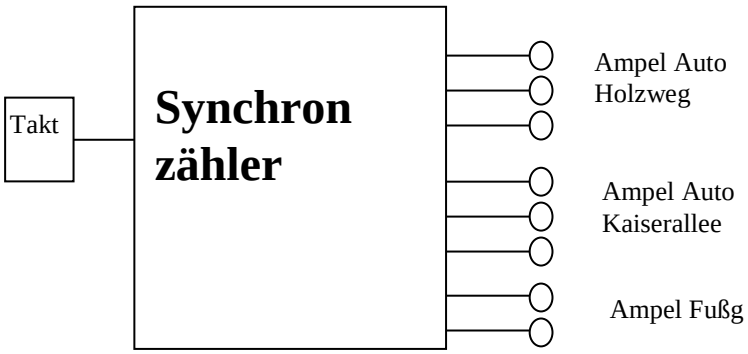


Beispiel 1:

```
MODULE Ampel
"Synchroner 9 Bit Binaerzähler, beschrieben mit einer Funktionstabelle
//Ampelsteuerung mit einem 9 Bit Zaehler. Das 9bit ist deshalb benutzt,
//Damit keine 2 gleiche Zustände (rot-Rot) entstehen, sonst Fehlfunktion
//Alle Ampelphasen gleich lang
DECLARATIONS "************** Ein- und Ausgänge *****GWS_Offenburg**********************

  takt      PIN 11;        "Takteingang   Ne555 Taster
  bit7,bit6,bit5,bit4,bit3,bit2,bit1,bit0  PIN 21,20,19,18,17,16,15,14  ISTYPE
internen D-FFs zu verwenden,
  bit8  NODE  ISTYPE'BUFFER,REG';   //Hilfsbit
            "diese nennt man Registerausgänge  Port2 14,15,16,17,18,19,20,21
```

Synchroner 9 bit Zähler, erzeugt direkt die Ampelimpulse

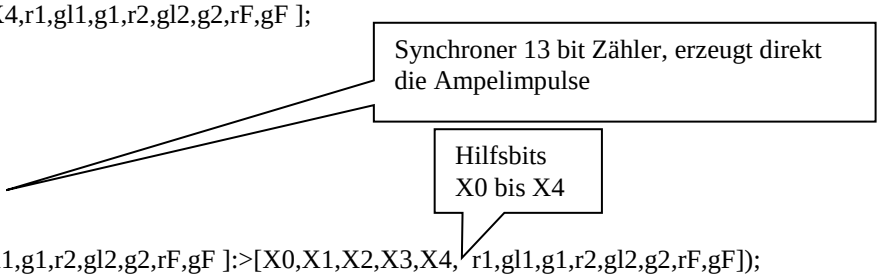
Hilfsbit bit8

```
"so zu lesen: vor dem Takt :>  nach dem Takt
TRUTH_TABLE   ([bit8,  bit7,bit6,bit5,bit4,bit3,bit2,bit1,bit0] :> [bit8,  bit7,bit6,bit5,bit4,bit3,bit2,bit1,bit0])

              [0, 0,0,0,0,0,0,0,0] :> [0,  0,1,0,0,1,0,0,1]; //rot rot !!Zaehler muss mit 0 beginnen!!
              [0, 0,1,0,0,1,0,0,1] :> [0,  0,1,0,0,1,0,1,1]; //rot gelb rot
              [0, 0,1,0,0,1,0,1,1] :> [0,  0,1,0,0,1,1,0,0]; //rot grün
              [0, 0,1,0,0,1,1,0,0] :> [0,  0,1,0,0,1,0,1,0]; //rot gelb
              [0, 0,1,0,0,1,0,1,0] :> [1,  0,1,0,0,1,0,0,1]; //rot rot   Hier bit8 notwendig, damit Unterschied zu Zustand 1
              [1, 0,1,0,0,1,0,0,1] :> [0,  0,1,0,1,1,0,0,1]; //gelb rot rot
              [0, 0,1,0,1,1,0,0,1] :> [0,  0,1,1,0,0,0,0,1]; //grün rot
              [0, 0,1,1,0,0,0,0,1] :> [0,  0,1,0,1,0,0,0,1]; //gelb rot
              [0, 0,1,0,1,0,0,0,1] :> [0,  0,1,0,0,1,0,0,1]; //rot rot  Wie Zustand 1


EQUATIONS "**************** Zähler-Gleichungen ********************************************


  bit0.clk = takt;          "synchroner Zähler: alle D-FF's erhalten den
  bit1.clk = takt;          "gleichen Takt
  bit2.clk = takt;
  bit3.clk = takt;
  bit4.clk = takt;
  bit5.clk = takt;
  bit6.clk = takt;
  bit7.clk = takt;
  bit8.clk = takt;
```

