

TELEGRAM 1

FIELD NAME							LENGTH [byte]	Type	Scale	Unit	Note	Description
DIF	DIFE	DIFE2	VIF	VIFE	VIFE2	VIFE3						
8Ch	80h	40h	04h				4	BCD	0,01	kWh		Current total active energy
0Ch			04h				4	BCD	0,01	kWh		Current import active energy
8Ch	40h		04h				4	BCD	0,01	kWh		Current export active energy
8Ch	80h	40h	84h	FFh	72h		4	BCD	0,01	kWh	Manufacturer specific	Current resettable total active energy
0Ch			84h	FFh	72h		4	BCD	0,01	kWh	Manufacturer specific	Current resettable import active energy
8Ch	40h		84h	FFh	72h		4	BCD	0,01	kWh	Manufacturer specific	Current resettable export active energy
8Ch	80h	40h	FBh	02h			4	BCD	1	kVArh		Current total reactive energy
0Ch	FBh	02h					4	BCD	1	kVArh		Current import reactive energy
8Ch	40h		FBh	02h			4	BCD	1	kVArh		Current export reactive energy
8Ch	80h	40h	FBh	82h	FFh	72h	4	BCD	1	kVArh	Manufacturer specific	Current resettable total reactive energy
0Ch			FBh	82h	FFh	72h	4	BCD	1	kVArh	Manufacturer specific	Current resettable import reactive energy
8Ch	40h		FBh	82h	FFh	72h	4	BCD	1	kVArh	Manufacturer specific	Current resettable export reactive energy

STARTING CONFIGURATION PARAMETERS

Parameter	Value	Programmability
Primary Address	1	YES
ID (Secondary Address)	Last 8 digits of Serial Number	YES
Baud Rate	2400	YES
Parity	EVEN	NO

SPECIAL PRIMARY ADDRESSES SUPPORTED

Address	Meaning	Description	Note
FBh	Reserved address	Reserved address for future application	-
FCh	Reserved address	Reserved address for future application	-
FDh	Optional Addressing	Address used by the master after a slave selection through his secondary address	The address can be used since the slave is in selection mode
FEh	Broadcast Addressing	Address used by the master to send a broadcast frame to all slaves on the network	The device that receive the frame execute the command but doesn't responde anything

REFER ALSO TO: <http://www.m-bus.com/> - MBUS basic of serial bus
- MBUS protocol and layers specifications

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LIST OF COMMANDS AND ANSWERS

From master to slave

SND_NKE

Byte (HEX)	Length (Byte)	Description
10h	1	Start Field
40h	1	Control Field
From 0h To FAh	1	Primary Address
CKS	1	Checksum
16h	1	Stop Character

REQ_UD2

Byte (HEX)	Length (Byte)	Description
10h	1	Start
5Bh/7Bh	1	Control Field (FcBit)
From 0h to FAh	1	Primary Address
CKS	1	Checksum
16h	1	Stop Character

SWITCHING BAUD RATE

Byte (HEX)	Length (Byte)	Description
68h	1	Start
L	1	Frame Byte Length
L	1	Frame Byte Length
68h	1	Start
53h/73h	1	Control Field
From 0h To FAh	1	Primary Address
From B8h To BDh	1	Baud Rate Code (See note)
CKS	1	Checksum
16h	1	Stop Character

REMOVING THE SECONDARY ADDRESS MATCHING SYMBOL FOR ALL THE METER ON THE BUS

Byte (HEX)	Length (Byte)	Description
10h	1	Start
40h	1	Control Field (FcBit)
FDh	1	Primary Address
CKS	1	Checksum
16h	1	Stop Character

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From slave to master

ANSWER

Byte (HEX)	Length (Byte)	Description
E5h	1	ACK

ANSWER

Byte (HEX)	Length (Byte)	Description
68h	1	Start
L	1	Frame Byte Length
L	1	Frame Byte Length
68h	1	Start
08h	1	Control Field
From 0h To FAh	1	Primary Address
72h	1	72h: LSB Trasmitted First
From 0h To 5F5E0FFh (DEC 99999999)	4	ID (Secondary Address) - 8 BCD Digits
XXXXh	2	Manufacturer Code "IME"
xxh	1	Device Version
02h	1	Electricity
xxh	1	Incremented by 1 for every telegram answered
xxh	1	Status ¹
0000h	2	Signature (Not Used)
Data	x	See The Telegrams Tables
CKS	1	Checksum
16h	1	Stop Character

¹ Status byte indicates some possible errors in the device:

No error	00h
Permanent Error	08h
Temporarry Error	10h

ANSWER

Byte (HEX)	Length (Byte)	Description
E5h	1	ACK

NOTE

B8h = 300 bps
B9h = 600 bps
BAh = 1200 bps
BBh = 2400 bps
BCh = 4800 bps
BDh = 9600 bps

ANSWER

Byte (HEX)	Length (Byte)	Description
-	0	No answer

From master to slave

SELECTION THROUGH SECONDARY ADDRESS

Byte (HEX)	Length (Byte)	Description
68h	1	Start
L	1	Frame Byte Length
L	1	Frame Byte Length
68h	1	Start
53h/73h	1	Control Field
FDh	1	Primary Address
52h	1	CI Field
From 0h To 5F5E0FFh (DEC 99999999)	4	ID (Secondary Address) - 8 BCD Digits
FFFFh	2	Manufacturer Code "IME"
FFh	1	Device Version
FFh	1	Electricity
CKS	1	Checksum
16h	1	Stop Character

In the selection command is allowed to use the wildcard searching procedure (EN1434-3)

CHANGING PRIMARY ADDRESS

Byte (HEX)	Length (Byte)	Description
68h	1	Start Field
L	1	Frame Byte Length
L	1	Frame Byte Length
68h	1	Start
53h/73h	1	Control Field
From 0h To FAh	1	Primary Address
51h	1	CI Field
01h	1	DIF
7Ah	1	VIF
From 0h To FAh	1	New Address
CKS	1	Checksum
16h	1	Stop Character

SET THE COMPLETE IDENTIFICATION OF THE SLAVE

Byte (HEX)	Length (Byte)	Description
68h	1	Start Field
L	1	Frame Byte Length
L	1	Frame Byte Length
68h	1	Start
53h/73h	1	Control Field
Feh	1	Primary Address
51h	1	CI Field
07h	1	DIF
79h	1	VIF
XXXXXXXXh	4	Identification number
XXXXh	2	Manufacturer ID
XXh	1	Generation
XXh	1	Medium
CKS	1	Checksum
16h	1	Stop Character

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From slave to master

ANSWER

Byte (HEX)	Length (Byte)	Description
E5h	1	ACK

ANSWER

Byte (HEX)	Length (Byte)	Description
E5h	1	ACK

ANSWER

Byte (HEX)	Length (Byte)	Description
E5h	1	ACK