BEYOND SECURITY

KABA®

Orthos Personal Interlocks

For the highest security requirements

«Security is a key aspect of working in nuclear power plants. That's why when it came to selecting a personal interlock system for access to the control room and to the uranium storehouse, it had to be one with the highest level of security: fire and burglary protection, installation of scales showing exact weight as well as a biometric verification system inside the cabin.»

Versatile Orthos Personal Interlocks

Top security is not only a matter of checking authorizations: the highest degree of separation and check of authorization has to be accomplished.
Orthos electronically monitored security interlocks meet highest security demands and provide optimal protection of sensitive building areas.

Versatility
The Orthos product series comprises all kinds of shapes, whether round or angled personal interlocks for single passage or interlocks with a set of doors in a row which can only be passed in one direction.

Orthos PIL Personal Interlocks round or cubic
The degree of separation may be accomplished by means of body weight, sensors or an additional check point for identification in the middle of the interlock.
With regard to the security requirements the interlock may be equipped with contact mat, scales or in-cabin monitoring. Alternative versions for high-security areas are bullet- and burglary-resistant layouts. The different variants are certified from RC2/WK2 up to WK4.

Orthos PIL-M02 One-Way Interlock with only one direction of passage for airports
This modular interlock controls the passenger flow at airports from airside to landside.
Depending on the structural environment the individual half- and full-height swing doors may be combined in a way that the passage in the opposite direction or even the throwing through of objects is made impossible. Various sensor packages triggering alarms are available for separation of people, recognition of unauthorized passages in opposite direction or even left objects.

Orthos Personal Interlocks round or cubic

Throughput rate	=	3 to 5 per minute
Security level	=	●●●●●
Comfort	=	●●●○○

Orthos PIL-M02 Airport Interlock

Throughput rate	=	40 to 60 per minute
Sicherheitsstufe	=	●●●●●
Comfort	=	●●●●○

Interlocks with automatic drives and appropriate width offer a barrier-free solution.

Advantages of Orthos Personal Interlocks

Highest security for sensitive areas.

Orthos PIL Personal Interlocks round or cubic

> High security owing to contact mats
> Additional security by installation of scales, weight limits, actual weight or Multivision
> Resistance classes RC2/WK2, WK3 and up to WK4 for cubic interlocks
> Optional wings and folding wing doors and automatic locking
> Optional firedoor
> Optional escaper escape route function
> Optional bullet- and burglary-resistance
> Elegant glass units
> Smooth, silent running
> Little space requirement

Orthos PIL-MO2 Airport Interlocks

> Modular, adaptable system of half- and full-height swing doors
> Angled interlocks for prevention of throwing through
> User-friendly passage also with luggage
> Low forces and a sensor system ensure high personal safety
> Optional bullet- and burglary-resistance
> Visual and acoustic alarm at unauthorized passage in opposite direction
> Visual user guidance
> Transparent design

The fitting solution for any entrance situation

All-glass multiple units matching perfectly with the historic building

Single unit – only little space required thanks to compact design and circular sliding doors

Translucent, not transparent – version with translucent glass for VIP areas

With integrated biometric verification system for highest security in banks and financial institutions

One-way interlock for arriving passengers at the airport – quick, comfortable passage even with luggage

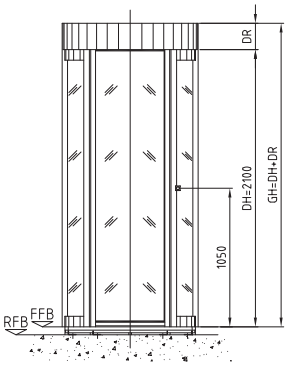
One-way interlock in all-glass design with angled layout – for prevention of objects being thrown through

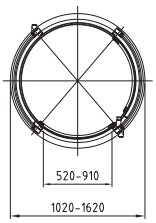
Basic Equipment

		PIL-S01
Construction	Outside diameter	1020, 1120, 1220, 1320, 1420, 1520, 1620
	Passage width	520, 580, 650, 710, 780, 840, 910
	Total height	2300
	Passage height	2100
	Unit top	200
Body	Resistance class	RC2 or without available.
	Side panels	With glazing, alternatively metal cladded.
	Interior room	Including black rubber floor covering.
Sliding doors		Made of aluminium profiles with curved glass. Flush mounted outside.
Finish		Powder-coated in an RAL colour.
Function		Door leaves with locking system. Default position inside and outside closed. Automatic opening and closing of both doors consecutively. Release switch PMA inside the interlock, opens the outer door. Interior planar light scanner for relaying, including 1-zone contact mat with black rubber floor covering. Light curtain for contactless protection. Integrated in the faceplate of the outside radius on both sides. Behaviour of the sliding doors in the case of a power failure is as desired. Standard setting: inside closed and locked, outside open. Behaviour of the sliding doors in the case of a power failure with burglary resistance: outside closed and locked, inside opened. PMA is replaced by a manual unlocking device inside the interlock.
Electrical components		Network-compatible control ETS 21 due to CAN bus, integrated in the unit.
		Power supply 230 VAC, 50 Hz.
Installation		On pre-mounted stainless steel floor element with guiding rail for structural floor SFL, measure X = 70 – 79 mm.
		For outdoor installations, the surrounding conditions have to be considered!

