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ETM Modems ET communication specification

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1. DOCUMENT HISTORY

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01	2002-03-04	Christian Leierer	Original version, First issue
02	2002-05-21	Christian Leierer	Change of protocol parameters. Add ET message functions.
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33	2004-12-06	Christian Leierer	Change of protocol parameters. Add ET message functions.
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47	2008-04-04	Christian Leierer	Change of protocol parameters. Add ET message functions.
48	2008-08-29	Christian Leierer	Change of protocol parameters. Add ET message functions.

2. RELEVANT DOCUMENTS

The appendices and documents listed below are of essential value for the understanding of this document.

Appendices

No.	Document no.	Title
/1/		

Document

Ref.	Document no.	Title
[1]		

3. ABBREVIATION

EEPROM	Electrical Erasable Program Read Only Memory
UART	Universal Asynchrony Receive Transmit
CR	Carriage Return
LF	Line Feed
CT	Configuration Tool
ETM Modem	ETM 9Series(ETM9550, ETM9560, ETM9660, ETM9900 and ETM9800)

4. INTRODUCTION

ETM Modem is a GSM/GPRS modem with a microcontroller interface, which is configurable to control outputs and read inputs. The GSM/GPRS engine, which is a Siemens MC39i or HC25 device, uses AT commands. The ETM Modem device is equipped with an EEPROM that must be programmed with data for the functions of the modem.
The data in the EEPROM shall be for example alarm messages, telephone numbers, port in- and output status, baudrate, id numbers and user passwords.

5. PROTOCOL

5.1. Bit Time and parity

Different baudrates will be used:

Baudrate (bits per second)	Bit time	Baudrate (bits per second)	Bit time
110	9.09 ms ± 0.5 % (± 45.45 µs)	9600	104.17 µs ± 0.5 % (± 520 ns)
300	3.33 ms ± 0.5 % (± 16.67 µs)	19200	52.08 µs ± 0.5 % (± 260 ns)
1200	833.33 µs ± 0.5 % (± 4.17 µs)	38400	26.04 µs ± 0.5 % (± 130 ns)
2400	416.67 µs ± 0.5 % (± 2.08 µs)	57600	17.36 µs ± 0.5 % (± 90 ns)
4800	208.33 µs ± 0.5 % (± 1.04 µs)	115200	8.68 µs ± 0.5 % (± 45 ns)

Parity and number of data bits

8N1	8 data bits, no parity, 1 stop bit
8E1	8 data bits, even parity, 1 stop bit
7E1	7 data bits, even parity, 1 stop bit
8O1	8 data bits, odd parity, 1 stop bit

5.2. Character Format

A character shall consist of 10 bit times. The first bit shall always be a low logic level and is called the start bit. The last (10th) bit shall always be a high logic level and is called the stop bit.
This convention is consistent with standard UART operation. The remaining eight centre bits are data bits that are transmitted with the least significant bit (LSB) first.

5.3. Message Format

5.3.1. Message Content

A message appearing on the communication line shall consist of the following:

- Message Identification Characters (MIC)
- Data Characters
- (Checksum)

A message shall always be preceded by a carriage return (<CR>)

5.3.2. Result Code Acknowledge

Response from ET message is in the following format <CR><LF> <Text> <CR><LF> or Numeric code<CR>
If System is busy when sending ET message or sending "---" then "**BUSY**" will be returned.

5.3.3. Message Identification Characters (MIC)

The first character of every message must be a MIC. The MIC is associated with a start of special commands. The MIC is a two-byte field, thus each byte a range of 0 to 255.

5.3.4. Data Characters

Data characters shall be characters that convey the intelligence of the message and shall conform to the character format as defined in ch 5.2. The eight bit data character may be given any value from 0 to 255.

5.3.5. Checksum

The last character of each message shall be the two complements of the sum at the MIC and the data characters. Simple message error detection may be implemented by adding the checksum to the sum of all previous message characters (including the MIC). The eight bit sum will be zero, neglecting the CARRY, for a correctly received message.

