

Control stations

177-627

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XAL control stations for Harmony style 5

Ø 22 control and signalling units with double insulated bezel

General

XAL-D and XAL-K control stations are available in two forms:

- Complete.
- For user assembly.

These control stations use pushbuttons and pilot lights from the Harmony style 5 range which offers a wide choice of circular or square head types.

Complete stations

Pre-assembled

These are complete, ready to install stations, fitted with 1 to 3 pushbuttons to provide the most commonly used functions:

- **Start or Stop**, with:
 - 1 flush, spring return pushbutton 1
 - 1 red, spring return, mushroom head pushbutton 2
- **Emergency Stop**, with:
 - 1 red, latching, mushroom head pushbutton 3 (standard or trigger action), push-pull and turn to release, with or without key
- **Start-Stop**, with:
 - 2 flush, spring return pushbuttons 1
 - 1 flush, spring return pushbutton 1
 - 1 projecting, spring return pushbutton 2
 - 1 2-position selector switch 4
 - 1 pilot light with integral red LED, if required
- **Two function**, with:
 - 2 flush, spring return pushbuttons 1
- **Three function**, with:
 - 3 flush, spring return pushbuttons 1
 - 2 flush, spring return pushbuttons 1
 - 1 projecting, spring return pushbutton 2
 - 2 flush, spring return pushbuttons 1
 - 1 red, latching, mushroom head pushbutton 3

These pushbuttons are made up of double insulated operating heads from the Harmony style 5 range and electrical blocks (contact or light) 6 mounted at the back of the enclosure.

Stations for user assembly

For user assembly

These stations are for assembly by the user in two ways, as required:

- **Box method**
Identical to the pre-assembled versions. The electrical blocks 6 are mounted on a metal mounting plate at the back of the enclosure 7.
- **Station method**
The electrical blocks 9 are mounted directly beneath the heads using a fixing base. This assembly method also allows the electrical blocks to be connected to a printed circuit board.

It is possible to assemble stations with 1 to 5 heads, each of which can be combined with 3 electrical blocks 8 or 9 (contact or light).

The XAL range offers a wide choice of head types for:

- Spring return pushbuttons 1 or 2, marked or unmarked.
- Spring return mushroom head pushbuttons.
- Latching mushroom head pushbuttons 3.
- Selector switches with standard or long handle, or key switches 4.
- Toggle switches.
- Pilot lights 5.
- Spring return illuminated pushbuttons 6.
- Illuminated selector switches with standard handle.

Accessories

For heads

Markings can be customised by using legend holders 10 that take legends which are ready marked or can be engraved by the user, or paper legends (with backing board and protective transparent cover) prepared using "SIS Label" software 11 and sheets of peel-off legends for marking with laser printer.

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XAL control stations for Harmony style 5
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Characteristics

Environment

Protective treatment	Standard version		"TH"
Ambient air temperature around the device	Storage	°C	- 40...+ 70
	Operation	°C	- 25...+ 70 unless otherwise stated
Electric shock protection	Conforming to IEC 536		Class II
Degree of protection	Conforming to IEC 529		IP 65
	Conforming to NEMA		NEMA 4X and 13
Protection against mechanical impact	Conforming to EN 50102		Non illuminated heads: IK 03
			Illuminated heads: IK 05
Conforming to standards			IEC 947-1, IEC 947-5-1, IEC 947-5-4, EN 60947-1, EN 60947-5-1, JIS C 4520, UL 508, CSA C22-2 n° 14
Product certifications	UL Listed, CSA		Light blocks with screw clamp terminals Standard single contacts with screw clamp terminals: A600; Q600
Terminal identification	Conforming to EN 50005 and EN 50013		
Material and colours			XAL-D: polycarbonate, light grey RAL 7035, and dark grey RAL 7016 XAL-K: polycarbonate, light grey RAL 7035 and yellow RAL 1012
Cable entries			Cable entries: 'knock-outs' for no. 13 (CM12, PG13.5) cable glands and tapped ISO 20

