Sensors, telemetry functions: Version 7

ASCII-Modus:
GPS data: Text 0x7F 0xAF
Vario data: Text: 0x7F 0x9F
General data: Text 0x7F 0xDF
ElectricAir data: Text 0x7F 0xEF
Buttons: 0x7F 0xST; 7 = ESC, D = INC, B = DEC, E = ENTER, 9 = INC + DEC
S= Sensor ID, T = Taste/Button

data format:
19,2 kbaud, 1 Startbit, 8 data bits, 1 Stopbit:

This data flow can work with 8 bit data.

ASCII_Data protocol:

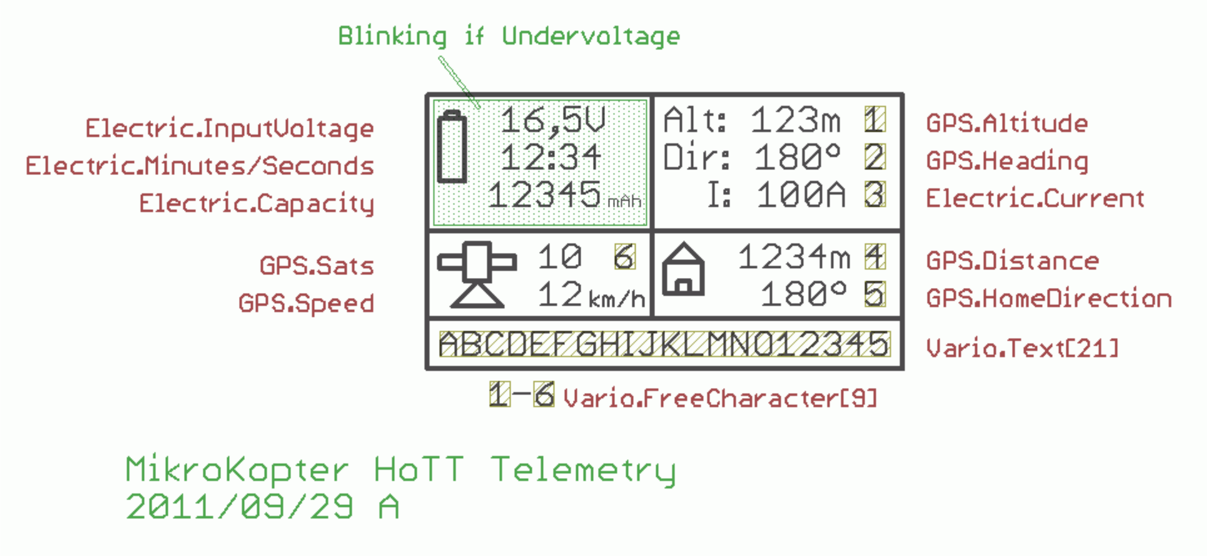
Smart-Box
0x7F = sensor byte, 4ms delay before sending next byte
0xXF= buttons and X=Sensor text ID
8ms delay
Answer module:
0x7B = Start byte ASCII
00
00 = Warnton SMART-BOX 1= A, 2=B…..
All ASCii Display bytes 168 Bytes
0x7D = End byte
Parity byte

About 2ms delay between all bytes.

Digital_Sensor Data protocol Empfänger:
0x80 = Empfänger/Receiver byte
0x80 = Empfängerdaten
0x7C = Start byte data
0 = ???
02…= Warnton SMART-BOX 2 = B
All data bytes:
95 = RX-S-STR
66 = R-VOLT 6,6V
55 = 0 = -20°C; 55 = 35°C Empfängertemperatur
30 = R-DBM: -30dbm
100 =RX-S-QUA
51 =R-LOW: 5,1V
10 =Lost package time low byte 10ms
0 =Lost package time high byte, bei >2000msec werden 2000msec angezeigt.
67 =T-DBM: -67dbm
0
0x7D = End byte
Parity byte

19200baud, 1Startbit, 9databit, no parity bit.1 Stopbit

Digital_Sensor Data protocol Vario Modul-Smart-Box:



Es gibt zwei verschiedene Protokolle:
– **Textmodus**
Anfrage kommt alle 800 ms vom Empfänger, Sensor sendet Text
– **Digitalmodus**
Anfrage kommt alle 300 ms vom Empfänger, Sensor sendet Daten für grafische Darstellung

