
	Send Intermediate Positions	POST_MOTOR_IP (35h)	Out >>
	Send DCT status (Enabled / Disabled)	POST_DCT_LOCK (37h)	Out >>
	Send factory default status	POST_FACTORY_DEFAULT (3Fh)	Out >>

4 Supported Messages

4.1 Mandatory Messages (40h – 7Fh)

Mandatory messages are used for basic networking features (address, group management, acknowledgment, network diagnostics) and product identification (serial number, software version, user label).

Definition of these messages can be found in GME-STD 065 “ILTv3 Standard Messages” (Revision R1 or later).
These messages are provided by the *RS485 Protocol Stack* software.

4.2 ILTv2 Compatibility Messages (40h – 7Fh)

ILTv2 Compatibility messages are messages giving a backward compatibility with existing ILT2 motors and/or controls that are using ILT2 messages (e.g. SDN products developed by SNABA).

Definition of these messages can be found in GME-STD-052 “ILT Protocol Specifications” (Revision R1 or later).

4.2.1 Table of Messages

All messages are prefixed with “ILT2_” to avoid confusion with ILTv3 messages.

4.2.2 Deviations from ILTv2 Protocol

The following are deviations from message definitions in ILTv2 protocol, specific to ST30 RS485 profile.

4.2.2.1 ILT2_SET_LOCK_STATUS

This message blocks all messages from the network that may move the motor or change critical settings. All other messages are permitted. When Lock is set, and the received message is not allowed, NODE_IS_LOCKED (20h) NACK value is returned, if an acknowledgment is required.

When Lock is set, all Mandatory Messages (§4.1) and all Motor Diagnostic Messages (§4.5) are allowed to complete. In addition, the following profile-specific messages are also permitted:

	!

4.3 Factory Mode Messages (80h - FFh)

These messages are needed for communication with the product during manufacturing process (naming convention PROC_xxx). They can only be used in broadcast mode, therefore multiple products may not be connected in a network configuration, during manufacturing. To prevent use of these messages by the end-users, the message "PROC_FACTORY_MODE (80h)" has to be used first to enter Factory Mode.

In addition to the PROC_ messages listed below, the operation of CTRL_MOVE and CTRL_MOVEOF messages is altered when the product is in Factory Mode. See remarks for the corresponding message descriptions for details (§4.4.3.1, §4.4.3.4)

4.3.1 Table of Messages

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			!		

Messages in gray are currently not implemented in ST30

4.3.2 Setting Messages

4.3.2.1 PROC_FACTORY_MODE (80h)

➢ Enter factory mode

MSG	Name	DATA Length	FRAME Length	Addressing

4.3.2.2 PROC_SET_NODE_ADDR (D0h)

➢ Set the NodeID of the product

MSG	Name	DATA Length	FRAME Length	Addressing		
D0h	PROC_SET_NODE_ADDR	3	14	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
NodeID	24-bits (LSBF)	N/a	N/a	

Related messages			
	Request	GET_NODE_ADDR	40h
	Reply	POST_NODE_ADDR	60h

Remarks

- This message is only available in factory mode (see §4.3.2.1).
- The NodeID must be compliant with the address range that is defined for the product (see §2 “Applicable Standard”).

Warning

- This operation may only be performed once. After successful receipt of the Node Address by the product, it is permanently recorded in ROM. Any attempt to change this address will be ignored and NACK will be returned by the product.

4.3.2.3 PROC_SET_SERIAL_NUMBER (D1h)

➢ Set the Serial Number of the product

MSG	Name	DATA Length	FRAME Length	Addressing		
D1h	SET_NODE_SERIAL_NUMBER	12	23	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Serial_Number	ASCII String	N/a	N/a	See example below for string definition

Related messages			
	Request	GET_NODE_SERIAL_NUMBER	4Ch
	Reply	POST_NODE_SERIAL_NUMBER	6Ch

Example

Product NodeID = 01A23F (as written on the label, not LSBF, in Hex format, capitalized)
Manufacturer ID = GD (always two letters, capitalized)
Year = 2009 (use last two digits)
Week = 45

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	
'0'	'1'	'A'	'2'	'3'	'F'	'G'	'D'	'0'	'9'	'4'	'5'
30h	31h	41h	32h	33h	46h	47h	44h	30h	39h	34h	35h

Remark

- This message is only available in factory mode (see §4.3.2.1).

Warning

- This operation may only be performed once. After successful receipt of the Serial Number by the product, it is permanently recorded in ROM. Any attempt to change this address will be ignored and NACK will be returned by the product.

