# Generic movement2.

## Data-layout.

|  |  |  |
| --- | --- | --- |
| **NPC data field** | **Generic value** | **Description** |
| NPC\_type | “22” | Value of the NPC type |
| NPC\_status | Movement action | Each status represents a movement function. |
| NPC\_x | X position |  |
| NPC\_y | Y position |  |
| NPC\_pattern | Sprite pattern |  |
| NPC\_color | Sprite color |  |
| NPC\_pattern2 | Sprite pattern |  |
| NPC\_color2 | Sprite color |  |
| NPC\_dx | X movement parameter | Contains the displacement.  Can be value or pointer (low byte) to movement path data. |
| NPC\_dy | Y movement parameter | Contains the displacement.  Can be value or pointer (low byte) to movement path data. |
| NPC\_ddx | X fine movement | Contains the fine movement (less than 1 pixel) |
| NPC\_ddy | Y fine movement | Contains the fine movement (less than 1 pixel) |
| NPC\_timer | Action timer | When reaching ‘0’ the next script action is processed |
| NPC\_counter | Bullet timer | When reaching ‘0’ a bullet is ‘cast’. |
| NPC\_hp | HP of the NPC | When reaching <1 the NPC will be turned in an NPC of the type defined in ‘NPC\_explosiontype’. |
| NPC\_xoffset | Collision window offset |  |
| NPC\_yoffset | Collision window offset |  |
| NPC\_xsize | Collision window size |  |
| NPC\_ysize | Collision window size |  |
| NPC\_fx | Action data pointer | (low byte) |
| NPC\_fy | Action data pointer | (high byte) |
| NPC\_score | Score to add when destroyed | 16 bit BCD value |
| NPC\_explosiontype | Type to cast on destroyed | When reaching <1 the NPC will be turned in an NPC of the type defined in ‘NPC\_explosiontype’. |
| NPC\_subtype | Processing information | Contains flags for specific processing of the NPC. |
| NPC\_bullettype / NPC\_lx | Type off bullet to cast/ Tmp value for fine move |  |
| NPC\_bullettrigger/ NPC\_ly | Time to recast bullet/ Tmp value for fine move |  |
| NPC\_hitjump | Jump to this address on hit | Contains the low byte address value to jump to in the Action data. |
| NPC\_specialaction | contains the special action# | Contains the number of the special action to check. |
| NPC\_animationtimer | Animation speed | When reaches ‘0’ the next animation action is processed. |
| NPC\_animationdata | Animation data pointer | 16 bit value that points to the animation data actions. |

### NPC\_subtype

7 6 5 4 3 2 1 0

[ L | S | H | A | | sp| C | C ]

L – Locking. Used for MC sub weapon homing. 1= homing missiles detect this NPC. 0= not.

S – Sprite layers. Number of sprite layers. 1 = 2 sprites layered. 0 = 1 Sprite.

H – Hit MC. Set the behavior when colliding with MC. 1 = hit. 0 = nothing. Note: If NPC\_hitjump != 0 then the action data is changed to the value (low byte) and executed.

A – Animated. 1= animated, 0 = no animation. Animation speed and data is stored in NPC\_animationdata and NPC\_animationspeed.

C – Collision type. 00 = normal collision, 01 = bullet collision, 10 = subweap collision, 11 = mc collision.

Sp – Special action processing. 1= process a special action every ISR call. Needed for very specific npc behaviour. When 0 then no special action to perform/check.

### Movement actions (NPC\_status)

#### Status 0 – Fixed X / Fixed Y

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Movement in pixels. (-127 – 127) |
| NPC\_dy | Movement in pixels. (-127 – 127) |
| NPC\_timer | Duration of the movement until next action is processed |
|  |  |  |

#### Status 1 – Var X / Fixed Y

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Low byte pointer to movement path. |
| NPC\_dy | Movement in pixels. (-127 – 127) |
| NPC\_timer | Duration of the movement until next action is processed |
|  |  |  |

#### Status 2 – Fixed X / Var Y

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Movement in pixels. (-127 – 127) |
| NPC\_dy | Low byte pointer to movement path. |
| NPC\_timer | Duration of the movement until next action is processed |
|  |  |  |

#### Status 3 – Var X / Var Y

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Low byte pointer to movement path. |
| NPC\_dy | Low byte pointer to movement path. |
| NPC\_timer | Duration of the movement until next action is processed |
|  |  |  |

#### Status 4 – Var X2 / Fixed Y

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Low byte pointer to movement path. Values are multiplied by 2 |
| NPC\_dy | Movement in pixels. (-127 – 127) |
| NPC\_timer | Duration of the movement until next action is processed |
|  |  |  |

