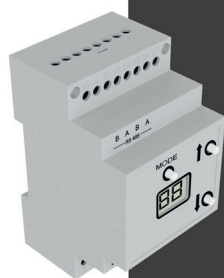


IF SMI RS-485 DIN RAIL

3060 001 GB 1823 A07



IF SMI RS-485 24VDC-DIN

Art.-no.: 01092124

Motor control SMI RS-485 for top-hat rail for control of 16 SMI motors 24 VDC.

IF SMI RS-485 230VAC-DIN

Art.-no.: 01092714

Motor control SMI RS-485 for top-hat rail for control of 16 SMI motors 230VAC.

Installation and Operating Instructions

Contents

- 1. What is SMI?
- 2. Safety precautions
- 3. Technical data
- 4. Hardware
 - 4.1 Overview IF SMI RS-485
 - 4.1.1 RS-485 User interface
 - 4.1.2 RS-485 BUS
 - 4.1.3 Power supply
 - 4.1.4 SMI BUS
 - 4.1.5 Master Up/Down button
 - 4.1.6 Base Address
 - 4.2 Termination RS-485 BUS
- 5. Menu navigation
 - 5.1 Power-up
 - 5.2 Main menu
 - 5.3 Menu navigation
 - 5.4 Address menu
 - 5.5 Modify base address
 - 5.6 Show error
 - 5.7 Error log menu
 - 5.8 Soft RESET
- 6. Protocol
 - 6.1 Message structure
 - 6.2 CRC16 Calculation
 - 6.3 Steer commands
 - 6.3.1 MSG_UP
 - 6.3.2 MSG_DOWN
 - 6.3.3 MSG_STOP
 - 6.3.4 MSG_STEP_UP
 - 6.3.5 MSG_STEP_DOWN
 - 6.3.6 MSG_SET_POS
 - 6.3.7 MSG_SET_TILT
 - 6.3.8 MSG_SET_POS_STEP_UP
 - 6.3.9 MSG_SET_POS_STEP_DOWN
 - 6.3.10 MSG_GOTO_POS1
 - 6.3.11 MSG_GOTO_POS2
 - 6.3.12 MSG_GETMANID
 - 6.3.13 MSG_SMI_TUNNEL
 - 6.3.14 MSG_GW_OPTIONS
 - 6.3.15 MSG_ERROR
 - 6.4 Maintenance commands
 - 6.4.1 MSG_VERSION
 - 6.4.2 MSG_AUTO_ADDR
 - 6.4.3 MSG_GET_SER
 - 6.4.4 MSG_SET_SMIID
 - 6.4.5 MSG_GET_PAR
 - 6.4.6 MSG_GET_POS1
 - 6.4.7 MSG_SET_POS1
 - 6.4.8 MSG_GET_POS2
 - 6.4.9 MSG_SET_POS2
 - 6.5 Status commands
 - 6.5.1 MSG_GETGENSTAT
 - 6.5.2 MSG_GETDETSTAT
- 7. PC Test Software
 - 7.1 Communication
 - 7.2 General commands
 - 7.3 Motor Mask based commands
 - 7.4 Motor ID based commands
 - 7.5 Send / Receive
- 8. Wiring diagrams
 - 8.1 IF SMI RS-485 LoVo
 - 8.2 IF SMI RS-485 230VAC

1. What is SMI?

SMI is the abbreviation for **Standard Motor Interface**. SMI has been developed for the connection of intelligent drives for roller shutters and sun protection systems. SMI enables to transmit telegrams from control system to the drive and vice versa. With SMI it is possible to combine products from different sources together. The SMI Interface should spread high value solutions and promote drives and controls on the market. The applications in roller shutters and sun protection systems require extreme robustness and economic efficiency. SMI has been developed to meet these requirements.

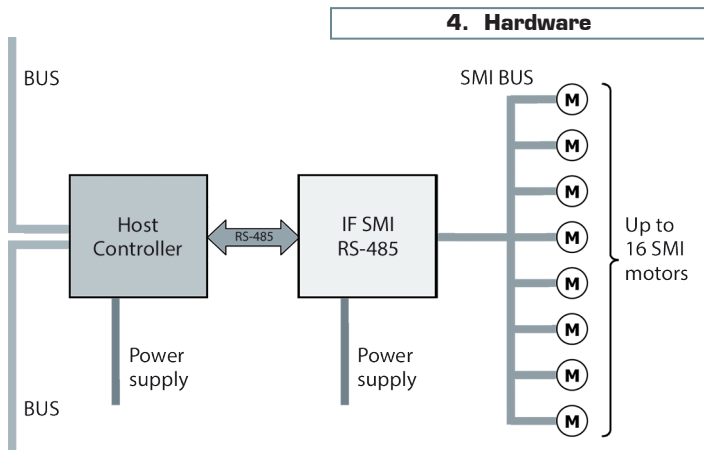
2. Safety precautions



- Contact a professional electrician for installation.
- Check the control system for signs of mechanical damage after unpacking. If you notice any shipping damage, do not start up the control system and notify your supplier immediately.
- The control system should only be used for the purpose specified by the manufacturer (refer to the operating instructions). Any changes or modifications thereof are not permissible and will result in loss of all warranty claims.
- If the control unit cannot be operated without presenting a hazard, it must be switched off and prevented from being switched on unintentionally.
- Turn off the power supply and prevent it from being switched on unintentionally before performing work on any windows, control or sunshades driven by the control system.

