DE BEIJER ENGINEERING

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Client : -

Project Name : Reading P1 smart meter

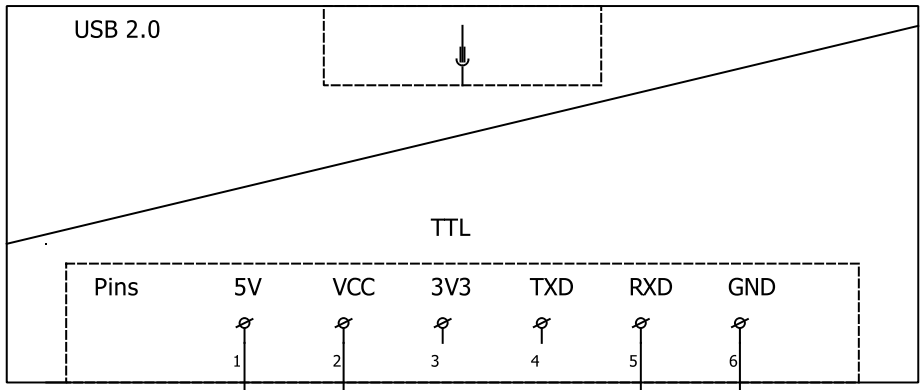
Project number : -

Supplier : -

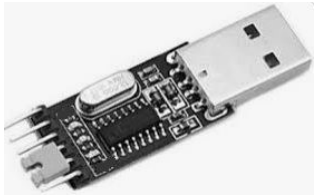
Engineer : Rob de Beijer

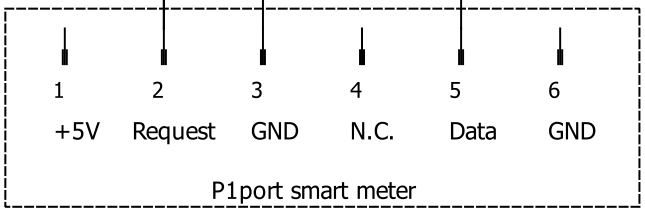
Initials : RdeB

Model: USB-Serial CH340
Converter USB to TTL



Bits per second: 115200
Bata bits: 8
Parity: none
Stop bits: 1
Flow control: none





Landis + Gyr
E360 SMR 5.0

RJ 12 connector

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	Date:	Initials:	Page Description:	Status of Drawings:	Project:	Revision info:	Page info:
Drawn:	2/28/2023	RdeB	TTL to USB converter	Draft		Rev. -: 30-11-22	Page: 4
Checked:						Rev.: -	Next: 5/14
Approved:							Total: 14

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Model: USR-TCP232-T2
Converter TTL to Network

To local network

230V AC

5V DC

TCP server

UDP server

TTL

Pins	CFG	RXD	TXD	RST	GND	VCC	VDD
	1	2	3	4	5	6	7

Bits per second: 115200
Bata bits: 8
Parity: none
Stop bits: 1
Flow control: none

10K

10K

C

BC547B

2,2nf

B

680

E

Landis + Gyr
E360 SMR 5.0

1	2	3	4	5	6
+5V	Request	GND	N.C.	Data	GND

P1port smart meter

RJ 12 connector

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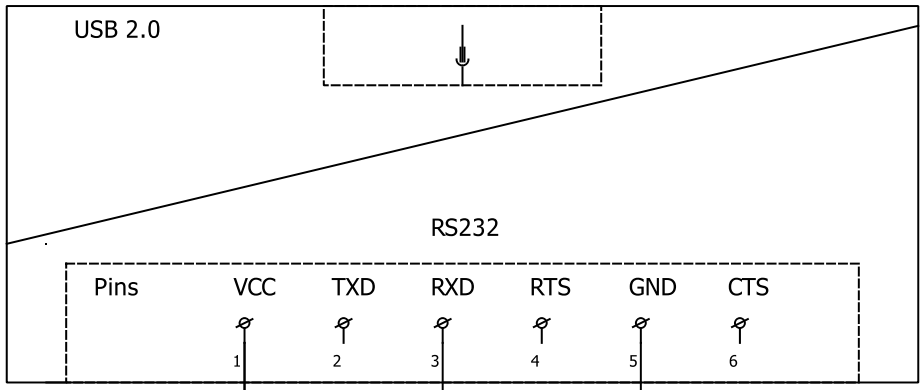
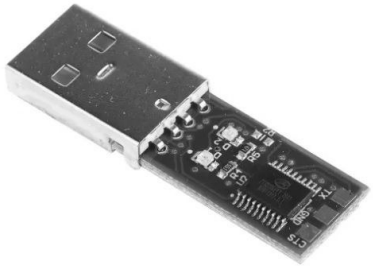
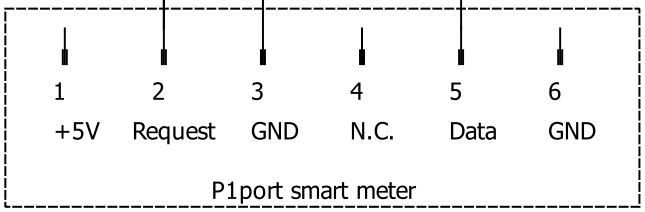
Drawn:	2/28/2023	RdeB	TTL to Ethernet converter	Draft		Rev. -: 30-11-22	Page: 5
Checked:						Rev.: -	Next: 6/14
Approved:							Total: 14

