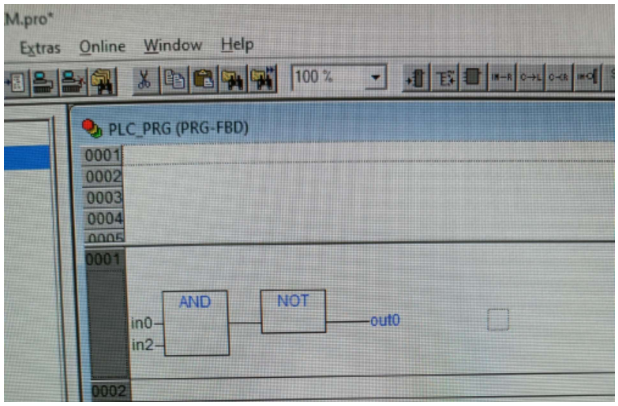
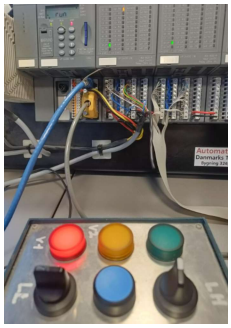
Basic Logic Functions

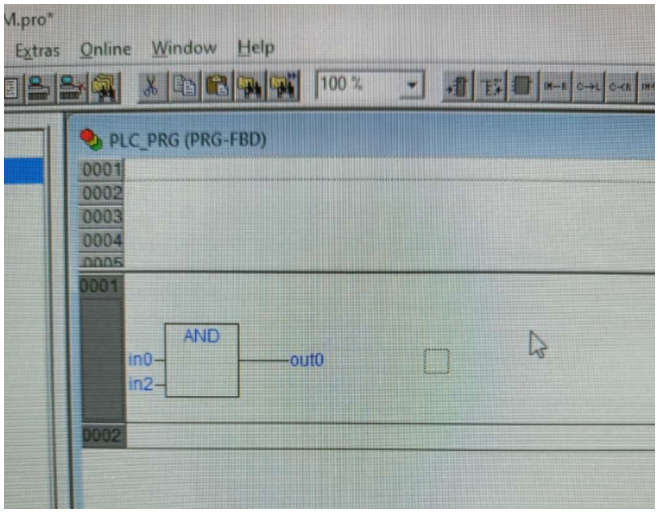
NAND

Jeg lavede den som en AND gate efter fulgt af en NOT gate. Men den kunne også laves som en ANDN, hvilket har samme funktion.

