

# SMASH

## Advanced SEM E modular connector

The SMASH connector offers extremely high robustness where signal integrity is required. Based on an aluminium shell with 1, 2 or 3 bays, the SMASH connector can house up to 450 contacts, with up to 150 contacts per bay. The chevron grid pattern (1.905 x 1.905 [.075 x .075]) provides high contact density for advanced electronics packaging. The metallic shell is equipped with grounding, guide pins, and keying devices to ensure mechanical reliability.

### The modularity

Within the standard SEM E form factor, the SMASH connector provides a wide array of signal transmission combinations. Various inserts can be housed within the robust, modular shell while meeting the standard board and chassis formats.

### A connector that is adaptable to all types of mounting and soldering processes

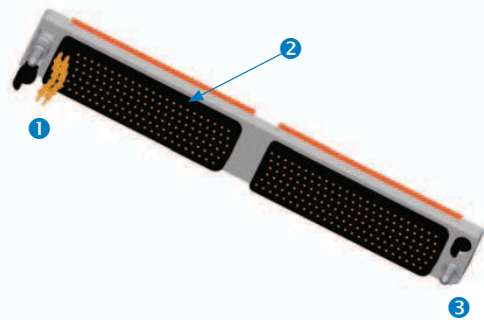
The sculptured flex circuit termination of the daughter card connector can accept the thickest boards. No tooling is required as the design provides good alignment to the solder pads of the daughter card.

### A connector dedicated to harsh environment

The Starclip technology of the socket contact (with a 6 tine clip) offers high mechanical and electrical reliability, combined with low insertion force. The SMASH connector is ruggedized to meet extreme conditions such as salt spray, vibration, and contact resistance.

### Flexibility

From 1 to 3 bays with 150 or 132 signal contacts per bay, the SMASH connector is available in either chevron grid or staggered grid\* patterns. It can provide RF, power, and fiber optic solutions with hybrid arrangements. LVDS signals\* are also available.



### QUICK SELECTION GUIDE

#### Signal contacts

1

#### FEMALE



#### MALE



For further terminations of contacts, consult us.

PAGE 62

PAGE 62

#### Housing

2

#### GRID

Chevron grid | Staggered grid



#### NUMBER OF ROWS

6 rows / 8 rows

For specific pitches or arrangements, consult us.

PAGE 64

#### Shell

3

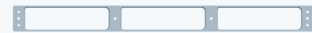
#### 1 BAY



#### 2 BAYS



#### 3 BAYS



With or without ground spring or rackable, consult us.