33600 Module-GPS-Sensor: RX part + Sensor part 57 bytes

15 Bytes

Smart box or Handy App Master request:	old firmware:
Byte 1: 0x80 = Receiver byte	0x180
Byte 2: 0x8A = GPS Sensor byte	0x18A

Module answer:

Byte 1: 0x7C = Start byte data	0x17C
Byte 2: 0x00 = ?	0x0
Byte 3: 0x00…= warning beeps 1…36	0x100
Byte 4: 71 = ?	Empf.-temp.53 =33°C
Byte 5: 52 = aktuelle Empf.-spg./actual rx volt.5,2 V	88=??
Byte 6: 56 = 36 °C 0 = -20 °C RX temperature	99= RX-S-STR
Byte 7: 71 = ?	RX min volt. 5.1 V
Byte 8: 100 = Signal Quality 100%	Lost pack. Time low byte
Byte 9: 51 = minimale Empf.-spg./ min. RX-volt. 5,1 V	Lost pack.Time high byte
Byte 10: 10 = low byte verl. Datenpak. (lost package time)	0
Byte 11: 0 = high byte verl. Datenpak. (lost package time)	90 =??
Byte 12: 0 = ?	0
Byte 13: 71 = ?	0

Byte 14: 160 0xA0 Sensor ID   100% Signal quality
Byte 15: 119 = Flugricht./dir. 1 = 2°; 0° (North), 90° (East), 180° (South), 270° (West)
Byte 16: 196 8 = Geschwindigkeit/GPS speed low byte 8km/h
Byte 17: 002 0 = Geschwindigkeit/GPS speed high byte
Byte 18: 00   0 =   N = 48°39'988
Byte 19: 231 0xE7 = 0x12E7 = 4839
Byte 20: 018 18 = 0x12
Byte 21: 171 220 = 0xDC = 0x03DC =0988
Byte 22: 016 3 = 0x03
Byte 23: 000 0 =   E= 9° 25'9360
Byte 24: 150 157 = 0x9D = 0x039D
Byte 25: 003 3 = 0x03
Byte 26: 056 144 = 0x90 0x2490 =
Byte 27: 004 36 = 0x24
Byte 28: 027 123 = Entfernung/distance low byte 6 = 6 m
Byte 29: 036 35 = Entfernung/distance high byte
Byte 30: 243 244 = Höhe/Altitude low byte 500 = 0m
Byte 31: 001 1 = Höhe/Altitude high byte
Byte 32: 48 = Low Byte m/s resolution 0.01m   48 = 30000 = 0.00m/s (1=0.01m/s)
Byte 33: 117 = High Byte m/s resolution 0.01m
Byte 34: 120 = 0m/3s
Byte 35: GPS.Satelites (number of satelites) (1 byte)
Byte 36: GPS.FixChar. (GPS fix character. display, if DGPS, 2D oder 3D) (1 byte)
Byte 37: HomeDirection (direction from starting point to Model position) (1 byte)
Byte 38: acceleration x-direction (1 byte)
Byte 39: acceleration y-direction (1 byte)
Byte 40: acceleration z-direction (1 byte)
Byte 41: gyro x low byte (2 bytes) (GPS time hours for #33600)
Byte 42: gyro x high byte   (GPS time minutes for # 33600)
Byte 43: gyro y low byte (2 bytes) (GPS time seconds for #33600)
Byte 44: gyro y high byte   (GPS time .sss for #33600)
Byte 45: gyro z low byte (2 bytes) (MSL Altitude) low byte for #33600
Byte 46: gyro z high byte   (MSL Altitude) High byte for #33600
Byte 47: vibration (1 bytes)
Byte 48: 00 ASCII Free Character [4]
Byte 49: 00 ASCII Free Character [5]
Byte 50: 00 ASCII Free Character [6] (GPS ASCII 'D'=DGPS, '2'=2D and '3'=3D)
Byte 51: 00 version number , #0=GPS #33600, #1=gyro receiver, #255=mikrokopter
Byte 52: 00 inverse
Byte 53: 00 inverse status 1 = kein GPS Signal
Byte 54: 0x7D Ende byte
Byte 55: Parity Byte

Bei der Antwort müssen die einzelnen Bytes in einem Raster von etwa 2 ms gesendet werden. Nicht am
Stück senden!

