BIBS-70

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NOTE:
Notes are used to call attention to information that is significant to the understanding and operation of equipment.

The BALOGH BIBS-70 manual is based on information available at the time of its publication. We have attempted to provide accurate and up-to-date information. This document does not purport to cover all details or variations in hardware or software; nor does it provide for every possible combination of products. Some features described herein may not be available on all like products. BALOGH assumes no obligation to notify holders of this document of any subsequent changes. BALOGH makes no representation or warranty, expressed, implied or statutory with respect to, and assumes no responsibility for the accuracy, completeness, or usefulness of the information contained in this manual. No warranties of merchantability or fitness for purpose shall apply. INTERBUS-S® is a registered trademark of the Phoenix Contact Corporation.

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Introduction

The BIBS-70 Interface uses Version 2.0 Peripheral Communication Protocol (PCP). Each BIBS-70 can control up to (2) BALOGH transceivers. It controls communication between BALOGH'S electronic TAGS and Transceivers, and interfaces the data to the INTERBUS-S® Network via a Remote Bus connection. It provides a connection scheme for up to (62) BIBS-70 units (1) PCP word version and the ability to handle (124) Read Only or Read/Write RFID stations. The (4) PCP word standard BIBS-70 has an INTERBUS-S® Module ID of 241. It uses (1) I/O word to supply channel status and diagnostics, and uses (4) PCP words for data communications per bus cycle.

The BALOGH RFID technology provides 100% data integrity even in the harshest environments.
Areas of application include:

- Palletized systems
- Process controls
- Product tracking
- Automated storage and retrieval
- Automated manufacturing & assembly

The INTERBUS-S® network communicates at 500K baud rate. It makes wiring easier and reduces the cost of installations. Communications are managed by a master (PC or PLC) and require a host controller board. The BIBS-70 is linkable on the Remote Bus of the Interbus-S Network® and works as an I/O module.

The BIBS-70 Interface:

The BIBS-70 interface uses the I/O channel to provide its status for both channels to the supervisor (16 bits) and the PCP (Peripheral Communication Protocol) channel to communicate data, requests, and commands.

- Returns a status word (one byte for each channel) on the I/O channel on each bus cycle:
  - Operation in progress
  - TAG presence
  - Error indication

- PCP channel communication for receiving or transmitting:
  - Orders to execute
  - TAG addresses to read or write
  - Data

Reminder about Coding Systems

Electronic TAG:

BALOGH passive RFID TAGS are independent of a power supply. They receive the necessary energy for operation from an electromagnetic field emitted by a Transceiver. The BALOGH BIBS-70 allows the Reading and/or Writing of BALOGH TAGS:

OF/OFR	Read-Only TAG. Data is factory programmed to users specifications. OFR TAGS are user re-programmable. **Capacity: 7 bytes**
OL/OLR	Read-Only TAG. Data is factory programmed to users specifications. OLR TAGS are user re-programmable. **Capacity: 2 bytes**
OP	Read/Write TAG. Data is stored in EEPROM memory. **Capacity: 64 bytes**
OMA	Read/Write TAG. Data is stored in Ferro-Electric memory. **Capacity: 64 bytes, 2K bytes, or 8K bytes**
GIE	Read/Write TAG. Data is stored in Ferro-Electric memory. **Capacity: 512 bytes, 2K bytes, or 8K bytes**
OMX	High-speed Read/Write TAG. Data is stored in Ferro-Electric memory. **Capacity: 8K bytes, or 32K bytes**
OIR	Infrared Read/Write TAG. Data is stored in Ferro-Electric memory. **Capacity: 32K bytes**

Transceiver:

The Transceiver communicates with a passive BALOGH RFID TAG by way of an inductive electromagnetic field emitted by the Transceiver, allowing data communication with the TAG.

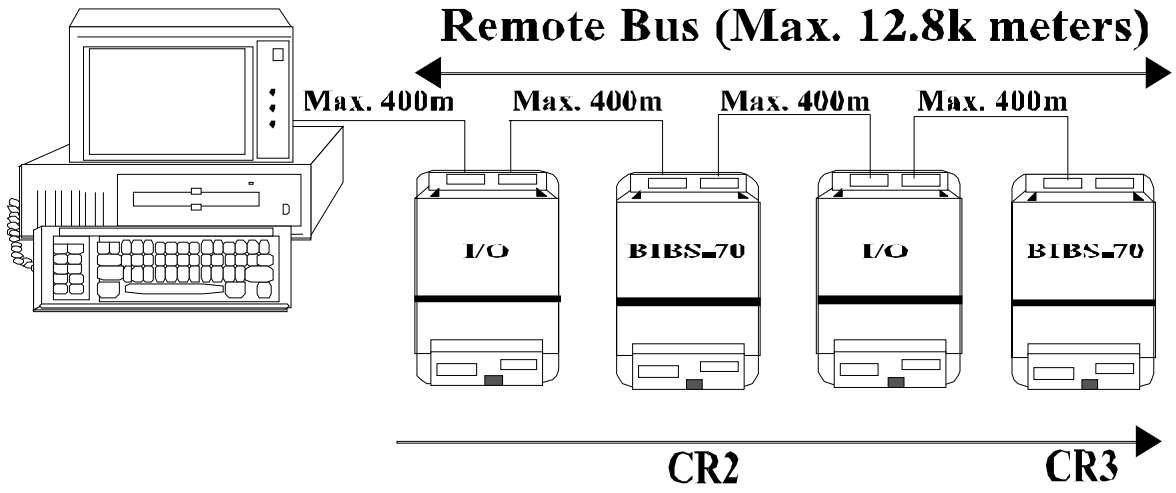
Interface Control Board:

The BIBS-70 unit processes data, commands, and works as an interface between BALOGH'S RFID TAGS and the PHOENIX INTERBUS-S® Network.