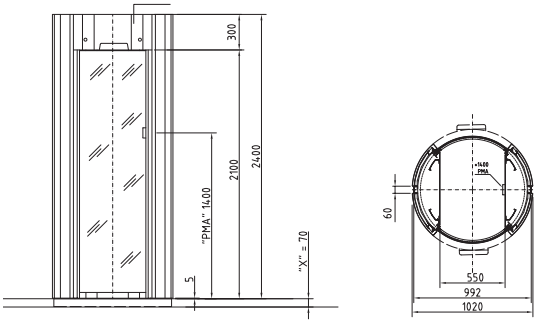
interlocks with automatic drive and passage width 900 mm offer ideal conditions for a barrier-free solution. We advise to comply with the appropriate regulations e.g. DIN 18024, 18025, DIN E 18040

All dimensions in mm





	PIL-C01
	1020, 1220
	550, 680
	2400
	2100
	300
	WK2, WK3 or without available. Metal cladded side panels with steel basement structure. Lighting included (LED, life time 30000 h).
	Made of aluminium profiles with curved glass (flush mounted outside); configuration according to selected resistance class.
	Powder-coated in an RAL colour.
	Door leaves with locking system. Safety strips at the main closing edges, fixed at the door. Default position inside and outside closed. Automatic opening and closing of both doors consecutively. PMA release switch opens the outer door. Inner area monitored by sensor system (photosensor and 1-zone contact mat with black rubber floor covering). Behaviour of the sliding doors in the case of a power failure is as desired. Standard setting: inside closed and locked, outside open. Behaviour of the sliding doors in the case of a power failure with burglary and bullet resistance: outside closed and locked, inside opened. PMA is replaced by a manual unlocking device inside the interlock.
	Network-compatible control ETS 21 due to CAN bus, integrated in the unit.
	Power supply 230 VAC, 50 Hz.
	On floor element for structural floor SFL, measure X = 70 mm.
	For outdoor installations, the surrounding conditions have to be considered!



Options PIL-S01, PIL-C01

Note: Increase of access security using a 2-zone contact mat.
Biometric verification and weight detection are possible.

	PIL-S01	PIL-C01
Construction		
Increase of passage height.	•	
Increase of body top.	•	•
Thermal separation of body side panels in axis.	•	
Wall connection.	•	•
T30 fire protection, two wings.	•	•
Manual unlocking to open inner or outer door, installed on body's outside.		•
Monitoring of sliding door, status message closed and locked.	•	•
Finish		
Stainless steel satin finish.	•	•
Finish anodized C0 and C31-35 (E6).	•	
Silver anodized C0 instead of powder-coated according to RAL colours.		•
Electrical components		
Consoles (1, 2, and 3) in plastic or aluminium in color of door or in RAL 9006, also available in stainless steel satin finish.	•	•
Consoles 4 and 5 stainless steel satin finish.	•	
Push-button for manual single release.	•	•
Electro key switch to open corresponding door.	•	•
Operating panel OPL 05, functions can be chosen freely.	•	•
Magnetic contact for monitoring of service openings or ceiling plate.	•	•
Signal display, two lights red/green.	•	•
Contact mat including black rubber knob floor.	•	•
Light curtain for contactless protection (see project-specific risk evaluation).	**Standard**	•
Release push-button PIB, release switch PMI, PMB.	•	•
Various weighing scales as access control systems (ACTUAL-weight or weight limits).	•	•
Lighting by 2 LED spots.	•	**Standard**
Additional boards to expand the existing in-/outputs.	•	•
Installation		
Wall frame for pre-installation.		•
Sub-frame for raised floor.	•	•
Floor element in stainless steel for advance installation.	**Standard**	•

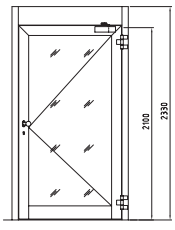
Passage sequence see page 18.
Level of single file access according to equipment see page 17.
Drawings of options see page 15.
ETS 21: adjustable parameters, potential-free signals for further processing by the customer page 17.