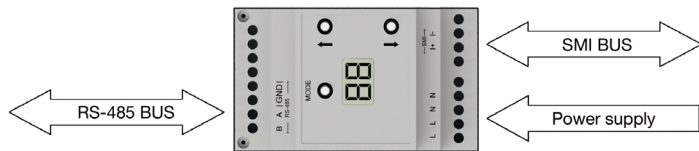
3. Technical data

Article	IF SMI RS-485 DIN		
	Art.-no.:	01092124	01092714
Supply voltage:		230VAC	
Impulse voltage withstand level:	kV	2.5	
Rated power:	W	2 W	
Operating temperature:	°C	0 °C (32 °F) to +40 °C (104 °F)	
IP class:	IP	20	
Degree of contamination:		2	
Dimensions (H x W x D):	mm	90 x 52 x 60 (3 HP)	
Conformity:			



The IF SMI RS-485 can be used for SMI (230VAC) or SMI LoVo applications.
Important: It is not allowed to use a combination of SMI (230VAC) and SMI LoVo on the same SMI BUS.

4.1 Overview IF SMI RS-485



The IF SMI RS-485 module is an intelligent module that translates RS-485 commands to SMI commands.

4.1.1 RS-485 User interface

- **MODE button**
 - Short press Show current base address for 5 sec.
 - Long press Modify current base address
 - Double press Show error log
- **UP/DOWN button**
 - In main menu Steer all attached SMI motors UP/DOWN.
 - In address menu Increase/Decrease base address
 - Error log menu Show next/previous error

4.1.2 RS-485 BUS

The communication BUS between Host controller and IF SMI RS-485 module is RS-485. The following configuration is used:

- Baud rate: 19200
- Data bits: 8
- Stop bits: 1
- Parity: None
- Signal: -7V to +10V Common-Mode Input Voltage Range
- Maximum allowed pause Byte-to-Byte: 5 milliseconds

4.1.3 Power supply

The IF SMI RS-485 module needs the following power supply signals:

- L, N (230VAC/50Hz)

4.1.4 SMI BUS

The SMI bus exists out of the following signals:

- I+ (SMI BUS)
- I- (SMI BUS)

4.1.5 Master Up/Down button

The IF SMI RS-485 has a master UP/DOWN button, to operate all connected SMI motors at simultaneously.

4.1.6 Base Address

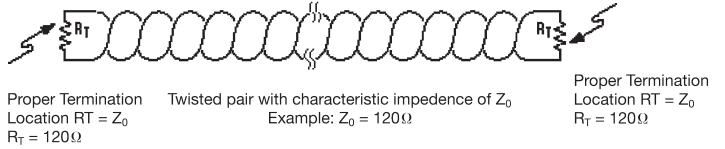
The IF SMI RS-485 is selected by its base address. Each IF SMI RS-485 module connected to a shared RS-485 BUS must have an unique base address. A maximum of 16 IF SMI RS-485 modules can be connected to the same RS-485 BUS, which makes it possible to control $16 \times 16 = 256$ SMI motors.

4.2 Termination RS-485 BUS (Optional)

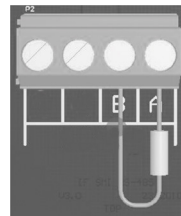
If you experience problems, please read this section.

The device usually has sufficient base termination. In exceptional cases (e.g. with long or untwisted lines) we recommend to use a terminating resistor of 120Ω at both ends of the bus line.

This is to be installed between terminals A and B of the RS-485 signal line. A terminating resistor is simply a resistor placed at the extreme end or ends of a cable. The value of the terminating resistor is ideally the same value as the characteristic impedance of the cable.



As a general rule moreover, termination resistors should be placed at *both* far ends of the cable. Although properly terminating both ends is absolutely critical for most system designs, it can be argued that in one special case only one termination resistor is needed. This case occurs in a system when there is a single transmitter and that single transmitter is located at the far end of the cable. In this case there is no need to place a termination resistor at the end of the cable with the transmitter, because the signal is intended to always travel away from this end of the cable.

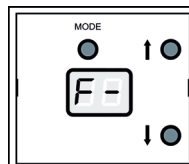


There is a Terminating resistor with a value of 120Ω delivered by every IF SMI RS-485 module. If the Terminating resistor is recommended than he must be placed between the A and B from the connector on the PCB.

5. Menu navigation

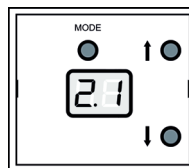
5.1 Power-up

During power-up, the firmware version is shown in 3 stages:



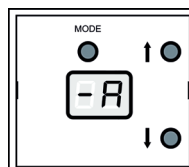
Step 1

Display shows "F-" for 2 sec as indication that firmware version follows.



Step 2

Display shows firmware version (major.minor) for 3 seconds.



Step 3

Display shows firmware revision for 2 seconds.

5.2 Main menu

The main menu is the default menu that is being shown when no other user actions take place. The main menu shows:

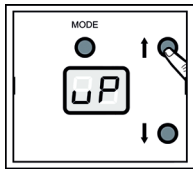
- A counter – counting the number of correctly received RS-485 frames from 0 up to 99 and then starts at 0 again.
- A blinking dot in the right bottom corner with a blink-frequency of 1 Hz to indicate a running application.

5.3 Menu navigation

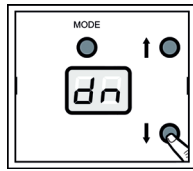
When the UP or DOWN buttons in the main menu are pressed, all attached SMI motors will move UP or DOWN (depends on the pressed button) as long as the button is pressed. This feature is useful during commissioning to check:

- if the SMI communication is working
- if all attached motors are running in the correct direction
- if the limit positions are set correctly

Display shows the following as a visual feedback:



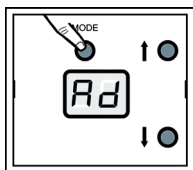
UP button pressed



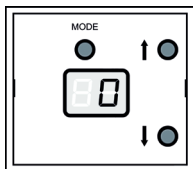
DOWN button pressed

5.4 Address menu

The current RS-485 base address is shown when the MODE button is pressed shortly (< 5 sec).



As long as the MODE button is pressed shortly, "Ad" is shown on the display.



When the MODE button is released, the current RS-485 base address is shown for 5 sec.

To directly return to the main menu, the MODE button must be pressed again.