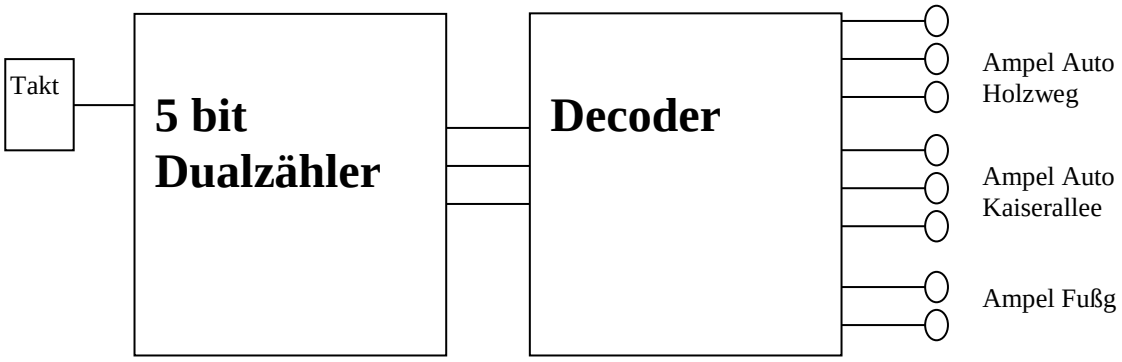
END

Beispiel 2:

```
MODULE ampel
declarations


//Ampel(Strassenkreuzung) mit Fussgaenger,  Ampelphasen verschieden lang
takt pin 11;
X0,X1,X2,X3,X4 node ISTYPE'BUFFER,REG';
r1,gl1,g1,r2,gl2,g2,rF,gF pin 14,15,16,17,18,19,20,21 ISTYPE'BUFFER,REG';
register=[X0,X1,X2,X3,X4,r1,gl1,g1,r2,gl2,g2,rF,gF ];

equations

register.clk=takt;

truth_table

([X0,X1,X2,X3,X4,  r1,gl1,g1,r2,gl2,g2,rF,gF ]:>[X0,X1,X2,X3,X4,  r1,gl1,g1,r2,gl2,g2,rF,gF]);

[0,0,0,0,0,  0,0,0,0,0,0,0,0]:>[0,0,0,0,0,  1,0,0,1,0,0,1,0]; //rot - rot
[0,0,0,0,0,  1,0,0,1,0,0,1,0]:>[0,0,0,0,1,  1,0,0,1,0,0,1,0];
[0,0,0,0,1,  1,0,0,1,0,0,1,0]:>[0,0,0,1,0,  1,0,0,1,0,0,1,0];
[0,0,0,1,0,  1,0,0,1,0,0,1,0]:>[0,0,0,1,1,  1,0,0,1,0,0,1,0];

[0,0,0,1,1,  1,0,0,1,0,0,1,0]:>[0,0,0,0,0,  1,1,0,1,0,0,1,0]; //rot,gelb - rot

[0,0,0,0,0,  1,1,0,1,0,0,1,0]:>[0,0,0,0,0,  0,0,1,1,0,0,1,0]; //grün - rot
[0,0,0,0,0,  0,0,1,1,0,0,1,0]:>[0,0,0,0,1,  0,0,1,1,0,0,1,0];
[0,0,0,0,1,  0,0,1,1,0,0,1,0]:>[0,0,0,1,0,  0,0,1,1,0,0,1,0];
[0,0,0,1,0,  0,0,1,1,0,0,1,0]:>[0,0,0,1,1,  0,0,1,1,0,0,1,0];

[0,0,0,1,1,  0,0,1,1,0,0,1,0]:>[0,0,0,0,0,  0,1,0,1,0,0,1,0]; //gelb - rot

[0,0,0,0,0,  0,1,0,1,0,0,1,0]:>[0,0,1,0,0,  1,0,0,1,0,0,1,0]; //rot - rot
[0,0,1,0,0,  1,0,0,1,0,0,1,0]:>[0,0,1,0,1,  1,0,0,1,0,0,1,0];
[0,0,1,0,1,  1,0,0,1,0,0,1,0]:>[0,0,1,1,0,  1,0,0,1,0,0,1,0];

[0,0,1,1,0,  1,0,0,1,0,0,1,0]:>[0,0,0,0,0,  1,0,0,1,1,0,1,0]; //rot - rot,gelb

[0,0,0,0,0,  1,0,0,1,1,0,1,0]:>[0,0,0,0,0,  1,0,0,0,0,1,1,0]; //rot - grün
[0,0,0,0,0,  1,0,0,0,0,1,1,0]:>[0,0,0,0,1,  1,0,0,0,0,1,1,0];
[0,0,0,0,1,  1,0,0,0,0,1,1,0]:>[0,0,0,1,0,  1,0,0,0,0,1,1,0];

[0,0,0,1,0,  1,0,0,0,0,1,1,0]:>[0,0,0,0,0,  1,0,0,0,1,0,1,0];//rot - gelb

[0,0,0,0,0,  1,0,0,0,1,0,1,0]:>[0,1,0,0,0,  1,0,0,1,0,0,1,0];//rot - rot
[0,1,0,0,0,  1,0,0,1,0,0,1,0]:>[0,1,0,0,1,  1,0,0,1,0,0,1,0];

[0,1,0,0,1,  1,0,0,1,0,0,1,0]:>[0,0,0,0,0,  1,0,0,1,0,0,0,1];//rot - rot, fuss grün
[0,0,0,0,0,  1,0,0,1,0,0,0,1]:>[0,0,0,0,1,  1,0,0,1,0,0,0,1];

[0,0,0,0,1,  1,0,0,1,0,0,0,1]:>[0,1,0,1,0,  1,0,0,1,0,0,1,0];//rot - rot, fuss rot
[0,1,0,1,0,  1,0,0,1,0,0,1,0]:>[0,0,0,0,0,  1,0,0,1,0,0,1,0];//Beginn wieder von vorne


END
```



