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[logotip FAKRO]

KATALOG

Katalog: sistemski proizvodi za ravne krovove 2023 (prozori za ravne krovove i pribor)

Originalna oznaka dokumenta: FPD/36-/GB/30.03.2023/G037

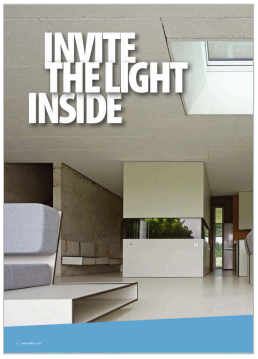
Prevod uz katalog: tekst svake strane originala preveden je pored njene sličice. Fotografije i grafika nalaze se u originalu iza prevoda.



STRANA 1 ORIGINALA

SISTEMSKI PROIZVODI ZA RAVNE KROVOVE 2023

Širok asortiman trajnih i izolovanih prozora za ravne krovove



STRANA 2 ORIGINALA

POZOVITE SVJETLOST UNUTRA

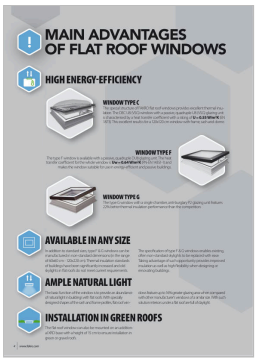


STRANA 3 ORIGINALA

RAVNI KROVOVI
NAČINI OSVJETLJAVANJA

Prednosti prirodnog osvjetljenja objekata su neupitne, ali kod objekata sa ravnim krovom nije uvijek moguće ugraditi dovoljan broj standardnih vertikalnih prozora. Izvor prirodne svjetlosti treba da postoji u svakom stambenom prostoru da bi se osobe koje u njemu borave osjećale ugodno. Idealno rješenje za obezbjeđivanje svjetlosti je ugradnja posebno projektovanih proizvoda za ravne krovove.

Proizvodi FAKRO za ravne krovove donose enterijeru najviši standard prirodne svjetlosti. Obezbjeđuju provjetravanje, spajaju izuzetnu funkcionalnost, moderan dizajn i savršene izolacione performanse. Ukratko, mogu da pretvore svaku prostoriju ispod ravnog krova u topao, svijetao i izuzetno ugodan prostor.



STRANA 4 ORIGINALA

GLAVNE PREDNOSTI PROZORA ZA RAVNE KROVOVE

VISOKA ENERGETSKA EFIKASNOST

PROZOR TIP C

Posebna konstrukcija FAKRO prozora za ravne krovove obezbjeđuje odličnu toplotnu izolaciju. Prozor DEC U8 (VSG) sa pasivnim, četvorostrukim staklopaketom U8 (VSG) odlikuje se koeficijentom prolaza toplote **U = 0.55 W/m²K** (EN 1873). Ovaj odličan rezultat odnosi se na prozor dimenzija 120x120 cm sa ramom, krilom i kupolom.

PROZOR TIP F

Prozor tip F dostupan je sa pasivnim, četvorostrukim staklopaketom DU8. Koeficijent prolaza toplote cijelog prozora je **Uw = 0.64 W/m²K** (PN-EN 14351-1), zbog čega je prozor pogodan za upotrebu u energetski efikasnim i pasivnim objektima.

PROZOR TIP G

Prozor tip G sa jednokomornim staklopaketom P2 protiv provale ima za 22% bolje performanse toplotne izolacije od konkurencije.

DOSTUPNI U SVAKOJ VELIČINI

Pored standardnih veličina, prozori tip F i G mogu se izraditi i u nestandardnim dimenzijama (u rasponu od 60x60 cm - 120x220 cm). Standardi toplotne izolacije objekata znatno su pooštreni, a stari svjetlarnici na ravnim krovovima ne ispunjavaju važeće zahtjeve. Specifikacija prozora tip F i G omogućava jednostavnu zamjenu postojećih, često nestandardnih svjetlarnika. Korišćenje takve mogućnosti obezbjeđuje bolju izolaciju, kao i veliku fleksibilnost pri projektovanju ili renoviranju objekata.

OBILJE PRIRODNE SVJETLOSTI

Osnovna funkcija prozora je da obezbijedi obilje prirodne svjetlosti u objektima sa ravnim krovom. Zahvaljujući posebno oblikovanim profilima krila i rama, prozori za ravne krovove imaju do 16% veću površinu stakla u poređenju sa prozorima drugih proizvođača slične veličine. Uz takvo rješenje, prostorije ispod ravnog krova pune su dnevne svjetlosti.

UGRADNJA NA ZELENE KROVOVE

Prozor za ravni krov može se montirati i na dodatnu montažnu osnovu XRD visine 15 cm, čime se obezbjeđuje ugradnja na zelene krovove ili krovove sa šljunkom.



STRANA 5 ORIGINALA

KONSTRUKCIJA PROZORA ZA RAVNE KROVOVE

Ram prozora za ravni krov izrađen je od ojačanih višekomornih PVC profila. Unutrašnja površina rama je bijela (RAL 9010). Materijal profila ima visoku otpornost na kiseline i nisku apsorpciju vlage. Zbog toga se prozor može ugraditi u svaku prostoriju. Profili su ispunjeni izolacionim materijalom, što dodatno poboljšava parametre uštede energije proizvoda. Svaki prozor isporučuje se sa posebno profilisanim pokrivnim materijalom ispod kapnice rama, koji dodatno poboljšava završnu obradu spoja između prozora i krovnog pokrivača.

Prozor tip F	Prozor tip C	Prozor tip G	Prozor tip Z
(sa inovativnim staklopaketom)	(sa staklopaketom i kupolom)	(sa staklopaketom i staklenom sekcijom)	(fabrički opremljen sa AMZ/Z, staklopaketom i nagnutom staklenom sekcijom)
DEF DMF DXF	DEC DMC DXC	DEG DMG DXG	DEZ-A AMZ/Z Z-Wave DMZ-A AMZ/Z Z-Wave DXZ-A AMZ/Z Z-Wave

Prozor za ravni krov tip F opremljen je inovativnim staklopaketom koji obezbjeđuje odličnu toplotnu izolaciju i savremenog je dizajna. Prozor se može izraditi u nestandardnim veličinama u okviru proizvodnih tolerancija ili mogućnosti. Prozor tip C opremljen je staklopaketom i kupolom od polikarbonata. Prozor tip G spaja inovativan izgled prozora tip F i dizajn koji nudi prozor tip C. Prozor tip Z isporučuje se sa fabrički ugrađenom nagnutom staklenom sekcijom. Prozori za ravne krovove dostupni su u tri verzije otvaranja:

DE_	otvara se električno
DM_	otvara se ručno
DX_	bez otvaranja

Aktuator kod prozora koji se otvaraju električno smješten je u krilu i zaštićen je od nepovoljnih vremenskih uslova, kao što su kiša i snijeg. Time je obezbijeđen nesmetan rad aktuatora i svih upravljačkih elemenata.

Električno upravljani prozori (tip F, tip C, tip G i tip Z) imaju ugrađen senzor koji automatski aktivira funkciju zatvaranja krila kada pada kiša.



STRANA 6 ORIGINALA

DEF, DMF, DXF

Dizajnerska inovacija ravnog krovnog prozora DEF DU6 nagrađena je prestižnom nagradom Red Dot Design Award.

Na slici: oznaka nagrade Red Dot Design Award, dobitnik 2016.

PROZORI ZA RAVNE KROVOVE TIP F

- Obilje prirodne svjetlosti. Posebno oblikovan profil prozora daje površinu stakla do 16% veću nego kod konkurencije.
- Ram prozora za ravni krov izrađen je od višekomornih PVC profila ispunjenih izolacionim materijalom. Gornji dio prozora ima inovativan ravni staklopaket. Spoljno staklo je kaljeno i reflektuje sunčeve zrake, dok je unutrašnje staklo protiv provale, klase P2A. Ako staklo pukne, krhotine stakla ne predstavljaju opasnost.
- Prozori su dostupni sa dva staklopaketa:
  1) trostruki staklopaket DU6 sa koeficijentom Uw cijelog prozora 0.70 W/m²K (EN 14351-1) i Urc=0,59 [W/m²K], A:4,0 m² prema EN1873:2014
  2) četvorostruki staklopaket DU8 sa koeficijentom Uw cijelog prozora 0.64 W/m²K (EN 14351-1) i Urc=0,51 [W/m²K], A:4,0 m² prema EN 1873:2014. Tako odlične performanse čine prozor pogodnim za upotrebu u pasivnim objektima.
- Pored standardnih veličina, prozori tip F mogu se izraditi u bilo kojoj veličini (u rasponu od 60x60 cm - 120x220 cm). To olakšava zamjenu postojećih svjetlarnika (često nestandardnih dimenzija) koji ne ispunjavaju važeće toplotne zahtjeve.
- Dostupni su sa opcijom ColourLine, koja kupcima omogućava da prozore prilagode ličnom ukusu.

- Prozori se mogu montirati na dodatnu montažnu osnovu XRD ili XRD/W visine 15 cm, čime se obezbjeđuje ugradnja na zelene krovove ili krovove sa šljunkom.
- Ako je nagib krova manji od 2° ili je preporučljivo povećati ugao ugradnje, treba koristiti ugaonu montažnu osnovu XRD/A, koja povećava ugao ugradnje za 3 ili 5 stepeni, zavisno od veličine.
- Pogodni su za nagibe krova između 2° i 15°, odnosno 0° -15° sa osnovom XRD/A.
- Konstrukcija prozora omogućava ugradnju unutrašnjeg i spoljnog pribora.

STRANA 7 ORIGINALA

DEF Solar	DEF	DMF	DXF
- autonomni prozor koji se napaja solarnom energijom - otvara se daljinskim upravljačem u bežičnom Z-Wave sistemu - u kompletu: daljinski upravljač (dostupan na narudžbu), senzor kiše, solarni panel i baterija - krilo se podiže 12 cm.	- otvara se električno u bežičnom Z-Wave sistemu - u kompletu: jedinica za napajanje, daljinski upravljač (dostupan na narudžbu), senzor kiše - krilo se podiže 12 cm.	- otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) - krilo se podiže 30 cm	- bez otvaranja

Autonomni prozor DEF Solar napaja se solarnom energijom preko posebnog PV panela, pa proizvod ne zahtijeva nikakve dodatne električne instalacije. PV panel integrisan sa baterijom obezbjeđuje neprekidan rad i po oblačnom vremenu. Iza odličnih performansi i besprijekorne estetike stoji provjerena konstrukcija prozora za ravne krovove. Jednostavno upravljanje bežičnim Z-Wave sistemom pomoću priloženog daljinskog upravljača ZRH1.

Prozori za ravne krovove tip F:

- Imaju veoma visoku klasu B reakcije na požar (PN-EN 13501-1). To potvrđuje njihove visoke performanse u pogledu širenja plamena.
- Odlikuju se najvišom otpornošću na udar – 950 mm (klasa 5 prema EN 14351-1).
- Ispitani su na zvučnu izolaciju pri kiši (ISO 10140-1/A2:2014) i postigli su veoma dobre rezultate. Koeficijent LIA za prozore DEF DU6 iznosi 36 dB.

PROZORI ZA RAVNE KROVOVE

Veličina prozora [cm] **(veličina otvora za ugradnju)**	**60x60**	**60x90**	**70x70**	**80x80**	**90x60**	**90x90**	**90x120**	**100x100**	**100x150**	**120x90[1])**	**120x120**	**120x220[1])**	**140x140[1])**	**150x100**	**200x100**
Površina stakla [m²]	0,23	0,37	0,33	0,46	0,37	0,6	0,83	0,77	1,21	0,83	1,16	2,23	1,63	1,21	1,64
Oznaka veličine	01K	02K	03K	04K	31K	05K	06K	07K	10K	32K	08K	11K	09K	33K	34K
DEF DU6 Solar (NOVO) Uw=0.70 W/m²K Urc=0.59 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DEF DU6 Otvara se električno Uw=0.70 W/m²K Urc=0.59 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DEF DU8 Otvara se električno Uw=0.64 W/m²K Urc=0.51 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-
DMF DU6 Otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) Uw=0.70 W/m²K Urc=0.59 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DMF DU8 Otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) Uw=0.64 W/m²K Urc=0.51 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-
DXF DU6 Bez otvaranja Uw=0.70 W/m²K Urc=0.59 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

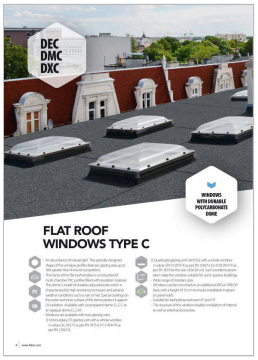
Veličina prozora [cm] (veličina otvora za ugradnju)	60x60	60x90	70x70	80x80	90x60	90x90	90x120	100x100	100x150	120x90[1]	120x120	120x220[1]	140x140[1]	150x100	200x100
DXF DU8 Bez otvaranja Uw=0.64 W/m²K Urc=0.51 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

*prema EN 14351-1:2006+A2:2016

***prema EN 1873:2014+A1:2016 za veličinu 120x120, A:4,1 m²

Položaj šarki i aktuatora kod prozora DEF i DMF koji se otvaraju.

[1] Prozori DMF veličina 100x150 cm, 120x90 i 120x120 cm imaju jedan vijčani aktuator.



STRANA 8 ORIGINALA

DEC, DMC, DXC

PROZORI SA TRAJNOM KUPOLOM OD POLIKARBONATA

PROZORI ZA RAVNE KROVOVE TIP C

- Obilje prirodne svjetlosti. Posebno oblikovan profil prozora daje površinu stakla do 16% veću nego kod konkurencije.
- Ram prozora za ravni krov izrađen je od višekomornih PVC profila ispunjenih izolacionim materijalom. Kupola je izrađena od trajnog polikarbonata koji se odlikuje visokom otpornošću na udar i nepovoljne vremenske uslove, kao što su kiša ili grad. Posebni premazi na spoljnoj i unutrašnjoj površini kupole štite je od UV zračenja. Dostupna je sa providnom kupolom D_C-C ili neprozirnom kupolom D_C-M.
- Prozori su dostupni sa dva staklopaketa:
  1) staklopaket P2 protiv provale sa koeficijentom Urc cijelog prozora 0.73 prema EN 1873 (U=1.2 W/m²K prema EN 12567-2).
  2) četvorostruki staklopaket U8 (VSG) sa koeficijentom U cijelog prozora 0.72 W/m²K prema EN 12567-2 (U=0.55 W/m²K prema EN 1873 za veličinu 120x120 cm). Tako odlični parametri čine prozor pogodnim za upotrebu u pasivnim objektima.
- Širok asortiman standardnih veličina
- Prozori se mogu montirati na dodatnu montažnu osnovu XRD ili XRD/W visine 15 cm, čime se obezbjeđuje ugradnja na zelene krovove ili krovove sa šljunkom.
- Pogodni su za nagibe krova između 0° i 15°.
- Konstrukcija prozora omogućava ugradnju unutrašnjeg i spoljnog pribora.