System Overview

INTERBUS-S® technology is based on a Shift Register Network. It is configured with a basic master/slave access. Data is shifted in a serial mode by the master (controller board) through each module and its register. All are part of a larger combined register. This allows the simultaneous sending and receiving of data (full duplex).

The main line is called the "**Remote Bus**." It bridges the distance between the substations.



Bus Specifications

Remote Bus:

A Remote Bus segment consists of the transmission line (Remote Bus cable) and BIBS-70 module. Each BIBS-70 may be connected and bridged up to 400 meters apart. The remote bus can be divided into 256 remote bus segments. The total length of the Remote Bus can be 12.8k meters in length.

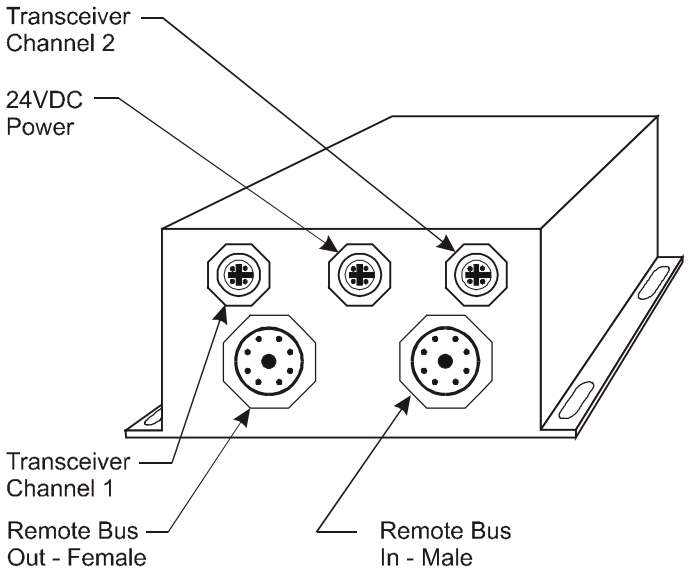
Remote Bus specifications:

Maximum number of remote BIBS-70 units @ (1) PCP word, 62
Maximum number of remote BIBS-70 units @ (2) PCP words, 31
Maximum number of remote BIBS-70 units @ (4) PCP words, 15

Maximum Remote Bus cable length between:

Controller Board and first BIBS-70 module: 400 meters
Two BIBS-70 modules: 400 meters
Controller Board and the last remote module: 12.8k meters

Connection



End View Of Controller

Remote Bus-In: Interbus-S® Remote Bus connection from controller card or previous Remote Bus unit.

Remote Bus-Out: Interbus-S® Remote Bus connection to next Remote Bus unit.

Tr #1: BALOGH Transceiver connection on Channel #1. Use BALOGH M-F/EXT/** cables.

24 VDC: BALOGH BIBS-70 24 VDC power connection. Use BALOGH SEF-ST/* cable.
Pin #1 = +24 VDC
Pin #4 = 0 VDC (Ground)

Tr #2: BALOGH Transceiver connection on Channel #2. Use BALOGH M-F/EXT/** cables.

Note:

* 2 meter, 5 meter, and 25ft, 50ft, 100ft, 150ft cables are standard BALOGH lengths for SEF-ST/* cables (other cable lengths are available upon request).

** 2 meter, 5 meter, and 10 meter cables are standard BALOGH lengths for M-F/EXT/* cables (other cables lengths are available upon request).

Operation & Fault Indications

Bus Status					TR #1 Status			TR #2 Status		
24 VDC Power	R Bus Check	Bus Active (BA)	Transmit (TR)	Receive (RD)	Com in Progress	TAG Presence	TR/TAG Error	Com in Progress	TAG Presence	TR/TAG Error
LED 1	LED 2	LED 3	LED 4	LED 5	LED 6	LED 7	LED 8	LED 9	LED 10	LED 11

End View of Controller LED'S

LED #1: "24 VDC Power"

Indicates presence of 24V DC power. Power is supplied to the BIBS-70 via an external power supply (24VDC).

LED #2: "R-Bus Check"

Indicates correct connection to the Interbus-S® Remote Bus.

LED #3: "Bus Active (BA)"

Indicates presence of Bus Activity.

LED #4: "Transmit (TR)"

Indicates presence of PCP Channel Activity.

LED #5: "Receive RD"

Indicates Receive Data.

LED #6: "Com in Progress" (TR #1)

When lit this indicates that a request for Transceiver/Channel #1 was received and it is in progress.

LED #7: "TAG Presence" a (TR #1)

Transitions high each time the TAG comes into Transmission Zone of Transceiver #1.

LED #8: "TR/TAG Error" (TR #1)

Indicates a general fault condition. The status word returned on the I/O channel provides information on the cause of the error, or indicates a TAG memory fault or a Transceiver #1 fault. The LED transitions high when the Transceiver is incorrectly wired or when there is a communication error. When the error has been corrected, and the network is configured properly, the BIBS-70 is ready to execute requests.

LED #9: "Command in Progress" (TR #2)

When lit this indicates that a request for Transceiver/Channel #2 was received and it is in progress.

