Reer S.p.A.

Process data mapping

for MBx / MI-Bx Fieldbus expansion modules V2.0.1

(Addendum of Technical manual 8541654)



Contents

General Notes....8
MODULE BUS MBx FIRMWARE < 3.0.0....9
EtherCAT (MBEC)....9
Map without analog data....9
PDO predefined connection set....9
Process data mapping (PDO)....9
Map with analog data....11
PDO predefined connection set....11
Process data mapping (PDO)....11
Vendor specific Objects....13
Object Index 2001h – System status....13
Object Index 2003h – Errors data CPU 0....13
Object Index 2004h – Errors data CPU 1....13
Object Index 2005h – Input diagnostics....14
Object Index 2006h – OSSD diagnostics....15
Object Index 2007h – Project CRC....16
Object Index 2101h – Fieldbus inputs....16
Object Index 2181h – Fieldbus inputs feedback....16
Object Index 2201h – Input status....17
Object Index 2202h – OSSD status....17
Object Index 2203h – Probe status....17
Object Index 2204h – Analog data....18
CANopen (MBC)....19
Map without analog data....19
PDO predefined connection set....19
Process data mapping (PDO)....20
Map with analog data....22
PDO predefined connection set....22
Process data mapping (PDO)....23
Vendor specific Objects....25
Object Index 2001h – System status....25
Object Index 2003h – Errors data CPU 0....25
Object Index 2004h – Errors data CPU 1....25
Object Index 2005h – Input diagnostics....26

Object Index 2006h – OSSD diagnostics 27
Object Index 2007h – Project CRC 28
Object Index 2101h – Fieldbus inputs 28
Object Index 2181h – Fieldbus input feedback 28
Object Index 2201h – Input status 29
Object Index 2202h – OSSD status 29
Object Index 2203h – Probe status 29
Object Index 2204h – Analog data 30
EtherNet/IP (MBEI) 31
Map without analog data 31
Process data mapping (Class 1 Connection) 31
Assembly instance 96h (Connection point O->T Consuming Instance) 31
Assembly instance 64h (Connection point T->O Producing Instance) 31
Assembly instance 05h (Configuration Data) 31
Map with analog data 32
Process data mapping (Class 1 Connection) 32
Assembly instance 96h (Connection point O->T Consuming Instance) 32
Assembly instance 64h (Connection point T->O Producing Instance) 32
Assembly instance 05h (Configuration Data) 33
Explicit messaging 34
DeviceNet (MBD) 35
Map without analog data 35
Process data mapping 35
Assembly instance 96h (Consuming Instance) 35
Assembly instance 64h (Producing Instance) 35
Map with analog data 35
Process data mapping 35
Assembly instance 96h (Consuming Instance) 36
Explicit messaging 37
Modbus TCP/IP (MBEM) 38
Register mapping 38
Write Single (6x) Fieldbus Inputs 38
Holding Registers (4x) System I/O 38
Holding Registers (4x) Analog data 39
Holding Registers (4x) Error CPU 0 / Error CPU 1 39

Holding Registers (4x) Input diagnostics 40
Holding Registers (4x) Output diagnostics 41
Holding Registers (4x) Projetc CRC 41
Modbus Serial (MBMR) 42
Register mapping 42
Write Single (6x) Fieldbus Inputs 42
Holding Registers (4x) System I/O 42
Holding Registers (4x) Analog data 43
Holding Registers (4x) Error CPU 0 / Error CPU 1 43
Holding Registers (4x) Input diagnostics 44
Holding Registers (4x) Output diagnostics 45
Holding Registers (4x) Project CRC 45
CC-LINK (MBCCL) 46
Process data mapping 46
Master to slave 46
Slave to master 46
PROFINET (MBEP) 48
Process data mapping 48
Module Fieldbus input 48
Module System I/O 48
Module Analog data 49
Record Data read/write services 49
PROFIBUS DP (MBP) 50
Module 1 (with Analog data) 50
Process data mapping 50
Module 2 (without Analog data) 51
Process data mapping 51
Powerlink (MBEPL) 52
Map without analog data 52
PDO predefined connection set 52
Process data mapping (PDO) 52
Map with analog data 54
PDO predefined connection set 54
Process data mapping (PDO) 54
Vendor specific Objects 56
Object Index 2001h – System status 56

Object Index 2003h – Errors data CPU 0 56
Object Index 2004h – Errors data CPU 1 56
Object Index 2005h – Input diagnostics 57
Object Index 2006h – OSSD diagnostics 58
Object Index 2007h – Project CRC 59
Object Index 2101h – Fieldbus inputs 59
Object Index 2181h – Fieldbus inputs feedback 59
Object Index 2201h – Input status 60
Object Index 2202h – OSSD status 60
Object Index 2203h – Probe status 60
Object Index 2204h – Analog data 61
Record Data read/write services 62
MODULE BUS MBx FIRMWARE ≥ 3.0.0 63
EtherCAT (MBEC) 63
Map without analog data and without restart inputs 63
PDO predefined connection set 63
Process data mapping (PDO) 63
Map with analog data and without restart inputs 65
PDO predefined connection set 65
Process data mapping (PDO) 65
Map without analog data and with restart inputs 67
PDO predefined connection set 67
Process data mapping (PDO) 67
Map with analog data and with restart inputs 68
PDO predefined connection set 68
Process data mapping (PDO) 68
Vendor specific Objects 70
Object Index 2001h – System status 70
Object Index 2003h – Errors data CPU 0 70
Object Index 2004h – Errors data CPU 1 70
Object Index 2005h – Input diagnostics 71
Object Index 2006h – OSSD diagnostics 72
Object Index 2007h – Project CRC 73
Object Index 2101h – Fieldbus inputs 73
Object Index 2181h – Fieldbus inputs feedback 73

Object Index 2201h – Input status 74
Object Index 2202h – OSSD status 74
Object Index 2203h – Probe status 74
Object Index 2204h – Analog data 75
Object Index 2008h – RFID Chain 1 75
Object Index 2009h – RFID Chain 2 75
EtherNet/IP (MBEI) 76
Map without analog data and without restart inputs 76
Process data mapping (Class 1 Connection) 76
Assembly instance 96h (Connection point O->T Consuming Instance) 76
Assembly instance 64h (Connection point T->O Producing Instance) 76
Assembly instance 05h (Configuration Data) 76
Map with analog data and without restart inputs 77
Process data mapping (Class 1 Connection) 77
Assembly instance 96h (Connection point O->T Consuming Instance) 77
Assembly instance 64h (Connection point T->O Producing Instance) 77
Assembly instance 05h (Configuration Data) 78
Map without analog data and with restart inputs 79
Process data mapping (Class 1 Connection) 79
Assembly instance 96h (Connection point O->T Consuming Instance) 79
Assembly instance 64h (Connection point T->O Producing Instance) 79
Assembly instance 05h (Configuration Data) 79
Map with analog data and with restart inputs 80
Process data mapping (Class 1 Connection) 80
Assembly instance 96h (Connection point O->T Consuming Instance) 80
Assembly instance 64h (Connection point T->O Producing Instance) 80
Assembly instance 05h (Configuration Data) 81
Explicit messaging 82
Modbus TCP/IP (MBEM) 83
Register mapping 83
Write Single/Multiple Holding Registers (6x,16x) Fieldbus Inputs 83
Holding Registers (3x,4x) System I/O and Analog Data 84
Holding Registers (3x,4x) Error CPU0 / Error CPU1 85
Holding Registers (3x,4x) Input diagnostics 86
Holding Registers (3x,4x) Output diagnostics 87

Holding Registers (3x,4x) Project CRC 87
Holding Registers (3x,4x) RFID Chain 1 / RFID Chain 2 88
Coils mapping 89
Coils addresses (1x, 2x, 5x, 15x) 89
PROFINET (MBEP) 91
Process data mapping 91
Module Fieldbus input 91
Module System I/O without restart inputs 91
Module System I/O with restart inputs 92
Module Analog data 93
Record Data read/write services 93
MODULO BUS MI-Bx 94
EtherCAT (MBEC) 94
Process data mapping (PDO) 94
EtherNet/IP (MBEI) 95
Process data mapping (Class 1 Connection) 95
Assembly instance 96h (Connection point O->T Consuming Instance) 95
Assembly instance 64h (Connection point T->O Producing Instance) 95
Modbus TCP/IP (MBEM) 96
Register Mapping 96
Holding Registers (3x,4x) Micron data 96
PROFINET (MBEP) 97
Process data mapping 97
Module Fieldbus input 97
Module Micron Data 97
Backward compatibility process data map 98
Explanation 98
Backward compatibility: example 1 99
Backward compatibility: example 2 99
Backward compatibility: example 3 100
EtherCAT (MBEC) (backward compatibility) 102
Process data mapping (PDO) 102
EtherNet/IP (MBEI) (backward compatibility) 103
Process data mapping (Class 1 Connection) 103
Assembly instance 96h (Connection point O->T Consuming Instance) 103
Assembly instance 64h (Connection point T->O Producing Instance) 103

Modbus TCP/IP (MBEM) (backward compatibility) 104
Register mapping 104
Holding Registers (3x,4x) System I/O 104
PROFINET (MBEP) (backward compatibility) 105
Process data mapping 105
Module Fieldbus input 105
Module System I/O 105
Acyclic data format 106
Errors data CPUx format 106
Input diagnostics format 106
OSSD diagnostics format 106
Project CRC format 106
Cyclic data format 108
Version history 110

General Notes

1. The process data size is fixed, this means that the size and mapping of the process data image of the bus communication devices does not change depending on how many input or output modules are connected to the configurable safety controller.

2. “Reserved”-Bytes are allocated as variables where necessary (e.g., to maintain the inner sub-index structure of the CANopen user defined objects when an object in enlarged beyond 1 byte size)

3. Some data are available only if the communication module is used in a system where the M1 firmware version is greater that a miminum value (i.e., Errors data are only available if M1 firmware version is greater than 5.0, Analog data are available only with M1 greater than 4.0, Project CRC data are available only with M1 greater than 3.0)

4. The Analog data section is optional: it can be turned on or off using the Bus configurator software; if the Analog data checkbox in the software is selected then the bytes are present in the process image, if the box is unchecked the bytes are not present; the process image size must be adapted to the actual number of bytes.

5. The Restart inputs data section is optional: it can be turned on or off using the Bus configurator software; if the Restart inputs checkbox in the software is selected then the bytes are present in the process image, if the box is unchecked the bytes are not present; the process image size must be adapted to the actual number of bytes.

MODULE BUS MBx FIRMWARE < 3.0.0

EtherCAT (MBEC)

Map without analog data

PDO predefined connection set

PDO Designation	Name	Length	Mapping Object
RxPDO 1	RxPDO 1	4 Byte	1600h
TxPDO 1	TxPDO 1	32 Byte	1A00h

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	2001h	02h	Reserved_2001_02
1A00h	03h	2001h	03h	Reserved_2001_03
1A00h	04h	2001h	04h	Reserved_2001_04
1A00h	05h	2201h	01h	Input status byte 0
1A00h	06h	2201h	02h	Input status byte 1
1A00h	07h	2201h	03h	Input status byte 2
1A00h	08h	2201h	04h	Input status byte 3
1A00h	09h	2201h	05h	Input status byte 4
1A00h	0Ah	2201h	06h	Input status byte 5
1A00h	0Bh	2201h	07h	Input status byte 6
1A00h	0Ch	2201h	08h	Input status byte 7
1A00h	0Dh	2201h	09h	Input status byte 8
1A00h	0Eh	2201h	0Ah	Input status byte 9
1A00h	0Fh	2201h	0Bh	Input status byte 10
1A00h	10h	2201h	0Ch	Input status byte 11
1A00h	11h	2201h	0Dh	Input status byte 12
1A00h	12h	2201h	0Eh	Input status byte 13
1A00h	13h	2201h	0Fh	Input status byte 14
1A00h	14h	2201h	10h	Input status byte 15
1A00h	15h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	16h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	17h	2181h	03h	Fieldbus input byte 2 feedback
1A00h	18h	2181h	04h	Fieldbus input byte 3 feedback
1A00h	19h	2203h	01h	Probe status byte 0
1A00h	1Ah	2203h	02h	Probe status byte 1
1A00h	1Bh	2203h	03h	Probe status byte 2
1A00h	1Ch	2203h	04h	Probe status byte 3

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	1Dh	2202h	01h	OSSD status byte 0
1A00h	1Eh	2202h	02h	OSSD status byte 1
1A00h	1Fh	2202h	03h	OSSD status byte 2
1A00h	20h	2202h	04h	OSSD status byte 3

Map with analog data

PDO predefined connection set

PDO Designation	Name	Length	Mapping Object
RxPDO 1	RxPDO 1	4 Byte	1600h
TxPDO 1	TxPDO 1	96 Byte	1A00h

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	2001h	02h	Reserved_2001_02
1A00h	03h	2001h	03h	Reserved_2001_03
1A00h	04h	2001h	04h	Reserved_2001_04
1A00h	05h	2201h	01h	Input status byte 0
1A00h	06h	2201h	02h	Input status byte 1
1A00h	07h	2201h	03h	Input status byte 2
1A00h	08h	2201h	04h	Input status byte 3
1A00h	09h	2201h	05h	Input status byte 4
1A00h	0Ah	2201h	06h	Input status byte 5
1A00h	0Bh	2201h	07h	Input status byte 6
1A00h	0Ch	2201h	08h	Input status byte 7
1A00h	0Dh	2201h	09h	Input status byte 8
1A00h	0Eh	2201h	0Ah	Input status byte 9
1A00h	0Fh	2201h	0Bh	Input status byte 10
1A00h	10h	2201h	0Ch	Input status byte 11
1A00h	11h	2201h	0Dh	Input status byte 12
1A00h	12h	2201h	0Eh	Input status byte 13
1A00h	13h	2201h	0Fh	Input status byte 14
1A00h	14h	2201h	10h	Input status byte 15
1A00h	15h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	16h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	17h	2181h	03h	Fieldbus input byte 2 feedback
1A00h	18h	2181h	04h	Fieldbus input byte 3 feedback
1A00h	19h	2203h	01h	Probe status byte 0
1A00h	1Ah	2203h	02h	Probe status byte 1
1A00h	1Bh	2203h	03h	Probe status byte 2
1A00h	1Ch	2203h	04h	Probe status byte 3
1A00h	1Dh	2202h	01h	OSSD status byte 0
1A00h	1Eh	2202h	02h	OSSD status byte 1
1A00h	1Fh	2202h	03h	OSSD status byte 2
1A00h	20h	2202h	04h	OSSD status byte 3
1A00h	21h	2204h	01h	Analog data float 0

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	22h	2204h	02h	Analog data float 1
1A00h	23h	2204h	03h	Analog data float 2
1A00h	24h	2204h	04h	Analog data float 3
1A00h	25h	2204h	05h	Analog data float 4
1A00h	26h	2204h	06h	Analog data float 5
1A00h	27h	2204h	07h	Analog data float 6
1A00h	28h	2204h	08h	Analog data float 7
1A00h	29h	2204h	09h	Analog data float 8
1A00h	2Ah	2204h	0Ah	Analog data float 9
1A00h	2Bh	2204h	0Bh	Analog data float 10
1A00h	2Ch	2204h	0Ch	Analog data float 11
1A00h	2Dh	2204h	0Dh	Analog data float 12
1A00h	2Eh	2204h	0Eh	Analog data float 13
1A00h	2Fh	2204h	0Fh	Analog data float 14
1A00h	30h	2204h	10h	Analog data float 15

Vendor specific Objects

Object Index 2001h – System status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	System status
02h	UNSIGNED8	Reserved_2001_02
02h	UNSIGNED8	Reserved_2001_03
02h	UNSIGNED8	Reserved_2001_04

Object Index 2003h – Errors data CPU 0

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Module name
02h	UNSIGNED8	Error code
03h	UNSIGNED8	Error address byte 0
04h	UNSIGNED8	Error address byte 1
05h	UNSIGNED8	Error address byte 2
06h	UNSIGNED8	Error address byte 3
07h	UNSIGNED8	CPU firmware version
08h	UNSIGNED8	Extended code 0
09h	UNSIGNED8	Extended code 1

Object Index 2004h – Errors data CPU 1

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Module name
02h	UNSIGNED8	Error code
03h	UNSIGNED8	Error address byte 0
04h	UNSIGNED8	Error address byte 1
05h	UNSIGNED8	Error address byte 2
06h	UNSIGNED8	Error address byte 3
07h	UNSIGNED8	CPU firmware version
08h	UNSIGNED8	Extended code 0
09h	UNSIGNED8	Extended code 1

Object Index 2005h – Input diagnostics

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Diagnostic index 0
02h	UNSIGNED8	Diagnostic code 0
03h	UNSIGNED8	Diagnostic index 1
04h	UNSIGNED8	Diagnostic code 1
05h	UNSIGNED8	Diagnostic index 2
06h	UNSIGNED8	Diagnostic code 2
07h	UNSIGNED8	Diagnostic index 3
08h	UNSIGNED8	Diagnostic code 3
09h	UNSIGNED8	Diagnostic index 4
0Ah	UNSIGNED8	Diagnostic code 4
0Bh	UNSIGNED8	Diagnostic index 5
0Ch	UNSIGNED8	Diagnostic code 5
0Dh	UNSIGNED8	Diagnostic index 6
0Eh	UNSIGNED8	Diagnostic code 6
0Fh	UNSIGNED8	Diagnostic index 7
10h	UNSIGNED8	Diagnostic code 7
11h	UNSIGNED8	Diagnostic index 8
12h	UNSIGNED8	Diagnostic code 8
13h	UNSIGNED8	Diagnostic index 9
14h	UNSIGNED8	Diagnostic code 9
15h	UNSIGNED8	Diagnostic index 10
16h	UNSIGNED8	Diagnostic code 10
17h	UNSIGNED8	Diagnostic index 11
18h	UNSIGNED8	Diagnostic code 11
19h	UNSIGNED8	Diagnostic index 12
1Ah	UNSIGNED8	Diagnostic code 12
1Bh	UNSIGNED8	Diagnostic index 13
1Ch	UNSIGNED8	Diagnostic code 13
1Dh	UNSIGNED8	Diagnostic index 14
1Eh	UNSIGNED8	Diagnostic code 14
1Fh	UNSIGNED8	Diagnostic index 15
20h	UNSIGNED8	Diagnostic code 15