STRANA 9 ORIGINALA

DEC	DMC	DXC
- otvara se električno u bežičnom Z-Wave sistemu - u kompletu: jedinica za napajanje, daljinski upravljač (dostupan na narudžbu), senzor kiše - krilo se podiže 12 cm.	- otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) - krilo se podiže 30 cm	- bez otvaranja

Prozori za ravne krovove tip C:

- Imaju veoma visoku klasu B reakcije na požar (PN-EN 13501-1). To potvrđuje njihove visoke performanse u pogledu širenja plamena.
- Odlikuju se najvišom otpornošću na udar (SB1200 prema EN 1873).
- Ispitani su na zvučnu izolaciju pri kiši (ISO 10140-1/A2:2014) i postigli su veoma dobre rezultate. Koeficijent LIA za prozore DEC-C P2 iznosi 45.6 dB.

PROZORI ZA RAVNE KROVOVE

Veličina prozora [cm] (veličina otvora za ugradnju)	60x60	60x90	70x70	80x80	90x90	90x120	100x100	100x150[1)]	120x120[1)]	120x220[2)]	140x140[2)]
Površina stakla [m²]	0,23	0,37	0,33	0,46	0,6	0,83	0,77	1,21	1,16	2,23	1,63
Oznaka veličine	01K	02K	03K	04K	05K	06K	07K	10K	08K	11K	09K
DEC-C U8 (VSG) Otvara se električno U=0.72W/m²K* U=0.55W/m²K**	+	+	+	+	+	+	+	+	+	-	-
DEC-C P2 Otvara se električno U=1.2 W/m²K* Urc=0.73 W/m²K***	+	+	+	+	+	+	+	+	+	+	+
DMC-C P2 Otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) U=1.2 W/m²K* Urc=0.73 W/m²K***	+	+	+	+	+	+	+	+	+	+	+
DXC-C P2 Bez otvaranja U=1.2 W/m²K* Urc=0.73 W/m²K***	+	+	+	+	+	+	+	+	+	+	+

*prema EN 12567-2

**prema EN 1873 za veličinu 120x120 cm.

***prema EN 1873:2014+A1:2016 za veličinu 120x120, A:4,1 m²

Položaj šarki i aktuatora kod prozora DEC i DMC koji se otvaraju.

[1] Prozori DEC U8(VSG) veličina 100x150 cm i 120x120 cm imaju dva električna aktuatora.

[2] Prozori DMC P2 veličina 140x140 cm i 120x220 cm imaju jedan vijčani aktuator.



STRANA 10 ORIGINALA

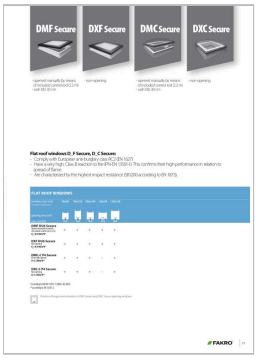
D_F Secure, D_C Secure

PROZORI PROTIV PROVALE U KLASI RC2

PROZORI ZA RAVNE KROVOVE D_F SECURE, D_C SECURE

- Obilje prirodne svjetlosti. Posebno oblikovan profil prozora daje površinu stakla do 16% veću nego kod konkurencije.
- Ram prozora za ravni krov izrađen je od višekomornih PVC profila ispunjenih izolacionim materijalom. Kod prozora D_F Secure gornji dio prozora ima inovativan ravni staklopaket, dok prozori D_C Secure imaju kupolu od trajnog polikarbonata.
- Prozori su dostupni sa dva staklopaketa:
  1) prozori D_F Secure sa staklopaketom DU6 Secure, sa unutrašnjim staklom protiv provale klase P4A. Koeficijent U cijelog prozora iznosi 0.70 W/m²K (EN 14351-1).
  2) prozori D_C Secure sa staklopaketom P4 protiv provale, sa koeficijentom U cijelog prozora 1.2 W/m²K (EN 12567-2). Unutrašnje staklo je protiv provale i ispunjava klasu P4A.
- Prozori se mogu montirati na dodatnu montažnu osnovu XRD ili XRD/W visine 15 cm, čime se obezbjeđuje ugradnja na zelene krovove ili krovove sa šljunkom.
- Prozor za ravni krov tip C pogodan je za nagibe krova između 0° i 15°, dok je tip F predviđen za nagibe između 2° i 15°, odnosno 0° -15° sa osnovom XRD/A.
- Ako je kod prozora tip F Secure nagib krova manji od 2° ili je preporučljivo povećati ugao ugradnje, treba koristiti ugaonu montažnu osnovu XRD/A, koja, postavljena neposredno

ispod prozora, povećava ugao ugradnje za 3 stepena.
- Konstrukcija prozora omogućava ugradnju unutrašnjeg i spoljnog pribora.



STRANA 11 ORIGINALA

DMF Secure	DXF Secure	DMC Secure	DXC Secure
- otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) - krilo se podiže 30 cm	- bez otvaranja	- otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) - krilo se podiže 30 cm	- bez otvaranja

Prozori za ravne krovove D_F Secure, D_C Secure:

- Ispunjavaju evropsku klasu otpornosti na provalu RC2 (EN 1627)
- Imaju veoma visoku klasu B reakcije na požar (PN-EN 13501-1). To potvrđuje njihove visoke performanse u pogledu širenja plamena.
- Odlikuju se najvišom otpornošću na udar (SB1200 prema EN 1873).

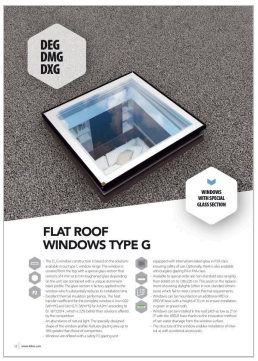
PROZORI ZA RAVNE KROVOVE

Veličina prozora [cm] (veličina otvora za ugradnju)	90x90	90x120	100x100	120x90	120x120
Površina stakla [m²]	0,6	0,83	0,77	0,83	1,16
Oznaka veličine	05K	06K	07K	32K	08K
DMF DU6 Secure Otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) Uw=0.70 W/m²K*	+	+	+	+	+
DXF DU6 Secure Bez otvaranja Uw=0.70 W/m²K*	+	+	+	+	+
DMC-C P4 Secure Otvara se električno U=1.2 W/m²K**	+	+	+	-	+
DXC-C P4 Secure Bez otvaranja U=1.2 W/m²K**	+	+	+	-	+

*prema EN 14351-1:2006+A2:2016

**prema EN 12567-2

Položaj šarki i aktuatora kod prozora DMF Secure i DMC Secure koji se otvaraju.



STRANA 12 ORIGINALA

DEG, DMG, DXG

PROZORI SA POSEBNOM STAKLENOM SEKCIJOM

PROZORI ZA RAVNE KROVOVE TIP G

- Konstrukcija prozora D_G zasniva se na rješenjima koja su dostupna u našoj liniji prozora tip C. Prozor je odozgo prekriven posebnom staklenom sekcijom koju čini kaljeno staklo debljine 4 mm ili 6 mm, zavisno od veličine paketa, u kombinaciji sa jedinstvenim crnim aluminijumskim profilom. Staklena sekcija se postavlja na prozor u fabrici, što znatno skraćuje vrijeme ugradnje.
- Odlične performanse toplotne izolacije. Koeficijent prolaza toplote cijelog prozora je Uw=0,92 [W/m²K], a Urc=0,71 [W/m²K] za A:4,0 m² prema EN 1873:2014, što je za 22% bolje od rješenja koja nudi konkurencija.
- Obilje prirodne svjetlosti. Posebno oblikovan profil prozora daje površinu stakla do 16% veću nego kod konkurencije.
- Prozori se nude sa sigurnosnim staklopaketom P2, opremljenim unutrašnjim laminiranim staklom klase P2A koje obezbjeđuje sigurnost upotrebe. Opciono je dostupan i staklopaket P4 protiv provale klase P4A.
- Na posebnu narudžbu dostupne su nestandardne veličine od 60x60 cm do 120x220 cm. To olakšava zamjenu postojećih svjetlarnika (često nestandardnih dimenzija) koji ne ispunjavaju važeće toplotne zahtjeve.
- Prozori se mogu montirati na dodatnu montažnu osnovu XRD ili XRD/W visine 15 cm, čime se obezbjeđuje ugradnja na zelene krovove ili krovove sa šljunkom.
- Zahvaljujući inovativnom načinu odvođenja kišnice sa površine prozora, prozori se mogu ugraditi na krov nagiba već od 2°, odnosno od 0° sa osnovom XRD/A.
- Konstrukcija prozora omogućava ugradnju unutrašnjeg i spoljnog pribora.

STRANA 13 ORIGINALA

DEG	DMG	DXG
- otvara se električno u bežičnom Z-Wave sistemu - u kompletu: jedinica za napajanje, daljinski upravljač (dostupan na narudžbu), senzor kiše - krilo se podiže 12 cm.	- otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) - krilo se podiže 30 cm	- bez otvaranja

Nova linija prozora D_G proširuje ponudu proizvoda za ravne krovove.
Prozori ovog tipa objedinjuju rješenja poznata iz prozora tip C i tip F, pa su ovi proizvodi tehnološki napredni, nude visoke eksploatacione karakteristike i predstavljaju alternativno rješenje za unošenje prirodne dnevne svjetlosti u prostorije ispod ravnog krova. Njihov moderan dizajn oslanja se na prestižne nagrađivane proizvode iz linije prozora za ravne krovove tip F.

Prozori za ravne krovove D_G ispitani su na zvučnu izolaciju pri kiši (ISO 10140-1/A2:2014) i postigli su veoma dobre rezultate. Koeficijent LIA za prozore DEG P2 iznosi 42.1 dB.

PROZORI ZA RAVNE KROVOVE

Veličina prozora [cm] (veličina otvora za ugradnju)	60x60	60x90	70x70	80x80	90x60	90x90	90x120	100x100	100x150	120x90[1]	120x120	120x220[1]	140x140[1]	150x100	200x100
Površina stakla [m²]	0,23	0,37	0,33	0,46	0,37	0,6	0,83	0,77	1,21	0,83	1,16	2,23	1,63	1,21	1,64
Oznaka veličine	01K	02K	03K	04K	31K	05K	06K	07K	10K	32K	08K	11K	09K	33K	34K
DEG P2 Otvara se električno Uw=0.92 W/m²K* Urc=0,71 [W/m²K]**	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DMG P2 Otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) Uw=0.92 W/m²K* Urc=0,71 [W/m²K]**	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DXG P2 Bez otvaranja Uw=0.92 W/m²K* Urc=0,71 [W/m²K]**	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

*prema EN 14351-1:2006+A2:2016

**prema EN 1873:2014; A:4,0 m²

Položaj šarki i aktuatora kod prozora D_G koji se otvaraju.

[1] Prozori DMG veličina 100x150 cm i 120x120 cm imaju jedan vijčani aktuator.



STRANA 14 ORIGINALA

D_Z-A AMZ/Z

PROZORI SA NAGNUTOM STAKLENOM SEKCIJOM

PROZORI ZA RAVNE KROVOVE TIP Z

- Prozori se standardno isporučuju sa fabrički ugrađenim AMZ/Z. Kompletno rješenje koje obezbjeđuje odvođenje kišnice sa horizontalno ugrađenog prozora uz zadržavanje ravne površine, kako kupci traže.
- Ugradnja je moguća od 0 stepeni – oblik prozora projektovan je tako da omogućava ugradnju bez ikakvih dodatnih elemenata koji bi povećali nagib ugradnje.
- Odlične performanse toplotne izolacije zahvaljujući provjerenoj konstrukciji prozora. Koeficijent prolaza toplote cijelog prozora je 0.95 W/m²K.
- Prozori se nude sa sigurnosnim staklopaketom P2, opremljenim unutrašnjim laminiranim staklom klase P2A koje obezbjeđuje sigurnost upotrebe. Opciono je dostupan i staklopaket P4 protiv provale sa unutrašnjim laminiranim staklom klase P4A.
- Z-Wave spoljna tenda ispod staklene sekcije, čime se kupcima nudi potpuno funkcionalno rješenje uz uštedu vremena i manje investicione troškove.
- Fabrički ugrađena nagnuta staklena sekcija umjesto kupole skraćuje vrijeme ugradnje.
- Širok asortiman standardnih veličina i mogućnost izrade prozora nestandardnih veličina (od 60x60 cm do 120x120 cm), zbog čega su pogodni za renoviranje i za upotrebu u projektima prema zahtjevima kupca.
- Ekološki prihvatljivi zahvaljujući upotrebi profila izrađenih većim dijelom od recikliranog materijala.
- Prozori se mogu opremiti spoljnim tendama kao i unutrašnjim priborom. Takođe su potpuno kompatibilni sa priborom za ugradnju FAKRO prozora za ravne krovove.

STRANA 15 ORIGINALA

D_Z-A AMZ/Z

- otvara se električno bežičnim Z-Wave sistemom, daljinskim upravljačem,

- krilo se podiže 12 cm,
- otvara se ručno,
- bez otvaranja.

Prozori tip Z izrađeni su na osnovu konstrukcije primijenjene na našim prozorima tip G.
Posebno konstruisana staklena sekcija sa nagibom na spoljnoj površini omogućava odvođenje vode čak i kada je prozor ugrađen savršeno horizontalno u odnosu na liniju krova.

Nova linija prozora D_Z nudi najširi spektar primjene i dopunjuje ponudu prozora za ravne krovove FAKRO. Prozori se fabrički opremaju sa AMZ/Z, staklopaketom i staklenom sekcijom.