PAGE 64

### The SMASH series serves various markets, including:



Military avionics & airframe



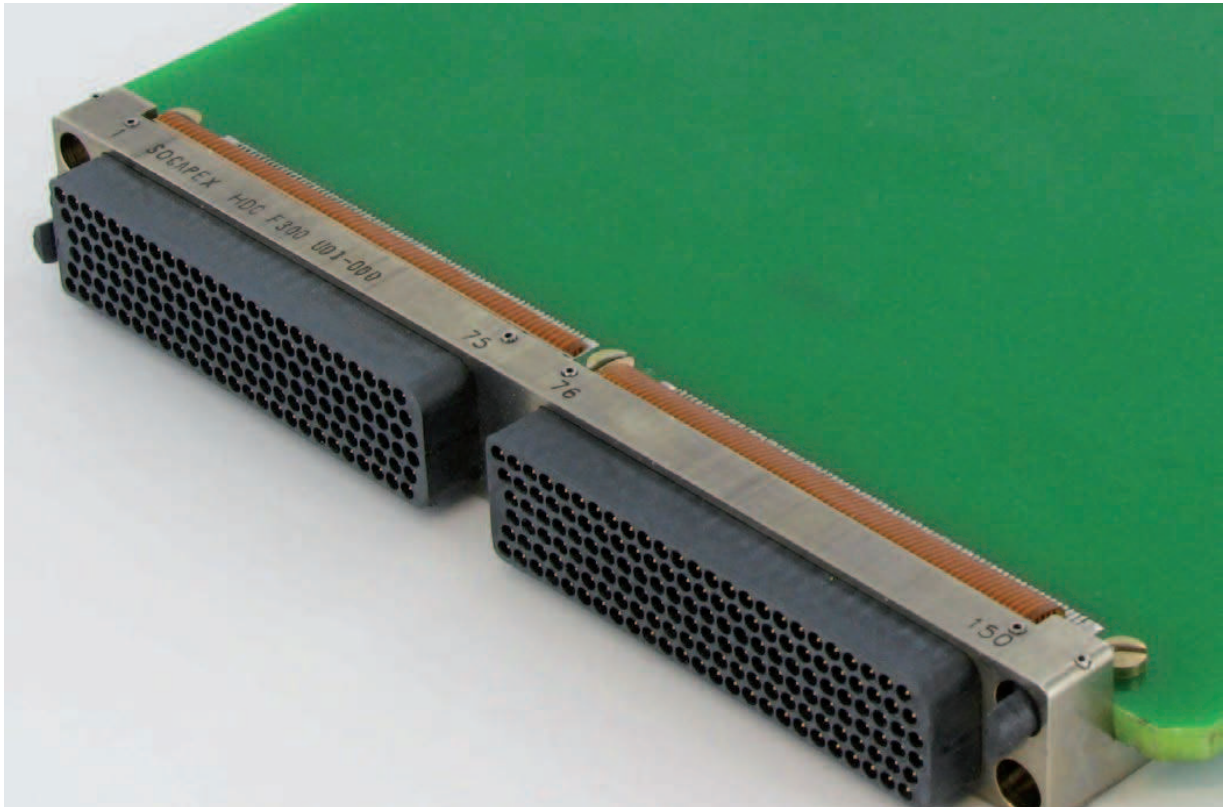
Commercial avionics & airframe



C4ISR

\* Consult us

All dimensions are given for information only and are in mm [inch], except as otherwise specified



SMASH Series

## SMASH Series

High density interconnect system for harsh environment applications

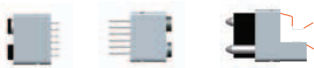
SMASH product range .....	58
Standard technology of contacts.....	62
Special technology of contacts.....	63
Standard housings and shells .....	64
Special housings and shells .....	65
Layouts .....	66

SMASH >>> GENERAL SPECIFICATIONS



- **No tooling required. SEM E form factor.**
- **Flexible circuit termination of the plug can be used with daughter cards of various thicknesses. Compatible with all soldering processes.**
- **Excellent mechanical electrical reliability**
- **Chevron grid pattern (1.905 [.075] spacing along the row with 1.905 [.075] between rows, offset 0.635 [.025])**

Terminations



Recommended configurations



Main characteristics

- 3 versions with 1, 2 or 3 bays
- Each insert can house up to 132 or 150 signal contacts depending on contact sizes
- High density: 0.34 cts/mm<sup>2</sup> [130 cts/inch<sup>2</sup>]
- 3 A per contacts / DWV: 1000 Vrms / Insulation resistance: 5Gohms
- Press-fit solderless attachment possible. *Consult us*
- Aluminium shell for electrical enhancements (filters, shell to shell continuity) as well as advanced mechanical robustness.