5.3.6. Message Length

Total message length, including MIC and checksum, shall not exceed 528 characters. Messages longer than 528 characters may also be broken up into several separate messages of 528 or fewer characters.

Table 1: MIC:s Assignments in ETM data communication used by ETM Mätteknik AB

ETM Device	Description	MIC
Port ↔ ETM Modem Module ↔ ETM Modem	**Port terminal to MCU** **GSM/GPRS modem to MCU**	"ET", (69, 84) or "et", (101, 116)

5.4. CMD Programming Commands

The CMD numbers are the first bytes of data in the message.

5.4.1. CMD Login Commands

COMMAND	PID	PID	CMD	CMD					Example
Enter User Password	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'**P**' (80) or '**p**'(112)	'**W**' (87) or '**w**'(119)	'=' (61)	Password (Max 7 characters)			**ETPW="********"**
Set User Password	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'**S**' (83) or '**s**'(115)	'**P**' (80) or '**p**'(112)	'**W**'(87) or '**w**'(119)	'=' (61)	New Password (Max 7 characters)		**ETSPW="********"**
Login for R/W EEPROM	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**'(116)	'**L**' (76) or '**l**' (108)	'**I**' (73) or '**i**' (105)	'=' (61)	Three letters initials			**ETLI=CLE**
Login for R/W EEPROM, accepted	"LAST LI"				'=' (61)	Three letters initials	Date		**LAST LI=HBA** 4 Byte Date

5.4.2. CMD Other Commands

COMMAND	PID	PID	CMD						Example
ETM Modem information	'**E**' (69) or '**e**' (101)	'**T**' (84) or '**t**' (116)	'**I**' (73) or '**i**' (105)						**ETI**
Response information from Information memory	**ID:"ID string"** **RTC: – Real Time Clock (Date and Time)** **REFDATE: – Reference date, Day counter** **TOTAL: – Total time since start** **RSTIN: – Time to SW reset** **RC SW: PU: – Reset counter SW / Power Up** **SW#: – Software number** **HW#: – 95*Hardware number (96* if ETM9600)** **SIGNAL: n MIN: MAX: – Signal strength real / min / max** **SUPPL VOLT: – Supply voltage(V)** **CHAN: RS: dBm: LAC: CELL: – Cell information** **MTemp: – Module Temperature(degC)** **CID: – Configuration ID** **IMEI#:Request International Mobile Equipment Identity**								
Echo ON/OFF	'**E**' (69) or '**e**' (101)	'**T**' (84) or '**t**' (116)	'**E**' (69) or '**e**' (101)	'0' = off '1' = on					**ETE0** Echo off
ETM Modem Low power Mode Period time	'**E**' (69) or '**e**' (101)	'**T**' (84) or '**t**' (116)	'**L**' (76) or '**l**' (108)	'**P**' (80) or '**p**' (112)	'**P**' (80) or '**p**' 112)	'=' (61)	**w,a** w= Low power on/off (0=OFF/1=ON) a = Min Awake time(min)		**ETLPP=0,0** Low power mode is off **ETLPP=1,10** Wake up on the SWT 5 timer and stay awake min 10min