Model: USB-Serial FTDI
Converter USB to RS232



Bits per second: 115200
Bata bits: 8
Parity: none
Stop bits: 1
Flow control: none





Landis + Gyr
E360 SMR 5.0

RJ 12 connector

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Drawn:	2/28/2023	RdeB	USB to RS232 converter	Draft		Rev. -: 30-11-22	Page: 6
Checked:						Rev.: -	Next: 7/14
Approved:							Total: 14

230V AC

5V DC

Model: USR-TCP232-302
Converter RS232 to Network

To local network

TCP server

UDP server

Bits per second: 115200
Bata bits: 8
Parity: none
Stop bits: 1
Flow control: none

RS232

Sub D9 Connector Female

CD	TXD	RXD	DTR	GND	DSR	CTS	RTS	RI
1	2	3	4	5	6	7	8	9

1 2 3 4 5 6 7 8 9

Sub D9 Connector male

1K

10K

100pF

100nF

Buffer line Driver
SN74LS244

1 19 20 10

18 4 6 8

2 16 14 12

etc.

P1:1 P1:2 P1:3

1	2	3	4	5	6
+5V	Request	GND	N.C.	Data	GND

P1port smart meter

RJ 12 connector

Landis + Gyr
E360 SMR 5.0

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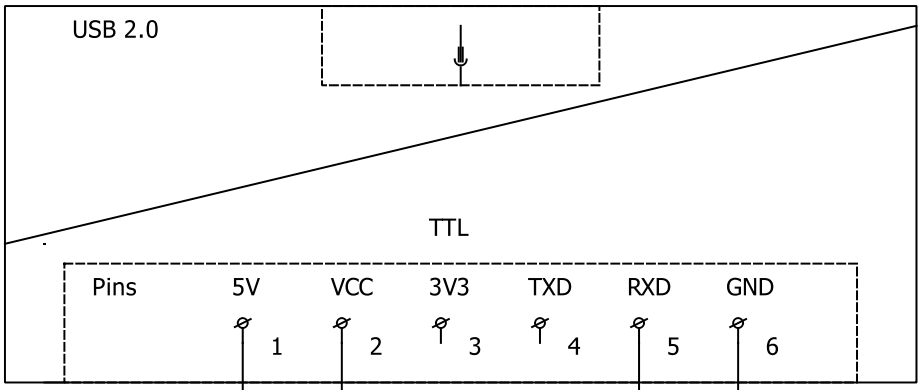
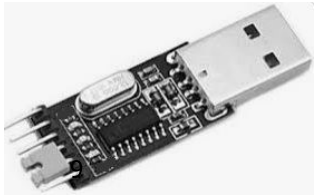
Drawn:	2/28/2023	RdeB	RS232 to ether. + Extra P1	Draft		Rev. -: 30-11-22	Page: 7
Checked:						Rev.: -	Next: 8/14
Approved:							Total: 14

