GEFRAN

R-GPBs
Modulo gateway PROFIBUS - DP Slave GILOGIK II

INSTALLATION AND CONFIGURATION MANUAL

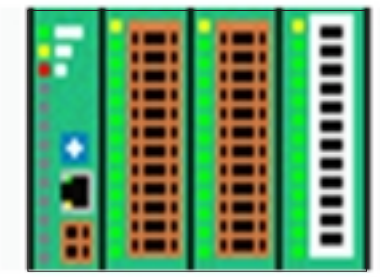
Version Fw: **00.0X**
GSD File version: **05**

code: **80136 - 0308 - ENGLISH**

INDEX

1 • INTRODUCTION

The R-GPB module is a GATEWAY between a PROFIBUS DPV0 field bus and a GEFRAN GILOGIK II local bus. For the PROFI network, it is a Modular Slave in the family of I/Os.
A maximum of 16 I/O modules is controlled, using an R-BUS18.
Via SW configuration with PLC or Supervision PC, you can configure the structure of the GILOGIK II bus and the options of individual modules with the “RGPB0B24.GSD” file.



2 • TECHNICAL CHARACTERISTICS

TECHNICAL DATA

PROTOCOL	PROFIBUS DP V0
FUNCTION	Connection of R-GPB gateway to DP Master device
BAUD RATE	Software autosynchronization from 9.6 to 12,000 Kbit/s
CONNECTOR	9 pin DB female
NODE ADDRESS	HW 1.99 with 2 rotary switches SW 1..124 with specific message
I/O DIMENSION	Input-Output: depends on configuration, max I/0 244 byte
MSG SUPPORTED:	Data_Exchange, Slave_Diag, Set_Prm, Chk_Cfg, Get_Cfg, Global_Control, Set Slave-Add
FILE GSD	RGPB0B24.gsd

WIRING

Distance:	1200m at 9.6 Kbit/s;100m at 12,000 Kbit/s
Wire:	PROFIBUS EN50170
Impedance:	150 Ohm at 2 wires
Connectors:	9 pin M SUB D Line termination: external, present on connector

POWER SUPPLY

Voltage:	24VDC ± 25%
Current:	1A max
Connector:	2 pin F, spring contacts

DIAGNOSTIC

LED POWER:	YELLOW presence of power supply.
LED RUN:	Operative state
LED BF:	Communication error

DIMENSIONS AND WEIGHT

Dimensions:	92x90x25.4mm
Weight:	150g.
Fastening:	snaps onto R-BUS(x)
Protection level:	IP20

AMBIENT SPECIFICATIONS

Working temperature:	0...50°C
Storage temperature:	-20...70°C
Humidity:	max. 90% RH non-condensing

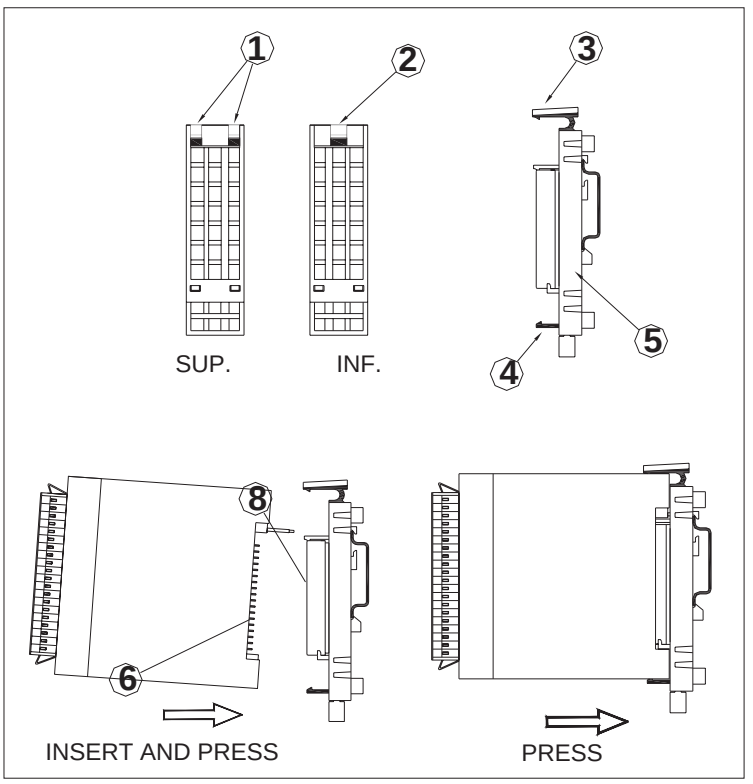
CERTIFICATIONS

Mark:	CE, UL

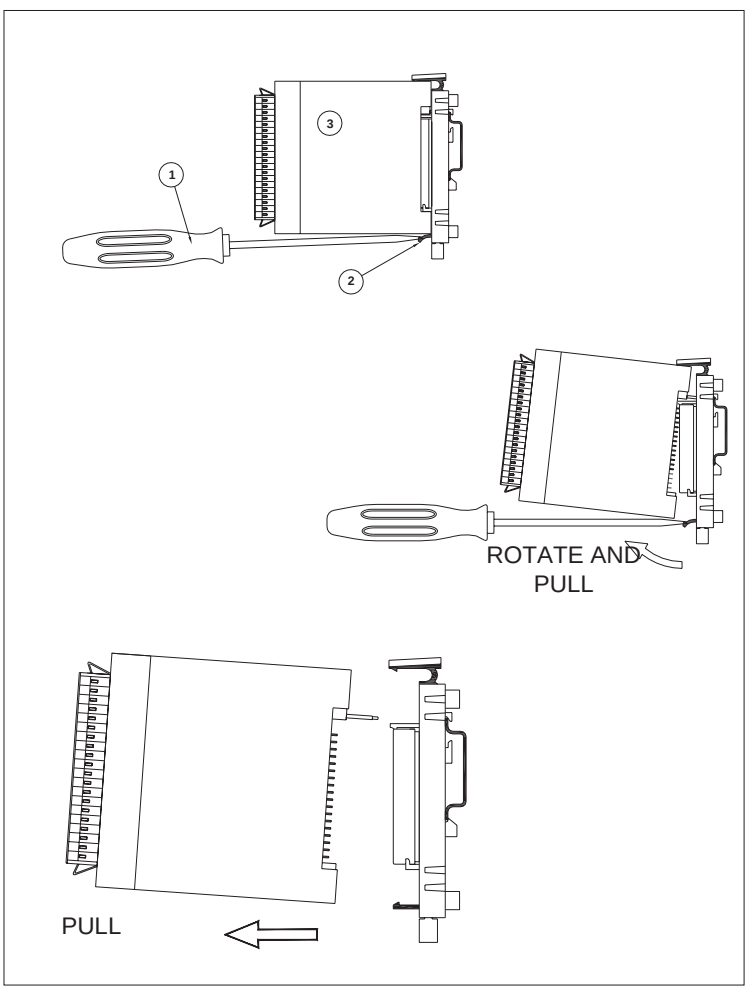
3 • INSTALLATION

3.1 Inserting and removing the module

Hook the module onto the back-plane as shown below:



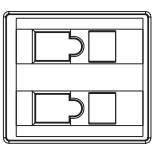
Position module (7) on back plane (5) at a slight angle, making sure that teeth (3) are aligned with the spaces (1) on the box.
Insert male connector (6) into female (8).
Press until completely inserted so that the module attaches with tooth (4) in space (2).

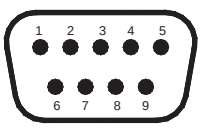
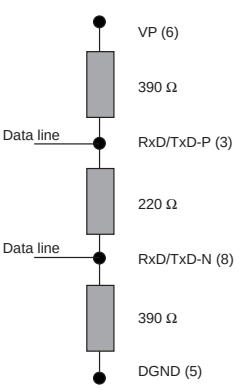


Insert screwdriver (1) between box (3) and tooth (2) to release the module. Rotate slightly and pull until completely released.

Module R-GPB must always be positioned in slot 1 of the R-BUS(x)

3.2 Electrical connections

	3 L1 4 M-	Power supply 18...32Vdc		**0,14 - 0,5mm²**	**28-20AWG**

S5 Connector D-SUB 9 pin male	**Nr. Pin**	**Name**	**Description**	**Note**
 	1	SHIELD	EMC protection	Connect the termination resistance as shown below: 
	2	M24V	Output voltage - 24V	
	3	RxD/TxD-P	Data reception/transmission	
	4	n.c.	n.c.	
	5	DGND	Vp ground	
	6	VP	+5V positive voltage	
	7	P24V	+24V output voltage	
	8	RxD/TxD-N	Data reception/transmission	
	9	n.c.	n.c.	
Wire type: shielded 1 pair 22AWG conforming to PROFIBUS				

When R-GPB is the last node of the PROFIBUS network you have to connect a 220ohm 1/4W termination resistance between the two “RxD/TxD-P” and “RxD/TxD-N” signals and two 390ohm 1/4W resistances to polarize the line between the “VP” signal with “RxD/TxD-P” and between the “DGND” signal with “RxD/TxD-N”.

