Assembly Instructions for:
PL 5** Series Junction Boxes

HAWKE International

AI 260 / Issue K - 19/02/21

PL511 Service Temperatures
PL 511A, & PL511B - Normal Impact Risk -60°C to +75°C (IP66 & IP67)
PL 511D - Low Impact Risk -20°C to +75°C (IP66 & IP67)
PL511Z - Normal Impact Risk -60°C to +75°C (IP66)

PL520 Service Temperatures
PL 520B - Normal Impact Risk -60°C to +75°C (IP66 & IP67)
PL520D - Low Impact Risk -25°C to +75°C (IP66)
PL520G - Low Impact Risk -20°C to +75°C (IP66)

PL513 Service Temperatures
PL 513B - Normal Impact Risk -60°C to +75°C (IP66 & IP67)
PL513D - Normal Impact Risk -30°C to +75°C (IP66 & IP67)
PL 513D - Low Impact Risk -60°C to +75°C (IP66 & IP67)
PL513G - Low Impact Risk -20°C to +75°C (IP66)

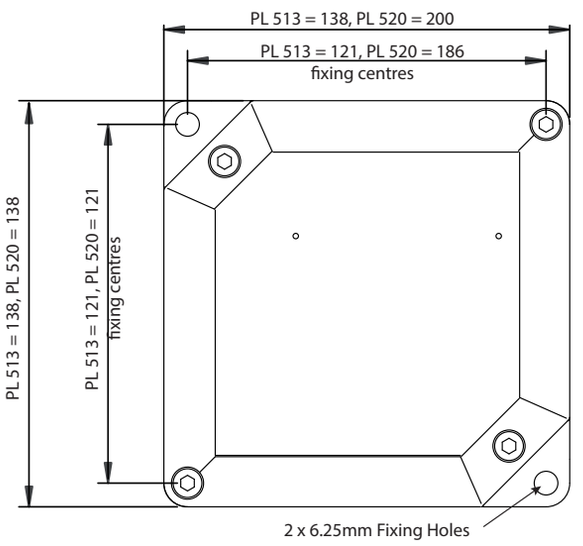
PL514 Service Temperatures
PL 514B - Normal Impact Risk -60°C to +75°C (IP66 & IP67)

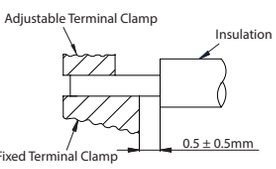
Minimum Installation Temperature: -5°C

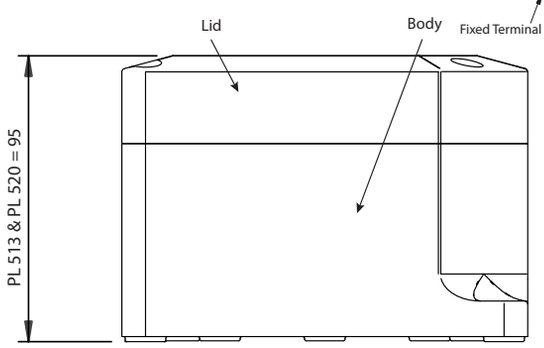
Certification Details
Box Type: PL5** Series
Ⓔx II 2 GD Ex eb IIC Gb T*,
Ex tb IIIC Db T** Tamb *** IP66/67 CE
Baseefa14ATEX0268X
IECEx BAS14.0123X
EAC Ex TC RU C-GB.AA87.B.00430
IEx 16.0143X

IMPORTANT: *This document should be read carefully before commencing installation*