A maximum of 16 Input diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus

Object Index 2006h – OSSD diagnostics

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Diagnostic index 0
02h	UNSIGNED8	Diagnostic code 0
03h	UNSIGNED8	Diagnostic index 1
04h	UNSIGNED8	Diagnostic code 1
05h	UNSIGNED8	Diagnostic index 2
06h	UNSIGNED8	Diagnostic code 2
07h	UNSIGNED8	Diagnostic index 3
08h	UNSIGNED8	Diagnostic code 3
09h	UNSIGNED8	Diagnostic index 4
0Ah	UNSIGNED8	Diagnostic code 4
0Bh	UNSIGNED8	Diagnostic index 5
0Ch	UNSIGNED8	Diagnostic code 5
0Dh	UNSIGNED8	Diagnostic index 6
0Eh	UNSIGNED8	Diagnostic code 6
0Fh	UNSIGNED8	Diagnostic index 7
10h	UNSIGNED8	Diagnostic code 7
11h	UNSIGNED8	Diagnostic index 8
12h	UNSIGNED8	Diagnostic code 8
13h	UNSIGNED8	Diagnostic index 9
14h	UNSIGNED8	Diagnostic code 9
15h	UNSIGNED8	Diagnostic index 10
16h	UNSIGNED8	Diagnostic code 10
17h	UNSIGNED8	Diagnostic index 11
18h	UNSIGNED8	Diagnostic code 11
19h	UNSIGNED8	Diagnostic index 12
1Ah	UNSIGNED8	Diagnostic code 12
1Bh	UNSIGNED8	Diagnostic index 13
1Ch	UNSIGNED8	Diagnostic code 13
1Dh	UNSIGNED8	Diagnostic index 14
1Eh	UNSIGNED8	Diagnostic code 14
1Fh	UNSIGNED8	Diagnostic index 15
20h	UNSIGNED8	Diagnostic code 15

A maximum of 16 OSSD diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus

Object Index 2007h – Project CRC

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Project CRC High byte
02h	UNSIGNED8	Project CRC Low byte

Object Index 2101h – Fieldbus inputs

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Fieldbus input byte 0
02h	UNSIGNED8	Fieldbus input byte 1
03h	UNSIGNED8	Fieldbus input byte 2
04h	UNSIGNED8	Fieldbus input byte 3

Object Index 2181h – Fieldbus inputs feedback

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Fieldbus input byte 0 feedback
02h	UNSIGNED8	Fieldbus input byte 1 feedback
03h	UNSIGNED8	Fieldbus input byte 2 feedback
04h	UNSIGNED8	Fieldbus input byte 3 feedback

Object Index 2201h – Input status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Input status byte 0
02h	UNSIGNED8	Input status byte 1
03h	UNSIGNED8	Input status byte 2
04h	UNSIGNED8	Input status byte 3
05h	UNSIGNED8	Input status byte 4
06h	UNSIGNED8	Input status byte 5
07h	UNSIGNED8	Input status byte 6
08h	UNSIGNED8	Input status byte 7
09h	UNSIGNED8	Input status byte 8
0Ah	UNSIGNED8	Input status byte 9
0Bh	UNSIGNED8	Input status byte 10
0Ch	UNSIGNED8	Input status byte 11
0Dh	UNSIGNED8	Input status byte 12
0Eh	UNSIGNED8	Input status byte 13
0Fh	UNSIGNED8	Input status byte 14
10h	UNSIGNED8	Input status byte 15

Object Index 2202h – OSSD status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	OSSD status byte 0
02h	UNSIGNED8	OSSD status byte 1
03h	UNSIGNED8	OSSD status byte 2
04h	UNSIGNED8	OSSD status byte 3

Object Index 2203h – Probe status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Probe status byte 0
02h	UNSIGNED8	Probe status byte 1
03h	UNSIGNED8	Probe status byte 2
04h	UNSIGNED8	Probe status byte 3

Object Index 2204h – Analog data

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	REAL32	Analog data float 0
02h	REAL32	Analog data float 1
03h	REAL32	Analog data float 2
04h	REAL32	Analog data float 3
05h	REAL32	Analog data float 4
06h	REAL32	Analog data float 5
07h	REAL32	Analog data float 6
08h	REAL32	Analog data float 7
09h	REAL32	Analog data float 8
0Ah	REAL32	Analog data float 9
0Bh	REAL32	Analog data float 10
0Ch	REAL32	Analog data float 11
0Dh	REAL32	Analog data float 12
0Eh	REAL32	Analog data float 13
0Fh	REAL32	Analog data float 14
10h	REAL32	Analog data float 15

CANopen (MBC)

Map without analog data

PDO predefined connection set

PDO	Name	Length	Parameter	Mapping	Remarks
RxPDO 1	Fieldbus inputs	8 Byte	1400h	1600h	Part of the standard communication set
RxPDO 2	Dummy	8 Byte	1401h	1601h	Part of the standard communication set; not used; disabled by default
RxPDO 3	Dummy	8 Byte	1402h	1602h	Part of the standard communication set; not used; disabled by default
RxPDO 4	Dummy	8 Byte	1403h	1603h	Part of the standard communication set; not used; disabled by default
TxPDO 1	Status, Fieldbus inputs feedback	8 Byte	1800h	1A00h	Part of the standard communication set
TxPDO 2	Inputs status 1	8 Byte	1801h	1A01h	Part of the standard communication set
TxPDO 3	Inputs status 2	8 Byte	1802h	1A02h	Part of the standard communication set
TxPDO 4	Outputs & Probes status	8 Byte	1803h	1A03h	Part of the standard communication set

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	**Subindex**	**Index**	**Subindex**	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3
1600h	05h	0005h	05h	Dummy entry
1600h	06h	0005h	06h	Dummy entry
1600h	07h	0005h	07h	Dummy entry
1600h	08h	0005h	08h	Dummy entry
1601h	01h	0005h	01h	Dummy entry
1601h	02h	0005h	02h	Dummy entry
1601h	03h	0005h	03h	Dummy entry
1601h	04h	0005h	04h	Dummy entry
1601h	05h	0005h	05h	Dummy entry
1601h	06h	0005h	06h	Dummy entry
1601h	07h	0005h	07h	Dummy entry
1601h	08h	0005h	08h	Dummy entry
1602h	01h	0005h	01h	Dummy entry
1602h	02h	0005h	02h	Dummy entry
1602h	03h	0005h	03h	Dummy entry
1602h	04h	0005h	04h	Dummy entry
1602h	05h	0005h	05h	Dummy entry
1602h	06h	0005h	06h	Dummy entry
1602h	07h	0005h	07h	Dummy entry
1602h	08h	0005h	08h	Dummy entry
1603h	01h	0005h	01h	Dummy entry
1603h	02h	0005h	02h	Dummy entry
1603h	03h	0005h	03h	Dummy entry
1603h	04h	0005h	04h	Dummy entry
1603h	05h	0005h	05h	Dummy entry
1603h	06h	0005h	06h	Dummy entry
1603h	07h	0005h	07h	Dummy entry
1603h	08h	0005h	08h	Dummy entry

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	0005h	00h	Dummy entry
1A00h	03h	0005h	00h	Dummy entry
1A00h	04h	0005h	00h	Dummy entry
1A00h	05h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	06h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	07h	2181h	03h	Fieldbus input byte 2 feedback
1A00h	08h	2181h	04h	Fieldbus input byte 3 feedback
1A01h	01h	2201h	01h	Input status byte 0
1A01h	02h	2201h	02h	Input status byte 1
1A01h	03h	2201h	03h	Input status byte 2
1A01h	04h	2201h	04h	Input status byte 3
1A01h	05h	2201h	05h	Input status byte 4
1A01h	06h	2201h	06h	Input status byte 5
1A01h	07h	2201h	07h	Input status byte 6
1A01h	08h	2201h	08h	Input status byte 7
1A02h	01h	2201h	09h	Input status byte 8
1A02h	02h	2201h	0Ah	Input status byte 9
1A02h	03h	2201h	0Bh	Input status byte 10
1A02h	04h	2201h	0Ch	Input status byte 11
1A02h	05h	2201h	0Dh	Input status byte 12
1A02h	06h	2201h	0Eh	Input status byte 13
1A02h	07h	2201h	0Fh	Input status byte 14
1A02h	08h	2201h	10h	Input status byte 15
1A03h	01h	2203h	01h	Probe status byte 0
1A03h	02h	2203h	02h	Probe status byte 1
1A03h	03h	2203h	03h	Probe status byte 2
1A03h	04h	2203h	04h	Probe status byte 3
1A03h	05h	2202h	01h	OSSD status byte 0
1A03h	06h	2202h	02h	OSSD status byte 1
1A03h	07h	2202h	03h	OSSD status byte 2
1A03h	08h	2202h	04h	OSSD status byte 3

Map with analog data

PDO predefined connection set

PDO	Name	Length	Parameter	Mapping	Remarks
RxPDO 1	Fieldbus inputs	8 Byte	1400h	1600h	Part of the standard communication set
RxPDO 2	Dummy	8 Byte	1401h	1601h	Part of the standard communication set; not used; disabled by default
RxPDO 3	Dummy	8 Byte	1402h	1602h	Part of the standard communication set; not used; disabled by default
RxPDO 4	Dummy	8 Byte	1403h	1603h	Part of the standard communication set; not used; disabled by default
TxPDO 1	Status, Fieldbus inputs feedback	8 Byte	1800h	1A00h	Part of the standard communication set
TxPDO 2	Inputs status 1	8 Byte	1801h	1A01h	Part of the standard communication set
TxPDO 3	Inputs status 2	8 Byte	1802h	1A02h	Part of the standard communication set
TxPDO 4	Outputs & Probes status	8 Byte	1803h	1A03h	Part of the standard communication set
TxPDO 5	Analog data 1	8 Byte	1804h	1A04h	
TxPDO 6	Analog data 2	8 Byte	1805h	1A05h	
TxPDO 7	Analog data 3	8 Byte	1806h	1A06h	
TxPDO 8	Analog data 4	8 Byte	1807h	1A07h	
TxPDO 9	Analog data 5	8 Byte	1808h	1A08h	
TxPDO 10	Analog data 6	8 Byte	1809h	1A09h	
TxPDO 11	Analog data 7	8 Byte	180Ah	1A0Ah	
TxPDO 12	Analog data 8	8 Byte	180Bh	1A0Bh	

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	**Subindex**	**Index**	**Subindex**	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3
1600h	05h	0005h	05h	Dummy entry
1600h	06h	0005h	06h	Dummy entry
1600h	07h	0005h	07h	Dummy entry
1600h	08h	0005h	08h	Dummy entry
1601h	01h	0005h	01h	Dummy entry
1601h	02h	0005h	02h	Dummy entry
1601h	03h	0005h	03h	Dummy entry
1601h	04h	0005h	04h	Dummy entry
1601h	05h	0005h	05h	Dummy entry
1601h	06h	0005h	06h	Dummy entry
1601h	07h	0005h	07h	Dummy entry
1601h	08h	0005h	08h	Dummy entry
1602h	01h	0005h	01h	Dummy entry
1602h	02h	0005h	02h	Dummy entry
1602h	03h	0005h	03h	Dummy entry
1602h	04h	0005h	04h	Dummy entry
1602h	05h	0005h	05h	Dummy entry
1602h	06h	0005h	06h	Dummy entry
1602h	07h	0005h	07h	Dummy entry
1602h	08h	0005h	08h	Dummy entry
1603h	01h	0005h	01h	Dummy entry
1603h	02h	0005h	02h	Dummy entry
1603h	03h	0005h	03h	Dummy entry
1603h	04h	0005h	04h	Dummy entry
1603h	05h	0005h	05h	Dummy entry
1603h	06h	0005h	06h	Dummy entry
1603h	07h	0005h	07h	Dummy entry
1603h	08h	0005h	08h	Dummy entry

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	0005h	00h	Dummy entry
1A00h	03h	0005h	00h	Dummy entry
1A00h	04h	0005h	00h	Dummy entry
1A00h	05h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	06h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	07h	2181h	03h	Fieldbus input byte 2 feedback
1A00h	08h	2181h	04h	Fieldbus input byte 3 feedback
1A01h	01h	2201h	01h	Input status byte 0
1A01h	02h	2201h	02h	Input status byte 1
1A01h	03h	2201h	03h	Input status byte 2
1A01h	04h	2201h	04h	Input status byte 3
1A01h	05h	2201h	05h	Input status byte 4
1A01h	06h	2201h	06h	Input status byte 5
1A01h	07h	2201h	07h	Input status byte 6
1A01h	08h	2201h	08h	Input status byte 7
1A02h	01h	2201h	09h	Input status byte 8
1A02h	02h	2201h	0Ah	Input status byte 9
1A02h	03h	2201h	0Bh	Input status byte 10
1A02h	04h	2201h	0Ch	Input status byte 11
1A02h	05h	2201h	0Dh	Input status byte 12
1A02h	06h	2201h	0Eh	Input status byte 13
1A02h	07h	2201h	0Fh	Input status byte 14
1A02h	08h	2201h	10h	Input status byte 15
1A03h	01h	2203h	01h	Probe status byte 0
1A03h	02h	2203h	02h	Probe status byte 1
1A03h	03h	2203h	03h	Probe status byte 2
1A03h	04h	2203h	04h	Probe status byte 3
1A03h	05h	2202h	01h	OSSD status byte 0
1A03h	06h	2202h	02h	OSSD status byte 1
1A03h	07h	2202h	03h	OSSD status byte 2
1A03h	08h	2202h	04h	OSSD status byte 3
1A04h	01h	2204h	01h	Analog data float 0
1A04h	02h	2204h	02h	Analog data float 1
1A05h	01h	2204h	03h	Analog data float 2
1A05h	02h	2204h	04h	Analog data float 3
1A06h	01h	2204h	05h	Analog data float 4
1A06h	02h	2204h	06h	Analog data float 5
1A07h	01h	2204h	07h	Analog data float 6
1A07h	02h	2204h	08h	Analog data float 7
1A08h	01h	2204h	09h	Analog data float 8
1A08h	02h	2204h	0Ah	Analog data float 9
1A09h	01h	2204h	0Bh	Analog data float 10
1A09h	02h	2204h	0Ch	Analog data float 11
1A0Ah	01h	2204h	0Dh	Analog data float 12
1A0Ah	02h	2204h	0Eh	Analog data float 13
1A0Bh	01h	2204h	0Fh	Analog data float 14
1A0Bh	02h	2204h	10h	Analog data float 15

Vendor specific Objects

Object Index 2001h – System status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	System status
02h	UNSIGNED8	Reserved
03h	UNSIGNED8	Reserved
04h	UNSIGNED8	Reserved

Object Index 2003h – Errors data CPU 0

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Module name
02h	UNSIGNED8	Error code
03h	UNSIGNED8	Error address byte 0
04h	UNSIGNED8	Error address byte 1
05h	UNSIGNED8	Error address byte 2
06h	UNSIGNED8	Error address byte 3
07h	UNSIGNED8	CPU firmware version
08h	UNSIGNED8	Extended code 0
09h	UNSIGNED8	Extended code 1

Object Index 2004h – Errors data CPU 1

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Module name
02h	UNSIGNED8	Error code
03h	UNSIGNED8	Error address byte 0
04h	UNSIGNED8	Error address byte 1
05h	UNSIGNED8	Error address byte 2
06h	UNSIGNED8	Error address byte 3
07h	UNSIGNED8	CPU firmware version
08h	UNSIGNED8	Extended code 0
09h	UNSIGNED8	Extended code 1

Object Index 2005h – Input diagnostics

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Diagnostic index 0
02h	UNSIGNED8	Diagnostic code 0
03h	UNSIGNED8	Diagnostic index 1
04h	UNSIGNED8	Diagnostic code 1
05h	UNSIGNED8	Diagnostic index 2
06h	UNSIGNED8	Diagnostic code 2
07h	UNSIGNED8	Diagnostic index 3
08h	UNSIGNED8	Diagnostic code 3
09h	UNSIGNED8	Diagnostic index 4
0Ah	UNSIGNED8	Diagnostic code 4
0Bh	UNSIGNED8	Diagnostic index 5
0Ch	UNSIGNED8	Diagnostic code 5
0Dh	UNSIGNED8	Diagnostic index 6
0Eh	UNSIGNED8	Diagnostic code 6
0Fh	UNSIGNED8	Diagnostic index 7
10h	UNSIGNED8	Diagnostic code 7
11h	UNSIGNED8	Diagnostic index 8
12h	UNSIGNED8	Diagnostic code 8
13h	UNSIGNED8	Diagnostic index 9
14h	UNSIGNED8	Diagnostic code 9
15h	UNSIGNED8	Diagnostic index 10
16h	UNSIGNED8	Diagnostic code 10
17h	UNSIGNED8	Diagnostic index 11
18h	UNSIGNED8	Diagnostic code 11
19h	UNSIGNED8	Diagnostic index 12
1Ah	UNSIGNED8	Diagnostic code 12
1Bh	UNSIGNED8	Diagnostic index 13
1Ch	UNSIGNED8	Diagnostic code 13
1Dh	UNSIGNED8	Diagnostic index 14
1Eh	UNSIGNED8	Diagnostic code 14
1Fh	UNSIGNED8	Diagnostic index 15
20h	UNSIGNED8	Diagnostic code 15

A maximum of 16 Input diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus

Object Index 2006h – OSSD diagnostics

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Diagnostic index 0
02h	UNSIGNED8	Diagnostic code 0
03h	UNSIGNED8	Diagnostic index 1
04h	UNSIGNED8	Diagnostic code 1
05h	UNSIGNED8	Diagnostic index 2
06h	UNSIGNED8	Diagnostic code 2
07h	UNSIGNED8	Diagnostic index 3
08h	UNSIGNED8	Diagnostic code 3
09h	UNSIGNED8	Diagnostic index 4
0Ah	UNSIGNED8	Diagnostic code 4
0Bh	UNSIGNED8	Diagnostic index 5
0Ch	UNSIGNED8	Diagnostic code 5
0Dh	UNSIGNED8	Diagnostic index 6
0Eh	UNSIGNED8	Diagnostic code 6
0Fh	UNSIGNED8	Diagnostic index 7
10h	UNSIGNED8	Diagnostic code 7
11h	UNSIGNED8	Diagnostic index 8
12h	UNSIGNED8	Diagnostic code 8
13h	UNSIGNED8	Diagnostic index 9
14h	UNSIGNED8	Diagnostic code 9
15h	UNSIGNED8	Diagnostic index 10
16h	UNSIGNED8	Diagnostic code 10
17h	UNSIGNED8	Diagnostic index 11
18h	UNSIGNED8	Diagnostic code 11
19h	UNSIGNED8	Diagnostic index 12
1Ah	UNSIGNED8	Diagnostic code 12
1Bh	UNSIGNED8	Diagnostic index 13
1Ch	UNSIGNED8	Diagnostic code 13
1Dh	UNSIGNED8	Diagnostic index 14
1Eh	UNSIGNED8	Diagnostic code 14
1Fh	UNSIGNED8	Diagnostic index 15
20h	UNSIGNED8	Diagnostic code 15