Contact block characteristics

Mechanical characteristics

Contact operation	N/C or N/O		Slow break
Positive operation	Conforming to IEC 60947-5-1 appendix K		All functions incorporating a N/C contact have positive opening operation
Operating travel (to change electrical state)	Pushbutton	mm	Changing N/C state: 1.5
		mm	Changing N/O state: 2.6
		mm	Total travel: 4.3
Operating force	Pushbutton	N	Changing N/C state: 3.5
		N	Changing N/O state: 3.8
	Additional contact only	N	Single N/C contact: 2
		N	Single N/O contact: 2.3
	Emergency stop with N/C + N/O	N	Standard push-pull: 45
		N	Trigger action push-pull: 50
Operating torque (to change electrical state)	Selector switches	N.m	N/O contact: 0.14
		N.m	N/O contact: 0.05
	Additional contact only	N.m	N/O contact: 0.05
Mechanical durability (in millions of operating cycles)	Pushbuttons		5
	Selector switches	Spring return	3
		Non illuminated	1
	Toggle switches		0.5
	Emergency stop pushbuttons		0.1
Vibration resistance	Conforming to IEC 68-2-6	g	All functions except mushroom head pushbuttons (frequency: 2 to 500 Hz): 15
		g	Mushroom head pushbuttons (frequency: 10 to 500 Hz): 5
Shock resistance	Conforming to IEC 68-2-27	g	All functions except mushroom head pushbuttons
		g	half sine wave acceleration 11 ms: 50
		g	half sine wave acceleration 18 ms: 30
		g	Mushroom head pushbutton (half sine wave acceleration 11 ms): 10

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Characteristics (continued)

Contact block characteristics (continued)

Electrical characteristics

Cabling capacity	Conforming to IEC 947-1	mm ² mm ²	Screw clamp terminals; cross head screws (Pozidriv type) Min: 1 x 0.22 without cable end (1 x 0.34 for linking) Max: 2 x 1.5 with cable end		
Contact material			Silver alloy (Ag / Ni)		
Short circuit protection	Conforming to IEC 947-5-1	A	Standard blocks with screw clamp terminals: 10 (gG cartridge fuse conforming to IEC 269-1)		
Rated insulation voltage	Conforming to IEC 947-1	V	Standard blocks with screw clamp terminals: Ui = 600 degree of pollution 3		
Rated impulse withstand voltage	Conforming to IEC 947-1	kV	Standard blocks with screw clamp terminals: Uimp = 6		
Rated operational characteristics Conforming to IEC/EN 60947-5-1	a.c. supply: utilisation category AC-15		A 600: Ue = 600 V and Ie = 1.2 A or Ue = 240 V and Ie = 3 A or Ue = 120 V and Ie = 6 A		
	d.c. supply: utilisation category DC-13		R 300: Ue = 600 V and Ie = 0.1 A or Ue = 125 V and Ie = 0.22 A		
Electrical durability Conforming to IEC/EN 60947-5-1 Appendix C Frequency 3600 operating cycles/ hour. On-load factor: 0.5	a.c. supply for 1 million operating cycles utilisation category AC-15	V A	24 4 •	120 3	230 2
	d.c. supply for 1 million operating cycles utilisation category DC-13	V A	24 0.4	110 0.15	
Electrical reliability	Failure rate Conforming to IEC 947-5-4		Standard blocks: - at 17 V and 5 mA, $\lambda < 10^{-8}$ - at 5 V and 1 mA, $\lambda < 10^{-6}$		

Illuminated unit characteristics

Mechanical characteristics

Vibration resistance	Conforming to IEC 68-2-6	g	Frequency: 2 to 500 Hz: 15
Shock resistance	Conforming to IEC 68-2-27	g	Half sine wave acceleration 11 ms: 50
		g	Half sine wave acceleration 18 ms: 30

Electrical characteristics

Cabling capacity	Conforming to IEC 947-1	mm ² mm ²	Screw clamp terminals; cross head screws (Pozidriv type) Min: 1 x 0.22 without cable end (1 x 0.34 for linking) Max: 2 x 1.5 with cable end
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Specific characteristics of light modules with integral LED