Standard

exceed all the MIL DTL 55302 requirements

MIL-DTL-55302

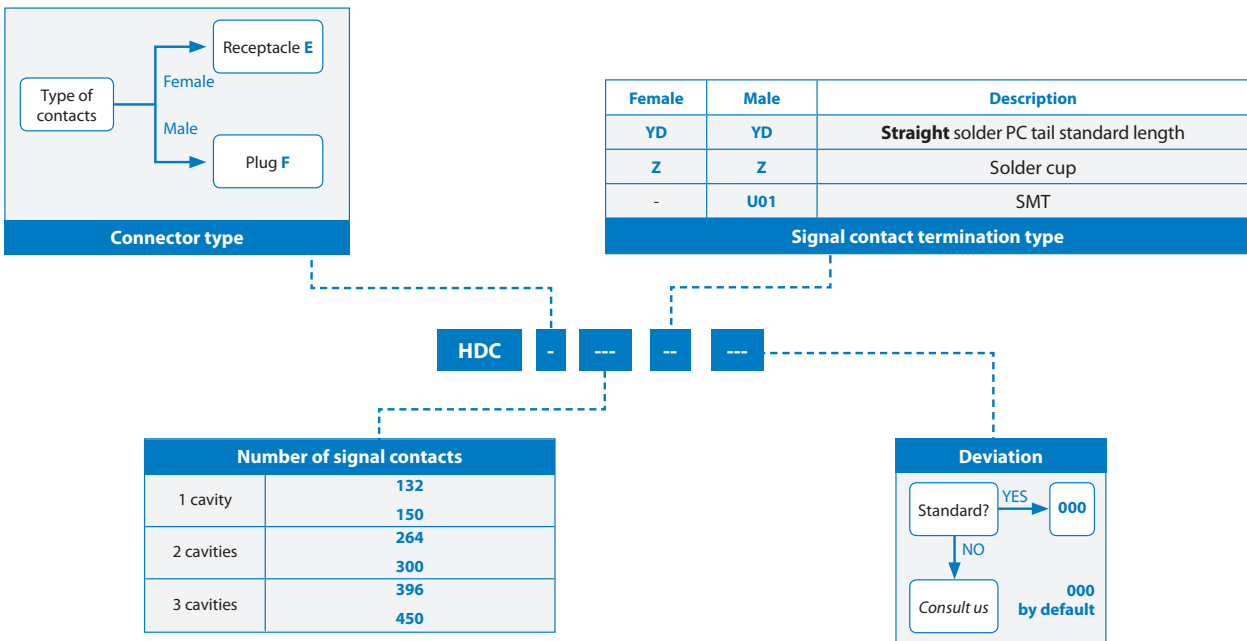
Markets



Main applications



How to order



Amphenol Socapex capabilities for specific connector design

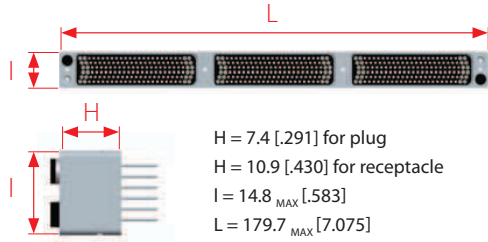
The metallic shell concept allows Amphenol to design numerous types of shells with various lengths and specific housings, providing:

- Insertion of specific contacts (RF, optical termini, power, high power)
- Modification of the height or type of signal contact terminations
- Customization of rack and panel shells or the addition of a ceramic plane for high-frequency filtering
- A variety of grid and footprint styles, to comply with density requirements

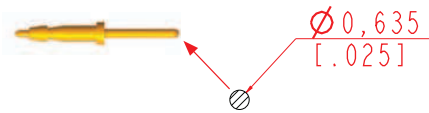
All dimensions are given for information only and are in mm [inch], except as otherwise specified

SMASH >>> TECHNICAL SPECIFICATIONS

**DIMENSIONAL CHARACTERISTICS**



**MALE CONTACT**



- **Mating end diameter:**  $\varnothing 0.635$  [.025]
- **Mating end section** (mating side):  $0.32 \text{ mm}^2$  [.0005 inch<sup>2</sup>]
- **Material:** brass alloy (machined)
- **Plating:** gold over nickel

**FEMALE CONTACT**



**Starclip female technology: 6 times for better reliability**

- 6 contact tines instead of 4
- Excellent mechanical and electrical reliability
- Better resistance to high vibrations
- Improved electrical conductivity
- 100% compatible with other connectors

**Material**

- Termination: machined brass alloy
- Clip: CuBe[BeCu], stamped and formed

**Plating**

- Barrel: tin lead or lead free plating
- Clip: gold over nickel

**MATERIALS**

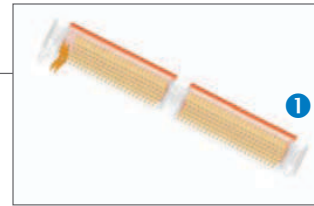
- **Guiding devices:** passivated stainless steel 303
- **Shells:** aluminum 6060 T6
- **Plating shells:** electroless nickel
- **Plastic insert & coding devices:** thermoplastic LCP, 30% glass-fiber filled