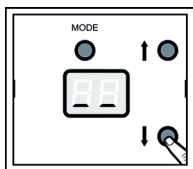
5.5 Modify base address

The current RS-485 base address can be modified by pressing the MODE button for more than 5 seconds (after 5 seconds the text "Ad" starts blinking).

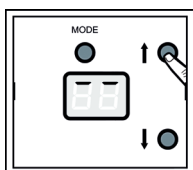
After the MODE button is released, the current RS-485 base address is shown blinking.

- Pressing UP will increase the RS-485 base address.
- Pressing DOWN will decrease the RS-485 base address.
- Pressing MODE button – or wait for 5 seconds – will store the RS-485 base address and return to main menu.

The RS-485 base address can be modified from 0 to 15.

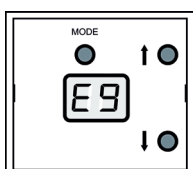


When pressing the DOWN button while base address is already 0, the following is shown to indicate that the base address cannot be further decreased.



When pressing the UP button while the base address is already 15, the following is shown to indicate that the base address cannot be further increased.

5.6 Show error



When an error occurs, this will be shown directly.

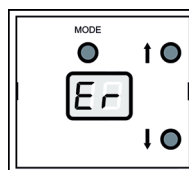
Error code description:

- E0 = no error
- E1 = RS-485 framing error
- E2 = RS-485 timing error
- E3 = RS-485 data overflow error
- E4 = RS-485 CRC error
- E5 = RS-485 command error (not supported or invalid length)
- E6 = RS-485 busy (not able to process new command)
- E7 = SMI format error
- E8 = SMI checksum error
- E9 = SMI timing error
- EA = SMI data overflow
- EB = SMI echo error
- EC = SMI queue full error

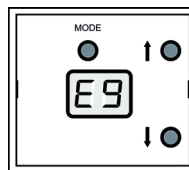
The error message is shown for 5 seconds. Pressing any button returns to main menu directly.

5.7 Error log menu

The error log keeps track of the 5 last occurred errors, and can be shown by pressing the MODE button twice within 1 second.

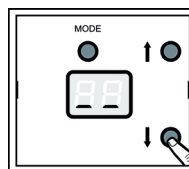


The text "Er" is briefly visible to indicate that the error log is shown.

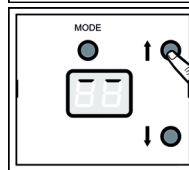


Next, the last occurred error is shown blinking.

- By pressing the UP button, the previous occurred error will be shown.
- By pressing the DOWN button, the next occurred error will be shown.



When pressing DOWN button while first error in log is currently being shown..



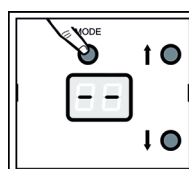
When pressing UP button while last error in log is currently shown.

By briefly pressing MODE button – or waiting for a few seconds – you will return back to main menu.

5.8 Soft RESET

The IF SMI RS-485 can be restarted (soft-reset) without interruption of the power supply by pressing the MODE button for 10 seconds.

After 10 seconds pressing the MODE button, the soft-reset will be entered, and display will briefly show the following:



6. Protocol

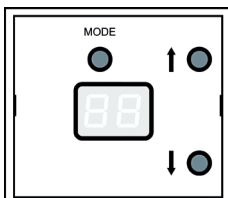
This chapter describes the communication protocol between the IF SMI RS-485 module and Host controller.

6.1 Message structure

[SID] [LEN] [CMD] [DATA] [CRC16]

SID Slave ID
 LEN Message length (without CRC)
 CMD Command byte
 DATA Optional data bytes
 CRC16 16 bits checksum (LSB first)

The IF SMI RS-485 module has 4 DIP switches, which represents the base address of the module from 0 to 15 (decimal) or 0 to F (hexadecimal). The base address is part of the Slave ID:



Base address	Slave ID
0	0xC0
1	0xC1
2	0xC2
3	0xC3
4	0xC4
5	0xC5
6	0xC6
7	0xC7
8	0xC8
9	0xC9
10	0xCA
11	0xCB
12	0xCC
13	0xCD
14	0xCE
15	0xCF

6.2 CRC16 Calculation

Example code CRC16 calculation in C-language:

```
#define CRC_CONSTANT    0xA001

word Crc16 (byte* pb, byte len)
{
    byte i;
    word crc;

    for (crc=0xffff; len--; pb++)
    {
        crc ^= (byte)*pb;
        for (i=8; i--; )
            if (crc & 0x01)
            {
                crc >>= 1;
                crc ^= CRC_CONSTANT;
            }
            else
                crc >>= 1;
    }
    // return crc result
    return crc;
}
```

6.3 Steer commands

```
#define MSG_UP          0x10
#define MSG_DOWN       0x11
#define MSG_STOP       0x12
#define MSG_STEP_UP    0x13
#define MSG_STEP_DOWN  0x14
#define MSG_SET_POS    0x15
#define MSG_SET_TILT   0x16
#define MSG_SET_POS_STEP_UP  0x17
#define MSG_SET_POS_STEP_DOWN 0x18
#define MSG_GOTO_POS1  0x19
#define MSG_GOTO_POS2  0x1A
#define MSG_GETMANID   0x2C
#define MSG_SMI_TUNNEL 0x2D
#define MSG_GW_OPTIONS 0x50
#define MSG_ERROR      0xE0
```

6.3.1 MSG_UP

This message is used to move all, or a set of sun blind, to the **top** position.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

When bit *n* in mask is set, SMI motor with address *n* is addressed and executes a **UP** command.

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT.

The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.2 MSG_DOWN

This message is used to move all, or a set of sun blind, to the **lower** position.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

When bit *n* in mask is set, SMI motor with address *n* is addressed and executes a **DOWN** command.

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT.

The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.3 MSG_STOP

This message is used to stop all, or a set of sun blind.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT.