Rated insulation voltage	Conforming to IEC 947-1	V	Pilot light blocks with integral LED: Ui = 250 degree of pollution 3
Rated impulse withstand voltage	Conforming to IEC 947-1	kV	Pilot light blocks with integral LED: Uimp = 4
Consumption	For all colours	mA	~ 24 V supply blocks: 18
		mA	~ 120 V supply blocks: 14
		mA	~ 240 V supply blocks: 14
Service life	At nominal voltage and at an ambient temperature of 25 °C	H	100 000
Surge withstand	Conforming to IEC 1000-4-5	kV	2/1
Resistance to fast transients	Conforming to IEC 1000-4-4	kV	2
Resistance to electromagnetic fields	Conforming to IEC 1000-4-3	V/m	10
Resistance to electrostatic discharges	Conforming to IEC 1000-4-2	kV	8/6
Electromagnetic emission	Conforming to EN 55011		Class B
Voltage limits	Nominal voltage	V	24 V : 19.2 at 30 ~ ; 21.6 at 24.6 ~ 120 V : 102 at 132 ~ 240 V : 195 at 264 ~

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 Complete stations (screw clamp connections)

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References

Start or Stop function (light grey base "RAL 7035", dark grey lid "RAL 7016")

Description	Type of push	Contact type		Marking	Reference	Weight
		N/O	N/C			

Marking on pushbutton

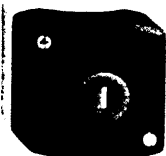
1 spring return pushbutton	Flush green	1	-	I	<u>XAL-D102</u>	0.135
				Marche	<u>XAL-D104</u>	0.156
				Start	<u>XAL-D103</u>	0.156
1 spring return pushbutton	Flush red	-	1	O	<u>XAL-D112</u>	0.156
				Arrêt	<u>XAL-D117</u>	0.156
				Stop	<u>XAL-D114</u>	0.156
	Projecting red	-	1	O	<u>XAL-D115</u>	0.157
				Arrêt	<u>XAL-D118</u>	0.157
				Stop	<u>XAL-D116</u>	0.157

Marking on legend holder and legend below head

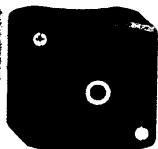
1 spring return pushbutton	Flush green	1	—	Marche	<u>XAL-D101</u>	0.157
				Start	<u>XAL-D101H29</u>	0.157
	Flush red	—	1	Arrêt	<u>XAL-D111</u>	0.157
				Stop	<u>XAL-D111H29</u>	0.157

Marking on legend below head

1 mushroom head pushbutton Ø 40 mm spring return	Red	-	1	Arrêt	<u>XAL-D164</u>	0.182
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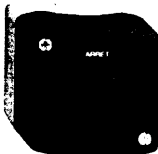
XAL-D102



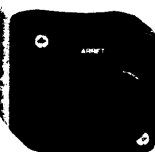
XAL-D115



XAL-D101



XAL-D111



XAL-D164

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Complete stations (screw clamp terminal connections)

References (continued)

Emergency Stop function (light grey base "RAL 7035", yellow lid "RAL 1012")

Description	Type	Contact type		Reference	Weight	
						
		N/O	N/C		kg	
Unmarked						
1 mushroom head pushbutton Ø 40 mm, red Turn to release	Standard	–	1	XAL-K174	0.178	
		–	2	XAL-K174F	0.188	
		1	1	XAL-K174E	0.188	
		1	2	XAL-K174G	0.197	
	Trigger action	–	2	XAL-K178F	0.194	
		1	1	XAL-K178E	0.194	
		1	2	XAL-K178G	0.194	
1 mushroom head pushbutton Ø 40 mm, red Key release (key n° 455)	Standard	–	1	XAL-K184	0.178	
		–	2	XAL-K184F	0.188	
		1	1	XAL-K184E	0.188	
		1	2	XAL-K184G	0.197	
	Trigger action	–	2	XAL-K188F	0.188	
		1	1	XAL-K188E	0.188	
		1	2	XAL-K188G	0.188	
1 mushroom head pushbutton Ø 40 mm, red Push-pull	Standard	–	1	XAL-K194	0.183	
Marked "Emergency Stop" on legend holder and legend below head						
1 mushroom head pushbutton Ø 40 mm, red Turn to release	Standard	–	 1	XAL-K1741	0.185	