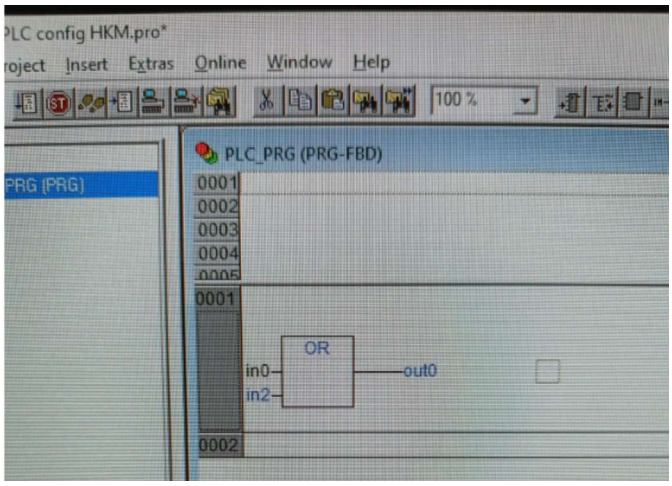




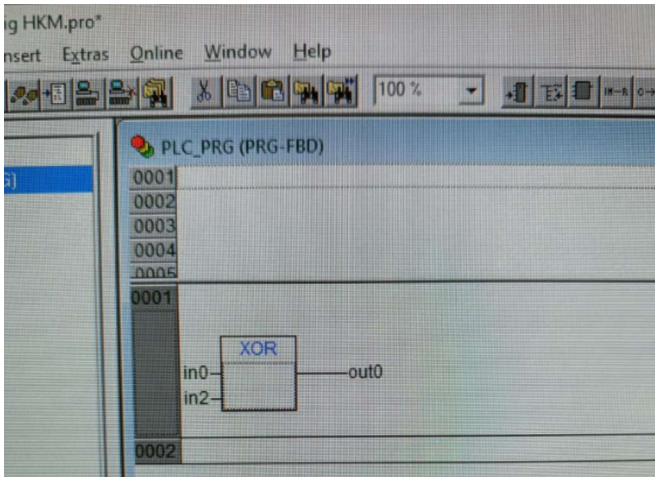
AND



OR

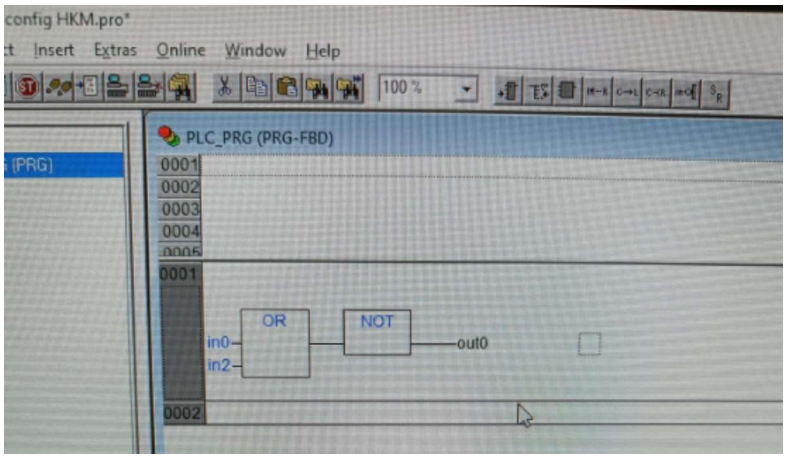


XOR

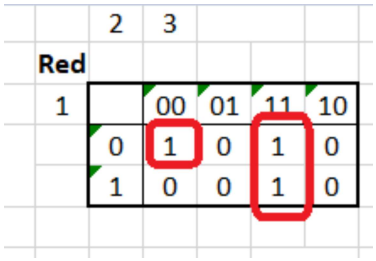


NOR

Igen har jeg lavet den som en sammensætning af en OR gate og en NOT gate. Som ville være det samme som ORN.



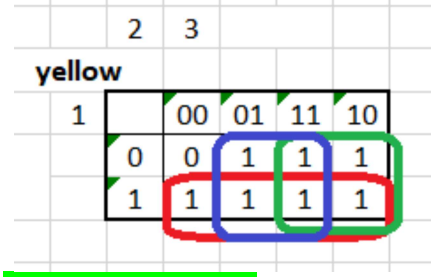
Logic combination



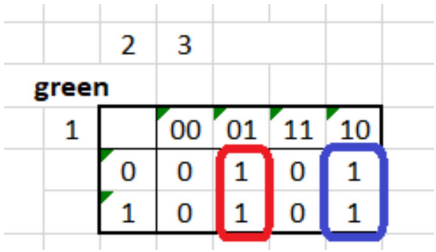
red = (**not** 1 **and not** 2 **and not** 3) **or** (2 **and** 3)
with(*Logic*) :
simplify((**not** *a* **and not** *b* **and not** *c*) **or** (*b* **and** *c*))

not (*a* **or** *b* **or** *c*) **or** *b* **and** *c* **(2.1)**

red = **not** (1 **or** 2 **or** 3) **or** (2 **and** 3)