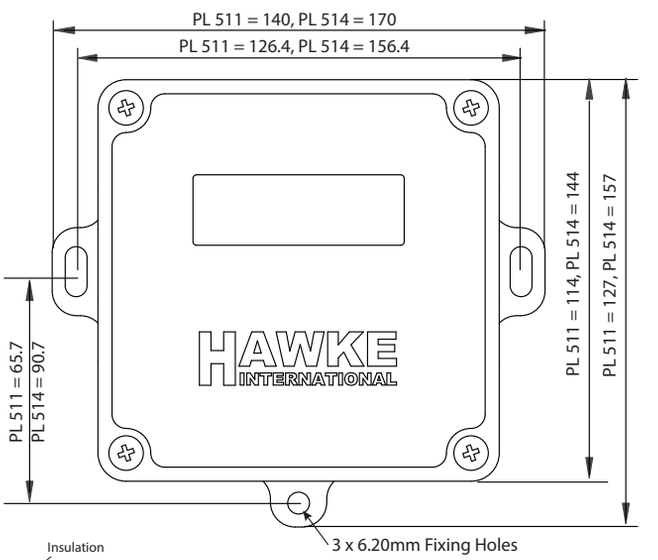
PL 513 & PL 520

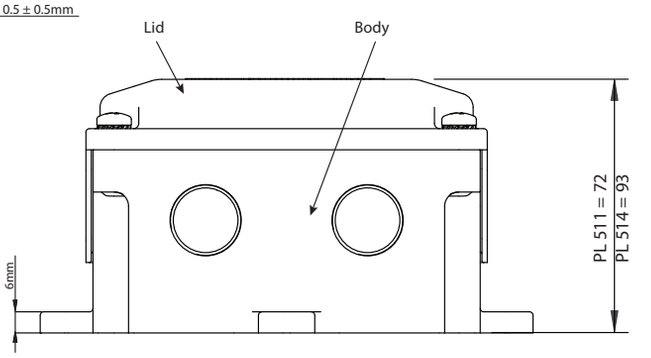






PL 511 & PL 514





(Dimensions in mm)

Drawings for illustration purposes only

W = Maximum Dissipated Wattage N = No. of Terminals Fitted F = Combined Terminal Resistance I = Maximum Current

$W = N \times F \times I^2$ $N = W / F \times I^2$ $I = \sqrt{W / N \times F}$

Note: *Combined Terminal Resistance = Resistance of Maximum Conductor Length (see BS 6360 and table below) + Terminal Resistance*

Box Type	Maximum Power Dissipation (Watts)																		Max. Cable Length Per Terminal (M)
	T* T6	T** 80°C	T*** +40°C	T* T6	T** 80°C	T*** +55°C	T* T6	T** 80°C	T*** +65°C	T* T5	T** 95°C	T*** +40°C	T* T5	T** 95°C	T*** +55°C	T* T5	T** 95°C	T*** +65°C	
PL 511	1.63			1.02			0.61			2.24			1.63			1.22			0.135
PL 513	4.1			2.5			1.5			5.6			4.1			3.0			0.179
PL 514	4.1			2.5			1.5			5.6			4.1			3.0			0.179
PL 520	4.8			3.0			1.8			6.6			4.8			3.6			0.229

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CONDITIONS FOR SAFE USE:

1. Junction boxes in material codes A, B, D, G and Z shall be maked with: Warning: Potential Electrostatic Hazard, clean only with a damp cloth.
2. Unused cable entries must be fitted with the stopping plugs as listed on the ZPL5* component certificate Baseefa 14ATEX0248U.
3. Only breather / drain and adaptor / reducer devices as specified in the empty enclosure certificate Baseefa 14ATEX0248U may be used with these junction boxes. The breather / drain devices must be installed in their correct orientation in the bottom face of the enclosure. The Ingress Protection rating and operating temperature range of the junction box is limited to that of the breather / drain and adaptor / reducer device fitted.
4. All terminal screws used and unused, shall be fully tightened down by the end user.
5. No more than one single or multi-stranded lead shall be connected to either side of any terminal unless multiple conductors have been joined in a suitable manner e.g. two conductors into a single insulated bootlace ferrule, or any method indicated on the terminal schedule.
6. Terminals shall be installed in such a manner that the creepage and clearance distances between the terminal and adjacent components, enclosure walls and covers comply with the requirements of IEC 60079-7 for the rated voltage of the equipment.
7. Terminal temperatures must not exceed the operating range specified on the component certificate.
8. All terminals and accessories such as cross-connectors shall be installed in accordance with the terminal manufacturer's instructions.
9. The maximum voltage, current and dissipated power shown on the rating label must not be exceeded.
10. When connecting conductors of cross-section below the maximum allowed for the particular terminal then the maximum amps per pole must be reduced in line with the maximum amps permitted for a terminal equivalent to the conductor size fitted e.g. if a terminal that can take a 10mm^2 conductor at 40 amps is fitted with a 4mm^2 conductor then the current shall be reduced to a maximum of 22 amps or the rating marked on the apparatus label whichever is the lower.
12. When label fixing is by screws complete with Nyloc nuts, then the ingress protection rating is IP66.
12. **Unused entries may be fitted with alternative equipment certified stopping plugs and/or breather drains to those listed in the schedule. The user is responsible for ensuring that the protection concept temperature class and relevant IP rating are maintained.**
13. Insulation of conductors must extend to within 1mm of the metal of the terminal throat unless specified otherwise on the terminal certificate.