4.3.2.4 PROC_SET_INT_CONTROLS (E2h)

- Enable or Disable internal controls

MSG	Name	DATA Length	FRAME Length	Addressing		
E2h	PROC_SET_INT_CONTROLS	2	13	P2P	GROUP	BROADCAST

4.3.2.5 PROC_SET_THERMO_PARAM (E3h)

➢ Set parameters for software thermal protection

MSG	Name	DATA Length	FRAME Length	Addressing		
E3h	PROC_SET_THERMO_PARAM	5	16	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Threshold	32-bit	n/a	n/a	TBD
Duty Cycle	8-bit	n/a	n/a	TBD

Related messages			
	Request	PROC_GET_INT_PARAM	E0h
	Reply	PROC_POST_INT_PARAM	E1h

Remark

- This message is currently not implemented.

4.3.2.6 PROC_SET_DEFAULT_POLARITY (E4h)

➢ Store current rotation direction as factory default motor polarity

MSG	Name	DATA Length	FRAME Length	Addressing		
E4h	PROC_SET_DEFAULT_POLARITY	0	11	P2P	GROUP	BROADCAST

Related messages			
	Request	N/a	
	Reply	N/a	

Remark

- This message is only available in factory mode (see §4.3.2.1).

Warning

- This operation can be performed only once, as it forces a permanent write into program memory.

4.3.3 Status Messages

4.3.3.1 PROC_GET_INT_PARAM (E0h)

➢ Request values of internal parameters

MSG	Name	DATA Length	FRAME Length	Addressing		
E0h	PROC_GET_INT_PARAM	0	11	P2P	GROUP	BROADCAST

Related messages			
	Reply	PROC_POST_ INT_PARAM	E1h
	Configuration	PROC_SET_THERMO_PARAM	E3h

4.3.3.2 PROC_POST_INT_PARAM (E1h)

➢ Return values of internal parameters

MSG	Name	DATA Length	FRAME Length	Addressing		
E1h	PROC_POST_INT_PARAM	20	31	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Software Index Letter	8-bit ASCII	41h	5Ah	Same value as App Index
Software Index Num	8-bit	n/a	n/a	Same value as App Index
Software Subrev Num	8-bit	n/a	n/a	Software sub-revision
Thermo Duty Cycle	8-bit	n/a	n/a	
Thermo Threshold	32-bit	n/a	n/a	
Overcurrent Threshold	16-bit	n/a	n/a	
Encoder Error Count	16-bit	n/a	n/a	
Flag_Set_0	16-bit	n/a	n/a	Internal flags
Flag_Set_1	16-bit	n/a	n/a	Internal flags
Flag_Set_2	16-bit	n/a	n/a	Internal flags
Flag_Set_3	16-bit	n/a	n/a	Internal flags

Related messages			
	Request	PROC_GET_INT_PARAM	E0h
	Configuration	PROC_SET_THERMO_PARAM	E3h

4.4 Motor Profile Messages (00h – 3Fh)

Motor Profile Messages are part of the Standard Motor Profile (GME-INF-xxx)

4.4.1 Table of Messages

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Messages in gray are currently not implemented in ST30

4.4.2 Setting Messages

4.4.2.1 SET_MOTOR_LIMITS (11h)

➢ Set or adjust UP / DOWN motor limits

MSG	Name	DATA Length	FRAME Length	Addressing		
11h	SET_MOTOR_LIMITS	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Function	8-bit	00h	05h	
Limit	8-bit	00h	01h	
Value	16-bits (LSBF)	See remarks below		

Function	Description	Remarks
00h	Delete	Limit & Value ignored
01h	Set limit at the current position	Value is ignored
02h	Set limit at the specified position (in pulses)	Value is the encoder pulse count from top limit
04h	Adjust using Jog (in ms)	Move during Value*10ms
05h	Adjust using Jog (in pulses)	Move by Value pulses
Others	Ignored	Returns NACK

Limit	Description	Remarks
00h	DOWN limit / Downward movement	
01h	UP limit / Upward movement	
Others	Ignored	Returns NACK

Related messages			
	Request	GET_MOTOR_LIMITS	21h
	Reply	POST_MOTOR_LIMITS	31h

Remarks

- Default values for limits are FFFFh, meaning they are not yet adjusted.
- Delete will set both UP and DOWN limits to FFFFh and clear all IPs.
- When set, UP limit is always 0000h, and DOWN limit is the encoder pulse count from UP limit position.
- In ST30 motors, 324 pulses correspond to one revolution.
- Minimum possible range from UP to DOWN limit is one revolution.
- When limits are already set, they can be re-set to another position or adjusted in “Jog” mode.
- “Specified position” mode is only available when at least one limit is set. If only one limit is set, this mode can only be used to set the opposite limit. The Value parameter specifies relative position of limit being set from the already set opposite limit.
- “Jog” mode is only available when both limits have been set. It is intended for small adjustments. Motor must be at the limit to be adjusted.
- When adjusting limits using “Jog” mode:
  - Motor is running at Slow_speed.
  - Value parameter may be between 10 and 1000.
  - When the jog is specified in ms, the actual travel is estimated based on the specified time and currently set value for Slow speed.
  - If an event occurs causing the motor to stop, the limit is set to this position.
- After resetting or adjusting limits:
  - If an IP is out of range after adjustment, then the IP is deleted.
  - All IPs are re-calculated to stay at the same physical position.

