Waypoint

```
domain = "Signal";
displayName = "Waypoint";
brief = "Waypoint Controller with way points";
componentType = "ComponentSignal";
author = "Petter Krus <petter.krus@liu.se>";
affiliation = "Division of Fluid and Mechatronic Systems, Linköping University";
SetFilenames[defaultPath, domain, displayName];
ResetComponentVariables[];
```

```
inputVariables = {
    {s1, 0., double, "", "state 1"},
    {xc, 0., double, "m", "x-position"},
    {yc, 0., double, "m", "y-position"}
  };
```

```
inputParameters = {
    {R, 6367500., double, "m", "Earth radius"},
    {alt1, 0, double, "m", "altitude 1"},
    {v1, 200, double, "m/s", "ref. velocity 1"},
    {wptol, 500, double, "m", "waypoint tolerance"},
    {xcWp1, 15.1669, double, "deg", "waypoint longitude"},
    {ycWp1, 58.3812, double, "deg", "waypoint lattitude"}
  };
```

```
outputVariables = {
    {set1, 1., double, "", "set state"},
    {altitudeRef, 0., double, "m", "reference altitude"},
    {headingRef, 0., double, "rad", "reference heading"},
    {velocityRef, 0., double/s, "m", "reference velocity"},
    {distanceWp, 0., double, "m", "distance to wp"}
  };
```

$$d2r = \frac{N[Pi, 6]}{180}$$

0.0174533

$$r2d = \frac{180}{N[Pi, 6]}$$

57.2958

```
distanceWpe = d2r Sqrt[(xc - xcWp1)² (R Cos[d2r yc])² + (yc - ycWp1)² R²];
head1 = Atan2L[(xcWp1 - xc) R Cos[d2r yc], (ycWp1 - yc) R];
```

```
expressions = {
    {set1, s1 onPositive[(wptol - distanceWpe)]},
    {altitudeRef, s1 alt1},
    {headingRef, s1 head1},
    {velocityRef, s1 v1},
    {distanceWp, distanceWpe}
  };
```

```
Compgen[file]
```