

S5 to S5 – Gateway communication

I. S5 – Gateway configuration

Required tools: **S5 -LAN Manager**

Supported from firmware – Version 0.44 of the S5 – Gateway

1. Start the S5-LAN Manager and search for your module, mark it and click with the mouse on the button "**S5 – Gateway – Connections**". A dialog opens to adjust the connection.

S5-Gateway Connections

No.of: 1

Name: Example

Configuration-DB: 20 from 0

Type of: ISO-on-TCP connection ☐ Active connection

Poll cycle: 1000 ms

Addresses

local				Partner			
IP-Address	192.168.1.64			IP-Address	192 . 168 . 1 . 56		
Port	0			Port	0		
TSAP (Hex)	<input type="checkbox"/> TSAP			TSAP (Hex)	<input type="checkbox"/> TSAP		
TSAP-Lengtl	4			TSAP-Lengtl	4		

Nr	Name	Typ	aktiv	P-Zyklus	Konfig-DB	IP-Partner	Port Lokal	Port Par
1		ISO on ...		0	DB0.DBW0	0.0.0.0	0	0
2		ISO on ...		0	DB0.DBW0	0.0.0.0	0	0

OK Cancel

2. At the lower part of the dialog is the connection list located, in which you can select the connection you want to configure.
3. Now you can give the connection a logical name at "**Name**".
4. Type the position of the data block at the left input field at "**Configuration - DB**" (e.g. "**1**" for DB1) in and at the right input field the starting data word (e.g. "**1**" for

DW1) in which the configuration area is located.

5. Select **"ISO - on - TCP – connection"** for **"Type of"**. This option uses the TCP – Port 102.
6. The polling cycle(in ms) states how much time is needed until the S5-Gateway is cyclical reading the connection and checking if something needs to be done. If 0 is declared here it will read from the SPS nonstop.
7. At the address section you can only type the IP – address of the partner in. The IP– address of the of the S5 – Gateway Module still needs to be configured with the S5-LAN Manager.
8. You can set the **"TSAP"** (Transport – Service – Access – Point) for both devices. It consists of 16 chars and represents the identification of the connection, which is needed if several connections with an IP – address are existing. (Since firmware version **0.45** of the S5 – Gateway it's possible establish a connection with every TSAP).
9. Additionally to the described steps, for the second module at **"Type of"** the checkmark of **"Active connection"** needs to be set.

The communication over S5 – Gateway is configured now.

II. Load blocks into the SPS

1. Start your programming software and open the S5D – file **"S5anS5 – Gateway"**.
2. Establish a connection with one of your S5 – Gateway modules and load all blocks (OB1, FB55 and FB56) into the to the modules belonging SPS. Also load the same blocks into the second SPS. The blocks DB20 and DB100 are generated automatically.

III. Starting the sending cycle

At the following example the DB20 is getting used as configuration – DB. M10.0 is controlling sending and M12.0 the receiving. If **M10.0** equals **"1"**, 20 bytes of the DB100, starting with DW0, are getting send. **M12.0** is granting access to the receive buffer of the DB100 starting with DW100 and the length of 20 bytes.

```

:SPA FB 55
Name :S5L_SEND
JDBN : KF +00020
JDBW : KF +00000
STYP : KC D
SDBN : KF +00100
SBEG : KF +00000
SLEN : KF +00020
ACT : M 10.0
LEN : KF +00020
DONE : M 11.0
ERR : M 11.1
STAT : MW 20

```

```

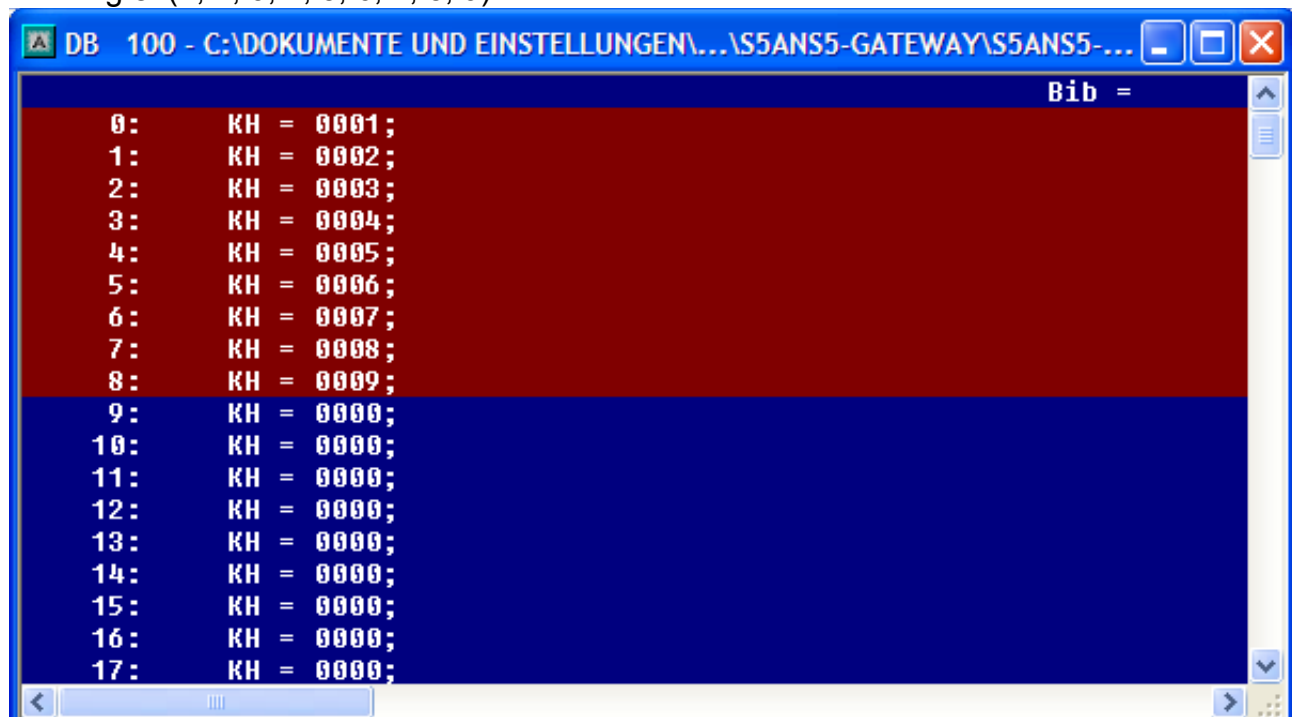
:SPA FB 56
Name :S5L_RECV
JDBN : KF +00020
JDBW : KF +00000
RTYP : KC D
RDBN : KF +00100
RBEG : KF +00100
RLEN : KF +00020
ACT : M 12.0
LEN : MW 24
NDR : M 13.0
ERR : M 13.1
STAT : MW 22