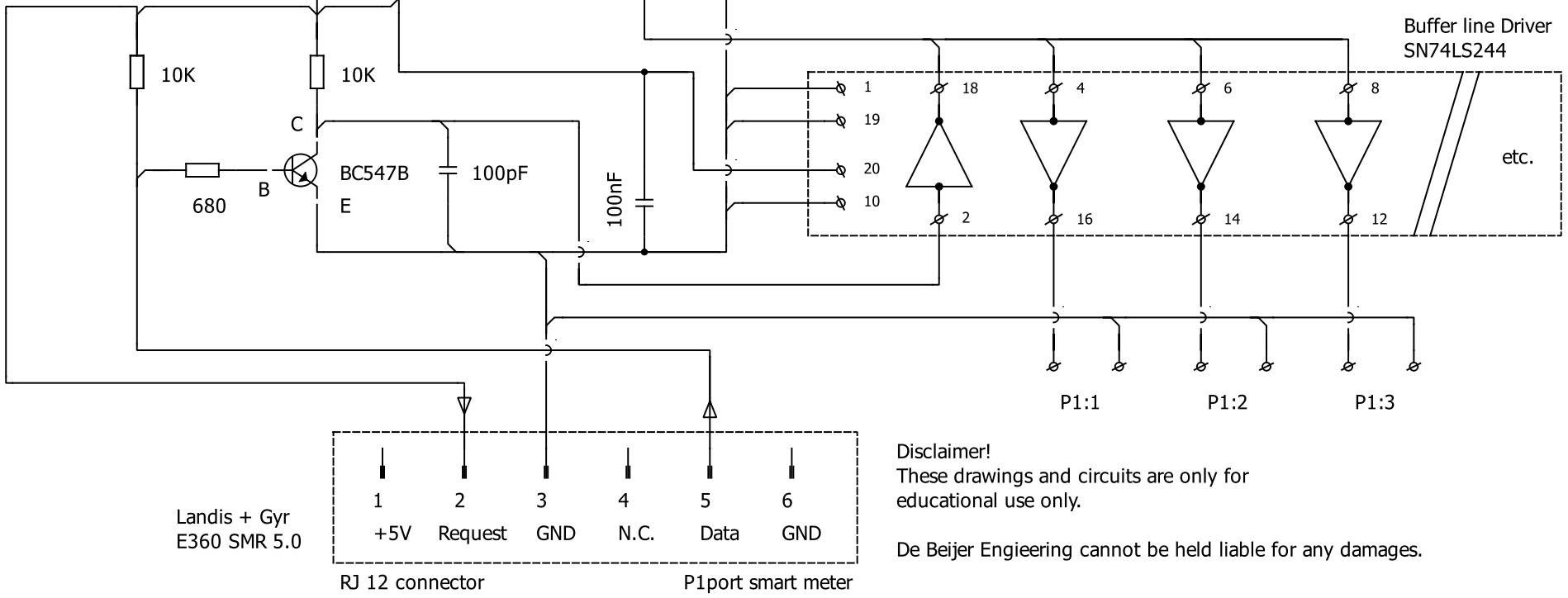
Model: USB-Serial CH340
Converter USB to TTL

To USB port



Bits per second: 115200
Bata bits: 8
Parity: none
Stop bits: 1
Flow control: none





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	Date:	Initials:	Page Description:	Status of Drawings:	Project:	Revision info:	Page info:
Drawn:	2/28/2023	RdeB	TTL to USB + Extra P1	Draft		Rev. -: 30-11-22	Page: 8
Checked:						Rev.: -	Next: 9/14
Approved:							Total: 14

Model: USR-TCP232-T2
Converter TTL to Network

To local network

230V AC

5V DC

TCP server

UDP server

TTL

Pins CFG RXD TXD RST GND VCC VDD

1 2 3 4 5 6 7

Bits per second: 115200
Bata bits: 8
Parity: none
Stop bits: 1
Flow control: none

Buffer line Driver
SN74LS244

1 19 20 10 18 4 6 8 2 16 14 12 etc.

10K

10K

100nF

C

BC547B

B

E

680

100pF

P1:1 P1:2 P1:3

Landis + Gyr
E360 SMR 5.0

1	2	3	4	5	6
+5V	Request	GND	N.C.	Data	GND

P1port smart meter

RJ 12 connector

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Drawn:	2/28/2023	RdeB	TTL to Ether. + Extra P1	Draft		Rev. -: 30-11-22	Page: 9
Checked:						Rev.: -	Next: 10/14
Approved:							Total: 14

230V AC

5V DC

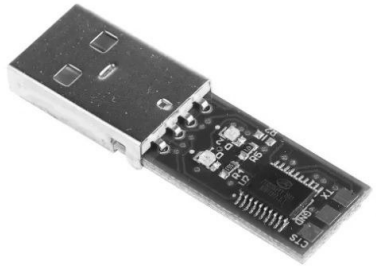
Model: USB-Serial FTDI
Converter USB to RS232