XAL-K174

XAL-K184

XAL-K194

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Complete stations (screw clamp terminal connections)

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References (continued)

Start-Stop function (light grey base "RAL 7035", dark grey lid "RAL 7016")

Description	Type of push	Contact type		Marking	Reference	Weight
						
		N/O	N/C			kg

Marking on pushbutton

2 spring return pushbuttons	1 flush green	1	—	I	XAL-D213	0.233
	1 flush red	—	1	O		
				Marche	XAL-D224	0.233
				Arrêt		
				Start	XAL-D215	0.233
				Stop		
		1	1	I	XAL-D213E	0.252
		1	1	O		
	1 flush green	1	—	I	XAL-D214	0.234
	1 projecting red	—	1	O		
				Start	XAL-D225	0.234
				Stop		

Marking on legend holder and legend below head

2 spring return pushbuttons	1 flush green	1	—	Marche	XAL-D211	0.233
	1 flush red	—	1	Arrêt		
				Start	XAL-D211H29	0.233
				Stop		
		1	—	Ouverture	XAL-D241	0.233
		1	—	Fermeture		
1 selector switch 2-position stay put	Standard handle	1	—	O-I	XAL-D134	0.163
				Arrêt-Marche	XAL-D132	0.163
	Key switch, key n° 455	1	—	O-I	XAL-D144	0.187
	Key withdrawal in left-hand position			Arrêt-Marche	XAL-D142	0.187
		1	1	O-I	XAL-D144E	0.196

Description	Contact type		Marking	Pilot light supply	Reference	Weight
						
	N/O	N/C		V		kg

With pilot light and and marking on pushbutton

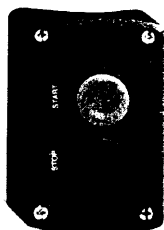
2 spring return pushbuttons and 1 pilot light with integral red LED	1 flush green	1	—	I	≈ 24 XAL-D363B	0.261
	1 flush red	—	1	O	~ 120 XAL-D363G	0.261
					~ 230 XAL-D363M	0.261

With pilot light and marking on legend holder and legend below head

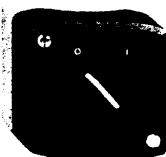
2 spring return pushbuttons and 1 pilot light with integral red LED	1 flush green	1	—	Marche	≈ 24 XAL-D361B	0.261
	1 flush red	—	1	Arrêt	~ 230 XAL-D361M	0.261



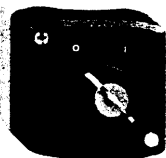
XAL-D224



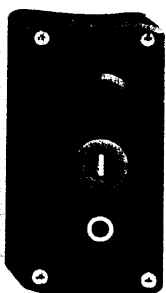
XAL-D211H29



XAL-D134



XAL-D144



XAL-D363B

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Complete stations (screw clamp terminal connections)

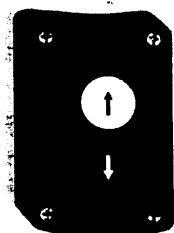
References (continued)

Two function (light grey base "RAL 7035", dark grey lid "RAL 7016")

Description	Type of push	Contact type		Marking	Reference	Weight
						
		N/O	N/C			kg

Marking on pushbutton

2 spring return pushbuttons	1 flush white	1	—	↑	XAL-D222	0.233
	1 flush black	1	—	↓		
				→	XAL-D223	0.233
				←		
		1	1	↑	XAL-D222E	0.252
		1	1	↓		

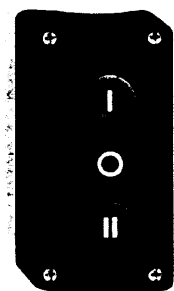


XAL-D222

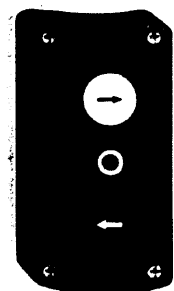
Three function (light grey base "RAL 7035", dark grey lid "RAL 7016")