A maximum of 16 OSSD diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus

Object Index 2007h – Project CRC

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Project CRC Low byte
02h	UNSIGNED8	Project CRC High byte

Object Index 2101h – Fieldbus inputs

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Fieldbus input byte 0
02h	UNSIGNED8	Fieldbus input byte 1
03h	UNSIGNED8	Fieldbus input byte 2
04h	UNSIGNED8	Fieldbus input byte 3

Object Index 2181h – Fieldbus input feedback

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Fieldbus input byte 0 feedback
02h	UNSIGNED8	Fieldbus input byte 1 feedback
03h	UNSIGNED8	Fieldbus input byte 2 feedback
04h	UNSIGNED8	Fieldbus input byte 3 feedback

Object Index 2201h – Input status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Input status byte 0
02h	UNSIGNED8	Input status byte 1
03h	UNSIGNED8	Input status byte 2
04h	UNSIGNED8	Input status byte 3
05h	UNSIGNED8	Input status byte 4
06h	UNSIGNED8	Input status byte 5
07h	UNSIGNED8	Input status byte 6
08h	UNSIGNED8	Input status byte 7
09h	UNSIGNED8	Input status byte 8
0Ah	UNSIGNED8	Input status byte 9
0Bh	UNSIGNED8	Input status byte 10
0Ch	UNSIGNED8	Input status byte 11
0Dh	UNSIGNED8	Input status byte 12
0Eh	UNSIGNED8	Input status byte 13
0Fh	UNSIGNED8	Input status byte 14
10h	UNSIGNED8	Input status byte 15

Object Index 2202h – OSSD status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	OSSD status byte 0
02h	UNSIGNED8	OSSD status byte 1
03h	UNSIGNED8	OSSD status byte 2
04h	UNSIGNED8	OSSD status byte 3

Object Index 2203h – Probe status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Probe status byte 0
02h	UNSIGNED8	Probe status byte 1
03h	UNSIGNED8	Probe status byte 2
04h	UNSIGNED8	Probe status byte 3

Object Index 2204h – Analog data

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	REAL32	Analog data float 0
02h	REAL32	Analog data float 1
03h	REAL32	Analog data float 2
04h	REAL32	Analog data float 3
05h	REAL32	Analog data float 4
06h	REAL32	Analog data float 5
07h	REAL32	Analog data float 6
08h	REAL32	Analog data float 7
09h	REAL32	Analog data float 8
0Ah	REAL32	Analog data float 9
0Bh	REAL32	Analog data float 10
0Ch	REAL32	Analog data float 11
0Dh	REAL32	Analog data float 12
0Eh	REAL32	Analog data float 13
0Fh	REAL32	Analog data float 14
10h	REAL32	Analog data float 15

EtherNet/IP (MBEI)

Map without analog data

Process data mapping (Class 1 Connection)

Assembly instance 96h (Connection point O->T Consuming Instance)

Byte offset	Size	Name
0	USINT	Fieldbus input byte 0
1	USINT	Fieldbus input byte 1
2	USINT	Fieldbus input byte 2
3	USINT	Fieldbus input byte 3

O->T connection type: Point-to-point

Assembly instance 64h (Connection point T->O Producing Instance)

Byte offset	Size	Name
0	USINT	System status
1	USINT	Reserved
2	USINT	Input status byte 0
3	USINT	Input status byte 1
4	USINT	Input status byte 2
5	USINT	Input status byte 3
6	USINT	Input status byte 4
7	USINT	Input status byte 5
8	USINT	Input status byte 6
9	USINT	Input status byte 7
10	USINT	Input status byte 8
11	USINT	Input status byte 9
12	USINT	Input status byte 10
13	USINT	Input status byte 11
14	USINT	Input status byte 12
15	USINT	Input status byte 13
16	USINT	Input status byte 14
17	USINT	Input status byte 15
18	USINT	Fieldbus input byte 0 feedback
19	USINT	Fieldbus input byte 1 feedback
20	USINT	Fieldbus input byte 2 feedback
21	USINT	Fieldbus input byte 3 feedback
22	USINT	Probe status byte 0
23	USINT	Probe status byte 1
24	USINT	Probe status byte 2
25	USINT	Probe status byte 3
26	USINT	OSSD status byte 0
27	USINT	OSSD status byte 1
28	USINT	OSSD status byte 2
29	USINT	OSSD status byte 3

T->O connection type: Point-to-point,Multicast.

Assembly instance 05h (Configuration Data)

Set this instance to size 0

Supported trigger types: Cyclic

Map with analog data

Process data mapping (Class 1 Connection)

Assembly instance 96h (Connection point O->T Consuming Instance)

Byte offset	Size	Name
0	USINT	Fieldbus input byte 0
1	USINT	Fieldbus input byte 1
2	USINT	Fieldbus input byte 2
3	USINT	Fieldbus input byte 3

O->T connection type: Point-to-point

Assembly instance 64h (Connection point T->O Producing Instance)

Byte offset	Size	Name
0	USINT	System status
1	USINT	Reserved
2	USINT	Input status byte 0
3	USINT	Input status byte 1
4	USINT	Input status byte 2
5	USINT	Input status byte 3
6	USINT	Input status byte 4
7	USINT	Input status byte 5
8	USINT	Input status byte 6
9	USINT	Input status byte 7
10	USINT	Input status byte 8
11	USINT	Input status byte 9
12	USINT	Input status byte 10
13	USINT	Input status byte 11
14	USINT	Input status byte 12
15	USINT	Input status byte 13
16	USINT	Input status byte 14
17	USINT	Input status byte 15
18	USINT	Fieldbus input byte 0 feedback
19	USINT	Fieldbus input byte 1 feedback
20	USINT	Fieldbus input byte 2 feedback
21	USINT	Fieldbus input byte 3 feedback
22	USINT	Probe status byte 0
23	USINT	Probe status byte 1
24	USINT	Probe status byte 2
25	USINT	Probe status byte 3
26	USINT	OSSD status byte 0
27	USINT	OSSD status byte 1
28	USINT	OSSD status byte 2
29	USINT	OSSD status byte 3
30	REAL	Analog data float 0
34	REAL	Analog data float 1
38	REAL	Analog data float 2
42	REAL	Analog data float 3
46	REAL	Analog data float 4
50	REAL	Analog data float 5
54	REAL	Analog data float 6

Byte offset	Size	Name
58	REAL	Analog data float 7
62	REAL	Analog data float 8
66	REAL	Analog data float 9
70	REAL	Analog data float 10
74	REAL	Analog data float 11
78	REAL	Analog data float 12
82	REAL	Analog data float 13
86	REAL	Analog data float 14
90	REAL	Analog data float 15

T->O connection type: Point-to-point,Multicast.

Assembly instance 05h (Configuration Data)

Set this instance to size 0

Supported trigger types: Cyclic

Explicit messaging[1]

To access Errors data, Input diagnostics, OSSD diagnostic and Project CRC the service 0x0E (Get attribute single) shall be used.

Name	Class	Instance	Attribute	Length (byte)	Access type
Fieldbus inputs	A2h	101h	05h	4	Set/Get
System I/O	A2h	01h	05h	30	Get
Analog data	A2h	204h	05h	64	Get
Errors data CPU 0	A2h	03h	05h	9	Get
Errors data CPU 1	A2h	04h	05h	9	Get
Input diagnostics	A2h	05h	05h	32	Get
OSSD diagnostics	A2h	06h	05h	32	Get
Project CRC	A2h	07h	05h	2	Get

[1] See Acyclic data format at the end of the document for more information

DeviceNet (MBD)

Map without analog data

Process data mapping

Assembly instance 96h (Consuming Instance)

Byte offset	Size	Name
0	USINT	Fieldbus input byte 0
1	USINT	Fieldbus input byte 1
2	USINT	Fieldbus input byte 2
3	USINT	Fieldbus input byte 3

Assembly instance 64h (Producing Instance)

Byte offset	Size	Name
0	USINT	System status
1	USINT	Reserved
2	USINT	Input status byte 0
3	USINT	Input status byte 1
4	USINT	Input status byte 2
5	USINT	Input status byte 3
6	USINT	Input status byte 4
7	USINT	Input status byte 5
8	USINT	Input status byte 6
9	USINT	Input status byte 7
10	USINT	Input status byte 8
11	USINT	Input status byte 9
12	USINT	Input status byte 10
13	USINT	Input status byte 11
14	USINT	Input status byte 12
15	USINT	Input status byte 13
16	USINT	Input status byte 14
17	USINT	Input status byte 15
18	USINT	Fieldbus input byte 0 feedback
19	USINT	Fieldbus input byte 1 feedback
20	USINT	Fieldbus input byte 2 feedback
21	USINT	Fieldbus input byte 3 feedback
22	USINT	Probe status byte 0
23	USINT	Probe status byte 1
24	USINT	Probe status byte 2
25	USINT	Probe status byte 3
26	USINT	OSSD status byte 0
27	USINT	OSSD status byte 1
28	USINT	OSSD status byte 2
29	USINT	OSSD status byte 3

Map with analog data

Process data mapping

Assembly instance 96h (Consuming Instance)

Byte offset	Size	Name
0	USINT	Fieldbus input byte 0
1	USINT	Fieldbus input byte 1
2	USINT	Fieldbus input byte 2
3	USINT	Fieldbus input byte 3

Assembly instance 64h (Producing Instance)**Byte offset**	Size	Name
0	USINT	System status
1	USINT	Reserved
2	USINT	Input status byte 0
3	USINT	Input status byte 1
4	USINT	Input status byte 2
5	USINT	Input status byte 3
6	USINT	Input status byte 4
7	USINT	Input status byte 5
8	USINT	Input status byte 6
9	USINT	Input status byte 7
10	USINT	Input status byte 8
11	USINT	Input status byte 9
12	USINT	Input status byte 10
13	USINT	Input status byte 11
14	USINT	Input status byte 12
15	USINT	Input status byte 13
16	USINT	Input status byte 14
17	USINT	Input status byte 15
18	USINT	Fieldbus input byte 0 feedback
19	USINT	Fieldbus input byte 1 feedback
20	USINT	Fieldbus input byte 2 feedback
21	USINT	Fieldbus input byte 3 feedback
22	USINT	Probe status byte 0
23	USINT	Probe status byte 1
24	USINT	Probe status byte 2
25	USINT	Probe status byte 3
26	USINT	OSSD status byte 0
27	USINT	OSSD status byte 1
28	USINT	OSSD status byte 2
29	USINT	OSSD status byte 3
30	REAL	Analog data float 0
34	REAL	Analog data float 1
38	REAL	Analog data float 2
42	REAL	Analog data float 3
46	REAL	Analog data float 4
50	REAL	Analog data float 5
54	REAL	Analog data float 6
58	REAL	Analog data float 7
62	REAL	Analog data float 8
66	REAL	Analog data float 9
70	REAL	Analog data float 10
74	REAL	Analog data float 11

78	REAL	Analog data float 12
82	REAL	Analog data float 13
86	REAL	Analog data float 14
90	REAL	Analog data float 15

Explicit messaging[1]

To access Errors data, Input diagnostics, OSSD diagnostic and Project CRC the service 0x0E (Get attribute single) shall be used.

Name	Class	Instance	Attribute	Length (byte)	Access type
Fieldbus inputs	A2h	101h	05h	4	Set/Get
System I/O	A2h	01h	05h	30	Get
Analog data	A2h	204h	05h	64	Get
Errors data CPU 0	A2h	03h	05h	9	Get
Errors data CPU 1	A2h	04h	05h	9	Get
Input diagnostics	A2h	05h	05h	32	Get
OSSD diagnostics	A2h	06h	05h	32	Get
Project CRC	A2h	07h	05h	2	Get

[1] See Acyclic data format for more information

Modbus TCP/IP (MBEM)

Register mapping

Write Single (6x) Fieldbus Inputs

Register(s)	Size	Name
000h Low byte	UINT8	Fieldbus input byte 0
000h High byte	UINT8	Fieldbus input byte 1
001h Low byte	UINT8	Fieldbus input byte 2
001h High byte	UINT8	Fieldbus input byte 3

Holding Registers (4x) System I/O

Register(s)	Size	Name
800h Low byte	UINT8	System status
800h High byte	UINT8	Reserved
801h Low byte	UINT8	Input status byte 0
801h High byte	UINT8	Input status byte 1
802h Low byte	UINT8	Input status byte 2
802h High byte	UINT8	Input status byte 3
803h Low byte	UINT8	Input status byte 4
803h High byte	UINT8	Input status byte 5
804h Low byte	UINT8	Input status byte 6
804h High byte	UINT8	Input status byte 7
805h Low byte	UINT8	Input status byte 8
805h High byte	UINT8	Input status byte 9
806h Low byte	UINT8	Input status byte 10
806h High byte	UINT8	Input status byte 11
807h Low byte	UINT8	Input status byte 12
807h High byte	UINT8	Input status byte 13
808h Low byte	UINT8	Input status byte 14
808h High byte	UINT8	Input status byte 15
809h Low byte	UINT8	Fieldbus input feedback byte 0
809h High byte	UINT8	Fieldbus input feedback byte 1
80Ah Low byte	UINT8	Fieldbus input feedback byte 2
80Ah High byte	UINT8	Fieldbus input feedback byte 3
80Bh Low byte	UINT8	Probe status byte 0
80Bh High byte	UINT8	Probe status byte 1
80Ch Low byte	UINT8	Probe status byte 2
80Ch High byte	UINT8	Probe status byte 3
80Dh High byte	UINT8	OSSD status byte 0
80Dh Low byte	UINT8	OSSD status byte 1
80Eh High byte	UINT8	OSSD status byte 2
80Eh Low byte	UINT8	OSSD status byte 3

Holding Registers (4x) Analog data

Register(s)	Size	Name
80Fh-810h	FLOAT	Analog data float 0
811h-812h	FLOAT	Analog data float 1
813h-814h	FLOAT	Analog data float 2
815h-816h	FLOAT	Analog data float 3
817h-818h	FLOAT	Analog data float 4
819h-81Ah	FLOAT	Analog data float 5
81Bh-81Ch	FLOAT	Analog data float 6
81Dh-81Eh	FLOAT	Analog data float 7
81Fh-820h	FLOAT	Analog data float 8
821h-822h	FLOAT	Analog data float 9
823h-824h	FLOAT	Analog data float 10
825h-826h	FLOAT	Analog data float 11
827h-828h	FLOAT	Analog data float 12
829h-82Ah	FLOAT	Analog data float 13
82Bh-82Ch	FLOAT	Analog data float 14
82Dh-82Eh	FLOAT	Analog data float 15

Holding Registers (4x) Error CPU 0 / Error CPU 1

Register(s)	Size	Name
1030h Low byte	UINT8	Error CPU0 – Module
1030h High byte	UINT8	Error CPU0 – Error code
1031h-1032h	UINT32	Error CPU0 – Error address
1033h Low byte	UINT8	Error CPU0 – Firmware version
1033h High byte	UINT8	Error CPU0 – Extended code 0
1034h Low byte	UINT8	Error CPU0 – Extended code 1
1040h Low byte	UINT8	Error CPU1 – Module
1040h High byte	UINT8	Error CPU1 – Error code
1041h-1042h	UINT32	Error CPU1 – Error address
1043h Low byte	UINT8	Error CPU1 – Firmware version
1043h High byte	UINT8	Error CPU1 – Extended code 0
1044h Low byte	UINT8	Error CPU1 – Extended code 1

Holding Registers (4x) Input diagnostics

Register(s)	Size	Name
1050h Low byte	UINT8	Input diagnostics index 1
1050h High byte	UINT8	Input diagnostics code 1
1051h Low byte	UINT8	Input diagnostics index 2
1051h High byte	UINT8	Input diagnostics code 2
1052h Low byte	UINT8	Input diagnostics index 3
1052h High byte	UINT8	Input diagnostics code 3
1053h Low byte	UINT8	Input diagnostics index 4
1053h High byte	UINT8	Input diagnostics code 4
1054h Low byte	UINT8	Input diagnostics index 5
1054h High byte	UINT8	Input diagnostics code 5
1055h Low byte	UINT8	Input diagnostics index 6
1055h High byte	UINT8	Input diagnostics code 6
1056h Low byte	UINT8	Input diagnostics index 7
1056h High byte	UINT8	Input diagnostics code 7
1057h Low byte	UINT8	Input diagnostics index 8
1057h High byte	UINT8	Input diagnostics code 8
1058h Low byte	UINT8	Input diagnostics index 9
1058h High byte	UINT8	Input diagnostics code 9
1059h Low byte	UINT8	Input diagnostics index 10
1059h High byte	UINT8	Input diagnostics code 10
105Ah Low byte	UINT8	Input diagnostics index 11
105Ah High byte	UINT8	Input diagnostics code 11
105Bh Low byte	UINT8	Input diagnostics index 12
105Bh High byte	UINT8	Input diagnostics code 12
105Ch Low byte	UINT8	Input diagnostics index 13
105Ch High byte	UINT8	Input diagnostics code 13
105Dh Low byte	UINT8	Input diagnostics index 14
105Dh High byte	UINT8	Input diagnostics code 14
105Eh Low byte	UINT8	Input diagnostics index 15
105Eh High byte	UINT8	Input diagnostics code 15
105Fh Low byte	UINT8	Input diagnostics index 16
105Fh High byte	UINT8	Input diagnostics code 16

Holding Registers (4x) Output diagnostics

Register(s)	Size	Name
1060h Low byte	UINT8	Output diagnostics index 1
1060h High byte	UINT8	Output diagnostics code 1
1061h Low byte	UINT8	Output diagnostics index 2
1061h High byte	UINT8	Output diagnostics code 2
1062h Low byte	UINT8	Output diagnostics index 3
1062h High byte	UINT8	Output diagnostics code 3
1063h Low byte	UINT8	Output diagnostics index 4
1063h High byte	UINT8	Output diagnostics code 4
1064h Low byte	UINT8	Output diagnostics index 5
1064h High byte	UINT8	Output diagnostics code 5
1065h Low byte	UINT8	Output diagnostics index 6
1065h High byte	UINT8	Output diagnostics code 6
1066h Low byte	UINT8	Output diagnostics index 7
1066h High byte	UINT8	Output diagnostics code 7
1067h Low byte	UINT8	Output diagnostics index 8
1067h High byte	UINT8	Output diagnostics code 8
1068h Low byte	UINT8	Output diagnostics index 9
1068h High byte	UINT8	Output diagnostics code 9
1069h Low byte	UINT8	Output diagnostics index 10
1069h High byte	UINT8	Output diagnostics code 10
106Ah Low byte	UINT8	Output diagnostics index 11
106Ah High byte	UINT8	Output diagnostics code 11
106Bh Low byte	UINT8	Output diagnostics index 12
106Bh High byte	UINT8	Output diagnostics code 12
106Ch Low byte	UINT8	Output diagnostics index 13
106Ch High byte	UINT8	Output diagnostics code 13
106Dh Low byte	UINT8	Output diagnostics index 14
106Dh High byte	UINT8	Output diagnostics code 14
106Eh Low byte	UINT8	Output diagnostics index 15
106Eh High byte	UINT8	Output diagnostics code 15
106Fh Low byte	UINT8	Output diagnostics index 16
106Fh High byte	UINT8	Output diagnostics code 16