Set Real Time Clock	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's'(115)	'R' (82) or 'r' (114)	'T' (84) or 't' (116)	'C' (67) or 'c' (99)	'=' (61)	dd:hh:mm:ss d=Day, h=Hour m=Minute s=Second	**ETSRTC=10:13:23:00**
Set reference date	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's'(115)	'R' (82) or 'r' (114)	'D' (68) or 'd'(100)	'=' (61)	yy-mm-dd y=year, m=month d=day		**ETSRD=04-04-08**
Print Info Response	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'P' (80) or 'p' (112)		'0' = Response off '1' = Response on		**ETP0** Info Response print off		
Print Result	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'P' (80) or 'p' (112)	'R' (82) or 'r' (114)	'0' = Result print off '1' = Result print on		**ETPR0** Result print off		
Print Message	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'P' (80) or 'p' (112)	'M'(77) or 'm'(109)	'0' = Message print off '1' = Message print on		**ETPM0** Message print off		
Set Result code format	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'P' (80) or 'p' (112)	'S' (83) or 's'(115)	'R' (82) or 'r' (114)	'0' = Short format, numeric code '1' = Long format, text		**When ETPSR0 - 0<CR> When ETPSR1 - <CR><LF><"OK"><CR><LF>**	
Show active profile E,P, PR, M, PSR, Low power.	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'&' (38)	'V' (86) or 'v'(118)			**ET&V**		
Response result from Active Profile	**ACTIVE PROFILE: Ex Px PRx PSRx PMx LPP: - Low power mode n/m : n - Sleep Time[min] m – Awake Time[min] PWD:ON or OFF – Password Protection Activated**								
Save active profile	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'&' (38)	'W' (87) or 'w'(119)			**ET&W**		
GPS mode	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'G' (71) or 'g' (103)	'P' (80) or 'p' (112)	'S' (83) or 's'(115)	'(' (40)	Command:ON, OFF or POS	')' (41)	**ETGPS(ON)** Set ETM Modem to capture GPS data on the port **ETGPS(OFF)**Turn off ETM Modem to capture GPS data on the port **ETGPS(POS)** Get the Long- and Latitude position
Response (ETGPS(POS))	**N592082E0175855,Time of fix** **N592082 -** Latitude 59 deg. 20.82 min North **E0175855 -** Longitude 017 deg. 58.55 min East								
Clear Software and Hardware Reset , Socket and Receive/Transmit Counters	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'C' (67) or 'c' (99)	'S' (83) or 's'(115)	'C' (67) or 'c' (99)		**ETCSC**		
Enter int BootStrap Loader(TI BSL)	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'&' (38)	'B' (66) or 'b' (98)	'S' (83) or 's'(115)	'L' (76) or 'l' (108)	**ET&BSL**		
Check Voltage Level	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'R' (82) or 'r' (114)	'V' (86) or 'v'(118)	'L' (76) or 'l' (108)		**ETRVL**		
Software Reset MCU System	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'&' (38)	'S' (83) or 's'(115)	'R' (82) or 'r' (114)		**ET&SR**		
Jump from Main program to Boot program(Sector 0)	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'&' (38)	'M'(77) or 'm'(109)	'B' (66) or 'b' (98)		**ET&MB**		

Set status LEDs	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's'(115)	'L' (76) or 'l' (108)	'E' (69) or 'e'(101)	'D' (68) or 'd'(100)	'=' (61)	Binary value for active LED	**ETSLED=7 Set all status LED on**
Set wakeup timer for each tasks	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's'(115)	'W' (87) or 'w'(119)	'T' (84) or 't' (116)	'=' (61)	**n,hh:mm,p** n = Task number, max 4 hh = Wakeup Hour mm = Wakeup Minute p = Periodicity(min)		**ETSWT=1,12:00,10**
Show wakeup timers and tasks	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's'(115)	'W' (87) or 'w'(119)	'T' (84) or 't' (116)	'?' (63)	**ETSWT?**		
Response (ETSWT?)	**1,hh:mm,p** **2,hh:mm,p** **3,hh:mm,p** **4,hh:mm,p** Task no 1: PI Logging start time and periodicity Task no 2: PI Sending start time and periodicity Task no 3: Info Sending start time and periodicity Task no 4: Status Sending start time and periodicity hh:mm - is start time when next log/sending will commence. p - is periodicity.						**1,PTL:mm,p** **2,PTL:mm,p** **3,PTL:mm,p** **4,PTL:mm,p** PTL:mm - is Period Time Left time, shows the time to next log/sending. p - is periodicity.		
Set User ID	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's'(115)	'U' (85) or 'u' (117)	'I' (73) or 'i' (105)	'=' (61)		User ID, max 40 characters	**ETSUI= ETM Modem_1**
Switch to ET-command mode	'-' (45)	'-' (45)	'-' (45)	Must be a pause > 1sec			**"- - -"** **Switch to ET-mode from either AT-mode or Internet port mode**		
Check Hardware LED, I/Os and Module	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'C' (67) or 'c' (99)	'H' (72) or 'h' (104)			**ETCH** **ONLY IN PT CODE**		
Result message	**Test result from ETM Modem…**								
General Acknowledge	Return received character If echo is ON						**`E`+'T'+…**		
Command Rejected result message	**<CR><LF><ERROR: "error message"><CR><LF>**						**ERROR: "error message"**		
General Acknowledge on complete message	**<CR><LF><"OK"><CR><LF> or 0<CR>**						**OK or 0**		
Result message	**<CR><LF><MSG: "message"><CR><LF>**						**MSG: "message"**		