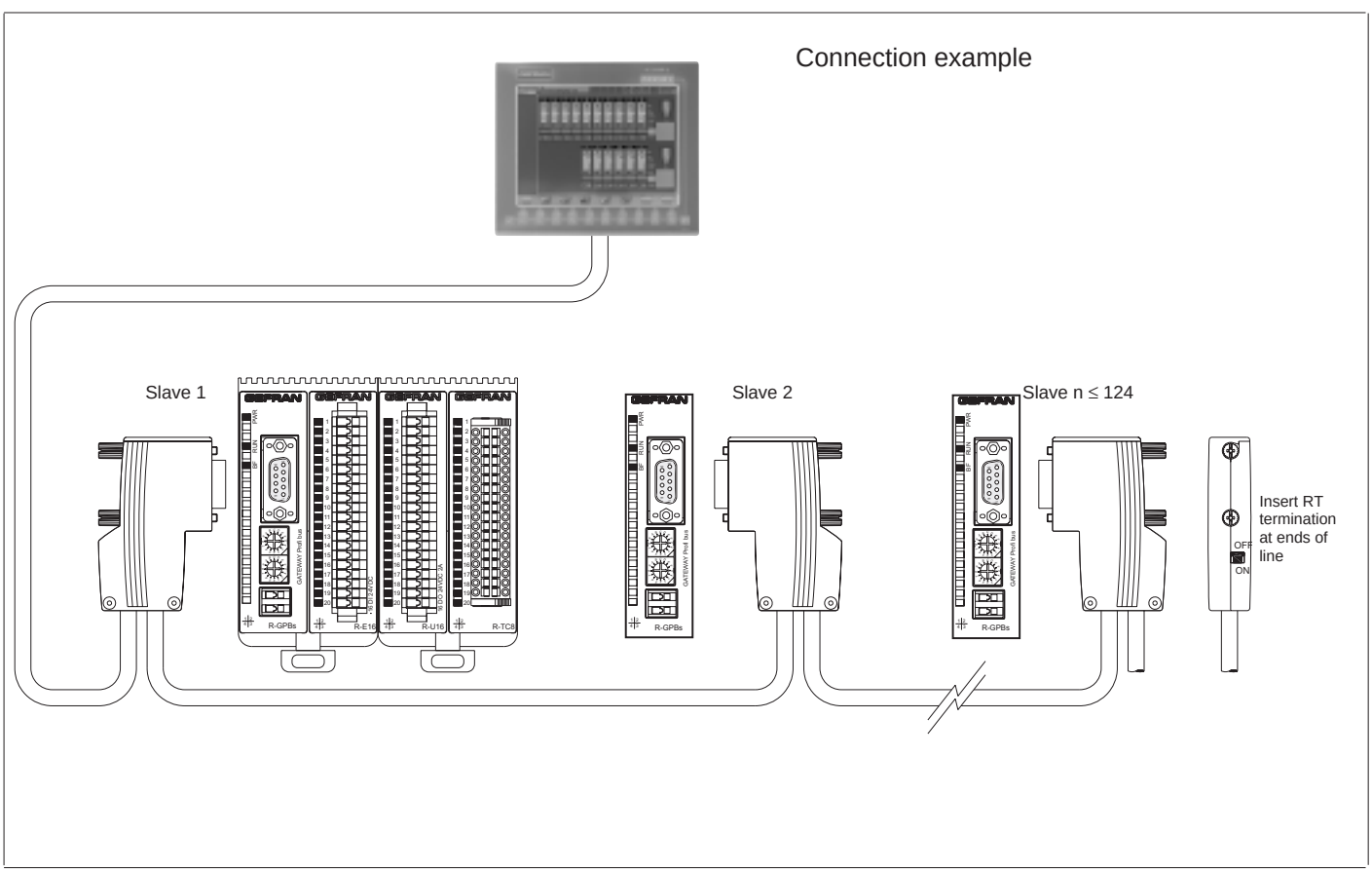
In conformity to EN50170, to guarantee good communication among PROFIBUS devices up to 12 Mbaud, the shielded cable must have special characteristics:

PARAMETER	CABLE TYPE “A”
Impedance in Ω	135...165
Capacity in pF/m	<60
Loop resistance in Ω/Km	<110
Core diameter in mm	>0.64
Core section in mm2	>0.34 (AWG22)

Using cables with these characteristics you can obtain the following line length:

Baudrate in Kbit/sec	9,6	19,2	45,45	93,75	187,5	500	1500	3000	6000	12000
Max. length in meters	1200	1200	1200	1200	1000	400	200	100	100	100

GEFRAN S.p.A. supplies PROFIBUS-approved cables and connection systems as accessories for the R-GPB



4 • NODE CONFIGURATION

4.1 ADDRESSING

The “NODE-ID” Rotary Switch lets you select the PROFIBUS node address (from 1 to 99); the other positions are not currently used:

NODE-ID		FUNCTION
MSB	*LSB*	
0	0	Not controlled: Node-ID unchanged
0	1	“SLAVE PROFIBUS” Node-ID 01
..	..	“SLAVE PROFIBUS” Node-ID n
9	9	“SLAVE PROFIBUS” Node-ID 99
9	A	Not controlled: Node-ID unchanged
..	..	Not controlled: Node-ID unchanged
F	F	Not controlled: Node-ID unchanged

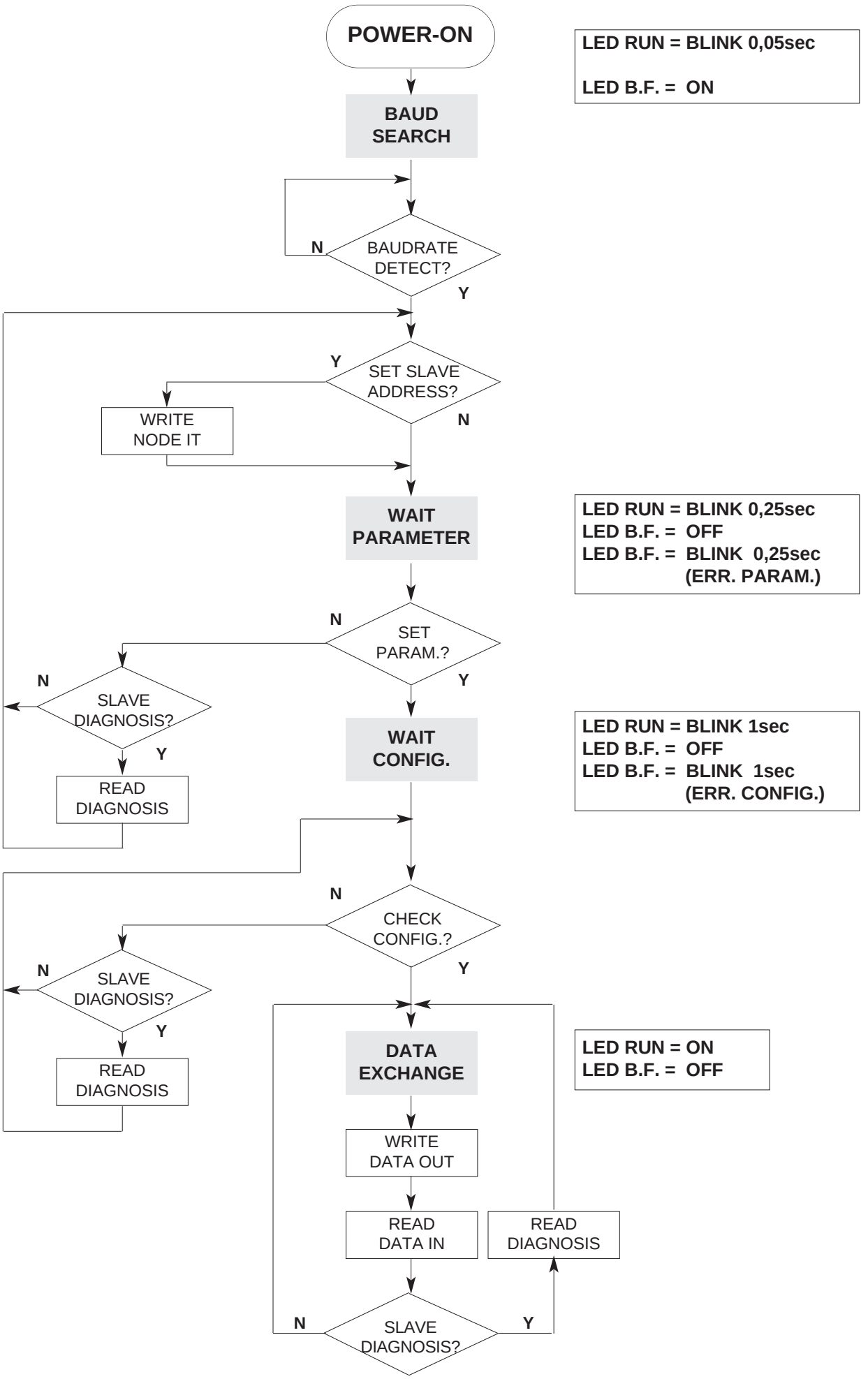
The Rotary Switch state is shown both in the POWER-ON phase of the R-GPB Module, and during normal operation: by turning the Rotary Switch the “RUN” and “B.F.” LEDs switch off and the new node address value is acquired only after movement has stopped for at lease 3seconds.

4.2 STATUS LEDs

The LEDs on the board show its operative state:

OPERATIVE STATE	LED	FUNCTION
BAUD SEARCH	POWER	ON
	RUN	Flashing every 0,05sec
	BUS FAIL	ON
WAIT PARAMETER	POWER	ON
	RUN	Flashing every 0,25sec
	BUS FAIL	OFF: waiting for parameterization Flashing every 0,25sec: Parameterization incorrect
WAIT CONFIGURATION	POWER RUN BUS FAIL	ON Flashing every 1sec OFF: Parameterization correct Flashing every 1sec: Configuration incorrect
DATA EXCHANGE	POWER	ON
	RUN	ON
	BUS FAIL	OFF
ROTARY SWITCH IN MOVEMENT	POWER	ON
	RUN	OFF
	BUS FAIL	OFF

4.3 4.4 PROFIBUS DP STATE FLOW CHART



4.4 GLOBAL CONTROL TELEGRAM (SAP 58)

The “Global_Control” telegram is sent cyclically by the Master PROFIBUS to transmit special controls to a group of Slaves for reasons of synchronization. It is controlled internally by the ASIC SPC3.