```

Set values of the sending and receiving inputs E8.0 and E9.0 to “1”.

IV. Testing of the setup

1. Open distinctively the DB100 in your SPSes and type random values for the first 20 bytes in.
g.e.:(1; 2; 3; 4; 5; 6; 7; 8; 9)



- Save the blocks and set the values of the inputs E8.0 and E9.0 in your SPS with the active S5 – gateway module to "1" and start the cycle.

STEUERN VARIABLE				
Mark	Adresse	Art	Wert	Kommentar
*	E 8.0	KM	1	
*	E 9.0	KM	1	

- Open the DB100 now and compare the values of the 20 Bytes that you have configured in the other SPS in DB100 with the ones starting with DW100. The communication was a success if the values are equal.

DB 100 - C:\DOKUMENTE UND EINSTELLUNGEN\...\S5ANS5-GATEWAY\S5ANS5-...	
97:	KH = 0000;
98:	KH = 0000;
99:	KH = 0000;
100:	KH = 0001;
101:	KH = 0002;
102:	KH = 0003;
103:	KH = 0004;
104:	KH = 0005;
105:	KH = 0006;
106:	KH = 0007;
107:	KH = 0008;
108:	KH = 0009;
109:	KH = 0000;
110:	KH = 0000;
111:	KH = 0000;
112:	KH = 0000;
113:	KH = 0000;
114:	KH = 0000;
115:	KH = 0000;

V. Format of the area of configuration data

	DL								DR								DW
	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	
received	reserved								RTYP ('D', 'X', 'M', 'E', 'A')								0
									RDBN (at 'D' or 'X' block number)								1
									RBEG (at 'D' or 'X' StartDW else StartByte)								2
									RLEN (length of the receive buffer in bytes)								3
									reserved								4
send	reserved								STYP ('D', 'X', 'M', 'E', 'A')								5
									SDBN (at 'D' or 'X' block number)								6
									SBEG (at 'D' or 'X' StartDW else StartByte)								7
									SLEN (length of the send buffer in bytes)								8

	reserved	9
	TxLEN (send - length in Bytes)	10
	TxSTAT (sending status)	11
reserved	reserved	DO ER AC 12
		NE R T
	RxLEN (receiving - length in bytes)	13
	RxSTAT (receiving status)	14
reserved	reserved	ND ER AC 15
		R R T
reserved for extension	reserved	16
	reserved	17
	reserved	18
	reserved	19

Details of the fields

Description	Meaning	FB - parameter - name	Access R = read W = write
RTYP	Data type of the receiving buffer: 'D' = DB 'X' = DX 'M' = Memory 'E' = Input 'A' = Output	RTYP	S5 – GW R SPS S
RDBN	If RTYP DB or DX block number, else no usage.	RDBN	R W
RBEG	Start of the receiving buffer. For DB and DX start is data word else data byte.	RBEG	R W
RLEN	Length of the receiving buffer in byte(also for DB).	RLEN	R W
STYP	Data type of the sending buffer: 'D' = DB 'X' = DX 'M' = Memory 'E' = Input 'A' = Output	STYP	R W
SDBN	For STYP DB or DX block number, else no usage.	SDBN	R W
SBEG	Start of the sending buffer. For DB and DX start is data word else data byte.	SBEG	R W
SLEN	Length of the sending buffer in byte(also for DB).	SLEN	R W
TxLEN	Amount of bytes to send.	LEN	R W
TxSTAT	Evaluate the sending status, if DONE or ERR equal 1. If DONE equals 1 the job has been executed without errors. In that case STAT equals 0.	STAT	W R
TxACT	Is starting a sending order in the S5 – LAN.	ACT	R/W R/W
TxERR	Equals 1 if an error has occurred. The details of the error can be found at the field STAT.	ERR	W R/W

TxDONE	Equals 1 if the sending order was successful.	DONE	W	R/W
RxLEN	Amount of received bytes.	LEN	W	R
RxSTAT	Evaluate the receiving status, if DONE or ERR equal 1. If DONE equals 1 the job has been executed without errors. In that case STAT equals 0.	STAT	W	R
RxACT	Granting access if 1	ACT	R/W	R/W
RxERR	Equals 1 if an error has occurred. The details of the error can be found at the field STAT.	ERR	W	R/W
NDR	Equals 1 if data received. In that case evaluate RxLEN.	NDR	W	R/W

The FB55(S5L_SEND) and FB56(S5L_RECV) are provided to make the communication easier. In these blocks the communication between S5 – Gateway and SPS is getting transacted. The FBs were developed based on the S5 -communication FCs(FC5, FC6, AG – SEND respectively AG - RECV) .

Please note: These blocks use MW200 and MW202 as scratchpad memory area.