



TM 102HI - SYSTEM FEATURES

YAWAL TM 102HI System is dedicated to energy-saving and passive buildings.

This system will work in public utility buildings and in residential buildings. It is a well-developed system of aluminium profiles used to manufacture modern types of windows, doors and display windows that require high thermal insulation properties. The modern construction of the sash, with insulator angled with respect to the frame, provides beneficial distribution of forces within the profile.

Due to the above, manufacturing of highly durable profiles was possible, and that, in turn, allowed for creating constructions of large dimensions and significant weight. As a part of this system, we offer wide range of glazing and the possibility of installing all types of two-chamber or three-chamber glass panes available on the market.

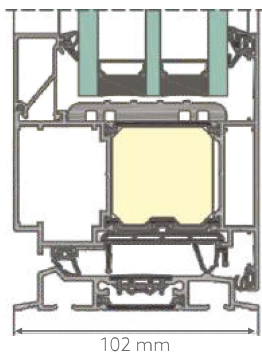
Photo: Kindergarten nr 10, Myslowice / Design: Usługi Projektowe Paweł Drabik
Aluminium manufacturer: For-Bud, Krzepice



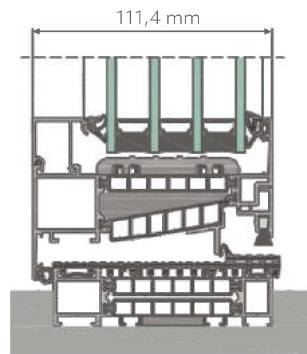
ADVANTAGES OF THE SYSTEM

- possibility of using full range of fittings available at the market: surface fittings ALU, groove type PCV, hidden hinges, handles with spindles - of any shape, stainless handles,
- excellent level of energy-saving and very high water-tightness due to innovative central seal construction,
- modern design of lock profiles in combination with the new gaskets allows for creating one uninterrupted surface of aluminium and gaskets,
- possibility of manufacturing glazing reversible profile,
- possibility of creating large - dimension structures,
- possibility of making balcony door with low threshold,
- possibility of manufacturing the window with a movable mullion,
- additional wind insulation due to application of gasket at the contact point of glazing bead and profile,
- possibility of combination with other Yawal systems.

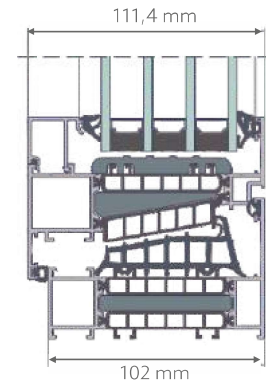
CROSS SECTION OF
DOOR THRESHOLD



CROSS SECTION OF LOW
THRESHOLD WINDOW TM 102HI



CROSS SECTION OF
WINDOW TM 102HI



TECHNICAL PARAMETERS - TM 102HI

Air permeability	class 4 (600 Pa)
Water tightness	class AE1800 (1800 Pa)
Heat transfer coefficient	$U_f =$ from 0,45 W/m ² K
Acoustic insulation	39÷48 dB acc. to PN-EN ISO 140-3
Anti-theft protection	RC2
Wind load resistance	class C5 (2000 Pa)

SYSTEM CHARACTERISTICS

Window structural depth	Frame profile	102 mm
	Sash profile	111,4 mm
Acceptable thickness of infills	Frame profile	35÷69 mm
	Sash profile	44÷72 mm
Acceptable leaf dimensions	Width	1600 mm
	Height	3000 mm
Max leaf weight		300 kg



TM 77HI - SYSTEM FEATURES

TM 77HI system is a safe and innovative solution that provides excellent parameters of thermal and acoustic insulation, safety, and protection against wind and water.

The separators between aluminium profiles ensure great thermal insulation properties.

Dedicated thermal insulators act as thermal insulation, in combination with infill of high thermal insulation properties.

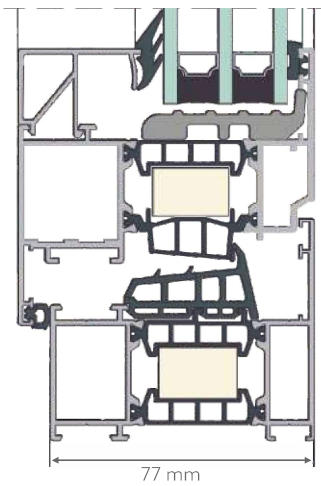
Photo: Corner House, Warsaw
Design: Biuro Projektów Kazimierski i Ryba Sp. J., Warsaw
Aluminium manufacturer: BUMA FACTORY, Cracow



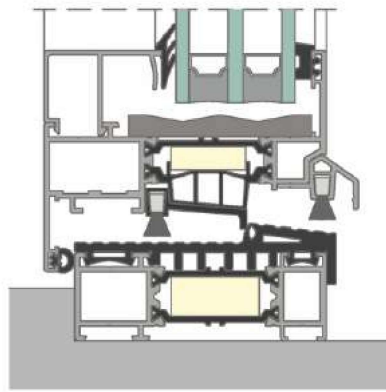
ADVANTAGES OF THE SYSTEM

- possibility of heating costs reduction,
- possibility of creating large-surface constructions with modern arrangement of facades and interiors,
- easy to match with fittings elements and control elements,
- possibility of creating modern constructions of various shapes and configurations,
- possibility of achieving heat transfer factor as good as $U_f = 0,8 \div 1,5 \text{ W/m}^2\text{K}$ thanks to using unique thermal insulation solutions,
- possibility of making balcony door with low threshold,
- possibility of combination with other Yawal systems.