 # 33600 GPS am/at Sensor: 47 bytes – 2 bytes Anforderung = 45
Empfänger/RX→GPS Sensor
Byte 1: 0x80 = Receiver byte
Byte 2: 0x8A = GPS Sensor byte
5ms delay
Sensor answer:
Byte 1: 0x7C = Start byte data
Byte 2: 0x8A = GPS Sensor
Byte 3: 0…= warning beeps
Byte 4: 160 0xA0 Sensor ID
Byte 5: 01 inverse status
Byte 6: 00 inverse status status 1 = kein GPS Signal
Byte 7: 119 = Flugricht./dir. 1 = 2°; 0° (North), 90° (East), 180° (South), 270° (West)
Byte 8: 196 8 = Geschwindigkeit/GPS speed low byte 8km/h
Byte 9: 002 0 = Geschwindigkeit/GPS speed high byte
Byte 10: 00 0 = N = 48°39’988
Byte 11: 231 0xE7 = 0x12E7 = 4839
Byte 12: 018 18 = 0x12
Byte 13: 171 220 = 0xDC = 0x03DC =0988
Byte 14: 016 3 = 0x03
Byte 15:000 0 = E= 9° 25’9360
Byte 16: 150 157 = 0x9D = 0x039D
Byte 17: 003 3 = 0x03
Byte 18: 056 144 = 0x90 0x2490 =
Byte 19: 004 36 = 0x24
Byte 20: 027 123 = Entfernung/distance low byte 6 = 6 m
Byte 21: 036 35 = Entfernung/distance high byte
Byte 22: 243 244 = Höhe/Altitude low byte 500 = 0m
Byte 23: 001 1 = Höhe/Altitude high byte
Byte 24: 48 = Low Byte m/s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/s)
Byte 25: 117 = High Byte m/s resolution 0.01m
Byte 26: 120 = 0m/3s
Byte 27: GPS.Satelites (number of satelites) (1 byte)
Byte 28: GPS.FixChar. (GPS fix character. display, if DGPS, 2D oder 3D) (1 byte)
Byte 29: HomeDirection (direction from starting point to Model position) (1 byte)
Byte 30: acceleration x-direction (1 byte)
Byte 31: acceleration y-direction (1 byte)
Byte 32: acceleration z-direction (1 byte)
Byte 33: gyro x low byte (2 bytes)
Byte 34: gyro x high byte
Byte 35: gyro y low byte (2 bytes)
Byte 36: gyro y high byte
Byte 37: gyro z low byte (2 bytes)
Byte 38: gyro z high byte
Byte 39: vibration (1 bytes)
Byte 40: 00 ASCII Free Character [4]
Byte 41: 00 ASCII Free Character [5]
Byte 42: 00 ASCII Free Character [6]
Byte 43: 00 version number
Byte 44: 0x7D Ende byte
Byte 45: Parity Byte

Byte 28:
GPSFix sind ASCII-Zeichen:
Dgps: 'D'
2D = '2'
3D = '3'
KeinFix = "-"

Module answer:
#33601 Digital_Sensor Data protocol Vario-Receiver
19200baud, 1Startbit, 9databit, no parity.
Byte 1-13: like Module answer page 2:
Byte 14: 128 0x80 Sensor ID
Byte 15: 244 244 = Low Byte aktuelle Höhe/act. Alt. -2m (244+256=0m)
Byte 16: 1 1 = High Byte aktuelle Höhe/actual altitude (500 = 0m)
Byte 17: 244 244 = Low Byte max. Höhe/max. alt. -2m (244+256=0m)
Byte 18: 1 1 = High Byte max. Höhe/ max. altitude (500 = 0m)
Byte 19: 244 244 = Low Byte min. Höhe/ min. altitude -2m (244+256=0m)
Byte 20: 1 1 = High Byte min. Höhe/ min. altitude (500 = 0m)
Byte 21: 48 Low Byte m/s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/s)
Byte 22: 117 117 = High Byte m/s resolution 0.01m 117
Byte 23: 48 Low Byte m/3s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/3s)
Byte 24: 117 117 = High Byte m/3s resolution 0.01m 117
Byte 25: 48 Low Byte m/10s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/10s)
Byte 26: 117 117 = High Byte m/10s resolution 0.01m 117
Byte 27: 0 ASCII [1]
Byte 28: 0 ASCII [2]
Byte 29: 0 ASCII [3]
Byte 30: 0 ASCII [4]
Byte 31: 0 ASCII [5]
Byte 32: 0 ASCII [6]
Byte 33: 0 ASCII [7]
Byte 34: 0 ASCII [8]
Byte 35: 0 ASCII [9]
Byte 36: 0 ASCII [10]
Byte 37: 0 ASCII [11]
Byte 38: 0 ASCII [12]
Byte 39: 0 ASCII [13]
Byte 40: 0 ASCII [14]
Byte 41: 0 ASCII [15]
Byte 42: 0 ASCII [16]
Byte 43: 0 ASCII [17]
Byte 44: 0 ASCII [18]
Byte 45: 0 ASCII [19]
Byte 46: 0 ASCII [20]
Byte 47: 0 ASCII [21]
Byte 48: 0 ASCII Free Character [1]
Byte 49: 0 ASCII Free Character [2]
Byte 50: 0 ASCII Free Character [3]
Byte 51: 0 Magnetometer 1= 2°