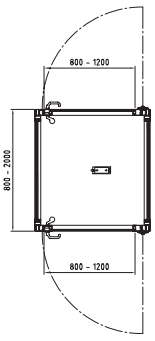
Basic Equipment

		PIL-M01
Construction	Unit top length	800 - 2000
	Passage width	800 - 1200
	Outside dimension	Depending on combination.
	Total height	2330
	Passage height	2100
	Unit top	230
Body		Upper part of the body with dustproof covering and ceiling plate house the control and surveillance elements.
	Outer door	Optional (swing door, folding wing, sliding door, fire protection door) or on-site.
	Inner door	Optional (swing door, folding wing, sliding door, fire protection door) or on-site.
Finish		Powder-coated in an RAL colour.
Function		Default position inside and outside closed. Release signals to activate the door inside or outside provided by customer. Release respectively power assisted opening of the first door in entrance or exit direction. Release respectively power assisted opening of the second door in entrance or exit direction as soon as the first door is automatically closed and locked. Interior planar light scanner for relaying. Lighting installation is possible.
Electrical components		Network-compatible control ETS 21 due to CAN bus integrated in the unit.
Installation		With side walls on finished floor level FFL.
		For outdoor installations, the surrounding conditions have to be considered!

interlocks with automatic drive and passage width 900 mm offer ideal conditions for a barrier-free solution. We advise to comply with the appropriate regulations e.g. DIN 18024, 18025, DIN E 18040.

All dimensions in mm





Options PIL-M01

Note: Increase in access security via 2-zone contact mat, additional photo sensors, biometric verification, Quattrovision (optical separation) and weight detection possible. Increase in comfort via swing door drives.

Construction	
Increase of body top.	
Side wall consisting of aluminium profile with 8 mm laminated glass.	
Side wall consisting of aluminium profile in WK2 with glazing P4A.	
Swing door consisting of aluminium profile with 8 mm laminated glass.	
Swing door consisting of aluminium profile in WK 2, with glazing P4A.	
Swing door smoke proof with glazing 8 mm laminated glass.	
Magnetic clamp (locking force 5000 N) additional to electrical door opener for outer or inner door.	
Fire-resistant door T30 (EI-30) or T90 (EI-90) made of ground-coated steel plates with inspection window in F30 or F90.	
Folding wing door with circumferential Kaba profilesystem and sealing. 10 mm toughened glass.	
Floor element in stainless steel for pre-installation.	
Base frame with false floor.	
Floor covering with green or grey round spot Ø 300 mm in center of interlock.	
Watertight wooden base plate for floor covering, height = 10 mm.	
Black pimpled rubber floor covering, height appr. 5 mm, to be glued on floor pavement or concrete.	
Function	
Electromechanical KABA drive FDC (with reset spring) for swing door (not suitable for fire resistant doors).	
Electromechanical KABA drive FDC-B (with reset spring) for swing door. Appropriate for fire resistant doors, recommended for emergency exits.	
Pre-assembled (with self retraction) finger protection textile to be used in the door hinge.	!
Sensor strip on door wing inside and outside (light curtain) revolving with door.	!
Fixed light curtain for folding wing door.	!
Integrated door closer, hidden within the frame of swing door instead of lintel installation.	
Escape route module.	
Escape route function for swing door and folding wing (FFM).	

Electrical components
Installation preparation for components provided by customer.
Consoles 4 and 5 stainless steel satin finish.
Release push-button with various functions PMB, PIB, PMA, PMI.
Push-button for manual single release.
Key button or switch prepared for on-site profile half-cylinder, to install in flush box or surface mounted housing or console.
Operating panel OPL 05, functions can be chosen freely.
Various housings and frames for surface installation.
Door glass pane with alarm function (netted or parallel alarm wires, glass breakage detector).
Magnetic contact, signal «closed» according to VDS «C» or bolt contact signal «locked», for customer's processing of the swing door.
Magnetic contact for monitoring the maintenance hatches.
Signal display, two lights red/green.
Surface light scanner integrated in body top for additional monitoring of complete interlock interior.
Contact mats including black pimpled rubber floor.
Ramp railing for contact mat on FFL, entrance and exit side.
Various weighing scales as access control systems (ACTUAL-weight or weight limit).
Lighting by 2 or 3 LED spots.
Additional boards to expand the existing in-/outputs.

safety device

Passage sequence see page 19.
Level of single file access according to equipment see page 17.
Drawings of options see page 15.
ETS 21: adjustable parameters, potential-free signals for further processing by the customer page 17.

Basic Equipment

		PIL-M02	PIL-M02 Swing door unit
		Quick motion two-winged swing door, can be combined with additional modules. including sensor system pack level A (MDR): securing of interlock corridor by means of motion detectors with sense detection.	Charon HSD, quick motion half-height two-winged swing door with blocking of return motion
Construction	Passage width	Approx 640 – 950 (standard 920).	According to portal width.
	Total width	1076 – 1386	903 – 1213
	Total length	-	-
	Total height	2300	900
	Passage height	2100	-
	Height of barrier element	-	820
	Unit top	200	-
Body		Self-supporting portal made of stainless steel AISI 304. glazing: 6 mm toughened glass. Control unit and maintenance opening at the top. Operating panel required (supplied by customer or optional OPL 02).	Two half-columns (W = 130 mm/D = 90 mm) as housing for the drive, made of stainless steel, each with a curved bar Ø 27 mm as barrier element including one-way passage signs on the entrance and exit side.
Finish		Stainless steel satin finish.	Stainless steel satin finish.
Function		The personal interlock manages the flow of persons in one direction (detection of return motion). Opening or closing pulse signals using radar motion detectors in both directions. Door area pivoting radius is monitored by means of light scanner. Signal display (arrow/cross pictogram Ø 90 mm) on the passage side. In case of power failure the unit can be set to closed and locked or closed and unlocked. Duration of closing cycle < 2 sec.	Can be combined with all side wall types. Servo-positioning drive: One direction electrically controlled, in exit direction opening 90°. Light curtain in the foot area prevents the opening and closing of the doors when a pedestrian is in the door pivoting radius. Monitoring of the door pivoting radius in front of the swing door unit using a light scanner. Duration of closing cycle < 0,5 sec
Electrical components		Integrated in unit top.	Control units integrated in the housings.
		Power supply 230 VAC, 50 Hz.	
Installation		On finished floor level FFL.	On finished floor level FFL.