Beispiel mit Zähler und Decoder:




```
MODULE Ampel
"Synchroner 5 Bit Binaerzähler, beschrieben mit Beschreibungssprache: Zaehler=Zaehler+1

DECLARATIONS "********** Ein- undAusgänge*****GWS_Offenburg**********

  takt      PIN 11;        "Takteingang    Ne555 Taster
//Ampelausgaenge:

  bit7,bit6,bit5,bit4,bit3,bit2,bit1,bit0  PIN 21,20,19,18,17,16,15,14  ISTYPE'BUFFER,COM';

  Q4,Q3,Q2,Q1,Q0 NODE ISTYPE'BUFFER,REG';
  zaehler=[Q4..Q0];  //5bit Zaehler 0 bis 31

Equations
zaehler=zaehler+1;

TRUTH_TABLE   (zaehler -> [bit7,bit6,bit5,bit4,bit3,bit2,bit1,bit0]);

              0 -> [0,1,0,0,1,0,0,1]; //rot   rot
              1 -> [0,1,0,0,1,0,0,1];
              2 -> [0,1,0,0,1,0,0,1];
              3 -> [0,1,0,0,1,0,0,1];

              4 -> [0,1,0,0,1,0,1,1]; //rot   gelb rot
              5 -> [0,1,0,0,1,0,1,1];

              6 -> [0,1,0,0,1,1,0,0];  //rot   grün
              7 -> [0,1,0,0,1,1,0,0];
              8 -> [0,1,0,0,1,1,0,0];
              9 -> [0,1,0,0,1,1,0,0];

             10 -> [0,1,0,0,1,0,1,0]; //rot   gelb
             11 -> [0,1,0,0,1,0,1,0];

             12 -> [0,1,0,0,1,0,0,1]; //rot rot
             13 -> [0,1,0,0,1,0,0,1];
             14 -> [0,1,0,0,1,0,0,1];
             15 -> [0,1,0,0,1,0,0,1];

             16 -> [0,1,0,1,1,0,0,1];//gelb rot rot
             17 -> [0,1,0,1,1,0,0,1];

             18 -> [0,1,1,0,0,0,0,1];//Ggruen rot
             19 -> [0,1,1,0,0,0,0,1];
             20 -> [0,1,1,0,0,0,0,1];
```

Synchroner 5 bit Zähler

Decoder

```
        21 -> [0,1,1,0,0,0,0,1];

        22 -> [0,1,0,1,0,0,0,1];//gelb rot
        23 -> [0,1,0,1,0,0,0,1];

        24 -> [0,1,0,0,1,0,0,1]; //rot rot
        25 -> [0,1,0,0,1,0,0,1];
        26 -> [0,1,0,0,1,0,0,1];
        27 -> [0,1,0,0,1,0,0,1];

        28 -> [1,0,0,0,1,0,0,1];//Fussgaenger
        29 -> [1,0,0,0,1,0,0,1];
        30 -> [1,0,0,0,1,0,0,1];
        31 -> [1,0,0,0,1,0,0,1];

EQUATIONS "**************** Zählertakt*************************

  [Q4..Q0].clk=takt;

END
```