BYTE	DESCRIPTION	VALUE (hex)
1	Global Control Commands	xx
2	Group number	xx

4.5 DIAGNOSTICS DATA REQUEST TELEGRAM (SAP60)

The Master PROFIBUS requests diagnostics data from the device via the “Slave_Diagnosis” telegram; the Slave replies with 7 standard data bytes and a maximum of 56 bytes representing specific diagnostics for the product.

BYTE	DESCRIPTION	VALUE (hex)
1..3	In agreement with standard EN50170	-
4	PROFIBUS address of Master	xx
5	ID number (byte high)	0B
6	ID number (byte low)	24
7	External diagnostics length	38
8	R-GPB byte 1: SPECIFIC FAILURE R-GPB	xx
9	R-GPB byte 2: SPECIFIC FAILURE R-GPB	xx
10	R-GPB byte 3: MODULE 1..8 SPECIFIC FAILURE	xx
11	R-GPB byte 4: MODULE 9..16 SPECIFIC FAILURE	xx
12	R-GPB byte 5: MODULE 1..8 ID-CODE ERROR	xx
13	R-GPB byte 6: MODULE 9..16 ID-CODE ERROR	xx
14	R-GPB byte 7: MODULE 1..8 POWER FAILURE	xx
15	R-GPB byte 8: MODULE 9..16 POWER FAILURE	xx
16	MODULE 1 byte 1: SPECIFIC FAILURE 1	xx
17	MODULE 1 byte 2: SPECIFIC FAILURE 2	xx
18	MODULE 1 byte 3: SPECIFIC FAILURE 3	xx
19	MODULE 2 byte 1: SPECIFIC FAILURE 1	xx
20	MODULE 2 byte 2: SPECIFIC FAILURE 2	xx
21	MODULE 2 byte 3: SPECIFIC FAILURE 3	xx
~	~	
61	MODULE 16 byte 1: SPECIFIC FAILURE 1	xx
62	MODULE 16 byte 2: SPECIFIC FAILURE 2	xx
63	MODULE 16 byte 3: SPECIFIC FAILURE 3	xx

Bytes 8..15 refer to the R-GPB module, always present, and supply cumulative diagnostics data for GILOGIK II modules inserted in bus slots: each bit at 1 indicates the presence of diagnostics in the module corresponding to the bit position. The next bytes, in groups of 3, indicate the specific diagnostics, if available, of each slot of the GILOGIK II bus (see DIAGNOSTICS DATA table).

In particular, bytes 10 and 11, “**SPECIFIC FAILURE**,” indicate the presence of a specific diagnostics indication for the modules inserted in the bus. To reset this error condition, you have to force to 1 the bit corresponding to the first output word of the “DATA EX” telegram.

Bytes 12 and 13, “**ID-CODE ERROR**,” indicate that a GILOGIK II module not coherent with the HW configuration is inserted in the bus slot. The I/O data for that module will not be updated.

Bytes 14 and 15, “**POWER FAILURE**,” indicate that the module in question has a failure that requires complete system reboot to reset the situation. Examples of general diagnostics situations:

- R-BUS18 configured in an R-BUS8 bus: does not enter DATA EXCHANGE and lights up FAIL LED
- R-BUS8 configured in an R-BUS18 bus: does not enter DATA EXCHANGE and lights up FAIL LED
- Board configured in EMPTY slot: enters DATA EXCHANGE but is not controlled
- EMPTY board configured in slot with board present: does not enter DATA EXCHANGE and lights up FAIL LED
- Incorrectly configured board in slot with different board present: does not enter DATA EXCHANGE and lights up FAIL LED
- extra configured board on bus: enters DATA EXCHANGE but is not controlled

4.6 NODE ADDRESS CHANGE TELEGRAM (SAP 55)

Class 2 Master Profibuses can change Slave addresses via the “Set_Slave_Add” telegram

BYTE	DESCRIPTION	VALUE (hex)
1	New address	n
2	ID number (byte high)	0B
3	ID number (byte low)	24
4	Enable (00)\Disable (01) further changes	00

4.7 PARAMETERIZATION TELEGRAM (SAP 61)

The PROFIBUS Master uses the “**Set_Parameter**” telegram to specify the way the Slave has to function: in this case it is also used to configure all of the GILOGIK II modules on the bus, indicating the presence of free slots.
The telegram consists partly of fixed data (7 bytes) and partly of variable length data, because each module use a different number of bytes, from a minimum of 1 to a maximum of 18, based on the type of Module (see PARAMETERIZATION DATA Table).
The telegram is composed by the Master PROFIBUS Hardware Configuration Software, which reads the data contained in the **RGPB0B24.GSD** file.

BYTE	DESCRIPTION	VALUE (hex)
1	WatchDog activation command and other function modes (EN50170)	xx
2	WD Fact.(WatchDog rete PROFIBUS = WD_Fact1 * WD_Fact2 * 10msec)	xx
3	WD Fact2	xx
4	TSDRmin (Minimum response time of Slave)	xx
5	ID number (byte high)	0B
6	ID number (byte low)	24
7	Group ID	xx
8	Reserved for DPV2 Protocol	00
9	Reserved for DPV2 Protocol	00
10	Reserved for DPV2 Protocol	00
11	R-GPB byte 1: ID-CODE	06
12	R-GPB byte 2:	xx
13	R-GPB byte 3: R-BUS selection	xx
14	MODULE 1 byte 1: ID-CODE	xx
~	~	~

4.8 CONFIGURATION CONTROL TELEGRAM (SAP 62)

After parameterization, the Master PROFIBUS sends the “**Check_Configuration**” telegram to check that correct Slave configuration and coherence of assignment of the number of bytes exchanged in “DATA EX”.
The number of bytes in the telegram is based on the type of modules configured in the bus (see CONFIGURATION DATA Table).
If the Slave confirms coherence of the Configuration data, the states device goes to “DATA EX” phase and begins cyclic transmission of I/O process data.

BYTE	DESCRIPTION	VALUE (hex)
1	R-GPB: 1 word INPUT + 1 word OUTPUT	70
2	MODULE 1: xx	xx
~	~	~

4.9 CONFIGURATION REQUEST TELEGRAM (SAP 59)

With the “Get_Configuration” telegram, the Master PROFIBUS can request the saved configuration from the Slave for an additional conformity check; the Slave replies with the same data packet seen previously:

BYTE	DESCRIPTION	VALUE (hex)
1	R-GPB: 1 word INPUT + 1 word OUTPUT	70
2	MODULE 1: xx	xx
~	~	~

4.10 I/O DATA EXCHANGE TELEGRAM (SAP DEFAULT

After checking coherence of configurations via the telegrams seen above, the Master PROFIBUS enters DATA EXCHANGE state and cyclically activates the “Write_Read_Data” telegram, which produces a transmission of output bytes from Master to Slave (Data Output) and a subsequent transmission of input bytes from Slave to Master (Data Input). The number of bytes in the two packets is based on the number and type of modules configured on the GILO-GIK II bus (see PROCESS DATA Table).

BYTE	DESCRIPTION (from Master PROFIBUS to Slave R-GPB)	VALUE (hex)
1	R-GPB byte 1: Reset alarms SPECIFIC FAILURE MODULE 1..8	xx
2	R-GPB byte 2: Reset alarms SPECIFIC FAILURE MODULE 9..16	xx
3	MODULE “O1” byte 1:	xx
~	~	

BYTE	DESCRIZIONE (from Slave R-GPB to Master PROFIBUS)	VALUE (hex)
1	R-GPB byte 1:	xx
2	R-GPB byte 2:	xx
3	MODULE “I1” byte 1:	xx
~	~	

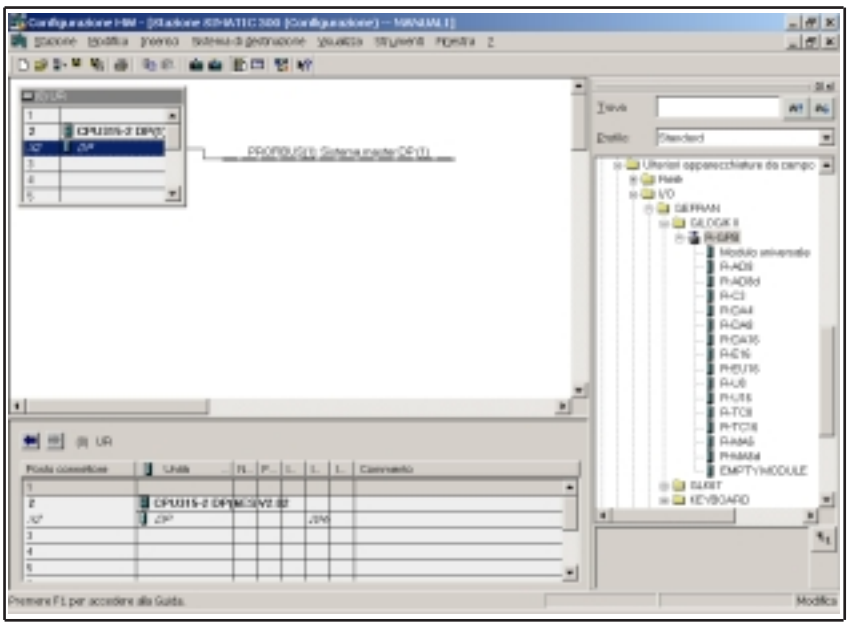
The “O1” Module is the first module on the bus (if present) that provides bytes in write; similarly, the “I1” Module is the first module on the bus (if present) that provides bytes in read.