5.4.3. CMD Memory Commands

COMMAND	PID	PID	CMD	CMD				Example
Request read from all EEPROM cells	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'R' (82) or 'r' (114)	'E' (69) or 'e'(101)	'A' (65) or 'a' (97)			**ETREA** Read all data bytes from EEPROM cells.
Return contents of all EEPROM cells			'R' (82) or 'r' (114)	'E' (69) or 'e'(101)	'A' (65) or 'a' (97)	'=' (61)	Data…after full upload, two byte chksum+gen.ack	**RE A = 1 2 3 4 5 6 7 8 9 ....Chksum + OK**
Write to all EEPROM cells block wise	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'W' (87) or 'w'(119)	'E' (69) or 'e'(101)	'B' (66) or 'b' (98)	Block No 0 – 1, 512B each	Data block…+ two byte chksum **See 5.4.8.2**	**ETWEB0** Write 512 data bytes to 1st block in EEPROM cells.
Response from cmd Write to all EEPROM cells block wise							After 256 bytes full download, chksum ok and write ok, gen.ack	**OK**

5.4.4. CMD IO Port Commands

COMMAND	PID	PID	CMD	CMD				Example
Show I/O settings	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'R' (82) or 'r' (114)	'I' (73) or 'i' (105)	'S' (83) or 's'(115)			ETRIS
Response I/O settings Total 21 I/O:s	1:DI,1,2:DI,1,3:DI,1,4:DI,1,5:DI,1,6:DI,1,7:DI,1, (I/O 1-21 will be presented if ETM9600) I/O 1 Digital Input = 1, I/O 2 Digital Input = 1,...					D : Digital I : Input 0 : Low		A : Analogue O : Output 1 : High
Set IO port registers	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's' (115)	'(' (40)	Delimited (' , ') Command List		')' (41)	ETS(1:DO=0,2:DO=0,3:DO=1, 4:AI) See 5.4.4.1
Set IO pin selection to analoguel I/O, set direction to Input				I/O number	(' : ')	'A' (65) or 'a' (97)	'I' (73) or 'i' (105)	ETS(7:AI) Set as Analogue Input I/O number 7
Set IO pin selection to digital I/O, set direction to Output and Set pin level		I/O number	(' : ')	'D' (68) or 'd' (100)	'O' (79) or 'o' (111)	'=' (61)	Level	ETS(7:DO=0) Set as Digital Output I/O number 7 set to low level (1=high level)
Set IO pin selection to digital I/O, set direction to Input				I/O number	(' : ')	'D' (68) or 'd' (100)	'I' (73) or 'i' (105)	ETS(7:DI) Set as Digital Input I/O number 7
Return I/O settings	ETRIS command will be returned See "ETRIS"							

5.4.4.1. Set IO port registers

ETS(….) will set different registers for the IO port. The command can be ended with a string "ta or TA"(time active) and a number (minutes) i.e ETS(….)TA30. Which is a time for the outputs, that is set within the command, to change back to the opposite state i.e ETS(1:DO=0;2:DO=1)TA30 will set IO1 to Output and low and IO2 to Output and high state. And after 30 minutes both IO1 and IO2 will fall back to the opposite.

5.4.5. CMD MC39 Commands

MC39 commands can be send either from PC terminal or internally from the MCU via AT commands.

