

## Product information

# VELUX INTEGRA<sup>®</sup> Solar top-operated centre-pivot pine roof window GGL



### Product description

- No wiring – photovoltaic solar cell on the window top cover powers the window operator
- Icon based control pad with eight pre-set programs. The programs can manage products and control the indoor climate – also possible to design personal programs
- Pre-installed hidden window operator
- Silent motor operation
- Built-in rain sensor ensures that the window closes automatically in case of rain
- Easy installation of solar powered decoration and sunscreening products
- Control pad uses secure radio frequency (RF) technology to operate individual or groups of roof windows, blinds, awnings and roller shutters from anywhere in the building
- Control pad can operate up to 200 products
- Rechargeable battery charged by the PV solar cell
- Safety circuit prevents battery from total discharge
- Ventilation flap allows fresh air to circulate even when your window is closed
- Integrated dust and insect filter

### Roof pitch

- Can be installed in roof pitches between 15° and 90°

### Materials

- High quality natural pinewood coated with impregnation and layers of water-based acrylic clear lacquer or white paint
- VELUX ThermoTechnology<sup>™</sup> insulation ensures an excellent energy performance
- Maintenance-free exterior covers in lacquered aluminium, copper or zinc

### Downloads

For installation instructions, CAD drawings, 3D BIM objects, 3D GDL objects etc, please visit [www.velux.bg](http://www.velux.bg).

### Certifications



The VELUX product factories guarantee quality systems implementation process and environmental management systems through appropriate accreditations ISO 9001 and ISO 14001

**EUTR** In compliance with the EU Timber Regulation (EUTR), EU regulation 995/2010

**REACH** We are aware of the REACH regulation and acknowledge the obligations. No products are obliged to be registered in accordance to REACH and none of our products contains any Substances of Very High Concern.

**Available sizes and daylight area**

	472 mm	550 mm	660 mm	780 mm	942 mm	1140 mm	1340 mm
778 mm		<b>GGL CK02</b> (0.22)					
978 mm	<b>GGL BK04</b> (0.29)	<b>GGL CK04</b> (0.29)	<b>GGL FK04</b> (0.38)	<b>GGL MK04</b> (0.47)	<b>GGL PK04</b> (0.60)		<b>GGL UK04</b> (0.91)
1178 mm		<b>GGL CK06</b> (0.37)	<b>GGL FK06</b> (0.47)	<b>GGL MK06</b> (0.59)	<b>GGL PK06</b> (0.75)	<b>GGL SK06</b> (0.95)	
1398 mm			<b>GGL FK08</b> (0.58)	<b>GGL MK08</b> (0.72)	<b>GGL PK08</b> (0.92)	<b>GGL SK08</b> (1.16)	<b>GGL UK08</b> (1.40)
1600 mm				<b>GGL MK10</b> (0.85)	<b>GGL PK10</b> (1.07)	<b>GGL SK10</b> (1.35)	<b>GGL UK10</b> (1.63)

**Lining measurements**

Size	Width (mm)
BK--	417
CK--	495
FK--	605
MK--	725
PK--	887
SK--	1085
UK--	1285

Size	Height (mm)
--02	719
--04	919
--06	1119
--08	1339
--10	1549

( ) = Effective daylight area, m<sup>2</sup>



**Recommended application**

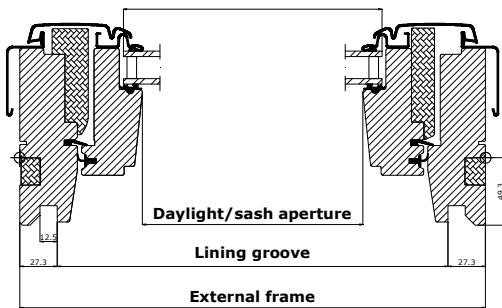
VELUX INTEGRA® Solar roof windows are

- perfect for replacement of old roof windows as no wiring is required
- ideal for out-of-reach situations or when extra convenience is needed