Holding Registers (4x) Projetc CRC

Register(s)	Size	Name
1070h Low byte	UINT8	Project CRC High byte
1070h High byte	UINT8	Project CRC Low byte

Modbus Serial (MBMR)

Register mapping

Write Single (6x) Fieldbus Inputs

Register(s)	Size	Name
000h Low byte	UINT8	Fieldbus input byte 0
000h High byte	UINT8	Fieldbus input byte 1
001h Low byte	UINT8	Fieldbus input byte 2
001h High byte	UINT8	Fieldbus input byte 3
10Eh Low byte	UINT8	OSSD status byte 3

Holding Registers (4x) System I/O

Register(s)	Size	Name
100h Low byte	UINT8	System status
100h High byte	UINT8	Reserved
101h Low byte	UINT8	Input status byte 0
101h High byte	UINT8	Input status byte 1
102h Low byte	UINT8	Input status byte 2
102h High byte	UINT8	Input status byte 3
103h Low byte	UINT8	Input status byte 4
103h High byte	UINT8	Input status byte 5
104h Low byte	UINT8	Input status byte 6
104h High byte	UINT8	Input status byte 7
105h Low byte	UINT8	Input status byte 8
105h High byte	UINT8	Input status byte 9
106h Low byte	UINT8	Input status byte 10
106h High byte	UINT8	Input status byte 11
107h Low byte	UINT8	Input status byte 12
107h High byte	UINT8	Input status byte 13
108h Low byte	UINT8	Input status byte 14
108h High byte	UINT8	Input status byte 15
109h Low byte	UINT8	Fieldbus input feedback byte 0
109h High byte	UINT8	Fieldbus input feedback byte 1
10Ah Low byte	UINT8	Fieldbus input feedback byte 2
10Ah High byte	UINT8	Fieldbus input feedback byte 3
10Bh Low byte	UINT8	Probe status byte 0
10Bh High byte	UINT8	Probe status byte 1
10Ch Low byte	UINT8	Probe status byte 2
10Ch High byte	UINT8	Probe status byte 3
10Dh High byte	UINT8	OSSD status byte 0
10Dh Low byte	UINT8	OSSD status byte 1
10Eh High byte	UINT8	OSSD status byte 2

Holding Registers (4x) Analog data

Register(s)	Size	Name
10Fh-110h	FLOAT	Analog data float 0
111h-112h	FLOAT	Analog data float 1
113h-114h	FLOAT	Analog data float 2
115h-116h	FLOAT	Analog data float 3
117h-118h	FLOAT	Analog data float 4
119h-11Ah	FLOAT	Analog data float 5
11Bh-11Ch	FLOAT	Analog data float 6
11Dh-11Eh	FLOAT	Analog data float 7
11Fh-120h	FLOAT	Analog data float 8
121h-122h	FLOAT	Analog data float 9
123h-124h	FLOAT	Analog data float 10
125h-126h	FLOAT	Analog data float 11
127h-128h	FLOAT	Analog data float 12
129h-12Ah	FLOAT	Analog data float 13
12Bh-122Ch	FLOAT	Analog data float 14
12Dh-12Eh	FLOAT	Analog data float 15

Holding Registers (4x) Error CPU 0 / Error CPU 1

Register(s)	Size	Name
230h Low byte	UINT8	Error CPU0 – Module
230h High byte	UINT8	Error CPU0 – Error code
231h-232h	UINT32	Error CPU0 – Error address
233h Low byte	UINT8	Error CPU0 – Firmware version
233h High byte	UINT8	Error CPU0 – Extended code 0
234h Low byte	UINT8	Error CPU0 – Extended code 1
240h Low byte	UINT8	Error CPU1 – Module
240h High byte	UINT8	Error CPU1 – Error code
241h-242h	UINT32	Error CPU1 – Error address
243h Low byte	UINT8	Error CPU1 – Firmware version
243h High byte	UINT8	Error CPU1 – Extended code 0
244h Low byte	UINT8	Error CPU1 – Extended code 1

Holding Registers (4x) Input diagnostics

Register(s)	Size	Name
250h Low byte	UINT8	Input diagnostics index 1
250h High byte	UINT8	Input diagnostics code 1
251h Low byte	UINT8	Input diagnostics index 2
251h High byte	UINT8	Input diagnostics code 2
252h Low byte	UINT8	Input diagnostics index 3
252h High byte	UINT8	Input diagnostics code 3
253h Low byte	UINT8	Input diagnostics index 4
253h High byte	UINT8	Input diagnostics code 4
254h Low byte	UINT8	Input diagnostics index 5
254h High byte	UINT8	Input diagnostics code 5
255h Low byte	UINT8	Input diagnostics index 6
255h High byte	UINT8	Input diagnostics code 6
256h Low byte	UINT8	Input diagnostics index 7
256h High byte	UINT8	Input diagnostics code 7
257h Low byte	UINT8	Input diagnostics index 8
257h High byte	UINT8	Input diagnostics code 8
258h Low byte	UINT8	Input diagnostics index 9
258h High byte	UINT8	Input diagnostics code 9
259h Low byte	UINT8	Input diagnostics index 10
259h High byte	UINT8	Input diagnostics code 10
25Ah Low byte	UINT8	Input diagnostics index 11
25Ah High byte	UINT8	Input diagnostics code 11
25Bh Low byte	UINT8	Input diagnostics index 12
25Bh High byte	UINT8	Input diagnostics code 12
25Ch Low byte	UINT8	Input diagnostics index 13
25Ch High byte	UINT8	Input diagnostics code 13
25Dh Low byte	UINT8	Input diagnostics index 14
25Dh High byte	UINT8	Input diagnostics code 14
25Eh Low byte	UINT8	Input diagnostics index 15
25Eh High byte	UINT8	Input diagnostics code 15
25Fh Low byte	UINT8	Input diagnostics index 16
25Fh High byte	UINT8	Input diagnostics code 16

Holding Registers (4x) Output diagnostics

Register(s)	Size	Name
260h Low byte	UINT8	Output diagnostics index 1
260h High byte	UINT8	Output diagnostics code 1
261h Low byte	UINT8	Output diagnostics index 2
261h High byte	UINT8	Output diagnostics code 2
262h Low byte	UINT8	Output diagnostics index 3
262h High byte	UINT8	Output diagnostics code 3
263h Low byte	UINT8	Output diagnostics index 4
263h High byte	UINT8	Output diagnostics code 4
2264h Low byte	UINT8	Output diagnostics index 5
264h High byte	UINT8	Output diagnostics code 5
265h Low byte	UINT8	Output diagnostics index 6
265h High byte	UINT8	Output diagnostics code 6
266h Low byte	UINT8	Output diagnostics index 7
266h High byte	UINT8	Output diagnostics code 7
267h Low byte	UINT8	Output diagnostics index 8
267h High byte	UINT8	Output diagnostics code 8
268h Low byte	UINT8	Output diagnostics index 9
268h High byte	UINT8	Output diagnostics code 9
269h Low byte	UINT8	Output diagnostics index 10
269h High byte	UINT8	Output diagnostics code 10
26Ah Low byte	UINT8	Output diagnostics index 11
26Ah High byte	UINT8	Output diagnostics code 11
26Bh Low byte	UINT8	Output diagnostics index 12
26Bh High byte	UINT8	Output diagnostics code 12
26Ch Low byte	UINT8	Output diagnostics index 13
26Ch High byte	UINT8	Output diagnostics code 13
26Dh Low byte	UINT8	Output diagnostics index 14
26Dh High byte	UINT8	Output diagnostics code 14
26Eh Low byte	UINT8	Output diagnostics index 15
26Eh High byte	UINT8	Output diagnostics code 15
26Fh Low byte	UINT8	Output diagnostics index 16
26Fh High byte	UINT8	Output diagnostics code 16

Holding Registers (4x) Project CRC

Register(s)	Size	Name
270h Low byte	UINT8	Project CRC High byte
270h High byte	UINT8	Project CRC Low byte

CC-LINK (MBCCL)

Process data mapping

CC-Link version: 2

Number of occupied stations: 3

Extension cycles: 4

Master to slave

Bit area content

Register(s)	Content
RY #7... 0	System area
RY #15…8	

Word area content

Point(s)	Content (LSB)	Content (MSB)
RWw #0	Fieldbus input byte 1	Fieldbus input byte 0
RWw #1	Fieldbus input byte 3	Fieldbus input byte 2

Slave to master

Bit area content

Register(s)	Content
RX #7... 0	System area
Rx #15…8	

Word area content

RWr #0	Reserved	System status
RWr #1	Input status byte 1	Input status byte 0
RWr #2	Input status byte 3	Input status byte 2
RWr #3	Input status byte 5	Input status byte 4
RWr #4	Input status byte 7	Input status byte 6
RWr #5	Input status byte 9	Input status byte 8
RWr #&	Input status byte 11	Input status byte 10
RWr #7	Input status byte 13	Input status byte 12
RWr #8	Input status byte 15	Input status byte 14
RWr #9	Fieldbus input feedback byte 1	Fieldbus input feedback byte 0
RWr #10	Fieldbus input feedback byte 3	Fieldbus input feedback byte 2
RWr #11	Probe status byte 1	Probe status byte 0
RWr #12	Probe status byte 3	Probe status byte 2
RWr #13	OSSD status byte 1	OSSD status byte 0
RWr #14	OSSD status byte 3	OSSD status byte 2
RWr #15	Analog data 0 byte 1	Analog data 0 byte 0
RWr #16	Analog data 0 byte 3	Analog data 0 byte 2
RWr #17	Analog data 1 byte 1	Analog data 1 byte 0
RWr #18	Analog data 1 byte 3	Analog data 1 byte 2
RWr #19	Analog data 2 byte 1	Analog data 2 byte 0
RWr #20	Analog data 2 byte 3	Analog data 2 byte 2
RWr #21	Analog data 3 byte 1	Analog data 3 byte 0
RWr #22	Analog data 3 byte 3	Analog data 3 byte 2
RWr #23	Analog data 4 byte 1	Analog data 4 byte 0
RWr #24	Analog data 4 byte 3	Analog data 4 byte 2
RWr #25	Analog data 5 byte 1	Analog data 5 byte 0
RWr #26	Analog data 5 byte 3	Analog data 5 byte 2
RWr #27	Analog data & byte 1	Analog data 6 byte 0
RWr #28	Analog data 6 byte 3	Analog data 6 byte 2
RWr #29	Analog data 7 byte 1	Analog data 7 byte 0

RWr #30	Analog data 7 byte 3	Analog data 7 byte 2
RWr #31	Analog data 8 byte 1	Analog data 8 byte 0
RWr #32	Analog data 8 byte 3	Analog data 8 byte 2
RWr #33	Analog data 9 byte 1	Analog data 9 byte 0
RWr #34	Analog data 9 byte 3	Analog data 9 byte 2
RWr #35	Analog data 10 byte 1	Analog data 10 byte 0
RWr #36	Analog data 10 byte 3	Analog data 10 byte 2
RWr #37	Analog data 11 byte 1	Analog data 11 byte 0
RWr #38	Analog data 11 byte 3	Analog data 11 byte 2
RWr #39	Analog data 12 byte 1	Analog data 12 byte 0
RWr #40	Analog data 12 byte 3	Analog data 12 byte 2
RWr #41	Analog data 13 byte 1	Analog data 13 byte 0
RWr #42	Analog data 13 byte 3	Analog data 13 byte 2
RWr #43	Analog data 14 byte 1	Analog data 14 byte 0
RWr #44	Analog data 14 byte 3	Analog data 14 byte 2
RWr #45	Analog data 15 byte 1	Analog data 15 byte 0
RWr #46	Analog data 15 byte 3	Analog data 15 byte 2
RWr #47	Error Code[LSB]	Error Code[MSB]

Please note that CC-Link does not allow acyclic exchange, so all the acyclic data like Errors, Diagnostics and Project CRC are not availabe.

System area initial handshake

In order to start the cyclic exchange the PLC has to handle the System Area as following:

- react to a set "Initial Data Processing Request"-flag by setting the "Initial Data Processing Complete"-flag. The Complete Flag should be reset as soon as the Request is reset;
- set the "Initial Data Setting Request"-flag until the "Initial Data Setting Complete"- and the "Remote READY"-flag are set.

Every time the connection gets interrupted, the PLC has to wait for the "Initial Data Processing Request"-flag again.

<table>
<tr><th colspan="4">System area</th></tr>
<tr><th colspan="2">Slave -> Master</th><th colspan="2">Master -> Slave</th></tr>
<tr><th>Point</th><th>Contents</th><th>Point</th><th>Contents</th></tr>
<tr><td>RX #0</td><td rowspan="5">Not used</td><td>RY #0</td><td rowspan="5">Not used</td></tr>
<tr><td>RX #1</td><td>RY #1</td></tr>
<tr><td>…</td><td>…</td></tr>
<tr><td>RX #12E</td><td>RY #12E</td></tr>
<tr><td>RX #12F</td><td>RY #12F</td></tr>
<tr><td>RX #130</td><td rowspan="8">Reserved</td><td>RY #130</td><td rowspan="8">Reserved</td></tr>
<tr><td>RX #131</td><td>RY #131</td></tr>
<tr><td>RX #132</td><td>RY #132</td></tr>
<tr><td>RX #133</td><td>RY #133</td></tr>
<tr><td>RX #134</td><td>RY #134</td></tr>
<tr><td>RX #135</td><td>RY #135</td></tr>
<tr><td>RX #136</td><td>RY #136</td></tr>
<tr><td>RX #137</td><td>RY #137</td></tr>
<tr><td>RX #138</td><td>Initial Data Processing Request</td><td>RY #138</td><td>Initial Data Processing Complete</td></tr>
<tr><td>RX #139</td><td>Initial Data Setting Complete</td><td>RY #139</td><td>Initial Data Setting Request</td></tr>
<tr><td>RX #13A</td><td>Error Status</td><td>RY #13A</td><td>Error Reset Request</td></tr>
<tr><td>RX #13B</td><td>Remote READY</td><td>RY #13B</td><td rowspan="4">Reserved</td></tr>
<tr><td>RX #13C</td><td rowspan="3">Reserved</td><td>RY #13C</td></tr>
<tr><td>RX #13D</td><td>RY #13D</td></tr>
<tr><td>RX #13E</td><td>RY #13E</td></tr>
<tr><td>RX #13F</td><td>RY #13F</td></tr>
</table>

PROFINET (MBEP)

Process data mapping

Module Fieldbus input

Byte offset	Data direction[1]	Size	Name
0	In	UINT8	Fieldbus input byte 0
1	In	UINT8	Fieldbus input byte 1
2	In	UINT8	Fieldbus input byte 2
3	In	UINT8	Fieldbus input byte 3

Module System I/O

Byte offset	Data direction	Size	Name
0	Out	UINT8	System status
1	Out	UINT8	Reserved
2	Out	UINT8	Input status byte 0
3	Out	UINT8	Input status byte 1
4	Out	UINT8	Input status byte 2
5	Out	UINT8	Input status byte 3
6	Out	UINT8	Input status byte 4
7	Out	UINT8	Input status byte 5
8	Out	UINT8	Input status byte 6
9	Out	UINT8	Input status byte 7
10	Out	UINT8	Input status byte 8
11	Out	UINT8	Input status byte 9
12	Out	UINT8	Input status byte 10
13	Out	UINT8	Input status byte 11
14	Out	UINT8	Input status byte 12
15	Out	UINT8	Input status byte 13
16	Out	UINT8	Input status byte 14
17	Out	UINT8	Input status byte 15
18	Out	UINT8	Fieldbus input byte 0 feedback
19	Out	UINT8	Fieldbus input byte 1 feedback
20	Out	UINT8	Fieldbus input byte 2 feedback
21	Out	UINT8	Fieldbus input byte 3 feedback
22	Out	UINT8	Probe status byte 0
23	Out	UINT8	Probe status byte 1
24	Out	UINT8	Probe status byte 2
25	Out	UINT8	Probe status byte 3
26	Out	UINT8	OSSD status byte 0
27	Out	UINT8	OSSD status byte 1
28	Out	UINT8	OSSD status byte 2
29	Out	UINT8	OSSD status byte 3

[1] Direction from the Mosaic point of view

Module Analog data

Byte offset	Data direction	Size	Name
0	Out	FLOAT	Analog data float 0
4	Out	FLOAT	Analog data float 1
8	Out	FLOAT	Analog data float 2
12	Out	FLOAT	Analog data float 3
16	Out	FLOAT	Analog data float 4
20	Out	FLOAT	Analog data float 5
24	Out	FLOAT	Analog data float 6
28	Out	FLOAT	Analog data float 7
32	Out	FLOAT	Analog data float 8
36	Out	FLOAT	Analog data float 9
40	Out	FLOAT	Analog data float 10
44	Out	FLOAT	Analog data float 11
48	Out	FLOAT	Analog data float 12
52	Out	FLOAT	Analog data float 13
56	Out	FLOAT	Analog data float 14
60	Out	FLOAT	Analog data float 15

Record Data read/write services[1]

Name	Slot	Index	Length (byte)	Access type
Fieldbus inputs	01h	01h	4	Get
System I/O	00h	00h	30	Get
Analog data	02h	05h	64	Get
Error data CPU0	00h	03h	9	Get
Error data CPU1	00h	04h	9	Get
Input diagnostics	00h	05h	32	Get
OSSD diagnostics	00h	06h	32	Get
Project CRC	00h	07h	2	Get

[1] See Acyclic data format at the end of the document for more information

PROFIBUS DP (MBP)

Module 1 (with Analog data)