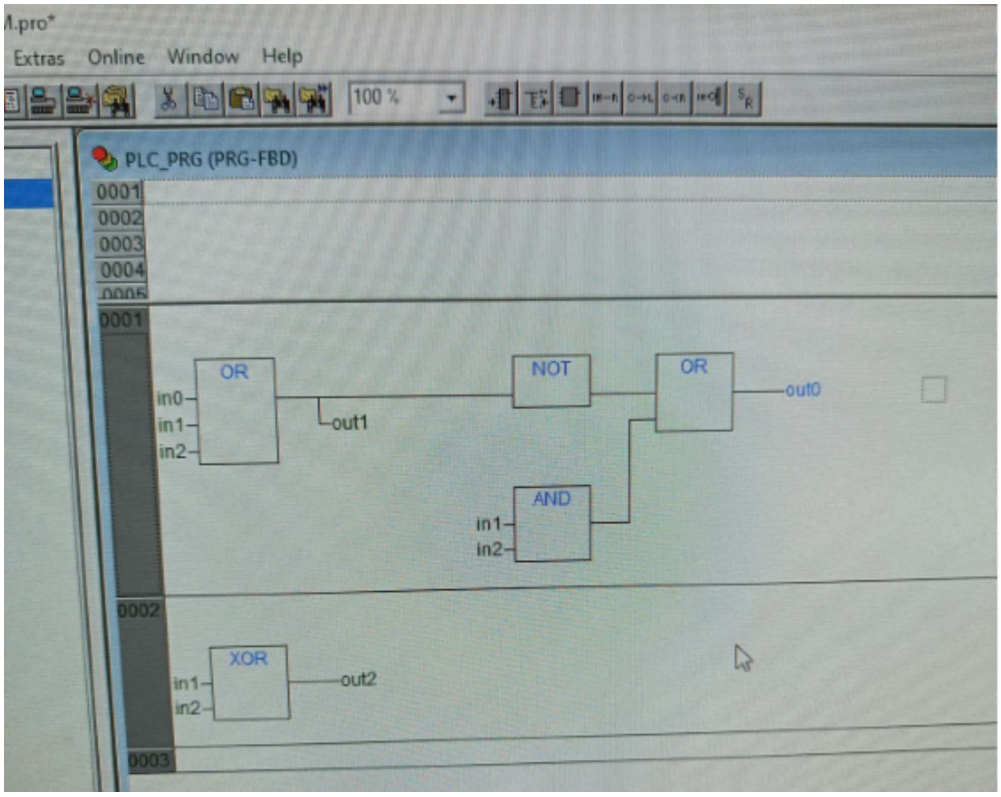


yellow = 1 **or** 2 **or** 3



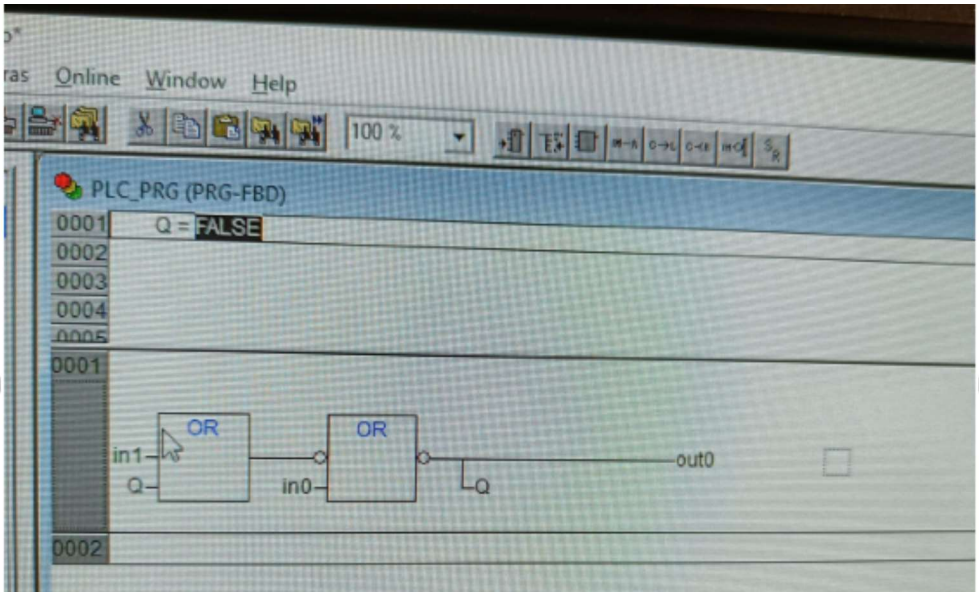
green = (**not** 2 **and** 3) **or** (2 **and not** 3)
green = 2 **xor** 3

