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1. Introduction and settings

This user manual explains how to read (request) and write (send) the data of the PRO1-Mb and PRO380-Mb in Commix 1.4. To communicate with the M-bus meter you need:

- Commix 1.4
- Inepro PRO1 and PRO380 M-bus register files
- M-bus to USB converter
- HEX to decimal converter (<u>www.binaryhexconverter.com</u>)

Connect the meter

- 1. Connect the meter to a power supply
- 2. Connect input A (+) and B (-) to the M-bus to USB converter
- 3. Connect the USB converter to the PC

Settings

- Start commix 1.4
- Select the COM port
- Baud rate: 9600 (default)
- Stop bits: 1

- Databits: 8
- Parity: Even (default)

- Select Input HEX and Show HEX

S0____

13

Ν

8

00

80

0

21

kWh

OUT -L1

-12

-L3

2

S

z

24

云 Commix 1.4	
Park COM4 - BaudRade (R000 - Apply DTR RTS	Open Port
Dolaška: 10 💌 Party. Even 💌 StopBat: 1 💌 📉 MoCRB	Pause
Input HEX Show HEX Input ASC Show ASC IF Ignore Space IF New Line IF Show Interval	Clear
	(g) Send ↓ I by Enter
	× *

Click on no CRC and choose SUM to send a command or request without calculation of the checksum (chapter 3). This field is not selected (no CRC) when you want to send a command or request with calculation of the checksum (chapter 2). Click on 'open port' to start.

Address

- 0 = default primary address after manufacture
- 1-250 = primary address, setup via software
- 251/252 = unused
- 253 (FD) = secondary address (chapter 4)
- 254 (FE) = broadcast primary address
- 255 (FF) = broadcast without reply

Reset all communication values

This procedure serves to start up after the interruption or beginning of communication. The command 'SND_NKE' is: 10 40 (address) (checksum) 16. The slave responds to a correctly received SND_NKE with an acknowledgment consisting of a single character (E5).

Response

RSP_UD is the data transfer from the slave to the master after the request. The reply is always E5 unless it sends back data. The received data (RSP_UD) is explained in the Inepro PRO1 and PRO380 M-bus register files (<u>http://ineprometering.com/manuals/new</u>).

2. Request data (read)

Use the following three	commands to request data from the PRO1-Mb and PRO380-Mb:
REQ_UD2:	10 (5B or 7B) (address) (checksum) 16
EEPROM contents:	68 03 03 68 (53 or 73) (address) B4 (checksum) 16
RAM contents:	68 03 03 68 (53 or 73) (address) B1 (checksum) 16

The checksum is calculated by counting together all the bytes from the 0x10 to the checksum in short messages or from the second 0x68 to the checksum in long messages:

REQ_UD2: 10 5B FE (checksum) 16

Checksum is 5B+FE = 91+254 = 345 \rightarrow convert to HEX = 159 = **<u>59</u>**



EEPROM read: 68 03 03 68 53 FE B4 (checksum) 16

Checksum is 53+FE+B4 = 83+254+180 = 517 \rightarrow convert to hex = 205 = **05**

Commix 1.4		• X
Pet COM4 - BaudRate 9500 - Accel DTR RTS		Close Port
Detable: 0 P Party Even = StopBar 1 = T NoCRC		Pause
Input HEX Show HEX Input ASC Show ASC To Ignore Space To New Line To Show Interval]Clear
68 03 03 68 53 FE B4 05 16	~	(g) Send
	τ.	V by Enter
		^
(18 as)		
68 D8 D8 68 08 01 72 40 01 02 15 92 B0 01 02 0B 00 00 00 AFD 0C 03 01 0AFD 0E 14 01 0B FD 59 00 00 01 0B FD 3A 10 00 00 09 FD 3A 10 0C 7C 04 76 61 72 6	8 00 00	0 00
00 8C 10 7C 04 76 61 72 68 00 00 00 00 8C 20 7C 04 76 61 72 68 00 00 00 1C 7C 04 76 61 72 68 00 00 00 9C 10 7C 04 76 61 72 68 00 00 00 9C 20 7C 04 7	6 61 73	2 68
00 00 00 00 02 C 7C 04 76 61 72 68 00 00 00 AC 10 7C 04 76 61 72 68 00 00 0A C 10 7C 04 76 61 72 68 00 00 00 AC 20 7C 04 76 61 72 68 00 00 00 49 FD 3A 00 0A FD 3A 05 00 4C 04 08 00 0	10 00 80	3 01
04 00 00 00 00 0C 01 04 00 00 00 5C 04 08 00 00 9C 01 04 00 00 9C 01 04 00 00 00 DC 01 04 00 00 00 6C 04 00 00 00 AC 01 04 00 00 00 00 EC 01 04 00 00 00 00 2	9 16 6	3 78
1 78 68 08 01 72 40 01 02 15 92 B0 01 02 0C 00 00 04 C 7C 04 76 61 72 68 00 00 08 C 01 7C 04 76 61 72 68 00 00 00 CC 01 7C 04 76 61 72 68 00 00 00 5	iC 7C 04	4 76
61 72 68 00 00 00 00 9C 01 7C 04 76 61 72 68 00 00 00 DC 01 7C 04 76 61 72 68 00 00 00 DC 01 7C 04 76 61 72 68 00 00 00 00 C 7C 04 76 61 72 68 00 00 00 AC 01 7C 04 76 61 72 68 00 00 0	10 00 EC	3 01
7C 04 76 61 72 68 00 00 00 5F 16		-