To USB port

RS232

Pins	VCC	TXD	RXD	RTS	GND	CTS
	1	2	3	4	5	6

Bits per second: 115200
Bata bits: 8
Parity: none
Stop bits: 1
Flow control: none



Buffer line Driver
SN74LS244

1K

10K

100pF

100nF

1	19	20	10	18	4	6	8	2	16	14	12

P1:1 P1:2 P1:3

1	2	3	4	5	6
+5V	Request	GND	N.C.	Data	GND

Landis + Gyr
E360 SMR 5.0

P1port smart meter

RJ 12 connector

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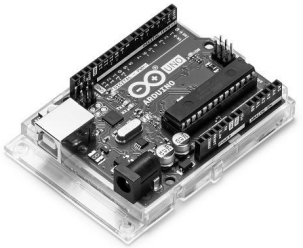
Drawn:	2/28/2023	RdeB	RS232 to USB + Extra P1	Draft		Rev. -: 30-11-22	Page: 10
Checked:						Rev.: -	Next: 11/14
Approved:							Total: 14

Model: Arduino UNO R3 / MEGA 2560



To USB port

USB 2.0

Note:
RX Pin
Depending on code
pin 2
Pin 8
Pin 19

Serial

Pins 5V GND RX

Serial USB Site:
Bits per second: 9600 (users choice)
Bata bits: 8
Parity: none
Stop bits: 1
Flow control: none

Serial P1 site:
Bits per second: 115200
Bata bits: 8
Parity: none
Stop bits: 1
Flow control: none

Code Exampels on page 12

Buffer line Driver
SN74LS244

10K 10K

C
BC547B
B
E

680

100pF

100nF

1 19 20 10

18 4 6 8

2 16 14 12

etc.

P1:1 P1:2 P1:3

Landis + Gyr
E360 SMR 5.0

1	2	3	4	5	6
+5V	Request	GND	N.C.	Data	GND

RJ 12 connector P1port smart meter

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	Date:	Initials:	Page Description:	Status of Drawings:	Project:	Revision info:	Page info:
Drawn:	2/28/2023	RdeB	Arduino Uno + Extra P1	Draft		Rev. -: 30-11-22	Page: 11
Checked:						Rev.: -	Next: 12/14
Approved:							Total: 14

```
//Basic code for: Arduino UNO

#include <SoftwareSerial.h>

 SoftwareSerial P1_Serial(2, 3); // 2=RX, 3=TX pins

void setup() {
   // Open serial communications and wait for port to open:
   Serial.begin(9600);
   P1_Serial.begin(115200);
}

void loop() { // write P1_serial data P1 meter to serial monitor
   if (P1_Serial.available()) {
      Serial.write(P1_Serial.read());
   }
}
```

Works oke but some time a reding error

```
//Basic code for: Arduino UNO & Mega

#include <AltSoftSerial.h>
// AltSoftSerial always uses these pins:
//
// Board          Transmit  Receive   PWM Unusable
// -----          --------  -------   ------------
// Teensy 2.0         9        10       (none)
// Teensy++ 2.0      25        4         26, 27
// Arduino Uno        9        8         10
// Arduino Mega      46        48        44, 45
// Wiring-S           5        6         4
// Sanguino          13        14        12

AltSoftSerial P1_Serial;
char P1_value;

void setup() {
   Serial.begin(115200);
   P1_Serial.begin(115200);
}

void loop() {
   if (P1_Serial.available()) {
      P1_value = P1_Serial.read();
      char inChar = (char)P1_value;
      Serial.print(P1_value);
   }
}
```

Works oke but some time a reding error

```
//Basic code for: Arduino Mega

//Serial1 Rx = pin 19

void setup()
{
  Serial.begin(115200); // monitor
  Serial1.begin(115200); // P1 Signal
}

void loop()
{

  if (Serial1.available()) {
     Serial.write(Serial1.read());
  }
}
```

Best result No errors

	Date:	Initials:	Page Description:	Status of Drawings:	Project:	Revision info:	Page info:
Drawn:	2/28/2023	RdeB	Arduino Code	Draft		Rev. -: 30-11-22	Page: 12
Checked:						Rev.: -	Next: 13/14
Approved:							Total: 14