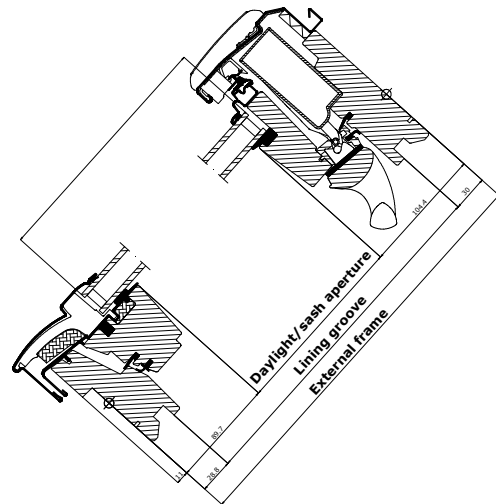
VELUX INTEGRA® control pad with intelligent programs ensures

- a perfect level of energy efficiency and comfort
- easy ventilation and better indoor air quality

**Width**



**Height**



### Technical values

	--57	--60	--66	--70	--73
<b>U<sub>w</sub> [W/m<sup>2</sup>K]</b>	1.2	1.2	1.0	1.3	1.2
<b>U<sub>g</sub> [W/m<sup>2</sup>K]</b>	1.0	1.0	0.7	1.1	1.0
<b>R<sub>w</sub> [dB]</b>	37	37	37	35	35
<b>g [ ]</b>	0.30	0.30	0.50	0.64	0.52
<b>τ<sub>v</sub> [ ]</b>	0.79	0.61	0.69	0.79	0.75
<b>τ<sub>UV</sub> [ ]</b>	0.05	0.05	0.05	0.05	0.05
<b>Air permeability [class]</b>	4	4	4	4	4

Thermal improvements such as lower U-value (U<sub>w</sub>) and lower linear heat loss coefficient (φ) can, for some variants, be obtained with frame insulation collar and/or recessed installation.

### Glazing structure

	--57	--60	--66	--70	--73
<b>Inner glass pane</b>	2 x 3 mm laminated float with low ε coating	2 x 3 mm laminated float with low ε coating	2 x 3 mm laminated float with low ε coating	2 x 3 mm laminated float with low ε coating	2 x 3 mm laminated float with low ε coating
<b>Middle glass pane</b>	-	-	3 mm heat strengthened float with low ε coating	-	-
<b>Outer glass pane</b>	6 mm toughened with coatings	6 mm toughened with coatings	4 mm toughened with coatings	4 mm toughened	4 mm toughened
<b>Cavity</b>	15 mm	15 mm	2 x 12 mm	15 mm	15 mm
<b>Glass panes</b>	Double	Double	Triple	Double	Double
<b>Gas filling</b>	Argon	Argon	Argon	Argon	Argon

## Glazing features

		--57	--60	--66	--70	--73
	<b>Heat insulation</b> Low energy glazing provides reduced heat loss through the window and enhanced indoor comfort.	••	••	•••	•	••
	<b>Solar gain</b> In the wintertime, the heat from the sun entering through the windows is a usable solar gain.	•	•	••	•••	••
	<b>Solar protection</b> In warm climates and in rooms with large window areas, a sun protective coating provides a better indoor climate during summer periods. Alternatively, exterior sunscreening can be installed.	•••	•••			
	<b>Sound insulation</b> A combination of laminated glass and optimal glass thickness provides better sound insulation. Frame/sash construction and gaskets are equally important.	•••	•••	•••	••	••
	<b>Security</b> Thicker laminated inner glass pane designed to increase resistance to manual attack (burglary).		•	•	•	•
	<b>Energy balance</b> The energy balance represents the ability of the roof window to utilise the passive solar gain and keep in the heat during winter and its ability to protect against the risk of overheating during summer. Sunscreening products can further improve indoor summer comfort.	✓	✓	✓	✓	✓
	<b>Safety</b> Laminated inner glass is designed to hold the fragments together if the glass breaks. We recommend that you consider using glass units with laminated glass on the inside for windows placed above areas where people sleep, play or work.	✓	✓	✓	✓	✓
	<b>Outside strength</b> Toughened outer glass pane makes your glazing more resistant to hail, heavy wind and snow loads.	✓	✓	✓	✓	✓
	<b>Delayed fading of materials</b> Inner laminated glass protects materials behind the glass against UV radiation and therefore delays fading of the materials.	✓	✓	✓	✓	✓
	<b>Rain noise reduction</b> The combination of laminated glass and extra thick glass helps provide a significant, audible reduction of rainfall sound. Frame/sash construction and gaskets are equally important.	✓	✓			
	<b>Easy-to-clean</b> The easy-to-clean coating minimises the cleaning frequency of the outer glass pane and gives you a clearer view in case of rain.	✓	✓			

