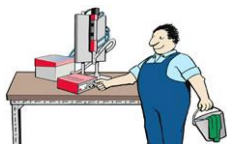




# **Communication signals between screwdriver control (BMS6252) and higher order control (MMI)**

## **Profinet-IRT FO**

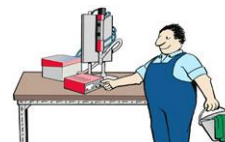


## 8 Description of the controller

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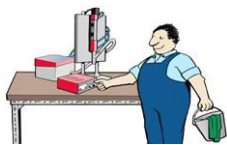
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STÖGER AUTOMATION GmbH points out that this interface description is not binding and may differ depending on the individual application.



## 8 Description of the controller

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### 1. Input signals to BMS6252

#### 1.1. Start

	Function	Format
Start	eStart	0/1

With “Ready” signal active, a new cycle can be start with this signal.

#### 1.2. Reserve

	Function	Format
		0/1

#### 1.3. Error Quit (optional)

	Function	Format
Error Quit	eAck	0/1

Errors can be acknowledged externally with this signal.

#### 1.4. Automatic (optional)

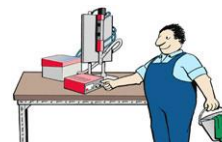
	Function	Format
Automatic	eAuto	0/1

Automatic mode can be selected externally with this signal.

#### 1.5. Pressure ok (optional)

	Function	Format
Pressure ok	eDruckIO	0/1

With external pressure monitoring, this signal indicates that the operating pressure has been reached.

**1.6. Reserve**

	Function	Format
		0/1

**1.7. Passwordinput (optional)**

	Function	Format	
Passwordinput Bit 0	ePwLevel	0/1	PW-Level +1
Passwordinput Bit 1	ePwLevel	0/1	PW-Level +2

This signal is used to transmit the password level externally (e.g. Euchner key).

**1.8. Program selection**

	Function	Format	
Program Selection Bit 0	eProgBit0	0/1	PG-Nr. +1
Program Selection Bit 1	eProgBit1	0/1	PG-Nr. +2
Program Selection Bit 2	eProgBit2	0/1	PG-Nr. +4
Program Selection Bit 3	eProgBit3	0/1	PG-Nr. +8
Program Selection Bit 4	eProgBit4	0/1	PG-Nr. +16
Program Selection Bit 5	eProgBit5	0/1	PG-Nr. +32
Program Selection Bit 6	eProgBit6	0/1	PG-Nr. +64

“eProgBit0 ... eProgBit6” selects in binary form the program for the next cycle. A selection < 1 or > 127 is not valid.



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### 1.9. Value request

	Function	Format
Value request	eWertAnf	-32768 .. 32767

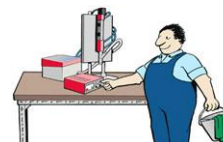
“eWertAnf” select the Value to be displayed in „aWert“.

Value	Function	
0	0	
1	Force	
2	Distance	
3	Position	
4	Time	
5	Target	
6	Trashold force	
7	Force_min	
8	Force_Setpoint	
9	Force_max	
10	Distance_min	
11	Distance_Setpoint	
12	Distance_max	
13	Position_min	
14	Position_Setpoint	
15	Position_max	
100	Error	
101	Force current	
102	Position current	

### 1.10. Programmable Customer Input #1-4

	Funktion	Format
Programmable Customer Input	eKdE#	0/1

“eKdE#” is connected to the command “wait for input” in the rivet setting program.



## 2. Output signals from BMS6252

### 2.1. Error

	Function	Format
Error	aStoer	0/1

“aStoer” is switched on if there is a fault on the unit. As soon as the fault has been resolved, the output is switched off.

### 2.2. Homeposition

	Function	Format
Homeposition	aGst	0/1

“aGst” is switched on when the stroke of the spindle has reached the predetermined position in which it can be moved transversely to the workpiece (robot, positioning system) or the workpiece transversely to the screwdriver (production line with workpiece carriers). Otherwise collisions might happen!

### 2.3. Ready

	Function	Format
Ready	aSb	0/1

“aSb” is switched on when the spindle can be started by switching on the customer input “eStart”.