LED #10: "TAG Presence" (TR #2)

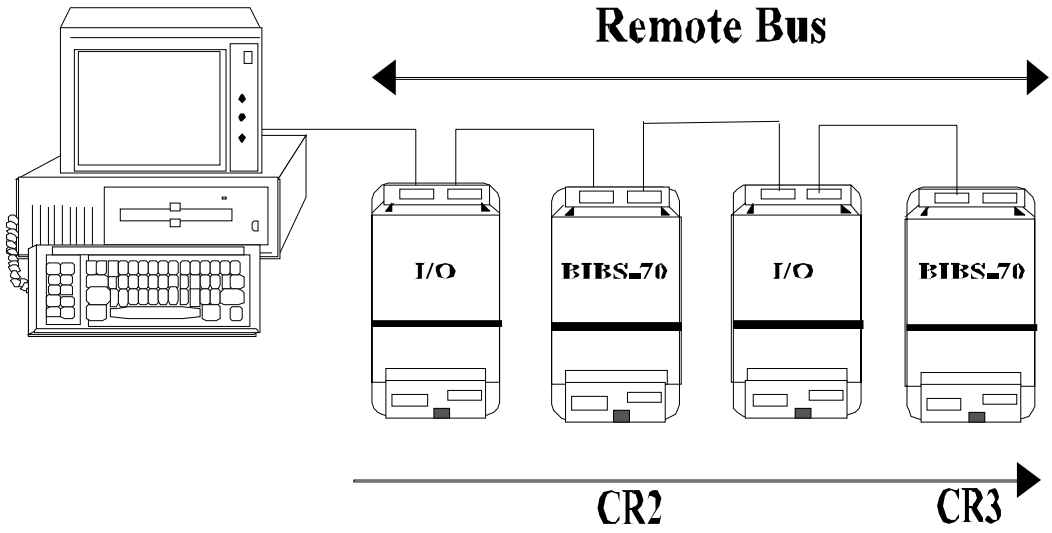
Transitions high each time the TAG comes into Transmission Zone of Transceiver #2.

LED #11: "TR/TAG Error" (TR #2)

Similar to LED #8 with respect to TR #2.

Systems Specifications

Remote bus modules connected to the INTERBUS-S® Network, are identified by their function type. The (4) PCP word standard BIBS-70 has an INTERBUS-S® Module ID of 241. This BALOGH assigned ID code is required for configuring the Bus system. It uses (2) addresses for each exchange, (1) for the I/O channel that designates the number of bytes in the Input and Output address area, and (1) for the PCP channel that designates the number of bytes in the PCP address area. Network module access is by pre-assigned mapped communication words. They follow the positions of the modules on the network.



Interbus-S® Communications Modes

The INTERBUS-S® network uses two communication channels. The I/O channel and the PCP channel. BALOGH'S BIBS-70 uses both channels to dialogue with the host:

The I/O Channel is used:

- By the BIBS-70 to transmit Transceiver status of both channels to the host.
- By the Host to acknowledge the falling edge of bit 7 (Command in progress).

The PCP Channel is used:

- For communication with peripheral devices, it receives or transmits data and orders to execute.
- TAG addresses to Read or Write.

Data is transmitted through the INTERBUS-S® system on two separate channels. Cyclically transmitted Process Data is available through the I/O Channel. Parameter data is transferred via the PCP Channel and integrated into the communication protocol.

Network Module Connection

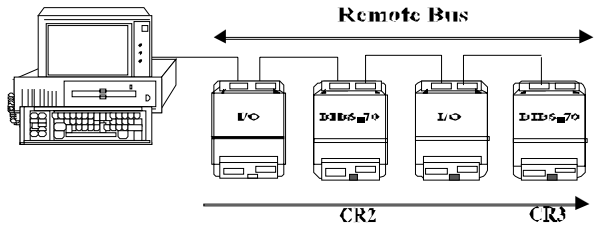
BIBS-70 Automatic Configuration:

Installation of the BIBS-70 on a Remote bus link:
Before data can be exchanged between PCP devices, a logical connection must be made. The host controller creates a list for each PCP device. To access the network, each module must be connected using the PCP channel. If a connection fails, the entire procedure must be redone.

PHOENIX® provides an Auto-profile configuration that allows automatic initialization of the network. The IBS host controller allocates communication reference (CR) numbers beginning with #2 in the same order as the physical configuration of the network PCP devices automatically during initialization.

PCP Channel:

Example: Network to Remote Bus #1:
The first PCP module (BIBS-70) is given the communication reference of CR 2. The second BIBS-70 is placed in "position 4" on the Remote Bus and given the communication reference CR3 etc… Implementing the BIBS-70 on the network requires modifications to the communication parameters contained in the CRL.DAT file (CRL= communication parameters list). This list is mandatory for accurate network operation.



Stored in a Communication Relationship List (CRL) these connection parameters can be changed or updated as needed. It contains information on their connection type and parameter requirements. The CRL is set up line by line. Every admissible communication relationship contains a number, called the communication reference (CR). The communication reference is specifically coded to distinguish between the individual devices. The logical connections configured by the communication relationship list, guarantee a smooth data exchange between communications devices. A sample Communication Reference list (CRL.DAT file) is shown on the following page.