The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT. The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT.

The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.4 MSG_STEP_UP

This message is used to relatively move all, or a set of sun blind, in **UP** direction.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [NSTEP] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

[NSTEP]: Number of steps (1..255) in **UP** direction. 1 step is defined as 2° rotation of the output shaft of the SMI motor.

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT.

The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.5 MSG_STEP_DOWN

This message is used to relatively move all, or a set of sun blind, in **DOWN** direction.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [NSTEP] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

[NSTEP]: Number of steps (1..255) in **DOWN** direction. 1 step is defined as 2° rotation of the output shaft of the SMI motor.

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT.

The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.6 MSG_SET_POS

This message is used to move all, or a set of sun blind, to an absolute position.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [POS0] / [POS1] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

[POS0]: LSB of 16-bit absolute position.

[POS1]: MSB of 16-bit absolute position.

The absolute position value is defined as below:

0x0000 is the top position (0%).

0x8000 is the middle position (50%).

0xFFFF is the bottom position (100%).

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT.

The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.7 MSG_SET_TILT

This message is used to move all, or a set of venetian blinds, in a absolute tilt orientation.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [TILT] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

[TILT]: Absolute tilt orientation (0..255).

Absolute tilt orientation is defined as follow:

127 (0x7F) slats completely closed in down direction

0 (0x00) slats completely open (horizontal)

-128 (0x80) slats completely closed in up direction

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT.

The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

REMARK: The MSG_SET_TILT message uses a manufacturer specific SMI command, which is currently only supported by Vestamatic SMI motors.

6.3.8 MSG_SET_POS_STEP_UP

This message is used to move all, or a set of venetian blinds, to an absolute position combined with an relative **up** command.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [POS0] / [POS1] / [NSTEP] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

[POS0]: LSB of 16-bit absolute position.

[POS1]: MSB of 16-bit absolute position.

[NSTEP]: Number of steps (1..255) in **UP** direction. 1 step is defined as 2° rotation of the output shaft of the SMI motor.

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT. The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.9 MSG_SET_POS_STEP_DOWN

This message is used to move all, or a set of venetian blinds, to an absolute position combined with an relative **down** command.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [POS0] / [POS1] / [NSTEP] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

[POS0]: LSB of 16-bit absolute position.

[POS1]: MSB of 16-bit absolute position.

[NSTEP]: Number of steps (1..255) in **DOWN** direction. 1 step is defined as 2° rotation of the output shaft of the SMI motor.

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT. The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.10 MSG_GOTO_POS1

This message is used to move all, or a set of venetian blinds, to intermediate position 1.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT. The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.11 MSG_GOTO_POS2

This message is used to move all, or a set of venetian blinds, to intermediate position 2.

Message: [SID] / [LEN] / [CMND] / [MSK0] / [MSK1] / [CRC16]

[MSK0]: LSB of 16-bit mask to select motor address 0..7.

[MSK1]: MSB of 16-bit mask to select motor address 8..16.

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT. The position of each sun blind can be obtained by the detailed response message MSG_GETDETSTAT.

6.3.12 MSG_GETMANID

This message is used to request the manufacturer ID of a specific motor.

Message: [SID] / [LEN] / [CMND] / [SMIID] / [CRC16]

[SMIID]: SMI address of motor (0..15).

Response: [SID] / [LEN] / [CMND] / [SMIID] / [MID] / [CRC16]

[MID]: bit3-0: Manufacturer ID. (See SMI-Group website for actual list)

Bit7-4: Motor type. An indication from 0 to 15 which each SMI motor manufacturer can freely use to identify their SMI motor type.

REMARK: An Manufacturer ID of 0 indicates that an invalid SMI-ID is used.

6.3.13 MSG_SMI_TUNNEL

This message is used to send a SMI message directly to the SMI bus. Detailed knowledge in SMI protocol is required to use this command.

Message: [SID] / [LEN] / [CMND] / [SMIMSG0] /... / [SMIMSGn] / [CRC16]

[SMIMSG0..n]: SMI message data to send directly to SMI bus. The [LEN] parameter defines the number of SMIMSG data bytes expected.

Response: [SID] / [LEN] / [CMND] / [RTYP] / [SMI_CMND] / [DATA0] /... / [DATAm] / [CRC16]

[RTYP]: Response type:

0xFF: SMI message send successfully and accepted by addressed motor(s).

0xE0: Error occurred. [DATA0] contains error code:

0x01: checksum error

0x02: format error

0x03: echo error

0x04: data overflow

0x05: timeout error

0xEF: SMI message send successfully and response is in [DATA0..m]

[SMI_CMND]: SMI command to which this response belongs.

[DATA0..m]: Additional data for response type 0xE0 and 0xEF.

6.3.14 MSG_GW_OPTIONS

This message is used to request current gateway options or to set the gateway options.

Set gateway options

Message: [SID] / [LEN] / [CMND] / [OPTIONS] / [CRC16]

[OPTIONS]: Gateway options:

bit 0: RS485 error feedback enabled flag

bit 1: Cycle logging in EEPROM enabled flag

bit 2-3: –

bit 4: RS485 error feedback flag state after power-up

bit 5: Cycle logging enabled flag state after power-up

bit 6-7: –

Response: [SID] / [LEN] / [CMND] / [OPTIONS] / [CRC16]

[OPTIONS]: Stored gateway options. See gateway options layout as described above.

REMARK: Cycle logging is by default disabled, meaning that the gateway does not keep track of the number of motor cycles performed by each SMI motor.

For RS485 error feedback, see chapter 6.3.15 MSG_ERROR.

Request gateway options

Message: [SID] / [LEN] / [CMND] / [CRC16]

Response: [SID] / [LEN] / [CMND] / [OPTIONS] / [CRC16]

[OPTIONS]: Stored gateway options.
See gateway options layout as described above.
Default gateway options: 0x00

6.3.15 MSG_ERROR

This message is used to request the error log or used as a feedback message to host, when an error occurred during RS485 communication.