4.4.2.2 SET_MOTOR_DIRECTION (12h)

➢ Set the rotation direction of the motor

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

DATA	TYPE	MIN	MAX	Description
Direction	8-bit	00h	01h	

Direction	Description	Remarks
00h	Standard rotation	Default value
01h	Reversed rotation	
Others	Ignored	Returns NACK

Related messages			
	Request	GET_MOTOR_DIRECTION	22h
	Reply	POST_MOTOR_DIRECTION	32h

Remark

o This function is not available while in limit readjustment mode. The motor will return a NACK code in response to this message in such case.

4.4.2.3 SET_MOTOR_ROLLING_SPEED (13h)

➢ Set the motor speed for rolling applications

MSG	Name	DATA Length	FRAME Length	Addressing		
13h	SET_MOTOR_ROLLING_SPEED	3	14	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
UP_Speed	8-bits	6	28	Speed during UP movement (rpm)
DOWN_Speed	8-bits	6	28	Ignored
Slow_Speed	8-bits	6	28	Speed for adjustment movements (rpm)

Related messages			
	Request	GET_MOTOR_ROLLING_SPEED	23h
	Reply	POST_MOTOR_ROLLING_SPEED	33h

Remarks

- For ST30, speed is always the same moving up or down. Therefore, only UP_Speed setting is accepted, but it applies for both directions.
- Default values are 28 rpm for UP_Speed and 16 rpm for Slow_Speed.
- Motor speed tolerance is +/- 2 rpm.
- This function is not available while in limit readjustment mode. The motor will return a NACK code in response to this message in such case.

4.4.2.4 SET_MOTOR_IP (15h)

➢ Set or delete Intermediate Positions

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

DATA	TYPE	MIN	MAX	Description
Function	8-bits	00h	03h	
IP_Index	8-bits	00h	10h	
Value	16-bits (LSBF)	00h	Limit or 100%	

Function	Description	Remarks
00h	Delete IP	Value is ignored
01h	Set IP at the current position	Value is ignored
02h	Set IP at the specified position (in pulses)	Valid range between UP and DOWN limits values
03h	Set IP at the specified position (in %)	Valid range from 0% to 100%
Others	Ignored	Returns NACK

IP_Index	Description	Remarks
00h	All Ips	Only used with “Delete IP” function
01h - 10h	IP number	Indicates one of 16 possible IPs
Others	Ignored	Returns NACK

Value	Description	Remarks
All	IP value in pulses or %	

Related messages			
	Request	GET_MOTOR_IP	25h
	Reply	POST_MOTOR_IP	35h

Remarks

- Default value for all IPs is FFFFh, meaning they are not yet adjusted.
- Setting an IP at UP limit, DOWN limit or out of range is not allowed.
- This function is not available while in limit readjustment mode. The motor will return a NACK code in response to this message in such case.

4.4.2.5 SET_DCT_LOCK (17h)

➢ Lock and Unlock local dry contact inputs

MSG	Name	DATA Length	FRAME Length	Addressing		
17h	SET_DCT_LOCK	3	14	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Function	8-bits	00h	01h	
DCT_Index	8-bits	00h	01h	One DCT input for ST30
Priority	8-bits	00h	FFh	Greater number indicates higher priority

Function	Description	Remarks
00h	Unlock	
01h	Lock	
Others	Ignored	Returns NACK

DCT_Index	Description	Remarks
00h	All DCT inputs	
01h	DCT input number	
Others	Ignored	Returns NACK

Related messages			
	Request	GET_DCT_LOCK	27h
	Reply	POST_DCT_LOCK	37h

Remarks

- When a DCT input is locked, all actions on this input are ignored until it's unlocked.
- Lock may be re-set or removed by another SET_DCT_LOCK message with equal or higher priority level.
- DCT_LOCK status is not saved upon power failure => DCT are always enabled after power-up.
- This function is not available while in limit readjustment mode. The motor will return a NACK code in response to this message in such case.

4.4.2.6 SET_FACTORY_DEFAULT (1Fh)

➢ Recall factory default for all or selected parameters

MSG	Name	DATA Length	FRAME Length	Addressing		
1Fh	SET_FACTORY_DEFAULT	1	12	P2P	GROUP	BROADCAST

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

Function	Description	Remarks
00h	All settings to factory default	
01h	Clear all Group addresses	00:00:00
…		
11h	Delete all limits (and IPs)	FFFFh
12h	Default rotation polarity	Standard (00h)
13h	Default rolling speed setting	UP_Speed = DOWN_Speed = 28 Slow_Speed = 16
15h	Delete all IPs	FFFFh
17h	Clear all locks	
…		
Others	Ignored	Returns NACK

Related messages			
	Request	GET_FACTORY_DEFAULT	2Fh
	Reply	POST_FACTORY_DEFAULT	3Fh

Remarks

- When Function 00h is received, all settings are restored to factory default values and hardware RESET is performed. In this case, no ACK is returned by the motor, even if ACK bit is set.
- After an hardware RESET, a 3-second recovery period is required, during which the motor will not accept any messages.