MECHANICAL CHARACTERISTICS		
<b>Backoff</b> <sup>1</sup> (mm)	1.2 <sub>MAX</sub> [.047]	N/A
<b>Mating force</b> per contact (N)	100g	§ 4.5.4
<b>Unmating force</b> per contact (N)	40g	§ 4.5.4
<b>Durability</b> cycles	500	§ 4.5.9
<b>Sinusoidal vibrations</b> (10 to 2000 Hz) micro discontinuity 2ns	15 g	§ 4.5.10
<b>Random vibrations</b> (600 to 700 Hz) micro discontinuity 2ns	2.682g <sup>2</sup> / Hz	Consult us
<b>Shocks</b> micro discontinuity 2ns	100 g / 6s	§ 4.5.14
<b>Recommended tightening torques</b>		
- nuts for M2.5 screws, brass (m.N)	0.25	N / A
- nuts for M2 screws, brass (m.N)	0.2	
ENVIRONMENTAL CHARACTERISTICS		
<b>Thermal shocks</b>		
Temperature (°C) cycles	-65 / +150 5	§ 4.5.13
<b>Salt Spray</b> hours	96	§ 4.5.11
ELECTRICAL CHARACTERISTICS		
<b>Current rating</b> per contacts (A)	3 <sub>MAX</sub>	§ 4.5.5
<b>Insulation resistance</b> (GΩ)	5 <sub>MIN</sub>	§ 4.5.8
<b>Contact resistance</b> (mΩ)	10 <sub>MIN</sub>	§ 4.5.12
<b>Dielectric Withstanding Voltage</b> (Vrms)	1000 <sub>MIN</sub>	§ 4.5.7.1
<b>Service voltage</b> (at 50 Hz) (Vrms)	250	N / A

<sup>1</sup>: When both connectors are fully mated, the backoff is the maximum distance the connectors can be unmated while functioning properly

## SMASH &gt;&gt;&gt; STANDARD TECHNOLOGY OF CONTACT (1)

## FEMALE CONTACTS FOR RECEPTACLES



## Starclip female technology



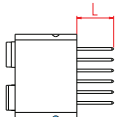
- 6 contact tines instead of 4
- Excellent mechanical and electrical reliability
- Better resistance to high vibrations
- Improved electrical conductivity
- 100% compatible with other connectors



- Size 23: high average current
- Clip for male contact Ø0.635 [.025]
- **Plating** on active part (clip)

Cu	Ni	Au
1 [.039]	3.5 [.138]	<b>1.3 [.051]</b>

## Standard straight PC tail

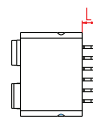


- Thru hole soldering
- Mother board or mezzanine connection
- PCB thickness: up to 5.5 [.217]
- **Plating** (µm [µin])

Version	Ni	Pure Sn	Sn Pb
RoHs	2.5 [.098]	5 [.197]	
Standard	3 [.118]		10 [.394]
Termination style			<b>YD</b>



## Press-fit



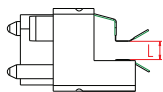
- For solderless assembly
- Mother board or mezzanine connection
- PCB thickness: 2.5<sub>MIN</sub> [.098]
- **Plating** (µm [µin])

Ni electrolytic	Ni electroless	Sn Pb
2 [.079]	15.2 [.598]	10 [.394]
Termination style		<b>YP</b>



## MALE CONTACT FOR PLUGS

## SMT



- Flexible circuit for double sided SMT mounting
- Daughter card or extended card
- PCB thickness: specific, *consult us*
- **Plating** (µm [µin])

Cu	Ni	Au
1 [.039]	3.5 [.138]	<b>1.3 [.051]</b>
<i>Consult us</i>		<b>U01</b>



	YD	YP	U01
<b>L<sub>MAX</sub></b>	6.5 [.256]	2.5 <sub>MIN</sub> [.098]	2.4 ± 0.3 [.094 ± .012]

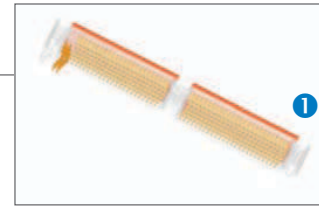
## AMPHENOL SIGNAL CONTACTS CAPABILITIES

- Male contacts attached to flexible circuit for double sided SMT mounting on daughter card
- Female contacts with straight PC tails for thru hole soldering, with numerous contact lengths available
- Male and female solder cup termination for soldering on a cable
- Specific plating

**Consult us**

All dimensions are given for information only and are in mm [inch], except as otherwise specified

SMASH >>> SPECIAL TECHNOLOGY OF CONTACT (1)



Power contacts 20A

			<p>- Thru hole soldering - Mother board or daughter board - 20A / contact</p> <p style="text-align: right;"><i>Consult us</i></p>
--	--	--	-------------------------------------------------------------------------------------------------------------------------------------------