Marking on pushbutton

3 spring return pushbuttons	1 flush green	1	—	I	XAL-D339	0.298
	1 flush red	—	1	O		
	1 flush green	1	—	II		
	1 flush white	1	—	↑	XAL-D324	0.298
	1 flush red	—	1	O		
	1 flush black	1	—	↓		
				↑ Stop	XAL-D326	0.298
				↓		
				→	XAL-D334	0.298
				O		
				←		
		1	1	↑	XAL-D324E	0.317
		1	1	O		
		1	1	↓		
	1 flush white	1	—	↑	XAL-D325	0.299
	1 projecting red	—	1	O		
	1 flush black	1	—	↓		



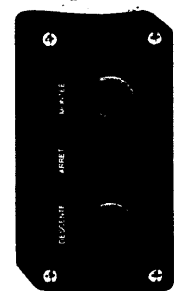
XAL-D339



XAL-D334

Marking on legend holder and legend below head

2 spring return pushbuttons + 1 latching mushroom head pushbutton Ø 40 mm	1 flush white	1	—	→ ↑	XAL-D328	0.317
	1 mushroom head red (standard "turn to release")	—	1	O O		
	1 flush black	1	—	← ↓		
3 spring return pushbuttons	1 flush green	1	—	Avant	XAL-D331	0.299
	1 flush red	—	1	Arrêt		
	1 flush green	1	—	Arrière		
				Montée	XAL-D321	0.299
				Arrêt		
				Descente		



XAL-D321

For two function control stations for AS-i bus, please consult your local customer support centre.

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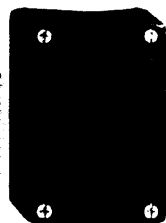
XAL control stations for Harmony style 5
Ø 22 control and signalling units with double insulated bezel
Stations for user assembly: empty enclosures

References

Empty enclosures (1)

Description	Number of ways	Reference	Weight kg
For normal environments (with stainless steel lid fixing screws)			
Light grey base "RAL 7035" Dark grey lid "RAL 7016"	1	XAL-D01	0.136
	2	XAL-D02	0.193
	3	XAL-D03	0.238
	4	XAL-D04	0.278
	5	XAL-D05	0.322
Light grey base "RAL 7035" Yellow lid "RAL 1012"	1	XAL-K01	0.136
For normal environments, CSA + UL approvals (2) (with stainless steel lid fixing screws)			
Light grey base "RAL 7035" Dark grey lid "RAL 7016"	1	XAL-D01H7	0.136
	2	XAL-D02H7	0.205
	3	XAL-D03H7	0.238
	4	XAL-D04H7	0.279
	5	XAL-D05H7	0.322
Light grey base "RAL 7035" Yellow lid "RAL 1012"	1	XAL-K01H7	0.136
For harsh environments and resistance to solvents (with stainless steel lid fixing screws)			
Black base and lid "RAL 9005"	1	XAL-G01	0.136
	2	XAL-G02	0.217
	3	XAL-G03	0.238
	4	XAL-G04	0.274
	5	XAL-G05	0.322

(1) For pushbutton heads please see pages 2/21, 2/22, 2/25 to 2/29, 2/37, 2/39, 2/44 to 2/50 and 2/53.
(2) Volt-free commoning/earth terminal supplied.



XAL-D02

Control stations

XAL control stations for Harmony style 5

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Stations for user assembly: electrical blocks

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Electrical blocks and accessories (for mounting on metal plate at back of enclosure)

Description	Type	Colour	Sold in lots of	Unit reference	Weight kg
Electrical blocks with screw clamp terminal connections					
Standard contact blocks (1)	N/O contact	–	5	ZEN-L1111	0.015
	N/C contact	–	5	ZEN-L1121	0.015
Light blocks with integral LED (1) 	~ 24 V	White	5	ZAL-VB1	0.015
		Green	5	ZAL-VB3	0.015
		Red	5	ZAL-VB4	0.015
		Yellow	5	ZAL-VB5	0.015
		Blue	5	ZAL-VB6	0.015
	~ 120 V	White	5	ZAL-VG1	0.015
		Green	5	ZAL-VG3	0.015
		Red	5	ZAL-VG4	0.015
		Yellow	5	ZAL-VG5	0.015
		Blue	5	ZAL-VG6	0.015
	~ 230 V	White	5	ZAL-VM1	0.015
		Green	5	ZAL-VM3	0.015
		Red	5	ZAL-VM4	0.015
		Yellow	5	ZAL-VM5	0.015
		Blue	5	ZAL-VM6	0.015
Description	Application		Sold in lots of	Unit reference	Weight kg