COMMAND	PID	PID	CMD	CMD					Example
Sends one AT-command to the module	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's'(115)	'E' (69) or 'e'(101)	'N' (78) or 'n'(110)	'D' (68) or 'd' (100)	'=' (61)	One AT-command to MC39	ETSEND= AT&V
Run Check signal level 255 times or until "ESC" key is pressed	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'R' (82) or 'r' (114)	'S' (83) or 's'(115)	'L'(76) or 'l'(108)				ETRSL

5.4.6. CMD Communication Commands

COMMAND	PID	PID	CMD	CMD			Example
Set Communication direction	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's'(115)	'C' (67) or 'c' (99)	'0'=Shutdown com device (low power mode) '1'= MC39⇔PC		ETSC1 Open MC39 and PC communication

5.4.7. CMD Special function Commands

Special function commands

5.4.7.1. A/D input

COMMAND	PID	PID	CMD	CMD				Example
Set A/D Calibrating parameters	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'S' (83) or 's'(115)	'A' (65) or 'a' (97)	'C' (67) or 'c' (99)	'=' (61)	**n,p1,p2,timeout,unit** n = A/D ch number p1 = 1st Input point p2 = 2nd Input point timeout = Timeout (s) unit = Unit	**ETSAC=3,0,20,10,dgC** **See 5.4.7.2**

5.4.7.2. ETSAC Command

ETSAC= n,p1,p2,timeout,unit
n = A/D channel number, 1 – 7.
p1 = First Input point.
p2 = Second Input point**.**
timeout = Timeout (s) when entering the second point. If setting "0" in the timeout field, the default timeout (10sec) will be used.
unit = Unit (mV, V, m, cm, mm, dgC, dgF, mA, A, W, kW …etc). If setting "0" in the unit field, the calculations will be set to default(mV) and the point settings will be discarded.

5.4.8. CMD GPRS/GSM Internet Commands

COMMAND	PID	PID	CMD	CMD	CMD	CMD				Example
Set Internet Service Parameters	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'P' (80) or 'p' (112)	'1'= Set IP1 '2'= Set IP2 '3'= Set IP3 '4'= Set IP4		'=' (61)	Delimited(' : ') Parameter List	**ET-IP1=...** **See 5.4.8.1**
Connect to an ISP	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'C' (83) or 'c' (115)					**ET-IC**
Response (ET-IC)	**MSG:INTERNET CONNECT** If connection OK else, result: **ERROR:No Answer from Module** **or** **ERROR:PPP Negotiation TimeOut**						If in UDP mode the ETM Modem will begin in that mode after ET-IC. If in TCP mode the ETM Modem will go to command mode. If socket if required ET-ISO must be sent.			
Disconnect to Internet and the Socket server	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'D' (68) or 'd' (100)	'C' (83) or 'c' (115)				**ET-IDC**
Response (ET-IDC)	**MSG:ISP DISCONNECT**									
Send Local Port number	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'L' (76) or 'l' (108)	'P' (80) or 'p' (112)	'=' (61)	Local Port nr		**ET-ILP=2040**
Perform a ActiveOpen and establish a Socket Connect to an ISP if not connected.	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'S' (83) or 's'(115)	'O' (79) or 'o'(111)	'=' (61)	IP-address position in EEPROM area		**ET-ISO=IP1** **or** **ET-ISO**
Response (ET-ISO)	**MSG:SOCKET OPEN** If socket open OK else, result: **ERROR:TCP/IP Opening TimeOut**						If in UDP mode the ETM Modem will open a socket but the data will be sent over the UDP. If in TCP mode the ETM Modem will open a socket and the data will be sent through that socket.			