PROZORI ZA RAVNE KROVOVE

Veličina prozora [cm] (veličina otvora za ugradnju)	60x60	60x90	70x70	80x80	90x90	90x120	100x100	120x120
Površina stakla [m²]	0,23	0,37	0,33	0,46	0,6	0,83	0,77	1,16
Oznaka veličine	01K	02K	03K	04K	05K	06K	07K	08K
DEZ-A P2 Otvara se električno Uw=0.95 W/m²K	+	+	+	+	+	+	+	+
DMZ-A P2 Otvara se ručno pomoću priložene šipke za upravljanje (2.2 m) Uw=0.95 W/m²K	+	+	+	+	+	+	+	+
DXZ-A P2 Bez otvaranja Uw=0.95 W/m²K	+	+	+	+	+	+	+	+

*prema EN 14351-1:2006+A2:2016



STRANA 16 ORIGINALA

DXW

Naš inovativni ravni krovni prozor DXW dobio je prestižnu nagradu „ICONIC AWARDS 2018: Innovative Architecture - Best of Best".

PROZORI ZA RAVNE KROVOVE DXW

- Obilje prirodne svjetlosti u objektima sa ravnim krovom.
- Ram prozora za ravni krov izrađen je od višekomornih PVC profila ispunjenih izolacionim materijalom. Gornji dio prozora ima inovativan ravni staklopaket.
- Prozor ima pasivni, dvokomorni staklopaket sa savršenim koeficijentom U od 0.70 W/m²K.
- Prozori se mogu montirati na dodatnu montažnu osnovu XRD/W visine 15 cm, čime se obezbjeđuje ugradnja na zelene krovove ili krovove sa šljunkom.
- Pogodni su za nagibe krova između 0° i 15°.
- Moguća je ugradnja istog unutrašnjeg pribora koji se koristi na svim našim prozorima za ravne krovove tip F.

STRANA 17 ORIGINALA

DXW

- obezbjeđuje površinu u ravni sa krovom i specijalno protivklizno staklo za potpunu sigurnost pri hodanju preko prozora
- povećana nosivost, radno opterećenje 500 kg/m²,
- inovativan način ugradnje staklopaketa

- visoka otpornost na pokušaje provale zahvaljujući ojačanoj konstrukciji
- smanjeni gubici toplote (Uw = 0.70 W/m²K)
- moderan dizajn i visokokvalitetna završna obrada
- brza i jednostavna ugradnja

Prozor za ravne krovove DXW nudi potpuno nov pristup projektovanju ravnih krovova. Posebno ojačano krilo i ram omogućavaju njegovu ugradnju potpuno u ravni sa linijom krova. Zahvaljujući posebnim konstrukcionim rješenjima, kao što su povećana nosivost i trajno protivklizno staklo, preko njegove površine možete slobodno hodati.

PROZORI ZA RAVNE KROVOVE

dimenzija prozora [cm] (dimenzija otvora za ugradnju)	60x60	60x90	70x70	80x80	90x90	90x120	100x100	120x120
površina zastakljenja [m²]	0,23	0,37	0,33	0,46	0,6	0,83	0,77	1,16
oznaka veličine	01K	02K	03K	04K	05K	06K	07K	08K
DXW Bez otvaranja Uw=0.70 W/m²K*	+	+	+	+	+	+	+	+

*prema EN 14351-1:2006+A2:2016



STRANA 18 ORIGINALA

LAK PRISTUP KROVU

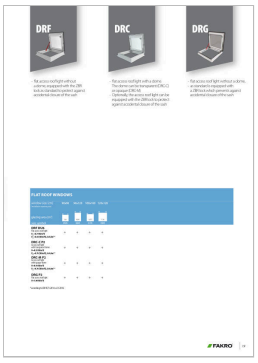
IZLAZNI KROVNI PROZORI ZA RAVNE KROVOVE DRF, DRC, DRG

- Obezbjeđuju siguran i udoban pristup ravnim krovovima. Upotreba posebnih šarki i funkcionalan način rada omogućavaju da se krilo otvori do 80° (kod dimenzija 90x120 i 120x120 otvara se do ugla od 60°). Gasne opruge olakšavaju rukovanje krilom. Pored toga, izlazni krovni prozor ima povećanu radnu sigurnost zahvaljujući protivkliznoj traci na profilima ramova.
- Ram izlaznog krovnog prozora izrađen je od višekomornih PVC profila ispunjenih izolacionim materijalom. Kod izlaznog krovnog prozora DRF gornji dio ima inovativni ravni staklopaket, dok model DRC ima kupolu od izdržljivog polikarbonata, a DRG je izlazni prozor sa staklenim segmentom.

Izlazni krovni prozori dostupni su u sljedećim varijantama:

1. Izlazni krovni prozor DRF sa staklopaketom DU6, sa unutrašnjim staklom protiv provale klase P2A i koeficijentom Uw od 0.74 W/m²K (EN14351-1:2006+A2:2016) i Urc=0,64 [W/m²K], A:4,0m² prema EN1873:2014+A1:2016
2. Izlazni krovni prozor DRC sa staklopaketom P2 i koeficijentom U od 0.93 W/m²K (EN 1873:2005) i Urc=0,76 [W/m²K], A:4,1m² prema EN 1873:2014+A1:2016
3. Izlazni krovni prozor DRG sa staklopaketom P2 i koeficijentom U od 1.00 W/m²K (EN14351-1:2006+A2:2016)

- Pogodan za ugradnju na dodatnu osnovu XRD/W visine 15 cm radi ugradnje na zelene krovove ili krovove sa šljunkom.
- Izlazni krovni prozor tipa C pogodan je za nagibe krova od 0° do 15°, dok su tipovi F i G namijenjeni za nagibe od 2° do 15° ili od 0° do 15° uz XRD/A.
- Konstrukcija izlaznog krovnog prozora omogućava ugradnju unutrašnjeg ručnog, kao i spoljnog solarnog pribora. Upotreba spoljne tende štiti prostoriju od pregrijavanja, dok unutrašnji pribor štiti od intenzivne sunčeve svjetlosti i doprinosi uređenju enterijera.



STRANA 19 ORIGINALA

DRF

- ravni izlazni krovni prozor bez kupole, standardno opremljen blokadom ZBR koja štiti od slučajnog zatvaranja krila

DRC

- ravni izlazni krovni prozor sa kupolom. Kupola može biti providna (DRC-C) ili neprovidna (DRC-M)
- Izlazni krovni prozor se opciono može opremiti blokadom ZBR koja štiti od slučajnog zatvaranja krila

DRG

- ravni izlazni krovni prozor bez kupole,
- standardno je opremljen blokadom ZBR koja sprječava slučajno zatvaranje krila

PROZORI ZA RAVNE KROVOVE

dimenzija prozora [cm] (dimenzija otvora za ugradnju)	90x90	90x120	100x100	120x120
površina zastakljenja [m²]	0,6	0,83	0,77	1,16
oznaka veličine	05K	06K	07K	08K
DRF DU6 Ravni izlazni krovni prozor Uw=0.74 W/m²K Urc=0.64 [W/m²K], A:4,0m² *	+	+	+	+
DRC-C P2 Izlazni krovni prozor sa providnom kupolom U=0.93 W/m²K Urc=0.76 [W/m²K], A:4,0m² *	+	+	+	+
DRC-M P2 Izlazni krovni prozor sa neprovidnom kupolom U=0.93 W/m²K Urc=0.76 [W/m²K], A:4,0m² *	+	+	+	+
DRG P2 Ravni izlazni krovni prozor U=1.00 W/m²K	+	+	+	+

*prema EN1873:2014+A1:2016



STRANA 20 ORIGINALA

DSC-C, DSF

EFIKASNO ODIMLJAVANJE

PROZORI ZA ODIMLJAVANJE ZA RAVNE KROVOVE

- Obilje prirodne svjetlosti u objektima sa ravnim krovovima.
- Ram prozora za odimljavanje izrađen je od višekomornih PVC profila ispunjenih izolacionim materijalom.
- Jednostavno otvaranje za postavljanje prozora u standardni položaj za provjetravanje (svakodnevni dotok svježeg vazduha).

- Krilo se za svakodnevno provjetravanje podiže na visinu od 23 cm, a u slučaju požara podiže se na 50 cm. Elementi mehanizma za podizanje krila nijesu vidljivi kada je prozor zatvoren.
- Mehanizam za otvaranje i dva ili četiri aktuatora od 24V obezbjeđuju savršen rad i lak pristup radi održavanja.
- Pogodni su za nagibe krova od 0° do 15°. Prilikom ugradnje prozori moraju biti horizontalno postavljeni.



STRANA 21 ORIGINALA

DSC-C_ P2

- prozor za odimljavanje za ravne krovove bez kupole
- moderan dizajn – novi prozori za odimljavanje imaju isti profil kao standardni prozori za ravne krovove
- gornji dio prozora ima inovativni ravni staklopaket DU6 Ug=0.5 W/m²K
- dimenzija 105x105 ima 1 m² geometrijske površine odimljavanja, radi ispunjavanja različitih standarda koji se zahtijevaju u različitim zemljama
- prozori DSF mogu se farbati u bilo koju boju iz palete RAL Classic
- Uw=0,79 W/m²K za DSF DU6 120x120 (PN-EN ISO 10077-1:2007)

DSF DU6

- prozor za odimljavanje za ravne krovove sa kupolom od izdržljivog polikarbonata. Kupola od izdržljivog polikarbonata može biti providna (DSC-C) ili neprovidna (DSC-M)
- opremljen staklopaketom P2 (Ug=1.1 W/m²K)
- Uw = 1,0 W/m²K za DSC-C2 P2 120x120 (PN-EN ISO 10077-1:2007)

PROZORI ZA ODIMLJAVANJE ZA RAVNE KROVOVE

dimenzija prozora [cm] (dimenzija otvora za ugradnju)	**100x100**	**105x105**	**120x120**
površina zastakljenja [m²]	0,77	1,00	1,16
oznaka veličine	07K	12K	08K
DSF DU6 Ug= 0.5 W/m²K	-	+	+
DSC-C2 P2 Ug=1.1 W/m²K	+	-	+



STRANA 22 ORIGINALA

DRL, LML

KOMPLETNO RJEŠENJE ZA PRISTUP KROVU

VRATA ZA IZLAZ NA RAVAN KROV

- Potpuno sklopljen proizvod.
- Ram je izrađen od višekomornih PVC profila ispunjenih izolacionim materijalom.
- Krilo je ispunjeno sendvič panelom radi savršenih svojstava toplotne izolacije.

- Krilo se može otvoriti do 60°. Gasne opruge olakšavaju otvaranje i zatvaranje, a krilo se može ostaviti u otvorenom položaju.
- Protivklizna traka na osnovi obezbjeđuje siguran pristup ravnom krovu.
- Dimenzije vrata za izlaz na krov prilagođene su dimenzijama tavanskih ljestava (tavanske ljestve se prodaju zasebno – pogledajte Katalog tavanskih ljestava).
- Pogodna za ugradnju na dodatnu osnovu XRD/W visine 15 cm radi ugradnje na zelene krovove ili krovove sa šljunkom.
- Mogućnost ugradnje dodatne blokade ZBR koja štiti od slučajnog zatvaranja krila.
- Pogodna za nagibe krova od 0° do 5°.

STRANA 23 ORIGINALA

DRL

- montira se na površinu krova
- cijela konstrukcija je izolovana

LML

(detalji se nalaze u Katalogu tavanskih ljestava)

- može se ugraditi u otvor ispod vrata za izlaz na krov DRL
- mehanizam koji olakšava rasklapanje i sklapanje ljestava
- dodatna prečka u kutiji
- široke (13 cm) protivklizne prečke

Vrata za izlaz na krov DRL su inovativan proizvod koji obezbjeđuje siguran i udoban pristup ravnim krovovima. Konstrukciona trajnost i raspon dimenzija čine ih savršenom kombinacijom sa tavanskim ljestvama, što daje sveobuhvatno rješenje za pristup ravnom krovu.

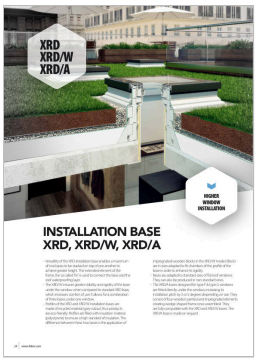
VRATA ZA IZLAZ NA RAVAN KROV

dimenzija vrata za izlaz na krov [cm] (dimenzija otvora za ugradnju)	**60x120**	**70x120**	**70x130**	**70x140**	**86x130**	**92x130**
oznaka veličine	13K	14K	15K	16K	17K	18K
DRL Uw=0.67 W/m²K*	+	+	+	+	+	+

*prema EN14351-1:2006+A2:2016

visina prostorije [cm]	**280**	**280**	**280**	**280**	**280**	**280**	**305**	**305**	**305**	**305**	**305**
dimenzija tavanskih ljestava [cm]	60x120	70x120	70x130	70x140	86x130	92x130	60x130	70x130	70x140	86x130	92x130
LML	+	+	+	+	+	+	+	+	+	+	+

PREVOD NA CRNOGORSKI JEZIK (NESLUŽBENI)
Ovo nije originalni dokument proizvođača. Mjerodavan je original, priložen iza prevoda: fakro-catalogue-flat-roof-windows-en.pdf.



STRANA 24 ORIGINALA

VIŠA UGRADNJA PROZORA

MONTAŽNA OSNOVA XRD, XRD/W, XRD/A

- Svestranost montažne osnove XRD omogućava da se najviše dvije osnove postave jedna na drugu radi postizanja veće visine. Produženi element rama, tzv. „peraje", služi za povezivanje osnove i hidroizolacionog sloja krova.
- XRD/W obezbjeđuje veću stabilnost i krutost osnove ispod prozora u poređenju sa standardnom osnovom XRD, što povećava udobnost korišćenja. Omogućava kombinaciju tri osnove ispod jednog prozora.
- Profili montažnih osnova XRD i XRD/W izrađeni su od recikliranog materijala (sive boje), pa su proizvodi ekološki prihvatljivi. Profili su ispunjeni izolacionim materijalom (polistirenom) radi visokog standarda izolacije. Razlika između ove dvije osnove je upotreba impregniranih drvenih blokova u modelu XRD/W. Blokovi su dimenzija prilagođenih komorama profila osnove, radi povećanja njene krutosti.
- Osnove su prilagođene standardnim dimenzijama prozora za ravne krovove. Mogu se izraditi i u nestandardnim dimenzijama.
- Osnove XRD/A, namijenjene za prozore tipa F i tipa G, postavljaju se neposredno ispod prozora i povećavaju nagib njegove ugradnje za 3 ili 5 stepeni, zavisno od dimenzije. Sastoje se od četiri obojena i impregnirana drvena elementa koji nakon sklapanja čine okvir u obliku klina. U potpunosti su kompatibilne sa osnovama XRD i XRD/W. Osnova XRD/A izrađuje se po zahtjevu.