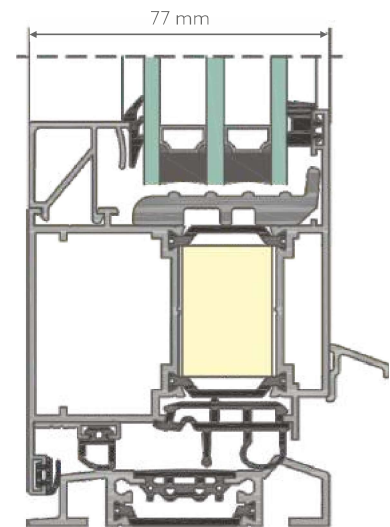
CROSS SECTION OF WINDOW TM 77HI



CROSS SECTION OF LOW THRESHOLD WINDOW TM 77HI



CROSS SECTION OF DOOR THRESHOLD

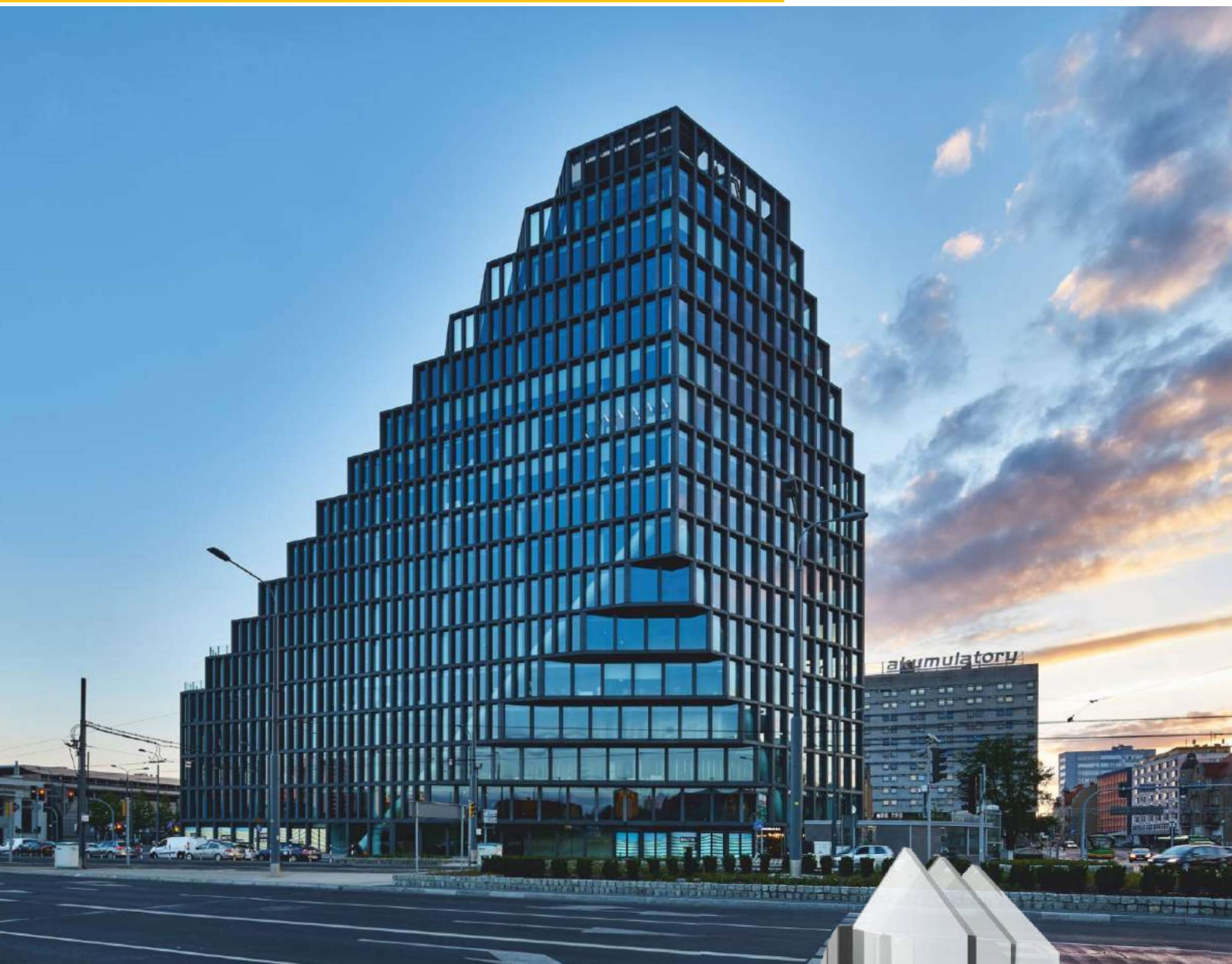


TECHNICAL PARAMETERS - TM 77HI

	TM 77HI windows	TM 77HI doors
Air permeability	class 4 acc. to PN 12207	class 4 acc. to PN-EN 12207
Water tightness	E1650 acc. to PN-EN 12208	E900 acc. to PN-EN 12208
Heat transfer coefficient	$U_f = 0,8 \div 1,4 \text{ W/m}^2\text{K}$ acc. to PN-EN ISO 10077-2	$U_f = 0,9 \div 1,5 \text{ W/m}^2\text{K}$ acc. to PN-EN ISO 10077-2
Acoustic insulation	39-48 dB acc. to PN-EN ISO 140-3	36-45 dB acc. to PN-EN ISO 140-3
Anti-theft protection	RC2, RC3, RC4	RC2, RC3

SYSTEM CHARACTERISTICS

Window structural depth	Frame profile	77 mm
	Sash profile	86,4 mm
Door structural depth	Frame profile	77 mm
	Sash profile	77 mm
Glass pane thickness for windows	Frame profile	19÷61 mm
	Sash profile	28÷67 mm



TM 74HI - SYSTEM FEATURES

This system is dedicated to constructing doors, windows and display windows with high thermal insulation properties, to be used in apartment buildings, houses, public and industrial buildings.

Thermal insulators used in this system are made of polyamide reinforced with glass fibre, the space between insulators is additionally filled with polyurethane foam.

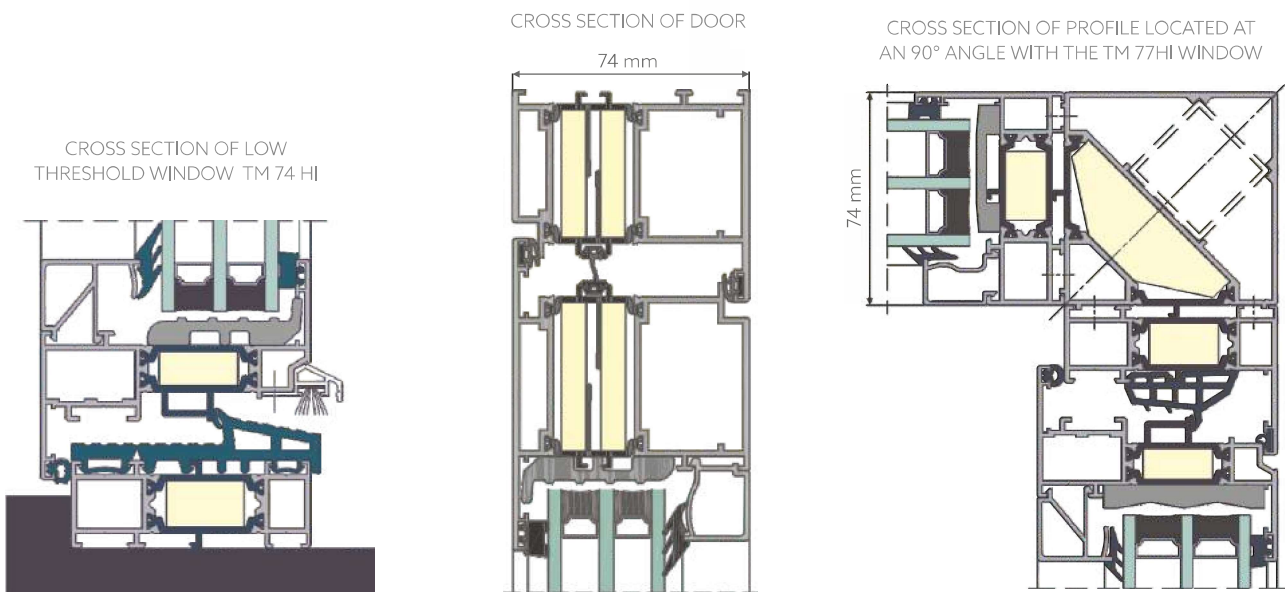
The system allows for creating constructions of large dimensions due to application of reinforced profiles arranged on the outside and inside.



Photo: Bałtyk Tower, Poznań
 Design: MVRDV, Rotterdam / NO Natkaniec Olechnicki Architekci, Warsaw / BT TUSCHER, Gdynia
 Aluminium manufacturer: Alglob Sp. z o.o., Dąbrowa near Poznań

ADVANTAGES OF THE SYSTEM

- optimizing of operation costs of the buildings due to thermal insulation of the profiles,
- possibility of creating modern window constructions in various configurations,
- possibility of profile bending,
- possibility of installing windows in facade systems,
- possibility of creating sets of constructions mounted at optional angle,
- possibility of using full range of modern fittings and individual handles or pull handles due to profiles of various width,
- possibility of using hidden hinges and remotely controlled locks due to used profiles of appropriate width,
- possibility of combination with other Yawal systems.