RADSOK® contact 350A

		<p>- High power contact - Mother board or daughter board - 350A / contact</p> <p style="text-align: right;"><i>Consult us</i></p>
--	--	-------------------------------------------------------------------------------------------------------------------------------------------

Optical contacts

		<p>- 2x12 optical channels (MT ferules)</p> <p style="text-align: right;"><i>Consult us</i></p>
--	--	-------------------------------------------------------------------------------------------------

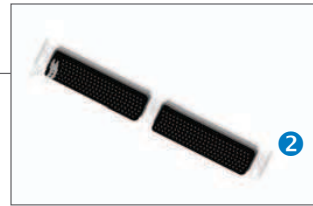
AMPHENOL CUSTOM DESIGN CAPABILITIES

- Development of housings and shells for specific arrangement or special contacts
- Numerous types of special contacts, various lengths and mounting processes
- Various platings (Tin Lead, Gold, Pure bright tin ...)
- Proven knowledge in custom design for tailor-made applications
- Development of coaxial contacts

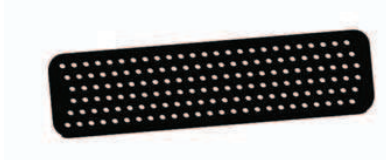
*Consult us*

**SMASH >>> STANDARD HOUSINGS AND SHELLS (2 & 3)**

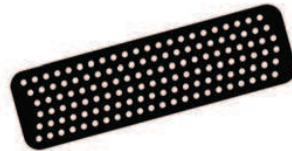
**HOUSINGS 6-ROW CHEVRON GRID PATTERN**



150 signal contacts insert



132 signal contacts insert



**STANDARD SHELLS WITH 1, 2 OR 3 BAYS**

1 bay connector / 150 signal contacts



1 bay connector / 132 signal contacts



2 bays connector / 300 signal contacts



2 bays connector / 264 signal contacts



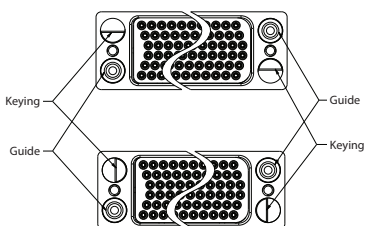
3 bays connector / 450 signal contacts



3 bays connector / 396 signal contacts



**KEYING AND GUIDING**



Connectors are supplied with non-assembled keying and guiding devices.

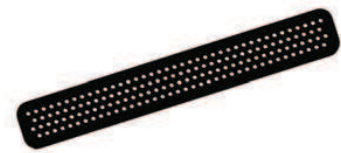
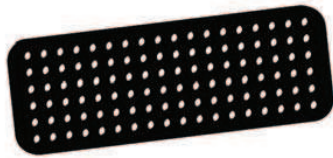
*All dimensions are given for information only and are in mm [inch], except as otherwise specified*

SMASH >>> SPECIAL HOUSINGS AND SHELLS (2 & 3)

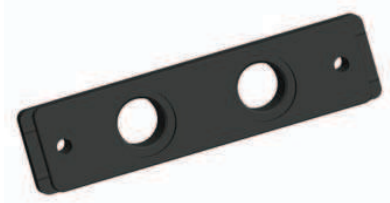


AMPHENOL CAPABILITIES: HOUSINGS

Specific grid: Square grid pattern, 1.905 [.075] x 1.905 [.075] staggered grid pattern, 1.588 [.063] x 1.588 [.063] staggered grid pattern, 2.54 mm...