Request readout of complete RAM content: 68 03 03 68 53 FE B1 (checksum) 16 Checksum is 53+FE+B1 = 83+254+180 = 514 = 202 = **02**

🗟 Commix 1.4		• ×	
Port COM4 _ Baudhate (9500 _ Aceby _ DTR _ RTS		Close Po	nt
Dealbhr, B = Parky, Even = StopBir, T = T No CRC		Pause	,
Input HSX Show HBX Input ASC Show ASC I Igrore Space I New Line I Show Interval	•	Clear	
68 03 03 68 53 FE B1 02 16	*	(g) Send ✓ byEnt	er
	_		=
68 03 03 68 53 FE B1 02 16			Î
(14 ms) 68 C2 C2 58 08 01 72 40 01 02 15 92 R0 01 02 11 00 00 04 R FD 47 20 34 02 RR 01 FD 47 00 00 00 CR 01 FD 47 00 00 00 4R FD 59 00 00 00 RR 01 FD 59 01 00 00 CR (01 FD	59	
01 00 00 0C 2A 00 00 00 4C 2A 00 00 00 8C 01 2A 00 00 00 8C 01 2A 00 00 00 CC 01 2A 00 00 00 0C 7C 03 76 61 72 00 00 00 4C 7C 03 76 61 72 00 00 00 00 8C 01 7C 03 76 70 70 8C 01 7C 03 76 70 70 70 70 70 70 70 70 70 70 70 70 70	76 61	72	
00 00 00 00 00 00 CC 01 7C 03 76 61 72 00 00 00 00 00 0C 7C 02 56 41 00 00 00 4C 7C 02 56 41 00 00 00 8C 01 7C 02 56 41 00 00 00 0C C0 1 7C 02 56 41 00 00 00 00 00 00 00 00 00 00 00 00 00	JA FD	3A	
00 00 4A FD 3A 00 00 8A 01 FD 3A 00 00 CA 01 FD 3A 00 00 0A 7C 02 48 7A 99 49 09 7C 01 54 01 54 16			Ŧ

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68 03 03 68 (53 or 73) (address) B4/B1:

You can also request data using the CRC settings to calculate the checksum. Instead of calculating the checksum we use the CRC setting SUM with 2 or 5 startbytes and terminating symbol 16. Click on No CRC to open the CRC settings select the following settings:

10 (5B or 7B) (address):

CRC Settings			×][CRC Settings		×
Start Byte:	2 🜲	CRC Type: SUM	•		Start Byte: 5 😫	CRC Type: SUM	•
		 Low Byte First 	I Byte			🗙 🙃 Low Byte First	I Byte
	C ASCII	C High Byte First	C 2 Byte		C AS	CII C High Byte First	C 2 Byte
Terminating	Symbol: 16				Terminating Symbol:	16	
		ОК				OK	