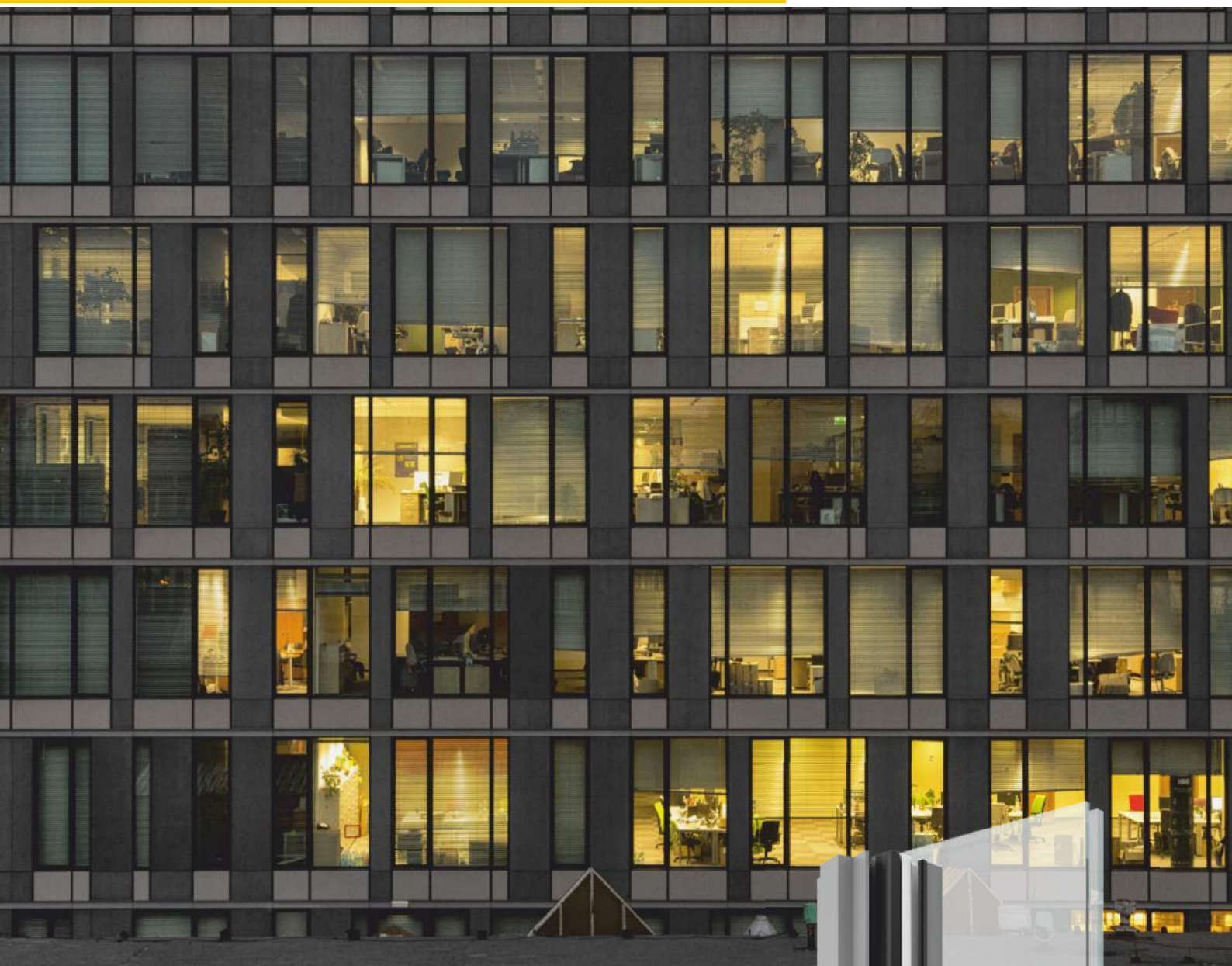


TECHNICAL PARAMETERS - TM 74HI

	TM 74HI windows	TM 74HI doors
Air permeability	class 4 acc. to PN-EN 12207	class 4 acc. to PN-EN 12207
Water tightness	E 1050 acc. to PN-EN 12208	E 900 acc. to PN-EN 12208
Heat transfer coefficient	$U_r =$ from 1,0 W/m ² K acc. to PN-EN ISO 10077-2	$U_r =$ from 1,2 W/m ² K acc. to PN-EN ISO 10077-2
Acoustic insulation	$R_w = 31\div 44$ dB acc. to PN-EN ISO 20140-3	$R_w = 28\div 42$ dB acc. to PN-EN ISO 20140-3
Anti-theft protection	RC2, RC2N, RC3	RC2, RC2N, RC3

SYSTEM CHARACTERISTICS

Window structural depth	Frame profile	74 mm
	Sash profile	83,4 mm
Door structural depth	Frame profile	74 mm
	Sash profile	74 mm
Glazing thickness	Frame profile	16÷58 mm
	Sash profile	25÷66 mm



TM 74HI MODULE - SYSTEM FEATURES

TM 74HI MODULE is a system of aluminium profiles intended for manufacture of curtain walls.

This solutions allows for erection of buildings facades constructed of modules connected with one another in a system manner (considering, amongst others, expansion joints between modules). The basis for the new system are popular window solutions TM 74HI and TM 74HI US, which are additionally supplemented with decorative clips of FA 50N system.

An interesting characteristic of this solution is the possibility of obtaining fluent shift between elements glazed traditionally on the internal side of the building and, elements glazed on the external side of the building.

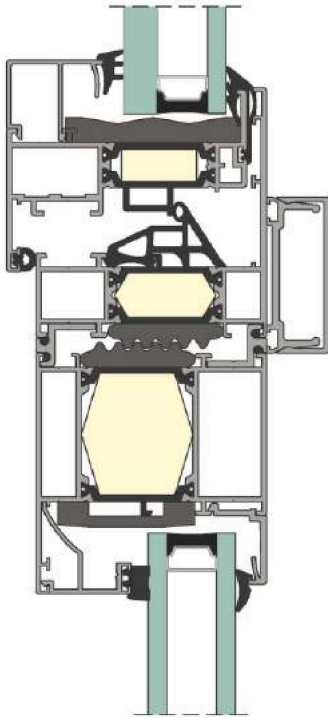


Picture: Example of modular solution

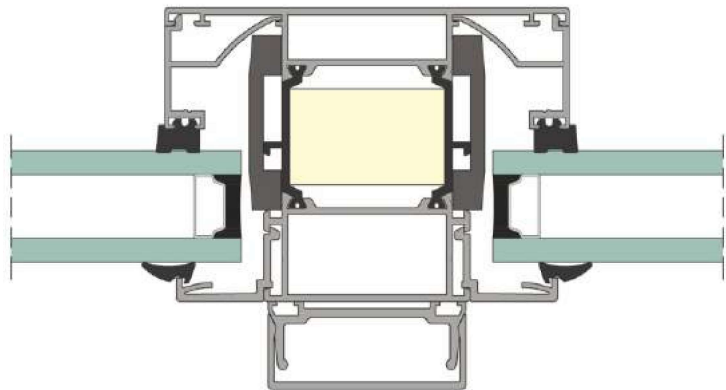
ADVANTAGES OF THE SYSTEM

- modular construction of the building facade which positively influences the time and quality of assembly,
- modern solutions of expansion joints between modules,
- fluent shift between elements glazed in the internal and external side of the building,
- possibility of combination with other Yawal systems.