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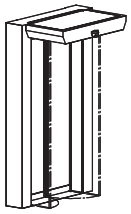
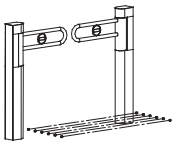
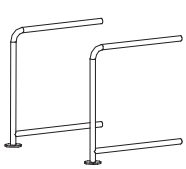
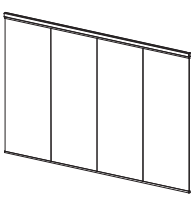
All dimensions in mm

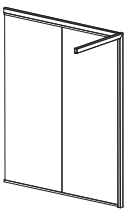




	PIL-M02 PGB Entry	PIL-M02 Glass Element 3750	PIL-M02 Glass Element 1908
	800	3750	1908
	895	2300	2300
	Two guiding bars made of stainless steel tube Ø 40 mm, including mounting material Alternatively PGB-E02 applicable.	10 mm safety toughened glazing. Floor rail at the bottom, cable channel for sensor cable at the top.	10 mm safety toughened glazing. Floor rail at the bottom, cable channel for sensor cable at the top. Reinforcement frame and edge protection.
	Stainless steel satin finish. Pedestrian guidance prior to reaching the activation sensors on the entrance side when single or multiple units are implemented, allowing flawless operation of the door activating sensor.	Stainless steel satin finish: Solid glass side element to guide pedestrians and to separate the flow of people between two swing door units.	Stainless steel satin finish. Solid glass side element to guide pedestrians and to separate the flow of people after the last swing door unit, end of the corridor.
	On finished floor level FFL and fixed to the portal.	On finished floor level FFL (floor levelness +/- 2 mm).	On finished floor level FFL (floor levelness +/- 2 mm).







Options PIL-M02

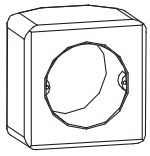
Construction	PIL-M02	PIL-M02 Swing door unit	PIL-M02 PGB Entry	PIL-M02 Glass Element 3750	PIL-M02 Glass Element 1908
Modification of passage width in-between array 640 - 950 mm.	•	•			
Projectile guard between two swing door units at the top of the interlock to prevent items from being thrown from one unit corridor to the other.				•	
Limiting plate at bottom made of stainless steel satin finish, fixed to the pedestal of the glass wall on both sides inside the corridor.				•	•
Limiting bar at bottom made of stainless steel satin finish, fixed on finished floor level FFL on both sides of the corridor.				•	
Guiding bar for swing door unit.		•			
Finish					
Stainless steel and aluminium parts additionally plastic-coated according to RAL.	•			•	•
Electrical components					
Key button or switch prepared for on-site profile half-cylinder, to install in flush box or surface mounted housing or console.	•				
Diagnostics tool TD 200 (intended for service and maintenance purposes).	•				
Operating panel OPL 02 with key switch: operation unit for the integration into flush-mounting socket with twofold installation frame in grey.	•				
Sensor package level C (direction identifying motion detectors and vertical light scanner).	•			•	
Sequence flashing lights: three stacked arrow-cross pictographs with LED in the portal of the swing door unit.	•				
Voice module.	•				
Direction identifying sensor strip installed at the end of the corridor, with additional projectile sensor.	•				•
Direction identification 1 (EOR), 2 (EOR) and 3 (SOR) for single unit, direction identification 1 (EOR) for double unit and triple unit. Each with highest detection level.	•	•			•
Additional radar sensor for direction identification of passages from the opposite direction.	•			•	
Installation					
Whole assembly for factory acceptance prior to installation.	•				
Substructure pre-installation.	•	•	•	•	•

Passage sequence see page 18.
Level of single file access according to equipment see page 17.
Drawings of options see page 16.