Process data mapping

Byte offset	Data direction1	Size	Name
0	Out	UINT8	System status
1	Out	UINT8	Reserved
2	Out	UINT8	Input status byte 0
3	Out	UINT8	Input status byte 1
4	Out	UINT8	Input status byte 2
5	Out	UINT8	Input status byte 3
6	Out	UINT8	Input status byte 4
7	Out	UINT8	Input status byte 5
8	Out	UINT8	Input status byte 6
9	Out	UINT8	Input status byte 7
10	Out	UINT8	Input status byte 8
11	Out	UINT8	Input status byte 9
12	Out	UINT8	Input status byte 10
13	Out	UINT8	Input status byte 11
14	Out	UINT8	Input status byte 12
15	Out	UINT8	Input status byte 13
16	Out	UINT8	Input status byte 14
17	Out	UINT8	Input status byte 15
18	Out	UINT8	Fieldbus input byte 0 feedback
19	Out	UINT8	Fieldbus input byte 1 feedback
20	Out	UINT8	Fieldbus input byte 2 feedback
21	Out	UINT8	Fieldbus input byte 3 feedback
22	Out	UINT8	Probe status byte 0
23	Out	UINT8	Probe status byte 1
24	Out	UINT8	Probe status byte 2
25	Out	UINT8	Probe status byte 3
26	Out	UINT8	OSSD status byte 0
27	Out	UINT8	OSSD status byte 1
28	Out	UINT8	OSSD status byte 2
29	Out	UINT8	OSSD status byte 3
30-33	Out	FLOAT	Analog data float 0
34-37	Out	FLOAT	Analog data float 1
38-41	Out	FLOAT	Analog data float 2
42-45	Out	FLOAT	Analog data float 3
46-49	Out	FLOAT	Analog data float 4
50-53	Out	FLOAT	Analog data float 5
54-57	Out	FLOAT	Analog data float 6
58-61	Out	FLOAT	Analog data float 7
62-65	Out	FLOAT	Analog data float 8
66-69	Out	FLOAT	Analog data float 9
70-73	Out	FLOAT	Analog data float 10
74-77	Out	FLOAT	Analog data float 11
78-81	Out	FLOAT	Analog data float 12
82-85	Out	FLOAT	Analog data float 13

[1] Direction from the Mosaic point of view

86-89	Out	FLOAT	Analog data float 14
90-94	Out	FLOAT	Analog data float 15
0	In	UINT8	Fieldbus input byte 0
1	In	UINT8	Fieldbus input byte 1
2	In	UINT8	Fieldbus input byte 2
3	In	UINT8	Fieldbus input byte 3

Module 2 (without Analog data)

Process data mapping

Byte offset	Data direction1	Size	Name
0	Out	UINT8	System status
1	Out	UINT8	Reserved
2	Out	UINT8	Input status byte 0
3	Out	UINT8	Input status byte 1
4	Out	UINT8	Input status byte 2
5	Out	UINT8	Input status byte 3
6	Out	UINT8	Input status byte 4
7	Out	UINT8	Input status byte 5
8	Out	UINT8	Input status byte 6
9	Out	UINT8	Input status byte 7
10	Out	UINT8	Input status byte 8
11	Out	UINT8	Input status byte 9
12	Out	UINT8	Input status byte 10
13	Out	UINT8	Input status byte 11
14	Out	UINT8	Input status byte 12
15	Out	UINT8	Input status byte 13
16	Out	UINT8	Input status byte 14
17	Out	UINT8	Input status byte 15
18	Out	UINT8	Fieldbus input byte 0 feedback
19	Out	UINT8	Fieldbus input byte 1 feedback
20	Out	UINT8	Fieldbus input byte 2 feedback
21	Out	UINT8	Fieldbus input byte 3 feedback
22	Out	UINT8	Probe status byte 0
23	Out	UINT8	Probe status byte 1
24	Out	UINT8	Probe status byte 2
25	Out	UINT8	Probe status byte 3
26	Out	UINT8	OSSD status byte 0
27	Out	UINT8	OSSD status byte 1
28	Out	UINT8	OSSD status byte 2
29	Out	UINT8	OSSD status byte 3
0	In	UINT8	Fieldbus input byte 0
1	In	UINT8	Fieldbus input byte 1
2	In	UINT8	Fieldbus input byte 2
3	In	UINT8	Fieldbus input byte 3

[1] Direction from the Mosaic point of view

Powerlink (MBEPL)

Map without analog data

PDO predefined connection set

PDO Designation	Name	Length	Mapping Object
RxPDO 1	RxPDO 1	4 Byte	1600h
TxPDO 1	TxPDO 1	32 Byte	1A00h

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	2001h	02h	Reserved_2001_02
1A00h	03h	2001h	03h	Reserved_2001_03
1A00h	04h	2001h	04h	Reserved_2001_04
1A00h	05h	2201h	01h	Input status byte 0
1A00h	06h	2201h	02h	Input status byte 1
1A00h	07h	2201h	03h	Input status byte 2
1A00h	08h	2201h	04h	Input status byte 3
1A00h	09h	2201h	05h	Input status byte 4
1A00h	0Ah	2201h	06h	Input status byte 5
1A00h	0Bh	2201h	07h	Input status byte 6
1A00h	0Ch	2201h	08h	Input status byte 7
1A00h	0Dh	2201h	09h	Input status byte 8
1A00h	0Eh	2201h	0Ah	Input status byte 9
1A00h	0Fh	2201h	0Bh	Input status byte 10
1A00h	10h	2201h	0Ch	Input status byte 11
1A00h	11h	2201h	0Dh	Input status byte 12
1A00h	12h	2201h	0Eh	Input status byte 13
1A00h	13h	2201h	0Fh	Input status byte 14
1A00h	14h	2201h	10h	Input status byte 15
1A00h	15h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	16h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	17h	2181h	03h	Fieldbus input byte 2 feedback
1A00h	18h	2181h	04h	Fieldbus input byte 3 feedback
1A00h	19h	2203h	01h	Probe status byte 0
1A00h	1Ah	2203h	02h	Probe status byte 1
1A00h	1Bh	2203h	03h	Probe status byte 2
1A00h	1Ch	2203h	04h	Probe status byte 3
1A00h	1Dh	2202h	01h	OSSD status byte 0
1A00h	1Eh	2202h	02h	OSSD status byte 1

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	1Fh	2202h	03h	OSSD status byte 2
1A00h	20h	2202h	04h	OSSD status byte 3

Map with analog data

PDO predefined connection set

PDO Designation	Name	Length	Mapping Object
RxPDO 1	RxPDO 1	4 Byte	1600h
TxPDO 1	TxPDO 1	96 Byte	1A00h

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	2001h	02h	Reserved_2001_02
1A00h	03h	2001h	03h	Reserved_2001_03
1A00h	04h	2001h	04h	Reserved_2001_04
1A00h	05h	2201h	01h	Input status byte 0
1A00h	06h	2201h	02h	Input status byte 1
1A00h	07h	2201h	03h	Input status byte 2
1A00h	08h	2201h	04h	Input status byte 3
1A00h	09h	2201h	05h	Input status byte 4
1A00h	0Ah	2201h	06h	Input status byte 5
1A00h	0Bh	2201h	07h	Input status byte 6
1A00h	0Ch	2201h	08h	Input status byte 7
1A00h	0Dh	2201h	09h	Input status byte 8
1A00h	0Eh	2201h	0Ah	Input status byte 9
1A00h	0Fh	2201h	0Bh	Input status byte 10
1A00h	10h	2201h	0Ch	Input status byte 11
1A00h	11h	2201h	0Dh	Input status byte 12
1A00h	12h	2201h	0Eh	Input status byte 13
1A00h	13h	2201h	0Fh	Input status byte 14
1A00h	14h	2201h	10h	Input status byte 15
1A00h	15h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	16h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	17h	2181h	03h	Fieldbus input byte 2 feedback
1A00h	18h	2181h	04h	Fieldbus input byte 3 feedback
1A00h	19h	2203h	01h	Probe status byte 0
1A00h	1Ah	2203h	02h	Probe status byte 1
1A00h	1Bh	2203h	03h	Probe status byte 2
1A00h	1Ch	2203h	04h	Probe status byte 3
1A00h	1Dh	2202h	01h	OSSD status byte 0
1A00h	1Eh	2202h	02h	OSSD status byte 1
1A00h	1Fh	2202h	03h	OSSD status byte 2
1A00h	20h	2202h	04h	OSSD status byte 3
1A00h	21h	2204h	01h	Analog data float 0

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	22h	2204h	02h	Analog data float 1
1A00h	23h	2204h	03h	Analog data float 2
1A00h	24h	2204h	04h	Analog data float 3
1A00h	25h	2204h	05h	Analog data float 4
1A00h	26h	2204h	06h	Analog data float 5
1A00h	27h	2204h	07h	Analog data float 6
1A00h	28h	2204h	08h	Analog data float 7
1A00h	29h	2204h	09h	Analog data float 8
1A00h	2Ah	2204h	0Ah	Analog data float 9
1A00h	2Bh	2204h	0Bh	Analog data float 10
1A00h	2Ch	2204h	0Ch	Analog data float 11
1A00h	2Dh	2204h	0Dh	Analog data float 12
1A00h	2Eh	2204h	0Eh	Analog data float 13
1A00h	2Fh	2204h	0Fh	Analog data float 14
1A00h	30h	2204h	10h	Analog data float 15

Vendor specific Objects

Object Index 2001h – System status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	System status
02h	UNSIGNED8	Reserved_2001_02
02h	UNSIGNED8	Reserved_2001_03
02h	UNSIGNED8	Reserved_2001_04

Object Index 2003h – Errors data CPU 0

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Module name
02h	UNSIGNED8	Error code
03h	UNSIGNED8	Error address byte 0
04h	UNSIGNED8	Error address byte 1
05h	UNSIGNED8	Error address byte 2
06h	UNSIGNED8	Error address byte 3
07h	UNSIGNED8	CPU firmware version
08h	UNSIGNED8	Extended code 0
09h	UNSIGNED8	Extended code 1

Object Index 2004h – Errors data CPU 1

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Module name
02h	UNSIGNED8	Error code
03h	UNSIGNED8	Error address byte 0
04h	UNSIGNED8	Error address byte 1
05h	UNSIGNED8	Error address byte 2
06h	UNSIGNED8	Error address byte 3
07h	UNSIGNED8	CPU firmware version
08h	UNSIGNED8	Extended code 0
09h	UNSIGNED8	Extended code 1

Object Index 2005h – Input diagnostics

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Diagnostic index 0
02h	UNSIGNED8	Diagnostic code 0
03h	UNSIGNED8	Diagnostic index 1
04h	UNSIGNED8	Diagnostic code 1
05h	UNSIGNED8	Diagnostic index 2
06h	UNSIGNED8	Diagnostic code 2
07h	UNSIGNED8	Diagnostic index 3
08h	UNSIGNED8	Diagnostic code 3
09h	UNSIGNED8	Diagnostic index 4
0Ah	UNSIGNED8	Diagnostic code 4
0Bh	UNSIGNED8	Diagnostic index 5
0Ch	UNSIGNED8	Diagnostic code 5
0Dh	UNSIGNED8	Diagnostic index 6
0Eh	UNSIGNED8	Diagnostic code 6
0Fh	UNSIGNED8	Diagnostic index 7
10h	UNSIGNED8	Diagnostic code 7
11h	UNSIGNED8	Diagnostic index 8
12h	UNSIGNED8	Diagnostic code 8
13h	UNSIGNED8	Diagnostic index 9
14h	UNSIGNED8	Diagnostic code 9
15h	UNSIGNED8	Diagnostic index 10
16h	UNSIGNED8	Diagnostic code 10
17h	UNSIGNED8	Diagnostic index 11
18h	UNSIGNED8	Diagnostic code 11
19h	UNSIGNED8	Diagnostic index 12
1Ah	UNSIGNED8	Diagnostic code 12
1Bh	UNSIGNED8	Diagnostic index 13
1Ch	UNSIGNED8	Diagnostic code 13
1Dh	UNSIGNED8	Diagnostic index 14
1Eh	UNSIGNED8	Diagnostic code 14
1Fh	UNSIGNED8	Diagnostic index 15
20h	UNSIGNED8	Diagnostic code 15

A maximum of 16 Input diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus

Object Index 2006h – OSSD diagnostics

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Diagnostic index 0
02h	UNSIGNED8	Diagnostic code 0
03h	UNSIGNED8	Diagnostic index 1
04h	UNSIGNED8	Diagnostic code 1
05h	UNSIGNED8	Diagnostic index 2
06h	UNSIGNED8	Diagnostic code 2
07h	UNSIGNED8	Diagnostic index 3
08h	UNSIGNED8	Diagnostic code 3
09h	UNSIGNED8	Diagnostic index 4
0Ah	UNSIGNED8	Diagnostic code 4
0Bh	UNSIGNED8	Diagnostic index 5
0Ch	UNSIGNED8	Diagnostic code 5
0Dh	UNSIGNED8	Diagnostic index 6
0Eh	UNSIGNED8	Diagnostic code 6
0Fh	UNSIGNED8	Diagnostic index 7
10h	UNSIGNED8	Diagnostic code 7
11h	UNSIGNED8	Diagnostic index 8
12h	UNSIGNED8	Diagnostic code 8
13h	UNSIGNED8	Diagnostic index 9
14h	UNSIGNED8	Diagnostic code 9
15h	UNSIGNED8	Diagnostic index 10
16h	UNSIGNED8	Diagnostic code 10
17h	UNSIGNED8	Diagnostic index 11
18h	UNSIGNED8	Diagnostic code 11
19h	UNSIGNED8	Diagnostic index 12
1Ah	UNSIGNED8	Diagnostic code 12
1Bh	UNSIGNED8	Diagnostic index 13
1Ch	UNSIGNED8	Diagnostic code 13
1Dh	UNSIGNED8	Diagnostic index 14
1Eh	UNSIGNED8	Diagnostic code 14
1Fh	UNSIGNED8	Diagnostic index 15
20h	UNSIGNED8	Diagnostic code 15

A maximum of 16 OSSD diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus

Object Index 2007h – Project CRC

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Project CRC High byte
02h	UNSIGNED8	Project CRC Low byte

Object Index 2101h – Fieldbus inputs

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Fieldbus input byte 0
02h	UNSIGNED8	Fieldbus input byte 1
03h	UNSIGNED8	Fieldbus input byte 2
04h	UNSIGNED8	Fieldbus input byte 3

Object Index 2181h – Fieldbus inputs feedback

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Fieldbus input byte 0 feedback
02h	UNSIGNED8	Fieldbus input byte 1 feedback
03h	UNSIGNED8	Fieldbus input byte 2 feedback
04h	UNSIGNED8	Fieldbus input byte 3 feedback

Object Index 2201h – Input status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Input status byte 0
02h	UNSIGNED8	Input status byte 1
03h	UNSIGNED8	Input status byte 2
04h	UNSIGNED8	Input status byte 3
05h	UNSIGNED8	Input status byte 4
06h	UNSIGNED8	Input status byte 5
07h	UNSIGNED8	Input status byte 6
08h	UNSIGNED8	Input status byte 7
09h	UNSIGNED8	Input status byte 8
0Ah	UNSIGNED8	Input status byte 9
0Bh	UNSIGNED8	Input status byte 10
0Ch	UNSIGNED8	Input status byte 11
0Dh	UNSIGNED8	Input status byte 12
0Eh	UNSIGNED8	Input status byte 13
0Fh	UNSIGNED8	Input status byte 14
10h	UNSIGNED8	Input status byte 15

Object Index 2202h – OSSD status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	OSSD status byte 0
02h	UNSIGNED8	OSSD status byte 1
03h	UNSIGNED8	OSSD status byte 2
04h	UNSIGNED8	OSSD status byte 3

Object Index 2203h – Probe status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Probe status byte 0
02h	UNSIGNED8	Probe status byte 1
03h	UNSIGNED8	Probe status byte 2
04h	UNSIGNED8	Probe status byte 3

Object Index 2204h – Analog data

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	REAL32	Analog data float 0
02h	REAL32	Analog data float 1
03h	REAL32	Analog data float 2
04h	REAL32	Analog data float 3
05h	REAL32	Analog data float 4
06h	REAL32	Analog data float 5
07h	REAL32	Analog data float 6
08h	REAL32	Analog data float 7
09h	REAL32	Analog data float 8
0Ah	REAL32	Analog data float 9
0Bh	REAL32	Analog data float 10
0Ch	REAL32	Analog data float 11
0Dh	REAL32	Analog data float 12
0Eh	REAL32	Analog data float 13
0Fh	REAL32	Analog data float 14
10h	REAL32	Analog data float 15

Record Data read/write services[1]

Name	Slot	Index	Length (byte)	Access type
Fieldbus inputs	01h	01h	4	Get
System I/O	00h	00h	30	Get
Analog data	02h	05h	64	Get
Error data CPU0	00h	03h	9	Get
Error data CPU1	00h	04h	9	Get
Input diagnostics	00h	05h	32	Get
OSSD diagnostics	00h	06h	32	Get
Project CRC	00h	07h	2	Get

[1] See Acyclic data format at the end of the document for more information

MODULE BUS MBx FIRMWARE ≥ 3.0.0

EtherCAT (MBEC)

Map without analog data and without restart inputs

PDO predefined connection set

PDO Designation	Name	Length	Mapping Object
RxPDO 1	RxPDO 1	4 Byte	1600h
TxPDO 1	TxPDO 1	32 Byte	1A00h

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	2001h	02h	Reserved_2001_02
1A00h	03h	2001h	03h	Reserved_2001_03
1A00h	04h	2001h	04h	Reserved_2001_04
1A00h	05h	2201h	01h	Input status byte 0
1A00h	06h	2201h	02h	Input status byte 1
1A00h	07h	2201h	03h	Input status byte 2
1A00h	08h	2201h	04h	Input status byte 3
1A00h	09h	2201h	05h	Input status byte 4
1A00h	0Ah	2201h	06h	Input status byte 5
1A00h	0Bh	2201h	07h	Input status byte 6
1A00h	0Ch	2201h	08h	Input status byte 7
1A00h	0Dh	2201h	09h	Input status byte 8
1A00h	0Eh	2201h	0Ah	Input status byte 9
1A00h	0Fh	2201h	0Bh	Input status byte 10
1A00h	10h	2201h	0Ch	Input status byte 11
1A00h	11h	2201h	0Dh	Input status byte 12
1A00h	12h	2201h	0Eh	Input status byte 13
1A00h	13h	2201h	0Fh	Input status byte 14
1A00h	14h	2201h	10h	Input status byte 15
1A00h	15h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	16h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	17h	2181h	03h	Fieldbus input byte 2 feedback
1A00h	18h	2181h	04h	Fieldbus input byte 3 feedback
1A00h	19h	2203h	01h	Probe status byte 0
1A00h	1Ah	2203h	02h	Probe status byte 1
1A00h	1Bh	2203h	03h	Probe status byte 2
1A00h	1Ch	2203h	04h	Probe status byte 3
1A00h	1Dh	2202h	01h	OSSD status byte 0