REQ_UD2: 10 5B FE

😇 Commix 1.4		
Port: COM4 V BaudRate: 9600 V Apply DTF	TR TRS	Close Port
DataBits: 8 Parity: Even StopBits: 1	SUM	Pause
Input HEX Show HEX Input ASC Show ASC Ir Ignore Space Ir New Line Ir Show	ow Interval	Clear
10 5B FE		↓ [g] Send ↓ ▼ by Enter
		*
10 5B FE 59 16		
(125 ms)		
68 4B 4B 68 08 01 72 40 01 02 15 92 B0	01 02 12 00 00 00 0C 04 08 00 00 08 10 04 08 00 00 8C 10 04 08 00 00 8C 20 04 00 00 00 1C 04 08 00 00 9C 10 04 08 00 0	00 00 9C 20 04 00
00 00 00 2C 04 00 00 00 00 AC 10 04 00	00 00 00 AC 20 04 00 00 00 00 FA 16	-

EEPROM read: 68 03 03 68 53 FE B4

🖂 Connik 1.4		x
Port COM4 > BayuRate: \$5500 - Asabb DTR RTS	Close F	Port
Doběk: 🕫 💌 Parky: Even 💌 Skopěk: 🗍 💌 🐷 SUM	Pau	se
Input HSX Show HSX To Ignore Space To New Line To Show Interval	Clea	м
68 03 03 68 53 FE B4	(<u>s)</u> Se ₩ by Er	end] .nter
		*
68 03 03 68 53 FE B4 05 16		
[04 ms] 68 DB DB 68 08 01 72 40 01 02 15 92 B0 01 02 0D 00 00 00 AFD 0C 03 01 0A FD 0E 14 01 0B FD 59 00 00 01 0B FD 3A 10 00 00 09 FD 3A 10 0C 7C 04 76	61 72 68 00 00 00	
00 8C 10 7C 04 76 61 72 68 00 00 00 00 8C 20 7C 04 76 61 72 68 00 00 00 00 1C 7C 04 76 61 72 68 00 00 00 9C 10 7C 04 76 61 72 68 00 00 00 9C 20	7C 04 76 61 72 68	
00 00 00 00 02 C7 C 04 76 61 72 68 00 00 00 00 00 AC 10 7C 04 76 61 72 68 00 00 00 AC 10 7C 04 76 61 72 68 00 00 00 AC 20 7C 04 76 61 72 68 00 00 00 04 9 FD 3A 00 0A FD 3A 05 00 4C 04	08 00 00 00 8C 01	
04 00 00 00 00 00 CC 01 04 00 00 00 05 C 04 08 00 00 00 9C 01 04 00 00 00 DC 01 04 00 00 00 06 C 04 00 00 00 AC 01 04 00 00 00 00 EC 01 04 00 00	00 00 2B 16 68 78	
78 68 08 01 72 40 01 02 15 92 80 01 02 0E 00 00 00 4C 7C 04 76 61 72 68 00 00 00 8C 01 7C 04 76 61 72 68 00 00 00 0C C 01 7C 04 76 61 72 68 00 00	00 00 5C 7C 04 76	
161 72 68 00 00 00 90 9C 01 7C 04 76 61 72 68 00 00 00 0C 01 7C 04 76 61 72 68 00 00 00 6C 7C 04 76 61 72 68 00 00 00 AC 01 7C 04 76 61 72 68	00 00 00 00 EC 01	
		*

Request readout of complete RAM content: 68 03 03 68 53 FE B1

E Commix 14	0		x
Port COM4 > BaudRade (9500 - Asob) T DTR T RTS		Close	Port
Defabler B Y Party: Even - StopBer 1 - IV SUM		Pa	use
Input HSZ Show HSZ Irpore Space 🔽 New Line 🖾 Show Interval	···· •	Cle	ar
68 03 03 68 53 F2 B1	^	[s] S	end]
	*	I by B	inter
			~
68 03 03 68 53 FE B1 02 16			
(46 ns)			
68 C2 C2 68 08 01 72 40 01 02 15 92 80 01 02 0F 00 00 48 FD 47 10 32 02 88 01 FD 47 00 00 00 C8 01 FD 47 00 00 00 48 FD 59 00 00 08 80 1F 05 90 10 00 00 C8 01 FD 47 00 00 00 48 FD 59 01 00 00 88 01 FD 59 01 00 00 C8 01 FD 47 00 00 00 48 FD 59 01 00 00 88 01 FD 59 01 00 00 C8 01 FD 47 00 00 00 00 FD 47 00 00 00 48 FD 59 01 00 00 88 01 FD 59 01 00 00 C8 01 FD 47 00 00 00 00 FD 47 00 00 00 48 FD 59 01 00 00 88 01 FD 59 01 00 00 C8 01 FD 47 00 00 00 00 FD 47 00 00 00 48 FD 59 01 00 00 88 01 FD 59 01 00 00 C8 01 FD 47 00 00 00 48 FD 59 01 00 00 88 01 FD 59 01 00 00 C8 01 FD 47 00 00 00 48 FD 59 01 00 00 FD 59 01 00 00 C8 01 FD 47 00 00 00 00 FD 47 00 00 00 48 FD 59 01 00 00 FD 47 00 00 00 FD 47 00 00 00 FD 47 00 00 00 48 FD 59 01 00 00 FD 47 00 00 FD 47 00 FD 47 00 FD 47 00 00 FD 47 00 FD 47 00 00 FD 47 00 FD 47 00 FD 47 00 00 FD 47 00 FD	I FD	59	
	3 61	12	
	7 PD	3A	
00 00 4A FD 3A 00 00 8A 01 FD 3A 00 00 CA 01 FD 3A 00 00 0A 7C 02 48 7A 00 50 09 7C 01 54 01 AE 15			-