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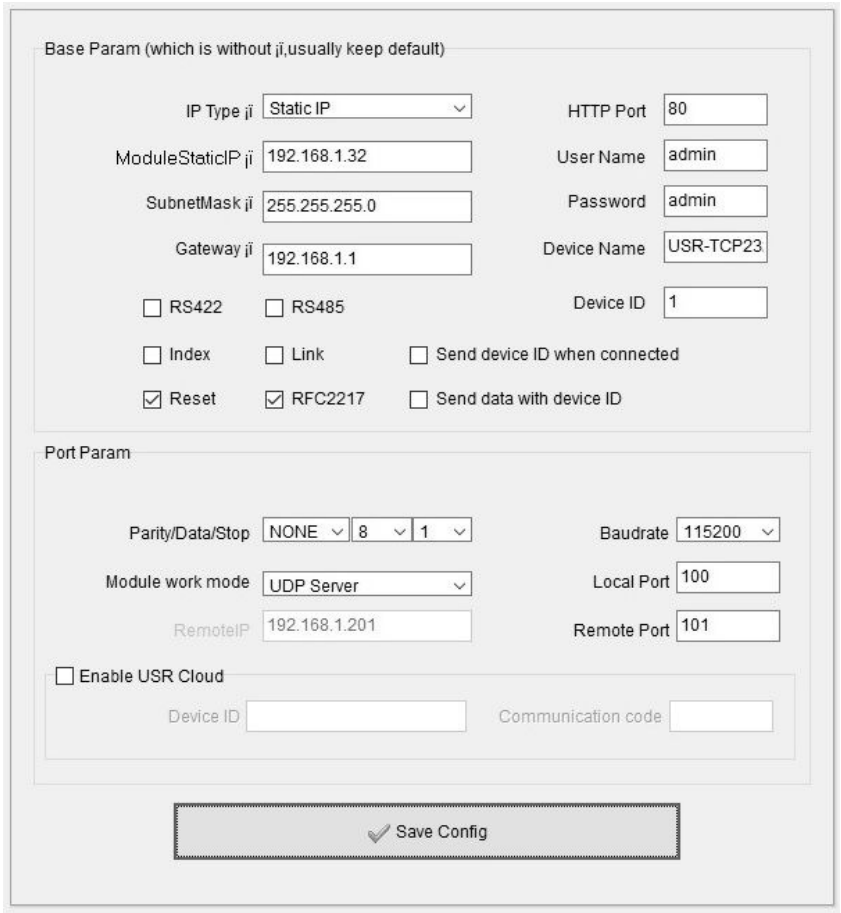
Example P1 telegram representation

/XMX5LGF

1-3:0.2.8(50)
0-0:1.0.0(230204153613W)
0-0:96.1.1(4530303531303035333335373033333139)
1-0:1.8.1(005683.933*kWh)
1-0:1.8.2(005732.923*kWh)
1-0:2.8.1(001325.774*kWh)
1-0:2.8.2(002999.425*kWh)
0-0:96.14.0(0001)
1-0:1.7.0(00.169*kW)
1-0:2.7.0(00.000*kW)
0-0:96.7.21(00014)
0-0:96.7.9(00004)
1-0:99.97.0(3)(0-0:96.7.19)(190403064938S)(0000000866*s)(191214140829W)(0000000272*s)(221024134949S)(0000000444*s)
1-0:32.32.0(00014)
1-0:32.36.0(00001)
0-0:96.13.0()
1-0:32.7.0(228.7*V)
1-0:31.7.0(001*A)
1-0:21.7.0(00.169*kW)
1-0:22.7.0(00.000*kW)
0-1:24.1.0(003)
0-1:96.1.0(473030333930303139333836363l1333139)
0-1:24.2.1(230204153506W)(04383.589*m3)
!4DB3

	Date:	Initials:	Page Description:	Status of Drawings:	Project:	Revision info:	Page info:
Drawn:	2/28/2023	RdeB	Serial data P1 meter	Draft		Rev. -: 30-11-22	Page: 13
Checked:						Rev.: -	Next: 14/14
Approved:							Total: 14

Basic Parameters Ethernet Converters



	Date:	Initials:	Page Description:	Status of Drawings:	Project:	Revision info:	Page info:
Drawn:	2/28/2023	RdeB	Basic Parameters Ethernet Conv.	Draft		Rev. -: 30-11-22	Page: 14
Checked:						Rev.: -	Next:
Approved:							Total: 14