CRL.DAT File Information

Configuration File:

---------- PMS Part----------

246 Maximum buffer length required buffer req/rep (send) low priority.
(always = 246 for the BIBS-70).

---------- Supported Services Part----------

Read	Is Supported
Write	Is Supported

I/O Channel Communication

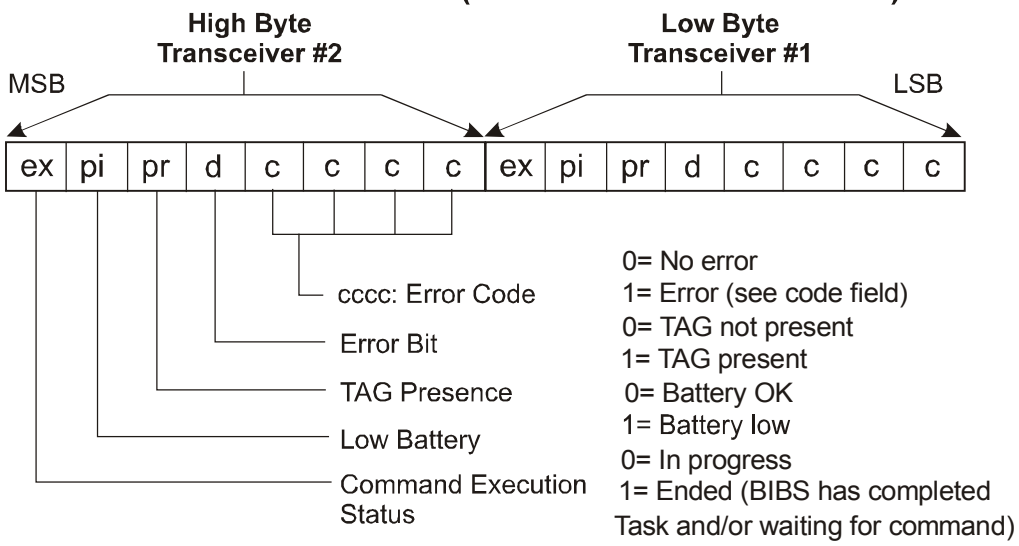
The I/O Channel is used:

- By the BIBS-70 to transmit Transceiver status to the host.
- By the Host to acknowledge the falling edge of bit 7 (Indicating that the BIBS-70 has a Command in Progress).

Status Word:

During every INTERBUS-S® cycle, the BALOGH BIBS-70 uses the High Byte of the I/O channel status word for Channel #2. The BALOGH BIBS-70 also uses the Low Byte of the I/O channel status word for Channel #1 to show its state to the Host. This allows the user to track the status of the command currently in progress and any possible error that might occur. The user validates the falling edge of bit 7 of status and changes it to an FFH value to verify the beginning of a command execution.

I/O Communication Word (Transceiver/Channel Status)



ERROR CODES

0011: Pic - Reset or Watchdog Error
0101: Pic - Dialogue Error
1100: Transceiver failure
1110: TAG Memory Failure
1111: Unable to complete TAG dialogue

Interpretation of Status Word

The High Byte contains the BIBS-70 status for Channel #2. The Low Byte contains the BIBS-70 status for Channel #1.

Number of Bit	Designation
Bit 0 to Bit 3	If Error Bit (B4) = 1 See Error Code Table Below
B4	Error Bit (B4) = 1 Error (See Error Code), B4 = 0 No Error
B5	TAG Presence Bit (B5) = 1 TAG Present, (B5) = 0 No TAG
B6	(B6) = 1 TAG Battery Low, (B6) = 0 TAG Battery OK
B7	Shows the State of Execution (B7) = 0 BIBS is processing a command (B7) = 1 BIBS has finished processing a command

Error code:

B3	B2	B1	B0	Designation
0	0	1	1	Pic - Reset or Watchdog Error
0	1	0	1	Pic - Dialogue Error
1	1	0	0	Transceiver Error
1	1	1	0	TAG Memory Error
1	1	1	1	TAG Communication Error
1	0	1	1	Addressing Error

PCP Channel Communication

The PCP channel is used for communication with peripheral devices it receives or transmits.

- Data and orders to execute.
- TAG addresses to Read or Write.

The host sends commands and receives data through the PCP channel. Data provided by the various PCP devices on the bus is known as device parameters. It is required during the start up phase of the system. Once this data has been entered, it needs to be changed only if the system configuration is changed or an error is experienced. Process objects are the communication values of the parameters for all devices that communicate via the PCP channel. To differentiate between the individual parameters during communication, each parameter is assigned a number. This index is found along with the description of parameter characteristics in a standardized list known as the Object Dictionary (OD). The Object Dictionary description contains all characteristics of the object such as; data type, object type, names, etc . . .

Each PCP device that exchanges information via the parameter data channel has its own Object Dictionary. This index is the address of the communication object. It is necessary for the identification of the object and allows the communication object to communicate with other PCP devices.

Commands

Block Read request:

The BIBS-70 Read command reads blocks of data from a continuous TAG address. It can read up to 236 bytes per block during one command, if larger amounts of data are needed, multiple block Read's are required.

Block Read result request:

If no errors are experienced after a Read Request has been performed, you need to send a Read Result Request to retrieve the data from the BIBS-70.

Block Write request:

The BIBS-70 WRITE command writes a block of data to a continuous TAG address. It can write up to 236 bytes per block during one command, if larger amounts of data are needed, multiple block Write's are required.

General reset:

This general reset command request cancels the command currently being executed. The BIBS-70 will revert to its start up state. This instruction causes the BIBS-70 to cancel the last instruction requested. This can be issued while a Read or Write operation is waiting to execute and cancels the current or last command.

Command Execution Cycle

The BIBS-70 uses (1) I/O word and (4) PCP v2.0 words, and has a Module ID of 241. The BIBS-70 returns one word of status on the input of the I/O channel. The high-byte of status word contains the status for Channel #2. The low-byte of the status word contains the status for Channel #1. When a request is received, the BIBS-70 sets bit 7 of the status word to 0. Upon detection of this transition of bit 7 from high to low, the user should then confirm transition by placing the value FFH on the I/O output channel (this serves as a handshake between the BIBS-70 and the host). When the command has ended (with or without error) the BIBS-70 will transition bit 7 of the status word high (to 1). The position of bit 4 reflects the error results, 1 = defect, 0 = correct execution (no errors).