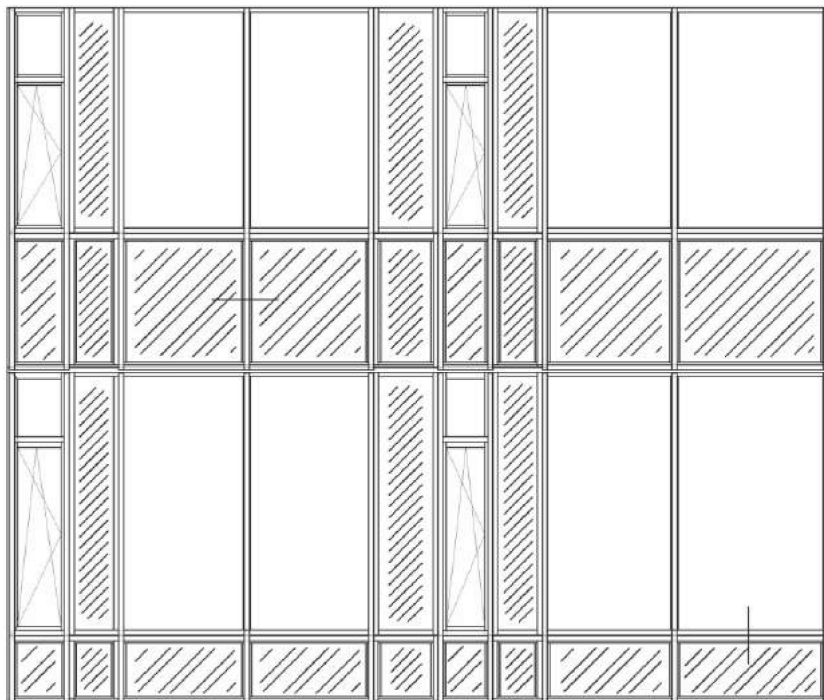
VERTIAL CROSS-SECTION



CROSS-SECTION THROUGH VERTICAL MULLION



EXAMPLE OF THE CURTAIN WALL MODULE





TM 62HI - SYSTEM FEATURES

TM 62HI is an aluminium system for manufacturing windows and doors requiring thermal insulation.

Improvement of insulation properties is also achieved by using extra under-glass elements in the space between the glass and the profile. This system meets the high requirements of crowded public buildings or residential buildings.

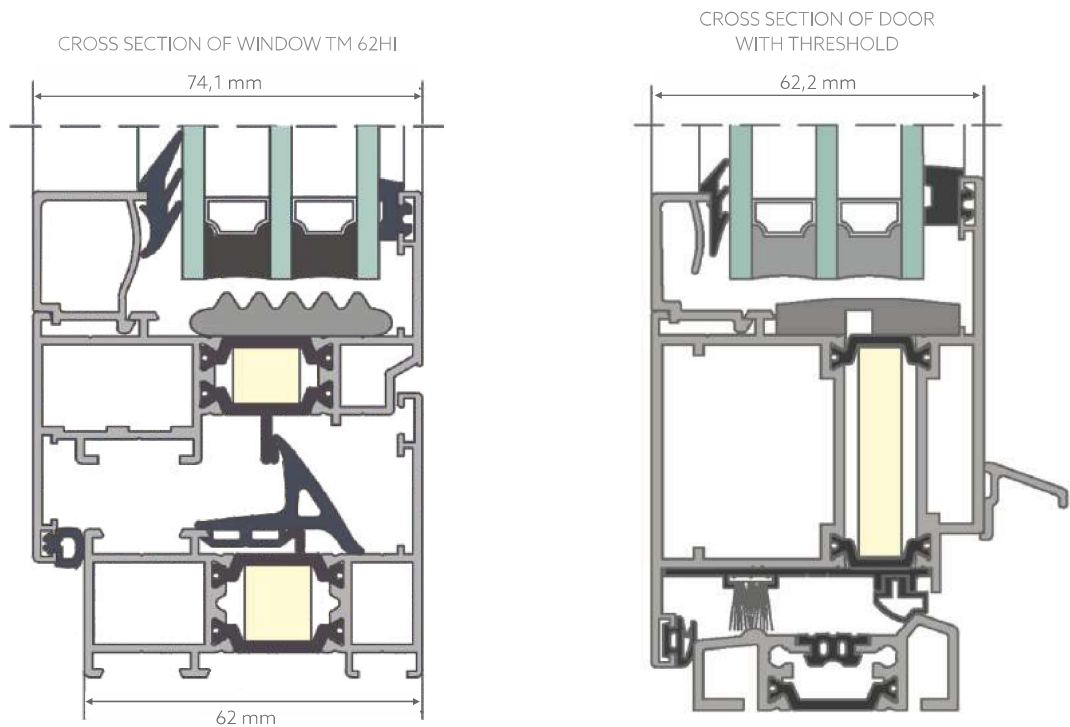
3-chamber construction of a profile and usage of an insulating material (polyurethane) between thermal separators has a positive effect on achieving low heat transfer coefficient.

Photo: Residential Estate Galeria Park, Warsaw
Design: KAPS Architekci, Warsaw
Aluminium manufacturer: MBB, Toruń



ADVANTAGES OF THE SYSTEM

- thermal parameters improved by 20-40% in comparison with TM 62 system,
- savings on energy that translate to heating costs reduction,
- possibility of using groove hinges and fittings, hidden in a groove, thus invisible,
- possibility of profile bending,
- possibility of combination with other Yawal systems.



TECHNICAL PARAMETERS - TM 62HI

	TM 62HI windows	TM 62HI doors
Air permeability	class 4 acc. to PN-EN 12207	class 2 acc. to PN-EN 12207
Water tightness	E1050 acc. to PN-EN 12208	3A acc. to PN-EN 12208
Heat transfer coefficient	1,3÷2,45 W/m ² K acc. to PN-EN ISO 10077-2	1,3÷2,45 W/m ² K acc. to PN-EN ISO 10077-2
Acoustic insulation	R _w = 35÷42 dB acc. to PN-EN ISO 140-3	R _w = 35÷44 dB acc. to PN-EN ISO 140-3
Anti-theft protection	RC2, RC3 acc. to PN-EN 1627	RC2, RC3 acc. to PN-EN 1627



TM 82W HI - SYSTEM FEATURES

TM 82W HI - provides simple and problem-free installation of large-sized glazings in various types of display windows and large glazed structures. It's a unique structure, without any equivalent offer on the market.

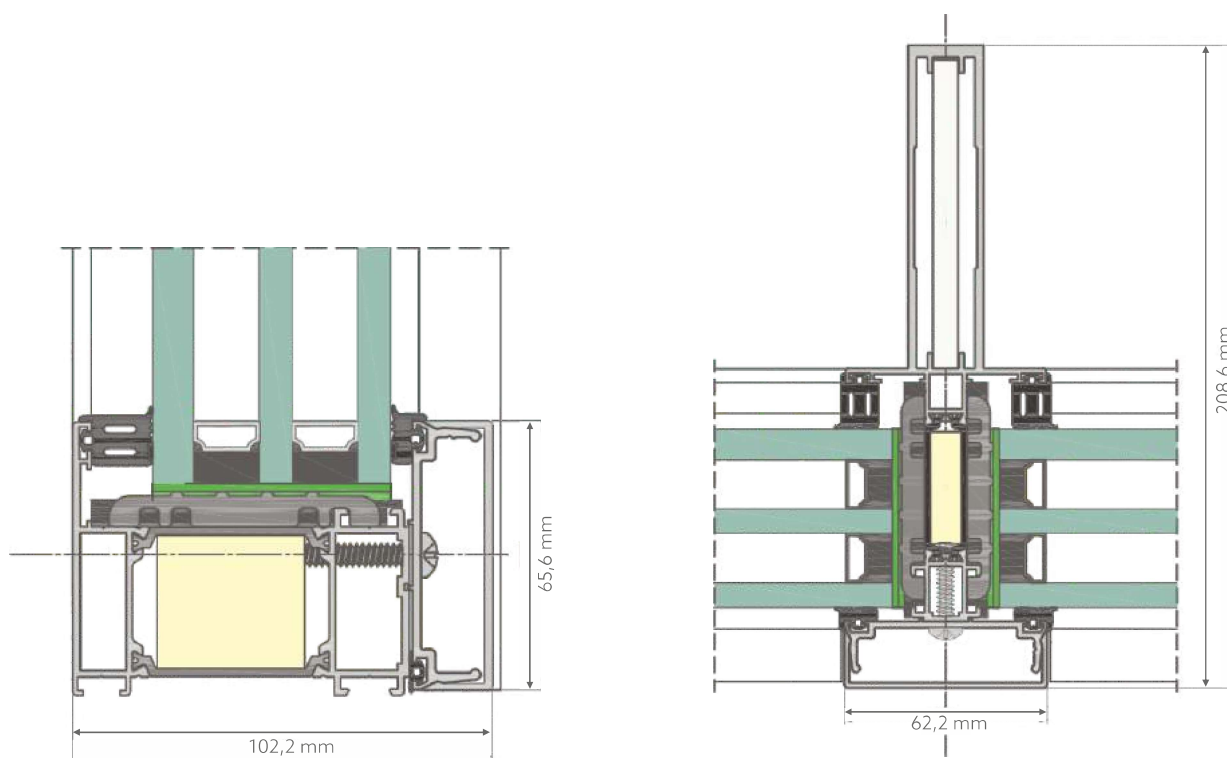
Perfect tightness parameters of the new solution have been confirmed during the construction tests carried out by the Building Research Institute in Warsaw.