4.4.3 Control Messages

These messages control the movement of motor(s).

If no limits are set, only CTRL_MOVE (01h) or CTRL_WINK (05h) messages may be used.

When limits are set, CTRL_MOVETO (03h) and CTRL_MOVEOF (04h) should be used for normal operation.

When a control message is received, the motor will start the requested operation, then return an ACK if required.

If the operation is interrupted by an abnormal condition, such as an obstacle, no other feedback is returned.
Instead, the status of the motor may be checked using GET_MOTOR_STATUS (0Eh) message.

Any control message received by the motor while in motion will interrupt the current operation.
The motor will then comply with the new message.

4.4.3.1 CTRL_MOVE (01h)

➢ Start a movement in momentary mode

MSG	Name	DATA Length	FRAME Length	Addressing		
01h	CTRL_MOVE	3	14	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Direction	8-bits	00h	01h	
Duration	8-bits	0Ah	FFh	Movement stops after Duration * 10ms
Speed	8-bits	00h	02h	

Direction	Description	Remarks
00h	Move in DOWN direction	
01h	Move in UP direction	
02h	Cancel adjustment	If outside limits, return to nearest limit
Others	Ignored	Returns NACK

Speed	Description	Remarks
00h	Use UP_Speed	
01h	Use DOWN_Speed	Same as Up_Speed for ST30
02h	Use Slow_Speed	
Others	Ignored	Returns NACK

Related messages			
	Request	N/a	
	Reply	N/a	
	Configuration	N/a	

Remarks

This message gives the ability to move the product even if the limits are not set, or to move the blind beyond limits:

- Movement is executed in standard or slow speed depending on “Speed” parameter.
- Position is allowed to be lower than DOWN limit or higher than UP limit.
- The movement automatically stops when **Duration** has elapsed.

4.4.3.3 CTRL_MOVETO (03h)

➢ Move to an absolute position

MSG	Name	DATA Length	FRAME Length	Addressing		
03h	CTRL_MOVETO	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Function	8-bits	00h	04h	See table below
Position	16-bits (LSBF)	See table below		IP index, Pulse count, or %
Tilting	8-bits	See table below		0° to 180° in Tilting Mode (Not available in ST30) Ignored in Rolling mode

Function	Description	Remarks
00h	… DOWN limit	Position value is ignored
01h	… UP limit	Position value is ignored
02h	… IP	Position value contains IP index
03h	… position (in pulses)	UP_LIMIT < Position < DOWN_LIMIT
04h	… position (in %)	0% (UP limit) < Position < 100% (DOWN limit)
Others	No action	

Tilting	Description	Remarks
00h	Apply TILT_DEFAULT value	
FFh	No tilting	
Others	Tilting value in degrees	Only valid between MIN_TILT and MAX_TILT

Related messages			
	Request	N/a	
	Reply	N/a	

Remarks

- This message is only allowed if limits are set.
- UP_LIMIT and DOWN_LIMIT stand for limit values as defined using SET_MOTOR_LIMITS (11h).
- MIN_TILT and MAX_TILT stand for orientation range limits as defined using SET_TILT_LIMITS (not implemented in ST30).

4.4.3.4 CTRL_MOVEOF (04h)

➢ Relative movement from current position

MSG	Name	DATA Length	FRAME Length	Addressing		
04h	CTRL_MOVEOF	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Function	8-bits	00h	07h	See table below
Value	16-bits	See table below		
Tilting	8-bits	See table below		

- o If value is specified to move outside of range, the motor will stop at the encountered limit.
- o Values for Jog Up or Down must be between 10 and 1000
- o If motor is in Factory Mode (§4.3.2.1), movement is allowed even if no limits are set. However, movement is restricted to approximately 25 revolutions or up to a limit, if one is set.

4.4.3.5 CTRL_WINK (05h)

➢ Move the blind for visual identification

MSG	Name	DATA Length	FRAME Length	Addressing		
05h	CTRL_WINK	0	11	P2P	GROUP	BROADCAST

Related messages			
	Request	N/a	
	Reply	N/a	

Remarks

This message executes in the following sequence:

- o Moves 300ms in the opposite direction of the last movement
- o Stops for 500ms
- o Moves 300ms to return to its original position

4.4.4 Status Messages

All POST_xxx messages are only available in P2P mode as they are explicit replies to a request from a specific MASTER node.