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	1Eh	2202h	02h	OSSD status byte 1
1A00h	1Fh	2202h	03h	OSSD status byte 2
1A00h	20h	2202h	04h	OSSD status byte 3

Map with analog data and without restart inputs

PDO predefined connection set

PDO Designation	Name	Length	Mapping Object
RxPDO 1	RxPDO 1	4 Byte	1600h
TxPDO 1	TxPDO 1	96 Byte	1A00h

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	2001h	02h	Reserved_2001_02
1A00h	03h	2001h	03h	Reserved_2001_03
1A00h	04h	2001h	04h	Reserved_2001_04
1A00h	05h	2201h	01h	Input status byte 0
1A00h	06h	2201h	02h	Input status byte 1
1A00h	07h	2201h	03h	Input status byte 2
1A00h	08h	2201h	04h	Input status byte 3
1A00h	09h	2201h	05h	Input status byte 4
1A00h	0Ah	2201h	06h	Input status byte 5
1A00h	0Bh	2201h	07h	Input status byte 6
1A00h	0Ch	2201h	08h	Input status byte 7
1A00h	0Dh	2201h	09h	Input status byte 8
1A00h	0Eh	2201h	0Ah	Input status byte 9
1A00h	0Fh	2201h	0Bh	Input status byte 10
1A00h	10h	2201h	0Ch	Input status byte 11
1A00h	11h	2201h	0Dh	Input status byte 12
1A00h	12h	2201h	0Eh	Input status byte 13
1A00h	13h	2201h	0Fh	Input status byte 14
1A00h	14h	2201h	10h	Input status byte 15
1A00h	15h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	16h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	17h	2181h	03h	Fieldbus input byte 2 feedback
1A00h	18h	2181h	04h	Fieldbus input byte 3 feedback
1A00h	19h	2203h	01h	Probe status byte 0
1A00h	1Ah	2203h	02h	Probe status byte 1
1A00h	1Bh	2203h	03h	Probe status byte 2
1A00h	1Ch	2203h	04h	Probe status byte 3
1A00h	1Dh	2202h	01h	OSSD status byte 0
1A00h	1Eh	2202h	02h	OSSD status byte 1
1A00h	1Fh	2202h	03h	OSSD status byte 2
1A00h	20h	2202h	04h	OSSD status byte 3
1A00h	21h	2204h	01h	Analog data float 0

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	22h	2204h	02h	Analog data float 1
1A00h	23h	2204h	03h	Analog data float 2
1A00h	24h	2204h	04h	Analog data float 3
1A00h	25h	2204h	05h	Analog data float 4
1A00h	26h	2204h	06h	Analog data float 5
1A00h	27h	2204h	07h	Analog data float 6
1A00h	28h	2204h	08h	Analog data float 7
1A00h	29h	2204h	09h	Analog data float 8
1A00h	2Ah	2204h	0Ah	Analog data float 9
1A00h	2Bh	2204h	0Bh	Analog data float 10
1A00h	2Ch	2204h	0Ch	Analog data float 11
1A00h	2Dh	2204h	0Dh	Analog data float 12
1A00h	2Eh	2204h	0Eh	Analog data float 13
1A00h	2Fh	2204h	0Fh	Analog data float 14
1A00h	30h	2204h	10h	Analog data float 15

Map without analog data and with restart inputs

PDO predefined connection set

PDO Designation	Name	Length	Mapping Object
RxPDO 1	RxPDO 1	4 Byte	1600h
TxPDO 1	TxPDO 1	35 Byte	1A00h

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	2001h	02h	Reserved_2001_02
1A00h	03h	2001h	03h	Reserved_2001_03
1A00h	04h	2001h	04h	Reserved_2001_04
1A00h	05h	2201h	01h	Input status byte 0
1A00h	06h	2201h	02h	Input status byte 1
1A00h	07h	2201h	03h	Input status byte 2
1A00h	08h	2201h	04h	Input status byte 3
1A00h	09h	2201h	05h	Input status byte 4
1A00h	0Ah	2201h	06h	Input status byte 5
1A00h	0Bh	2201h	07h	Input status byte 6
1A00h	0Ch	2201h	08h	Input status byte 7
1A00h	0Dh	2201h	09h	Input status byte 8
1A00h	0Eh	2201h	0Ah	Input status byte 9
1A00h	0Fh	2201h	0Bh	Input status byte 10
1A00h	10h	2201h	0Ch	Input status byte 11
1A00h	11h	2201h	0Dh	Input status byte 12
1A00h	12h	2201h	0Eh	Input status byte 13
1A00h	13h	2201h	0Fh	Input status byte 14
1A00h	14h	2201h	10h	Input status byte 15
1A00h	15h	2207h	01h	Restart input byte 0
1A00h	16h	2207h	02h	Restart input byte 1
1A00h	17h	2207h	03h	Restart input byte 2
1A00h	18h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	19h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	1Ah	2181h	03h	Fieldbus input byte 2 feedback
1A00h	1Bh	2181h	04h	Fieldbus input byte 3 feedback
1A00h	1Ch	2203h	01h	Probe status byte 0
1A00h	1Dh	2203h	02h	Probe status byte 1
1A00h	1Eh	2203h	03h	Probe status byte 2
1A00h	1Fh	2203h	04h	Probe status byte 3
1A00h	20h	2202h	01h	OSSD status byte 0
1A00h	21h	2202h	02h	OSSD status byte 1
1A00h	22h	2202h	03h	OSSD status byte 2
1A00h	23h	2202h	04h	OSSD status byte 3

Map with analog data and with restart inputs

PDO predefined connection set

PDO Designation	Name	Length	Mapping Object
RxPDO 1	RxPDO 1	4 Byte	1600h
TxPDO 1	TxPDO 1	96 Byte	1A00h

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2101h	01h	Fieldbus input byte 0
1600h	02h	2101h	02h	Fieldbus input byte 1
1600h	03h	2101h	03h	Fieldbus input byte 2
1600h	04h	2101h	04h	Fieldbus input byte 3

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	2001h	02h	Reserved_2001_02
1A00h	03h	2001h	03h	Reserved_2001_03
1A00h	04h	2001h	04h	Reserved_2001_04
1A00h	05h	2201h	01h	Input status byte 0
1A00h	06h	2201h	02h	Input status byte 1
1A00h	07h	2201h	03h	Input status byte 2
1A00h	08h	2201h	04h	Input status byte 3
1A00h	09h	2201h	05h	Input status byte 4
1A00h	0Ah	2201h	06h	Input status byte 5
1A00h	0Bh	2201h	07h	Input status byte 6
1A00h	0Ch	2201h	08h	Input status byte 7
1A00h	0Dh	2201h	09h	Input status byte 8
1A00h	0Eh	2201h	0Ah	Input status byte 9
1A00h	0Fh	2201h	0Bh	Input status byte 10
1A00h	10h	2201h	0Ch	Input status byte 11
1A00h	11h	2201h	0Dh	Input status byte 12
1A00h	12h	2201h	0Eh	Input status byte 13
1A00h	13h	2201h	0Fh	Input status byte 14
1A00h	14h	2201h	10h	Input status byte 15
1A00h	15h	2207h	01h	Restart input byte 0
1A00h	16h	2207h	02h	Restart input byte 1
1A00h	17h	2207h	03h	Restart input byte 2
1A00h	18h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	19h	2181h	02h	Fieldbus input byte 1 feedback
1A00h	1Ah	2181h	03h	Fieldbus input byte 2 feedback
1A00h	1Bh	2181h	04h	Fieldbus input byte 3 feedback
1A00h	1Ch	2203h	01h	Probe status byte 0
1A00h	1Dh	2203h	02h	Probe status byte 1
1A00h	1Eh	2203h	03h	Probe status byte 2
1A00h	1Fh	2203h	04h	Probe status byte 3
1A00h	20h	2202h	01h	OSSD status byte 0
1A00h	21h	2202h	02h	OSSD status byte 1

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	22h	2202h	03h	OSSD status byte 2
1A00h	23h	2202h	04h	OSSD status byte 3
1A00h	24h	2204h	01h	Analog data float 0
1A00h	25h	2204h	02h	Analog data float 1
1A00h	26h	2204h	03h	Analog data float 2
1A00h	27h	2204h	04h	Analog data float 3
1A00h	28h	2204h	05h	Analog data float 4
1A00h	29h	2204h	06h	Analog data float 5
1A00h	2Ah	2204h	07h	Analog data float 6
1A00h	2Bh	2204h	08h	Analog data float 7
1A00h	2Ch	2204h	09h	Analog data float 8
1A00h	2Dh	2204h	0Ah	Analog data float 9
1A00h	2Eh	2204h	0Bh	Analog data float 10
1A00h	2Fh	2204h	0Ch	Analog data float 11
1A00h	30h	2204h	0Dh	Analog data float 12
1A00h	31h	2204h	0Eh	Analog data float 13
1A00h	32h	2204h	0Fh	Analog data float 14
1A00h	33h	2204h	10h	Analog data float 15

Vendor specific Objects

Object Index 2001h – System status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	System status
02h	UNSIGNED8	Reserved_2001_02
02h	UNSIGNED8	Reserved_2001_03
02h	UNSIGNED8	Reserved_2001_04

Object Index 2003h – Errors data CPU 0

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Module name
02h	UNSIGNED8	Error code
03h	UNSIGNED8	Error address byte 0
04h	UNSIGNED8	Error address byte 1
05h	UNSIGNED8	Error address byte 2
06h	UNSIGNED8	Error address byte 3
07h	UNSIGNED8	CPU firmware version
08h	UNSIGNED8	Extended code 0
09h	UNSIGNED8	Extended code 1

Object Index 2004h – Errors data CPU 1

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Module name
02h	UNSIGNED8	Error code
03h	UNSIGNED8	Error address byte 0
04h	UNSIGNED8	Error address byte 1
05h	UNSIGNED8	Error address byte 2
06h	UNSIGNED8	Error address byte 3
07h	UNSIGNED8	CPU firmware version
08h	UNSIGNED8	Extended code 0
09h	UNSIGNED8	Extended code 1

Object Index 2005h – Input diagnostics

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Diagnostic index 0
02h	UNSIGNED8	Diagnostic code 0
03h	UNSIGNED8	Diagnostic index 1
04h	UNSIGNED8	Diagnostic code 1
05h	UNSIGNED8	Diagnostic index 2
06h	UNSIGNED8	Diagnostic code 2
07h	UNSIGNED8	Diagnostic index 3
08h	UNSIGNED8	Diagnostic code 3
09h	UNSIGNED8	Diagnostic index 4
0Ah	UNSIGNED8	Diagnostic code 4
0Bh	UNSIGNED8	Diagnostic index 5
0Ch	UNSIGNED8	Diagnostic code 5
0Dh	UNSIGNED8	Diagnostic index 6
0Eh	UNSIGNED8	Diagnostic code 6
0Fh	UNSIGNED8	Diagnostic index 7
10h	UNSIGNED8	Diagnostic code 7
11h	UNSIGNED8	Diagnostic index 8
12h	UNSIGNED8	Diagnostic code 8
13h	UNSIGNED8	Diagnostic index 9
14h	UNSIGNED8	Diagnostic code 9
15h	UNSIGNED8	Diagnostic index 10
16h	UNSIGNED8	Diagnostic code 10
17h	UNSIGNED8	Diagnostic index 11
18h	UNSIGNED8	Diagnostic code 11
19h	UNSIGNED8	Diagnostic index 12
1Ah	UNSIGNED8	Diagnostic code 12
1Bh	UNSIGNED8	Diagnostic index 13
1Ch	UNSIGNED8	Diagnostic code 13
1Dh	UNSIGNED8	Diagnostic index 14
1Eh	UNSIGNED8	Diagnostic code 14
1Fh	UNSIGNED8	Diagnostic index 15
20h	UNSIGNED8	Diagnostic code 15

A maximum of 16 Input diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus

Object Index 2006h – OSSD diagnostics

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Diagnostic index 0
02h	UNSIGNED8	Diagnostic code 0
03h	UNSIGNED8	Diagnostic index 1
04h	UNSIGNED8	Diagnostic code 1
05h	UNSIGNED8	Diagnostic index 2
06h	UNSIGNED8	Diagnostic code 2
07h	UNSIGNED8	Diagnostic index 3
08h	UNSIGNED8	Diagnostic code 3
09h	UNSIGNED8	Diagnostic index 4
0Ah	UNSIGNED8	Diagnostic code 4
0Bh	UNSIGNED8	Diagnostic index 5
0Ch	UNSIGNED8	Diagnostic code 5
0Dh	UNSIGNED8	Diagnostic index 6
0Eh	UNSIGNED8	Diagnostic code 6
0Fh	UNSIGNED8	Diagnostic index 7
10h	UNSIGNED8	Diagnostic code 7
11h	UNSIGNED8	Diagnostic index 8
12h	UNSIGNED8	Diagnostic code 8
13h	UNSIGNED8	Diagnostic index 9
14h	UNSIGNED8	Diagnostic code 9
15h	UNSIGNED8	Diagnostic index 10
16h	UNSIGNED8	Diagnostic code 10
17h	UNSIGNED8	Diagnostic index 11
18h	UNSIGNED8	Diagnostic code 11
19h	UNSIGNED8	Diagnostic index 12
1Ah	UNSIGNED8	Diagnostic code 12
1Bh	UNSIGNED8	Diagnostic index 13
1Ch	UNSIGNED8	Diagnostic code 13
1Dh	UNSIGNED8	Diagnostic index 14
1Eh	UNSIGNED8	Diagnostic code 14
1Fh	UNSIGNED8	Diagnostic index 15
20h	UNSIGNED8	Diagnostic code 15

A maximum of 16 OSSD diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus

Object Index 2007h – Project CRC

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Project CRC High byte
02h	UNSIGNED8	Project CRC Low byte

Object Index 2101h – Fieldbus inputs

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Fieldbus input byte 0
02h	UNSIGNED8	Fieldbus input byte 1
03h	UNSIGNED8	Fieldbus input byte 2
04h	UNSIGNED8	Fieldbus input byte 3

Object Index 2181h – Fieldbus inputs feedback

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Fieldbus input byte 0 feedback
02h	UNSIGNED8	Fieldbus input byte 1 feedback
03h	UNSIGNED8	Fieldbus input byte 2 feedback
04h	UNSIGNED8	Fieldbus input byte 3 feedback

Object Index 2201h – Input status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Input status byte 0
02h	UNSIGNED8	Input status byte 1
03h	UNSIGNED8	Input status byte 2
04h	UNSIGNED8	Input status byte 3
05h	UNSIGNED8	Input status byte 4
06h	UNSIGNED8	Input status byte 5
07h	UNSIGNED8	Input status byte 6
08h	UNSIGNED8	Input status byte 7
09h	UNSIGNED8	Input status byte 8
0Ah	UNSIGNED8	Input status byte 9
0Bh	UNSIGNED8	Input status byte 10
0Ch	UNSIGNED8	Input status byte 11
0Dh	UNSIGNED8	Input status byte 12
0Eh	UNSIGNED8	Input status byte 13
0Fh	UNSIGNED8	Input status byte 14
10h	UNSIGNED8	Input status byte 15

Object Index 2202h – OSSD status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	OSSD status byte 0
02h	UNSIGNED8	OSSD status byte 1
03h	UNSIGNED8	OSSD status byte 2
04h	UNSIGNED8	OSSD status byte 3

Object Index 2203h – Probe status

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED8	Probe status byte 0
02h	UNSIGNED8	Probe status byte 1
03h	UNSIGNED8	Probe status byte 2
04h	UNSIGNED8	Probe status byte 3

Object Index 2204h – Analog data

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	REAL32	Analog data float 0
02h	REAL32	Analog data float 1
03h	REAL32	Analog data float 2
04h	REAL32	Analog data float 3
05h	REAL32	Analog data float 4
06h	REAL32	Analog data float 5
07h	REAL32	Analog data float 6
08h	REAL32	Analog data float 7
09h	REAL32	Analog data float 8
0Ah	REAL32	Analog data float 9
0Bh	REAL32	Analog data float 10
0Ch	REAL32	Analog data float 11
0Dh	REAL32	Analog data float 12
0Eh	REAL32	Analog data float 13
0Fh	REAL32	Analog data float 14
10h	REAL32	Analog data float 15

Object Index 2008h – RFID Chain 1

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED16	RFID Chain 1

Object Index 2009h – RFID Chain 2

Object Type: Array

Subindex	Type	Name
00h	UNSIGNED8	Number Of Entries
01h	UNSIGNED16	RFID Chain 2

EtherNet/IP (MBEI)

Map without analog data and without restart inputs

Process data mapping (Class 1 Connection)

Assembly instance 96h (Connection point O->T Consuming Instance)

Byte offset	Size	Name
0	USINT	Fieldbus input byte 0
1	USINT	Fieldbus input byte 1
2	USINT	Fieldbus input byte 2
3	USINT	Fieldbus input byte 3

O->T connection type: Point-to-point

Assembly instance 64h (Connection point T->O Producing Instance)

Byte offset	Size	Name
0	USINT	System status
1	USINT	Reserved
2	USINT	Input status byte 0
3	USINT	Input status byte 1
4	USINT	Input status byte 2
5	USINT	Input status byte 3
6	USINT	Input status byte 4
7	USINT	Input status byte 5
8	USINT	Input status byte 6
9	USINT	Input status byte 7
10	USINT	Input status byte 8
11	USINT	Input status byte 9
12	USINT	Input status byte 10
13	USINT	Input status byte 11
14	USINT	Input status byte 12
15	USINT	Input status byte 13
16	USINT	Input status byte 14
17	USINT	Input status byte 15
18	USINT	Fieldbus input byte 0 feedback
19	USINT	Fieldbus input byte 1 feedback
20	USINT	Fieldbus input byte 2 feedback
21	USINT	Fieldbus input byte 3 feedback
22	USINT	Probe status byte 0
23	USINT	Probe status byte 1
24	USINT	Probe status byte 2
25	USINT	Probe status byte 3
26	USINT	OSSD status byte 0
27	USINT	OSSD status byte 1
28	USINT	OSSD status byte 2
29	USINT	OSSD status byte 3

T->O connection type: Point-to-point,Multicast.