out0 = red
out1 = yellow
out2 = green



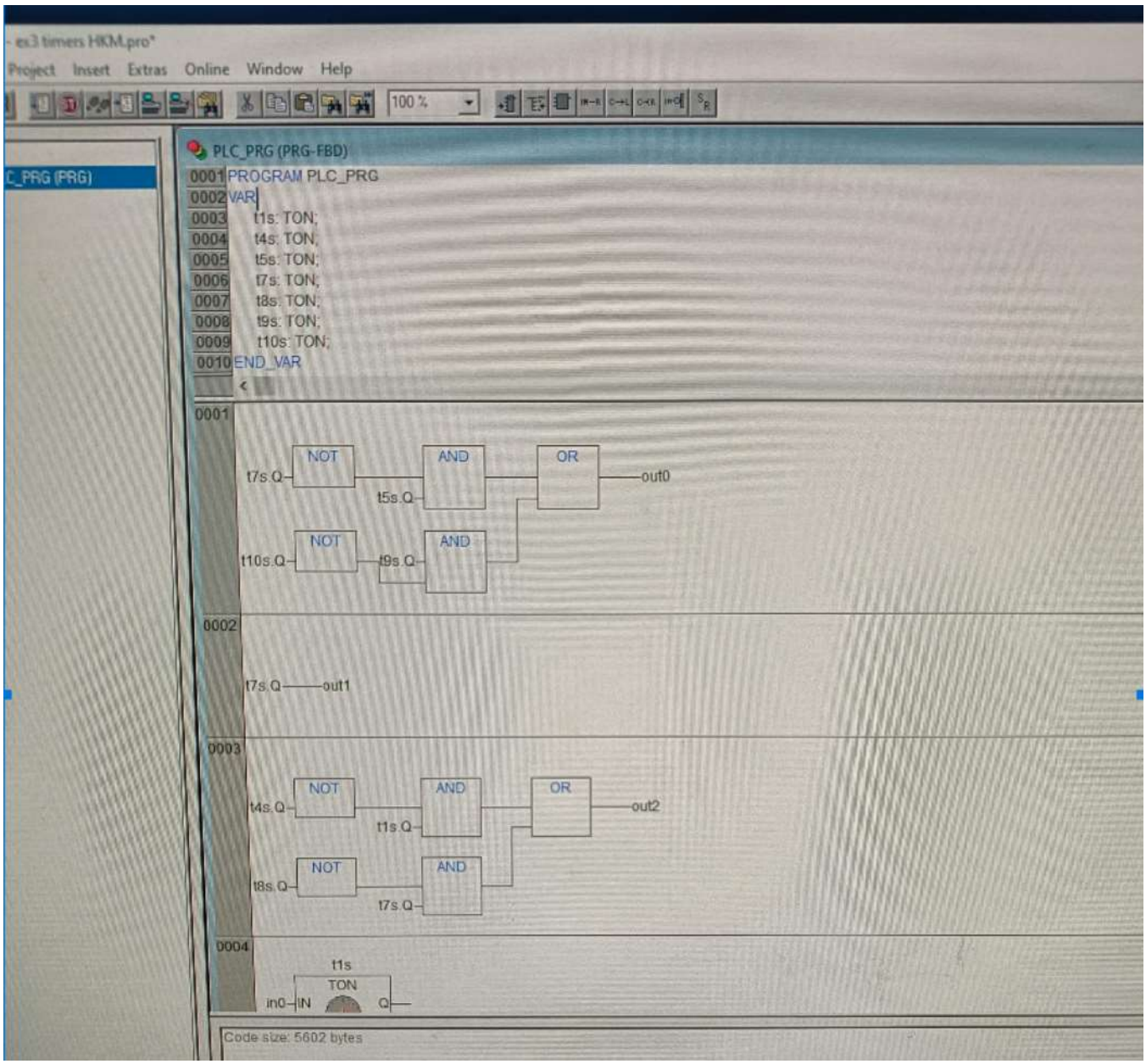
The number of logic gates necessary to implement this is 1xOR3, 1xNOT, 1xOR2, 1xAND, 1xXOR gate.

