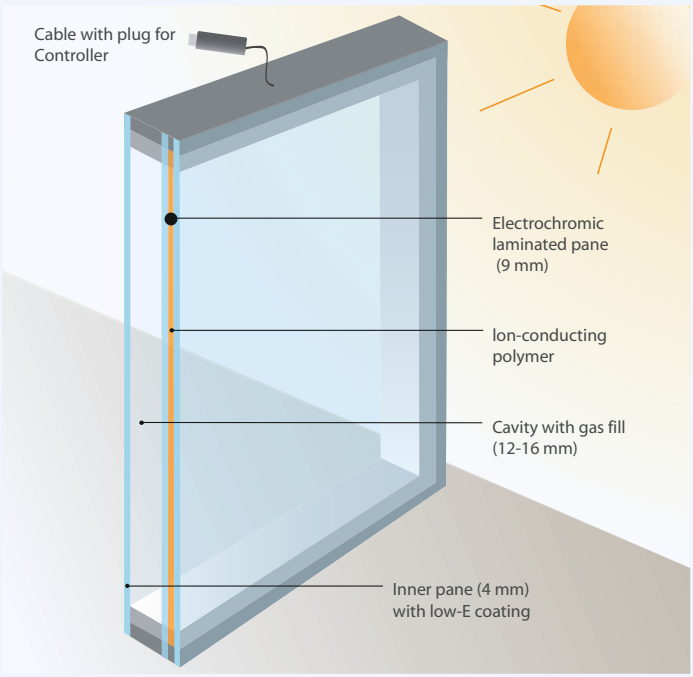
EControl-Glas

ECONTROL®: The Switchable Solar Control Glazing

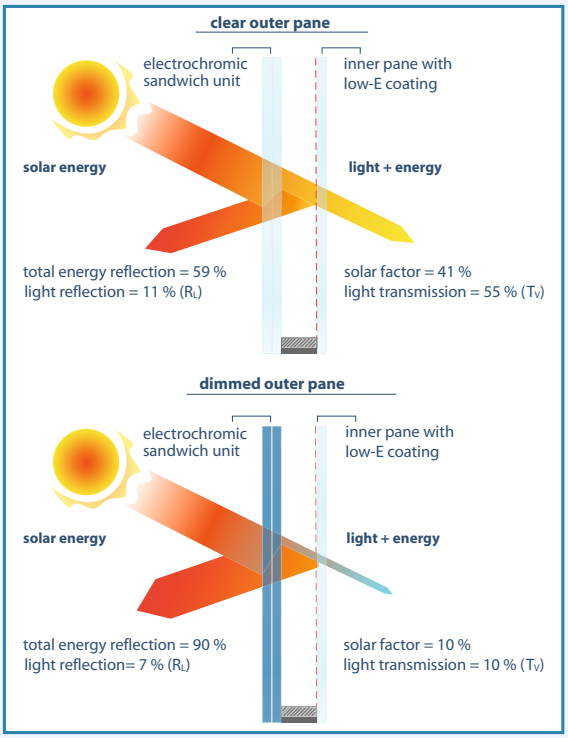
Shading with an unobstructed view

Solar Control with a Clear View

The transparency of glass opens up the transition between the inside of a building and the outside world. This is aesthetically desirable, but not energetically, as the solar radiation heats the room, especially in the summer months. The sunniest weather conditions have, until now, required the use of blinds, shutters and awnings thereby darkening the room. The switchable Solar Control Glazing ECONTROL allows for uninhibited views to the exterior while dramatically reducing glare and unwanted room heating.



The flow of heat and light energy into a room can be customised to suit the individual using ECONTROL. The glazing can be coloured to suit the constantly changing requirements of the day and the seasons. During sunny conditions, an electrical puls changes the colour of the glazing to an appealing blue, thereby providing comfortable lighting and temperature. This improves not only wellbeing, but also productivity – whether at home or in the workplace.



High-Tech for Low Energy

The dimmable Solar Control Glazing consists of a “sandwich-pane”, which utilises the principle of electrochromism; the application of a small electrical potential (< 5 V) causes a transfer of ions between electrodes. A nanostructured film undergoes a colour change, thereby reducing the transmission of solar radiation through the window pane.

Switching between completely bleached and coloured states requires about 20 minutes. This happens in an almost stepless process that is hardly noticeable for the occupants of the room.

Energy Management with Glass

The variable light transmittance (T_V) lies between 10 and 55 percent with the standard insulation glass ECONTROL smart®. The Solar Heat Gain Coefficient (SHCG) can be varied between 10 and 41 % (according to DIN EN 410). The insulation coefficient (U_g) of the standard ECONTROL IGU is equivalent to that of standard insulated glazings, at 1.1 W/m²K. The ECONTROL triple glazing has a U-value as low as 0.5 W/m²K and the SHGC may be varied between 8 and 36 %.

Operating costs are the ‘second rent’ of a building. More than one third of the consumption of primary-energy in the world is due to the built environment. ECONTROL improves not only wellbeing and user comfort, but also saves money. External shading systems and expensive maintenance costs are no longer required.

ECONTROL: Worth knowing	
Maximum pane size	135 x 330 cm
Minimum pane size	0.2 m²
Electrical power needed to change the setting	approx. 2 W/m²
Supply voltage for the control units	24 V
Time needed to switch between the lightest and most intensive colouration	approx. 20 Min
Service lifespan	> 20 years
Optional control	Open to BUS systems, light sensors, Modbus from Q4 2016

Shapes and Sizes

Aesthetically pleasing and versatile, ECONTROL fits into the common frame types and is suitable for office and industrial façades, and equally for overhead glazing (e.g. in an atrium or conservatory).