HOST	**BIBS-70**
Places 0 in the output word on the I/O Channel, then sends Command Request to BIBS-70.	
	Verification (ACK or NACK). Upon receiving command from the host the BIBS-70 sets bit 7 of status word low to indicate start of process of command.
Waits for detection of transition of bit 7 of status word from BIBS-70 from high to low (command is now in progress in the BIBS-70). Then the host places FFH in the output word on the I/O channel (verifies the start of BIBS-70 processing a command).	
	Processes command and waits to receive FFH from host (handshake). When the BIBS-70 receives the FFH from the host and has completed the command in progress, the BIBS-70 will transition bit 7 of the status from low to high.
Value of bit 7 of status = 1 the command was executed by the BIBS-70 and has completed. Then verify bit 4 = 0 (error bit). The data is validated, and the command is complete, if the error bit 4 = 1, then read the error code.	

Generic Request Format:

The header contains:

Number of the request (INTERBUS-S® Message Code).
Number of words that form the body (Parameter Count).
Number of the communication request (Communication Reference).
Number of Data Bytes and the number of the first word where the body of the request is stored.

The body contains:

Number of the index.
Number of the sub index.
The data (if necessary).

TAG Read Request

Packet creation is as follows:

1. The **Command Code** provides a preset number for each command. In this example, we use the WRITE request order code 0082H to implement a TAG READ REQUEST.

2. A **Parameter Count** of 05 is used for the 5 required subsequent data words for this command.

3a. The **Invoke ID** is always set to 00 (it is not used for PCP v2.0 protocol).

3b. **CR** is for the Communication Reference numbers for the specific BIBS-70 unit. A setting of 02 is used in this example, designating the 1st BIBS-70 on the Bus (2nd BIBS = 03 etc…).

4. The **Index** is an assigned command specifically designed for BIBS-70 operations. In this example, we issue a TAG READ REQUEST for Channel #1, the index is 5F 00 (for Channel #2, the index is 5F 10).

5a. The **Sub-Index** allows objects to be treated as a whole or individually if they consist of several elements. An object description includes all characteristics such as data type, object type, and names. In this example, it is set to 00.

5b. The **Data Byte Length**, indicates the number of Bytes needed to identify the profile (the remaining bytes till the end of the command. For a READ REQUEST the length is 4 bytes).

6. **TAG Address**, indicates the first TAG address to begin the operation. The TAG address is a 16 bit parameter. The bits are designated 0 to 15.

   If bit 14 = 0, the command execution is **WITHOUT** wait (TAG MUST be in the Transceiver zone for operation).

   If bit 14 = 1, the command execution is **WITH** wait (the command will execute when the next TAG enters the Transceiver zone).

7a. **Number of Bytes to Read**, designates the number of bytes to read from the TAG (maximum 236 bytes).

7b. **Not Used**, the low byte of this word is not used and should be set to 00.

The following page shows an example of a "TAG Read Request Packet for Channel 1".

TAG Read Request Packet Example

Example		
00 82	**Command Code** Provides a preset hexadecimal number for each command.	
00 05	**Parameter Counter** Provides the total number of the subsequent parameter words.	
00 02	**Invoke ID** (Always set to 00, not used for PCP v2.0 protocol).	**CR Communication Reference Number** (ID's the specific BIBS-70 Unit) 02 = BIBS-70 #1, 03 = BIBS-70 #2 etc…
5F 00	**Index Module Command For TAG Read** 5F 00 = Channel #1 TAG Read 5F 10 = Channel #2 TAG Read	
00 04	**Sub-Index**	**Data Byte Length** (To define the profile for the number of bytes listed below).
00 00	**TAG Address**	
04 00	**Number of Bytes to Read** (236 Bytes Maximum)	**Not Used**

*** TAG address:** The TAG address is a 16 bit parameter. The bits are designated 0 to 15.
If bit 14 = 0, the command execution is **WITHOUT** wait (TAG MUST be in the Transceiver zone for operation).

If bit 14 = 1, the command execution is **WITH** wait (The command will execute when the next TAG enters the Transceiver zone).

Read Result Request

Packet creation is as follows:

1. The **Command Code** provides a preset number for each command. In this example, we use a READ request order code 0081H to implement a READ RESULT REQUEST.

2. A **Parameter Count** of 03 is used for the 3 required subsequent data words for this command.

3a. The **Invoke ID** is always set to 00 (it is not used for PCP v2.0 protocol).

3b. **CR** is for the Communication Reference numbers for the specific BIBS-70 unit. A setting of 02 is used in this example, designating the 1st BIBS-70 on the Bus (2nd BIBS = 03 etc…).

4. The **Index** is an assigned command specifically designed for BIBS-70 operations. In this example, we issue a READ RESULT REQUEST for Channel #1, the index is 5F 03 (for Channel #2, the index is 5F 13).

5a. The **Sub-Index** allows objects to be treated as a whole or individually if they consist of several elements. An object description includes all characteristics such as data type, object type, and names. In this example, it is set to 00.

5b. The **Data Byte Length** indicates the number of Bytes needed to identify the profile (the remaining bytes till the end of the command). For a READ RESULT REQUEST the length is 00.

The following page shows an example of a "Read Result Request Packet".

Read Result Packet Example

Example		
00 81	**Command Code** Provides a preset hexadecimal number for each command.	
00 03	**Parameter Counter** Provides the total number of the subsequent parameter words.	
00 02	**Invoke ID** (Always set to 00, not used for PCP v2.0 protocol).	**CR Communication Reference Number** (ID's the specific BIBS-70 Unit) 02 = BIBS-70 #1, 03 = BIBS-70 #2 etc…
5F 03	**Index Module Command For Read Result** 5F 03 = Channel #1 Read Result 5F 13 = Channel #2 Read Result	
00 00	**Sub-Index**	**Data Byte Length** (To define the profile for the number of bytes listed below).