STRANA 25 ORIGINALA

- produženi element osnove, tzv. „peraje", omogućava povezivanje montažne osnove sa hidroizolacionim slojem krova
- za višu konstrukciju odsijeca se „peraje" koje po obodu strši, a osnove se slažu jedna na drugu
- osnova XRD/A postavljena neposredno ispod prozora

Montažne osnove XRD i XRD/W posebno su projektovane za našu ponudu prozora za ravne krovove. Omogućavaju da se prozor ugradi 15 cm iznad linije krova, što može biti potrebno kod sistema zelenih krovova ili krovova sa šljunkom. Osnova XRD/A namijenjena je za prozore tipa F i tipa G i podiže ugao njihove ugradnje za 3 stepena.

MONTAŽNA OSNOVA

dimenzija prozora [cm]	60/60	60/90	70/70	80/80	90/60	90/90	90/120	100/100	100/150	120/90	120/120	120/220	140/140	150/100	200/100	60/120	70/120	70/130	70/140	86/130	92/130
oznaka veličine	01K	02K	03K	04K	31K	05K	06K	07K	10K	32K	08K	11K	09K	33K	34K	13K	14K	15K	16K	17K	18K
XRD	+	+	+	+	-	+	+	+	+	-	+	+	+	-	+	-	-	-	-	-	-
XRD/W	+	+	+	+	-	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+
XRD/A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-

DODATNI PRIBOR

ZSD

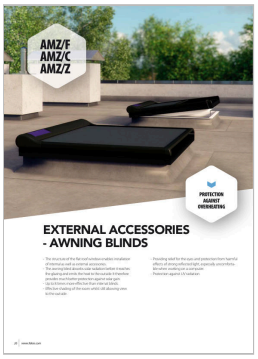
Teleskopska šipka koristi se za upravljanje prozorima za ravne krovove DMF, DMC, DMG, DMZ i unutrašnjim roletnama ARF/D. Standardna dužina šipke je 119 cm (može se produžiti do 330 cm).

ZBR

Blokada štiti od nenamjernog zatvaranja krila izazvanog slučajnim guranjem ili jakim naletima vjetra.

ZBL/D

Brava omogućava zaključavanje prozora ključem svuda gdje je potrebno zaštititi krov od neovlašćenog ulaska (npr. u višeporodičnim zgradama). Brava je kompatibilna sa svim standardnim izlaznim krovnim prozorima DRF, DRC i DRG i vratima za izlaz na krov DRL.



STRANA 26 ORIGINALA

AMZ/F, AMZ/C, AMZ/Z

ZAŠTITA OD PREGRIJAVANJA

SPOLJNI PRIBOR – SPOLJNE TENDE

- Konstrukcija prozora za ravne krovove omogućava ugradnju unutrašnjeg i spoljnog pribora.
- Tenda apsorbuje sunčevo zračenje prije nego što dopre do stakla i odaje toplotu napolje. Zbog toga pruža znatno bolju zaštitu od sunčevog zagrijavanja.
- Do 8 puta efikasnija od unutrašnjih roletni.
- Efikasno zasjenjenje prostorije uz zadržan pogled napolje.
- Olakšanje za oči i zaštita od štetnog djelovanja jake reflektovane svjetlosti, koja je posebno neprijatna pri radu na računaru.
- Zaštita od UV zračenja.

STRANA 27 ORIGINALA

AMZ/F SOLAR

- Za prozore za ravne krovove tipa F i tipa G.
- Udoban, automatski rad tende (inteligentni sistem upravlja tendom u zavisnosti od nivoa osunčanosti). Fotonaponski panel djeluje kao senzor i reaguje na sunčevo zračenje. Visok nivo osunčanosti automatski pokreće razmotavanje tende.
  Pri oblačnom vremenu tenda se automatski ponovo namotava, bez ikakve intervencije korisnika.
- Napaja se solarnim baterijskim paketom.

Upravljanje:

- Daljinski upravljač ili zidni prekidač nijesu uključeni.

AMZ/C Z-WAVE, AMZ/C SOLAR (pogodna za DRC)

- Za prozore za ravne krovove tipa C.
- Otvara se bežičnim Z-Wave sistemom.
- Inovativni profilni sistem omogućava ugradnju tende ispod kupole prozora.

Upravljanje:

- Daljinski upravljač ili zidni prekidač nijesu uključeni.

AMZ/Z Z-WAVE, AMZ/Z SOLAR

- Za prozore za ravne krovove tipa Z.

AMZ/Z Z-Wave:

- Otvara se bežičnim Z-Wave sistemom.

Upravljanje:

- Daljinski upravljač ili zidni prekidač nijesu uključeni.

AMZ/Z Solar:

- Udoban, automatski rad tende (inteligentni sistem upravlja tendom u zavisnosti od nivoa osunčanosti). Fotonaponski panel djeluje kao senzor i reaguje na sunčevo zračenje. Visok nivo osunčanosti automatski pokreće razmotavanje tende.
  Pri oblačnom vremenu tenda se automatski ponovo namotava, bez ikakve intervencije korisnika.
- Napaja se solarnim baterijskim paketom.

Upravljanje:

- Daljinski upravljač ili zidni prekidač nijesu uključeni.

089, 090	Tkanina sa 10% otvorene površine
092	Tkanina sa 1% otvorene površine
308	Tkanina sa 6% otvorene površine

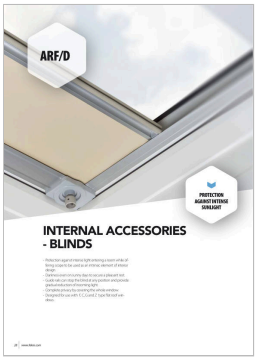
Uzorci materijala prikazani u štampi mogu se po boji razlikovati od stvarnog proizvoda.

dimenzija [cm]	60x60	60x90	70x70	80x80	90x60	90x90	90x120	100x100	100x150	120x90	120x120	120x220	140x140	150x100	200x100
oznaka veličine	01K	02K	03K	04K	31K	05K	06K	07K	10K	32K	08K	11K	09K	33K	34K
AMZ/F I Solar (089, 090)	+	+	+	+	-	+	+	+	-	-	+	+	+	-	-
AMZ/F II Solar (092)	+	+	+	+	-	+	+	+	-	-	+	+	+	-	-
AMZ/C I Z-Wave (090)	+	+	+	+	-	+	+	+	+	-	+	+	+	-	-
AMZ/C II Z-Wave (092)	+	+	+	+	-	+	+	+	+	-	+	+	+	-	-
AMZ/Z III Z-Wave (308)	+	+	+	+	-	+	+	+	-	-	+	-	-	-	-
AMZ/Z III Solar (308)	+	+	+	+	-	+	+	+	-	-	+	-	-	-	-

Pri ugradnji tendi AMZ/C Z-Wave, AMZ/Z Z-Wave na prozore DX_ i DM_ potrebno je posebno nabaviti jedinicu za napajanje i daljinski upravljač.

Oznake na crtežima

8 times more effective	8 puta efikasnije
SOLAR powered	SOLAR – napajanje solarnom energijom



STRANA 28 ORIGINALA

ARF/D

ZAŠTITA OD INTENZIVNE SUNČEVE SVJETLOSTI

UNUTRAŠNJI PRIBOR – ROLETNE

- Zaštita od intenzivne svjetlosti koja ulazi u prostoriju, uz mogućnost da se koristi kao sastavni element uređenja enterijera.
- Zamračenje čak i za sunčanih dana, radi ugodnog odmora.
- Vodilice omogućavaju zaustavljanje roletne u bilo kom položaju i postepeno smanjenje svjetlosti koja ulazi.
- Potpuna privatnost zahvaljujući prekrivanju čitavog prozora.
- Namijenjene su za upotrebu sa prozorima za ravne krovove tipa F, C, G i Z.

STRANA 29 ORIGINALA

ARF/D SOLAR

- Napaja se solarnim baterijskim paketom.

- Otvara se bežičnim Z-Wave sistemom
- Vodilice i kaseta dostupne su u dvije verzije boje – lakirana bijela i eloksirano srebrna.

Upravljanje:

- Daljinski upravljač ili zidni prekidač nijesu uključeni.

ARF/D

- Estetska aluminijumska maska koja skriva mehanizam roletne
- Zaštita od zagrijavanja

Upravljanje:

- Upravlja se pomoću šipke za upravljanje ZSD

ARF/D Z-WAVE

- Estetska aluminijumska maska koja skriva mehanizam roletne
- Zaštita od zagrijavanja
- Otvara se bežičnim Z-Wave sistemom
- Napaja se iz električne mreže

Upravljanje:

- Daljinski upravljač ili zidni prekidač nijesu uključeni.

Uzorci materijala prikazani u štampi mogu se po boji razlikovati od stvarnog proizvoda.

dimenzija [cm]	60x60	60x90	70x70	80x80	90x60	90x90	90x120	100x100	100x150	120x90	120x120	120x220	140x140	150x100	200x100
oznaka veličine	01K	02K	03K	04K	31K	05K	06K	07K	10K	32K	08K	11K	09K	33K	34K
ARF/D I	+	+	+	+	+	+	+	+	-	+	+	-	-	-	-
ARF/D II	+	+	+	+	+	+	+	+	-	+	+	-	-	-	-
ARF/D I Z-Wave	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-
ARF/D II Z-Wave	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-
ARF/D Solar I (NOVO)	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+
ARF/D Solar II (NOVO)	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+
ARF/D Z-Wave NL I															
ARF/D Z-Wave NL II															

Oznake na crtežima

SOLAR powered	SOLAR – napajanje solarnom energijom
I	255, 055, 052, 051, 265
II	053, 227, 256, 054, 260, 056, 059, 233, 226, 275, 277



STRANA 30 ORIGINALA

EF_

SISTEM ZA UGRADNJU KROVNIH PROZORA

SISTEM ZA RAVNE KROVOVE EF_

- Sistem za ravne krovove omogućava da se nagib ugradnje prozora podigne u odnosu na krov, pa se tako standardni krovni prozori mogu koristiti na ravnom krovu.
- Najčešće se koristi za obezbjeđivanje prirodne svjetlosti pri adaptaciji potkrovlja sa krovom malog nagiba u stambeni ili poslovni prostor, kao i u proizvodnim halama i skladištima, uz zadržavanje dobrih izolacionih svojstava.
- Sistem se sastoji od dvije glavne komponente: posebno projektovane drvene baze sa izolacionim materijalom i aluminijumske opšivke za povezivanje prozora sa kućištem.

Nakon ugradnje, drveno kućište mora biti pravilno pričvršćeno i zaptiveno prema postojećem krovnom pokrivaču.

- Prozori u sistemu za ravne krovove mogu se opremiti unutrašnjim priborom za zaštitu od sunčeve svjetlosti i spoljnim priborom za zaštitu od pregrijavanja prostorije. Preporučujemo upotrebu električno upravljanog pribora.
- Pogodan za nagibe krova od 0° do 15°.
- Dostupan u nekoliko varijanti. Svaka obezbjeđuje osvjetljenje i provjetravanje prostorije i, zavisno od primijenjenog rješenja, može nuditi dodatne funkcije.

STRANA 31 ORIGINALA

OSVJETLJENJE
EFW

- sa krovnim prozorom – preporučuje se prozor FTP Z-Wave sa daljinskim upravljačem

IZLAZ
EFW

- sa bočno otvarajućim izlaznim prozorom FWP – pristup ravnom krovu

ODIMLJAVANJE
EFS

- sa prozorom za odimljavanje FSP koji služi za odvođenje dima i toplote nastalih tokom požara

SISTEM ZA RAVNE KROVOVE

dimenzija prozora [cm] (spoljna dimenzija rama)	55/78	55/98	66/98	66/118	66/140	78/98	78/118	78/140	78/160	94/118	94/140	114/118	114/140	134/98
oznaka veličine	01	02	03	04	14	05	06	07	13	08	09	10	11	12
EFW Sistem za ravne krovove za krovne prozore	+	+	+	+	+	+	+	+	+	+	+	+	+	+

dimenzija prozora [cm] (spoljna dimenzija rama)	66/78	66/98	66/118	78/98	78/118	94/118	94/98
oznaka veličine	22	03	04	05	06	08	15
EFW Sistem za ravne krovove za krovne prozore	+	+	+	+	+	+	+
FWP U5 Bočno otvarajući izlazni prozor	+	+	+	+	+	+	+

dimenzija prozora [cm] (spoljna dimenzija rama)	78/140	94/140	114/118	114/140	134/98
oznaka veličine	07	09	10	11	12
EFS Sistem za ravne krovove za prozore za odimljavanje	+	+	+	+	+
FSP P2 Prozor za odimljavanje	+	+	+	+	+



STRANA 32 ORIGINALA

EFR

SISTEM ZA UGRADNJU KOMBINACIJE KROVNIH PROZORA

ZABATNI SISTEM ZA RAVNE KROVOVE EFR

- Sistem EFR omogućava kombinovanje krovnih prozora u konstrukciji ravnog krova.
- Drvena zabatna konstrukcija sa kompletnim setom opšivki svodi vrijeme ugradnje na minimum. Estetsko i veoma efikasno rješenje za osvjetljavanje prostorija u objektima sa krovovima malog nagiba.
- Zabatni sistem za ravne krovove obezbjeđuje dobra svojstva toplotne izolacije. Konstrukcija omogućava ugradnju standardnih drvenih krovnih prozora.
- Proizvod se isporučuje kao kompletan sistem i obezbjeđuje visok standard toplotne izolacije. Sastoji se od drvenog kerba sa pomoćnim rogovima, OSB i EPS ploča. Unutrašnje OSB ploče mogu se obraditi oblogom. Najmanje rastojanje između susjednih prozora je 40 mm. Prozori se kupuju zasebno.
- Prozori se mogu opremiti unutrašnjim priborom za zaštitu od sunčeve svjetlosti i spoljnim priborom za zaštitu od pregrijavanja prostorije. Preporučujemo upotrebu električno upravljanog pribora.
- Pogodan za nagibe krova od 0° do 15°.