3. Send data (write)

New data can be transferred to the meter by sending a SND_UD command. With this procedure the master transfers user data to the slave. The slave will confirm the correct receipt of data with a single character acknowledge (E5).

<u>Change baud rate</u> 68 03 03 68 (53 or 73) (address) (baudratenumber) (checksum) 16 (Baudratenumber B8=300, B9=600, BA=1200, BB=2400, BC=4800, BD=9600)

<u>Change primary address</u> 68 06 06 68 (53 or 73) (old/current address) 51 01 7A (new address) (checksum) 16

Change secondary address 68 09 09 68 (53 or 73) (address) 51 0C 79 aa aa aa aa (checksum) 16

Change tariff mode 68 08 08 68 (53 or 73) (address) 51 09 7C 01 54 (new tariff mode same as read) (checksum) 16

Change combined code

68 07 07 68 (53 or 73) (address) 51 09 FD 3A (new code, same as read) (checksum) 16

Change S0 rate

68 0A 0A 68 (53 or 73) (address) 51 0B FD 3A (new s0 rate, 00 00 10 00 = 1000) (checksum) 16

Reset resettable counter (1P only)

68 09 09 68 (53 or 73) (address) 51 0C 04 (4 byte value) (checksum) 16

CRC Settings			×
Start Byte:	5 🜩	CRC Type: SUM	T
	 HEX ASCII 	 Low Byte First High Byte First 	 1 Byte 2 Byte
Terminating	Symbol: 16		
		ОК	

\Xi Commix 1.4	
Port: COM4 - BaudRate: 9600 - Apply DTR RTS	Close Port
DataBite: 8 Parity: Even StopBite: 1	Pause
Input HEX Show HEX Input ASC Show ASC 🔽 Ignore Space 🔽 New Line 🔽 Show Interval	Clear
68 03 03 68 53 FE BB	← [[] Send] - ☞ by Enter
68 03 03 68 53 FE BB 0C 16 (47 ms) E5	· · · · · · · · · · · · · · · · · · ·

Use the CRC settings from the first screenshot, or calculate the checksum as explained in chapter 2 to send the command. Use the primary or secondary address to send a command to the meter. The second screenshot is an example of how to change the baud rate. It is not possible to use the broadcast ID (FE) to send a command to the single phase meters.

4. Selecting slave by secondary addressing

It is possible to request and send data by selecting the meter on its secondary address. This is based on the serial number, everything happens over address 253 (FD). When the meter is selected it will work like a normal meter on address 253.

To select:

Command: 68 0B 0B 68 53 FD 52 aa aa aa aa bb bb cc dd (checksum) 16

- The first 4 bytes 'aa' are the serial number
- The bytes are in reverse order, so a serial number of '15020140' would be '40 01 02 15'
- The bb bytes are the manufacturer id. 0x92 0xB0
- The cc bytes is the generation 'version' of the product, the same as the mayor version of the software.
- The dd bytes is the Medium, this is always 0x02, for electricity.

Use the following CRC settings or calculate the checksum as explained in chapter 2 to give the command:

CRC Settings			X
Start Byte:	5 🜲	CRC Type: SUM	•
Terminating	• HEX C ASCII Symbol: 16	 Low Byte First High Byte First 	⑦ 1 Bytel ○ 2 Byte
		OK	

The meter will respond E5 if the command is correct. You can now send a read/request or write/send command to the meter using the secondary address (FD):