Request error log

Message: [SID] / [LEN] / [CMND] / [CRC16]

Response: [SID] / [LEN] / [CMND] / [ERR0] / ... / [ERR4] / [CRC16]

[ERR0..4]: Contents of error log, where [ERR0] is the most recent error and [ERR4] is the oldest error in the log.

Error code description:

0x00 = no error

0x01 = RS485 framing error

0x02 = RS485 timing error

0x03 = RS485 data overflow error

0x04 = RS485 CRC error

0x05 = RS485 command error
(not supported or invalid length)

0x06 = RS485 busy (not able to process new command)

0x07 = SMI format error

0x08 = SMI checksum error

0x09 = SMI timing error

0x0A = SMI data overflow

0x0B = SMI echo error

0x0C = SMI queue full error

Error feedback

When during RS485 communication an error is detected by the gateway and "RS485 error feedback" is enabled (see chapter 6.3.14 Set gateway options), an error response is send to host.

Response: [SID] / [LEN] / [CMND] / [ERR] / [CRC16]

[CMND] MSG_ERROR (= 0xE0)

[ERR] Error code indicating the type of error occurred:

0x00 = no error

0x01 = RS485 framing error

0x02 = RS485 timing error

0x03 = RS485 data overflow error

0x04 = RS485 CRC error

0x05 = RS485 command error
(not supported or invalid length)

0x06 = RS485 busy (not able to process new command)

REMARK: An error feedback is send back, when an error is detected and at least the first 2 bytes of the original RS485 message were received correctly.

6.4 Maintenance commands

```
#define MSG_VERSION      0x20
#define MSG_AUTO_ADDR    0x21
#define MSG_GET_SER      0x22
#define MSG_SET_SMIID    0x23
#define MSG_GET_PAR      0x24
#define MSG_GET_POS1     0x28
#define MSG_GET_POS2     0x29
#define MSG_GET_POS2     0x2A
#define MSG_SET_POS2     0x2B
```

6.4.1 MSG_VERSION

This message is used to check to version number of the application.

Message: [SID] / [LEN] / [CMND] / [CRC16]

Response: [SID] / [LEN] / [CMND] / [HARD] / [VMAJ] / [VMIN] / [REV] / [CRC16].

[HARD]: An alphanumeric char to identify the hardware platform.

[VMAJ]: The major software version number (from 0 to 255).

[VMIN]: The minor software version number (from 0 to 255).

[REV]: An alphabetic char to identify the internal revision letter (from A to V), X is reserved for specific test software version.

6.4.2 MSG_AUTO_ADDR

This message is used to start the SMI auto address procedure. Motor address conflicts will be solved and every motor becomes an unique address (0..15). This procedure can take up to 60 seconds to solve all the address conflicts.

Message: [SID] / [LEN] / [CMND] / [CRC16]

The IF SMI RS-485 module responds to this request with a general status message MSG_GETGENSTAT.

6.4.3 MSG_GET_SER

This message is used to return the serial number and the SMI ID of a specific sun blind.

Message: [SID] / [LEN] / [CMND] / [SMIID] / [CRC16]

[SMIID]: SMI address of motor (0..15)

Response: [SID] / [LEN] / [CMND] / [SMIID] / [SER0] / ... / [SER3] / [CRC16]

[SMIID]: SMI address of motor (0..15)

[SER0..3]: The serial number of the specified SMI motor. The serial number is always 4 bytes.

6.4.4 MSG_SET_SMIID

This message is used to set the SMI ID of a specific sun blind address by its serial number.

Message: [SID] / [LEN] / [CMND] / [SER0] / ... / [SER3] / [SMIID] / [MAN] / [CRC16]

[SER0..3]: The serial number of the specified SMI motor. The serial number is always 4 bytes.

[SMIID]: SMI address of motor (0..15) to set.

[MAN]: Manufacturer ID of SMI motor. Manufacturer ID for a Vestamatic motor is 6.

Response: [SID] / [LEN] / [CMND] / [SER0] / ... / [SER3] / [SMIID] / [MAN] / [CRC16]

[SER0..3]: The serial number of the specified SMI motor.

[SMIID]: SMI address of motor (0..15). When high-nibble if SMI ID is 0xF0, an error occurred during SMI ID set.

[MAN]: Manufacturer ID of SMI motor.

It can take up to 60 seconds before the GETGENSTAT response is updated with the new SMI ID.

6.4.5 MSG_GET_PAR

This message is used to get the value of any private protected parameters of a specific motor.

Message: [SID] / [LEN] / [CMND] / [SMIID] / [PAR0] / [PAR1] / [PLEN] / [CRC16]

[SMIID]: SMI address of motor (0..15)

[PAR0..1]: Index of the motor parameter.

[PLEN]: Length of parameter (1, 2 or 4 bytes)

Response: [SID] / [LEN] / [CMND] / [SMIID] / [VAL0] / ... / [VALn] / [CRC16]

[SMIID]: SMI address of motor (0..15)

[VAL0..n]: Parameter value (1, 2 or 4 bytes in size)

6.4.6 MSG_GET_POS1

This message is used to get (read) the stored intermediate position 1.

Message: [SID] / [LEN] / [CMND] / [SMIID] / [CRC16]

[SMIID]: SMI address of motor (0..15)

Response: [SID] / [LEN] / [CMND] / [SMIID] / [POS0] / [POS1] / [CRC16]

[SMIID]: SMI address of motor (0..15).

When high-nibble of SMI address is 0xF0, an error occurred during GET_POS1.

[POS0]: LSB of 16-bit intermediate position 1.

[POS1]: MSB of 16-bit intermediate position 1.

The intermediate position value is defined as below:

0x0000 is the top position (0%).

0x8000 is the middle position (50%).

0xFFFF is the bottom position (100%).

