

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

1. Profibus interface between screwdriver control and higher order control (MMI / Optional)

- Input signals screwdriver control
- Output signals screwdriver control
- Profibus-DP connection

1.1 Input signals

1.1.1 Start screwdriver

	Function	Profibus-DP	Format
Start	eStart	X	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	Profibus-DP	Format
Fault	aStoer	X	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	Profibus-DP	Format
Home position	aGst	X	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	Profibus-DP	Format
Ready	aSb	X	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	Profibus-DP	Format
OK	aIO	X	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	Profibus-DP	Format
NOK	aNIO	X	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	Profibus-DP	Format
Fill level control	aFSK	X	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	Profibus-DP	Format
Torque OK	aM_IO	X	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	Profibus-DP	Format
Depth OK	aT_IO	X	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	Profibus-DP	Format
Time monitoring OK	aZ_IO	X	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	Profibus-DP	Format
SM Bit0	aSmBit0	X	0/1
SM Bit1	aSmBit1	X	0/1
SM Bit2	aSmBit2	X	0/1

aSmBit0 .. aSmBit2 displays in binary code with which screw the screwdriver is loaded.

1.2.11 State

	Function	Profibus-DP	Format
State	aSts	X	0... 255

1.2.12 Result

	Function	Profibus-DP	Format
Result	aErg	X	0...255

1.2.13 Time

	Function	Profibus-DP	Format
Time	aZ	X	-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. Profibus-DP connection

2.1 Properties of DP slave:

GSD – file:	si01818E.gsd
DP slave type:	EM1242-5
Transmission rate:	12Mbit/s
Profile:	DP

Tabelle 1: Properties of DP slave

2.2 Node configuration Profibus master

DP code	Designation

128	8 byte input	Output data SR1
64	2 Byte output	Input data SR1

Tabelle 2: Node configuration Profibus 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	8.0	see section: 1.1.1
Selection Bit 0	eProgBit0	bool	0/1	0.1	8.1	see section: 1.1.2
Selection Bit 1	eProgBit1	bool	0/1	0.2	8.2	
Selection Bit 2	eProgBit2	bool	0/1	0.3	8.3	
Selection Bit 3	eProgBit3	bool	0/1	0.4	8.4	

Tabelle 3: Input signals of the screwdriver control Profibus DP

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
res		bool	0/1	0.6	8.6	
res		bool	0/1	0.7	8.7	
Fill level control	aFSK	bool	0/1	0.7	8.7	see section: 1.2.6
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	
Status	aSts	byte	0 ... 255	2	10	see section: 1.2.11
Ergebnis	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	

Tabelle 4: Output signals of the screwdriver control Profibus DP

3. Tabellenverzeichnis

Tabelle 1:	Properties of DP slave	3
Tabelle 2:	Node configuration Profibus master	4
Tabelle 3:	Input signals of the screwdriver control Profibus DP	4
Tabelle 4:	Output signals of the screwdriver control Profibus DP	4

4. Inhaltsverzeichnis

1. PROFIBUS INTERFACE BETWEEN SCREWDRIVER CONTROL AND HIGHER ORDER CONTROL (MMI / OPTIONAL)	1
1.1 INPUT SIGNALS	1
1.1.1 Start screwdriver.....	1
1.2 OUTPUT SIGNALS	1
1.2.1 Fault.....	1
1.2.2 Home position	1
1.2.3 Ready	2
1.2.4 OK.....	2
1.2.5 NOK	2
1.2.6 Fill level control.....	2
1.2.7 Torque OK	2
1.2.8 Depth OK	2
1.2.9 Time monitoring OK	3
1.2.10 Screw measurement	3
1.2.11 State	3
1.2.12 Result	3
1.2.13 Time	3
2. PROFIBUS-DP CONNECTION	3
2.1 PROPERTIES OF DP SLAVE:	3
2.2 NODE CONFIGURATION PROFIBUS MASTER	3
2.3 INPUT SIGNALS OF THE SCREWDRIVER CONTROL	4
2.4 OUTPUT SIGNALS OF THE SCREWDRIVER CONTROL.....	4
3. TABELLENVERZEICHNIS	4
4. INHALTSVERZEICHNIS.....	5