Drawings of PIL options (PIL-S01, -C01, -M01)

Console 1

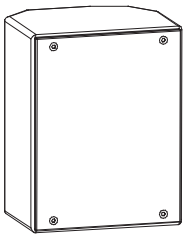
Plastic in color of door or in RAL 9006



Width	94 mm
Height	94 mm
Depth	65 mm
PIL-C01	
PIL-S01	
PIL-M01	

Console 2

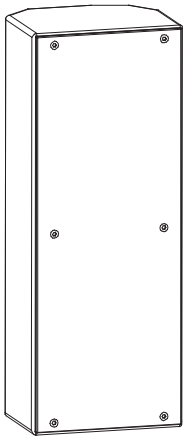
Aluminium in color of door or in RAL 9006



Width	140 mm
Height	180 mm
Depth	110 mm
PIL-C01	
PIL-S01	
PIL-M01	

Console 3

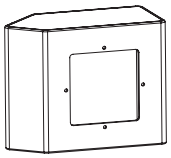
Aluminium in color of door or in RAL 9006



Width	140 mm
Height	365 mm
Depth	110 mm
PIL-C01	
PIL-S01	
PIL-M01	

Console 4

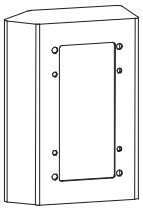
Stainless steel satin finsh



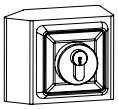
Width	118 mm
Height	93 mm
Depth	60 mm
PIL-C01	
PIL-S01	
PIL-M01	

Console 5

Stainless steel satin finsh



Width	118 mm
Height	164 mm
Depth	60 mm
PIL-C01	
PIL-S01	
PIL-M01	

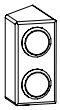


Electro key switch in console

PIL-C01	
PIL-S01	
PIL-M01	

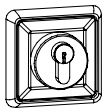
Release push-button

PIL-C01	
PIL-S01	
PIL-M01	



Signal lights

PIL-C01	
PIL-S01	
PIL-M01	

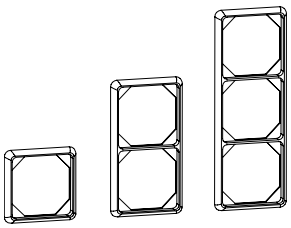


Key switch

PIL-C01	
PIL-S01	
PIL-M01	

OPL 05

PIL-C01	
PIL-S01	
PIL-M01	



Frame for flush-mounting

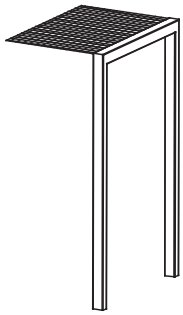
PIL-C01	
PIL-S01	
PIL-M01	

Emergency escape route terminal

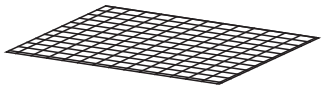
PIL-M01	

Drawings of PIL options (PIL-M02)

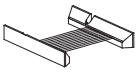
Sensor strip for directional identification



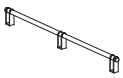
Projectile Guard



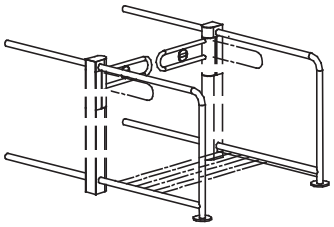
Limiting plate



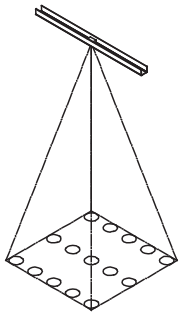
Limiting bar



Guiding bar for swing door unit



Sensor package level C



OPL 02 with key switch

Level of single file access

Element	Degree of separation
Contact mat one-zone	--
Contact mat two-zones	low
Additional photo sensors and light scanner	enhanced
Weighing scale with one weight limit	increased
Weighing scale with two weight limits	high
Weighing scale ACTUAL weight	safe
Weighing scale ACTUAL weight and biometry	highest

ETS 21: adjustable parameters, potential-free signals for further processing by the customer

In the control board are 5 potential-free messages included:

- Ready for release entry
- Passage entry
- Ready for release exit
- Passage exit
- Error

Additional messages are possible by use of extra I/O boards.
Max. 6 potential-free signals for each additional I/O board.

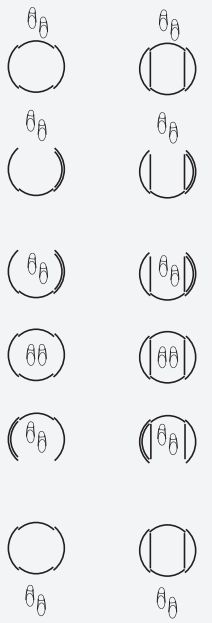
For Example:

- blocked
- free
- emergency set free
- single release entry
- single release exit
- permanent release entry
- permanent release exit
- blocking release entry
- blocking release exit
- random generator on/off
- random generator alarm
- passage message entry
- passage message exit
- setup after power on
- setup out of known position
- ready for release exit/entry
- ready
- home position
- pulse for electromechanical counter
- message service
- common breakdown
- breakdown BUS
- cleaning inside
- cleaning outside
- 1-door operation
- sabotage inner door wing
- sabotage outer door wing
- interlock occupied
- interlock occupied, both doors closed
- inner door locked
- outer door locked
- pre-alarm
- alarm
- alarm suppression

Further messages by parameterization available.
All parameters detailed in the online aid of control.