4.4.4.1 GET_MOTOR_POSITION (0Ch)

➢ Request current position of the motor

MSG	Name	DATA Length	FRAME Length	Addressing		
0Ch	GET_MOTOR_POSITION	0	11	P2P	GROUP	BROADCAST

Related messages			
	Reply	POST_MOTOR_POSITION	0Dh
	Configuration	N/a	

4.4.4.2 POST_MOTOR_POSITION (0Dh)

➢ Give current position of the motor

MSG	Name	DATA Length	FRAME Length	Addressing		
0Dh	POST_MOTOR_POSITION	5	16	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Position_pulse	16-bits (LSBF)	UP_LIMIT	DOWN_LIMIT	
Position_percentage	8-bits	0	100	
Tilting	8-bits	TILT_MIN	TILT_MAX	Not available in ST30
IP	8-bits	01h	IP_MAX	

Related messages			
	Request	GET_MOTOR_POSITION	0Ch
	Configuration	N/a	

Remarks

- The position is sent even if the motor is running
- If limits are not set, returned value for all fields are FFh
- If tilting is not available, returned value for **Tilting** is always FFh
- If the position does not correspond to any IP, returned value for **IP** is FFh.

4.4.4.3 GET_MOTOR_STATUS (0Eh)

➢ Request current status of the motor

MSG	Name	DATA Length	FRAME Length	Addressing		
0Eh	GET_MOTOR_STATUS	0	11	P2P	GROUP	BROADCAST

Related messages			
	Reply	POST_MOTOR_STATUS	0Fh
	Configuration	N/a	

4.4.4.4 POST_MOTOR_STATUS (0Fh)

➢ Send current status of the motor

MSG	Name	DATA Length	FRAME Length	Addressing		
0Fh	POST_MOTOR_STATUS	4	15	P2P	GROUP	BROADCAST

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	
02h	Blocked	
03h	Locked	

Direction	Description	Remarks
00h	Going DOWN	Current or last movement
01h	Going UP	
FFh	Unknown	

Source	Description	Remarks
00h	Internal	
01h	Network message	
02h	DCT inputs	Such as, over-current, limit reached, etc.

Cause	Description	Remarks
00h	Target reached	Reached limit or IP or already there

01h	Explicit command	Network or DCT command
02h	Wink	Feedback for DCT configuration
10h	Limits not set	
11h	IP not set	
12h	Polarity not checked	
13h	Configuration mode	Such as DCT configuration
20h	Obstacle detection	
21h	Over-current protection	
22h	Thermal protection	
30h	Run time exceeded	
31h	Out of range	
32h	Timeout exceeded	
80h	Encoder error occurred	
81h	No encoder pulses detected	
FFh	Reset / PowerUp	Power recycled / No command after startup

Related messages	***Request***	GET_MOTOR_STATUS	0Eh

4.4.4.5 GET_MOTOR_LIMITS (21h)

➢ Request values of Up and DOWN limits

MSG	Name	DATA Length	FRAME Length	Addressing		
21h	GET_MOTOR_LIMITS	0	11	P2P	GROUP	BROADCAST

Related messages	***Reply***	POST_MOTOR_LIMITS	31h
	Configuration	SET_MOTOR_LIMITS	11h

4.4.4.6 POST_MOTOR_LIMITS (31h)

➢ Send values of Up and DOWN limits, in pulsesl.

MSG	Name	DATA Length	FRAME Length	Addressing		
31h	POST_MOTOR_LIMITS	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
UP_Limit	16-bits (LSBF)	0000h	FFFFh	Always = 0 for ST30
DOWN_Limit	16-bits (LSBF)	0000h	FFFFh	

Related messages	***Request***	GET_MOTOR_LIMITS	21h
	Configuration	SET_MOTOR_LIMITS	11h

Remark

- When a limit is not set, returned values are FFFFh.

4.4.4.7 GET_MOTOR_DIRECTION (22h)

➢ Request motor rotation direction

MSG	Name	DATA Length	FRAME Length	Addressing		
22h	GET_MOTOR_DIRECTION	0	11	P2P	GROUP	BROADCAST

Related messages	***Reply***	POST_MOTOR_DIRECTION	32h
	Configuration	SET_MOTOR_DIRECTION	12h

4.4.4.8 POST_MOTOR_DIRECTION (32h)

➢ Send motor rotation direction

MSG	Name	DATA Length	FRAME Length	Addressing		
32h	POST_MOTOR_LIMITS	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Direction	8-bits	00h	01h	

Direction	Description	Remarks
00h	Standard rotation	
01h	Reversed rotation	
Others	Invalid	

Related messages			
	Request	GET_MOTOR_DIRECTION	22h
	Configuration	SET_MOTOR_DIRECTION	12h

4.4.4.9 GET_MOTOR_ROLLING_SPEED (23h)

➢ Request motor speed values

MSG	Name	DATA Length	FRAME Length	Addressing		
23h	GET_MOTOR_ROLLING_SPEED	0	11	P2P	GROUP	BROADCAST