### 2.4. Rivet drawn OK

	Function	Format
Rivet drawn OK	aIO	0/1

“aIO” is switched off as soon as a program is started and is switched on again when the program is finished and the riveting is OK. A program without draw step is always NOK!



## 8 Description of the controller

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### 2.5. Rivet drawn NOK

	Function	Format
Rivet drawn NOK	aNIO	0/1

“aNIO” is switched off as soon as a program is started and is switched on again when the program has ended and the rivet is NOT OK. A program without draw step is always NOK!

### 2.6. Distance NOK

	Function	Format
Distance NOK	aWegNIO	0/1

“aWegNIO” is switched off as soon as a cycle is started. If the specified minimum draw distance is not reached or the maximum draw distance is exceeded, this signal is switched on again.

### 2.7. Drawforce NOK

	Function	Format
Drawforce NOK	aKraftNIO	0/1

“aKraftNIO” is switched off as soon as a cycle is started. If the specified minimum draw force is not reached or the maximum draw force is exceeded, this signal is switched on again.

### 2.8. Position NOK

	Function	Format
Position NOK	aPosNIO	0/1

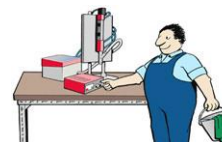
“aPosNIO” is switched off as soon as a cycle is started. The position is checked before the rivet is drawn. If the position reached is outside of the specified window, this signal is switched on again and the drawing process is aborted.

### 2.9. Automatic mode

	Function	Format
Automatic mode	aAuto	0/1

“aAuto” is always present when the controller is in automatic mode.



**2.10. Program busy**

	Function	Format
Program busy	aBusy	0/1

“aBusy” is activ when a Program is running.

**2.11. Program finished**

	Function	Format
Program finished	aFm	0/1

“aFm” is switched off as soon as a program is started. After a complete program has been processed, the stop command switches this signal back on.

**2.12. Rivet loaded**

	Function	Format
Rivet loaded	aSM	0/1

“aSm” is switched on as soon as a cycle has been processed with „load rivet“ is finished successfully, the „unload rivet“ parameter set switches this signal off again.

**2.13. Emergency stop circuit ok**

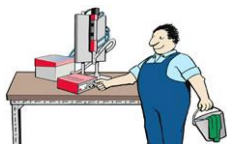
	Function	Format
Emergency stop circuit ok	aNaIO	0/1

„aNaOk“ is activated when the Emergency cycle in the controller is closed.

**2.14. Feeder empty**

	Function	Format
Feeder empty	aFSK	0/1

“aFSK” indicates that there will soon no longer be any rivets in the feeder bowl or belthopper.



## 8 Description of the controller

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### 2.15. Process active

	Function	Format
Process active	aProcessActive	0/1

“aProcessActive” indicates that some process is active and therefore the power release should not be switched off.

### 2.16. Reserve

	Function	Format
		0/1

### 2.17. Actual value draw force

	Function	Format
Actual draw force	aForce	-32768 .. 32767

“aForce” is set after finished a cycle with actual draw force x0.000N.

### 2.18. Actual value draw distance

	Function	Format
Actual draw distance	aDistance	-32768 .. 32767

“aDistance” is set after finished a cycle with actual draw distance x0.00mm.

### 2.19. Actual value draw position

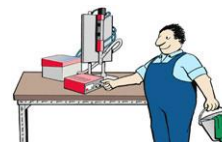
	Function	Format
Actual draw position	aPosition	-32768 .. 32767

“aPosition” is set after finished a cycle with actual draw position x0.00mm.

### 2.20. Actual value draw time

	Function	Format
Actual draw time	aTime	-32768 .. 32767

“aTime” is set after finished a cycle with actual draw time x0.000s.

**2.21. Rivet in Gripper**

	<b>Function</b>	<b>Format</b>
Rivet in Gripper	aGrSm	0/1

“aGrSm” is switched on after a rivet is feed into the Gripper. The Output is switched off, after the rivet is winded on or ejected.

**2.22. Lifebit**

	<b>Function</b>	<b>Format</b>
Lifebit	aLb	0/1

“aLb” is switched on and off in 0,5s sequence.