Photo: Fabryka wełny, Pabianice
 Design: Pracownia Projektowa Architektury Bogdan Niepsuj, Łódź
 Aluminium manufacturer: Zimny Sp. z o.o., Łódź

ADVANTAGES OF THE SYSTEM

- glazing installation from the outside makes it easier to assembly even the largest possible glazing and to avoid the necessity of carrying the glass panes into the room,
- window structure - the weight of the glass pane is transferred perpendicular onto the profile, so the effect of transom twisting doesn't occur,
- perfect thermal insulation of this solution (U_w from $0,5 \text{ W/m}^2\text{K}$),
- possibility of installing triple-glazed glass panes , thickness up to 60 mm,
- max. sash weight 500 kg,
- due to clips and strips of the FA 50N system used on the outside the structure visually resembles,
- system installation of windows and doors, including panel doors,
- the mullion is prepared, as a precondition, for the application of steel reinforcement in order to obtain better static parameters,
- the minimum quantity of new elements in the system and the possibility to use recognised and popular seals and connectors of other systems allows for optimisation of stock.



CROSS SECTION OF THE DOOR FRAME TM 82 W

CROSS SECTION OF CROSSPIECE TM 82 W

TECHNICAL PARAMETERS - TM 82W HI

Classification	00616/18/R202NZE
Air permeability	class up to 4 acc. to PN-EN 12207
Water tightness	E900 (900 Pa)
Wind load resistance	CE2400(2400 Pa) / BE2400 (2400 Pa)
Safety test	3600 Pa
Impact resistance	class 5 (950 mm)



TM INDUSTRIAL - SYSTEM FEATURES

Systems TM 62 / TM 62HI, 74HI, 77HI Industrial are modern solutions that imitate the shape of steel windows.

They are a perfect substitute of old steel windows in modernised industrial facilities, lofts and tenement houses. They allow for maintaining the industrial character of the building and meet the requirements of modern architecture at the same time.

The base of the system are aluminium structural sections with thermal separators and infills of high thermal insulation properties.



Photo: Grohman Factory, Łódź
Design: AGG Architekci Grupa Grabowski Sp. z o.o., Łódź
Aluminium manufacturer: OLI Sp. z o.o., Piotrków Trybunalski

ADVANTAGES OF THE SYSTEM

fully matching following Yawal systems TM 62 / TM 62HI, TM 74HI, TM 77HI,

excellent values of heat transfer coefficient,

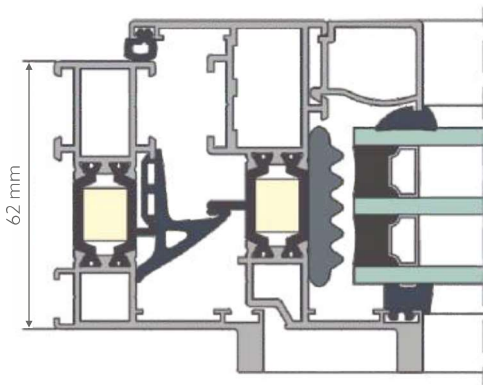
effective draining system,

good aesthetics due to narrow window frame visible from the outside,

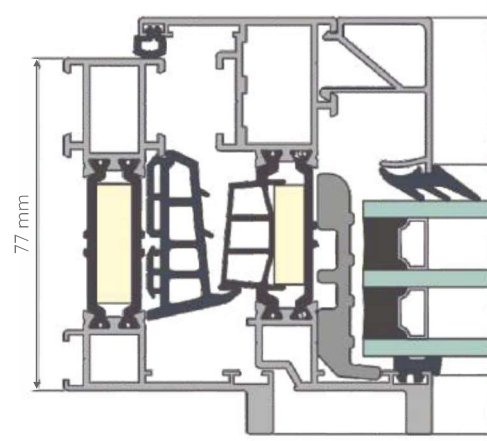
possibility of creating modern window structures in various arrangements,

possibility of combination with other Yawal systems.

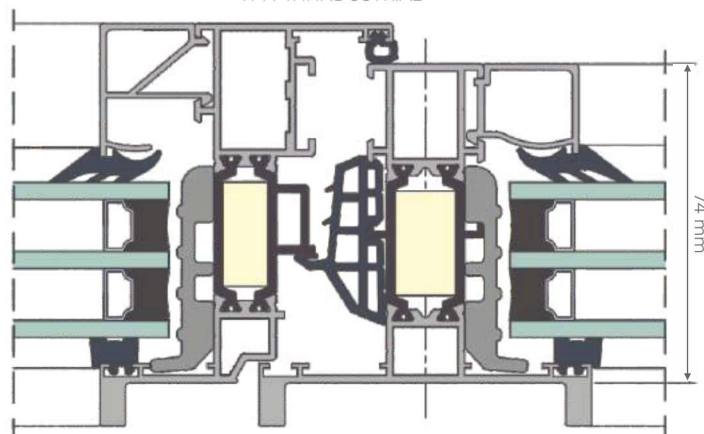
CROSS SECTION OF WINDOW
TM 62HI INDUSTRIAL



CROSS SECTION OF WINDOW
TM 77HI INDUSTRIAL



CROSS SECTION OF WINDOW
TM 74HI INDUSTRIAL





TM 62HI US, 74HI US, 77HI US - SYSTEM FEATURES

The systems TM 62HI US, 74HI US, 77HI US are solutions that make the window sash invisible, and seemingly impossible to open.