6.4.7 MSG_SET_POS1

This message is used to set (write) intermediate position 1.

Message: [SID] / [LEN] / [CMND] / [SMIID] / [POS0] / [POS1] / [CRC16]

[SMIID]: SMI address of motor (0..15)

[POS0]: LSB of 16-bit intermediate position 1.

[POS1]: MSB of 16-bit intermediate position 1.

Response: [SID] / [LEN] / [CMND] / [SMIID] / [POS0] / [POS1] / [CRC16]

[SMIID]: SMI address of motor (0..15).

When high-nibble of SMI address is 0xF0, an error occurred during SET_POS1.

[POS0]: LSB of 16-bit intermediate position 1.

[POS1]: MSB of 16-bit intermediate position 1.

6.4.8 MSG_GET_POS2

This message is used to get (read) the stored intermediate position 2.

Message: [SID] / [LEN] / [CMND] / [SMIID] / [CRC16]

[SMIID]: SMI address of motor (0..15)

Response: [SID] / [LEN] / [CMND] / [SMIID] / [POS0] / [POS1] / [CRC16]

[SMIID]: SMI address of motor (0..15). When high-nibble of SMI address is 0xF0, an error occurred during GET_POS2.

[POS0]: LSB of 16-bit intermediate position 2.

[POS1]: MSB of 16-bit intermediate position 2.

The intermediate position value is defined as below:

0x0000 is the top position (0%).

0x8000 is the middle position (50%).

0xFFFF is the bottom position (100%).

6.4.9 MSG_SET_POS2

This message is used to set (write) intermediate position 2.

Message: [SID] / [LEN] / [CMND] / [SMIID] / [POS0] / [POS1] / [CRC16]

[SMIID]: SMI address of motor (0..15)

[POS0]: LSB of 16-bit intermediate position 2.

[POS1]: MSB of 16-bit intermediate position 2.

Response: [SID] / [LEN] / [CMND] / [SMIID] / [POS0] / [POS1] / [CRC16]

[SMIID]: SMI address of motor (0..15). When high-nibble of SMI address is 0xF0, an error occurred during SET_POS2.

[POS0]: LSB of 16-bit intermediate position 2.

[POS1]: MSB of 16-bit intermediate position 2.

6.5 Status commands

```
#define MSG_GETGENSTAT 0xA0
#define MSG_GETDETSTAT 0xA1
```

6.5.1 MSG_GETGENSTAT

This message requests the general status of the system.

Message: [SID] / [LEN] / [CMND] / [CRC16]

Response: [SID] / [LEN] / [CMND] / [PRES0] / [PRES1] / [RDY0] / [RDY1] / [CRC16].

[PRES0]: The LSB mask of the 8 first motors present on the SMI BUS.

[PRES1]: The MSB mask of the 8 last motors present on the SMI BUS.

[RDY0]: The LSB mask of the 8 first motors ready to operate on the SMI BUS.

[RDY1]: The MSB mask of the 8 first motors ready to operate on the SMI BUS.

Motor can always accept new commands; RDY0/RDY1 indicates if a motor is running (flag cleared) or motor is idle (flag set).

6.5.2 MSG_GETDETSTAT

This message is used to obtain the detailed status of a specified sunblind.

Message: [SID] / [LEN] / [CMND] / [SMIID] / [CRC16]

[SMIID]: SMI address of motor (0..15)

Response: [SID] / [LEN] / [CMND] / [SMIID] / [STATUS] / [POS0] / [POS1] / [TILT] / [CYCLE0] / .. / [CYCLE3] / [CRC16]

[SMIID]: SMI address of motor (0..15)

[STATUS]: Status of the motor

[POS0..1]: 16-bits absolute position value

[TILT]: Orientation of the slats

REMARK: Tilt information uses a manufacturer specific SMI command, which is currently only supported by Vestamatic SMI motors. For non Vestamatic SMI-motors, TILT value 0x00 is returned.

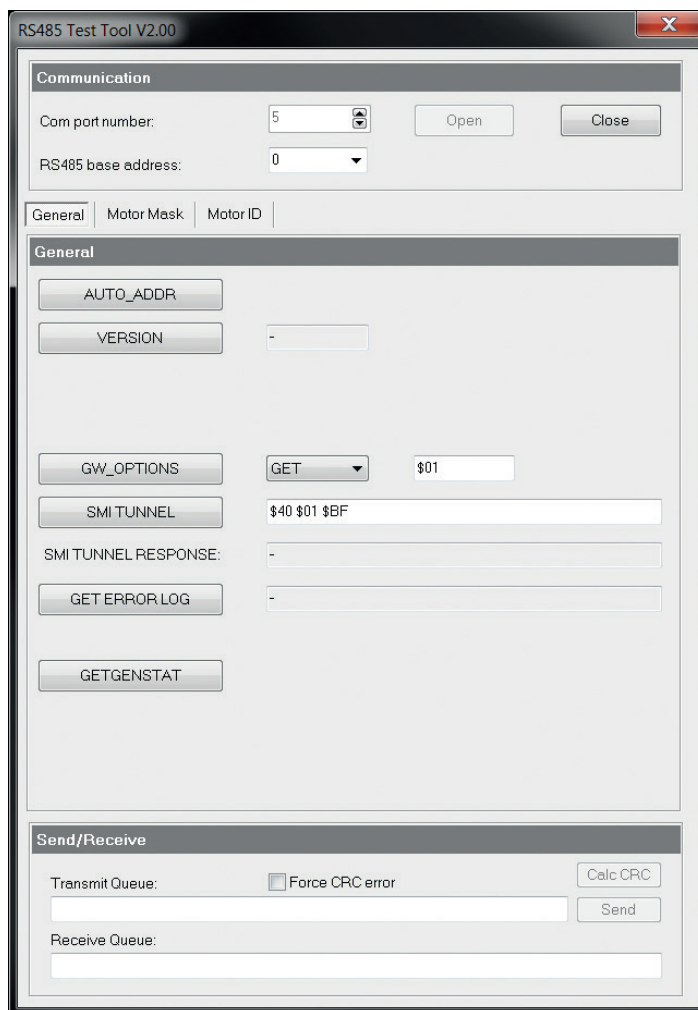
[CYCLE0..3]: 32-bits cycle counter of the motor