**2.23. Programmable Customer Output #1-4**

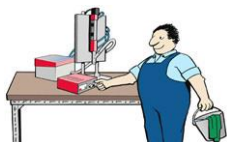
	<b>Function</b>	<b>Format</b>
Programmable Customer Output	aKdA	0/1

“aKdA#” is connected to the command “Set Output” and “Reset Output” in the rivet set program.

**2.24. Value at request**

	<b>Function</b>	<b>Format</b>
Value at request	aWertAngef	-32768 .. 32767

“aWertAnf” shows witch value is displayed in “aWert”.



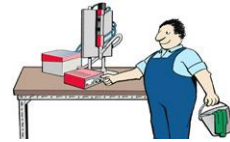
## 8 Description of the controller

### 2.25. Value

	Function	Format
Value	aWert	-32768 .. 32767

„aWert“ shows the value choose in “aWertAngef”

Value	Function		
0	0		
1	aForce	Result draw force	Display draw force after cycle finish
2	aDistance	Result draw distance	Display draw distance after cycle finish
3	aPosition	Result position	Display position after cycle finish
4	aTime	Result time	Display time after cycle finish
5	Target		Target in parameter set
6	Trashold force		Display set value in parameter set
7	Force_min		Display set value in parameter set
8	Force_Setpoint		Display set value in parameter set
9	Force_max		Display set value in parameter set
10	Distance_min		Display set value in parameter set
11	Distance_Setpoint		Display set value in parameter set
12	Distance_max		Display set value in parameter set
13	Position_min		Display set value in parameter set
14	Position_Setpoint		Display set value in parameter set
15	Position_max		Display set value in parameter set
100	Error		Display number of error
101	Force current		Display current force
102	Position current		Display current position



### 3. Profinet-IRT FO connection

#### 3.1. Properties Profinet-IRT FO-Slave

GSDML – File:	
X-Gateway	GSDML-V2.3-HMS-ABSPIR-20131010.xml
Input I/O data size (bytes):	64
Output I/O data size (bytes):	64

Table 1 Properties Profinet-IRT FO-Slave

#### 3.2. Input signals to BMS6252

Signal designation	Function	Data-type	Format	Address Spindle 1	Description
Start	eStart	Bool	0/1	I0.0	s. ref.: 1.1
Reserve		Bool	0/1	I 0.1	
Error Quit	eAck	Bool	0/1	I0.2	s. ref.: 1.3
Automatic	eAuto	Bool	0/1	I0.3	s. ref.: 1.4
Pressure ok	eDruckIO	Bool	0/1	I0.4	s. ref.: 1.5
Reserve		Bool	0/1	I0.5	
Passwordinput Bit 0	ePwLevel	Bool	0/1	I0.6	s. ref.: 1.7
Passwordinput Bit 1	ePwLevel	Bool	0/1	I0.7	s. ref.: 1.7
Programselection Bit 0	eProgBit0	Bool	0/1	I1.0	s. ref.: 1.8
Programselection Bit 1	eProgBit1	Bool	0/1	I1.1	s. ref.: 1.8
Programselection Bit 2	eProgBit2	Bool	0/1	I1.2	s. ref.: 1.8
Programselection Bit 3	eProgBit3	Bool	0/1	I1.3	s. ref.: 1.8
Programselection Bit 4	eProgBit4	Bool	0/1	I1.4	s. ref.: 1.8
Programselection Bit 5	eProgBit5	Bool	0/1	I1.5	s. ref.: 1.8
Programselection Bit 6	eProgBit6	Bool	0/1	I1.6	s. ref.: 1.8
Reserve		Bool	0/1	I1.7	
Value request	eWertAnf	Int	-32768 ..32769	I2	s. ref.: 1.9
Programmable Customer Input 1	eProgKdE1	Bool	0/1	I4.0	s. ref.: 1.10
Programmable Customer Input 2	eProgKdE2	Bool	0/1	I4.1	s. ref.: 1.10
Programmable Customer Input 3	eProgKdE3	Bool	0/1	I4.2	s. ref.: 1.10
Programmable Customer Input 4	eProgKdE4	Bool	0/1	I4.3	s. ref.: 1.10