• Good   •• Better   ••• Best   ✓ Feature included in glazing variant

### Technical values, ventilation through ventilation flap

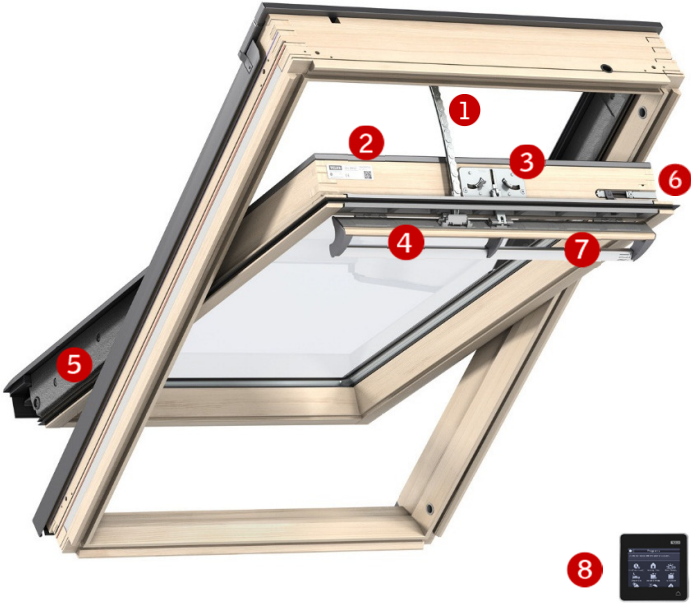
Property	Windows with double glazing					
	Width					
	CK--	FK--	MK--	PK--	SK--	UK--
Air flow characteristics [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Air flow exponent [-]	tbd	tbd	tbd	tbd	tbd	tbd
Ventilation capacity at 4 Pa [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Ventilation capacity at 8 Pa [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Ventilation capacity at 10 Pa [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Ventilation capacity at 20 Pa [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Equivalent area through ventilation flap [mm <sup>2</sup> ]	tbd	tbd	tbd	tbd	tbd	tbd
Geometrical free area [mm <sup>2</sup> ]	tbd	tbd	tbd	tbd	tbd	tbd

tbd: to be determined

Property	Windows with triple glazing					
	Width					
	CK--	FK--	MK--	PK--	SK--	UK--
Air flow characteristics [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Air flow exponent [-]	tbd	tbd	tbd	tbd	tbd	tbd
Ventilation capacity at 4 Pa [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Ventilation capacity at 8 Pa [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Ventilation capacity at 10 Pa [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Ventilation capacity at 20 Pa [l/s]	tbd	tbd	tbd	tbd	tbd	tbd
Equivalent area through ventilation flap [mm <sup>2</sup> ]	tbd	tbd	tbd	tbd	tbd	tbd
Geometrical free area [mm <sup>2</sup> ]	tbd	tbd	tbd	tbd	tbd	tbd

tbd: to be determined

**Visible features**



**1 Window opening**  
When operated with the control pad, the window opens variably up to 200 mm. The window can also be opened manually, eg in case of power failure



**2 Data plate**  
Each VELUX roof window has a unique data plate showing type, size, variant etc of the window. QR code with link to local mobile website



**3 Lock casing**  
Electro-galvanised steel



**4 Ventilation flap with control bar**  
The ventilation flap is designed with a control bar to allow for manual operation



**5 Excellent insulation**  
Elements of expanded polystyrene ensure an excellent energy performance



**6 Barrel bolt**  
The roof window can be rotated and secured in position with a barrel bolt to ensure safe and easy cleaning of the outside pane from the inside