Related messages			
	Reply	POST_MOTOR_ ROLLING_SPEED	33h
	Configuration	SET_MOTOR_ ROLLING_SPEED	13h

4.4.4.10 POST_MOTOR_ROLLING_SPEED (33h)

➢ Send motor speed values

MSG	Name	DATA Length	FRAME Length	Addressing		
33h	POST_MOTOR_ ROLLING_SPEED	3	14	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
UP_Speed	8-bits	6	28	Speed during UP movement
DOWN_Speed	8-bits	6	28	Speed during DOWN movement (In ST30, same as UP_Speed)
Slow_Speed	8-bits	6	28	Speed for adjustments movements

Related messages			
	Request	GET_MOTOR_ ROLLING_SPEED	23h
	Configuration	SET_MOTOR_ ROLLING_SPEED	13h

4.4.4.11 GET_MOTOR_IP (25h)

➢ Request position of an IP

MSG	Name	DATA Length	FRAME Length	Addressing		
25h	GET_MOTOR_IP	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
IP_Index	8-bits	01h	10h	

Related messages			
	Reply	POST_MOTOR_IP	35h
	Configuration	SET_MOTOR_IP	15h

4.4.4.12 POST_MOTOR_IP (35h)

➢ Send position of an IP

MSG	Name	DATA Length	FRAME Length	Addressing		
35h	POST_MOTOR_IP	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
IP_index	8-bits	01h	10h	
IP_pulse	16-bits (LSBF)	0000h	UP_LIMIT	
IP_percentage	8-bits	0	100	

Related messages			
	Request	GET_MOTOR_IP	25h
	Configuration	SET_MOTOR_IP	15h

Remark

- When an IP is not set, returned value is FFFFh for pulse count and FFh for percentage.

4.4.4.13 GET_DCT_LOCK (27h)

➢ Request lock status of a DCT input

MSG	Name	DATA Length	FRAME Length	Addressing		
27h	GET_DCT_LOCK	1	12	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
DCT_Index	8-bits	01h	DCT_MAX	

Related messages			
	Reply	POST_DCT_LOCK	37h
	Configuration	SET_DCT_LOCK	17h

4.4.4.14 POST_DCT_LOCK_STATUS (37h)

➢ Send lock status of a DCT input

MSG	Name	DATA Length	FRAME Length	Addressing		
37h	POST_DCT_LOCK	5	16	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Status	8-bits	00h	01h	
Source_Addr	24-bits (LSBF)	000000h	FFFFFFh	NodeID of the device that sent the lock command (always FFFFFFh in ST30)
Priority	8-bits	00h	FFh	Greater number indicates higher priority

Status	Description	Remarks
00h	Unlocked	
01h	Locked	
Others	Invalid	

Related messages			
	Request	GET_DCT_LOCK	27h
	Configuration	SET_DCT_LOCK	17h

4.4.4.15 GET_FACTORY_DEFAULT (2Fh)

➢ Request if specified function has its default value

MSG	Name	DATA Length	FRAME Length	Addressing		
2Fh	GET_FACTORY_DEFAULT	1	12	P2P	GROUP	BROADCAST

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

Function	Description	Remarks
00h	All settings	
01h	Group addresses	
…		
11h	Limits	
12h	Rotation polarity	
13h	Rolling speed	
15h	IPs	
17h	Locks	
…		
Others	Ignored	Returns NACK

Related messages			
	Reply	POST_FACTORY_DEFAULT	3Fh
	Configuration	SET_FACTORY_DEFAULT	1Fh

4.4.4.16 POST_FACTORY_DEFAULT (3Fh)

➢ Send whether specified function has its default value

MSG	Name	DATA Length	FRAME Length	Addressing		
3Fh	POST_MOTOR_LIMITS	2	13	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Function	8-bits	See §0		
Status	8-bits	00h	01h	

Status	Description	Remarks
00h	Different from default values	i.e. value were changed
01h	Default values	i.e. value weren't changed
Others	Invalid	

Related messages			
	Request	GET_MOTOR_LIMITS	2Fh
	Configuration	SET_MOTOR_LIMITS	1Fh

4.5 Motor Diagnosis Messages (B0h – C0h)

4.5.1 Table of Messages

Diagnosis messages are intended for use by Somfy quality assurance or customer support, or by authorized third-party installers to troubleshoot motors or understand the characteristics of specific applications.

	"		"

4.5.2 Status Messages

4.5.2.1 DIAG_GET_MOVE_COUNT (B0h)

➢ Request total number of movements

MSG	Name	DATA Length	FRAME Length	Addressing		
B0h	DIAG_GET_TOTAL_MOVE_COUNT	0	11	P2P	GROUP	BROADCAST

Related messages			
	Reply	DIAG_POST_TOTAL_MOVE_COUNT	C0h
	Configuration	N/a	

4.5.2.2 DIAG_POST_MOVE_COUNT (C0h)

➢ Send total number of movements

MSG	Name	DATA Length	FRAME Length	Addressing		
C0h	DIAG_POST_TOTAL_MOVE_COUNT	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Move_Count	32-bits (LSBF)			Total number of movements

Related messages			
	Request	DIAG_GET_TOTAL_MOVE_COUNT	B0h
	Configuration	N/a	

Remark

- This message returns the total number of up or down movements over the lifetime of the motor. The associated internal counter may only be cleared in Factory Mode, through the PROC_RESET_DEVICE message (see §4.3.2.7).