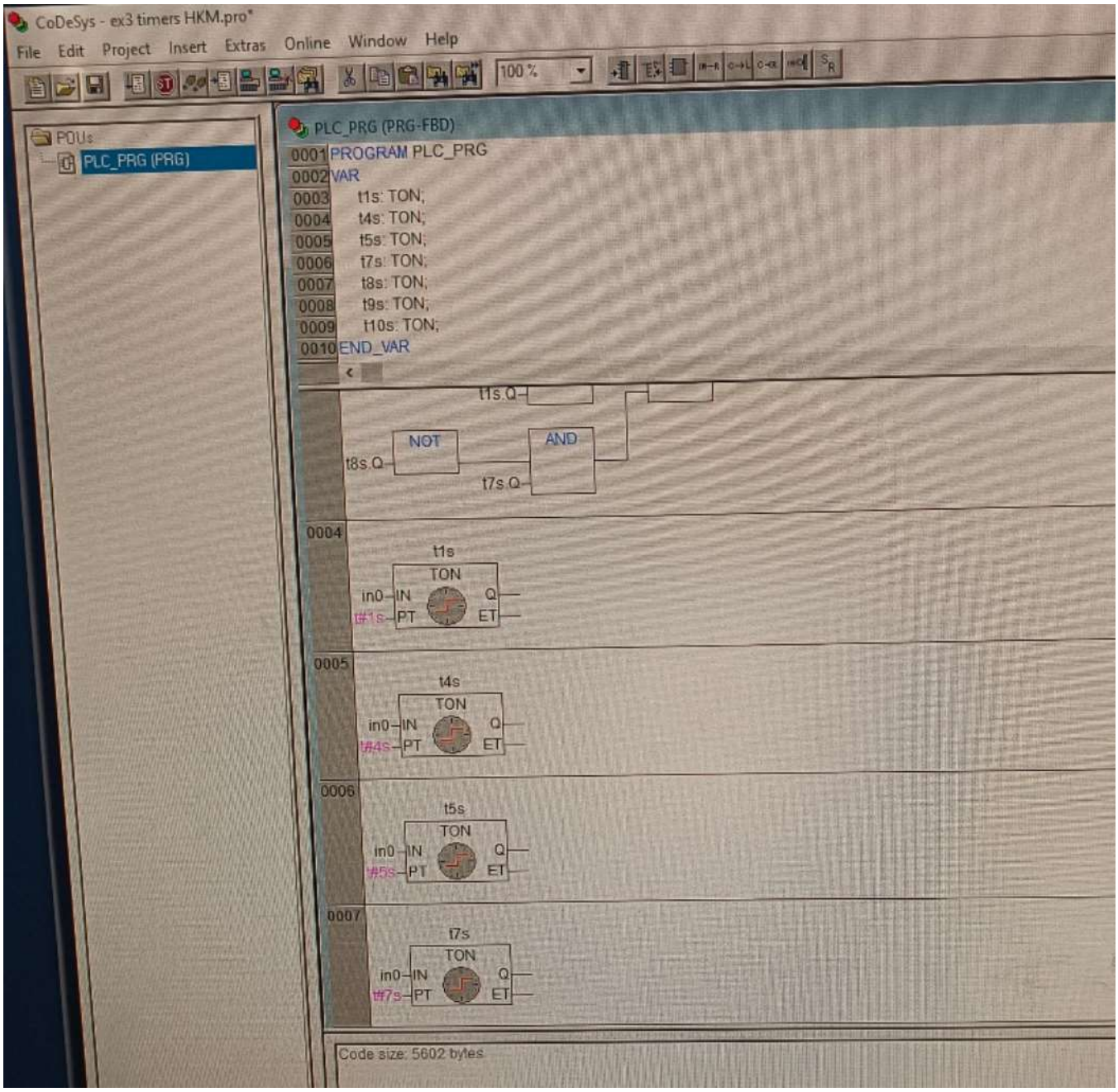
Latch



in1 is the middle push button.
in0 is the first switch button.
out0 = red LED

Timers


es3 timers HKM.pro*
Project Insert Extras Online Window Help
100 %
C_PRG (PRG)
PLC_PRG (PRG-FBD)
0001 PROGRAM PLC_PRG
0002 VAR
0003 t1s: TON;
0004 t4s: TON;
0005 t5s: TON;
0006 t7s: TON;
0007 t8s: TON;
0008 t9s: TON;
0009 t10s: TON;
0010 END_VAR
0001
t7s.Q
NOT
t5s.Q
AND
OR
out0
t10s.Q
NOT
t9s.Q
AND
0002
t7s.Q
out1
0003
t4s.Q
NOT
t1s.Q
AND
OR
out2
t8s.Q
NOT
t7s.Q
AND
0004
t1s
TON
in0
IN
Q
Code size: 5602 bytes


CoDeSys - ex3 timers HKM.pro*
File Edit Project Insert Extras Online Window Help
100 %
POUs
PLC_PRG (PRG)
PLC_PRG (PRG-FBD)
0001 PROGRAM PLC_PRG
0002 VAR
0003 t1s: TON;
0004 t4s: TON;
0005 t5s: TON;
0006 t7s: TON;
0007 t8s: TON;
0008 t9s: TON;
0009 t10s: TON;
0010 END_VAR
t1s.Q
NOT
AND
t8s.Q
t7s.Q
0004
t1s
TON
in0
IN
Q
t#1s
PT
ET
0005
t4s
TON
in0
IN
Q
t#4s
PT
ET
0006
t5s
TON
in0
IN
Q
t#5s
PT
ET
0007
t7s
TON
in0
IN
Q
t#7s
PT
ET
Code size: 5602 bytes