Close a Socket	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'S' (83) or 's'(115)	'C' (83) or 'c'(115)				**ET-ISC**
Response (ET-ISC)	**MSG:SOCKET CLOSED** If socket close OK else, result: **ERROR:TCP/IP Closing TimeOut**									
Internet Transparent mode	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'T' (84) or 't'(116)	'P' (80) or 'p' (112)				**ET-ITP**
Get the current socket status	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'S' (83) or 's'(115)	'?' (63)				**ET-IS?**
Set APN	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'A' (65) or 'a' (97)	'P' (80) or 'p' (112)	'N' (78) or 'n'(110)	'1'= Set APN1 '2'= Set APN2	'=' (61)	**ET-IAPN1=... See 5.4.8.1**
Finish power up sequence.	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'F' (70) or 'f' (102)	'P' (80) or 'p'(112)				**ET-IFP**
Get ISP status profile	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'&' (38)	'V' (86) or 'v'(118)				**ET-I&V**
Response (ET-I&V)	**ISP / SOCK STATUS:** **CD: - Carrier Detect, ACTIVE or INACTIVE** **TXB: - Number of transmitted bytes from the ETM Modem on the PPP protocol** **RXB: - Number of received bytes to the ETM Modem on the PPP protocol** **RECONN SOCK: - If ETM Modem is set to connect to Server at start up, YES or NO** **SOCKET STATUS: - If socket is established or not** **SOCKC: - Try to connect to socket counter / Successful Socket open counter (Max 255)** **SOCKFAILC: - Socket Failure counter (Max 255)** **RECONN ISP: - If ETM Modem is set to connect to ISP at start up, YES or NO** **ISP CONN: - If ETM Modem is connected to a ISP, YES or NO** **ISPC: - ISP successful connection counter (Max 255)** **PING CONN: - If ETM Modem has been ping responded, YES or NO**									
Get IP status profile	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'&' (38)	'I' (73) or 'i' (105)	'P' (80) or 'p'(112)			**ET-I&IP**
Response (ET-I&IP)	**IP STATUS:** **-IPCL: - Default used internet protocol, TCP or UDP** **LIP: - Local IP Address** **RIP1: - Remote TCP IP Address:Remote TCP Port which is configurated in the CT** **RIP2: - Remote TCP IP Address:Remote TCP Port which is configurated in the CT** **Last TCP:** **- Last Remote TCP IP Address:Last Remote TCP Port** **LP: - Last Local TCP Port** **Last UDP:** **- Last Remote UDP IP Address:Last Remote UDP Port** **LP: - Last Local UDP Port**									
Get Local IP Address	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'-' (45)	'I' (73) or 'i' (105)	'&' (38)	'L' (76) or 'l' (108)	'I' (73) or 'i' (105)	'P' (80) or 'p'(112)		**ET-I&LIP**
Response (ET-I&LIP)	**LIP ADD:** **- Local IP Address**									

5.4.8.1. ET-IPx and ET-IAPN Commands

ET-IP1=" Remote Server IP-Address" : "Remote Port" **<CR>**
ET-IP1=IP1 **<CR>**

After ET-"COMMAND" there must be an '='-character and the following parameters must be delimited with a COLON (:). The IP address is the Remote server address, which should receive the data. The IP address field must be four numbers with PERIODS (.) between. Next is the Remote Port number. **Send enter(<CR>(13)).** The ET-ISD actually sends the data string to the IP-address and the port address.
These parameters, except "Data to send" are stored in the EEPROM.
If "Remote Server IP-Address" is replaced with either "IP1" or "IP2" then the 1st or the 2nd EEPROM stored IP-address will be used. And the "Remote Port" and "Local Port" will be set accordingly to what is stored in the EEPROM.
GPRS connection

Example 1: ***Connects to the ISP***
ET-IP1=144.132.166.189:2049<CR> *Set the IP-, port-addresses*
Or **ET-IP1=**IP1**<CR>**
ET-ILP=2040<CR> *Set local port*
ET-IAPNx="APN" **<CR>**
Example 2:
ET-IAPN1= +cgdcont=1,"ip","isplnk1.swip.net"<CR>
ET-IAPN2= +cgdcont=1,"ip","isplnk1.swip.net"<CR>

5.4.8.2. Escape sequence

The data block "Data to send" MUST not include the following characters <CR>(0x0D), <~>(0x7D), <XON>(0x11), <XOFF>(0x13), and <BS>(0x08). An escape sequence must be done on these characters. Each of the forbidden characters could be preceded with 0x7D and the forbidden character is XOR:ed with 0x20 i.e. <CR>(0x0D) will be escaped to 0x7D 0x2D.