Assembly instance 05h (Configuration Data)

Set this instance to size 0

Supported trigger types: Cyclic

Map with analog data and without restart inputs

Process data mapping (Class 1 Connection)

Assembly instance 96h (Connection point O->T Consuming Instance)

Byte offset	Size	Name
0	USINT	Fieldbus input byte 0
1	USINT	Fieldbus input byte 1
2	USINT	Fieldbus input byte 2
3	USINT	Fieldbus input byte 3

O->T connection type: Point-to-point

Assembly instance 64h (Connection point T->O Producing Instance)

Byte offset	Size	Name
0	USINT	System status
1	USINT	Reserved
2	USINT	Input status byte 0
3	USINT	Input status byte 1
4	USINT	Input status byte 2
5	USINT	Input status byte 3
6	USINT	Input status byte 4
7	USINT	Input status byte 5
8	USINT	Input status byte 6
9	USINT	Input status byte 7
10	USINT	Input status byte 8
11	USINT	Input status byte 9
12	USINT	Input status byte 10
13	USINT	Input status byte 11
14	USINT	Input status byte 12
15	USINT	Input status byte 13
16	USINT	Input status byte 14
17	USINT	Input status byte 15
18	USINT	Fieldbus input byte 0 feedback
19	USINT	Fieldbus input byte 1 feedback
20	USINT	Fieldbus input byte 2 feedback
21	USINT	Fieldbus input byte 3 feedback
22	USINT	Probe status byte 0
23	USINT	Probe status byte 1
24	USINT	Probe status byte 2
25	USINT	Probe status byte 3
26	USINT	OSSD status byte 0
27	USINT	OSSD status byte 1
28	USINT	OSSD status byte 2
29	USINT	OSSD status byte 3
30	REAL	Analog data float 0
34	REAL	Analog data float 1
38	REAL	Analog data float 2
42	REAL	Analog data float 3
46	REAL	Analog data float 4
50	REAL	Analog data float 5
54	REAL	Analog data float 6

Byte offset	Size	Name
58	REAL	Analog data float 7
62	REAL	Analog data float 8
66	REAL	Analog data float 9
70	REAL	Analog data float 10
74	REAL	Analog data float 11
78	REAL	Analog data float 12
82	REAL	Analog data float 13
86	REAL	Analog data float 14
90	REAL	Analog data float 15

T->O connection type: Point-to-point,Multicast.

Assembly instance 05h (Configuration Data)

Set this instance to size 0

Supported trigger types: Cyclic

Map without analog data and with restart inputs

Process data mapping (Class 1 Connection)

Assembly instance 96h (Connection point O->T Consuming Instance)

Byte offset	Size	Name
0	USINT	Fieldbus input byte 0
1	USINT	Fieldbus input byte 1
2	USINT	Fieldbus input byte 2
3	USINT	Fieldbus input byte 3

O->T connection type: Point-to-point

Assembly instance 64h (Connection point T->O Producing Instance)

Byte offset	Size	Name
0	USINT	System status
1	USINT	Reserved
2	USINT	Input status byte 0
3	USINT	Input status byte 1
4	USINT	Input status byte 2
5	USINT	Input status byte 3
6	USINT	Input status byte 4
7	USINT	Input status byte 5
8	USINT	Input status byte 6
9	USINT	Input status byte 7
10	USINT	Input status byte 8
11	USINT	Input status byte 9
12	USINT	Input status byte 10
13	USINT	Input status byte 11
14	USINT	Input status byte 12
15	USINT	Input status byte 13
16	USINT	Input status byte 14
17	USINT	Input status byte 15
18	USINT	Restart input byte 0
19	USINT	Restart input byte 1
20	USINT	Restart input byte 2
21	USINT	Fieldbus input byte 0 feedback
22	USINT	Fieldbus input byte 1 feedback
23	USINT	Fieldbus input byte 2 feedback
24	USINT	Fieldbus input byte 3 feedback
25	USINT	Probe status byte 0
26	USINT	Probe status byte 1
27	USINT	Probe status byte 2
28	USINT	Probe status byte 3
29	USINT	OSSD status byte 0
30	USINT	OSSD status byte 1
31	USINT	OSSD status byte 2
32	USINT	OSSD status byte 3

T->O connection type: Point-to-point,Multicast.

Assembly instance 05h (Configuration Data)

Set this instance to size 0. Supported trigger types: Cyclic

Map with analog data and with restart inputs

Process data mapping (Class 1 Connection)

Assembly instance 96h (Connection point O->T Consuming Instance)

Byte offset	Size	Name
0	USINT	Fieldbus input byte 0
1	USINT	Fieldbus input byte 1
2	USINT	Fieldbus input byte 2
3	USINT	Fieldbus input byte 3

O->T connection type: Point-to-point

Assembly instance 64h (Connection point T->O Producing Instance)

Byte offset	Size	Name
0	USINT	System status
1	USINT	Reserved
2	USINT	Input status byte 0
3	USINT	Input status byte 1
4	USINT	Input status byte 2
5	USINT	Input status byte 3
6	USINT	Input status byte 4
7	USINT	Input status byte 5
8	USINT	Input status byte 6
9	USINT	Input status byte 7
10	USINT	Input status byte 8
11	USINT	Input status byte 9
12	USINT	Input status byte 10
13	USINT	Input status byte 11
14	USINT	Input status byte 12
15	USINT	Input status byte 13
16	USINT	Input status byte 14
17	USINT	Input status byte 15
18	USINT	Restart input byte 0
19	USINT	Restart input byte 1
20	USINT	Restart input byte 2
21	USINT	Fieldbus input byte 0 feedback
22	USINT	Fieldbus input byte 1 feedback
23	USINT	Fieldbus input byte 2 feedback
24	USINT	Fieldbus input byte 3 feedback
25	USINT	Probe status byte 0
26	USINT	Probe status byte 1
27	USINT	Probe status byte 2
28	USINT	Probe status byte 3
29	USINT	OSSD status byte 0
30	USINT	OSSD status byte 1
31	USINT	OSSD status byte 2
32	USINT	OSSD status byte 3
33	REAL	Analog data float 0
37	REAL	Analog data float 1
41	REAL	Analog data float 2
45	REAL	Analog data float 3
49	REAL	Analog data float 4
53	REAL	Analog data float 5

Byte offset	Size	Name
57	REAL	Analog data float 6
61	REAL	Analog data float 7
65	REAL	Analog data float 8
69	REAL	Analog data float 9
73	REAL	Analog data float 10
77	REAL	Analog data float 11
81	REAL	Analog data float 12
85	REAL	Analog data float 13
89	REAL	Analog data float 14
93	REAL	Analog data float 15

T->O connection type: Point-to-point,Multicast.

Assembly instance 05h (Configuration Data)

Set this instance to size 0. Supported trigger types: Cyclic

Explicit messaging[1]

To access Errors data, Input diagnostics, OSSD diagnostic, Project CRC and RFID Chain (1 or 2) the service 0x0E (Get attribute single) shall be used.

Name	Class	Instance	Attribute	Length (byte)	Access type
Fieldbus inputs	A2h	101h	05h	4	Get
System I/O	A2h	01h	05h	30 (no Restart Inputs)	Get
System I/O	A2h	01h	05h	33 (with Restart Inputs)	Get
Analog data	A2h	204h	05h	64	Get
Errors data CPU 0	A2h	03h	05h	9	Get
Errors data CPU 1	A2h	04h	05h	9	Get
Input diagnostics	A2h	05h	05h	32	Get
OSSD diagnostics	A2h	06h	05h	32	Get
Project CRC	A2h	07h	05h	2	Get
RFID Chain 1	A2h	08h	05h	2	Get
RFID Chain 2	A2h	09h	05h	2	Get

[1] See Acyclic data format for more information

Modbus TCP/IP (MBEM)

Register mapping

Write Single/Multiple Holding Registers (6x,16x) Fieldbus Inputs

Register(s)	Size	Name
000h Low byte	UINT8	Fieldbus input byte 0
000h High byte	UINT8	Fieldbus input byte 1
001h Low byte	UINT8	Fieldbus input byte 2
001h High byte	UINT8	Fieldbus input byte 3

Holding Registers (3x,4x) System I/O and Analog Data

Register(s)	Size	Name
400h Low byte	UINT8	System status
400h High byte	UINT8	Reserved
401h Low byte	UINT8	Input status byte 0
401h High byte	UINT8	Input status byte 1
402h Low byte	UINT8	Input status byte 2
402h High byte	UINT8	Input status byte 3
403h Low byte	UINT8	Input status byte 4
403h High byte	UINT8	Input status byte 5
404h Low byte	UINT8	Input status byte 6
404h High byte	UINT8	Input status byte 7
405h Low byte	UINT8	Input status byte 8
405h High byte	UINT8	Input status byte 9
406h Low byte	UINT8	Input status byte 10
406h High byte	UINT8	Input status byte 11
407h Low byte	UINT8	Input status byte 12
407h High byte	UINT8	Input status byte 13
408h Low byte	UINT8	Input status byte 14
408h High byte	UINT8	Input status byte 15
409h Low byte	UINT8	Restart Input byte 0
409h High byte	UINT8	Restart Input byte 1
40Ah Low byte	UINT8	Restart Input byte 2
40Ah High byte	UINT8	Reserved
40Bh Low byte	UINT8	Fieldbus input feedback byte 0
40Bh High byte	UINT8	Fieldbus input feedback byte 1
40Ch Low byte	UINT8	Fieldbus input feedback byte 2
40Ch High byte	UINT8	Fieldbus input feedback byte 3
40Dh High byte	UINT8	Probe status byte 0
40Dh Low byte	UINT8	Probe status byte 1
40Eh High byte	UINT8	Probe status byte 2
40Eh Low byte	UINT8	Probe status byte 3
40Fh High byte	UINT8	OSSD status byte 0
40Fh Low byte	UINT8	OSSD status byte 1
410h High byte	UINT8	OSSD status byte 2
410h Low byte	UINT8	OSSD status byte 3
411h-412h	FLOAT	Analog data float 0
413h-414h	FLOAT	Analog data float 1
415h-416h	FLOAT	Analog data float 2
417h-418h	FLOAT	Analog data float 3
419h-41Ah	FLOAT	Analog data float 4
41Bh-41Ch	FLOAT	Analog data float 5
41Dh-41Eh	FLOAT	Analog data float 6
41Fh-420h	FLOAT	Analog data float 7
421h-422h	FLOAT	Analog data float 8
423h-424h	FLOAT	Analog data float 9
425h-426h	FLOAT	Analog data float 10
427h-428h	FLOAT	Analog data float 11
429h-42Ah	FLOAT	Analog data float 12
42Bh-42Ch	FLOAT	Analog data float 13
42Dh-42Eh	FLOAT	Analog data float 14
42Fh-430h	FLOAT	Analog data float 15

Holding Registers (3x,4x) Error CPU0 / Error CPU1

Register(s)	Size	Name
500h Low byte	UINT8	Error CPU0 – Module
500h High byte	UINT8	Error CPU0 – Error code
501h-502h	UINT32	Error CPU0 – Error address
503h Low byte	UINT8	Error CPU0 – Firmware version
503h High byte	UINT8	Error CPU0 – Extended code 0
504h Low byte	UINT8	Error CPU0 – Extended code 1
510h Low byte	UINT8	Error CPU1 – Module
510h High byte	UINT8	Error CPU1 – Error code
511h-512h	UINT32	Error CPU1 – Error address
513h Low byte	UINT8	Error CPU1 – Firmware version
513h High byte	UINT8	Error CPU1 – Extended code 0
514h Low byte	UINT8	Error CPU1 – Extended code 1

Holding Registers (3x,4x) Input diagnostics

Register(s)	Size	Name
600h Low byte	UINT8	Input diagnostics index 1
600h High byte	UINT8	Input diagnostics code 1
601h Low byte	UINT8	Input diagnostics index 2
601h High byte	UINT8	Input diagnostics code 2
602h Low byte	UINT8	Input diagnostics index 3
602h High byte	UINT8	Input diagnostics code 3
603h Low byte	UINT8	Input diagnostics index 4
603h High byte	UINT8	Input diagnostics code 4
604h Low byte	UINT8	Input diagnostics index 5
604h High byte	UINT8	Input diagnostics code 5
605h Low byte	UINT8	Input diagnostics index 6
605h High byte	UINT8	Input diagnostics code 6
606h Low byte	UINT8	Input diagnostics index 7
606h High byte	UINT8	Input diagnostics code 7
607h Low byte	UINT8	Input diagnostics index 8
607h High byte	UINT8	Input diagnostics code 8
608h Low byte	UINT8	Input diagnostics index 9
608h High byte	UINT8	Input diagnostics code 9
609h Low byte	UINT8	Input diagnostics index 10
609h High byte	UINT8	Input diagnostics code 10
60Ah Low byte	UINT8	Input diagnostics index 11
60Ah High byte	UINT8	Input diagnostics code 11
60Bh Low byte	UINT8	Input diagnostics index 12
60Bh High byte	UINT8	Input diagnostics code 12
60Ch Low byte	UINT8	Input diagnostics index 13
60Ch High byte	UINT8	Input diagnostics code 13
60Dh Low byte	UINT8	Input diagnostics index 14
60Dh High byte	UINT8	Input diagnostics code 14
60Eh Low byte	UINT8	Input diagnostics index 15
60Eh High byte	UINT8	Input diagnostics code 15
60Fh Low byte	UINT8	Input diagnostics index 16
60Fh High byte	UINT8	Input diagnostics code 16

Holding Registers (3x,4x) Output diagnostics

Register(s)	Size	Name
610h Low byte	UINT8	Output diagnostics index 1
610h High byte	UINT8	Output diagnostics code 1
611h Low byte	UINT8	Output diagnostics index 2
611h High byte	UINT8	Output diagnostics code 2
612h Low byte	UINT8	Output diagnostics index 3
612h High byte	UINT8	Output diagnostics code 3
613h Low byte	UINT8	Output diagnostics index 4
613h High byte	UINT8	Output diagnostics code 4
614h Low byte	UINT8	Output diagnostics index 5
614h High byte	UINT8	Output diagnostics code 5
615h Low byte	UINT8	Output diagnostics index 6
615h High byte	UINT8	Output diagnostics code 6
616h Low byte	UINT8	Output diagnostics index 7
616h High byte	UINT8	Output diagnostics code 7
617h Low byte	UINT8	Output diagnostics index 8
617h High byte	UINT8	Output diagnostics code 8
618h Low byte	UINT8	Output diagnostics index 9
618h High byte	UINT8	Output diagnostics code 9
619h Low byte	UINT8	Output diagnostics index 10
619h High byte	UINT8	Output diagnostics code 10
61Ah Low byte	UINT8	Output diagnostics index 11
61Ah High byte	UINT8	Output diagnostics code 11
61Bh Low byte	UINT8	Output diagnostics index 12
61Bh High byte	UINT8	Output diagnostics code 12
61Ch Low byte	UINT8	Output diagnostics index 13
61Ch High byte	UINT8	Output diagnostics code 13
61Dh Low byte	UINT8	Output diagnostics index 14
61Dh High byte	UINT8	Output diagnostics code 14
61Eh Low byte	UINT8	Output diagnostics index 15
61Eh High byte	UINT8	Output diagnostics code 15
61Fh Low byte	UINT8	Output diagnostics index 16
61Fh High byte	UINT8	Output diagnostics code 16

Holding Registers (3x,4x) Project CRC

Register(s)	Size	Name
620h Low byte	UINT8	Project CRC High byte
620h High byte	UINT8	Project CRC Low byte

Holding Registers (3x,4x) RFID Chain 1 / RFID Chain 2

Register(s)	Size	Name
630h Low byte	UINT8	RFID Chain 1 High byte
630h High byte	UINT8	RFID Chain 1 Low byte
Register(s)	**Size**	**Name**
631h Low byte	UINT8	RFID Chain 2 High byte
631h High byte	UINT8	RFID Chain 2 Low byte

Coils mapping

Coils addresses (1x, 2x, 5x, 15x)

Data	BIT 07	BIT 06	BIT 05	BIT 04	BIT 03	BIT 02	BIT 01	BIT 00
Fieldbus Input byte 0	0x0007	0x0006	0x0005	0x0004	0x0003	0x0002	0x0001	0x0000
Fieldbus Input byte 1	0x000F	0x000E	0x000D	0x000C	0x000B	0x000A	0x0009	0x0008
Fieldbus Input byte 2	0x0017	0x0016	0x0015	0x0014	0x0013	0x0012	0x0011	0x0010
Fieldbus Input byte 3	0x001F	0x001E	0x001D	0x001C	0x001B	0x001A	0x0019	0x0018
System Status	0x0107	0x0106	0x0105	0x0104	0x0103	0x0102	0x0101	0x0100
Input Status byte 0	0x010F	0x010E	0x010D	0x010C	0x010B	0x010A	0x0109	0x0108
Input Status byte 1	0x0117	0x0116	0x0115	0x0114	0x0113	0x0112	0x0111	0x0110
Input Status byte 2	0x011F	0x011E	0x011D	0x011C	0x011B	0x011A	0x0119	0x0118
Input Status byte 3	0x0127	0x0126	0x0125	0x0124	0x0123	0x0122	0x0121	0x0120
Input Status byte 4	0x012F	0x012E	0x012D	0x012C	0x012B	0x012A	0x0129	0x0128
Input Status byte 5	0x0137	0x0136	0x0135	0x0134	0x0133	0x0132	0x0131	0x0130
Input Status byte 6	0x013F	0x013E	0x013D	0x013C	0x013B	0x013A	0x0139	0x0138
Input Status byte 7	0x0147	0x0146	0x0145	0x0144	0x0143	0x0142	0x0141	0x0140
Input Status byte 8	0x014F	0x014E	0x014D	0x014C	0x014B	0x014A	0x0149	0x0148
Input Status byte 9	0x0157	0x0156	0x0155	0x0154	0x0153	0x0152	0x0151	0x0150
Input Status byte 10	0x015F	0x015E	0x015D	0x015C	0x015B	0x015A	0x0159	0x0158
Input Status byte 11	0x0167	0x0166	0x0165	0x0164	0x0163	0x0162	0x0161	0x0160
Input Status byte 12	0x016F	0x016E	0x016D	0x016C	0x016B	0x016A	0x0169	0x0168
Input Status byte 13	0x0177	0x0176	0x0175	0x0174	0x0173	0x0172	0x0171	0x0170
Input Status byte 14	0x017F	0x017E	0x017D	0x017C	0x017B	0x017A	0x0179	0x0178
Input Status byte 15	0x0187	0x0186	0x0185	0x0184	0x0183	0x0182	0x0181	0x0180
Restart input byte 0	0x018F	0x018E	0x018D	0x018C	0x018B	0x018A	0x0189	0x0188
Restart input byte 1	0x0197	0x0196	0x0195	0x0194	0x0193	0x0192	0x0191	0x0190
Restart input byte 2	0x019F	0x019E	0x019D	0x019C	0x019B	0x019A	0x0199	0x0198
Fieldbus input feedback byte 0	0x01A7	0x01A6	0x01A5	0x01A4	0x01A3	0x01A2	0x01A1	0x01A0
Fieldbus input feedback byte 1	0x01AF	0x01AE	0x01AD	0x01AC	0x01AB	0x01AA	0x01A9	0x01A8
Fieldbus input feedback byte 2	0x01B7	0x01B6	0x01B5	0x01B4	0x01B3	0x01B2	0x01B1	0x01B0
Fieldbus input feedback byte 3	0x01BF	0x01BE	0x01BD	0x01BC	0x01BB	0x01BA	0x01B9	0x01B8
Probe status byte 0	0x01C7	0x01C6	0x01C5	0x01C4	0x01C3	0x01C2	0x01C1	0x01C0
Probe status byte 1	0x01CF	0x01CE	0x01CD	0x01CC	0x01CB	0x01CA	0x01C9	0x01C8
Probe status byte 2	0x01D7	0x01D6	0x01D5	0x01D4	0x01D3	0x01D2	0x01D1	0x01D0
Probe status byte 3	0x01DF	0x01DE	0x01DD	0x01DC	0x01DB	0x01DA	0x01D9	0x01D8