Byte 52: 0 version number
Byte 53: 0 Inverse
Byte 54: 0x7D Ende byte
Byte 55: Parity Byte

#33601 Vario Sensor answer to receiver:
Empfänger→General Sensor
Byte 1: 80 = Receiver byte
Byte 2: 89 = Vario Sensor byte
5ms delay
Byte 1: 0x7C = Start byte data
Byte 2: 0x89 = Vario Sensor
Byte 3: 0…= warning beeps
Byte 4: 144 0x90 Sensor ID
Byte 5: 0 Inverse status
Byte 6: 244 244 = Low Byte aktuelle Höhe/act. Alt. -2m (244+256=0m)
Byte 7: 1 1 = High Byte aktuelle Höhe/actual altitude (500 = 0m)
Byte 8: 244 244 = Low Byte max. Höhe/max. alt. -2m (244+256=0m)
Byte 9: 1 1 = High Byte max. Höhe/ max. altitude (500 = 0m)
Byte 10: 244 244 = Low Byte min. Höhe/ min. altitude -2m (244+256=0m)
Byte 11: 1 1 = High Byte min. Höhe/ min. altitude (500 = 0m)
Byte 12: 48 Low Byte m/s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/s)
Byte 13: 117 117 = High Byte m/s resolution 0.01m 117
Byte 14: 48 Low Byte m/3s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/3s)
Byte 15: 117 117 = High Byte m/3s resolution 0.01m 117
Byte 16: 48 Low Byte m/10s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/10s)
Byte 17: 117 117 = High Byte m/10s resolution 0.01m 117
Byte 18: 0 ASCII [1]
Byte 19: 0 ASCII [2]
Byte 20: 0 ASCII [3]
Byte 21: 0 ASCII [4]
Byte 22: 0 ASCII [5]
Byte 23: 0 ASCII [6]
Byte 24: 0 ASCII [7]
Byte 25: 0 ASCII [8]
Byte 26: 0 ASCII [9]
Byte 27: 0 ASCII [10]
Byte 28: 0 ASCII [11]
Byte 29: 0 ASCII [12]
Byte 30: 0 ASCII [13]
Byte 31: 0 ASCII [14]
Byte 32: 0 ASCII [15]
Byte 33: 0 ASCII [16]
Byte 34: 0 ASCII [17]
Byte 35: 0 ASCII [18]
Byte 36: 0 ASCII [19]
Byte 37: 0 ASCII [20]
Byte 38: 0 ASCII [21]

Byte 39: 0   ASCII Free Character [1]
Byte 40: 0   ASCII Free Character [2]
Byte 41: 0   ASCII Free Character [3]
Byte 42: 0   Magnetometer 1= 2°
Byte 43: 0   version number
Byte 44: 0x7D Ende byte
Byte 45: Parity Byte

Module answer:
#33611 Digital_Sensor Data protocol General Sensor:
Byte 1-13: like Module answer page 2:

Byte 14: 208   0xD0 Sensor ID
Byte 15: 124 = Zelle/cell 1 124 = 2.48 V
Byte 16: 132 = Zelle/cell 2 132 = 2.64 V
Byte 17: 00   = Zelle/cell 3
Byte 18: 00   = Zelle/cell 4
Byte 19: 00   = Zelle/cell 5
Byte 20: 00   = Zelle/cell 6
Byte 21: 51   = 5,1V BATT1 low byte Spannung/voltage BATT1
Byte 22: 0   = High Byte Spannung/voltage BATT1 für Spannungen über 25,5V
Byte 23: 50   = 5,0V BATT2 low byte Spannung/voltage BATT2
Byte 24: 0   = high byte Spannung/voltage BATT2 für Spannungen über 25,5V
Byte 25: 46   = Temperatur/temperature 1 = 46 = 26°C
Byte 26: 45   = Temperatur/temperature 2 = 45 = 25°C
Byte 27: 0   = Fuel?
Byte 28: 0   = 0 = Fuel ml low byte?
Byte 29: 0   = 0 = Fuel ml high byte?
Byte 30: 199 = Drehzahl/rpm low byte 199 = 1990 U/min
Byte 31: 0   = Drehzahl/rpm high byte
Byte 32: 244 = Altitude low byte 500 = 0m
Byte 33: 1   = Altitude high byte
Byte 34: 48   = Low Byte m/s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/s)
Byte 35: 117 = High Byte m/s resolution 0.01m117
Byte 36: 120 = 0m/3s
Byte 37: 1   = 1=0.1A Strom/current low byte
Byte 38: 0   = Strom/current high byte
Byte 39: 166 = Power-V low byte = 16,6V
Byte 40: 0   = Power-V high byte
Byte 41: 0   = capacity mAh low byte 1 = 10mAh
Byte 42: 0   = capacity mAh high byte
Byte 43: 0   = Speed low byte
Byte 44: 0   = Speed high byte
Byte 45: 0   = lowest cell voltage 124 = 2.48 V
Byte 46: 0   = cell number lowest cell voltage
Byte 47: 0   = 2^{nd} rpm low byte 1 = 10 U/min
Byte 48: 0   = 2^{nd} rpm high byte
Byte 49: 0   = General.ErrorNumber (voice: Error 12) (1 byte)
Byte 50: 0   = Pressure sensor up to 15 bar (in 0.1bar steps) connectable on CS
Byte 51: 0   = version number
Byte 52: 0   Inverse

Byte 53: 80   Inverse status
Byte 54: 0x7D Ende byte
Byte 55: Parity Byte

#33611 General am Empfänger: 47 bytes – 2 bytes Anforderung = 45
Empfänger→General Sensor
Byte 1: 80 = Receiver byte
Byte 2: 8D = General Sensor byte
5ms delay
Sensor answer:
Byte 1: 0x7C = Start byte data
Byte 2: 0x8D = General Sensor
Byte 3: 0…   = warning beeps
Byte 4: 208   0xD0 Sensor ID
Byte 5: 0   Inverse
Byte 6: 80   Inverse status I
Byte 7: 124   = Zelle/cell 1 124 = 2.48 V
Byte 8: 132   = Zelle/cell 2 132 = 2.64 V
Byte 9: 00   = Zelle/cell 3
Byte 10: 00   = Zelle/cell 4
Byte 11: 00   = Zelle/cell 5
Byte 12: 00   = Zelle/cell 6
Byte 13: 51   = 5,1V BATT1 low byte Spannung/voltage BATT1
Byte 14: 0   = High Byte Spannung/voltage BATT1 für Spannungen über 25,5V
Byte 15: 50   = 5,0V BATT2 low byte Spannung/voltage BATT2
Byte 16: 0   = high byte Spannung/voltage BATT2 für Spannungen über 25,5V
Byte 17: 46   = Temperatur/temperature 1 = 46 = 26°C
Byte 18: 45   = Temperatur/temperature 2 = 45 = 25°C
Byte 19: 0   = Fuel?
Byte 20: 0   = 0 = Fuel ml low byte?
Byte 21: 0   = 0 = Fuel ml high byte?
Byte 22: 199 = Drehzahl/rpm low byte 199 = 1990 U/min
Byte 23: 0   = Drehzahl/rpm high byte
Byte 24: 244 = Altitude low byte 500 = 0m
Byte 25: 1   = Altitude high byte
Byte 26: 48   = Low Byte m/s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/s)
Byte 27: 117 = High Byte m/s resolution 0.01m117
Byte 28: 120 = 0m/3s
Byte 29: 1   = 1=0.1A Strom/current low byte
Byte 30: 0   = Strom/current high byte
Byte 31: 166 = Power-V low byte = 16,6V
Byte 32: 0   = Power-V high byte
Byte 33: 0   = capacity mAh low byte 1 = 10mAh
Byte 34: 0   = capacity mAh high byte
Byte 35: 0   = Speed low byte
Byte 36: 0   = Speed high byte
Byte 37: 0   = lowest cell voltage 124 = 2.48 V