5.4.9. CMD SMS Commands

COMMAND	PID	PID	CMD	CMD	CMD	CMD			Example
Set SMS Alarm Phone Numbers	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'**-**' (45)	'**S**' (83) or '**s**' (115)	'**S**' (83) or '**s**' (115)	'**P**' (80) or '**p**'(112)	'=' (61)	Delimited(' , ') Parameter List	**ET-SSP=…… See 5.4.9.1**
Response (ET-SSR?)	**OK:** "OK Response Message" **TO:** "TO Response Message"								
Clear SMS Counter	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'**-**' (45)	'**S**' (83) or '**s**'(115)	'**C**' (67) or '**c**' (99)	'**C**' (67) or '**c**' (99)			**ET-SCC**
Get SMS status profile	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'**-**' (45)	'**S**' (83) or '**s**'(115)	'**&**' (38)	'**V**' (86) or '**v**'(118)			**ET-S&V**
Response (ET-S&V)	**SMS STATUS:** **TXC: - Number of send SMS to the network (Max 255) / Send limit counter (Max 65535)** **UTXC: - Number of unsend SMS (Max 255), the SMS was not sent correctly to the network** **DTXC: - Number of delivered SMS to a recipient (Max 255)** **The above counters will be cleared at 00:00 each day** **LTXi: - Latest Send index from the network (Max 255)** **DTXi: - Delivered Send index (Max 255). A receipt has been Received that the SMS has been delivered to the recipient** **The above index will be cleared when 255 has been reached,**								

Get latest incomming SMS	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'-' (45)	'**S**' (83) or '**s**'(115)	'**I**' (73) or '**i**' (105)				**ET-SI**
Response (ET-SI)	**PNo:+46704102934** **DateTime:05/04/08,20:19:26+04**								
Set SMS sending limit	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'-' (45)	'**S**' (83) or '**s**'(115)	'**L**' (76) or '**l**' (108)	'=' (61)	**SMS counter Limit per 24h**		**ET-SL=10**

5.4.9.1. ET-SSP SMS Alarm Phone numbers

ET-SSP="Phonenumber1" , "Phonenumber2" , "…." , "Phonenumber5"
Max 5 Phonenumbers.
These Phonenumbers are stored in the EEPROM.

Example :
ET-SSP=0704102020,07394851230<CR>

5.4.9.2. ET cmd response through SMS

ET commands through SMS messages are typed, ETxxx. The ET cmd message must begin with "ET", otherwise it will not be processed. If it is not starting with "ET", the message will be passed through to the port, and the message will be printed out, as it is.
Example:
Outgoing Message **ETS(3:DO=1,7:DO=0)**
Incoming message in response to above outgoing message:
USER ID, ETS(3:DO=1;7:DO=0)<CR><LF>
1:DI,0,2:DI,0,3:DO,1,4:DI,1,5:DO,1,6:DI,1,7:DO,0, (I/O 1-21 will be presented if ETM9600)

If the ET cmd message is ended with a identification string(*xxxxx*)
Example:
Outgoing Message **ETS(3:DO=1,7:DO=0)*0123456789***
Incoming message in response to above outgoing message:
***0123456789*,USER ID, ETS(3:DO=1;7:DO=0)<CR><LF>**
1:DI,0,2:DI,0,3:DO,1,4:DI,1,5:DO,1,6:DI,1,7:DO,0, (I/O 1-21 will be presented if ETM9600)