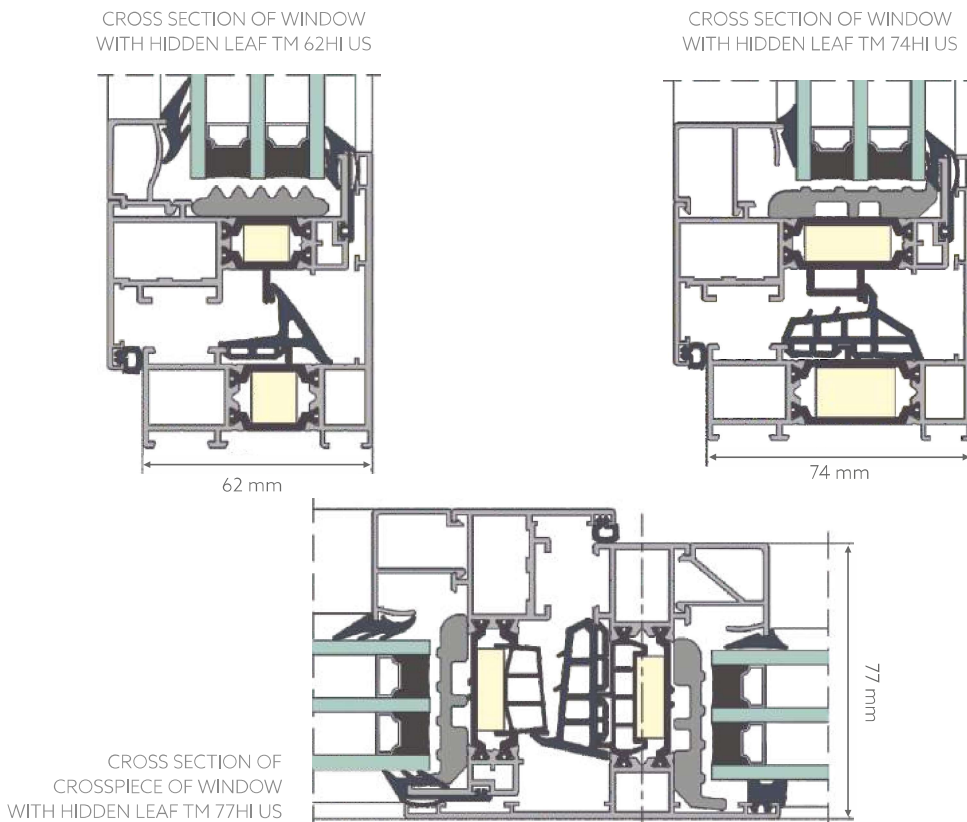
The hidden sash windows are a top quality modern solution. The base of the system are aluminium structural sections with thermal separators and infills of high thermal insulation properties.

Photo: Residential Building, Poznań
Design: Archikwadrat, Poznań
Aluminium manufacturer: Lindhorst Sp. z o.o., Sp. k, Poznań
Investor: Wechta Inwestycje Sp. z o.o.



ADVANTAGES OF THE SYSTEM

- possibility of manufacturing sashes invisible from the outside,
- good aesthetics due to narrow window frame visible from the outside,
- excellent values of the heat transfer coefficient,
- possibility of creating many varieties with diversified parameters,
- possibility of combination with other Yawal systems.

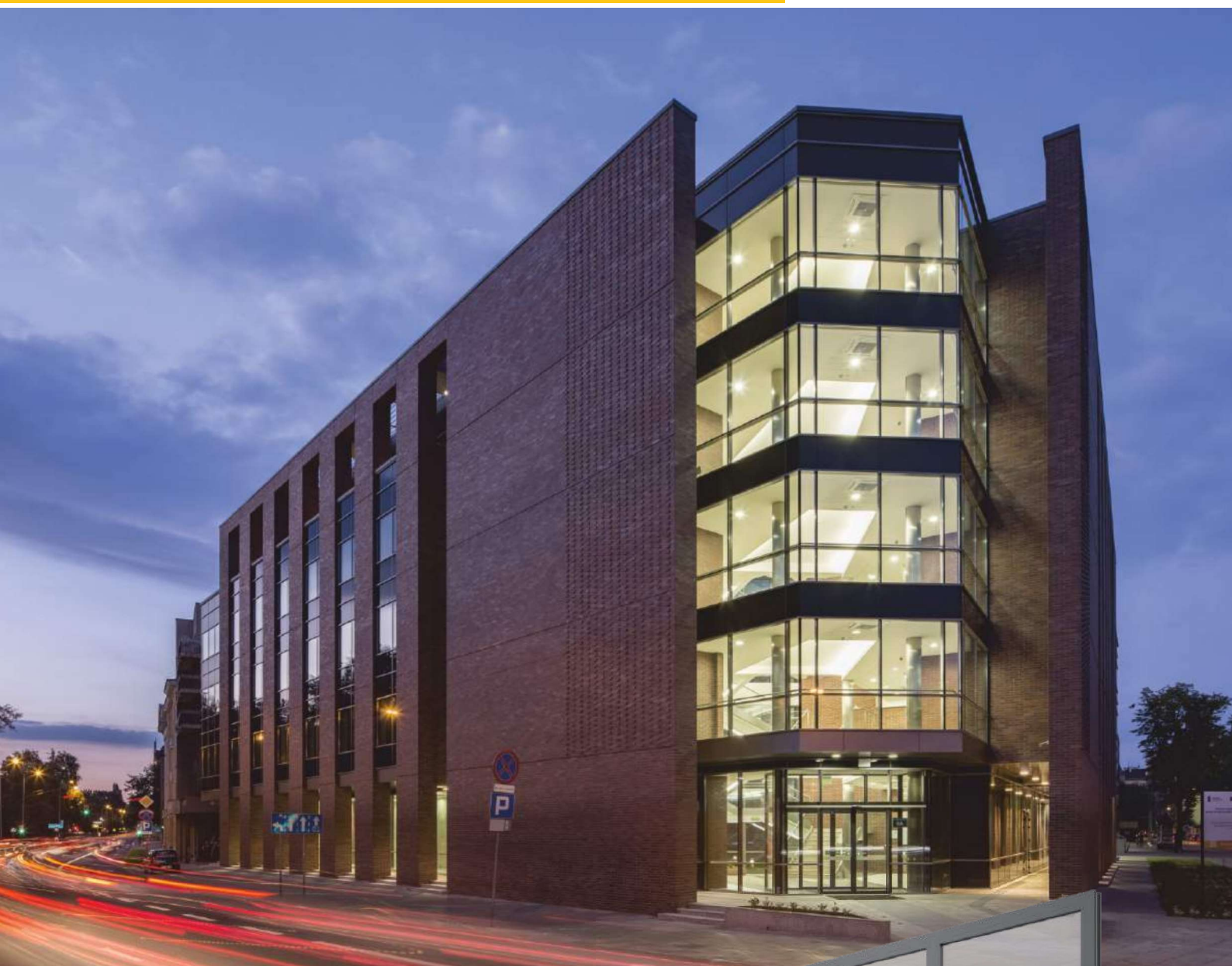


TECHNICAL PARAMETERS - TM 62HI US, TM 74HI US, TM 77HI US

	TM 62HI US	TM 74HI US	TM 77HI US
Air permeability	class up to 4 acc. to PN-EN 12207	class up to 4 acc. to PN-EN 12207	class up to 4 acc. to PN-EN 12207
Water tightness	class E1350 acc. to PN-EN 12208	class E1350 acc. to PN-EN 12208	class E1350 acc. to PN-EN 12208
Heat transfer coefficient	$U_f = 1,70 \div 2,18 \text{ W/m}^2\text{K}$ acc. to PN-EN ISO 10077-2	$U_f = 1,33 \div 1,59 \text{ W/m}^2\text{K}$ acc. to PN-EN ISO 10077-2	$U_f = 1,16 \div 1,37 \text{ W/m}^2\text{K}$ acc. to PN-EN ISO 10077-2

SYSTEM CHARACTERISTICS

		TM 62HI US	TM 74HI US	TM 77HI US
Window structural depth	Frame profile	62 mm	74 mm	77 mm
	Sash profile	64,9 mm	76,9 mm	79,9 mm
Glazing thickness		24÷52 mm	24÷64 mm	26÷67 mm



AUTOMATIC DOORS - SYSTEM FEATURES

Automatic doors belong to products of best technical parameters.