Accessories for electrical blocks

Blanking plug	Ø 22 units	10	ZB5-SZ3	0.008
Nut	Head fixing	10	ZB5-AZ901	0.002
Volt free terminal	Commoning/earth	10	XAL-Z09	0.003
Key	For tightening nut ZB5-AZ901	1	ZB5-AZ905	0.016

Electrical blocks and accessory (for mounting directly beneath heads)

Description	Type	Colour	Sold in lots of	Unit reference	Weight kg
Electrical blocks with screw clamp connections (2) (for fixing on base ZB5-AZ009)					
Standard contact blocks	N/O contact	–	5	ZBE-101	0.011
	N/C contact	–	5	ZBE-102	0.011
Light blocks with integral LED 	~ 24 V	White	5	ZBV-B1	0.017
		Green	5	ZBV-B3	0.017
		Red	5	ZBV-B4	0.017
		Yellow	5	ZBV-B5	0.017
		Blue	5	ZBV-B6	0.017
	~ 110...120 V	White	5	ZBV-G1	0.017
		Green	5	ZBV-G3	0.017
		Red	5	ZBV-G4	0.017
		Yellow	5	ZBV-G5	0.017
		Blue	5	ZBV-G6	0.017
	~ 230...240 V	White	5	ZBV-M1	0.017
		Green	5	ZBV-M3	0.017
		Red	5	ZBV-M4	0.017
		Yellow	5	ZBV-M5	0.017
		Blue	5	ZBV-M6	0.017
Description	For use with		Sold in lots of	Unit reference	Weight kg

Accessory for electrical blocks

Fixing base	Electrical blocks (contact or light)	10	ZB5-AZ009	0.006
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(1) A maximum of 3 electrical blocks may be fitted per associated head.

(2) For electrical blocks for printed circuit board connection: please consult your local customer support centre.

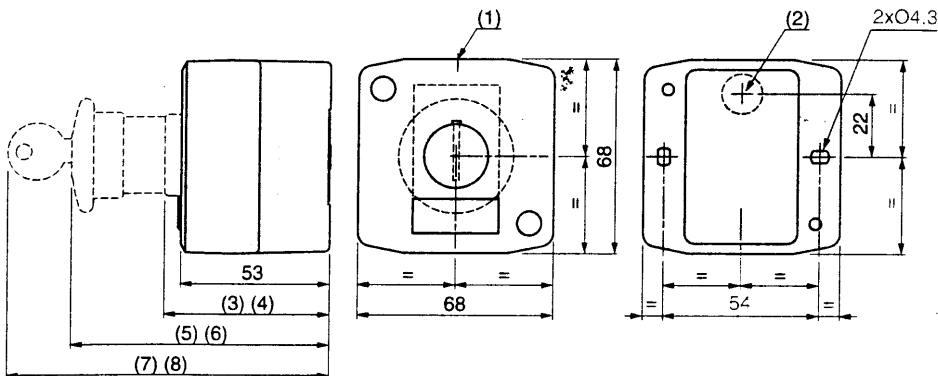
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XAL control stations for Harmony style 5
 Ø 22 control and signalling units with double insulated bezel