TAG Write

Packet creation is as follows:

1. The **Command Code** provides a preset number for each command. In this example, we use the WRITE request order code 0082H to implement a TAG WRITE REQUEST.

2. A **Parameter Count** of 07 is used for the 7 required subsequent data words for this command.

3a. The **Invoke ID** is always set to 00 (it is not used for PCP v2.0 protocol).

3b. **CR** is for the Communication Reference numbers for the specific BIBS-70 unit. A setting of 02 is used in this example, designating the 1st BIBS-70 on the Bus (2nd BIBS= 03 etc…).

4. The **Index** is an assigned a command specifically designed for BIBS-70 operations. In this example, we issue a TAG READ REQUEST for Channel #1, the index is 5F 01 (for Channel #2, the index is 5F 11).

5a. The **Sub-Index** allows objects to be treated as a whole or individually if they consist of several elements. An object description includes all characteristics such as data type, object type, and names. In this example, it is set to 00.

5b. The **Data Byte Length** indicates the number of Bytes needed to identify the profile (the remaining bytes till the end of the command). For this TAG WRITE REQUEST, the length is 8 bytes.

6. **TAG Address** indicates the first TAG address to begin the operation. The TAG address is a 16 bit parameter. The bits are designated 0 to 15.

   If bit 14 = 0, the command execution is **WITHOUT** wait (TAG MUST be in the transceiver zone for operation).

   If bit 14 = 1, the command execution is **WITH** wait (The command will execute when the next TAG enters the Transceiver zone).

7a. **Number of Bytes to Write** designates the number of bytes to write to the TAG (maximum 236 bytes).

7b. **Not Used** indicates the low byte of this word is not used and should be set to 00.

8a. **Word #1 High-Byte Data Value** is the first data byte that will be written to the TAG (Byte #1).

8b. **Word #1 Low-Byte Data Value** is the second data byte that will be written to the TAG (Byte #2).

9a. **Word #2 High-Byte Data Value** is the third data byte that will be written to the TAG (Byte #3).

9b. **Word #2 Low-Byte Data Value** is the fourth data byte that will be written to the TAG (Byte #4).

The following page shows an example of a "TAG Write Command Packet".

TAG Write Request Packet Example

Example		
00 82	**Command Code** Provides a preset hexadecimal number for each command.	
00 07	**Parameter Counter** Provides the total number of the subsequent parameter words.	
00 02	**Invoke ID** (Always set to 00, not used for PCP v2.0 protocol).	**CR Communication Reference Number** (ID's the specific BIBS-70 Unit) 02 = BIBS-70 #1, 03 = BIBS-70 #2 etc…
5F 01	**Index Module Command For TAG Write** 5F 01 = Channel #1 TAG Write 5F 11 = Channel #2 TAG Write	
00 08	**Sub-Index**	**Data Byte Length** (To define the profile for the number of bytes listed below).
00 00	**TAG Address ***	
04 00	**Number of Bytes to Write** (236 Bytes Maximum)	**Not Used**
?? ??	**Word #1 High-Byte Data Value** (Byte #1)	**Word #1 Low-Byte Data Value** (Byte #2)
?? ??	**Word #1 High-Byte Data Value** (Byte #3)	**Word #1 Low-Byte Data Value** (Bytes #4)

*** TAG address:** The TAG address is a 16 bit parameter. The bits are designated 0 to 15. If bit 14 = 0, the command execution is **WITHOUT** wait (TAG MUST be in the Transceiver zone for operation). If bit 14 = 1, the command execution is **WITH** wait (The command will execute when the next TAG enters the Transceiver zone).

BIBS-70 Reset Command

Packet creation is as follows:

1. The **Command Code** provides a preset number for each command. In this example, we use the WRITE request order code 0082H to implement a RESET REQUEST.

2. A **Parameter Count** of 04 is used for the 4 required subsequent data words for this command.

3a. The **Invoke ID** is always set to 00 (it is not used for PCP v2.0 protocol).

3b. **CR** is for the Communication Reference numbers for the specific BIBS-70 unit. A setting of 02 is used in this example, designating the 1st BIBS-70 on the Bus (2nd BIBS = 03 etc…).

4. The **Index** is an assigned command specifically designed for BIBS-70 operations. In this example, we issue a RESET REQUEST for Channel #1, the index is 5F 02 (for Channel #2, the index is 5F 12).

5a. The **Sub-Index** allows objects to be treated as a whole or individually if they consist of several elements. An object description includes all characteristics such as data type, object type, and names. In this example, it is set to 00.

5b. The **Data Byte Length** indicates the number of bytes needed to identify the profile (the remaining bytes till the end of the command). For a RESET REQUEST the length is 02.

6a. **Channel Reset** is set to FF (if not set to FF you will receive a parameter error).

6b. **Not Used:** For this command, the value should always be set = 00.

The following page shows an example of a "Channel Reset Request Packet".