4.5.2.3 DIAG_GET_TOTAL_REV_COUNT (B1h)

➢ Request total number of revolutions

MSG	Name	DATA Length	FRAME Length	Addressing		
B1h	DIAG_GET_TOTAL_REV_COUNT	0	11	P2P	GROUP	BROADCAST

Related messages			
	Reply	DIAG_POST_TOTAL_REV_COUNT	C1h
	Configuration	N/a	

4.5.2.4 DIAG_POST_ TOTAL_REV_COUNT (C1h)

➢ Send total number of revolutions

MSG	Name	DATA Length	FRAME Length	Addressing		
C1h	DIAG_POST_TOTAL_REV_COUNT	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Rev_Count	32-bits (LSBF)			Total number of revolutions

Related messages			
	Request	DIAG_GET_TOTAL_REV_COUNT	B1h
	Configuration	N/a	

Remark

- This message returns the total number of revolutions of the output shaft, over the lifetime of the motor. The associated internal counter may only be cleared in Factory Mode, through the PROC_RESET_DEVICE message (see §4.3.2.7).

4.5.2.5 DIAG_GET_THERMAL_COUNT (B2h)

➢ Request total number of thermal protection detections

MSG	Name	DATA Length	FRAME Length	Addressing		
B2h	DIAG_GET_THERMAL_COUNT	0	11	P2P	GROUP	BROADCAST

Related messages	***Reply***	DIAG_POST_THERMAL_COUNT	C2h
	Configuration	N/a	

4.5.2.6 DIAG_POST_THERMAL_COUNT (C2h)

➢ Send total number of thermal protection detections and the number of moves since last event

MSG	Name	DATA Length	FRAME Length	Addressing		
C2h	DIAG_POST_THERMAL_COUNT	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Thermal_Count	16-bits (LSBF)			Total number of thermal detections
Post_Thermal_Moves	16-bits (LSBF)			Number of moves after last event

Related messages	***Request***	DIAG_GET_THERMAL_COUNT	B2h
	Configuration	N/a	

Remarks

- This message returns the number of times (events) Thermal Protection algorithm was deployed, over the lifetime of the motor, and the number of up / down moves since the last event. When thermal protection is activated, each time the motor fails to move in response to a command, Thermal_Count will increment by one and Post_Thermal_Moves will be cleared.
- The associated internal counters may only be cleared in Factory Mode, through the PROC_RESET_DEVICE message (see §4.3.2.7).

4.5.2.7 DIAG_GET_OBSTACLE_COUNT (B3h)

- Request total number of obstacle or over-current detections

MSG	Name	DATA Length	FRAME Length	Addressing		
B3h	DIAG_GET_OBSTACLE_COUNT	0	11	P2P	GROUP	BROADCAST

Related messages	***Reply***	DIAG_POST_OBSTACLE_COUNT	C3h
	Configuration	N/a	

4.5.2.8 DIAG_POST_OBSTACLE_COUNT (C3h)

- Send total number of obstacle or over-current detections

MSG	Name	DATA Length	FRAME Length	Addressing		
C3h	DIAG_POST_OBSTACLE_COUNT	4	15	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Obstacle_Count	16-bits			Total count of obstacle or over-current detections
Post_Obstacle_Moves	16-bits (LSBF)			Number of moves after last event

Related messages	***Request***	DIAG_GET_OBSTACLE_COUNT	B3h
	Configuration	N/a	

Remarks

- This message returns the combined number of times (events) Obstacle Detection or Over-Current Protection algorithms were deployed, over the lifetime of the motor, and the number of up / down moves since the last event. Each time such an event occurs, Obstacle_Count will increment by one and Post_Obstacle_Moves will be cleared.
- The associated internal counters may only be cleared in Factory Mode, through the PROC_RESET_DEVICE message (see §4.3.2.7).

4.5.2.9 DIAG_GET_POWER_COUNT (B4h)

- Request total power-up count

MSG	Name	DATA Length	FRAME Length	Addressing		
B4h	DIAG_GET_POWER_COUNT	0	11	P2P	GROUP	BROADCAST

Related messages			
	Reply	DIAG_POST_POWER_COUNT	C4h
	Configuration	N/a	

4.5.2.10 DIAG_POST_POWER_COUNT (C4h)

- Send total power-up count

MSG	Name	DATA Length	FRAME Length	Addressing		
C4h	DIAG_POST_POWER_COUNT	2	13	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Power_Count	16-bits			Total number of power-ups

Related messages			
	Request	DIAG_GET_POWER_COUNT	B4h
	Configuration	N/a	

Remarks

- This message returns the number of times the motor was re-powered or reset, over its lifetime.
- The associated internal counter may only be cleared in Factory Mode, through the PROC_RESET_DEVICE message (see §4.3.2.7).