Passage sequence

Orthos PIL-S01 and -C01	
	Passage sequence with card reader outside (biometric check possible) Default position: personal interlock is closed and locked. - Person gets authorization from card reader. - Door is opened for authorized person. - Entrance into the cabin. - Door closes automatically. - Inside the cabin, as the case may be, additional identification and measuring systems will be activated. - Second door opens or person is rejected (leaves the cabin through the first door). - The last opened door closes automatically (default position). Further variants of passage sequences (individually activated by ID card) - automatic mode without reader inside door - automatic mode with reader inside door - comfort mode for disabled persons without reader inside door - comfort mode for disabled persons with reader inside door - material handling - preferential direction entry or exit - single door operation inside / outside
Orthos PIL-M02	
Short unit	Passage sequence: Default position: Door wings as well as the barrier elements of the half-height swing door are closed. - Person approaches door from the airside. - Full-height swing doors open. - Person enters the portal. - Half-height swing doors open. - Full-height and half-height swing door close as soon as the person has crossed the sector of opening and monitoring sensors. - In case of an attempt to cross in the wrong direction, the sensors for opposite direction activates an alarm; the doors close while safety monitoring the closing edges..
Long unit	Passage sequence: Default position: Door wings as well as the barrier elements of the half-height swing door are closed. - Person approaches door from the airside. - Full-height swing doors open. - Person enters the portal. - Half-height swing doors open. - Full-height and half-height swing doors close as soon as the person has crossed the sector of opening and monitoring sensors. - The operation of the doors on the land side corresponds with the doors on the airside. - In case of an attempt to cross in the wrong direction, the sensors for opposite direction activates an alarm; the doors close while safety monitoring the closing edges.

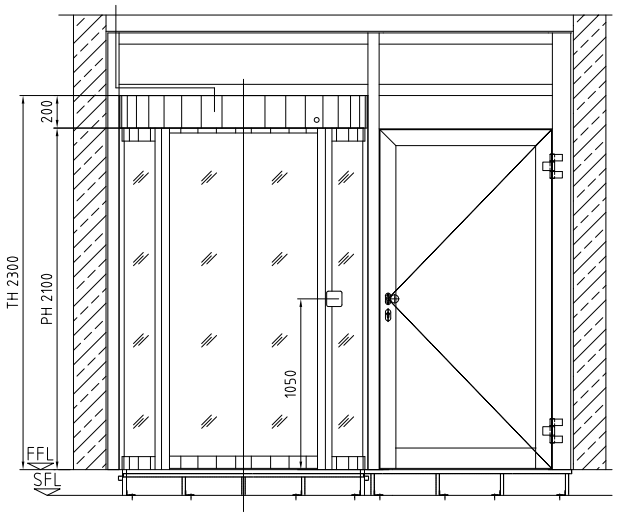


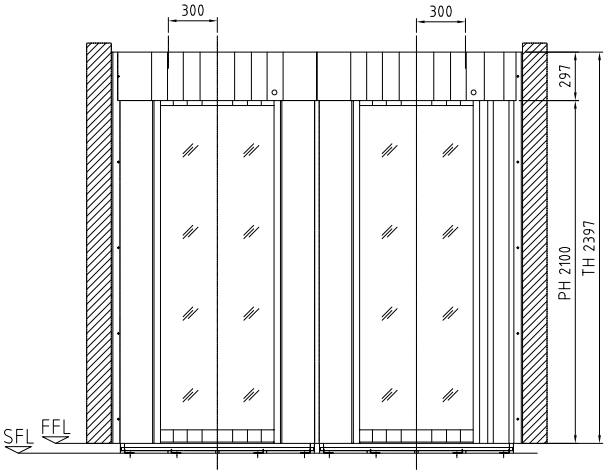
Orthos PIL-M01	
with two swing doors in basic version or with outer door WK2, WK3 or T30/T90 (EI-30/EI-90) respectively	Passage sequence with card reader outside (biometric check possible) Default position: personal interlock is closed and locked. – Person gets authorization from card reader. – Authorized person opens door. – Entrance into the cabin. – Door closes automatically. – Inside the cabin, as the case may be, additional identification and measuring systems will be activated. – Person opens second door or is rejected (leaves the cabin through the first door). – The last opened door closes automatically (default position).
with swing door outside and folding wing inside, emergency function	Passage sequence with card reader outside (biometric check possible) Default position: personal interlock is closed and locked. – Person gets authorization from card reader. – Authorized person opens door. – Entrance into the cabin. – Door closes automatically. – Inside the cabin, as the case may be, additional identification and measuring systems will be activated. – Second door opens or person is rejected (leaves the cabin through the first door). Emergency function: Operated by terminal according to EltVTR or by alarm system. Folding wing door inside opens, swing door outside has to be opened manually. Strike plate for emergency function according to DIN EN 179. For these units the customer or constructor has to apply for an «allowance in individual case» at the highest authority on building supervision. Further variants of passage sequences (individually activated by ID card) – automatic mode without reader inside door – automatic mode with reader inside door – comfort mode for disabled persons without reader inside door – comfort mode for disabled persons with reader inside door – material handling – preferential direction entry or exit – single door operation inside / outside