STRANA 33 ORIGINALA

EFR

- Osnovna verzija sistema EFR nudi se za prozore širine 78 cm i 114 cm u kombinaciji B2/2 (pogled odozgo).
- Maksimalna visina prozora za ovaj sistem je 140 cm.
- Maksimalan otvor u ravnom krovu je 228x250 cm.
- Standardni ugao između prozora je 120°, a ugao prema krovu je 30°.
- Druge izvedbe zabatnog sistema za ravne krovove EFR (B3/2, B4/2) i drugi uglovi prozora dostupni su po zahtjevu. Ukupna širina kombinacije ne smije prelaziti 250 cm.

ZABATNI SISTEM ZA RAVNE KROVOVE

Dimenzija [cm]	4 kom. 78x98	4 kom. 78x118	4 kom. 78x140	4 kom. 114x98	4 kom. 114x118	4 kom. 114x140
Ukupne dimenzije proizvoda [cm] – (S x L x h)	196x217x73	196x252x83	196x290x94	268x217x73	268x252x83	268x290x94
Dimenzija otvora u ravnom krovu [cm]	156x177	156x212	156x250	228x177	228x212	228x250
Površina zastakljenja B2/2 [m²]	1.88	2.36	2.92	3.04	3.80	4.64
Šifra proizvoda	B2/2 05	B2/2 06	B2/2 07	B2/2 20	B2/2 10	B2/2 11
EFR	+	+	+	+	+	+



STRANA 34 ORIGINALA

NAPOMENE



STRANA 36 ORIGINALA

FAKRO zadržava pravo izmjene specifikacija i tehničkih parametara proizvoda bez prethodne najave.

FLAT ROOF
SYSTEM PRODUCTS
2023



Wide range
of durable
and insulated
flat roof windows

FAKRO®

INVITE THE LIGHT INSIDE



FLAT ROOFS

MEANS OF ILLUMINATION

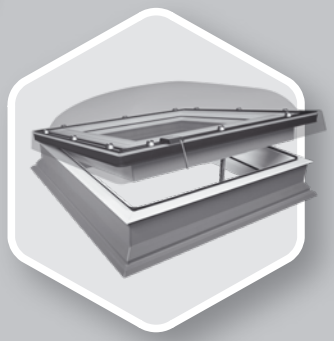
The benefits of natural illumination of buildings are unquestionable but in those with flat roofs it is not always possible to install sufficient standard vertical windows. A source of natural light should be available in any living space to make its occupants feel comfortable. The ideal solution for providing light is the installation of specially designed products for flat roofs.

FAKRO flat roof products bring the very highest standard of natural light to interiors. They provide ventilation, combine exceptional functionality, modern design and perfect insulation performance. In short, they can transform any room under a flat roof into warm, bright and extremely comfortable space.



MAIN ADVANTAGES OF FLAT ROOF WINDOWS

HIGH ENERGY-EFFICIENCY

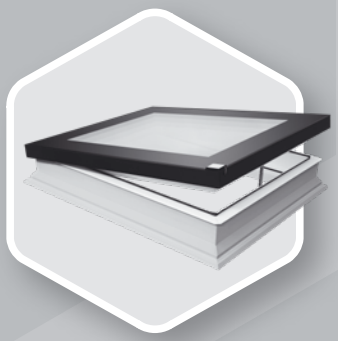


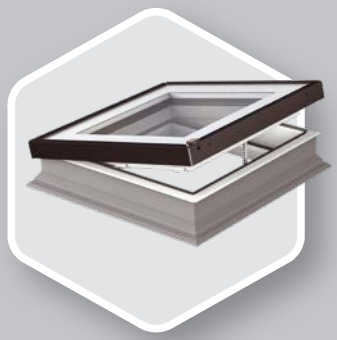
WINDOW TYPE C

The special structure of FAKRO flat roof windows provides excellent thermal insulation. The DEC U8 (VSG) window with a passive, quadruple U8 (VSG) glazing unit is characterised by a heat transfer coefficient with a rating of **U = 0.55 W/m²K** (EN 1873). This excellent result is for a 120x120 cm window with frame, sash and dome.

WINDOW TYPE F

The type F window is available with a passive, quadruple DU8 glazing unit. The heat transfer coefficient for the whole window is **Uw = 0.64 W/m²K** (PN-EN 14351-1) and makes the window suitable for use in energy-efficient and passive buildings.





WINDOW TYPE G

The type G window with a single chamber, anti-burglary P2 glazing unit features 22% better thermal insulation performance than the competition.

AVAILABLE IN ANY SIZE

In addition to standard sizes, type F & G windows can be manufactured in non-standard dimensions (in the range of 60x60 cm - 120x220 cm). Thermal insulation standards of buildings have been significantly increased and old skylights in flat roofs do not meet current requirements. The specification of type F & G windows enables existing, often non-standard skylights to be replaced with ease. Taking advantage of such opportunity provides improved insulation as well as high flexibility when designing or renovating buildings.

AMPLE NATURAL LIGHT

The basic function of the window is to provide an abundance of natural light in buildings with flat roofs. With specially designed shapes of the sash and frame profiles, flat roof windows feature up to 16% greater glazing area when compared with other manufacturer's windows of a similar size. With such solution interiors under a flat roof are full of daylight.

INSTALLATION IN GREEN ROOFS

The flat roof window can also be mounted on an additional XRD base with a height of 15 cm to ensure installation in green or gravel roofs.

FLAT ROOF WINDOW STRUCTURE

Flat roof window frame is constructed using reinforced multi-chamber PVC profiles. The internal surface of the frame is white (RAL 9010). The material used in the profile features high resistance against acids and has low moisture absorption. As a result, the window can be installed in every room. Profiles are filled with insulation material, thus additionally improving the energy saving parameters of the product. Each window comes with the specially profiled covering material under the frame drip cap that further improves the ultimate finish between the window and the roof covering.





Window type F

(with innovative glazing unit)

- DEF
- DMF
- DXF



Window type C

(with glazing unit and dome)

- DEC
- DMC
- DXC



Window type G

(with glazing unit and glass section)

- DEG
- DMG
- DXG



Window type Z

(factory equipped with AMZ/Z, glazing unit and angular glass section)

- DEZ-A AMZ/Z Z-Wave
- DMZ-A AMZ/Z Z-Wave
- DXZ-A AMZ/Z Z-Wave

The type F flat roof window is equipped with an innovative glazing unit which offers excellent thermal insulation and is of contemporary design. The window can be manufactured in non-standard sizes within production tolerances or capability. The type C window is equipped with a glazing unit and polycarbonate dome. The type G window combines innovative appearance of the type F window and the design offered by the type C window. The type Z window comes with factory fitted angular glass section. Flat roof windows are available in three opening versions:

DE_ - electrically opened DM_ - manually opened DX_ - non-opening

The actuator in electrically opened windows is positioned in the sash and is protected against adverse weather conditions such as rain and snow. This ensures trouble free operation of the actuator and all control elements.



The electrically operated windows (type F, type C, type G and type Z) have a built-in sensor that automatically activates the sash closing function when it rains.





DEF
DMF
DXF

reddot design award
winner 2016

The design innovation of the DEF DU6 flat roof window has been acknowledged with the prestigious Red Dot Design Award.

FLAT ROOF WINDOWS TYPE F

DU6

DU8

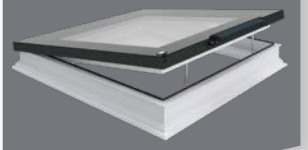
- An abundance of natural light. The specially designed shape of the window profiles features glazing area up to 16% greater than those of competitors.
- The frame of the flat roof window is constructed of multi-chamber PVC profiles filled with insulation material. The upper part of the window has an innovative flat glazing unit. The external glass is toughened and reflects the sun rays while the internal pane is anti-burglary class P2A. Should the pane crack, shards of glass do not pose a danger.
- Windows are available with two glazing units:
  1) DU6 triple-glazed unit with a whole window Uw-value of 0.70 W/m^{2}K (EN 14351-1) and Urc=0,59 [W/m^{2}K], A:4,0m^2 according to EN1873:2014
  2) Quadruple glazing unit DU8 with a whole window Uw-value of 0.64 W/m^{2}K (EN 14351-1) and Urc=0,51 [W/m^{2}K], A:4,0m^2 according En 1873:2014 Such excellent performance makes the window suitable for use in passive buildings.

RAL

2-15°

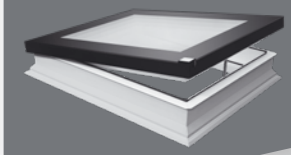
- In addition to standard sizes, type F windows can be manufactured in any size (in the range of 60x60 cm - 120x220 cm). This assists in the replacement of existing skylights (often in non-standard dimensions) which fail to meet current thermal requirements.
- Available with the ColourLine option which enables customers to customize their windows to suit their personal taste.
- Windows can be mounted on an additional XRD or XRD/W base with a height of 15 cm to ensure installation in green or gravel roofs.
- If the roof pitch is less than 2° or if it is advisable to increase the installation angle, the XRD/A angular installation base should be used, which lifts installation angle by 3 or 5 degrees depending on size..
- Suitable for roof pitches between 2° and 15° or 0° -15° with the XRD/A base.
- The structure of the window enables installation of internal as well as external accessories.

DEF Solar



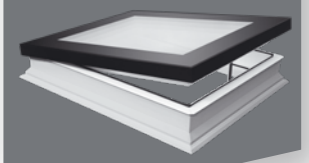
- autonomous window powered by solar energy
- opened via remote control in wireless Z-Wave system
- included in the kit: remote control (available to order), rain sensor, solar panel and battery
- sash tilts 12cm.

DEF



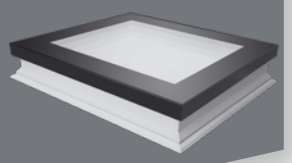
- electrically opened with wireless Z-Wave system
- included in the kit: power supply, remote control (available to order), rain sensor
- sash tilts 12cm.

DMF



- opened manually by means of included control rod (2.2 m)
- sash tilts 30 cm

DXF



- non-opening

The autonomous DEF Solar window is powered by solar energy through the special PV panel, therefore the product does not require any additional electrical systems. The PV panel integrated with the battery ensures continuous operation even on cloudy days. Proven design of flat roof windows stands behind excellent performance and impeccable aesthetics. Convenient operation with the wireless Z-Wave system using the included ZRH1 remote control.

Flat roof windows type F:

- Have a very high, Class B reaction to fire (PN-EN 13501-1). This confirms their high performance in relation to spread of flame.
- Are characterized by the highest impact resistance - 950 mm (Class 5 according to EN 14351-1).
- Have been tested for sound insulation during rainfall (ISO 10140-1/A2:2014) and obtained very good results. The L_{IA} coefficent for DEF DU6 windows is 36 dB.

FLAT ROOF WINDOWS

window size [cm] (installation opening size)	60x60	60x90	70x70	80x80	90x60	90x90	90x120	100x100	100x150	120x90[1)]	120x120	120x220[1)]	140x140[1)]	150x100	200x100
glazing area [m²]	0,23	0,37	0,33	0,46	0,37	0,6	0,83	0,77	1,21	0,83	1,16	2,23	1,63	1,21	1,64
size symbol	01K	02K	03K	04K	31K	05K	06K	07K	10K	32K	08K	11K	09K	33K	34K
DEF DU6 Solar U_w=0.70 W/m²K U_{cw}=0.59 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DEF DU6 Electrically opened U_w=0.70 W/m²K U_{cw}=0.59 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DEF DU8 Electrically opened U_w=0.64 W/m²K U_{cw}=0.51 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-
DMF DU6 Opened manually by means of included control rod (2.2 m) U_w=0.70 W/m²K U_{cw}=0.59 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DMF DU8 Opened manually by means of included control rod (2.2 m) U_w=0.64 W/m²K U_{cw}=0.51 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-
DXF DU6 Non-opening U_w=0.70 W/m²K U_{cw}=0.59 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DXF DU8 Non-opening U_w=0.64 W/m²K U_{cw}=0.51 W/m²K***	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

NEW

*according to EN 14351-1:2006+A2:2016

***according to EN 1873:2014+A1:2016 for the size 120x120, A:4,1m²

Position of hinges and actuators in DEF and DMF opening windows.

[1] DMF windows in sizes of 100x150 cm, 120x90 and 120x120cm have one screw actuator.



DEC
DMC
DXC

WINDOWS WITH DURABLE POLYCARBONATE DOME

FLAT ROOF WINDOWS TYPE C

P2

U8

0-15°

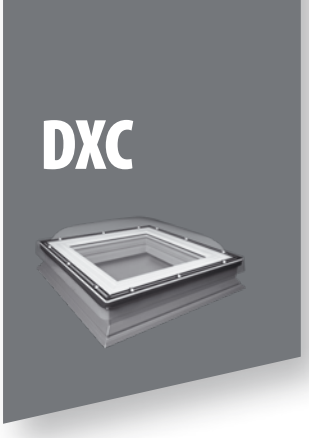
- An abundance of natural light. The specially designed shape of the window profiles features glazing area up to 16% greater than those of competitors.
- The frame of the flat roof window is constructed of multi-chamber PVC profiles filled with insulation material. The dome is made of durable polycarbonate which is characterised by high resistance to impact and adverse weather conditions such as rain or hail. Special coatings on the outer and inner surface of the dome protect it against UV radiation. Available with a transparent dome D_C-C or an opaque dome D_C-M.
- Windows are available with two glazing units:
  1) Anti-burglary, P2 glazing unit with a whole window U-value Urc of 0.73 as per EN 1873 (U=1.2 W/m^{2}K as per EN 12567-2).
  2) Quadruple glazing unit U8 (VSG) with a whole window U-value of 0.72 W/m^{2}K as per EN 12567-2 (U=0.55 W/m^{2}K as per EN 1873 for the size 120x120 cm). Such excellent parameters make the window suitable for use in passive buildings.
- Wide range of standars sizes
- Windows can be mounted on an additional XRD or XRD/W base with a height of 15 cm to ensure installation in green or gravel roofs.
- Suitable for roof pitches between 0° and 15°.
- The structure of the window enables installation of internal as well as external accessories.