Data	BIT 07	BIT 06	BIT 05	BIT 04	BIT 03	BIT 02	BIT 01	BIT 00
OSSD status byte 0	0x01E7	0x01E6	0x01E5	0x01E4	0x01E3	0x01E2	0x01E1	0x01E0
OSSD status byte 1	0x01EF	0x01EE	0x01ED	0x01EC	0x01EB	0x01EA	0x01E9	0x01E8
OSSD status byte 2	0x01F7	0x01F6	0x01F5	0x01F4	0x01F3	0x01F2	0x01F1	0x01F0
OSSD status byte 3	0x01FF	0x01FE	0x01FD	0x01FC	0x01FB	0x01FA	0x01F9	0x01F8
RFID Chain 1 Status low byte	0x0207	0x0206	0x0205	0x0204	0x0203	0x0202	0x0201	0x0200
RFID Chain 1 Status high byte	0x020F	0x020E	0x020D	0x020C	0x020B	0x020A	0x0209	0x0208
RFID Chain 2 Status low byte	0x0217	0x0216	0x0215	0x0214	0x0213	0x0212	0x0211	0x0210
RFID Chain 2 Status high byte	0x021F	0x021E	0x021D	0x021C	0x021B	0x021A	0x0219	0x0218

PROFINET (MBEP)

Process data mapping

Module Fieldbus input

Byte offset	Data direction[1]	Size	Name
0	In	UINT8	Fieldbus input byte 0
1	In	UINT8	Fieldbus input byte 1
2	In	UINT8	Fieldbus input byte 2
3	In	UINT8	Fieldbus input byte 3

Module System I/O without restart inputs

Byte offset	Data direction	Size	Name
0	Out	UINT8	System status
1	Out	UINT8	Reserved
2	Out	UINT8	Input status byte 0
3	Out	UINT8	Input status byte 1
4	Out	UINT8	Input status byte 2
5	Out	UINT8	Input status byte 3
6	Out	UINT8	Input status byte 4
7	Out	UINT8	Input status byte 5
8	Out	UINT8	Input status byte 6
9	Out	UINT8	Input status byte 7
10	Out	UINT8	Input status byte 8
11	Out	UINT8	Input status byte 9
12	Out	UINT8	Input status byte 10
13	Out	UINT8	Input status byte 11
14	Out	UINT8	Input status byte 12
15	Out	UINT8	Input status byte 13
16	Out	UINT8	Input status byte 14
17	Out	UINT8	Input status byte 15
18	Out	UINT8	Fieldbus input byte 0 feedback
19	Out	UINT8	Fieldbus input byte 1 feedback
20	Out	UINT8	Fieldbus input byte 2 feedback
21	Out	UINT8	Fieldbus input byte 3 feedback
22	Out	UINT8	Probe status byte 0
23	Out	UINT8	Probe status byte 1
24	Out	UINT8	Probe status byte 2
25	Out	UINT8	Probe status byte 3
26	Out	UINT8	OSSD status byte 0
27	Out	UINT8	OSSD status byte 1
28	Out	UINT8	OSSD status byte 2
29	Out	UINT8	OSSD status byte 3

[1] Direction from the Mosaic point of view

Module System I/O with restart inputs

Byte offset	Data direction	Size	Name
0	Out	UINT8	System status
1	Out	UINT8	Reserved
2	Out	UINT8	Input status byte 0
3	Out	UINT8	Input status byte 1
4	Out	UINT8	Input status byte 2
5	Out	UINT8	Input status byte 3
6	Out	UINT8	Input status byte 4
7	Out	UINT8	Input status byte 5
8	Out	UINT8	Input status byte 6
9	Out	UINT8	Input status byte 7
10	Out	UINT8	Input status byte 8
11	Out	UINT8	Input status byte 9
12	Out	UINT8	Input status byte 10
13	Out	UINT8	Input status byte 11
14	Out	UINT8	Input status byte 12
15	Out	UINT8	Input status byte 13
16	Out	UINT8	Input status byte 14
17	Out	UINT8	Input status byte 15
18	Out	UINT8	Restart Input status byte 0
19	Out	UINT8	Restart Input status byte 1
20	Out	UINT8	Restart Input status byte 2
21	Out	UINT8	Fieldbus input byte 0 feedback
22	Out	UINT8	Fieldbus input byte 1 feedback
23	Out	UINT8	Fieldbus input byte 2 feedback
24	Out	UINT8	Fieldbus input byte 3 feedback
25	Out	UINT8	Probe status byte 0
26	Out	UINT8	Probe status byte 1
27	Out	UINT8	Probe status byte 2
28	Out	UINT8	Probe status byte 3
29	Out	UINT8	OSSD status byte 0
31	Out	UINT8	OSSD status byte 1
32	Out	UINT8	OSSD status byte 2
33	Out	UINT8	OSSD status byte 3

Module Analog data

NOTE: this data are in Little Endian format

Byte offset	Data direction	Size	Name
0	Out	FLOAT	Analog data float 0
4	Out	FLOAT	Analog data float 1
8	Out	FLOAT	Analog data float 2
12	Out	FLOAT	Analog data float 3
16	Out	FLOAT	Analog data float 4
20	Out	FLOAT	Analog data float 5
24	Out	FLOAT	Analog data float 6
28	Out	FLOAT	Analog data float 7
32	Out	FLOAT	Analog data float 8
36	Out	FLOAT	Analog data float 9
40	Out	FLOAT	Analog data float 10
44	Out	FLOAT	Analog data float 11
48	Out	FLOAT	Analog data float 12
52	Out	FLOAT	Analog data float 13
56	Out	FLOAT	Analog data float 14
60	Out	FLOAT	Analog data float 15

Record Data read/write services[1]

Name	Slot	Index	Length (byte)	Access type
Fieldbus inputs	01h	01h	4	Get
System I/O	00h	00h	30 (no Restart Inputs)	Get
System I/O	00h	00h	33 (with Restart Inputs)	Get
Error data CPU0	00h	02h	9	Get
Error data CPU1	00h	03h	9	Get
Input diagnostics	00h	04h	32	Get
OSSD diagnostics	00h	05h	32	Get
Project CRC	00h	06h	2	Get
RFID Chain 1	00h	07h	2	Get
RFID Chain 2	00h	08h	2	Get

[1] See Acyclic data format at the end of the document for more information

MODULO BUS MI-Bx

EtherCAT (MBEC)

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2002h	01h	Command to enable data transmission

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h – 3Ah	2001h	01h – 3Ah	Micron data

Subindex values could span from 01h to 3Ah (1 to 58). This depends on the user choice about Micron process data map size with Bus Configurator.

EtherNet/IP (MBEI)

Process data mapping (Class 1 Connection)

Assembly instance 96h (Connection point O->T Consuming Instance)

Byte offset	Size	Name
0	USINT	Command to enable data transmission

O->T connection type: Point-to-point

Assembly instance 64h (Connection point T->O Producing Instance)

Byte offset	Data direction	Size	Name
0	Out	UINT8	Micron data.

Byte offset could span from 0 to 57. This depends on the user choice about Micron process data map size with Bus Configurator.

T->O connection type: Point-to-point, Multicast.

Modbus TCP/IP (MBEM)

Register Mapping

Holding Registers (3x,4x) Micron data

000h Low byte	UINT8	Command to enable data transmission
000h High byte	UINT8	Don't care
400h Low byte	UINT8	Micron data.
400h High byte	UINT8	Micron data.

Registers containing Micron data could span from 0x400 to 0x41D. This depends on the user choice about Micron process data map size with Bus Configurator.

PROFINET (MBEP)

Process data mapping

Module Fieldbus input

Byte offset	Data direction	Size	Name
0	In	UINT8	Command to enable data transmission

Module Micron Data

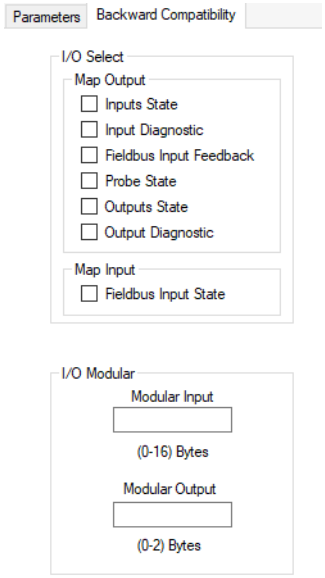
Byte offset	Data direction	Size	Name
0	Out	UINT8	Micron data.

Byte offset could span from 0 to 57. This depends on the user choice about Micron process data map size with Bus Configurator.

Backward compatibility process data map

Explanation

In order to guarantee backward compatibility with old systems the user could activate “Backward Compatibility“ mode when using “BUS Configurator“ software. This modality allows the user to choose the type and the amound of data to send/receive to/from process PLC.



The order of the data of Map output is always the same

- System status (always present)
- Input state (if selected by the user)
- Fieldbus input feedback (if selected by the user)
- Probe state (if selected by the user)
- Output state (if selected by the user)
- Output/Input diagnostic (if selected by the user)

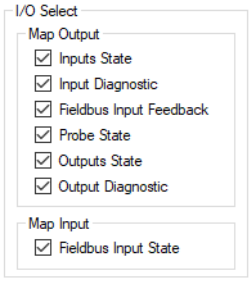
For Input state and Output state the user could choose the amount of data that will be outputted. The input/output diagnostic are always at the end of the map and cyclically updated every 500 ms.

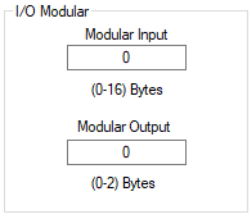
Map Output (From Module to PLC)		
Item	**Presence**	**Size (bytes)**
System status	Always present	1
Input state	User selectable	From 1 to 16
Fieldbus input feedback	User selectable	1
Probe state	User selectable	2
Output state	User selectable	From 1 to 2
Diagnostic index	User selectable	1
Diagnostic code	User selectable	1
Map Input (From PLC to module)		
Fieldbus input state	User selectable	1

A few examples will help to clarify the topic.

Backward compatibility: example 1

In this case all the data are selected and the modular sizes are set to zero which means to dynamically adapt to the number of physical modules present in the Mosaic system.



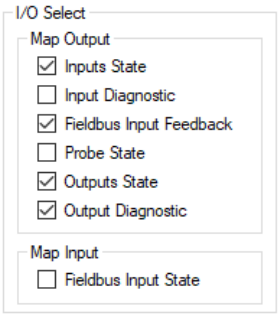


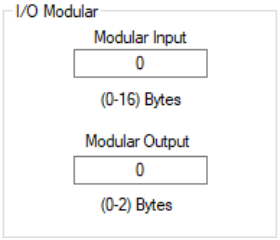
This results in the following input/output data

Map Output (From Module to PLC)	
Item	**Size (bytes)**
System status	1
Input state	1
Fieldbus input feedback	1
Probe state	2
Output state	1
Diagnostic index (Input and Output related)	1
Diagnostic code (Input and Output related)	1
Map Input (From PLC to module)	
Item	**Size (bytes)**
Fieldbus input state	1

Backward compatibility: example 2

In this case user has selected Input state, Fieldbus input state and Output diagnostics and the modular sizes are set to dynamic.



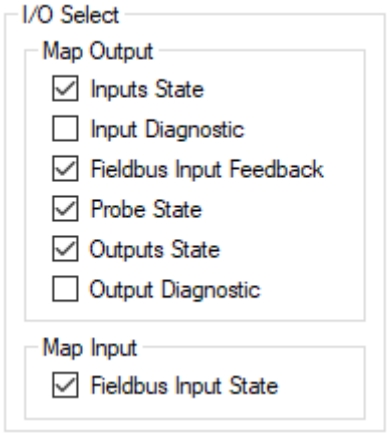


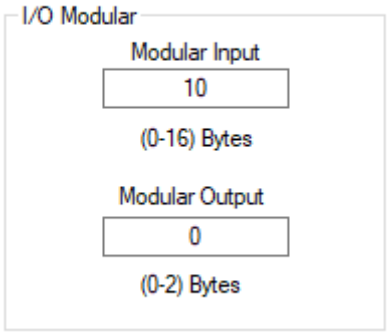
This results in the following input/output data

Map Output (From Module to PLC)	
Item	**Size (bytes)**
System status	1
Input state	1
Fieldbus input feedback	1
Output state	1
Diagnostic index (Output related only)	1
Diagnostic code (Output related only)	1
Map Input (From PLC to module)	
Item	**Size (bytes)**

Backward compatibility: example 3

In this case user has selected all data except diagnostics and set as Input state size the value of 10 bytes.





This results in the following input/output data

Map Output (From Module to PLC)	
Item	**Size (bytes)**
System status	1
Input state	10 (forced)
Fieldbus input feedback	1
Probe state	2
Output state	1
Map Input (From PLC to module)	
Item	**Size (bytes)**
Fieldbus input state	1

EtherCAT (MBEC) (backward compatibility)

Process data mapping (PDO)

RxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1600h	01h	2101h	01h	Fieldbus input byte 0

TxPDO		Mapped object		Name
Index	Subindex	Index	Subindex	
1A00h	01h	2001h	01h	System status
1A00h	02h	2201h	01h	Input status byte 0
1A00h	03h	2181h	01h	Fieldbus input byte 0 feedback
1A00h	04h	2203h	01h	Probe status byte 0
1A00h	05h	2203h	02h	Probe status byte 1
1A00h	06h	2202h	01h	OSSD status byte 0
1A00h	07h	2500h	01h	Cyclic diagnostic
1A00h	08h	2500h	02h	Cyclic diagnostic

EtherNet/IP (MBEI) (backward compatibility)

Process data mapping (Class 1 Connection)

Assembly instance 96h (Connection point O->T Consuming Instance)

Byte offset	Size	Name
0	USINT	Fieldbus input byte (if present)

O->T connection type: Point-to-point

Assembly instance 64h (Connection point T->O Producing Instance)

Byte offset	Data direction	Size	Name
0	Out	UINT8	System status
1	Out	UINT8	From offset 1 the data depend on what user has selected

T->O connection type: Point-to-point, Multicast.

Modbus TCP/IP (MBEM) (backward compatibility)

Register mapping

Holding Registers (3x,4x) System I/O

000h Low byte	UINT8	Fieldbus input byte 0 (if present)
000h High byte	UINT8	Don't care
400h Low byte	UINT8	System status
400h High byte	UINT8	Don't care

From register 401h the data depends on what user has selected

PROFINET (MBEP) (backward compatibility)

Process data mapping

Module Fieldbus input

Byte offset	Data direction	Size	Name
0	In	UINT8	Fieldbus input byte (if present)

Module System I/O

Byte offset	Data direction	Size	Name
0	Out	UINT8	System status
1	Out	UINT8	From offset 1 the data depend on what user has selected

Acyclic data format

Errors data CPUx format

Name	Size
Module	UINT8
Error code	UINT8
Error address	UINT32
Firmware version (x.y in hexadecimal format)	UINT8
Extended code 0 (optional)	UINT8
Extended code 1 (optional)	UINT8

The Module field is defined as follow:

B7-B2	B1-B0
Module name	Node

The subfield Module name is defined as follow:

Name	Code	Name	Code
MI8O2	2	MOR4	11
MO2	3	MOR4S8	12
MI16	4	MOS8	13
MI8	5	MOS16	14
MO4	6	MO4LHCS8	15
MI12T8	7	MA4	16
MV2	8	MI8O4	17
MV1	9	MO4L	18
MV0	10	MA2	19

For the Error code field please refer to the Mosaic manual.
The optional Extended codes are only meaningful to Reer.

Input diagnostics format

Name	Size
Diagnostic index	UINT8
Diagnostic code	UINT8

A maximum of 16 Input diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus.

OSSD diagnostics format

Name	Size
Diagnostic index	UINT8
Diagnostic code	UINT8

A maximum of 16 OSSD diagnostics are transferred, if more diagnostics are present on the system only the first 16 are available on the fieldbus.

Project CRC format

Name	Size
CRC byte 0	UINT8

CRC byte 1	UINT8

Cyclic data format

The System status byte is defined as follow:

B7-B3	B2	B1	B0
Reserved	M1 error detected	Diagnostic detected	M1 online

Version history

Version	Date	Modifications
2.0.0	06/04/2023	Maps are divided as function of Module BUS firmware version. Now all maps are described: - without analog data / without restart inputs - with analog data / without restart inputs - without analog data / with restart inputs - with analog data / with restart inputs MI-Bx modules maps are now described Backward compatibility maps are now described.
1.2.10	06/05/2022	Changed indexes for Profibus and Profinet Record Data read/write services
1.2.9	29/11/2021	Changed access type for Profibus and Profinet services; added CC-Link protocol specifications
1.2.8	08/09/2021	Added System status description
1.2.7	27/07/2021	Added Powerlink default mapping. Fixed Modbus RTU default mapping
1.2.6	29/01/2021	Fixed CANOpen and EtherCAT default mapping
1.2.5	19/06/2020	Minor fix in CC-Link section
1.2.4	16/04/2020	Added modules in the Errors data CPU field
1.2.3	20/03/2020	Reworked Profibus mapping
1.2.2	10/03/2020	Added CC-Link mapping; fixed the Errors data objects
1.2.1	05/02/2019	Fixed minor descriptions
1.2	01/10/2019	Changed Modbus TCP and RTU registers to adapt to HMS Common ethernet module
1.1	12/12/2018	Acyclic data: specification for Errors data format
1.0	26/09/2018	New mapping for the fieldbus communication modules with FW 2.0.x