BIBS Channel Reset Packet Example

Example		
00 82	**Command Code** Provides a preset hexadecimal number for each command.	
00 04	**Parameter Counter** Provides the total number of the subsequent parameter words.	
00 02	**Invoke ID** (Always set to 00, not used for PCP v2.0 protocol).	**CR Communication Reference Number** (ID's the specific BIBS-70 Unit) 02 = BIBS-70 #1, 03 = BIBS-70 #2 etc…
5F 02	**Index Module Command For BIBS Reset** 5F 02 = Channel #1 Reset, 5F 12 = Channel #2 Reset	
00 02	**Sub-Index**	**Data Byte Length** (To define the profile for the number of bytes listed below).
FF 00	**Channel Reset** FF = Reset Channel **(Channel # depends on Index used above).**	**Not Used** (Should always to set = 00)

Set TAG Value Command (Fill)

Packet creation is as follows:

1. The **Command Code** provides a preset number for each command. In this example, we use the WRITE request order code 0082H to implement a SET TAG VALUE REQUEST.

2. A **Parameter Count** of 05 is used for the 5 required subsequent data words for this command.

3a. The **Invoke ID** is always set to 00 (it is not used for PCP v2.0 protocol).

3b. **CR** is for the Communication Reference numbers for the specific BIBS-70 unit. A setting of 02 is used in this example, designating the 1st BIBS-70 on the Bus (2nd BIBS = 03 etc…).

4. The **Index** is an assigned command specifically designed for BIBS-70 operations. In this example, we issue a SET TAG VALUE REQUEST for Channel #1, the index is 5F 04 (for Channel #2, the index is 5F 14).

5a. The **Sub-Index** allows objects to be treated as a whole or individually if they consist of several elements. An object description includes all characteristics, such as data type, object type, and names. In this example, it is set to 00.

5b. **Not Used**: this value should always be set to 00 for this operation.

6. **TAG Address** indicates the first TAG address to begin the operation. The TAG address is a 16 bit parameter. The bits are designated 0 to 15.

   If bit 14 = 0, the command execution is **WITHOUT** wait (TAG MUST be in the transceiver zone for operation).

   If bit 14 = 1, the command execution is **WITH** wait (The command will execute when the next TAG enters the Transceiver zone).

7a. **Address Length To Fill** is set to 64 (Hex value in this example to fill 100 bytes of the TAG). The maximum length is 236 bytes.

7b. **Data Value To Fill:** This is the data value that will be written to the TAG.

The following page shows an example of a "Set TAG Value Request".

Set TAG Value (Fill) Packet Example

Example		
00 82	**Command Code** Provides a preset hexadecimal number for each command.	
00 05	**Parameter Counter** Provides the total number of the subsequent parameter words.	
00 02	**Invoke ID** (Always set to 00, not used for PCP v2.0 protocol).	**CR Communication Reference Number** (ID's the specific BIBS-70 Unit) 02 = BIBS-70 #1, 03 = BIBS-70 #2 etc...
5F 04	**Index Module Command For Set TAG Value (Fill)** 5F 04 = Channel #1 Set TAG Value (Fill) 5F 14 = Channel #2 Set TAG Value (Fill)	
00 04	**Sub-Index**	**Not Used**
00 00	**TAG Address ***	
64 00	**Address Length To Fill** (Maximum 236 bytes)	**Data Value to Fill**

*** TAG ADDRESS:** The TAG address is a 16 bit parameter. The bits are designated 0 to 15. If bit 14 = 0, the command execution is **WITHOUT** wait (TAG MUST be in the Transceiver zone for operation). If bit 14 = 1, the command execution is **WITH** wait (the command will execute when the next TAG enters the Transceiver zone).

Interbus-S® Communication Errors

Packet creation is as follows:

1. The **Message Code**, similar to the Command Code, provides a preset number for each command.

2. The **Parameter Count** is used for defining the required subsequent data words for this command.

3a. The **Invoke ID** is always set to 00 (it is not used for PCP v2.0 protocol).

3b. **CR** is for the Communication Reference numbers for the specific BIBS-70 unit. A setting of 02 is used in this example designating the 1st BIBS-70 on the Bus (2nd BIBS=03 etc...).

4a. **FF** identifies that a negative result has occurred.

4b. **Error Class** shows the type of error. An error class of 8 indicates a device specific error.

5a. **Error Code** supplies further information about what has caused the error. In the example on the following page, a READ RESULT was attempted. The information is unavailable.

5b. **Additional Code** provides additional manufacturers information on the specific error, if available.

6a. **Additional Code** provides additional manufacturers information on the specific error, if available.

6b. **Additional Code** provides additional manufacturers information on the specific error, if available.

Note: For the other error codes see PHOENIX INTERBUS-S® documentation.

Network Communications Errors

Example		
00 00	**Message Code** Provides a preset hexadecimal number for each command.	
00 00	**Parameter Counter** Provides the total number of the subsequent parameter words.	
00 02	**Invoke ID** (Always set to 00, not used for PCP v2.0 protocol).	**CR Communication Reference Number** (ID's the specific BIBS-70 Unit) 02 = BIBS-70 #1, 03 = BIBS-70 #2 etc…
FF 08	**Negative Result Error** (Indicates a negative result occurred).	**Error Class** (Shows the type of error that occurred).
00 20	**Error Code** (Provides additional information about the error that occurred).	**Additional Code** (Provides additional manufacturers information on the specific error, if available).
00 00	**Additional Code** (Provides additional manufacturers information on the specific error, if available).	**Additional Code** (Provides additional manufacturers information on the specific error, if available).