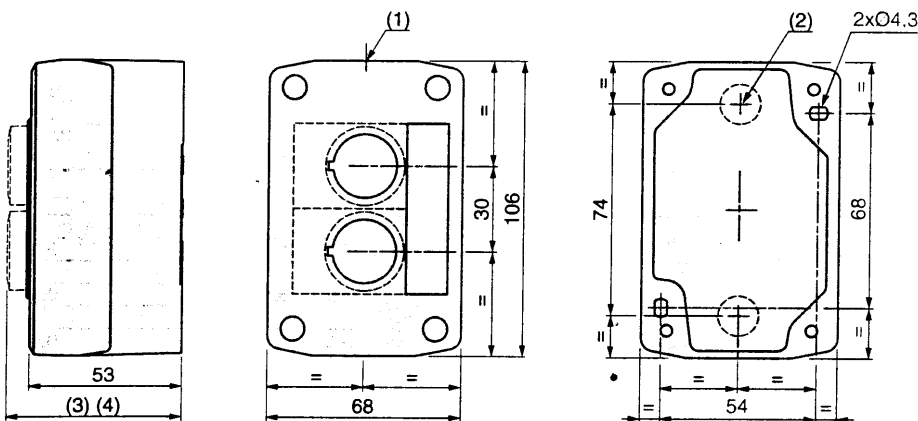
General :
 pages 3/2 and 3/3
 Characteristics :
 pages 3/4 and 3/5
 References :
 pages 3/6 to 3/11

Dimensions

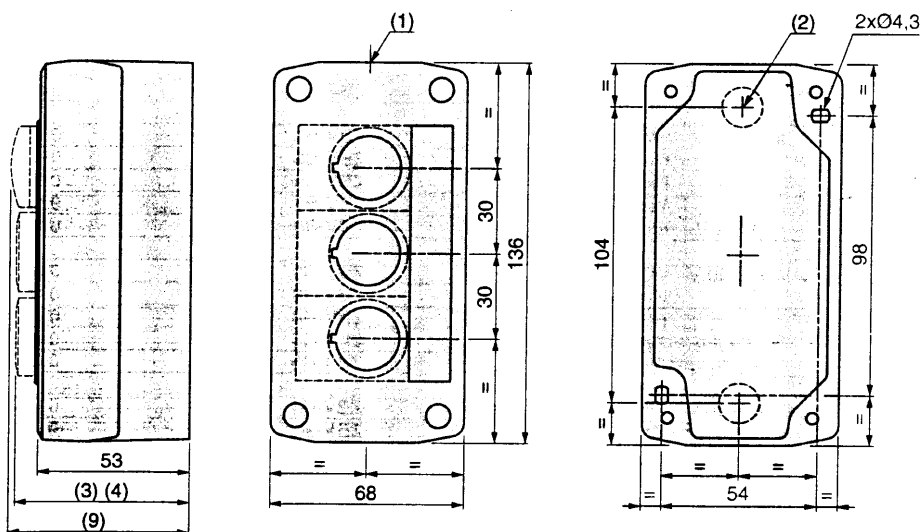
Single-way control stations XAL-D1●●, K1●●, D01, D01H7, G01



2-way control stations XAL-D2●●, K2●●, D02, D02H7, G02



3-way control stations XAL-D2●●, K3●●, D03, D03H7, G03



- (1) 2 'knock-outs' for PG 13.5 cable glands, maximum capacity 12 mm.
- (2) 'Knock-out' for cable entry, maximum capacity 14 mm.

Examples

- (3) 62 mm for flush pushbuttons.
- (4) 66 mm for projecting pushbuttons.
- (5) 91 mm for latching mushroom head push-buttons.
- (6) 74 mm for key switches.
- (7) 113 mm for latching mushroom head push-buttons with key release.
- (8) 96 mm for key switches with key.
- (9) 64 mm for pilot lights.