5 • EXAMPLES OF CONFIGURATION FROM PLC

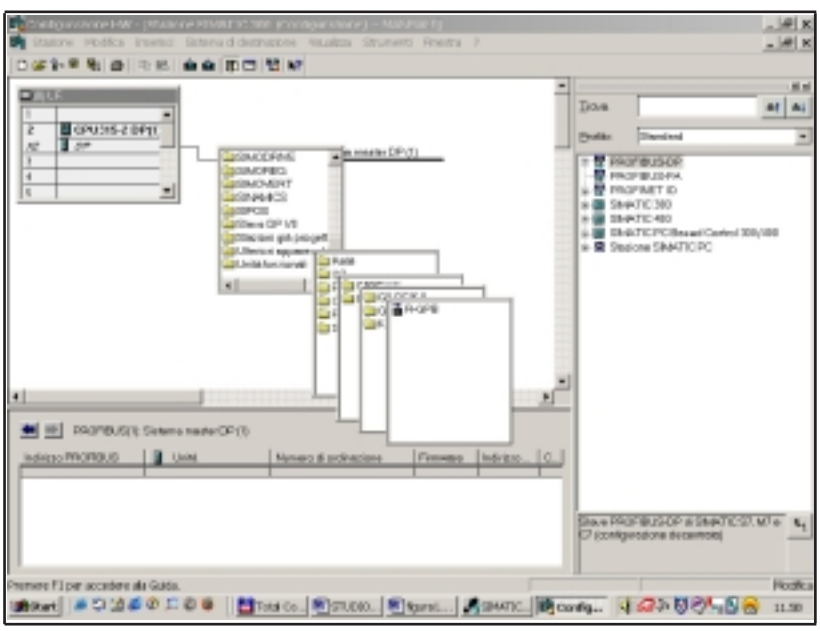
5.1 SIEMENS “STEP 7”

It is assumed that the customer has already installed the file “RGPB0B24.GSD” in his development environment.
The following procedure describes the steps required to insert an R-GPB node in a Profibus network with a Siemens S7300 PLC as Master.

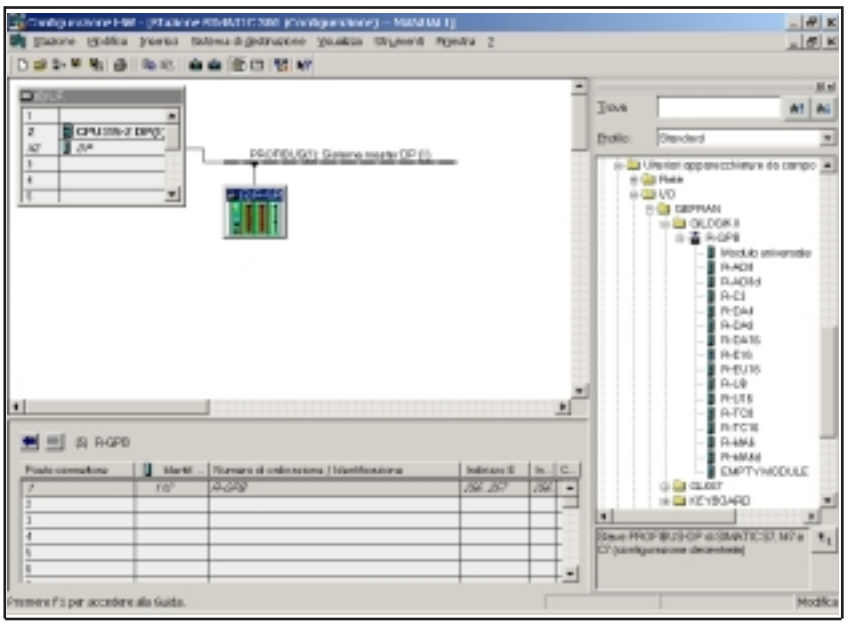
With “SIMATIC MANAGER,” create a project by selecting a CPU with PROFIBUS DP interface (example: CPU315-2DP).
Enter “HW CONFIGURATION” and enable the PROFIBUS DP interface.



Select the PROFIBUS network graphic and then select “Insert graphic” on the “INSERT” pull-down menu.
In the window, select “Additional field devices,” then “I/O,” “GILOGIK II,” and then “R-GPB.”

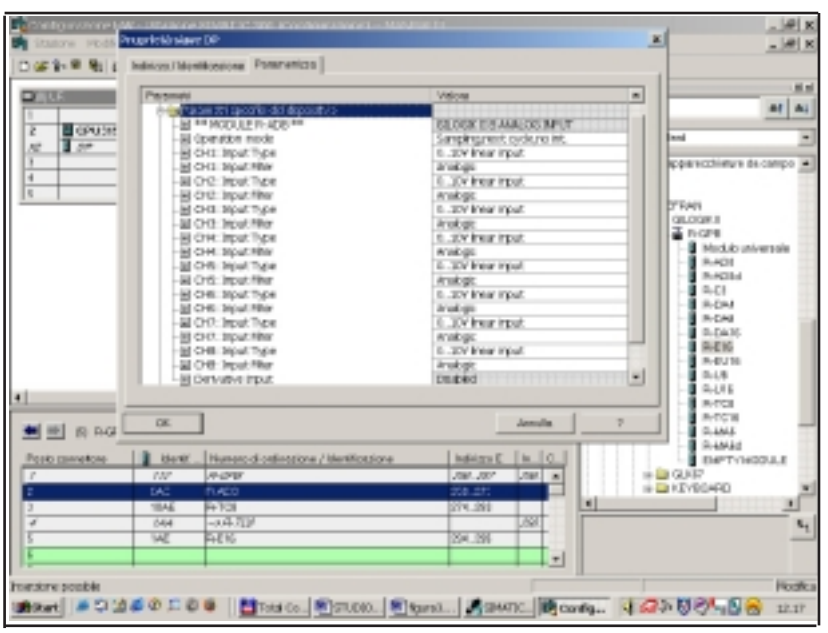


Device Slave "R-GPB" comes graphically connected to net PROFIBUS. The same result symbol "R-GPB" can be reached through the window of the "CATALOGUE" right of the screen, dragging on net PROFIBUS.



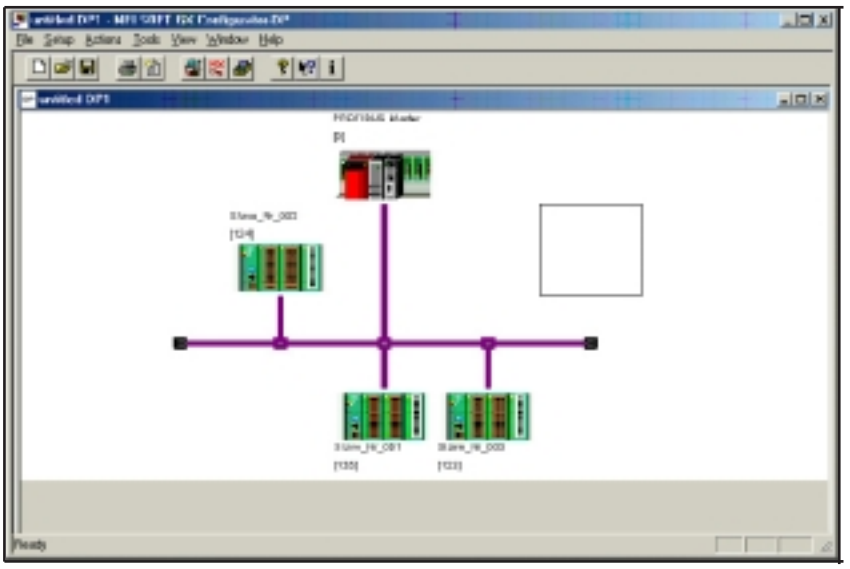
Drag the GILOGIK II modules from “CATALOG” to “CONNECTOR POST” according to their position on R-BUS.
If the R-BUS has empty positions, insert the “EMPTY” module.

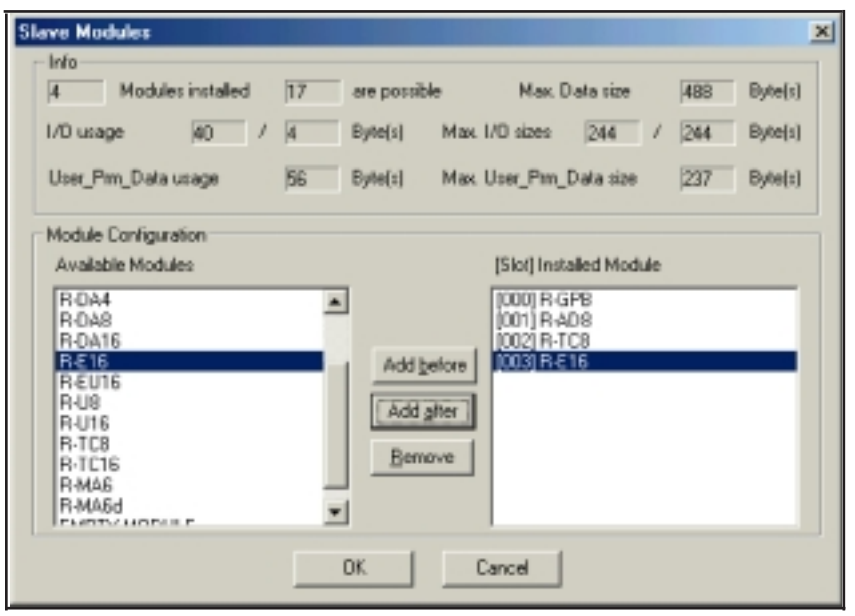
Select the module to be configured; the “DP slave properties” window appears.
Selezionare il canale ed il parametro da configurare

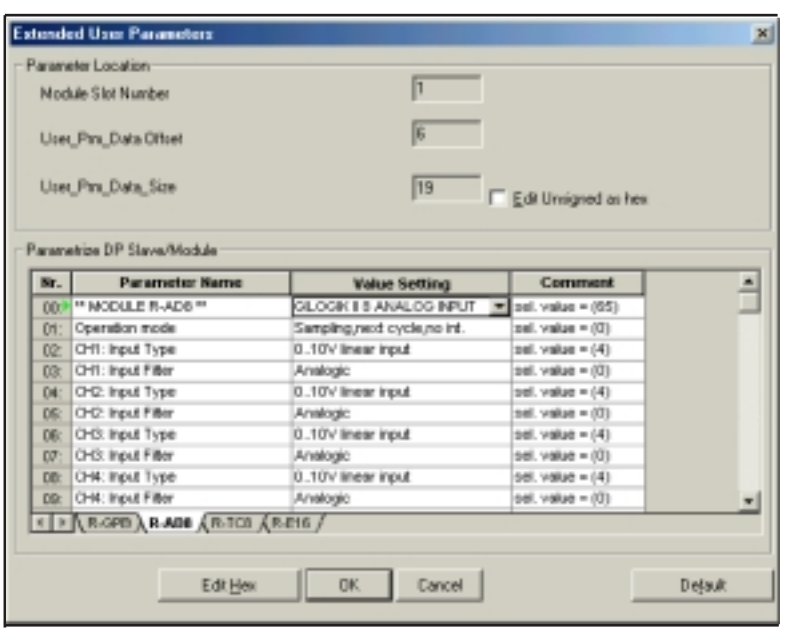


Repeat the procedure for all the modules inserted in the R-BUS.

