

This interface description is not binding and may differ depending on the individual application.

## 1. Communication between screwdriver control and higher order control (MMI / Optional)

- Input signals screwdriver control
- Output signals screwdriver control
- Profinet-IO connection

### 1.1 Input signals

#### 1.1.1 Start screwdriver

	Function	Format
Start	eStart	0/1

Starts the screwing sequence

The screwing sequence can be started when

- automatic mode is selected.
- no faults are active.
- the screwdriver is loaded

#### 1.1.2 Selection

	Function	
Selection Bit 0	eProgBit0	PG no. +1
Selection Bit 1	eProgBit1	PG no. +2
Selection Bit 2	eProgBit2	PG no. +4
Selection Bit 3	eProgBit3	PG no. +8

eProgBit0 ... eProgBit3 pre-selects the screwing program for the next screwing cycle in binary form.

A program number < 1 or >15 is invalid.

### 1.2 Output signals

#### 1.2.1 Fault

	Function	Format
Fault	aStoer	0/1

aStoer is switched on when there is a fault on the screwdriver.

As soon as the fault has been eliminated, the output is switched off.

#### 1.2.2 Home position

	Function	Format
Home position	aGst	0/1

aGst is switched on when

- The strokes of the screwdriver have reached the pre-defined position in which it is itself at right angles to the workpiece (robot, positioning system) or
- the workpiece can be moved at right angles to the screwdriver (production line with workpiece carriers).

### 1.2.3 Ready

	Function	Format
Ready	aSb	0/1

aSb is switched on when the screwdriver can be started by switching on the customer's input eStart.

### 1.2.4 OK

	Function	Format
OK	aIO	0/1

aIO is

- switched off as soon as the screwing process is started.
- switched on again when
- the screwing process is ended and
- the screw connection is OK.

### 1.2.5 NOK

	Function	Format
NOK	aNIO	0/1

aNIO is

- switched off as soon as the screwing process is started.
- switched on again when
- the screwing process is ended and
- the screw connection is NOT OK.

### 1.2.6 Fill level control

	Function	Format
Fill level control	aFSK	0/1

aFSK is switched on when the min. fill level in the feed device goes below the default setting.

### 1.2.7 Torque OK

	Function	Format
Torque OK	aM_IO	0/1

aM\_IO is

- switched off as soon as the screwing process is started.
- switched on again when
- the screwing process is ended and
- the default settings for the torque have been observed.

### 1.2.8 Depth OK

	Function	Format
Depth OK	aT_IO	0/1

aT\_IO is

- switched off as soon as the screwing process is started.
- switched on again when
- the screwing process is ended and

- the default settings for the depth have been observed.

#### 1.2.9 Time monitoring OK

	Function	Format
Time monitoring OK	aZ_IO	0/1

aZ\_IO is

- switched off as soon as the screwing process is started.
- switched on again when
- the screwing process is ended and
- the default settings for time monitoring have been observed.

#### 1.2.10 Screw measurement

	Function	Format
SM Bit0	aSmBit0	0/1
SM Bit1	aSmBit1	0/1

aSmBit0 .. aSmBit1 displays in binary code with which screw the screwdriver is loaded.

#### 1.2.11 State

	Function	Format
State	aSts	0 ... 255

aSts shows the State of the Spindle.

#### 1.2.12 Result

	Function	Format
Result	aErg	0 ... 255

aErg shows the Result of the screw setting.

#### 1.2.13 Time

	Function	Format
Time	aZ	-32768 ... 32767

aZ displays the duration of the screwing process in ms.

As soon as the OK or NOK signal is active, the valid value is entered,  
Otherwise 0 is entered in the variable.

## 2. Profinet-IO connection

### 2.1 Properties:

GSD – file:	GSDML-V2.25-#Siemens-PreConf_SGS20x0-20141215-144611.xml
DP slave type:	S7-1200 CPU1214C V4.0

Table 1: Properties

### 2.2 Node configuration Profinet-IO master

code	Designation	
	2 Byte output	SR1 Output data
	8 Byte input	SR1 Input data
	2 Byte output	SR2 Output data
	8 Byte input	SR2 Input data

Table 2: Node configuration Profinet-IO master

### 2.3 Input signals of the screwdriver control

Signal designation	Function	Data type	Format	Addr. Spindle 1	Addr. Spindle 2	Description
Start	eStart	bool	0/1	0.0	2.0	see section: 1.1.1
Selection Bit 0	eProgBit0	bool	0/1	0.1	2.1	see section: 1.1.2
Selection Bit 1	eProgBit1	bool	0/1	0.2	2.2	
Selection Bit 2	eProgBit2	bool	0/1	0.3	2.3	
Selection Bit 3	eProgBit3	bool	0/1	0.4	2.4	

Table 3: Input signals of the screwdriver control

### 2.4 Output signals of the screwdriver control

Signal designation	Function	Data type	Format	Addr. Spindle 1	Addr. Spindle 2	Description
Fault	aStoer	bool	0/1	0.0	8.0	see section: 1.2.1
Home position	aGst	bool	0/1	0.1	8.1	see section: 1.2.2
Ready	aSb	bool	0/1	0.2	8.2	see section: 1.2.3
OK	aIO	bool	0/1	0.3	8.3	see section: 1.2.4
NOK	aNIO	bool	0/1	0.4	8.4	see section: 1.2.5
Fill level control	aFSK	bool	0/1	0.5	8.5	see section: 1.2.6
res		bool	0/1	0.6	8.6	
res		bool	0/1	0.7	8.7	
Moment OK	aM_IO	bool	0/1	1.0	9.0	see section: 1.2.7
Depth OK	aT_IO	bool	0/1	1.1	9.1	see section: 1.2.8
res		bool	0/1	1.2	9.2	
Time monitoring OK	aZ_IO	bool	0/1	1.3	9.3	see section: 1.2.9
SM Bit0	aSmBit0	bool	0/1	1.4	9.4	see section: 1.2.10
SM Bit1	aSmBit1	bool	0/1	1.5	9.5	
res		bool	0/1	1.6	9.6	
res		bool	0/1	1.7	9.7	
State	aSts	byte	0... 255	2	10	see section: 1.2.11
Result	aErg	byte	0... 255	3	11	see section: 1.2.12

Time	aZ	int	-32768 ... 32769	4	12	see section: 1.2.13
res	res	int	-32768 ... 32769	6	14	

Table 4: Output signals of the screwdriver control

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