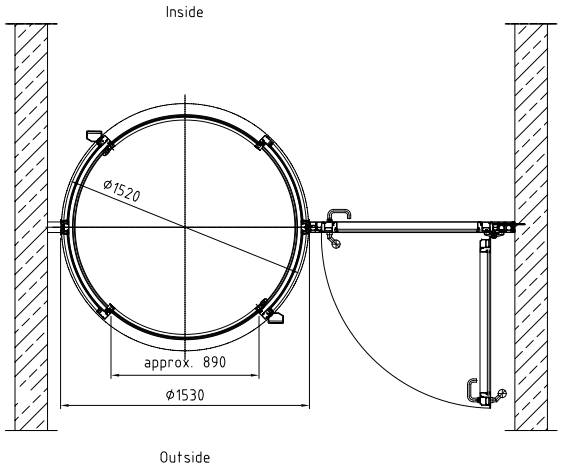
PIL-M01

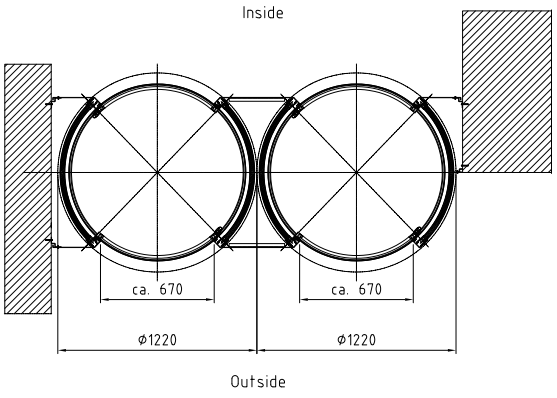
Examples of arrangements

Orthos PIL-SO1

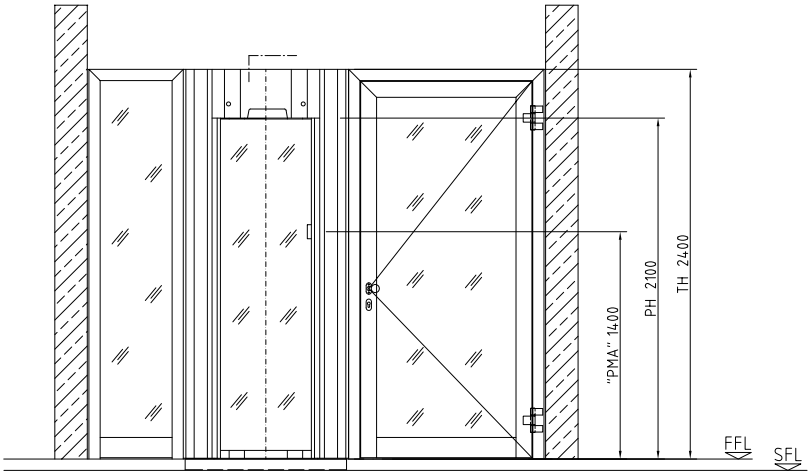


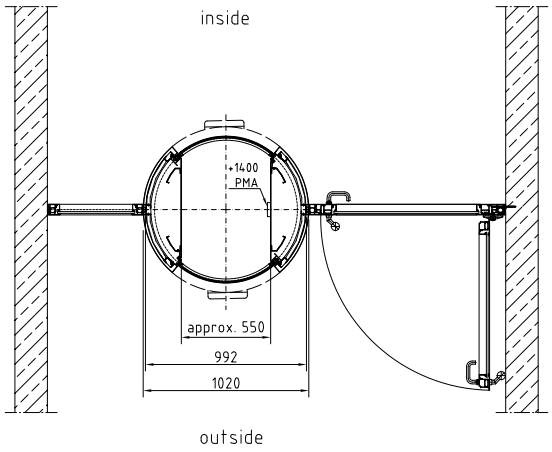






Orthos PIL-C01

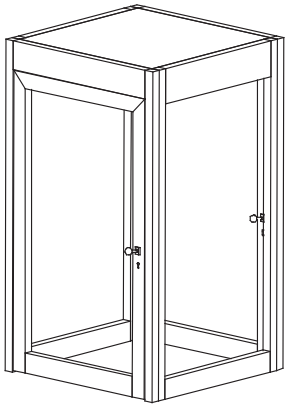




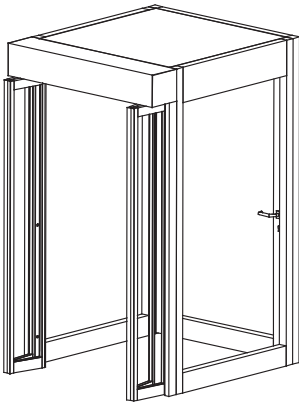
Combination examples

Orthos PIL-M01

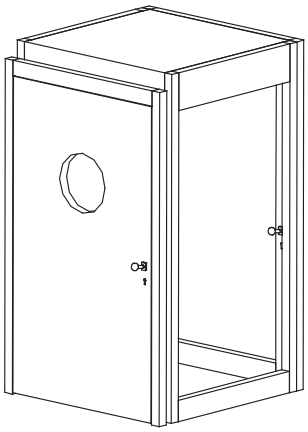