ECONTROL panes are available in sizes ranging from 40 x 50 cm to 135 x 330 cm and in several irregular shapes.

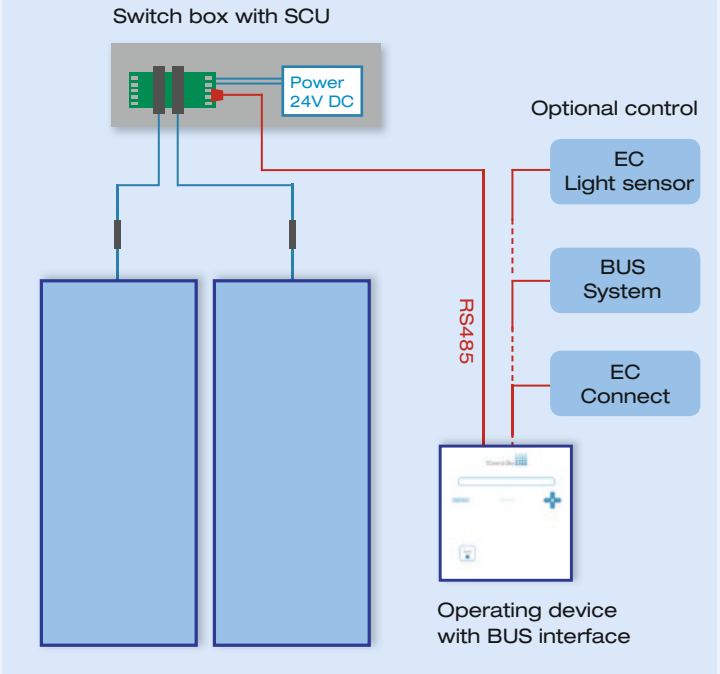
Intelligent control

Every ECONTROL glass pane is connected to a control unit via a cable. Using scalable operating devices, individual offices or complete façades and roofs can be dimmed simultaneously.

A modern interface in the operating device enables automatic and stepless control using light sensors, with a PC or via a bus system in the building technology. Manual control is also possible.

The control unit uses a 24 V electricity supply. Electrochromic glass only uses electricity to change its setting, for which a minimal power consumption of 2 W/m² is required. With ECONTROL industry 4.0 begins in the building shell.

ECONTROL - electric control - schematic diagram



Innovative Technology in Numbers

ECONTROL smart®

	State of Glazing	Light Transmission T_V [%], as per DIN EN 410	SHGC [%], as per DIN EN 410	U-value [W/m²K], as per DIN EN 673	External Light Reflection R_L [%], as per DIN EN 410	UV Transmission T_{UV} [%], as per DIN EN 410	Spectral Selectivity $S^*=T_{Vmax}/SHGC_{min}$
ECONTROL smart® 55/10							
Double glazing, (standard) structure EC9/16/4 [1) 2)]	bleached	55	41	1.1	11	3	5.5
	coloured	10	10	1.1	7	1	5.5
ECONTROL smart® 51/8							
Triple glazing, structure EC9/12/4/12/4 [1) 2)]	bleached	51	36	0.5 [3)]	13	2	6.4
	coloured	9	8	0.5 [3)]	7	1	6.4

ECONTROL® light

	State of Glazing	Light Transmission T_V [%], as per DIN EN 410	SHGC [%], as per DIN EN 410	U-value [W/m²K], as per DIN EN 673	External Light Reflection R_L [%], as per DIN EN 410	UV Transmission T_{UV} [%], as per DIN EN 410	Spectral Selectivity $S^*=T_{Vmax}/SHGC_{min}$
ECONTROL® light 57/13							
Double glazing, structure EC9/16/4 [1) 2)]	bleached	57	43	1.1	11	3	4.4
	coloured	15	13	1.1	7	1	4.4
ECONTROL® light 52/10							
Triple glazing, structure EC9/12/4/12/4 [1) 2)]	bleached	52	36	0.5 [3)]	13	2	5.2
	coloured	13	10	0.5 [3)]	7	1	5.2

1) Inner pane CG Premium 2 2) Values deviate for other combinations 3) With krypton-gas filling

ECONTROL – 10 Points for Comfort and Savings

1. Outstanding heat control in summer and a pleasant room climate
2. Shading by dimming the glass instead of mechanical blinds or sunshades
3. Reduces the glare of the sun and provides an unobstructed view to the outside at all times
4. Costs for maintenance of shading systems can be saved
5. No expensive air conditioning costs
6. Electricity only used during switching
7. Effective use of solar heating during winter
8. Ideal component for “smart buildings”
9. Individual and automatic control, can be integrated into building control systems
10. ECONTROL wellness windows - the blue colour has a positive effect on performance

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“Buildings of the Future”

The development of ECONTROL is supported by the German Federal Ministry of Business and Technology under the programme “Energy Optimisation in Buildings”. The concept “Buildings of the Future” involves the advancement of technologies which result in a minimal primary-energy requirement, high user-comfort, moderate investment- and significantly reduced operating-costs for buildings.

Europäische Union
Europäischer Fonds für regionale Entwicklung
Europäischer Sozialfonds

Europa fördert Sachsen.
EFRE ESF

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