Housings for specific contacts



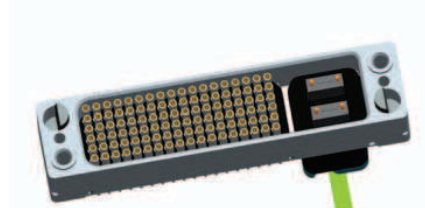
Consult us

AMPHENOL CAPABILITIES: SHELLS

Rackable shells



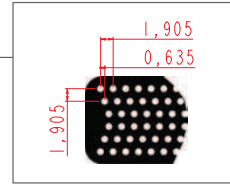
Specific shells



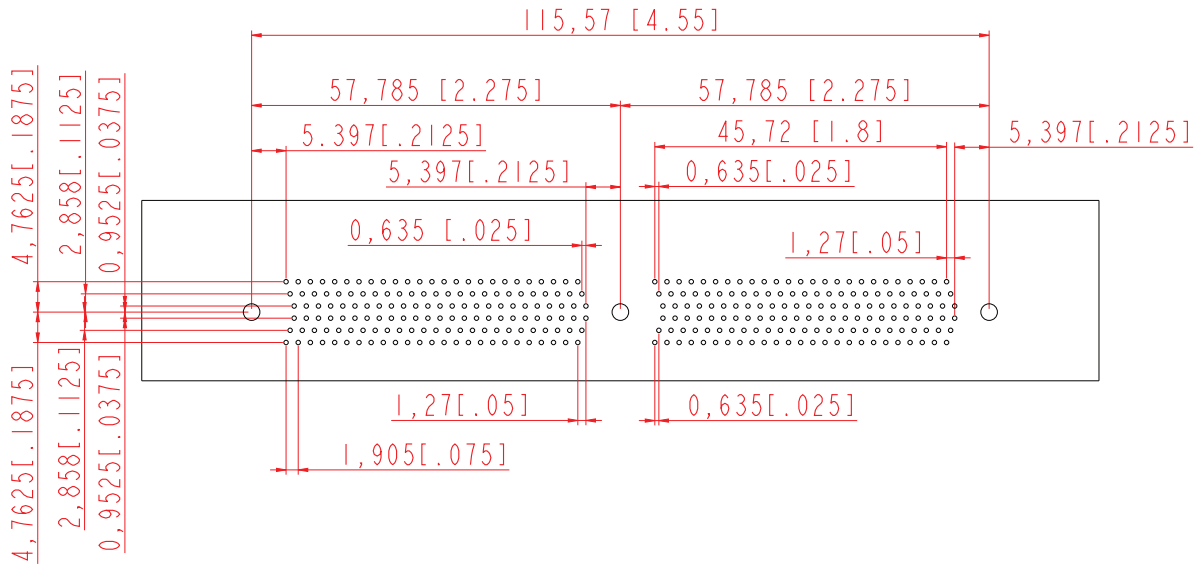
Consult us



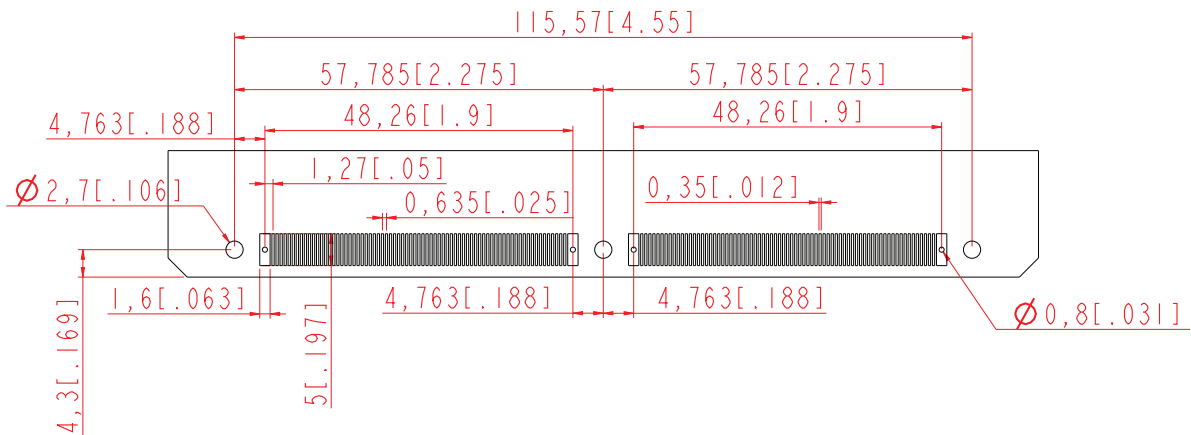
## SMASH &gt;&gt;&gt; LAYOUTS



## LAYOUTS FOR 300 SIGNAL CONTACTS CONNECTOR WITH YD/YP CONTACTS



## LAYOUTS FOR 300 SIGNAL CONTACTS CONNECTOR WITH U01 CONTACTS



For further arrangements, consult us

All dimensions are given for information only and are in mm [inch], except as otherwise specified

**NOTES**

Area with horizontal dotted lines for notes.

SMASH Series