Communication Errors

Error code	Reason	Solution
0022H	Received a command request while it was still communicating the bit of a previously executed command (while waiting for the falling edge of bit 7 of status).	A command was just sent. Wait for the rising edge of bit 7 and completion of the current cycle before resending the request that caused the error.
0023H	Received a read result request while still communicating a command execution bit.	The command was not executed again. It descends bit 7 of status and finishes the current cycle in progress. A command request is necessary. The read request of the result will be sent when the bit 7 of status goes high (=1).
0024H	Received a command request while waiting for the completion of the previous command.	The BIBS-70 only executes one command at a time. It cannot execute both commands simultaneously. Finish the command currently in progress before sending the next is necessary. To rescind the current command order, use the RAZ request.
0025H	Received a read result request, while waiting for the completion of the previous Command.	Wait for the rising edge of bit 7 of status before sending the read result request.
0026H	Received a command request while waiting for a read request.	A command was executed and the BIBS-70 prepared an answer (data was read from the TAG). Reading the result to execute another command is necessary. Canceling the order and the answer by using the RAZ request is possible.
0030H	Parameter error in the request command. The request was not included.	The request included a format error. Review this specific request command to verify the parameters of the request (type, length etc…).

BIBS-70
Data Sheet

INTERBUS-S® Control Board BIBS-70/**

Identification - Coding

Reference: BIBS-70/**

A=	OMA	64, 2K, or 8K bytes Read/Write TAG
P=	OP	64 byte & 96 byte Read/Write TAG
X=	OMX	High Speed 8K & 32K byte Read/Write TAG
E=	GIE	512, 2K, 8K byte Read/Write TAG
I =	OIR	64K Byte Read/Write TAG
F=	OF or OFR	7 bytes Read-Only TAG
L=	OL or OLR	2 byte Read-Only Extended Range TAG

Characteristics

- The BIBS-70 allows the Reading and Writing without contact of passive electronic TAGS.
- The BIBS-70 is an Interbus-S® Network compatible interface. It has an Identification Code of 241.
- Configurable as an I/O module, the BIBS-70 is linkable on the Remote Bus of the Interbus-S® Network. The BIBS-70 communicates at 500K baud. It makes wiring easier and reduces the cost of installation. Communications are managed by a master (PC or PLC), and requires an Interbus-S® host controller board.
- The BIBS-70 uses the I/O channel to give status for both channels to the supervisor (16 bits) and the PCP channel to communicate data, requests, and commands.
- The BIBS-70 visual diagnostics are as follows:
  - 1 LED D1: Indicating the presence of 24VDC power.
  - 4 LED's, D2 thru D5: Associated with the Interbus-S® Network diagnostics.
  - 6 LED's, D6 thru D11: For the BIBS-70 RFID system diagnostics.

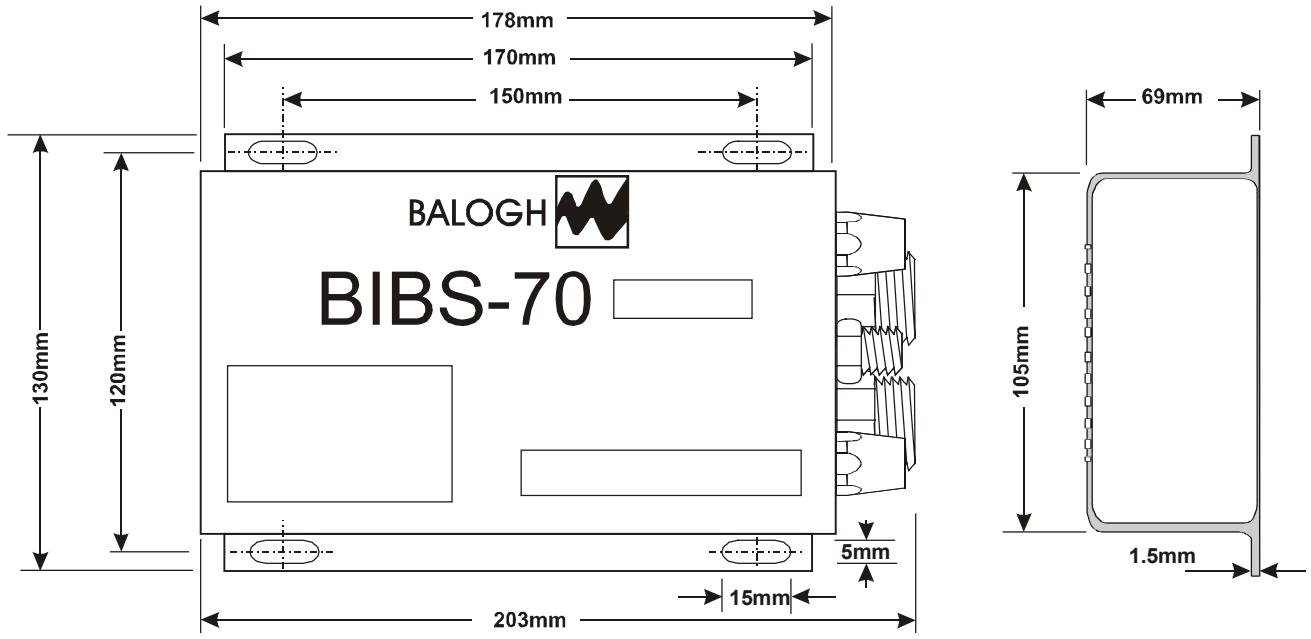
Transceiver/Channel #1		Transceiver/Channel #2	
D6	- Command in progress	D9	- Command in progress
D7	- TAG presence	D10	- TAG presence
D8	- TAG/Transceiver error	D11	- TAG/Transceiver error

Characteristics	Symbol	Unit	BIDP
Supply Power (+10% - -10%)	Ucc	V	24 VDC (ripple <2%)
Consumed Current	Io	mA	130mA (+ Transceiver consumption)
Ambient Temperature	T	°C	0 to 50°C
Protection Degree	IP	/	65

INTERBUS-S®
Control Board
BIBS-70/**

Identification - Coding

Dimensions



Connections