- electrically opened with wireless Z-Wave system
- included in the kit: power supply, remote control (available to order), rain sensor
- sash tilts 12 cm.



- opened manually by means of included control rod (2.2 m)
- sash tilts 30 cm



- non-opening

Flat roof windows type C:

- Have a very high, Class B reaction to fire (PN-EN 13501-1). This confirms their high performance in relation to spread of flame.
- Are characterized by the highest impact resistance (SB1200 according to EN 1873).
- Have been tested for sound insulation during rainfall (ISO 10140-1/A2:2014) and obtained very good results. The L_{IA} coefficent for DEC-C P2 windows is 45.6 dB.

FLAT ROOF WINDOWS

window size [cm] (installation opening size)	60x60	60x90	70x70	80x80	90x90	90x120	100x100	100x150[1)]	120x120[1)]	120x220[2)]	140x140[2)]
glazing area [m²]	0,23	0,37	0,33	0,46	0,6	0,83	0,77	1,21	1,16	2,23	1,63
size symbol	01K	02K	03K	04K	05K	06K	07K	10K	08K	11K	09K
DEC-C U8 (VSG) Electrically opened **U=0.72W/m²K*** **U=0.55W/m²K****	+	+	+	+	+	+	+	+	+	-	-
DEC-C P2 Electrically opened **U=1.2 W/m²K*** **Urc=0.73 W/m²K*****	+	+	+	+	+	+	+	+	+	+	+
DMC-C P2 Opened manually by means of included control rod (2.2 m) **U=1.2 W/m²K*** **Urc=0.73 W/m²K*****	+	+	+	+	+	+	+	+	+	+	+
DXC-C P2 Non-opening **U=1.2 W/m²K*** **Urc=0.73 W/m²K*****	+	+	+	+	+	+	+	+	+	+	+

*according to EN 12567-2
**according to EN 1873 for the size 120x120 cm.
***according to EN 1873:2014+A1:2016 for the size 120x120, A:4,1m²

Position of hinges and actuators in DEC and DMC opening windows.
[1] DEC U8(VSG) windows in sizes of 100x150 cm and 120x120 cm have two electric actuators.
[2] DMC P2 windows in sizes of 140x140 cm and 120x220 cm have one screw actuator.



D_F Secure
D_C Secure

ANTI-BURGLARY WINDOWS IN RC2 CLASS

FLAT ROOF WINDOWS D_F SECURE, D_C SECURE

- An abundance of natural light. The specially designed shape of the window profiles features glazing area up to 16% greater than those of competitors.
- The frame of the flat roof window is constructed of multi-chamber PVC profiles filled with insulation material. In the D_F Secure, the upper part of the window comes with an innovative flat glazing unit, while D_C Secure windows have a dome made of durable polycarbonate.
- Windows are available with two glazing units:
  1) D_F Secure windows with DU6 Secure glazing with a class P4A anti-burglary inner pane. The whole window U-value is 0.70 W/m^{2}K (EN 14351-1).
  2) D_C Secure windows with anti-burglary P4 glazing unit featuring a whole window U-value of 1.2 W/m^{2}K (EN 12567-2). Inner glass is anti-burglary and offers class P4A.

- Windows can be mounted on an additional XRD or XRD/W base with a height of 15 cm to ensure installation in green or gravel roofs.
- The type C flat roof window is suitable for roof pitches between 0° and 15°, while the type F is designed for pitches between 2° and 15° or 0° -15° with the XRD/A.
- If in the type F Secure window the roof pitch is less than 2° or if it is advisable to increase the installation angle, the XRD/A angular installation base should be used, which fitted directly beneath the window lifts installation angle by 3 degrees.
- The structure of the window enables installation of internal as well as external accessories.



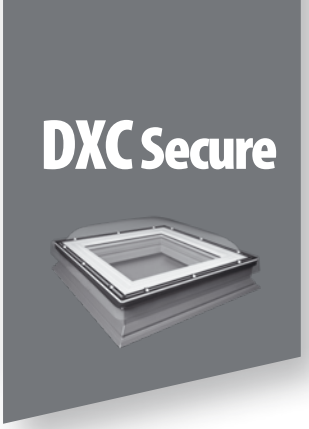
- opened manually by means of included control rod (2.2 m)
- sash tilts 30 cm



- non-opening



- opened manually by means of included control rod (2.2 m)
- sash tilts 30 cm



- non-opening

Flat roof windows D_F Secure, D_C Secure:

- Comply with European anti-burglary class RC2 (EN 1627)
- Have a very high, Class B reaction to fire (PN-EN 13501-1). This confirms their high performance in relation to spread of flame.
- Are characterized by the highest impact resistance (SB1200 according to EN 1873).

FLAT ROOF WINDOWS

window size [cm] (installation opening size)	90x90	90x120	100x100	120x90	120x120
glazing area [m²]	0,6	0,83	0,77	0,83	1,16
size symbol	05K	06K	07K	32K	08K
DMF DU6 Secure Opened manually by means of included control rod (2.2 m) **U_w=0.70 W/m²K***	+	+	+	+	+
DXF DU6 Secure Non-opening **U_w=0.70 W/m²K***	+	+	+	+	+
DMC-C P4 Secure Electrically opened **U=1.2 W/m²K****	+	+	+	-	+
DXC-C P4 Secure Non-opening **U=1.2 W/m²K****	+	+	+	-	+

*according to EN EN 14351-1:2006+A2:2016
**according to EN 12567-2

Position of hinges and actuators in DMF Secure and DMC Secure opening windows.

DEG
DMG
DXG



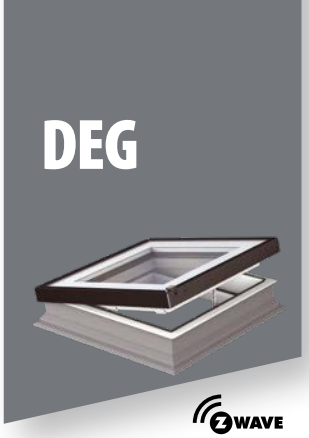
WINDOWS WITH SPECIAL GLASS SECTION

FLAT ROOF WINDOWS TYPE G

P2

- The D_G window construction is based on the solutions available in our type C window range. The window is covered from the top with a special glass section that consists of 4 mm or 6 mm toughened glass depending on the unit size combined with a unique aluminium black profile. The glass section is factory applied to the window which substantially reduces its installation time.
- Excellent thermal insulation performance. The heat transfer coefficient for the complete window is Uw=0,92 [W/m^{2}K] and Urc=0,71 [W/m^{2}K] for A:4,0m^2 according to En 1873:2014 , which is 22% better than solutions offered by the competition
- An abundance of natural light. The specially designed shape of the window profiles features glazing area up to 16% greater than those of competitors.
- Windows are offered with a safety P2 glazing unit equipped with internal laminated glass in P2A class ensuring safety of use. Optionally, there is also available anti-burglary glazing P4 in P4A class.
- Available to special order are non-standard sizes ranging from 60x60 cm to 120x220 cm. This assists in the replacement of existing skylights (often in non-standard dimensions) which fail to meet current thermal requirements.
- Windows can be mounted on an additional XRD or XRD/W base with a height of 15 cm to ensure installation in green or gravel roofs.
- Windows can be installed in the roof pitch as low as 2° or 0° with the XRD/A base thanks to the innovative method of rain water drainage from the window surface.
- The structure of the window enables installation of internal as well as external accessories.

2-15°
5-15°



- electrically opened with wireless Z-Wave system
- included in the kit: power supply, remote control (available to order), rain sensor
- sash tilts 12 cm.



- opened manually by means of included control rod (2.2 m)
- sash tilts 30 cm



- non-opening

The new range of D_G windows to expand the offer of products for flat roos.
Windows of this type incorporate solutions known from type C & type F windows, therefore these products are technologically advanced, offer high operational features and provide an alternative solution for bringing natural daylight into rooms below a flat roof. Their modern design referes to the prestigious award-winning products from the type F flat roof window range.

The D_G flat roof windows have been tested for sound insulation during rainfall (ISO 10140-1/A2:2014) and obtained very good results. The L_{IA} coefficent for DEG P2 windows is 42.1 dB.

FLAT ROOF WINDOWS

window size [cm] (installation opening size)	60x60	60x90	70x70	80x80	90x60	90x90	90x120	100x100	100x150	120x90[1)]	120x120	120x220[1)]	140x140[1)]	150x100	200x100
glazing area [m²]	0,23	0,37	0,33	0,46	0,37	0,6	0,83	0,77	1,21	0,83	1,16	2,23	1,63	1,21	1,64
size symbol	01K	02K	03K	04K	31K	05K	06K	07K	10K	32K	08K	11K	09K	33K	34K
DEG P2 Electrically opened U_w=0.92 W/m²K* U_{cc}=0,71 [W/m²K]**	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DMG P2 Opened manually by means of included control rod (2.2 m) U_w=0.92 W/m²K* U_{cc}=0,71 [W/m²K]**	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DXG P2 Non-opening U_w=0.92 W/m²K* U_{cc}=0,71 [W/m²K]**	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

*according to EN 14351-1:2006+A2:2016
**according to 1873:2014; A:4,0m²

Position of hinges and actuators in D_G opening windows.
[1] DMG windows in sizes of 100x150 cm and 120x120 cm have one screw actuator.



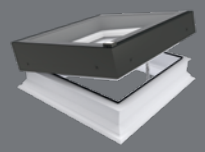
D_Z-A AMZ/Z

WINDOWS WITH ANGLED GLASS SECTION

FLAT ROOF WINDOWS TYPE Z

- Windows as standard are factory-fitted with AMZ/Z. Complete solution ensuring drainage of rainwater from a horizontally installed window while maintaining the flat surface as requested by customers.
- Installation possible from 0 degrees – the shape of windows has been designed to allow their installation without any additional elements that would increase their mounting pitch.
- Excellent thermal insulation performance thanks to proven design of the window. The heat transfer coefficient for the complete window is 0.95 W/m^{2}K.
- Windows are offered with a safety P2 glazing unit equipped with internal laminated glass in P2A class ensuring safety of use. Optionally, there is also available anti-burglary glazing P4 with internal laminated glass in P4A class.
- Z-Wave awning blind under the glass section, thus providing customers with a fully functional solution while saving time and limiting investment expenses.
- Factory-fitted angled glass section replacing a dome reduces installation time.
- Wide range of standard sizes and option to produce windows in non-standard ones (from 60x60 cm to 120x120 cm) which makes them suitable for renovation purposes and for use in projects to meet customer's specifications.
- Eco-friendly thanks to the use of profiles made largely from recycled material.
- Windows can be equipped with awning blinds as well as internal accessories. They are also fully compatible with installation accessories for FAKRO flat roof windows.

D_Z-A AMZ/Z



- electrically opened with wireless, Z-Wave system, remote control,
- sash tilts 12 cm,
- opened manually,
- non-opening.

The type Z windows are built based on the the design incorporated in our type G windows.
A specially constructed glass section with a slope on the outer surface allows drainage of water even when the window is fitted perfectly horizontally in relation to the roofline.

The new D_Z window line offers the widest range of applications to complement the FAKRO flat roof window offering. Windows are factory equipped with AMZ/Z, glazing unit and glass section.

FLAT ROOF WINDOWS								
window size [cm] (installation opening size)	60x60	60x90	70x70	80x80	90x90	90x120	100x100	120x120
glazing area [m²]	0,23	0,37	0,33	0,46	0,6	0,83	0,77	1,16
size symbol	01K	02K	03K	04K	05K	06K	07K	08K
DEZ-A P2 Electrically opened U_w=0.95 W/m²K	+	+	+	+	+	+	+	+
DMZ-A P2 Opened manually by means of included control rod (2.2 m) U_w=0.95 W/m²K	+	+	+	+	+	+	+	+
DXZ-A P2 Non-opening U_w=0.95 W/m²K	+	+	+	+	+	+	+	+

*according to EN 14351-1:2006+A2:2016



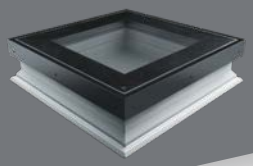
FLAT ROOF WINDOWS DXW

Our innovative DXW flat roof window has been given the prestigious "ICONIC AWARDS 2018: Innovative Architecture - Best of Best".

- An abundance of natural light in buildings with flat roofs.
- The frame of the flat roof window is constructed of multi-chamber PVC profiles filled with insulation material. The upper part of the window comes with an innovative flat glazing unit.
- The window comes with passive, double-chamber glazing unit with a perfect U-value of 0.70 W/m^{2}K.
- Windows can be mounted on an additional XRD/W base with a height of 15 cm to ensure installation in green or gravel roofs.

- Suitable for roof pitches between 0° and 15°.
- It is possible to install the same internal accessories which are used in all our type F flat roof windows.

DXW



- providing a surface level with the roof and a special non-slip glass to ensure complete safety when walking across the window
- enhanced load capacity, operational load of 500kg/m^2,
- innovative method of glazing unit installation
- high resistance to break-in attempts thanks to reinforced design
- reduced heat loss (Uw = 0.70 W/m^{2}K)
- modern design and high quality finish
- quick and easy installation

The DXW flat roof window offers a completely new approach to be taken with flat roof design. Its specially strengthened sash and frame enable it to be installed completely flush within the roofline. With special design features such as enhanced load-bearing capacity and a lasting, non-slip glass you can walk across its surface freely.