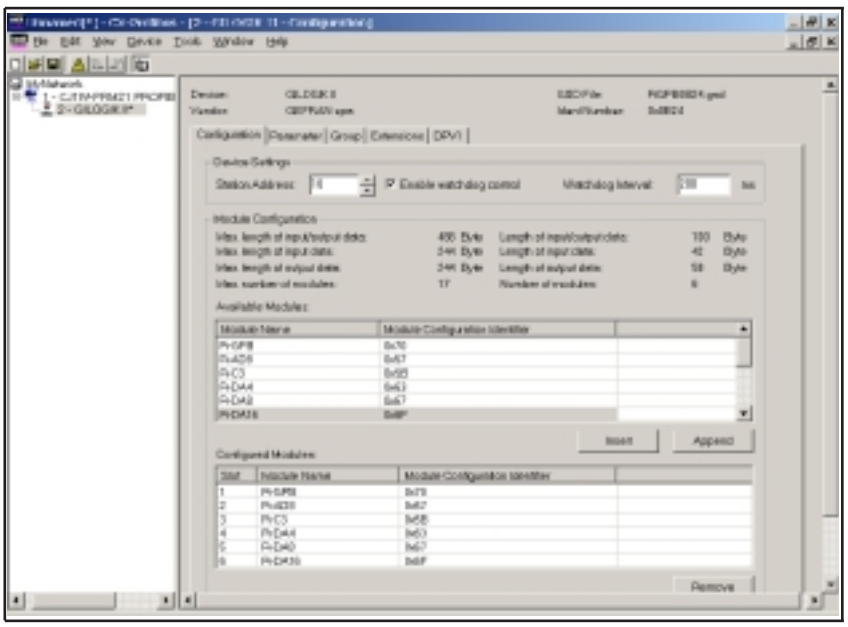
6.1 MITSUBISHI “MELSOFT GX” Configurator

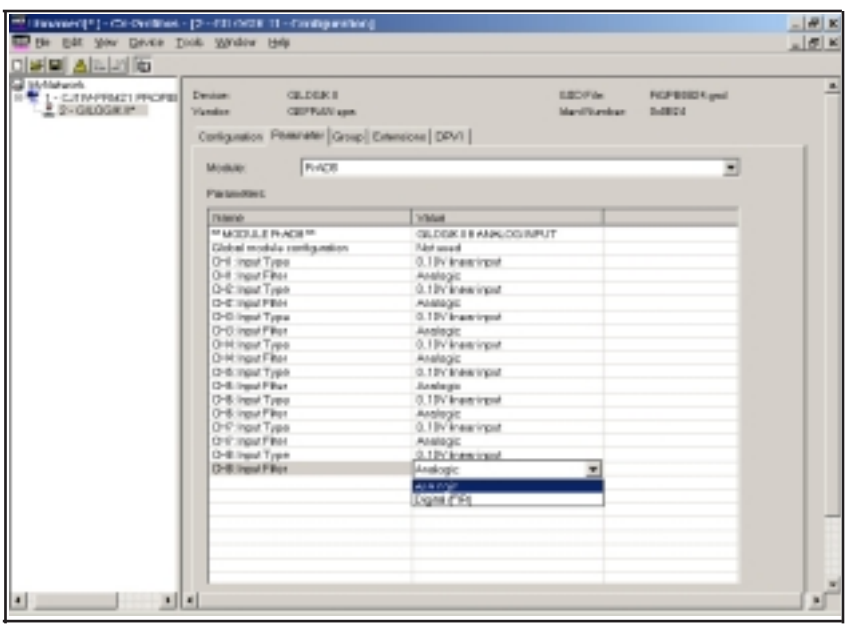




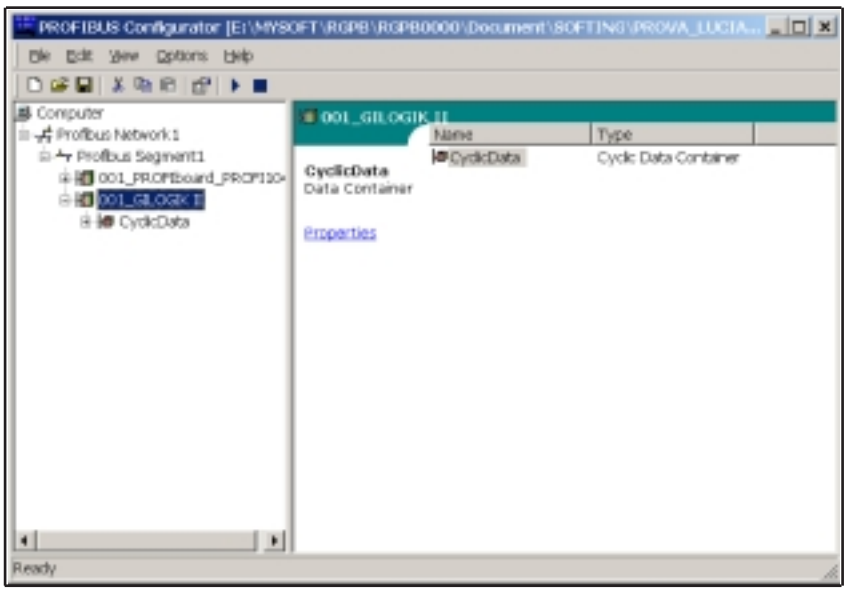


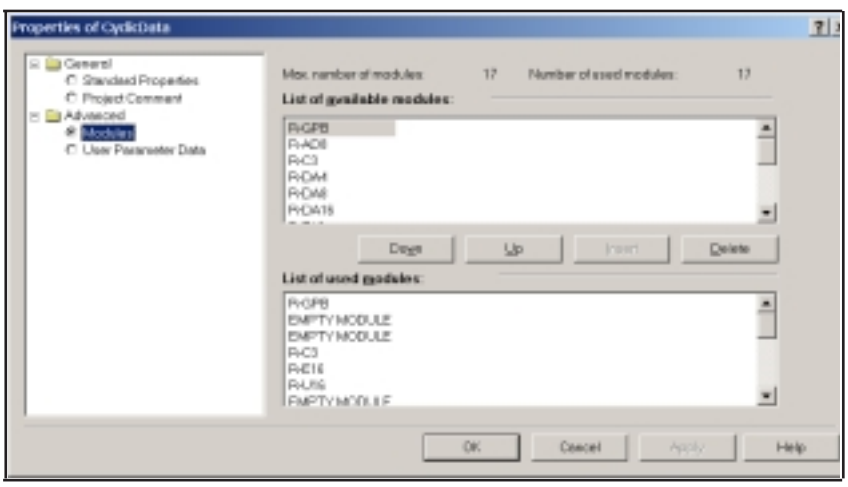
6.2 OMRON “CX-PROFIBUS”

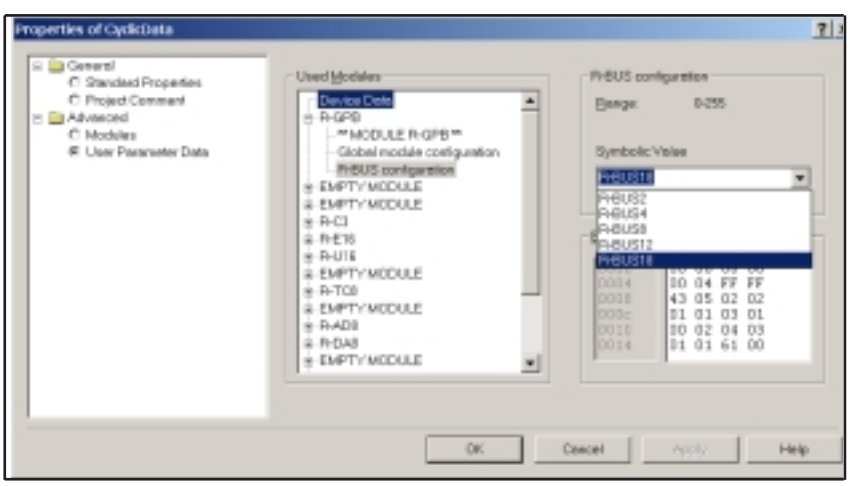




6.3 SOFTING PROFIBUS CONFIGURATOR







7 • GILOGIK II MODULES DATA TABLES

7.1 PARAMETERIZATION DATA

R-GPB MODULE

BYTE	DESCRIPTION	VALUE (hex)
1..10	Generic parameters for PROFIBUS Slave	xx
11	ID-CODE MODULE R-GPB	06
12	GSD File Revision	04
13	R-BUS configuration:	03
	R-BUS2	*00*
	R-BUS4	*01*
	R-BUS8	*02*
	R-BUS12	*03*
	R-BUS18	*04*

In the following tables, “n” is the last byte in the telegram used by the previous module (if R-GPB n=13).

