

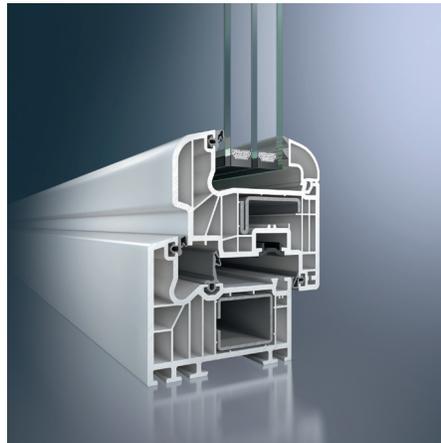
# Passive House Windows

## Passive House Certified and Recommended Systems



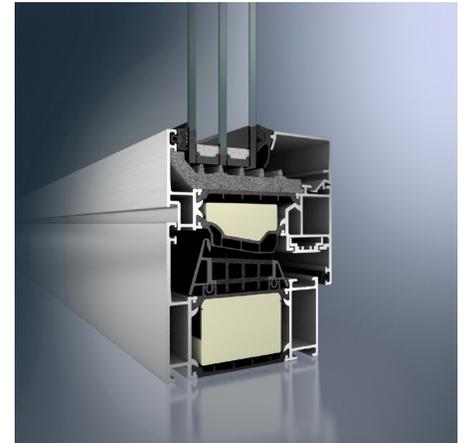
Schüco SI82 ThermoPlus uPVC Window

The Schüco SI82 ThermoPlus uPVC system with three drainage levels and patented aluminum reinforcement rolling technology is based on 7-chamber uPVC technology. This high-insulation system can be used to build passive and net-zero energy buildings with narrow face widths for houses, economically and to high standards.



Schüco SI82 Rondo uPVC Window

Schüco SI82 window systems have three levels of drainage and conventional steel reinforcing profiles. Thanks to industrial fabrication and fast availability, they can now be used to build low-energy windows for houses economically and to high standards. SI82 window and door systems are suitable for a wide variety of uses in both new-build and renovation projects. An extensive range of accessories ensures a high level of system security.



Schüco AWS 90.SI+ Aluminum Window

The Schüco AWS 90.SI+ aluminum window combines the benefits of aluminum with pioneering thermal insulation for sustainable architecture.



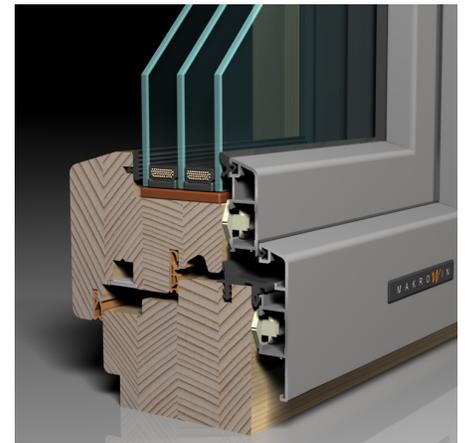
Makrowin MW88 G2 Wood Window

As the most recent addition to our Passive House fenestration offering, the MW88 G2 window represents the state-of-the-art in engineered wood frame technology. This window was recently certified at the Passivhaus Institute (PHI) in Darmstadt, achieving  $U_f = 0.13 \text{ Btu}/(\text{hr}\cdot\text{ft}^2\cdot^\circ\text{F})$ . At 88 mm thickness, this window profile represents the thinnest PHI-certified wood window design.



Makrowin MW88 Wood Window

Makrowin produces some of the most energy efficient wood windows in Europe. MW88 is their most widely used window frame for applications utilizing high-performance triple-pane glass. At 88 mm deep, the sash frame is capable of utilizing insulated glass up to R-14, enabling the frame to achieve PH-level  $U_w$  values. The sash and frame are exceptionally strong, making them suitable for extra large window assemblies up to 8 ft in height.



Makrowin MW88 Classic Wood/Aluminum Window

For demanding customers who desire the rich warm texture of wood on the inside and the durability of aluminum on the outside, these outstanding windows offer uncompromising performance and beautiful styling. The aluminum cladding provides the window frame with decades of protection from rain, ice and harmful UV radiation. Our aluminum frames are of the absolute best quality available. We utilize 100% extruded materials, we weld all mitered corners and use the highest quality powder-coated finishes.