4.5.2.11 DIAG_GET_RESET_COUNT (B5h)

- Request total reset count

MSG	Name	DATA Length	FRAME Length	Addressing		
B5h	DIAG_GET_RESET_COUNT	0	11	P2P	GROUP	BROADCAST

Related messages			
	Reply	DIAG_POST_ RESET_COUNT	C5h
	Configuration	N/a	

4.5.2.12 DIAG_POST_RESET_COUNT (C5h)

- Send total reset count

MSG	Name	DATA Length	FRAME Length	Addressing		
C5h	DIAG_POST_ RESET _COUNT	2	13	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Reset_Count	16-bits			Total number of resets

Related messages			
	Request	DIAG_GET_RESET_COUNT	B5h
	Configuration	N/a	

Remarks

- This message returns the number of times the motor was reset through the RS485 network, over the lifetime of the motor.
- The associated internal counter may only be cleared in Factory Mode, through the PROC_RESET_DEVICE message (see §4.3.2.7).

4.5.2.13 DIAG_GET_ENCODER_ERRORS (B6h)

- Request total number of encoder errors

MSG	Name	DATA Length	FRAME Length	Addressing		
B6h	DIAG_GET_ENCODER_ERRORS	0	11	P2P	GROUP	BROADCAST

Related messages			
	Reply	DIAG_POST_ ENCODER_ERRORS	C6h
	Configuration	N/a	

4.5.2.14 DIAG_POST_ ENCODER_ERRORS (C6h)

- Send total number of encoder errors

MSG	Name	DATA Length	FRAME Length	Addressing		
C6h	DIAG_POST_ ENCODER_ERRORS	2	13	P2P	GROUP	BROADCAST

DATA	TYPE	MIN	MAX	Description
Encoder_Err_Count	16-bits			Total number of encoder errors

Related messages			
	Request	DIAG_GET_ ENCODER_ERRORS	B6h
	Configuration	N/a	

Remarks

- This message returns the total number of encoder errors encountered by the motor, internally.
- The associated internal counter may only be cleared in Factory Mode, through the PROC_RESET_DEVICE message (see §4.3.2.7).

4.6 NACK Values

Standard values		Custom values	
DATA_ERROR	01h		
UNKNOWN_MESSAGE	10h		
		NODE_IS_LOCKED	20h
		WRONG_POSITION	21h
		LIMITS_NOT_SET	22h
		IP_NOT_SET	23h
		OUT_OF_RANGE	24h
BUSY	FFh		

4.7 Cross-compatibility of ILTv2 and ILTv3 Messages

ILTv2 and ILTv3 messages can be used interchangeably. However, mixing different protocol messages for configuration of the motors (ILT2_SET_ and SET_ messages) must be avoided, since their functionalities differ, and results may be unpredictable.

4.8 Compatibility with DCT Interface

ST30 RS485 motors may be controlled through the RS485 network and through DCT control, concurrently. However, configuration of the motor must be performed using either network messages or DCT, exclusively.

When a DCT controller is used to re-configure limits or motor speed, the motor will automatically lock out all network messages, which may potentially cause a conflict. The network will be unlocked, after configuration is complete or canceled. If the network was already locked, before configuration was started with DCT, the lock will be overridden, then the original lock priority will be restored, after completion or cancellation of the configuration.

Similarly, when network messages are used to re-configure a motor, the motor will automatically lock out DCT operation. DCT functionality will be restored after the configuration is completed or canceled, unless it was already locked by an explicit network command.

5 AMX Device Discovery

AMX Device Discovery is supported by this device.

5.1 AMX Identification

The following table lists mandatory information needed for AMX identification:

Name	Value	Comment
SDKClass	Motor	Every SOMFY motors and controls belong to the “Motor” class
GUID	SOMFY_SONESSE_30_RS485	
Revision	1.0.0	AMX defined
Device_Id	0xYYYYYY	YYYYYY stands for the product’s NodeID

5.2 Port Configuration

Port Configuration is the same as for the RS485 normal operation:

4800 Bds, 8 data bits, Odd Parity, 1 Stop bit

5.3 AMX Poll Message

The product recognizes to the following frame (without the quotes) coded in ASCII:

`"AMX\r"`

5.4 AMX Beacon Format

To the request of an AMX Master Node (cf. §6.3) the product sends the following data (without the quotes) coded in ASCII:

`"AMXB<-SDKClass=Motor><-GUID=SOMFY_SONESSE_30_RS485><-Revision=1.0.0><Device_Id=0xYYYYYY>\r"`