EXTERNAL EFFECTS AND AGGRESSIVE SUBSTANCES:

The end user shall take into consideration for health and safety regulations when changing environmental conditions and in the presence of extraneous voltages, humidity, vibrations, contamination and other effects, take into account the limits of the operating conditions established by Hawke International.

Equipment parts used must be appropriate to the intended mechanical and thermal stresses and capable of withstanding attack by existing or forseeable aggressive substances.

TO OPEN THE LID:

1. Untighten the lid securing screws.
2. Carefully remove the lid ensuring the gasket is not displaced or damaged.

TO CLOSE THE LID:

1. Check that the gasket is correctly located in the groove in the underside of the lid and undamaged. Ensure that the correct lid is refitted.
2. Locate and tighten all the lid securing screws into the box body.

EARTHING:

a) The earth leads must be in accordance with IEC/EN 60079-0.

b) Junction boxes shall be earthed in accordance with the relevant code of practice e.g. IEC/EN 60079-14.

i) The PL 5** series boxes are supplied fitted with an internal earth terminal.

ii) The PL 5** series boxes may be supplied fitted with or without an internal earth continuity plate.

Note 1: *An optional internal / external earth stud is available.*

Note 2:*Integral connection from the internal earth continuity plate through to the external of the box via M6 / M8 side mounted int/ext earth or underside earth foot when requested.*

SCHEDULE OF TERMINALS FITTED (T6 40°C AND T5 55°C)

PL 511 Terminal Capacity Data

Terminal Type	Conductor Size mm^2		Max. Volts	Maximum Physical Terminal Content		Reduced Terminal Content at Maximum Terminal Amps		Combined Terminal Resistance (Ohms)	Insulation Stripping Length (mm)	Terminal Tightening Torque (Nm)
	Min	Max		Term. Qty.	Amps	Term. Qty.	Amps			
WDU2.5N	0.5	2.5	440	9	11	3	17	0.00143	10	0.4 - 0.6
WDU2.5	0.5	2.5	690	9	11	3	17	0.00137	10	0.4 - 0.8
UT 2.5	0.14	2.5	690	9	11	4	15	0.00141	9	0.5 - 0.6
WDU 4	0.5	4.0	690	8	15	3	22	0.000912	10	0.5 - 1.0
UT 4	0.14	4.0	690	8	15	4	20	0.000882	9	0.6 - 0.8
WDU 6	0.5	6.0	690	5	23	3	29	0.000591	12	0.8 - 1.6
UT6	0.2	6.0	690	6	21	3	28	0.000615	10	1.5 - 1.8
HPB4*	0.5	6.0	550	1	37	1	37	N/A	12	1.0 - 2.0