Byte 38: 0 = cell number lowest cell voltage
Byte 39: 0 = 2nd rpm low byte 1 = 10 U/min
Byte 40: 0 = 2nd rpm high byte
Byte 41: 0 = General.ErrorNumber (voice: Error 12) (1 byte)
Byte 42: 0 = Pressure sensor up to 15 bar (in 0.1bar steps) connectable on CS
Byte 43: 0 = version number 255 = Deutsch
Byte 44: 0x7D Ende byte
Byte 45: Parity Byte
Byte 5 Alarmwert_invers_1 Bit 0 -> alle Zellenspannungen invers
Bit 1 -> Batt 1 Wert invers
Bit 2 -> Batt 2 Wert invers
Bit 3 -> Tmp 1 invers
Bit 4 -> Tmp 2 invers
Byte 6 Alarmwert_invers_2 Bit 0 -> Strom Wert invers
Bit 1 -> Power-V Wert invers
Bit 2 -> Höhe Wert invers
Bit 7 -> "ON" Zeichen aktiv

Module answer:
#33620 Digital_Sensor Data protocol Electric Air:
Byte 1-13: like Module answer page 2:

Byte 14: 224 =0xE0 Sensor ID
Byte 15: 124 = Zelle/cell 1L 124 = 2.48 V
Byte 16: 132 = Zelle/cell 2L 132 = 2.64 V
Byte 17: 00 = Zelle/cell 3L
Byte 18: 00 = Zelle/cell 4L
Byte 19: 00 = Zelle/cell 5L
Byte 20: 00 = Zelle/cell 6L
Byte 21: 00 = Zelle/cell 7L
Byte 22: 00 = Zelle/cell 1H
Byte 23: 00 = Zelle/cell 2H
Byte 24: 00 = Zelle/cell 3H
Byte 25: 00 = Zelle/cell 4H
Byte 26: 00 = Zelle/cell 5H
Byte 27: 00 = Zelle/cell 6H
Byte 28: 00 = Zelle/cell 7H
Byte 29: 51 = 5,1V BATT1 low byte Spannung/voltage BATT1 oder Zelle 8L
Byte 30: 0 = High Byte Spannung/voltage BATT1 für Spannungen über 25,5V
Byte 31: 50 = 5,0V BATT2 low byte Spannung/voltage BATT2 oder Zelle 8H
Byte 32: 0 = high byte Spannung/voltage BATT2 für Spannungen über 25,5V
Byte 33: 46 = Temperatur/temperature 1 = 46 = 26°C
Byte 34: 45 = Temperatur/temperature 2 = 45 = 25°C
Byte 35: 244 = Altitude low byte 500 = 0m
Byte 36: 1 = Altitude high byte
Byte 37: 1 = 1=0.1A Strom/current low byte
Byte 38: 0 = Strom/current high byte
Byte 39: 166 = Power-V low byte = 16,6V
Byte 40: 0 = Power-V high byte
Byte 41: 0 = mAh low byte 1 = 10mAh
Byte 42: 0 = mAh high byte
Byte 43: 48 = Low Byte m/s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/s)
Byte 44: 117 = High Byte m/s resolution 0.01m117
Byte 45: 120 = 0m/3s
Byte 46: 199 = rpm Drehzahl low byte 199 = 1990 U/min
Byte 47: 0 = rpm Drehzahl high byte
Byte 48: 0 = Electric.Minutes (Time does start, when motor current is > 3 A)
Byte 49: 0 = Electric.Seconds (1 byte)
Byte 50: 0 = Speed 1 = 2km/h
Byte 51: 0 = version number
Byte 52: 0 Inverse
Byte 53: 80 Inverse status l
Byte 54: 0x7D Ende byte
Byte 55: Parity Byte

#33620 Electric Air am Empfänger: 47 bytes – 2 bytes Anforderung = 45

Empfänger→Electric Sensor
Byte 1: 80 = Receiver byte
Byte 2: 8E = Electric Sensor byte
5ms delay

Sensor answer:

Byte 1: 0x7C = Start byte data
Byte 2: 0x8E = Electric Sensor
Byte 3: 0… = warning beeps
Byte 4: 224 0xE0 Sensor ID
Byte 5: 0 Inverse
Byte 6: 80 Inverse status I
Byte 7: 124 = Zelle/cell 1L 124 = 2.48 V
Byte 8: 132 = Zelle/cell 2L 132 = 2.64 V
Byte 9: 00 = Zelle/cell 3L
Byte 10: 00 = Zelle/cell 4L
Byte 11: 00 = Zelle/cell 5L
Byte 12: 00 = Zelle/cell 6L
Byte 13: 00 = Zelle/cell 7L
Byte 14: 00 = Zelle/cell 1H
Byte 15: 00 = Zelle/cell 2H
Byte 16: 00 = Zelle/cell 3H
Byte 17: 00 = Zelle/cell 4H
Byte 18: 00 = Zelle/cell 5H
Byte 19: 00 = Zelle/cell 6H
Byte 20: 00 = Zelle/cell 7H
Byte 21: 51 = 5,1V BATT1 low byte Spannung/voltage BATT1 oder Zelle 8L
Byte 22: 0 = High Byte Spannung/voltage BATT1 für Spannungen über 25,5V
Byte 23: 50 = 5,0V BATT2 low byte Spannung/voltage BATT2 oder Zelle 8H
Byte 24: 0 = high byte Spannung/voltage BATT2 für Spannungen über 25,5V
Byte 25: 46 = Temperatur/temperature 1 = 46 = 26°C
Byte 26: 45 = Temperatur/temperature 2 = 45 = 25°C
Byte 27: 244 = Altitude low byte 500 = 0m
Byte 28: 1 = Altitude high byte
Byte 29: 1 = 1=0.1A Strom/current low byte
Byte 30: 0 = Strom/current high byte
Byte 31: 166 = Power-V low byte = 16,6V
Byte 32: 0 = Power-V high byte
Byte 33: 0 = mAh low byte 1 = 10mAh
Byte 34: 0 = mAh high byte
Byte 35: 48 = Low Byte m/s resolution 0.01m 48 = 30000 = 0.00m/s (1=0.01m/s)
Byte 36: 117 = High Byte m/s resolution 0.01m117
Byte 37: 120 = 0m/3s
Byte 38: 199 = rpm Drehzahl low byte 199 = 1990 U/min
Byte 39: 0 = rpm Drehzahl high byte
Byte 40: 0 = Electric.Minutes (Time does start, when motor current is > 3 A)
Byte 41: 0 = Electric.Seconds (1 byte)
Byte 42: 0 = Speed 1 = 2km/h
Byte 43: 0 = version number
Byte 44: 0x7D Ende byte
Byte 45: Parity Byte

Warnungen für Sprachausgaben:

GPS Warnungen:

Max. Distance	D	
Min Speed	A	
Max Speed	L	
Min Alt	O	
Max Alt	Z	
Sinkrate / s	C	-10 m/s
Sinkrate / 3s	B	-1 m/s
Steigrate / s	N	10 m/s
Steigrate / 3s	M	1 m/s

Vario Warnungen:

Min Alt	O	
Max Alt	Z	
Sinkrate / s	C	-10 m/s
Sinkrate / 3s	B	-1 m/s
Steigrate / s	N	10 m/s
Steigrate / 3s	M	1 m/s

General Air und Electric Air Warnungen:

Min. Cell voltage	Q
Min. Sens. 1 voltage	R
Max. Sens. 1 voltage	J
Min. Sensor 1 temp.	F
Max. Sensor 1 temp.	H
Min. Sens. 2 voltage	S
Max. Sens. 2 voltage	K
Min. Sensor 2 temp.	G
Max. Sensor 2 temp.	I
Max. Current	W
Max. used capacity	V
Min. Power Voltage	P
Max. Power Voltage	X
Min. Altitude	O
Max. Altitude	Z
Negative Difference 1	C
Negative Difference 2	B
Positive Difference 1	N
Positive Difference 2	M
Minimum RPM	T
Maximum RPM	Y

New big letter displays:
Speed for Speed for General Sensor/electric Sensor:

122 km/h

Pressure:

10.1 bar

Big display for:

Byte 34: 0 = lowest cell voltage 124 = 2.48 V
Byte 35: 0 = cell number lowest cell voltage

Z 1: 2.48 V

For 21 ASCII signs:
2 x 11 characters
3 x 7 characters

012345567891
012345567891

0123456
0123456
0123456

Graphic display for:
- angle x-direction (1 byte)
- angle y-direction (1 byte)
- angle z-direction (1 byte)

- gyro x (2 byte)
- gyro y (2 byte)
- gyro z (2 bytes)
- vibration (1 bytes)