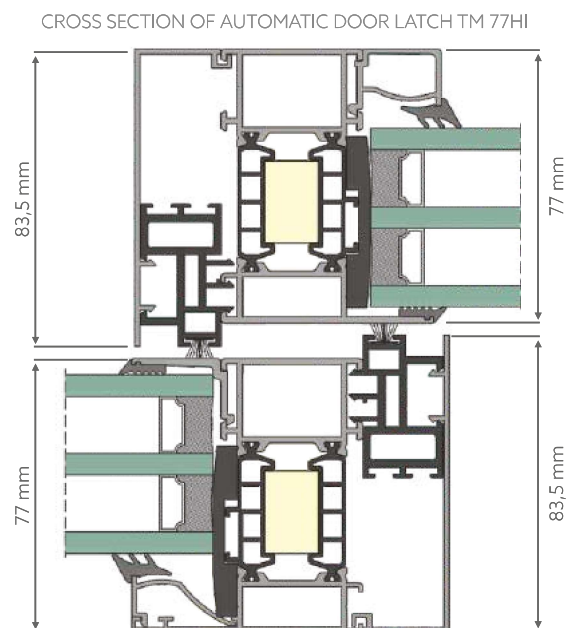
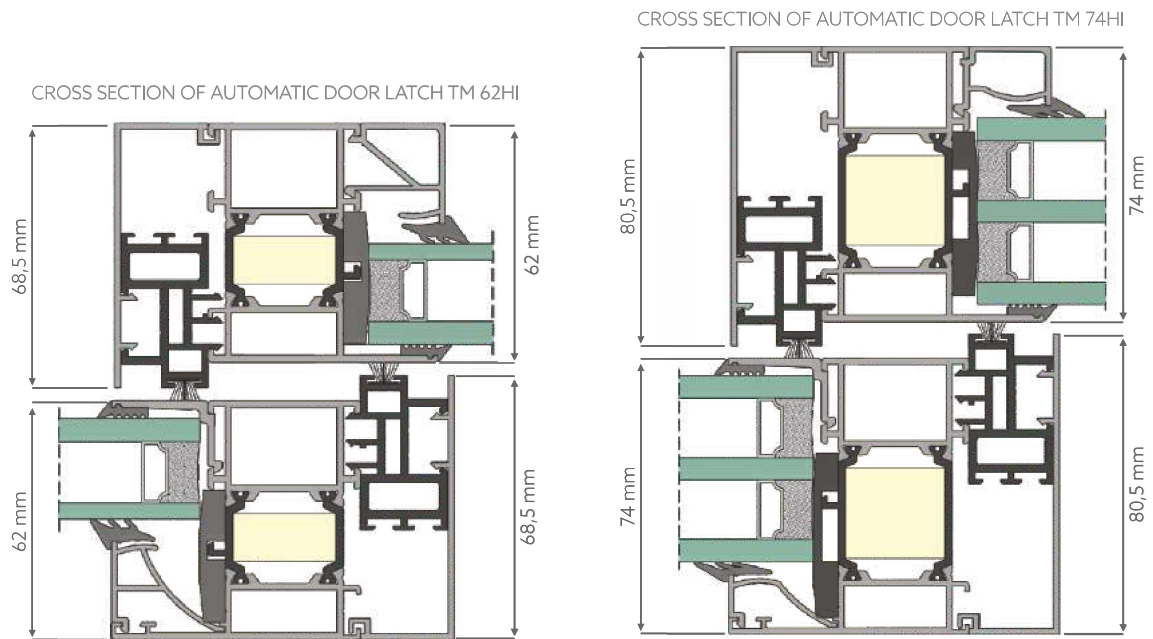
The system allows for construction of various types of automatic single-leaf and two-leaf doors with side and upper transoms.



Photo: Collegium Paderevianum II of the Jagiellonian University, Cracow
 Design: Bończa Studio, Wieliczka
 Aluminium manufacturer: Hossa Sp. z o.o., Katowice and Eurobud Grupa, Bystrowice

ADVANTAGES OF THE SYSTEM

- compliance with standard EN 16005:2013 for door with drives,
- use of PIR foams as profiles filling material,
- under-glass foams made of Styrodur material,
- ease of assembly in facade FA 50N,
- possibility of separating the sash with a crosspiece,
- possibility to assemble various types of drives.





PI 50N, TM 62HI, 74HI, 77HI OUTWARD - SYSTEM FEATURES

PI 50N, TM 62HI, TM74HI, and TM77HI OUTWARD systems are solutions allowing for opening aluminium windows outwards.

Windows opened outwards are structures mainly popular on foreign markets, however they are gaining more enthusiasts in our country as well. The main advantage of this type of projects is space-saving inside the room. A very important role is also played by the fact that the structure of outwards opened window allows the wind load to press the window sash into the frame, ensuring high tightness of the structure.

The basis of the OUTWARD system are aluminium structural sections with a thermal separator which are elements of the offer of four popular window systems available at Yawal's. The solution ensures the possibility of selecting the optimal variant considering the required thermal insulation.

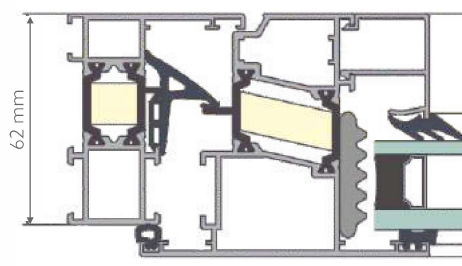
Photo: Primary School no. 3, Ruda Śląska
Design: architekciPL
Aluminium manufacturer: Domkat Sp. z o.o.



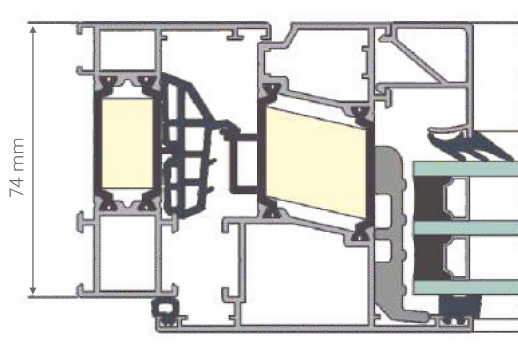
ADVANTAGES OF THE SYSTEM

- space-saving inside the room,
- possibility of adjusting the system to the expected level of thermal insulation,
- perfect tightness of the structure,
- product intended for export, which meets the requirements of the Scandinavian and British markets,
- possibility of implementing modern window structures in various arrangements,
- possibility of combination with other Yawal systems.