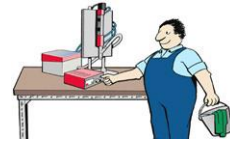
## 8 Description of the controller

Reserve		Bool	0/1	I4.4	
Reserve		Bool	0/1	I4.5	
Reserve		Bool	0/1	I4.6	
Reserve		Bool	0/1	I4.7	
Reserve		Int	0 ... 255	IB5	
Reserve		Int	-32768 ..32769	I6	

Table 2 Input signals to BMS6252 in Profinet-IRT FO

### 3.3. Output signals from BMS6252

Signal designation	Function	Data-type	Format	Address Spindle 1	Description
Error	aStoer	Bool	0/1	O0.0	s. ref.: 2.1
Homeposition	aGst	Bool	0/1	O0.1	s. ref.: 2.2
Ready	aSb	Bool	0/1	O0.2	s. ref.: 2.3
Cycle OK	aIO	Bool	0/1	O0.3	s. ref.: 2.4
Cycle NOK	aNIO	Bool	0/1	O0.4	s. ref.: 2.5
Distance NOK	aWegNIO	Bool	0/1	O0.5	s. ref.: 2.6
Drawforce NOK	aKraftNIO	Bool	0/1	O0.6	s. ref.: 2.7
Position NOK	aPosNIO	Bool	0/1	O0.7	s. ref.: 2.8
Automatic mode	aAuto	Bool	0/1	O1.0	s. ref.: 2.9
Cycle busy	aBusy	Bool	0/1	O1.1	s. ref.: 2.10
Cycle finished	aFm	Bool	0/1	O1.2	s. ref.: 2.11
Rivet loaded	aSm	Bool	0/1	O1.3	s. ref.: 2.12
Emergency stop ok	aNalo	Bool	0/1	O1.4	s. ref.: 2.13
Feeder empty	aFsk	Bool	0/1	O1.5	s. ref.: 2.14
Loading busy	aLoadingBusy	Bool	0/1	O1:6	s. ref.: 2.15
Reserve		Bool	0/1	O1.7	
Actual draw force	aForce	Int	-32768...32769	O2	s. ref.: 2.17
Actual draw distance	aDistance	Int	-32768...32769	O4	s. ref.: 2.18
Actual draw position	aPosition	Int	-32768...32769	O6	s. ref.: 2.19
Actual draw time	aTime	Int	-32768...32769	O8	s. ref.: 2.20
Reserve		Bool	0/1	O10.0	
Reserve		Bool	0/1	O10.1	
Reserve		Bool	0/1	O10.2	
Reserve		Bool	0/1	O10.3	
Rivet in Gripper	aGrSm	Bool	0/1	O10.4	s. ref.: 2.21



## 8 Description of the controller

Reserve		Bool	0/1	O10.5	
Reserve		Bool	0/1	O10.6	
Lifebit	aLb	Bool	0/1	O10.7	s. ref.:2.22
Programmable Customer Output 1	aProgKdA1	Bool	0/1	O11.0	s. ref.:2.23
Programmable Customer Output 2	aProgKdA2	Bool	0/1	O11.1	s. ref.:2.23
Programmable Customer Output 3	aProgKdA3	Bool	0/1	O11.2	s. ref.:2.23
Programmable Customer Output 4	aProgKdA4	Bool	0/1	O11.3	s. ref.:2.23
Reserve		Bool	0/1	O11.4	
Reserve		Bool	0/1	O11.5	
Reserve		Bool	0/1	O11.6	
Reserve		Bool	0/1	O11.7	
Value at request	aWertAngef	Int	-32768...32769	O12	s. ref.: 2.24
Value	aWert	Int	-32768...32769	O14	s. ref.: 2.25

Table 3 Output signals from BMS6252 in Profinet-IRT FO



## 8 Description of the controller

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### 3.4. Address table

All of the in-/outputs are available for each Spindle.

This address table shows the addresses of the minimum configuration. If you use additional signals, you will have a different address table.

Value	Offset address input signals	Offset address output signals
1	0	0
2	8	16
3	16	32
4	24	48

Table 4 Slave addresses

## Table directory

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