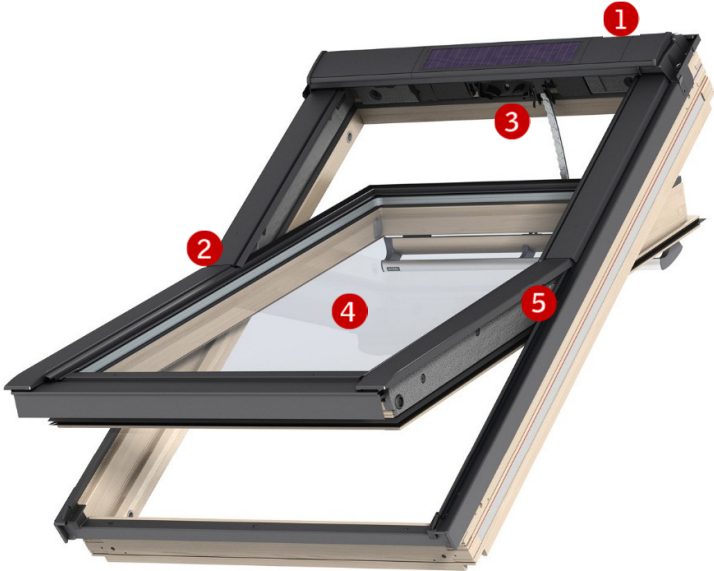


**7 Brackets for accessories**  
With the pre-installed VELUX Pick&Click!™ brackets, installation of solar powered blinds could not be easier



**8 Control pad**  
Unique VELUX INTEGRA® control pad featuring touch screen with swipe function and pre-set programs

**Visible features**



**1 Rain sensor**  
The built-in rain sensor ensures that the window closes automatically if it starts raining



**2 Click-on covers**  
Click-on covers make installation easier, faster and safer



**3 Window operator and chain**  
Fully integrated, hidden motor with chain. Silent motor operation



**4 Laminated pane**  
Laminated inner glass on all variants for personal safety



**5 Pivot hinge**  
VELUX high quality pivot hinge provides stability and perfect sash balance. Electro-galvanised steel

## Cleaning and maintenance



To clean the outer pane from the inside, rotate sash and secure in cleaning position with barrel bolt.



VELUX repair and maintenance kits are available.

## Exterior covers

Material	NCS standard colour	RAL nearest standard colour
Lacquered aluminium (-0--) grey	S 7500-N	7043
Lacquered aluminium (-5--) black	S 9000-N	9005
Copper (-1--)	-	-
Titanium zinc (-3--)	-	-

Special colour requests, please contact [www.velux.bg](http://www.velux.bg).

## Interior finish

Clear lacquer	Impregnation and layers of water-based acrylic lacquer
White paint	Impregnation and layers of water-based acrylic lacquer and paint, NCS standard colour: S 0500-N, nearest RAL standard colour: 9003.

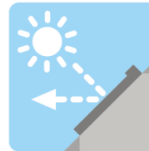
Special colour requests, please contact [www.velux.bg](http://www.velux.bg).

## Blinds, awnings and shutters



### Interior suncreening

- Blackout blind ▲▲
- Roller blind ▲▲
- Flying pleated blind ●
- Double pleated energy blind ●
- Venetian blind ●
- Duo blackout blind ●



### Exterior suncreening

- Awning blind ▲▲
- Roller shutter ▲▲



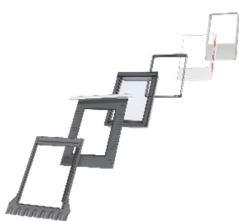
### Additional accessories

- Insect roller screen ●

▲▲ Available in manual and solar powered versions  
● Available in manual version

The mains and solar powered versions are part of the VELUX INTEGRA® product range.

## Flashings and installation products



### Flashings:

- ED- for single installation
- EB- for twin installation
- EK- for combi installation

Available for standard and recessed installation

### Installation products:

- Installation set BDX 2000 (incl. BFX)
- Underfelt collar BFX 1000 incl. transverse drainage gutter
- Vapour barrier collar BBX 0000
- Linings LS- (incl. BBX)
- Kit for lining LSG 1000 (incl. BBX)

## Control options



### Upgrade your system

VELUX INTEGRA® Active sensor system monitors and receives data from the outside solar and temperature sensors and activates blinds and shutters when necessary. In this way, the system improves thermal comfort while also reducing cooling costs in summer and heating costs in winter.