MODULES R-A/D8 and R-A/D8d ([2])

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-A/D8	41
n+2	Operation mode:	00
	Sampling,next cycle,no int.	*00*
	Free running,next cycle,no int.	*01*
	Free running,next cycle,yes int	*03*
	Sampling,on cycle, no int.	*04*
	Free running,on cycle,no int.	*05*
	Free running,on cycle,yes int.	*07*
n+3	CH1: Input Type	04
	OFF	*00*
	0..30mV linear input	*01*
	0..100mV linear input	*02*
	0..2V linear input	*03*
	0..10V linear input	*04*
	+/-10V linear input	*05*
	0..20mA linear input	*06*
	Potentiometric input	*07*
n+4	CH1; Filter Type	00
	Analogic	*00*
	Digital (FIR)	*01*
≈	≈	≈
n+17	CH8: Input Type	04
n+18	CH8; Filter Type	00
n+19	Derivative Input (R-A/D8 = 00 ; R-A/D8d = 01)	xx

MODULE R-C3

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-C3	43
n+2	Global module configuration:	00
	Sampling,next cycle,no int.	*00*
	Free running,next cycle,no int.	*01*
	Free running,next cycle,yes int	*03*
	Sampling,on cycle, no int.	*04*
	Free running,on cycle,no int.	*05*
	Free running,on cycle,yes int."	*07*
n+3	CH1: Input Mode	01
	Not used	*00*
	Bidirectional Encoder	*01*
	Monodirectional Encoder	*02*
	Counter	*03*
	Period Gauge	*04*
	Frequency Gauge	*05*
	Pulse Gauge	*06*
n+4	CH1: Input Filter	00
	500KHz	*00*
	100KHz	*01*
	10KHz	*02*
	100Hz	*03*
n+5	CH1: Input Type	00
	Single ended, push-pull	*00*
	Open collector	*01*
n+6	CH1: Z-Channel	00
	Not used	*00*
	Counter reset	*01*
	Master interrupt	*02*
n+7	CH2: Input Mode	01
n+8	CH2: Input Filter	00
n+9	CH2: Input Type	00
n+10	CH2: Z-Channel	00
n+11	CH3: Input Mode	01
n+12	CH3: Input Filter	00
n+13	CH3: Input Type	00
n+14	CH3: Z-Channel	00

MODULE R-DA4

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-DA4	66
n+2	Global module configuration:	00
	Not used	*00*

MODULE R-DA8

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-DA4	64
n+2	Global module configuration:	00
	Not used	*00*

MODULE R-DA16

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-DA4	65
n+2	Global module configuration:	00
	Not used	*00*

MODULE R-E16

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-E16	61
n+2	Byte swapping:	01
	NO	*00*
	YES	*01*
n+3	CH1: Input Filter	00
	100Hz	*00*
	5KHz	*01*
n+4	CH2: Input Filter	00
≈	≈	≈
n+18	CH16: Input Filter	00

MODULE R-EU16

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-EU16	70
n+2	Global module configuration:	00
	Not used	*00*
n+3	CH1: Input Filter	00
	100Hz	*00*
	5KHz	*01*
n+4	CH2: Input Filter	00
≈	≈	≈
n+10	CH8: Input Filter	00

MODULE R-U8

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-U8	63
n+2	Global module configuration:	00
	Not used	*00*

MODULE R-U16

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-U16	62
n+2	Byte swapping:	01
	NO	*00*
	YES	*01*

MODULE R-TC8

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-TC8	42
n+2	Byte swapping:	01
	NO	*00*
	YES	*01*
n+3	CH1: Input Type	01
	DISABLE	*00*
	TC J	*01*
	TC K	*02*
	TC R	*03*
	TC S	*04*
	TC L	*05*
	TC N	*06*
	TC E	*07*
	TC T	*08*
	RTD 2 WIRE (only for CH7)	*09*
	RTD 4 WIRE (only for CH7)	*10*
	0..50mV linear input	*11*
	0..2V linear input	*12*
	A/D Converter Point	*13*
n+4	CH2: Input Type	01
≈	≈	≈
n+10	CH8: Input Type	01
n+11	Frequency Input	01
	Not used	*00*
	Resolution 0.1 RPM	*01*
	Resolution 1 RPM	*02*
	Resolution 10 RPM	*03*
n+12	Impulse per revolution (programmabile da1 a 255)	01
n+13	Degree type	00
	CELSIUS	*00*
	FAHRENHEIT	*01*

MODULO R-TC16

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-TC16	46
n+2	Global module configuration:	00
	Not used	*00*
	Configuration 1	*01*
	Configuration 2	*02*
	Configuration 3	*03*
	Configuration 4	*04*
n+3	CH1: Input Type	01
	DISABLE	*00*
	TC J	*01*
	TC K	*02*
	TC R	*03*
	TC S	*04*
	TC L	*05*
	TC N	*06*
	TC E	*07*
	TC T	*08*
	RTD 2 WIRE	*09*
	RTD 4 WIRE	*10*
	0..50mV linear input	*11*
	0..2V linear input	*12*
n+4	CH2: Input Type	01
≈	≈	≈
n+18	CH16: Input Type	01

MODULI R-M/A6 e R-M/A6d ([3])

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE R-M/A6	45
n+2	Operation mode:	00
	Sampling,next cycle,no int.	*00*
	Free running,next cycle,no int.	*01*
	Free running,next cycle,yes int	*03*
	Sampling,on cycle, no int.	*04*
	Free running,on cycle,no int.	*05*
	Free running,on cycle,yes int."	*07*
n+3	CH1: Input Type	04
	OFF	*00*
	0..30mV linear input	*01*
	0..100mV linear input	*02*
	0..2V linear input	*03*
	0..10V linear input	*04*
	+/-10V linear input	*05*
	0..20mA linear input	*06*
	Potentiometric input	*07*
n+4	CH1; Filter Type	00
	Analogic	*00*
	Digital (FIR)	*01*
≈	≈	≈
n+13	CH6: Input Type	04
n+14	CH6; Filter Type	00
n+15	Derivative Input (R-M/A6 = 00; R-M/A6d = 01)	xx

MODULO EMPTY

BYTE	DESCRIPTION	VALUE (hex)
n+1	ID-CODE MODULE EMPTY	7F

7.2 CONFIGURATION DATA

MODULE R-GPB

BYTE	DESCRIPTION	VALUE (hex)
1	1 word input e 1 word output	70

Nelle seguenti tabelle “n” è l’ultimo byte del telegramma utilizzato dal modulo precedente (se R-GPB n=1).

MODULE R-A/D8

BYTE	DESCRIPTION	VALUE (hex)
n+1	8 words input	57

MODULE R-A/D8d (²)

BYTE	DESCRIPTION	VALUE (hex)
n+1	8 words input	57
n+2	16 words input	5F

MODULE R-C3

BYTE	DESCRIPTION	VALUE (hex)
n+1	12 words input	5B

MODULE R-DA4

BYTE	DESCRIPTION	VALUE (hex)
n+1	4 words ouput	63

MODULE R-DA8

BYTE	DESCRIPTION	VALUE (hex)
n+1	8 words ouput	67

MODULE R-DA16

BYTE	DESCRIPTION	VALUE (hex)
n+1	16 words ouput	6F

MODULE R-U16

BYTE	DESCRIPTION	VALUE (hex)
n+1	1 word input	50

MODULE R-EU16

BYTE	DESCRIPTION	VALUE (hex)
n+1	1 byte input and 1 byte output	30

MODULE R-U8

BYTE	DESCRIPTION	VALUE (hex)
n+1	1 byte output	50

MODULE R-U16

BYTE	DESCRIPTION	VALUE (hex)
n+1	1 word output	60

MODULE R-TC8

BYTE	DESCRIPTION	VALUE (hex)
n+1	10 words input	59
n+2	1 word output	60

MODULE R-TC16

BYTE	DESCRIPTION	VALUE (hex)
n+1	16 words input	5F
n+2	1 word input	50

MODULE R-M/A6

BYTE	DESCRIPTION	VALUE (hex)
n+1	6 words input and 6 words output	75

MODULE R-M/A6d ([3])

BYTE	DESCRIPTION	VALUE (hex)
n+1	6 words input and 6 words output	75
n+2	12 words input	5B

MODULE EMPTY

BYTE	DESCRIPTION	VALUE (hex)
n+1	0 words input and 0 words output	00

7.3 DIAGNOSTIC DATA

MODULE R-GPB

BYTE	DESCRIPTION	VALUE (hex)
1..7	Generic parameters for PROFIBUS Slave	xx
8	R-GPB byte 1: not yet defined	00
9	R-GPB byte 2: not yet defined	00
10	R-GPB byte 3: MODULE 1..8 SPECIFIC FAILURE	xx
11	R-GPB byte 4: MODULE 9..16 SPECIFIC FAILURE	xx
12	R-GPB byte 5: MODULE 1..8 ID-CODE ERROR	xx
13	R-GPB byte 6: MODULE 9..16 ID-CODE ERROR	xx
14	R-GPB byte 7: MODULE 1..8 POWER FAILURE	xx
15	R-GPB byte 8: MODULE 9..16 POWER FAILURE	xx

In the following tables, “n” is the last byte in the telegram used by the previous module (if R-GPB n=15).