5.4.10. CMD Pulse Input Commands

COMMAND	**PID**	**PID**	**CMD**	**CMD**	**CMD**	**CMD**			**Example**
Get calculated Power values	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'**R**' (82) or '**r**' (114)	'**P**' (80) or '**p**'(112)	'**O**' (79) or '**o**'(111)	'**W**' (87) or '**w**'(119)			**ETRPOW**
Response result from Power values	**PULSE POWER STATUS:** **PI1.1 :0 – Pulse difference over 5min, Input 1.Pin1** **PI2.8 :0 – Pulse difference over 5min, Input 2.Pin8** **PI3.9 :0 – Pulse difference over 5min, Input 3.Pin9** **PI4.10:0 – Pulse difference over 5min, Input 4.Pin10** **PI5.11:0 – Pulse difference over 5min, Input 5.Pin11** **PI6.12:0 – Pulse difference over 5min, Input 6.Pin12** **PI7.13:0 – Pulse difference over 5min, Input 7.Pin13**								
Set pulse value(s)	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'**S**' (83) or '**s**'(115)	'**P**' (80) or '**p**'(112)	'**I**' (73) or '**i**' (105)	'=' (61)	Pulse input channel ' 0 '= All	Delimited (' , ')	New Pulse Value(s)	**ETSPI=0,0**

Show Pulse Status	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'**&**' (38)	'**P**' (80) or '**p**'(112)					**ET&P**
Response result from Pulse Status	**PULSE STATUS:** **PI CHS:n – Number of pulse channels to log** **PI LOGC:n / x – Log Counter. n : Number of logged pulses / x : Total number of pulses to log** **PI1.1 :000000000* – Pulse Input 1.Pin1, followed by a ' * ' if ON, else nothing** **PI2.8 :000000000* – Pulse Input 2.Pin8, followed by a ' * ' if ON, else nothing** **PI3.9 :000000000* – Pulse Input 3.Pin9, followed by a ' * ' if ON, else nothing** **PI4.10:000000000 – Pulse Input 4.Pin10, followed by a ' * ' if ON, else nothing** **PI5.11:000000000 – Pulse Input 5.Pin11, followed by a ' * ' if ON, else nothing** **PI6.12:000000000 – Pulse Input 6.Pin12, followed by a ' * ' if ON, else nothing** **PI7.13:000000000 – Pulse Input 7.Pin13, followed by a ' * ' if ON, else nothing**								

5.4.11. CMD Alarm Commands

Get Alarm status profile	'**E**' (69) or '**e**'(101)	'**T**' (84) or '**t**' (116)	'**-**' (45)	'**A**' (65) or '**a**' (97)	'**&**' (38)	'**V**' (86) or '**v**'(118)		**ET-A&V**
Response (ET-A&V)	**ALARM STATUS:** **AC:0**							

6. PART IDENTIFICATION NUMBER

Part Identification numbers are ID numbers of hardware or software.

6.1. Request for part Identification Number

This is the request message for Identification numbers.

Part Type

- 0 = Hardware ID number
- 1 = Main Software ID number
- 2 = Bootloader Software ID number
- 3 = Hardware Model number

Requested part number

This is the number of the wanted part type.

The request for part identification number command format:

COMMAND	PID	PID	CMD	CMD	Part Type	Example
Read part number	'E' (69) or 'e' (101)	'T' (84) or 't' (116)	'**R**' (82) or '**r**' (114)	'**P**' (80) or '**p**' (112)	0,1,2,3	**ETRP0** Read Hardware identification number

6.2. Response to part Identification Number Request

Response to request for part identification number

This is the response message for part identification numbers.

Part type

- 0 = Hardware ID number
- 1 = Main Software ID number
- 2 = Bootloader Software ID number
- 3 = Hardware Model number

This shall be the same value as 'Part Type' in the request message.

Identification number of the part

The identification number of the requested part will be included in this field. The part number contains characters '0'- '9'. Software number begins with "SW" and Hardware number begins with an "A"

The response for Identification part number command format:

COMMAND	CMD	CMD	Part type	Identification number of part	Example
Return part number	'**R**' (82) or '**r**' (114)	'**P**' (80) or '**p**' (112)	0,1,2,3	95*A5025100698 (96* if ETM9600) SW951B491R06 20060123 CT1210 SW95BL026R04 2005-11-25	**RP 0 :** **95*A5025100698** **RP 1 :** **SW951B491R06 20060123 CT1210** **RP 2:** **SW95B026R04 2005-11-25**

Or:

COMMAND	CMD	CMD	Part type	Identification number of part	Example