#### Status 5– Fixed X / Var Y2

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Movement in pixels. (-127 – 127) |
| NPC\_dy | Low byte pointer to movement path. Values are multiplied by 2 |
| NPC\_timer | Duration of the movement until next action is processed |
|  |  |  |

#### Status6 – Var X2 / Var Y2

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Low byte pointer to movement path. Values are multiplied by 2 |
| NPC\_dy | Low byte pointer to movement path. Values are multiplied by 2 |
| NPC\_timer | Duration of the movement until next action is processed |
|  |  |  |

#### Status7 – Fine X /Fine Y

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Movement in pixels. (-127 – 127) |
| NPC\_dy | Movement in pixels. (-127 – 127) |
| NPC\_ddx | Fine movement . (-127 – 127). max speed is 127 or -127 |
| NPC\_ddy | Fine movement . (-127 – 127). max speed is 127 or -127 |
| NPC\_timer | Duration of the movement until next action is processed |
|  | NPC\_bullettimer  NPC\_bullettrigger | Are overwritten by this status. It is not possible to use the NPC\_counter to cast bullets. Manually re-init after status7 |

## Action commands

### 0 – init status 0

db 0,NPC\_dx,NPC\_dy,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Movement in pixels. (-127 – 127) |
| NPC\_dy | Movement in pixels. (-127 – 127) |
| NPC\_timer | Duration of the movement until next action is processed |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 1 – init status 1

db 1,NPC\_dx,NPC\_dy,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Low byte pointer to movement path. |
| NPC\_dy | Movement in pixels. (-127 – 127) |
| NPC\_timer | Duration of the movement until next action is processed |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 2 – init status 2

db 2,NPC\_dx,NPC\_dy,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Movement in pixels. (-127 – 127) |
| NPC\_dy | Low byte pointer to movement path. |
| NPC\_timer | Duration of the movement until next action is processed |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 3 – init status 3

db 3,NPC\_dx,NPC\_dy,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Low byte pointer to movement path. |
| NPC\_dy | Low byte pointer to movement path. |
| NPC\_timer | Duration of the movement until next action is processed |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 4 – init status4

db 4,NPC\_dx,NPC\_dy,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Low byte pointer to movement path. Values are multiplied by 2 |
| NPC\_dy | Movement in pixels. (-127 – 127) |
| NPC\_timer | Duration of the movement until next action is processed |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 5 – init status5

db 5,NPC\_dx,NPC\_dy,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Movement in pixels. (-127 – 127) |
| NPC\_dy | Low byte pointer to movement path. Values are multiplied by 2 |
| NPC\_timer | Duration of the movement until next action is processed |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 6 – init status6

db 6,NPC\_dx,NPC\_dy,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Low byte pointer to movement path. Values are multiplied by 2 |
| NPC\_dy | Low byte pointer to movement path. Values are multiplied by 2 |
| NPC\_timer | Duration of the movement until next action is processed |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 7 – init status7

db 7,NPC\_dx,NPC\_dy, NPC\_ddx,NPC\_ddy,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_dx | Movement in pixels. (-127 – 127) |
| NPC\_dy | Movement in pixels. (-127 – 127) |
| NPC\_ddx | Fine movement . (-127 – 127). max speed is 127 or -127 |
|  | NPC\_ddy | Fine movement . (-127 – 127). max speed is 127 or -127 |
|  | NPC\_timer | Duration of the movement until next action is processed |
|  | Action processing is ended | No other actions are processed. |
|  | NPC\_bullettimer  NPC\_bullettrigger | Are overwritten by this status. It is not possible to use the NPC\_counter to cast bullets. Manually re-init after status6 |

### 8 – set timer

db 8,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_timer | Duration of the movement until next action is processed |
|  |  |
|  |  |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 9 – jump to

db 9,NPC\_fx

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_fx | Low byte of action data address to jump to. |
|  |  |
|  |  |
|  | Action processing NOT ended | Other actions are processed. |
|  |  |  |

### 10 – move x to mc (max -2 – 2)

db 10

|  |  |  |
| --- | --- | --- |
| **Init:** |  |  |
|  |  |
|  |  |
|  | Action processing NOT ended | Other actions are processed. |
|  |  |  |

### 11 – aim at MC

db 11,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_timer | Duration of the movement until next action is processed |
|  |  |
|  |  |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 12 – move x/y random (max -2 - 2)

db 12,NPC\_timer

|  |  |  |
| --- | --- | --- |
| **Init:** | NPC\_timer | Duration of the movement until next action is processed |
|  |  |
|  |  |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

### 13 – Free NPC

db 13

|  |  |  |
| --- | --- | --- |
| **Init:** |  |  |
|  |  |
|  |  |
|  | Action processing is ended | No other actions are processed. |
|  |  |  |

## Initialization.