## Passive House Window Parameters

|   | SI82 ThermoPlus                   | SI82                            | AWS 90.SI+                    | MW88 G2                                      | MW88   | MW88 Classic            |   |
|---|-----------------------------------|---------------------------------|-------------------------------|--|--|-------------------------|---|
| Product family                                    | Schüco                            | Schüco                          | Schüco                        | Makrowin                                     | Makrowin                                     | Makrowin                |   |
| Material  | uPVC                              | uPVC                            | Aluminum                      | Wood   | Wood   | Wood with Aluminum Clad |   |
| Passive House Institute                           | Certified                         | Specification                   | Specification                 | Certified                                    | Specification                                | Specification           |   |
| Frame depth                                       | 82<br><b>3.23</b>                 | 82<br><b>3.23</b>               | 82<br><b>3.23</b>             | 88<br><b>3.46</b>                            | 88<br><b>3.46</b>                            | 105<br><b>4.13</b>      | [mm]<br>[in]  |
| Frame face width (sill / head / jamb)             | 120<br><b>4.72</b>                | 120<br><b>4.72</b>              | 117<br><b>4.61</b>            | 151 / 131 / 131<br><b>5.94 / 5.15 / 5.15</b> | 137 / 119 / 119<br><b>5.39 / 4.69 / 4.69</b> | 119<br><b>4.69</b>      | [mm]<br>[in]  |
| Possible glazing thickness                        | 18 - 52<br><b>0.71 - 2.05</b>     | 18 - 52<br><b>0.71 - 2.05</b>   | 26 - 52<br><b>1.02 - 2.05</b> | 44<br><b>1.73</b>                            | 44<br><b>1.73</b>                            | 44<br><b>1.73</b>       | [mm]<br>[in]  |
| Thermal insulation $U_f$                          | 0.75 - 0.98<br><b>0.13 - 0.17</b> | 1.0 - 1.1<br><b>0.18 - 0.19</b> | 1.0<br><b>0.176</b>           | 0.773<br><b>0.132</b>                        | 1.014<br><b>0.173</b>                        | 1.084<br><b>0.185</b>   | [W/(m <sup>2</sup> .K)]<br>[Btu/(hr.ft <sup>2</sup> .°F)] |
| Thermal bridge coefficient $\Psi_{\text{spacer}}$ | 0.028<br><b>0.016</b>             | 0.028<br><b>0.016</b>           | -<br>-                        | 0.030<br><b>0.017</b>                        | 0.030<br><b>0.017</b>                        | 0.033<br><b>0.019</b>   | [W/(m.K)]<br>[Btu/(hr.ft <sup>2</sup> .°F)]               |

## Passive House Glass Parameters

|                                    | Climatop ONE          |                       | Climatop ULTRA N      |                       | Climatop LUX          |                       |   |
|------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---|
| Fill (90%)                         | Argon                 | Krypton               | Argon                 | Krypton               | Argon                 | Krypton               |   |
| Number of glass panes              | 3                     | 3                     | 3                     | 3                     | 3                     | 3                     | [ ]   |
| Thermal insulation $U_g$           | 0.515<br><b>0.088</b> | 0.410<br><b>0.070</b> | 0.615<br><b>0.105</b> | 0.515<br><b>0.088</b> | 0.721<br><b>0.123</b> | 0.615<br><b>0.105</b> | [W/(m <sup>2</sup> .K)]<br>[Btu/(hr.ft <sup>2</sup> .°F)] |
| Solar heat gain coefficient (SHGC) | 0.34                  | 0.34                  | 0.50                  | 0.50                  | 0.62                  | 0.62                  | [ ]   |
| Visual Transmittance               | 0.58                  | 0.58                  | 0.71                  | 0.71                  | 0.73                  | 0.73                  | [ ]   |
| R-Value                            | R-11                  | R-14                  | R-10                  | R-11                  | R-8                   | R-10                  | [hr.ft <sup>2</sup> .°F/Btu]                              |
| Sound Insulation                   | 32                    | 35                    | 32                    | 35                    | 32                    | 35                    | [dB]  |

All glazings are manufactured in the configuration 4-16-4-16-4 mm with thermal spacer SWISSPACER V.