## Technical information

<b>Material and colour</b>	<p>Roof window: See brochure or price list for variants.</p> <p>Control pad: ABS, white (NCS S 1000-N), black (RAL 9005) and metallic grey.</p> <p>Window operator: PBT with glass fibre, black (NCS S 9000-N) and stainless steel chain.</p> <p>Rain sensor: PC with glass fibre, black (NCS S 9000-N)</p>
<b>Size and weight</b>	<p>Size of product including packaging: The same as equivalent manually operated roof window.</p> <p>Weight: Approx 3 kg more than equivalent manually operated roof window.</p> <p>Control pad: 95 x 95 x 23 mm (W x H x D), 114 g (with batteries 184 g).</p>
<b>Installation and use</b>	<p>The window is classified in protection class IP44.</p> <p>The window operator hidden in the top cover and functions at temperatures between -10°C and +60°C.</p> <p>The control pad is for indoor use, maximum ambient temperature 50°C.</p> <p>Radio frequency range: 200 m free field. Depending on building construction, the indoor range is approximately 20 m.</p> <p>Installation in rooms with a high level of humidity must comply with relevant regulations (contact a qualified electrician if necessary).</p>
<b>Window opening</b>	<p>Max 200 mm within 35 seconds.</p> <p>Due to a shorter chain, small/special window sizes have a different window opening.</p> <p>Window opening for sizes --01 and --02 = 135 mm. Window opening for sizes --25 and --27 = 38 mm.</p>
<b>Power consumption</b>	<p>Window operator: 90 uA standby, supplied by the battery.</p> <p>Battery: High performance battery, 10.8 V d.c., NiMH, type VELUX. Recharged continuously by the solar cell. A fully charged battery allows up to 300 operations without recharging.</p> <p>Expected battery lifetime of the solar powered window operator: Approximately 10 years.</p> <p>Solar cell: Charge current 0-80 mA (photovoltaic), dependent on the weather conditions.</p> <p>Control pad: 3 x alkaline AA/LR6 (1.5 V) batteries. Expected battery lifetime: Approximately 1 year.</p>
<b>Motor capacity</b>	<p>Traction capacity: Min 225 N</p> <p>Pressure capacity: Min 150 N</p>
<b>Compatibility</b>	<p>The window is based on radio frequency (RF) technology, 868 MHz range, and is compatible with other products with the io-homecontrol® logo.</p> <p>Subsequent installation of VELUX INTEGRA® Solar roller shutter SSL or VELUX INTEGRA® Solar awning blind MSL is possible if the window size code is MK--, PK--, SK-- or UK--. Only these sizes have enough room for the solar cell on the roller shutter top casing or the awning blind top cover.</p> <p>Installation of VELUX INTEGRA® Solar roller shutter SSL or VELUX INTEGRA® Solar awning blind MSL requires adaptor plate kit ZOZ 213. The kit must be purchased separately.</p> <p>Please note that the roller shutter must be io-homecontrol® labelled to be compatible with the VELUX INTEGRA® Solar roof window. Interior decoration and sunscreening products can be fitted to VELUX INTEGRA® Solar GGL and GGU. Please note that if these products are combined with VELUX INTEGRA® Solar roller shutter SSL or VELUX INTEGRA® Solar awning blind MSL, the battery recharging capability of the interior solar decoration and sunscreening products will be reduced.</p> <p>Connection to non-compatible products may cause damage or malfunction.</p>
<b>CE marking</b>	<p>The window is CE-marked to indicate that it is in accordance with the EU directives CPD, LVD, MD, R&amp;TTE and EMC for household, trade and light industry.</p>
<b>Note</b>	<p>This sheet describes the added features of VELUX INTEGRA® Solar roof window GGL compared with manually operated VELUX roof window GGL. For further information on the features and specifications of GGL, please see the main VELUX brochure.</p> <p>We reserve the right to make technical changes.</p>