Status Bit layout

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Meaning
X	X	X	X	0	X	X	X	MOTOR ERROR OCCURED
X	X	X	X	1	0	0	0	UP + DOWN + STOP
X	X	X	X	1	0	0	1	DOWN + STOP
X	X	X	X	1	0	1	0	UP + STOP
X	X	X	X	1	0	1	1	ALL STOP
X	X	X	X	1	1	0	0	UP + DOWN
X	X	X	X	1	1	0	1	ALL DOWN
X	X	X	X	1	1	1	0	ALL UP
X	X	X	X	1	1	1	1	NOT VALID
0	0	0	1	X	X	X	X	TILT INFO: NOT SUPPORTED BY MOTOR
1	1	1	1	X	X	X	X	INVALID SMI RESPONSE

7. PC Test Software

For testing your application, a freeware PC Software (Windows®) can be downloaded from our website <http://www.vestamatic.com>.



7.1 Communication

In the “**Communication**” section, select the RS-485 communication port of your PC, that is connected to the IF SMI RS-485 module. Also set the RS-485 base address. This must correspond with the DIP switch settings on the IF SMI RS-485 module. Press the “Open” button to open the communication channel.

7.2 General commands

On the “**General**” tab-sheet, you will find commands that don’t have additional parameters.

- VERSION:** Get software version of IF SMI RS-485 module.
- GETGENSTAT:** Get general status (motor present / motor ready).
- AUTO_ADDR:** Start the auto-address sequence, in case of address conflicts.

7.3 Motor Mask based commands

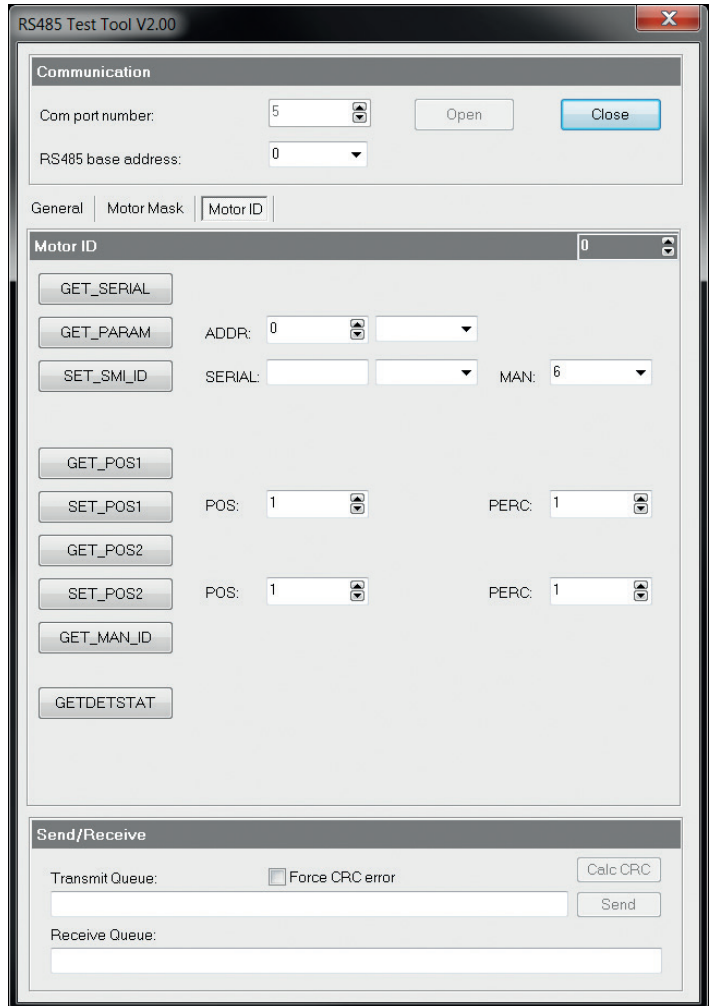
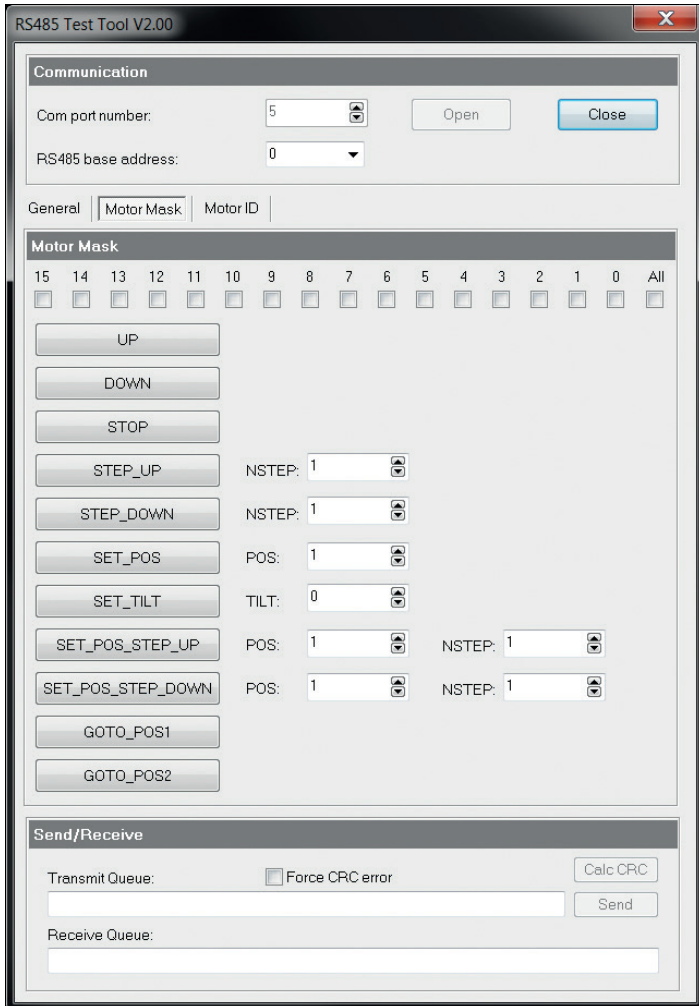
On the “**Motor Mask**” tab-sheet, you will find the “motor mask” based commands. With the checkboxes 15 to 0 you can select which motor(s) you want to address, or simply select “All”, to address all motors. Next, press a command button, like “UP”, “DOWN”, “STOP”, “STEP_UP”, “STEP_DOWN”, “SET_POS”, “SET_TILT”, “SET_POS_STEP_UP”, “SET_POS_STEP_DOWN”, “GOTO_POS1” or “GOTO_POS2”.