* Refer to Fig. 1 for HPB terminal limitations

PL 513 Terminal Capacity Data

Terminal Type	Conductor Size mm²		Max. Volts	Rail Orientation**	Maximum Physical Terminal Content		Reduced Terminal Content at Maximum Terminal Amps		Combined Terminal Resistance (Ohms)	Insulation Stripping Length (mm)	Terminal Tightening Torque (Nm)
	Min	Max			Term. Qty.	Amps	Term. Qty.	Amps			
WDU2.5N	0.5	2.5	440	V / H	16	12	7	17	0.001756	10	0.4 - 0.6
				D	18	11					
WDU2.5	0.5	2.5	690	V / H	16	12	7	17	0.001696	10	0.4 - 0.6
				D	18	11					
UT 2.5	0.14	2.5	690	V / H	16	12	10	15	0.001736	9	0.4 - 0.8
				D	17	11					
WDU 4	0.5	4	690	V / H	13	16	7	22	0.001115	10	0.5 - 0.6
				D	15	15					
UT 4	0.14	4	690	V / H	13	17	9	20	0.001085	9	0.5 - 1.0
				D	14	16					
WDU 6	0.5	6	690	V / H	10	23	6	29	0.000727	12	0.6 - 0.8
				D	11	22					
UT 6	0.2	6	690	V / H	9	24	6	28	0.000751	10	0.8 - 1.6
				D	11	22					
WDU 10	1.5	10	690	V / H	8	32	5	40	0.000479	12	1.5 - 1.8
				D	9	30					
UT 10	0.5	10	690	V / H	7	35	5	39	0.000467	10	1.2 - 2.4
				D	8	33					
HTB 6*	0.5	6	550		1	37	1	37	N/A	12	1.5 - 1.8

PL 514 Terminal Capacity Data

Terminal Type	Conductor Size mm²		Max. Volts	Maximum Physical Terminal Content		Reduced Terminal Content at Maximum Terminal Amps		Combined Terminal Resistance (Ohms)	Insulation Stripping Length (mm)	Terminal Tightening Torque (Nm)
	Min	Max		Term. Qty.	Amps	Term. Qty.	Amps			
WDU2.5N	0.5	2.5	440	18	11	7	17	0.001756	10	0.4 - 0.6
WDU2.5	0.5	2.5	690	18	11	7	17	0.001696	10	0.4 - 0.8
UT 2.5	0.14	2.5	690	17	11	10	15	0.001736	9	0.5 - 0.6
WDU 4	0.5	4.0	690	14	15	7	22	0.001115	10	0.5 - 1.0
UT 4	0.14	4.0	690	14	16	9	20	0.001085	9	0.6 - 0.8
WDU 6	0.5	6.0	690	11	22	6	29	0.000727	12	0.8 - 1.6
UT 6	0.2	6.0	690	10	23	6	28	0.000751	10	1.5 - 1.8
WDU10	1.5	10.0	690	8	32	5	40	0.000479	12	1.2 - 2.4
UT 10	0.5	10.0	690	8	33	5	39	0.000467	10	1.5 - 1.8
HPB4	0.5	6.0	550	2	37	2	37	N/A	12	1.0 - 2.0

PL 520 Terminal Capacity Data

Terminal Type	Conductor Size mm²		Max. Volts	Rail Orientation**	Maximum Physical Terminal Content		Reduced Terminal Content at Maximum Terminal Amps		Combined Terminal Resistance (Ohms)	Insulation Stripping Length (mm)	Terminal Tightening Torque (Nm)
	Min	Max			Term. Qty.	Amps	Term. Qty.	Amps			
WDU2.5N	0.5	2.5	440	V	16	11	7	17	0.002126	10	0.4 - 0.6
				H	30	8					
WDU2.5	0.5	2.5	690	V	16	12	7	17	0.002668	10	0.4 - 0.6
				H	30	8					
UT 2.5	0.14	2.5	690	V	16	11	9	15	0.002106	9	0.4 - 0.8
				H	29	8					
WDU 4	0.5	4	690	V	13	16	7	22	0.001345	10	0.5 - 0.6
				H	25	11					
UT 4	0.14	4	690	V	13	16	8	20	0.001315	9	0.5 - 1.0
				H	24	12					
WDU 6	0.5	6	690	V	10	23	6	29	0.000881	12	0.6 - 0.8
				H	19	16					
UT 6	0.2	6	690	V	9	24	6	28	0.000905	10	0.8 - 1.6
				H	18	17					
WDU 10	1.5	10	690	V	8	32	5	40	0.000571	12	1.5 - 1.8
				H	15	23					
UT 10	0.5	10	690	V	7	35	5	39	0.000559	10	1.2 - 2.4
				H	14	24					
HTB 6*	0.5	6	550		1	37	1	37	N/A	10	1.5 - 1.8