MODULE R-A/D8 and R-A/D8d ([2])

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-A/D8 byte 1: no specific diagnostic datum	00
n+2	R-A/D8 byte 2: no specific diagnostic datum	00
n+3	R-A/D8 byte 3: no specific diagnostic datum	00

MODULE R-C3

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-C3 byte 1:	xx
	No external power	*10*
	Interrupt wire CH1	*20*
	Interrupt wire CH2	*40*
	Interrupt wire CH3	*80*
n+2	R-C3 byte 2: no specific diagnostic datum	00
n+3	R-C3 byte 3: no specific diagnostic datum	00

MODULE R-DA4

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-DA4 byte 1:	0x
	Output CH1 not ok	*01*
	Output CH2 not ok	*02*
	Output CH3 not ok	*04*
	Output CH4 not ok	*08*
n+2	R-DA4 byte 2: no specific diagnostic datum	00
n+3	R-DA4 byte 3:	0x
	Overload output group CH1..CH4	*01*

MODULE R-DA8

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-DA8 byte 1:	xx
	Output CH1 not ok	*01*
	Output CH2 not ok	*02*
	Output CH3 not ok	*04*
	Output CH4 not ok	*08*
	Output CH5 not ok	*10*
	Output CH6 not ok	*20*
	Output CH7 not ok	*40*
	Output CH8 not ok	*80*
n+2	R-DA8 byte 2: no specific diagnostic datum	00
n+3	R-DA8 byte 3:	0x
	Overload output group CH1..CH4	*01*
	Overload output group CH5..CH8	*04*

MODULE R-DA16

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-DA16 byte 1:	xx
	Output CH1 not ok	*01*
	Output CH2 not ok	*02*
	Output CH3 not ok	*04*
	Output CH4 not ok	*08*
	Output CH5 not ok	*10*
	Output CH6 not ok	*20*
	Output CH7 not ok	*40*
	Output CH8 not ok	*80*
n+2	R-DA16 byte 2:	xx
	Output CH9 not ok	*01*
	Output CH10 not ok	*02*
	Output CH11 not ok	*04*
	Output CH12 not ok	*08*
	Output CH13 not ok	*10*
	Output CH14 not ok	*20*
	Output CH15 not ok	*40*
	Output CH16 not ok	*80*
n+3	R-DA16 byte 3:	0x
	Overload output group CH1, CH3, CH5, CH7	*01*
	Overload output group CH2, CH4, CH6, CH8	*02*
	Overload output group CH10, CH12, CH14, CH16	*04*
	Overload output group CH9, CH11, CH13, CH15	*08*

MODULE R-E16

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-E16 byte 1: no specific diagnostic datum	00
n+2	R- E16 byte 2: no specific diagnostic datum	00
n+3	R- E16 byte 3: no specific diagnostic datum	00

MODULE R-EU16

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-EU16 byte 1:	xx
	Output CH1 not ok	*01*
	Output CH2 not ok	*02*
	Output CH3 not ok	*04*
	Output CH4 not ok	*08*
	Output CH5 not ok	*10*
	Output CH6 not ok	*20*
	Output CH7 not ok	*40*
	Output CH8 not ok	*80*
n+2	R- EU16 byte 2: no specific diagnostic datum	00
n+3	R- EU16 byte 3: no specific diagnostic datum	00

MODULE R-U8

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-U8 byte 1:	xx
	Output CH1 not ok	*01*
	Output CH2 not ok	*02*
	Output CH3 not ok	*04*
	Output CH4 not ok	*08*
	Output CH5 not ok	*10*
	Output CH6 not ok	*20*
	Output CH7 not ok	*40*
	Output CH8 not ok	*80*
n+2	R- U8 byte 2: no specific diagnostic datum	00
n+3	R- U8 byte 3: no specific diagnostic datum	00

MODULE R-U16

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-U16 byte 1:	xx
	Output CH1 not ok	*01*
	Output CH2 not ok	*02*
	Output CH3 not ok	*04*
	Output CH4 not ok	*08*
	Output CH5 not ok	*10*
	Output CH6 not ok	*20*
	Output CH7 not ok	*40*
	Output CH8 not ok	*80*
n+2	R- U16 byte 2:	xx
	Output CH9 not ok	*01*
	Output CH10 not ok	*02*
	Output CH11 not ok	*04*
	Output CH12 not ok	*08*
	Output CH13 not ok	*10*
	Output CH14 not ok	*20*
	Output CH15 not ok	*40*
	Output CH16 not ok	*80*
n+3	R- U16 byte 3: no specific diagnostic datum	00

MODULE R-TC8

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-TC8 byte 1:	xx
	Output CH1 not ok	*01*
	Output CH2 not ok	*02*
	Output CH3 not ok	*04*
	Output CH4 not ok	*08*
	Output CH5 not ok	*10*
	Output CH6 not ok	*20*
	Output CH7 not ok	*40*
	Output CH8 not ok	*80*
n+2	R- TC8 byte 2:	xx
	Output CH9 not ok	*01*
	Output CH10 not ok	*02*
	Output CH11 not ok	*04*
	Output CH12 not ok	*08*
	Output CH13 not ok	*10*
	Output CH14 not ok	*20*
	Output CH15 not ok	*40*
	Output CH16 not ok	*80*
n+3	R- TC8 byte 3: no specific diagnostic datum	00

MODULE R-TC16

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-TC16 byte 1: no specific diagnostic datum	00
n+2	R- TC16 byte 2: no specific diagnostic datum	00
n+3	R- TC16 byte 3: no specific diagnostic datum	00

MODULE R-M/A6 and R-M/A6d ([3])

BYTE	DESCRIPTION	VALUE (hex)
n+1	R-M/A6 byte 1:	xx
	Output CH1 not ok	*01*
	Output CH2 not ok	*02*
	Output CH3 not ok	*04*
	Output CH4 not ok	*08*
	Output CH5 not ok	*10*
	Output CH6 not ok	*20*
n+2	R-M/A6 byte 2: no specific diagnostic datum	00
n+3	R-M/A6 byte 3:	0x
	Overload output group CH1..CH3	*01*
	Overload output group CH4..CH6	*02*

MODULE EMPTY

BYTE	DESCRIPTION	VALUE (hex)
n+1	EMPTY byte 1: no specific diagnostic datum	00
n+2	EMPTY byte 2: no specific diagnostic datum	00
n+3	EMPTY byte 3: no specific diagnostic datum	00

7.4 PROCESS DATA

R-GPB

BYTE	DATA INPUT	DATA OUTPUT
1	MSB Release FW	Reset alarms SPECIFIC FAILURE MODULE 1..8
2	LSB Release FW	Reset alarms SPECIFIC FAILURE MODULE 9..16

In the following tables, “n” is the last byte in the telegram used by the previous module (if R-GPB n=2).

R-A/D8 (²)

BYTE	DATA INPUT	DATA OUTPUT
n+1	MSB Analog Input 1	-
n+2	LSB Analog Input 1	-
n+3	MSB Analog Input 2	-
n+4	LSB Analog Input 2	-
n+5	MSB Analog Input 3	-
n+6	LSB Analog Input 3	-
n+7	MSB Analog Input 4	-
n+8	LSB Analog Input 4	-
n+9	MSB Analog Input 5	-
n+10	LSB Analog Input 5	-
n+11	MSB Analog Input 6	-
n+12	LSB Analog Input 6	-
n+13	MSB Analog Input 7	-
n+14	LSB Analog Input 7	-
n+15	MSB Analog Input 8	-
n+16	LSB Analog Input 8	-

R-A/D8d

BYTE	DATA INPUT	DATA OUTPUT
n+1	MSB Analog Input 1	-
n+2	LSB Analog Input 1	-
n+3	MSB Analog Input 2	-
n+4	LSB Analog Input 2	-
n+5	MSB Analog Input 3	-
n+6	LSB Analog Input 3	-
n+7	MSB Analog Input 4	-
n+8	LSB Analog Input 4	-
n+9	MSB Analog Input 5	-
n+10	LSB Analog Input 5	-
n+11	MSB Analog Input 6	-
n+12	LSB Analog Input 6	-
n+13	MSB Analog Input 7	-
n+14	LSB Analog Input 7	-
n+15	MSB Analog Input 8	-
n+16	LSB Analog Input 8	-
n+17	MSB Derivative Input 1	-
n+18	Derivative Input 1	-
n+19	Derivative Input 1	-
n+20	LSB Derivative Input 1	-
n+21	MSB Derivative Input 2	-
n+22	Derivative Input 2	-
n+23	Derivative Input 2	-
n+24	LSB Derivative Input 2	-

R-A/D8d (segue)

BYTE	DATA INPUT	DATA OUTPUT
n+25	MSB Derivative Input 3	-
n+26	Derivative Input 3	-
n+27	Derivative Input 3	-
n+28	LSB Derivative Input 3	-
n+29	MSB Derivative Input 4	-
n+30	Derivative Input 4	-
n+31	Derivative Input 4	-
n+32	LSB Derivative Input 4	-
n+33	MSB Derivative Input 5	-
n+34	Derivative Input 5	-
n+35	Derivative Input 5	-
n+36	LSB Derivative Input 5	-
n+37	MSB Derivative Input 6	-
n+38	Derivative Input 6	-
n+39	Derivative Input 6	-
n+40	LSB Derivative Input 6	-
n+41	MSB Derivative Input 7	-
n+42	Derivative Input 7	-
n+43	Derivative Input 7	-
n+44	LSB Derivative Input 7	-
n+45	MSB Derivative Input 8	-
n+46	Derivative Input 8	-
n+47	Derivative Input 8	-
n+48	LSB Derivative Input 8	-