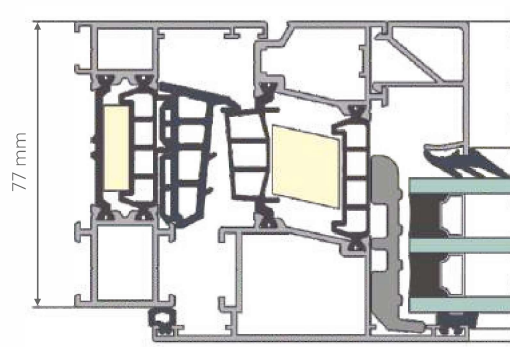
CROSS SECTION OF WINDOW TM 62HI OUTWARD



CROSS SECTION OF WINDOW TM 74HI OUTWARD



CROSS SECTION OF WINDOW TM 77HI OUTWARD

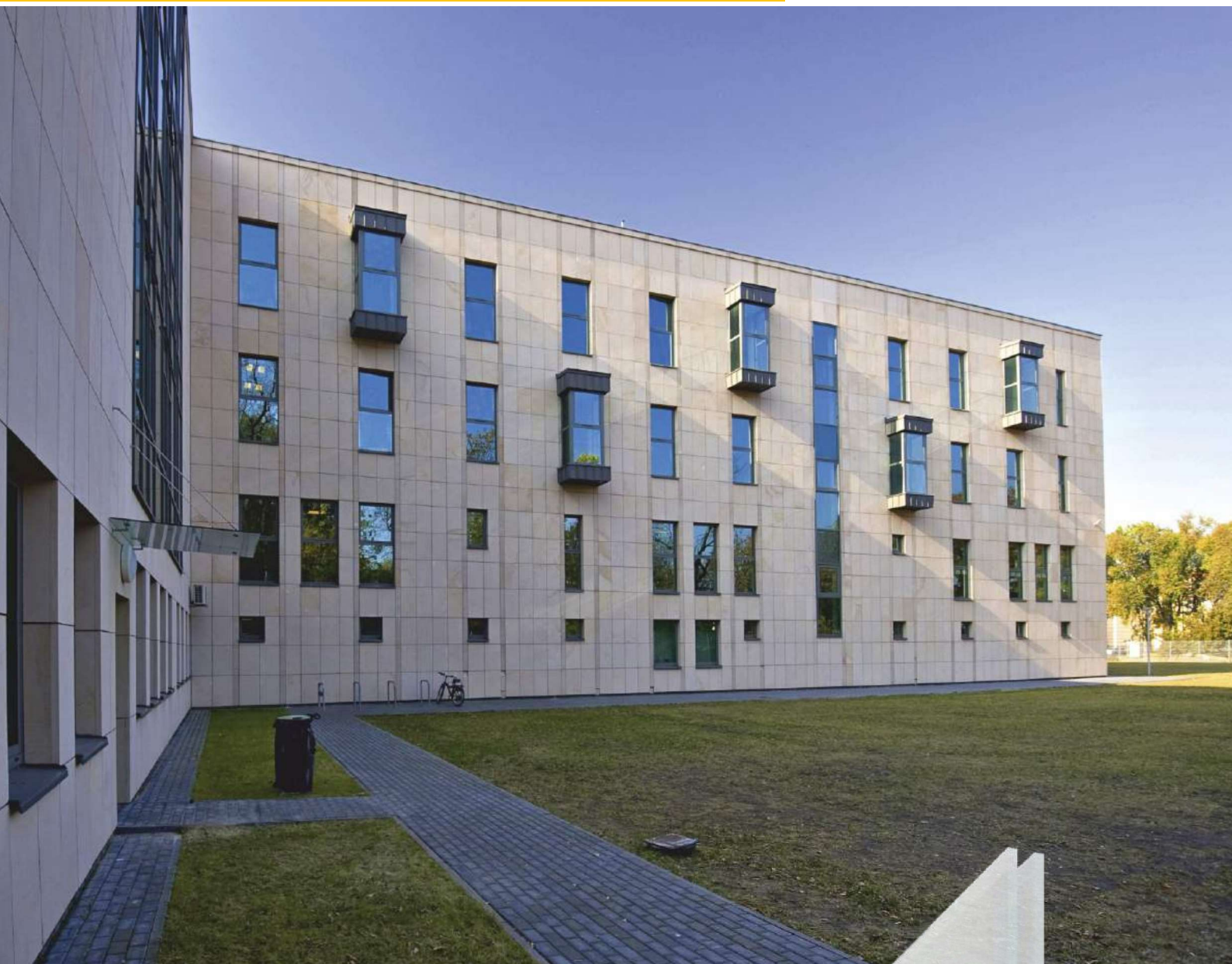


TECHNICAL PARAMETERS - TM OUTWARD

Air permeability	class 4 acc to. PN-EN 12207
Water tightness	class E750 acc to. PN-EN 12208
Wind load resistance	class C4 acc to. PN-EN 12210

SYSTEM CHARACTERISTICS

		PI 50N OUTWARD	TM 62HI OUTWARD	TM 74HI OUTWARD	TM 77HI OUTWARD
Window structural depth	Frame profile	62 mm	62 mm	74 mm	77 mm
	Sash profile	64,9 mm	64,9 mm	76,9 mm	79,9 mm
Glazing thickness		24÷52 mm	24÷52 mm	24÷64 mm	26÷67 mm



PI 50N - SYSTEM FEATURES

PI 50N is a well-developed system of aluminium profiles to create various types of modern, thermally insulated windows, doors, display windows, partition walls and vestibules.

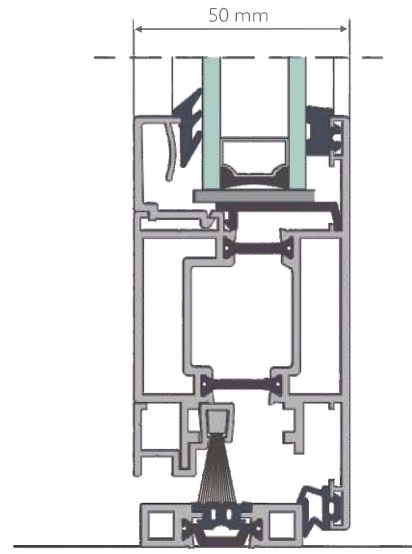
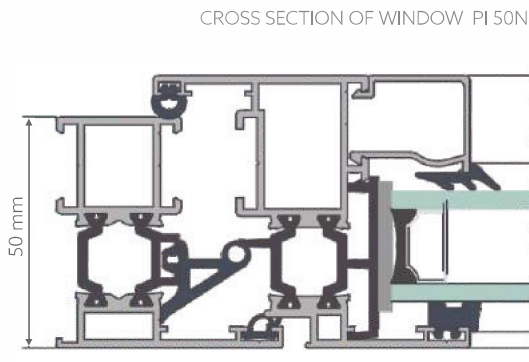
Available diversity of profiles allows for constructing surface-hinged doors as well as doors mounted on hinges installed in profile grooves.

Photo: Oskar Kolberg Complex of Music Schools, Radom
Design: Archi-Rad 2000 Piotr Wypchło, Radom
Aluminium manufacturer: Stolrad Sp. z o.o., Radom



ADVANTAGES OF THE SYSTEM

- possibility of constructing various types of solutions using minimal quantity of profiles, improving production process and aesthetics due to fast-fixed groove fittings system,
- universal solutions resulting from diversity of fittings and two possible assembly methods,
- possibility of creating large-dimension structures due to application of reinforced profiles,
- possibility of door assembly in a row of display windows due to additional profiles,
- possibility of creating angled structures,
- possibility of combination with other Yawal systems.



CROSS SECTION OF DOOR PI 50N

TECHNICAL PARAMETERS - PI 50N

	PI 50N windows	PI 50N doors
Air permeability	class 4 acc. to PN-EN 12207	class 3 acc. to PN-EN 12207
Water tightness	class E750 acc. to PN-EN 12208	class A5 acc. to PN-EN 12208
Heat transfer coefficient	$U_f=2,2\div 2,7 \text{ W/m}^2\text{K}$ acc. to PN-EN ISO 10077-2	$U_f=2,3\div 2,7 \text{ W/m}^2\text{K}$ acc. to PN-EN ISO 10077-2
Acoustic insulation	$R_w=30\div 40 \text{ dB}$ acc. to PN-EN ISO 140-3	$R_w=30\div 40 \text{ dB}$ acc. to PN-EN ISO 140-3

SYSTEM CHARACTERISTICS

		STANDARD	TURNING SASH
Window structural depth	Frame profile	50 mm	50 mm
	Sash profile	59 mm	59 mm
Glazing thickness	Frame profile	4÷34 mm	6÷43 mm
	Sash profile	6÷44 mm	6÷43 mm