** Refer to Fig. 1 for HPB terminal limitations*

*** V = Vertical*

H = Horizontal

D = Diagonal

Fig. 1 - When HPB / HTB terminals are fitted the following limitations apply:

Table 1
Max. No. conductors of same size connected to each terminal

Conductor Size (sq. mm.)	Maximum No. of Cores
10	2
6	3
4	4
Smaller Conductors > or = 0.5 sq. mm.	4

Conductors be either all solid or all stranded

Table 2
Alternatively, the following PAIRS of conductor combinations may be fitted in one terminal

1.5mm² solid with:	1.5mm² solid or 2.5mm² stranded or 4mm² stranded or 6mm² stranded or 10mm² stranded
1.5mm² stranded with:	0.9mm² stranded or 1.2mm² stranded or 1.5mm² stranded or 2.2mm² or 2.5mm² stranded or 4mm² stranded or 6mm² stranded or 10mm² stranded.
2.5mm² solid with:	0.9mm² stranded or 1.2mm² stranded or 2.2mm² solid or 2.5mm² solid or 4mm² solid or 6mm² stranded or 10mm² stranded
2.5mm² stranded with:	2.5mm² stranded or 4mm² stranded or 6mm² stranded or 10mm² stranded
4mm² stranded with:	4mm² stranded or 6mm² stranded or 10mm² stranded
6mm² stranded with:	6mm² stranded or 10mm² stranded
10mm² stranded with:	10mm² stranded

Alternatively, the following THREE of conductor combinations may be fitted in one terminal
Two 2.5mm² solid conductors and one 6mm² stranded conductor

SCHEDULE OF LIMITATIONS FOR HPB TERMINALS:

1) Leads connected to the terminals shall have insulation extending to within 3mm of the terminal throat and the bare end of each lead shall not extend more than 3mm beyond the other side of the slot and shall remain straight. Maximum stripping length 16mm.
2) The terminal cap of each terminal, used and unused, shall be fully tightened down by the end user.
3) Conductors of different sizes and configurations shall not be inserted into the same terminal throat/slot except for the specific combinations listed in Tables 1 & 2.
4) When installed in an enclosure the creepage and clearance distances between the terminals, adjacent equipment and enclosure walls must comply with the requirements of IEC/EN 60079-7.
5) When installed in plastic enclosures, there shall be at least 3mm clearance between the inside of the removable cover/lid of the enclosure and the terminal screws after the connections have been made and the terminal screws and cover/lid have been fully tightened down.
6) For conductor sizes less than 1mm² but not less than 0.5mm², the maximum current rating shall not exceed 1 amp.

NOTE:
The end user is responsible for ensuring the enclosure and gasket materials are suitable for the environment with regard to external effects and aggressive substances etc.

EU Declaration of Conformity in accordance with European Directive 2014/34/EU
Manufacturer: Hawke International
Address: Oxford Street West, Ashton-under-Lyne, OL7 0NA, United Kingdom.

Equipment Type: PL5 Series

Provisions of the Directive fulfilled by the Equipment:
Group II Category 2GD Ex eb IIC Gb T*, Ex tb IIIC Db T** Tamb *** – IP66/67

Notified Body for EU-Type Examination: SGS-Fimko 0598 Helsinki Finland
EU-type Examination Certificate: Baseefa14ATEX0268X
Notified Body for production: SGS-Fimko 0598 Helsinki Finland
Harmonized Standards used: EN 60079-0:2018, EN60079-7:2007, EN60079-31:2014.

On behalf of the above named company, I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives.

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A. Reid
Technical Manager