REMARK: Some commands need additional parameters. See section “6. Protocol” for detailed information.

7.4 Motor ID based commands

On the “**Motor ID**” tab-sheet, you will find the “Motor ID” based commands. The motor you want to address, can be selected with the spin edit box (in the dark gray part, behind Motor ID). Motor ID can be set from “0” to “15”. Next, press a command button, like “GET_SERIAL”, “GET_PARAM”, “SET_SMI_ID”, “GET_POS1”, “SET_POS1”, “GET_POS2”, “SET_POS2” or “GETDETSTAT”.

REMARK: Some commands need additional parameters. See section “6. Protocol” for detailed information.

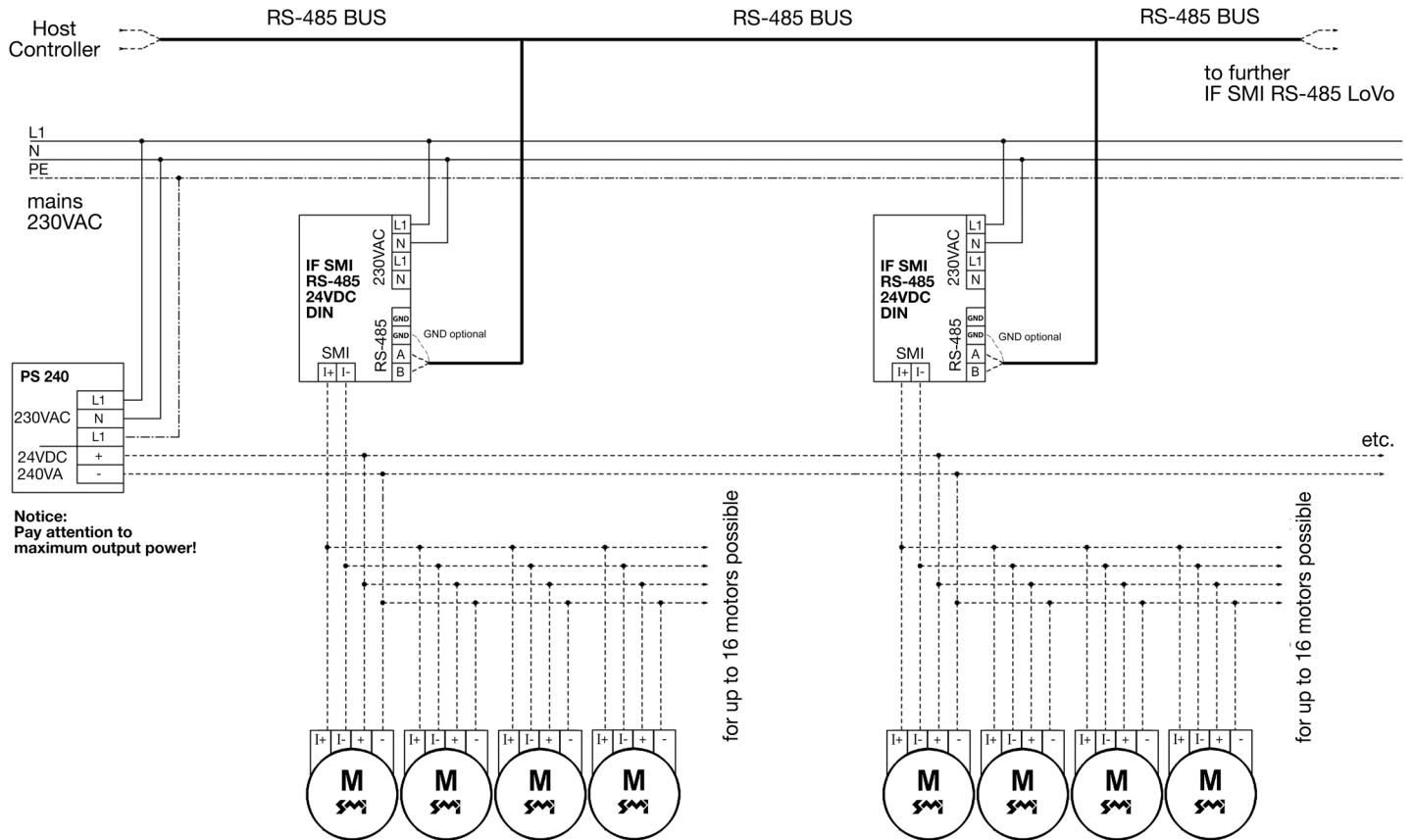


7.5 Send / Receive

In the “**Send/Receive**” section, you can monitor the communication between PC and IF SMI RS-485 module. You will see the Transmit and Receive data stream.

8. Wiring diagrams

8.1 Wiring diagram - IF SMI RS-485 24VDC DIN



8.2 Wiring diagram - IF SMI RS-485 230VAC DIN