PIL-M01 with swing doors, basic version



PIL-M01 with folding wing and swing door, suitable for escape routes

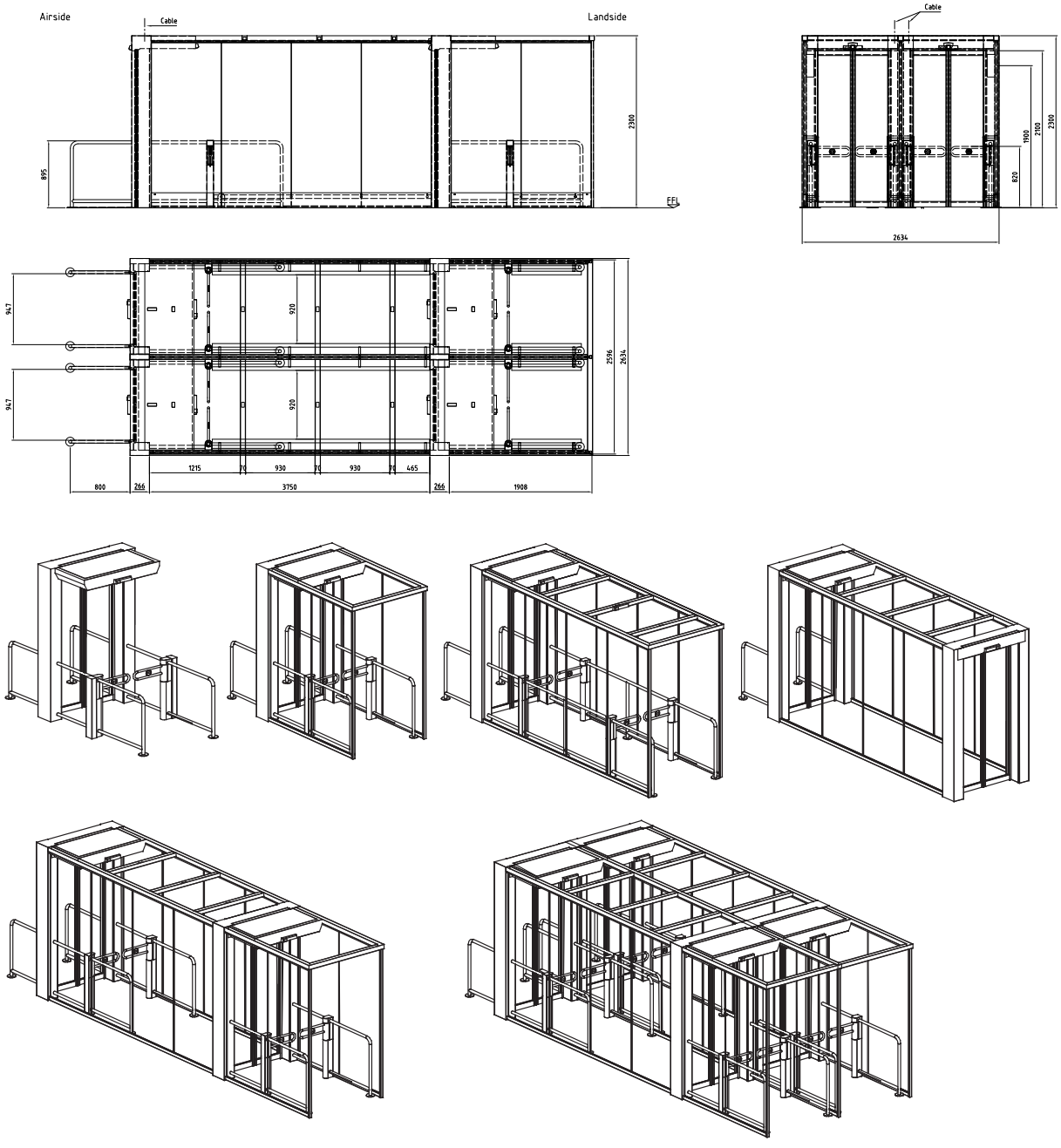


PIL-M01 with swing doors, outer door T30 (EI 30)



Orthos PIL-M02

PIL-M02 double unit long



Beside the shown examples other combinations are possible

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