

**MACHINE** Clock  
**VARIABLES**  $m, h$

**INVARIANTS**  
 $inv1: m \in \mathbb{N}$   
 $inv2: h \in \mathbb{N}$   
 $inv3: m < 60$   
 $inv4: h < 24$

**THEOREMS**  
 $thm1: m < 59 \vee (m = 59 \wedge h < 23) \vee (m = 59 \wedge h = 23)$

**VARIANTS**  
 $24 * 60 - 1 - (m + h * 60)$

**EVENTS**  
**INITIALISATION**

**THEN**  
 $act1: m, h :| m' = 0 \wedge h' = 0$   
**END**

**tick\_min** *<convergent>*

**WHERE**  
 $grd1: m < 59$

**THEN**  
 $act1: m :| m' = m + 1$   
**END**

**tick\_hour** *<convergent>*

**WHERE**  
 $grd1: m = 59 \wedge h < 23$

**THEN**  
 $act1: m, h :| m' = 0 \wedge h' = h + 1$   
**END**

**tick\_midnight** *<ordinary>*

**WHERE**  
 $grd1: m = 59 \wedge h = 23$

**THEN**  
 $act1: m, h :| m' = 0 \wedge h' = 0$   
**END**

**END**