R-C3

BYTE	DATA INPUT	DATA OUTPUT
n+1	MSB Position Input 1	-
n+2	Position Input 1	-
n+3	Position Input 1	-
n+4	LSB Position Input 1	-
n+5	MSB Position Input 2	-
n+6	Position Input 2	-
n+7	Position Input 2	-
n+8	LSB Position Input 2	-
n+9	MSB Position Input 3	-
n+10	Position Input 3	-
n+11	Position Input 3	-
n+12	LSB Position Input 3	-
n+13	MSB Speed/Frequency Input 1	-
n+14	Speed/Frequency Input 1	-
n+15	Speed/Frequency Input 1	-
n+16	LSB Speed/Frequency Input 1	-
n+17	MSB Speed/Frequency Input 2	-
n+18	Speed/Frequency Input 2	-
n+19	Speed/Frequency Input 2	-
n+20	LSB Speed/Frequency Input 2	-
n+21	MSB Speed/Frequency Input 3	-
n+22	Speed/Frequency Input 3	-
n+23	Speed/Frequency Input 3	-
n+24	LSB Speed/Frequency Input 3	-

R-DA4

BYTE	DATA INPUT	DATA OUTPUT
n+1	-	MSB Analog Output 1
n+2	-	LSB Analog Output 1
n+3	-	MSB Analog Output 2
n+4	-	LSB Analog Output 2
n+5	-	MSB Analog Output 3
n+6	-	LSB Analog Output 3
n+7	-	MSB Analog Output 4
n+8	-	LSB Analog Output 4

R-DA8

BYTE	DATA INPUT	DATA OUTPUT
n+1	-	MSB Analog Output 1
n+2	-	LSB Analog Output 1
n+3	-	MSB Analog Output 2
n+4	-	LSB Analog Output 2
n+5	-	MSB Analog Output 3
n+6	-	LSB Analog Output 3
n+7	-	MSB Analog Output 4
n+8	-	LSB Analog Output 4
n+9	-	MSB Analog Output 5
n+10	-	LSB Analog Output 5
n+11	-	MSB Analog Output 6
n+12	-	LSB Analog Output 6
n+13	-	MSB Analog Output 7
n+14	-	LSB Analog Output 7
n+15	-	MSB Analog Output 8
n+16	-	LSB Analog Output 8

R-DA16

BYTE	DATA INPUT	DATA OUTPUT
n+1	-	MSB Analog Output 1
n+2	-	LSB Analog Output 1
n+3	-	MSB Analog Output 2
n+4	-	LSB Analog Output 2
n+5	-	MSB Analog Output 3
n+6	-	LSB Analog Output 3
n+7	-	MSB Analog Output 4
n+8	-	LSB Analog Output 4
n+9	-	MSB Analog Output 5
n+10	-	LSB Analog Output 5
n+11	-	MSB Analog Output 6
n+12	-	LSB Analog Output 6
n+13	-	MSB Analog Output 7
n+14	-	LSB Analog Output 7
n+15	-	MSB Analog Output 8
n+16	-	LSB Analog Output 8
n+17	-	MSB Analog Output 9
n+18	-	LSB Analog Output 9
n+19	-	MSB Analog Output 10
n+20	-	LSB Analog Output 10
n+21	-	MSB Analog Output 11
n+22	-	LSB Analog Output 11
n+23	-	MSB Analog Output 12

R-DA16

BYTE	DATA INPUT	DATA OUTPUT
n+24	-	LSB Analog Output 12
n+25	-	MSB Analog Output 13
n+26	-	LSB Analog Output 13
n+27	-	MSB Analog Output 14
n+28	-	LSB Analog Output 14
n+29	-	MSB Analog Output 15
n+30	-	LSB Analog Output 15
n+31	-	MSB Analog Output 16
n+32	-	LSB Analog Output 16

R-E16

BYTE	DATA INPUT	DATA OUTPUT
n+1	LSB Digital Input (1)	-
n+2	MSB Digital Input (1)	-

R-EU16

BYTE	DATA INPUT	DATA OUTPUT
n+1	Digital Input	Digital Output

R-U8

BYTE	DATA INPUT	DATA OUTPUT
n+1		Digital Output

R-U16

BYTE	DATA INPUT	DATA OUTPUT
n+1	-	LSB Digital Output ([1])
n+2	-	MSB Digital Output ([1])

R-TC8

BYTE	DATA INPUT	DATA OUTPUT
n+1	MSB Temperature Input 1	LSB Digital Output (1)
n+2	LSB Temperature Input 1	MSB Digital Output (1)
n+3	MSB Temperature Input 2	-
n+4	LSB Temperature Input 2	-
n+5	MSB Temperature Input 3	-
n+6	LSB Temperature Input 3	-
n+7	MSB Temperature Input 4	-
n+8	LSB Temperature Input 4	-
n+9	MSB Temperature Input 5	-
n+10	LSB Temperature Input 5	-
n+11	MSB Temperature Input 6	-
n+12	LSB Temperature Input 6	-
n+13	MSB Temperature Input 7	-
n+14	LSB Temperature Input 7	-
n+15	MSB Temperature Input 8	-
n+16	LSB Temperature Input 8	-
n+17	MSB Ambient Temperature	-
n+18	LSB Ambient Temperature	-
n+19	MSB Frequency Input	-
n+20	LSB Frequency Input	-

R-TC16

BYTE	DATA INPUT	DATA OUTPUT
n+1	MSB Temperature Input 1	-
n+2	LSB Temperature Input 1	-
n+3	MSB Temperature Input 2	-
n+4	LSB Temperature Input 2	-
n+5	MSB Temperature Input 3	-
n+6	LSB Temperature Input 3	-
n+7	MSB Temperature Input 4	-
n+8	LSB Temperature Input 4	-
n+9	MSB Temperature Input 5	-
n+10	LSB Temperature Input 5	-
n+11	MSB Temperature Input 6	-
n+12	LSB Temperature Input 6	-
n+13	MSB Temperature Input 7	-
n+14	LSB Temperature Input 7	-
n+15	MSB Temperature Input 8	-
n+16	LSB Temperature Input 8	-
n+17	MSB Temperature Input 9	-
n+18	LSB Temperature Input 9	-
n+19	MSB Temperature Input 10	-
n+20	LSB Temperature Input 10	-
n+21	MSB Temperature Input 11	-
n+22	LSB Temperature Input 11	-
n+23	MSB Temperature Input 12	-
n+24	LSB Temperature Input 12	-
n+25	MSB Temperature Input 13	-
n+26	LSB Temperature Input 13	-
n+27	MSB Temperature Input 14	-
n+28	LSB Temperature Input 14	-
n+29	MSB Temperature Input 15	-
n+30	LSB Temperature Input 15	-
n+31	MSB Temperature Input 16	-
n+32	LSB Temperature Input 16	-

R-M/A6

BYTE	DATA INPUT	DATA OUTPUT
n+1	MSB Analog Input 1	MSB Analog Output 1
n+2	LSB Analog Input 1	LSB Analog Output 1
n+3	MSB Analog Input 2	MSB Analog Output 2
n+4	LSB Analog Input 2	LSB Analog Output 2
n+5	MSB Analog Input 3	MSB Analog Output 3
n+6	LSB Analog Input 3	LSB Analog Output 3
n+7	MSB Analog Input 4	MSB Analog Output 4
n+8	LSB Analog Input 4	LSB Analog Output 4
n+9	MSB Analog Input 5	MSB Analog Output 5
n+10	LSB Analog Input 5	LSB Analog Output 5
n+11	MSB Analog Input 6	MSB Analog Output 6
n+12	LSB Analog Input 6	LSB Analog Output 6

R-M/A6d ([3])

BYTE	DATA INPUT	DATA OUTPUT
n+1	MSB Analog Input 1	MSB Analog Output 1
n+2	LSB Analog Input 1	LSB Analog Output 1
n+3	MSB Analog Input 2	MSB Analog Output 2
n+4	LSB Analog Input 2	LSB Analog Output 2
n+5	MSB Analog Input 3	MSB Analog Output 3
n+6	LSB Analog Input 3	LSB Analog Output 3
n+7	MSB Analog Input 4	MSB Analog Output 4
n+8	LSB Analog Input 4	LSB Analog Output 4
n+9	MSB Analog Input 5	MSB Analog Output 5
n+10	LSB Analog Input 5	LSB Analog Output 5
n+11	MSB Analog Input 6	MSB Analog Output 6
n+12	LSB Analog Input 6	LSB Analog Output 6
n+13	MSB Derivative Input 1	-
n+14	Derivative Input 1	-
n+15	Derivative Input 1	-
n+16	LSB Derivative Input 1	-
n+17	MSB Derivative Input 2	-
n+18	Derivative Input 2	-
n+19	Derivative Input 2	-
n+20	LSB Derivative Input 2	-
n+21	MSB Derivative Input 3	-
n+22	Derivative Input 3	-
n+23	Derivative Input 3	-
n+24	LSB Derivative Input 3	-
n+25	MSB Derivative Input 4	-
n+26	Derivative Input 4	-
n+27	Derivative Input 4	-
n+28	LSB Derivative Input 4	-
n+29	MSB Derivative Input 5	-
n+30	Derivative Input 5	-
n+31	Derivative Input 5	-
n+32	LSB Derivative Input 5	-
n+33	MSB Derivative Input 6	-
n+34	Derivative Input 6	-
n+35	Derivative Input 6	-
n+36	LSB Derivative Input 6	-

([1]): The position of bytes “MSB“ and “LSB” depends on the configuration of parameterization data performed with the “Byte swapping” parameter. This option depends on the Master PROFIBUS used; the default value permits compatibility with SIEMENS PLCs..

([2]): The GILOGIK II “R-A/D8d” module, 8 analog inputs with derivative read, is available from HW release 7 and from release 5 of the RGPB0b24.GSD file.

([3]): The GILOGIK II “R-M/A6d” module, 6 analog inputs with derivative read and 6 analog outputs, is available from HW release 8 and from release 5 of the RGPB0b24.GSD file.