FLAT ROOF WINDOWS

window size [cm] (installation opening size)	60x60	60x90	70x70	80x80	90x90	90x120	100x100	120x120
glazing area [m^2]	0,23	0,37	0,33	0,46	0,6	0,83	0,77	1,16
size symbol	01K	02K	03K	04K	05K	06K	07K	08K
DXW Non-opening **U_w=0.70 W/m^{2}K***	+	+	+	+	+	+	+	+

*according to EN 14351-1:2006+A2:2016



FLAT ACCESS ROOF LIGHTS DRF, DRC, DRG

DU6 P2

- Providing safe and convenient access to flat roofs. The use of special hinges and a functional method of operation enables the sash to be opened to 80° (in sizes 90x120 and 120x120 opened up to an angle of 60°). Gas springs facilitate operation of the sash. Additionally, the access roof light incorporates increased operational safety through use of an anti-slip tape on its frame profiles.
- The frame of the access roof light is constructed of multi-chamber PVC profiles filled with insulation material. In the DRF access roof light, the upper part comes with an innovative flat glazing unit, while the DRC model has a dome made of durable polycarbonate DRG hatch window with a glass segment.
- The roof lights are available in options:
  1). The DRF access roof light with DU6 glazing unit with a class P2A anti-burglary inner pane and the Uw-value of 0.74 W/m^{2}K (EN14351-1:2006+A2:2016) and Urc=0,64 [W/m^{2}K], A:4,0m^2 according to EN1873:2014+A1:2016
  2). The DRC access roof light with P2 glazing unit and the U-value of 0.93 W/m^{2}K (EN 1873:2005) and Urc=0,76 [W/m^{2}K], A:4,1m^2 according to EN 1873:2014+A1:2016
  3). The DRG access rooflight with P2 glazing unit and U-value of 1.00 W/m^{2}K (EN14351-1:2006+A2:2016)

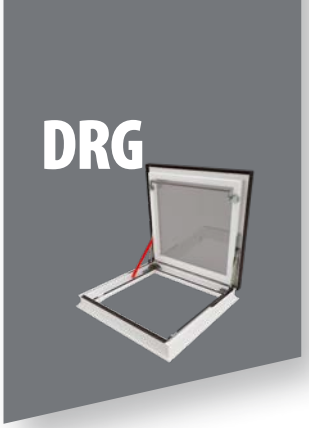
  -Suitable for installation on an additional XRD/W base with a height of 15 cm to ensure installation in green or gravel roofs.
- The type C flat access roof light is suitable for roof pitches between 0° and 15°, while the type F and G are designed for pitches between 2° and 15° or 0° -15° with the XRD/A.
- The structure of the access roof light enables installation of internal manual as well as external solar accessories. Use of an external awning blind protects the room from overheating, while internal accessories provide protection from intense sunlight and enhance interior design.



- flat access roof light without a dome, equipped with the ZBR lock as standard to protect against accidental closure of the sash



- flat access roof light with a dome. The dome can be transparent (DRC-C) or opaque (DRC-M)
- Optionally, the access roof light can be equipped with the ZBR lock to protect against accidental closure of the sash



- flat access roof light without a dome,
- as standard is equipped with a ZBR lock which prevents against accidental closure of the sash

FLAT ROOF WINDOWS

window size [cm] (installation opening size)	90x90	90x120	100x100	120x120
glazing area [m²]	0,6	0,83	0,77	1,16
size symbol	05K	06K	07K	08K
DRF DU6 Flat access roof light **U_w=0.74 W/m²K** **U_{cc}=0.64 [W/m²K], A:4,0m² ***	+	+	+	+
DRC-C P2 Access roof light with transparent dome **U=0.93 W/m²K** **U_{cc}=0.76 [W/m²K], A:4,0m² ***	+	+	+	+
DRC-M P2 Access roof light with opaque dome **U=0.93 W/m²K** **U_{cc}=0.76 [W/m²K], A:4,0m² ***	+	+	+	+
DRG P2 Flat access roof light **U=1.00 W/m²K**	+	+	+	+

*according to EN1873:2014+A1:2016



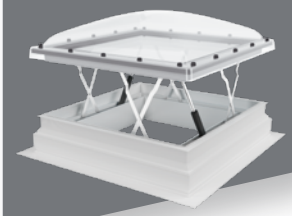
DSC-C DSF

EFFECTIVE SMOKE VENTILATION

SMOKE VENTILATION FLAT ROOF WINDOWS

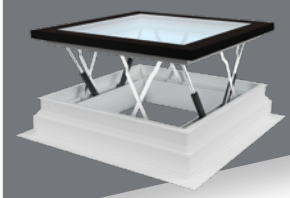
- An abundance of natural light in buildings with flat roofs.
- The frame of the smoke ventilation window is constructed of multi-chamber PVC profiles filled with insulation material.
- Easy opening to set the window in standard ventilation position (everyday flow of fresh air).
- The sash raises to a height of 23cm when used for everyday ventilation, but in the event of fire it raises to 50cm. Elements of the sash lifting mechanism are not visible with the window closed.
- Opening mechanism and two or four 24V actuators ensure perfect operation and ease of access for maintenance purposes.
- Suitable for roof pitches between 0° and 15°. When installing, windows must be level.

DSC-C_P2



- smoke ventilation flat roof window without dome
- modern design - new smoke ventilation windows have the same profile as standard flat roof windows
- the upper part of the window comes with an innovative flat glazing unit DU6 Ug=0.5 W/m^{2}K
- the size 105x105 has a 1m^2 of geometric smoke ventilation area to meet the varied standards required in different countries
- DSF windows can be painted in any colour chosen from the RAL Classic palette
- Uw=0,79 W/m^{2}K for DSF DU6 120x120 (PN-EN ISO 10077-1:2007)

DSF DU6



- smoke ventilation flat roof window with a dome made of durable polycarbonate. Dome made of durable polycarbonate which can be transparent (DSC-C) or opaque (DSC-M)
- equipped with P2 glazing unit (Ug=1.1 W/m^{2}K)
- Uw = 1,0 W/m^{2}K for DSC-C2 P2 120x120 (PN-EN ISO 10077-1:2007)

SMOKE VENTILATION FLAT ROOF WINDOWS

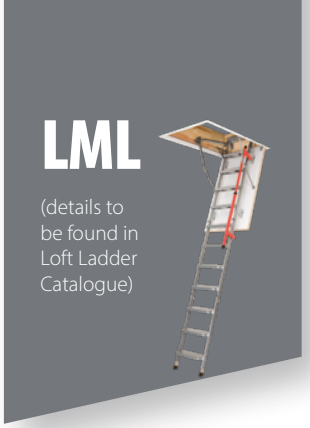
window size [cm] (installation opening size)	100x100	105x105	120x120
glazing area [m^2]	0,77	1,00	1,16
size symbol	07K	12K	08K
DSF DU6 Ug= 0.5 W/m^{2}K	-	+	+
DSC-C2 P2 Ug=1.1 W/m^{2}K	+	-	+



FLAT ROOF ACCESS DOOR

- Fully assembled product.
- The frame is constructed of multi-chamber PVC profiles filled with insulation material.
- The sash is filled with a sandwich panel to ensure perfect thermal insulation performance.
- The sash can be opened up to 60°. Gas springs facilitate opening and closing and the sash can be left in open position.
- Anti-slip tape on the base ensures safe access to the flat roof.
- Sizes of the roof access door are adjusted according to the size of loft ladder (loft ladders are sold separately - see Loft Ladder Catalogue).
- Suitable for installation on an additional XRD/W base with a height of 15 cm to ensure installation in green or gravel roofs.
- Option to install an additional ZBR lock which protects against accidental closure of the sash.
- Suitable for roof pitches between 0° and 5°.





- mounted on the roof surface
- the whole structure is insulated

- can be installed in the opening under the DRL roof access door
- mechanism to support unfolding and folding the ladder
- additional tread in the box
- wide (13 cm) anti-slip treads

The DRL roof access door is an innovative product providing safe and comfortable access to flat roofs. Its structural durability and range of sizes provide the perfect combination with a loft ladder that results in a comprehensive flat roof access solution.

FLAT ROOF ACCESS DOOR

roof access door size [cm] (installation opening size)	60x120	70x120	70x130	70x140	86x130	92x130
size symbol	13K	14K	15K	16K	17K	18K
DRL U_w=0.67 W/m²K*	+	+	+	+	+	+

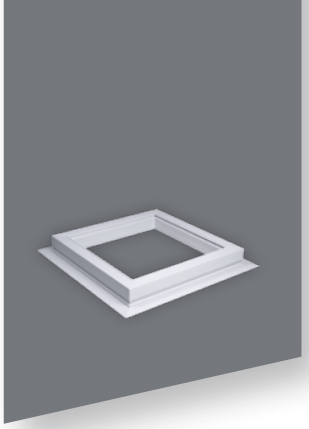
*according to EN14351-1:2006+A2:2016

room height [cm]	280						305				
loft ladder size [cm]	60x120	70x120	70x130	70x140	86x130	92x130	60x130	70x130	70x140	86x130	92x130
LML	+	+	+	+	+	+	+	+	+	+	+

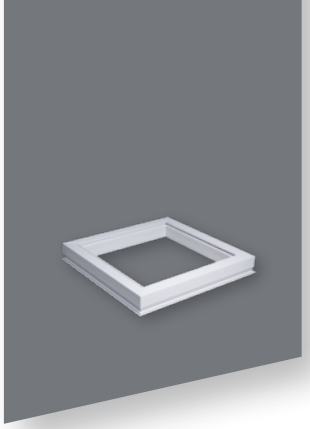


INSTALLATION BASE XRD, XRD/W, XRD/A

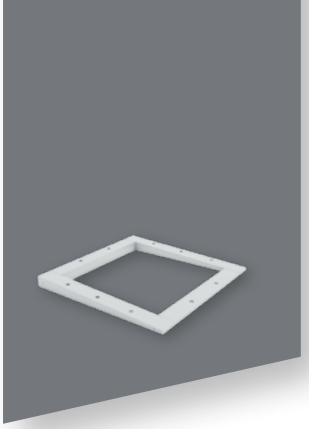
- Versatility of the XRD installation base enables a maximum of two bases to be stacked on top of one another to achieve greater height. The extended element of the frame, the so called 'fin' is used to connect the base and the roof waterproofing layer.
- The XRD/W ensures greater stability and rigidity of the base under the window when compared to standard XRD base, which increases comfort of use. It allows for a combination of three bases under one window.
- Profiles of the XRD and XRD/W installation bases are made of recycled material (grey colour), thus products are eco-friendly. Profiles are filled with insulation material (polystyrene) to ensure a high standard of insulation. The difference between these two bases is the application of impregnated wooden blocks in the XRD/W model. Blocks are in sizes adapted to fit chambers of the profile of the base in order to enhance its rigidity.
- Bases are adapted to standard sizes of flat roof windows. They can also be produced in non-standard ones.
- The XRD/A bases designed for type F & type G windows are fitted directly under the window, increasing its installation pitch by 3 or 5 degrees depending on size. They consist of four wooden painted and impregnated elements creating wedge-shaped frame once assembled. They are fully compatible with the XRD and XRD/W bases. The XRD/A base is made on request.



- extended element of the base, the so called 'fin' allows for connection of the installation base with the roof waterproofing layer



- for a higher structure, the peripheral protruding 'fin' is cut off and bases are stacked



- XRD/A base fitted directly under the window

The XRD and XRD/W installation bases are specifically designed for our range of flat roof windows. They allow the window to be installed above the roof line by 15 cm which may be required with green or gravel roof systems.
The XRD/A base is intended for the type F & type G windows and lifts their installation angle by 3 degrees.

INSTALLATION BASE																					
window size [cm]	60/60	60/90	70/70	80/80	90/60	90/90	90/120	100/100	100/150	120/90	120/120	120/220	140/140	150/100	200/100	60/120	70/120	70/130	70/140	86/130	92/130
size symbol	01K	02K	03K	04K	31K	05K	06K	07K	10K	32K	08K	11K	09K	33K	34K	13K	14K	15K	16K	17K	18K
XRD	+	+	+	+	-	+	+	+	+	-	+	+	+	-	+	-	-	-	-	-	-
XRD/W	+	+	+	+	-	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+
XRD/A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-

ADDITIONAL ACCESSORIES



ZSD

Telescopic rod is used for operating DMF, DMC, DMG, DMZ flat roof windows and ARF/D internal roller blinds. Standard rod length is 119 cm (can be extended to 330 cm).



ZBR

The lock protects against unintentional closure of the sash caused by accidental push or strong gusts of wind.



ZBL/D

The lock enables closing the window with the key everywhere where it is necessary to protect the roof against unauthorized entrance (e.g. in multi-family buildings). The lock is compatible with all standard DRF, DRC and DRG access roof lights and DRL roof access doors.



AMZ/F
AMZ/C
AMZ/Z

PROTECTION AGAINST OVERHEATING

EXTERNAL ACCESSORIES - AWNING BLINDS

- The structure of the flat roof window enables installation of internal as well as external accessories.
- The awning blind absorbs solar radiation before it reaches the glazing and emits the heat to the outside. It therefore provides much better protection against solar gain.
- Up to 8 times more effective than internal blinds.
- Effective shading of the room whilst still allowing view to the outside.
- Providing relief for the eyes and protection from harmful effects of strong reflected light, especially uncomfortable when working on a computer.
- Protection against UV radiation.

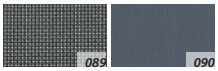


AMZ/F SOLAR

- For type F & type G flat roof windows.
- Comfortable, automatic operation of the blind (intelligent system controls the awning blind depending on the insolation level). Photovoltaic panel acts a sensor and reacts to solar radiation. High insolation levels trigger the awning nlind to unroll automatically.
  In cloudy weather, the awning blind rolls back up automatically without any user intervention.
- Powered by a solar battery pack.

Control:
- Remote control or wall switch are not included

II

III 

Fabric with 10% open area

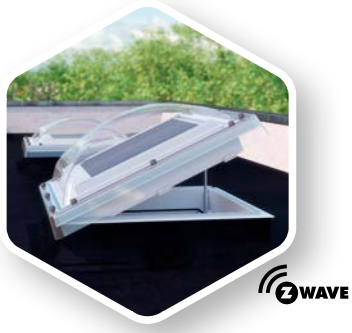


Fabric with 1% open area



Fabric with 6% open area

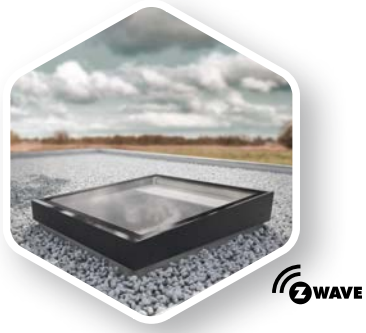
The material samples printed can differ in colour from the actual product.



AMZ/C Z-WAVE AMZ/C SOLAR (fit for DRC)

- For type C flat roof windows.
- Opened with wireless Z-Wave system.
- Innovative profile system enables installation of the awning blind under the window's dome.

Control:
- Remote control or wall switch are not included



AMZ/Z Z-WAVE, AMZ/Z SOLAR

- For type Z flat roof windows.