Control stations

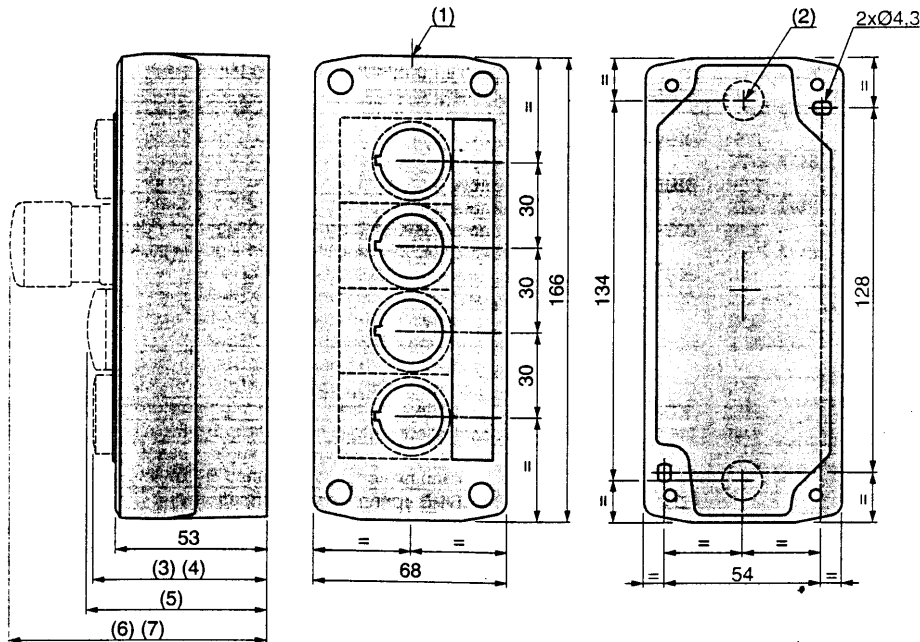
XAL control stations for Harmony style 5

Ø 22 control and signalling units with double insulated bezel

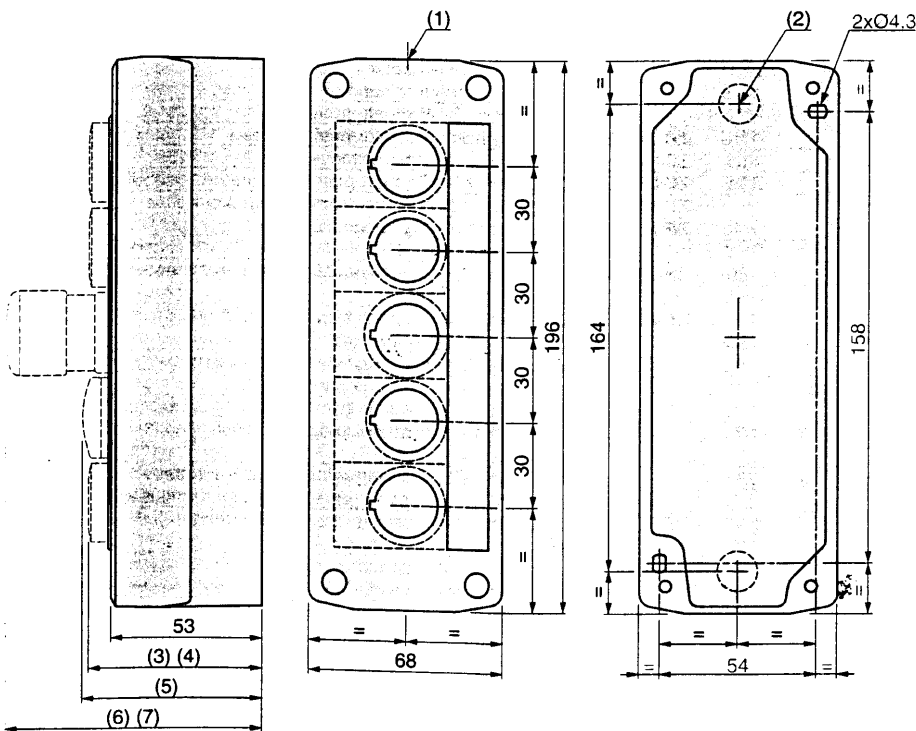
General :
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Dimensions (continued)

4-way control stations XAL-D2●●, K4●●, D04, D04H7, G04



5-way control stations XAL-D5●●, K5●●, D05, D05H7, G05



- (1) 2 'knock-outs' for PG 13.5 cable glands, maximum capacity 12 mm.
- (2) 'Knock-out' for cable entry, maximum capacity 14 mm.

Examples

- (3) 62 mm for flush pushbuttons.
- (4) 66 mm for projecting pushbuttons.
- (5) 64 mm for pilot lights.
- (6) 87 mm for mushroom head pushbuttons.
- (7) 78 mm for selector switches.