AMZ/Z Z-Wave:
- Opened with wireless Z-Wave system.

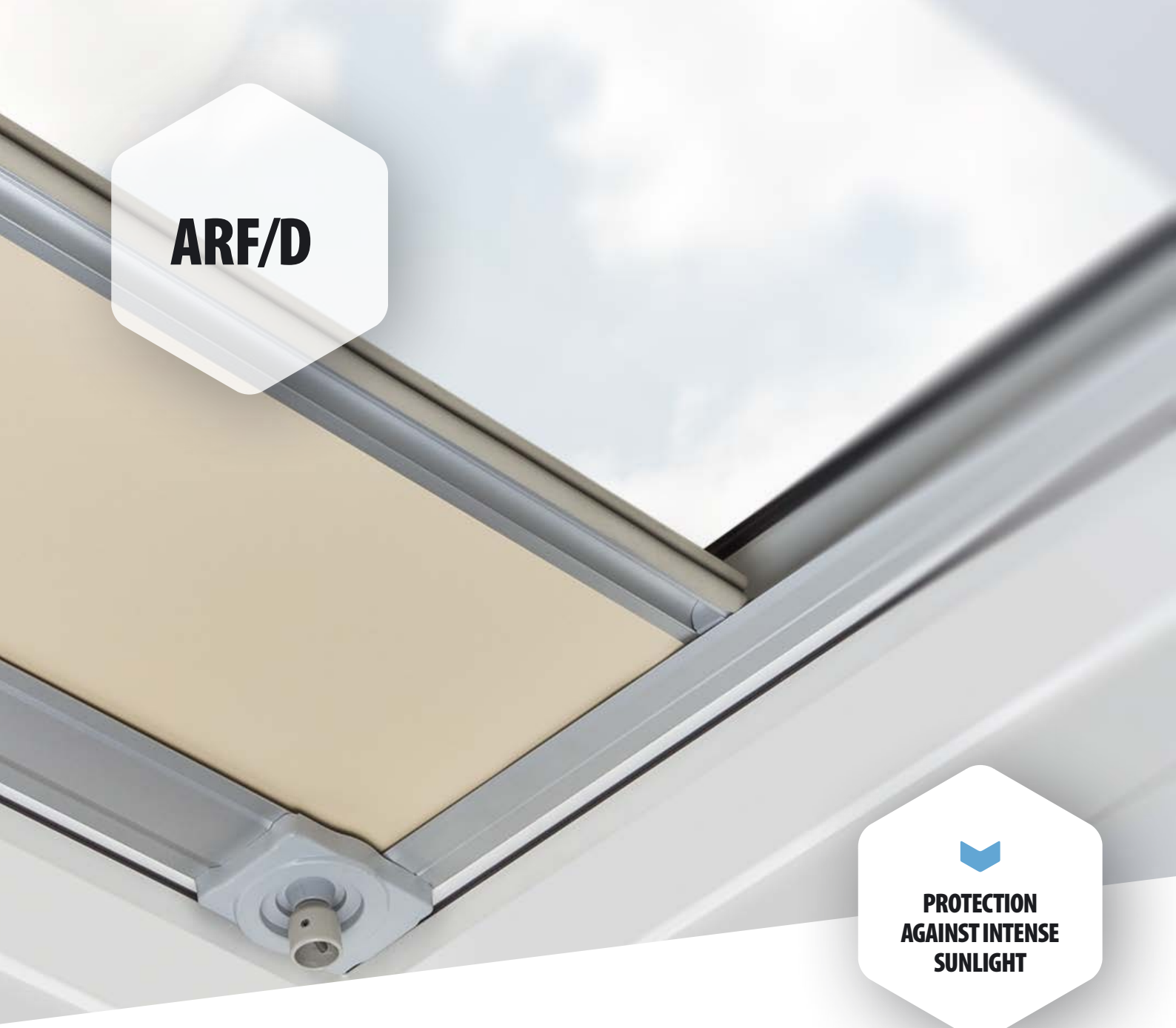
Control:
- Remote control or wall switch are not included

AMZ/Z Solar:
- Comfortable, automatic operation of the blind (intelligent system controls the awning blind depending on the insolation level). Photovoltaic panel acts a sensor and reacts to solar radiation. High insolation levels trigger the awning blind to unroll automatically. In cloudy weather, the awning blind rolls back up automatically without any user intervention.
- Powered by a solar battery pack.

Control:
- Remote control or wall switch are not included

size [cm] size symbol	60x60 01K	60x90 02K	70x70 03K	80x80 04K	90x60 31K	90x90 05K	90x120 06K	100x100 07K	100x150 10K	120x90 32K	120x120 08K	120x220 11K	140x140 09K	150x100 33K	200x100 34K
AMZ/F I Solar (089, 090)	+	+	+	+	-	+	+	+	-	-	+	+	+	-	-
AMZ/F II Solar (092)	+	+	+	+	-	+	+	+	-	-	+	+	+	-	-
AMZ/C I Z-Wave (090)	+	+	+	+	-	+	+	+	+	-	+	+	+	-	-
AMZ/C II Z-Wave (092)	+	+	+	+	-	+	+	+	+	-	+	+	+	-	-
AMZ/Z III Z-Wave (308)	+	+	+	+	-	+	+	+	-	-	+	-	-	-	-
AMZ/Z III Solar (308)	+	+	+	+	-	+	+	+	-	-	+	-	-	-	-

When installing the AMZ/C Z-Wave, AMZ/Z Z-Wave awning blinds on DX_ and DM_ windows, power supply and remote control have to be purchased additionally.



ARF/D

PROTECTION AGAINST INTENSE SUNLIGHT

INTERNAL ACCESSORIES - BLINDS

- Protection against intense light entering a room while offering scope to be used as an intrinsic element of interior design.
- Darkness even on sunny days to secure a pleasant rest.
- Guide rails can stop the blind at any position and provide gradual reduction of incoming light.
- Complete privacy by covering the whole window.
- Designed for use with F, C, G and Z type flat roof windows.



ARF/D SOLAR

- Powered by a solar battery pack.
- Opened with wireless Z-Wave system
- Guide rails and cassette are available in two colour versions - lacquered white and anodised silver.

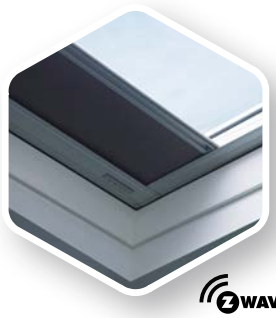
Control:
- Remote control or wall switch are not included



ARF/D

- Aesthetic aluminium fascia to conceal the mechanism of the blind
- Protection against heat gain

Control:
- Operated by means of ZSD control rod



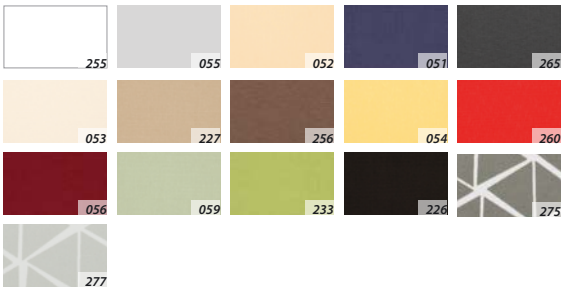
ARF/D Z-WAVE

- Aesthetic aluminium fascia to conceal the mechanism of the blind
- Protection against heat gain
- Opened with wireless Z-Wave system
- Powered from the mains

Control:
- Remote control or wall switch are not included

I

II



The material samples printed can differ in colour from the actual product.

size [cm] size symbol	60x60 01K	60x90 02K	70x70 03K	80x80 04K	90x60 31K	90x90 05K	90x120 06K	100x100 07K	100x150 10K	120x90 32K	120x120 08K	120x220 11K	140x140 09K	150x100 33K	200x100 34K
ARF/D I	+	+	+	+	+	+	+	+	-	+	+	-	-	-	-
ARF/D II	+	+	+	+	+	+	+	+	-	+	+	-	-	-	-
ARF/D I Z-Wave	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-
ARF/D II Z-Wave	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-
NEW **ARF/ D Solar I**	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+
NEW **ARF/ D Solar II**	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+
ARF/D Z-Wave NL I															
ARF/D Z-Wave NL II															



EF_

SYSTEM
FOR ROOF WINDOW
INSTALLATION

FLAT ROOF SYSTEM EF_

0-15°

- The flat roof system makes it possible to lift the window installation pitch in relation to the roof and therefore enables standard roof windows to be used on a flat roof.
- Most often used to provide natural light when adapting attic with low pitch roof to living or office space, in production halls and warehouses while at the same time maintaining good insulation properties.
- The system consists of two main components: a specially designed wooden base with insulation material and aluminium flashing to join the window with the housing. Once installed, the wooden housing must be properly fixed and sealed to the existing roof covering.
- Windows in the flat roof system can be equipped with internal accessories to protect against sunlight and external accessories to protect against overheating of the room. We recommend the use of electrically operated accessories.
- Suitable for roof pitches between 0° and 15°.
- Available in several options. Each provides illumination and ventilation of the room and, depending on the solution used, can offer additional functions.



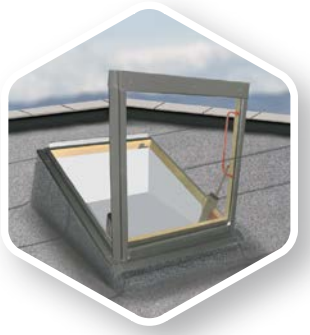
ILLUMINATION
EFW

- with roof window - FTP Z-Wave window with remote control is recommended



EXIT
EFW

- with FWP side hung escape window - access to a flat roof



SMOKE VENTILATION
EFS

- with FSP smoke ventilation window used for extraction of smoke and heat emitted during a fire

FLAT ROOF SYSTEM

window size [cm] (frame external size)	55/78	55/98	66/98	66/118	66/140	78/98	78/118	78/140	78/160	94/118	94/140	114/118	114/140	134/98
size symbol	01	02	03	04	14	05	06	07	13	08	09	10	11	12
EFW Flat roof system for roof windows	+	+	+	+	+	+	+	+	+	+	+	+	+	+

window size [cm] (frame external size)	66/78	66/98	66/118	78/98	78/118	94/118	94/98
size symbol	22	03	04	05	06	08	15
EFW Flat roof system for roof windows	+	+	+	+	+	+	+
FWP U5 Side hung escape window	+	+	+	+	+	+	+

window size [cm] (frame external size)	78/140	94/140	114/118	114/140	134/98
size symbol	07	09	10	11	12
EFS Flat roof system for smoke ventilation windows	+	+	+	+	+
FSP P2 Smoke ventilation window	+	+	+	+	+

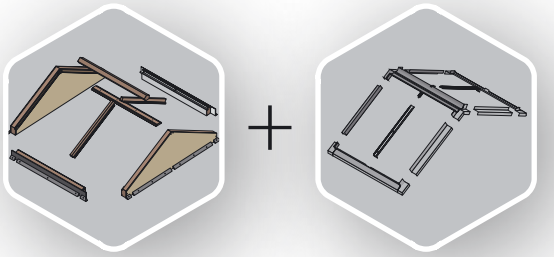


SYSTEM
FOR ROOF WINDOW
COMBINATION
INSTALLATION

FLAT ROOF GABLE SYSTEM EFR

- The EFR system enables combination of roof windows in flat roof structure.
- Wooden gable structure with complete set of flashings shortens to the minimum the installation time. Aesthetic and highly effective solution to illuminate rooms in buildings with low-angle roofs.
- Flat roof gable system ensures good thermal insulation performance. Design allows for fitting standard wooden roof windows.
- The product is supplied as a complete system and provides a high standard of thermal insulation. It consists of a wooden kerb with auxiliary rafters, OSB and EPS panels. The inner OSB panels can be finished with a lining. The minimum distance between adjacent windows is 40 mm. Windows are purchased separately.
- Windows can be equipped with internal accessories to protect against sunlight and external accessories to protect against overheating of the room. We recommend the use of electrically operated accessories.
- Suitable for roof pitches between 0° and 15°.

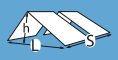




EFR

- Basic version of the EFR system is offered for windows with widths of 78 cm and 114 cm in B2/2 combination (view from the top).
- Maximum window height for this system is 140 cm.
- Maximum flat roof opening is 228x250 cm.
- Standard angle between windows is 120° and the angle to that of the roof is 30°.
- Other designs of the EFR flat roof gable system (B3/2, B4/2) and other window angles are available upon request. The total width of the combination must not exceed 250 cm.

FLAT ROOF GABLE SYSTEM

Size [cm]	4 pcs.78x98	4 pcs.78x118	4 pcs.78x140	4 pcs.114x98	4 pcs.114x118	4 pcs.114x140
Overal product size [cm] - (S x L x h)	196x217x73	196x252x83	196x290x94	268x217x73	268x252x83	268x290x94
Flat roof opening size [cm]	156x177	156x212	156x250	228x177	228x212	228x250
						
Glazing area B2/2 [m²]	1.88	2.36	2.92	3.04	3.80	4.64
Product code	**B2/2 05**	**B2/2 06**	**B2/2 07**	**B2/2 20**	**B2/2 10**	**B2/2 11**
EFR	+	+	+	+	+	+

NOTES



FAKRO

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FAKRO reserves the right to change specifications and technical parameters of products without prior notice.

FPD/36-/GB/30.03.2023/**G037**

Neslužbeni prevod na crnogorski jezik

Neslužbeni prevod na crnogorski jezik, Ymalko Montenegro. Mjerodavan je originalni dokument: fakro-catalogue-flat-roof-windows-en.pdf, https://www.fakro.com/att/LOCAL/catalogs/products/catalog-fakro-flat-roof-windows.pdf.

Dokument: „Katalog FAKRO prozora za ravne krovove (ME)“

Ovaj prevod je pripremio Ymalko Montenegro kao pomoć pri čitanju. Nije dokument proizvođača i ne zamjenjuje ga. U slučaju bilo kakve razlike ili nejasnoće važi originalni dokument proizvođača.

Stranice 1–21 su prevod; stranice 22–57 su originalni dokument proizvođača FAKRO, priložen bez izmjena.

Nazivi proizvoda, šifre, standardi, oznake mjernih jedinica i sve brojčane vrijednosti preneseni su tačno kako su odštampani u originalu.

Datum prevoda: 01.10.2026.