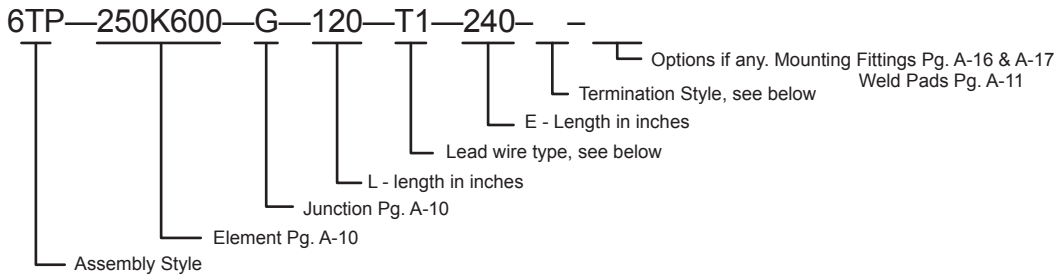


SANDELIUS INSTRUMENTS, INC.

To Order Any "T" Series Assembly Specify



Lead Wire Choices

Standard Leadwires are furnished with 20 gauge conductors unless otherwise noted below. Many other gauge sizes and constructions are available. Consult factory for ordering information.

Order Symbol	Conductor Type	Insulation Type Individual Conductors / Overall	Maximum Continuous Operating Temperature	Abrasion Resistance	Moisture Resistance	Available in ANSI Types
T1	Solid	Teflon/Teflon	400°F	Very Good	Excellent	J, K, E & T
T1S	Stranded	Teflon/Teflon	400°F	Very Good	Excellent	J & K
G1	Solid	Fiberglass/Fiberglass	950°F	Fair	Good	J, K, T, E, SX & RX
G1S	Stranded	Fiberglass/Fiberglass	950°F	Fair	Good	J & K
P1	Solid	PVC/PVC	221°F	Good	Excellent	JX, KX, TX & EX
P1S	Stranded	PVC/PVC	221°F	Good	Excellent	JX, KX, EX & TX
P4	Solid	PVC/PVC, twisted pair with aluminum backed tape shield with drain wire	221°F	Good	Excellent	JX, KX, TX & EX
P4D	Solid	Same as P4 except 2 pair under a single PVC jacket. For use on dual element assemblies	221°F	Good	Excellent	JX & KX
P5S	18 ga. Stranded	PVC/PVC with metallic overbraid shield under overall PVC jacket	221°F	Good	Excellent	JX, KX & EX
P5D	18 ga. Stranded	Same as P5S except 2 pair under a single PVC jacket. For use on dual element assemblies	221°F	Good	Excellent	JX, KX & EX
K1	Solid	Kapton/Kapton	500°F	Excellent	Excellent	J & K
K1S	Stranded	Kapton/Kapton	500°F	Excellent	Excellent	J & K

TERMINATION STYLES FOR "T" SERIES ASSEMBLIES

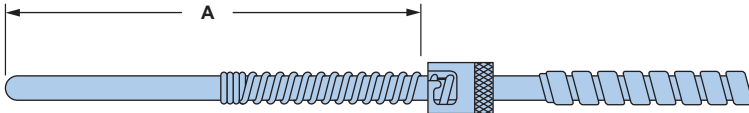
ORDER SYMBOL	DESCRIPTION	ORDER SYMBOL	DESCRIPTION	ORDER SYMBOL	DESCRIPTION
Leave Blank	 Plain End / Bare Leads				
S	 Spade Lugs	M1* M2* M3* M5* M7*	Standard Plug (400°F) High Temperature Std. Size Plug (550°F) Miniature Plug (400°F) Special 3-Pin Std. Size Plug (400°F) Ultra-High Temperature Std. Size Plug (800°F)	X-A46B	See pages A-18 & A-19 for available Head choices Head of your choice mounted with a 1/2" NPT Cord Grip.
BX	 1/2" NPT Malleable Iron "BX" Type Fitting	F1* F2* F3* F5* F7*	Standard Jack (400°F) High Temperature Std. Size Jack (550°F) Miniature Jack (400°F) Special 3-Pin Std. Size Jack (400°F) Ultra-High Temperature Std. Size Jack (800°F)	CB14-E44B	See pages A-18 & A-19 for available Head choices 1/2" NPT Compression Fitting
X XA XN XS	 Cord Grip - 1/2" NPT X - Standard Plated Grip XA - Aluminum XN - Nylon XS - Stainless Steel	MD1* MD2*	Standard Dual Plug High Temperature Dual Plugs *If mating plug is desired add the suffix "M". Example: MD1M	CF14-E44B	See pages A-18 & A-19 for available Head choices Head Mounted with Compression Fitting (Available on Style 6T only) Your choice of heads A-18 & A-19 and fittings Brass [PN: CB14] or SS [PN: CF14].

If a plain mating jack or plug is desired add the suffix "M". Examples: M1M, F2M.

If mating jack or plug complete with matching cable clamp is desired, add the suffix "MC". Examples: M1MC, F2MC.

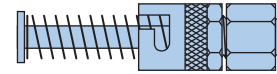
ACCESSORIES

BAYONET TYPE FITTINGS AND ADAPTERS



BAYONET FITTING

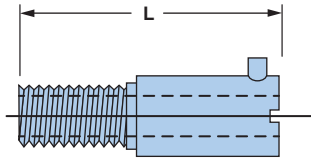
ORDER SYMBOL	DESCRIPTION
FB1	Bayonet Cap with spring stop brazed to sheath. Can be used on either 1/8" or 3/16" diameter.
FB4	Bayonet Cap with adjustable swage type spring. For use on 1/8" diameter probes.
FB5	Bayonet Cap with adjustable swage type spring. For use on 3/16" diameter probes.



ADJUSTABLE BAYONET FITTING

Order Symbol: **FB2B** (with Brass Ferrule)
FB2N (with Nylon Ferrule)
FB2T (with Teflon Ferrule)

Designed for use on 0.125" diameter sheath material. This fitting incorporates a compression type mounting feature. If nylon or Teflon ferrules are used, the fitting may be re-positioned as needed.

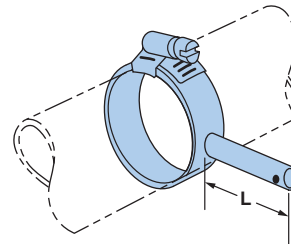


1/8" NPT

STANDARD BAYONET ADAPTER

Order Symbol: **BA-(L)**

Standard Lengths 7/8", 1 1/2", 2 1/2" and 3 1/2". Other lengths and special thread sizes are available on request.



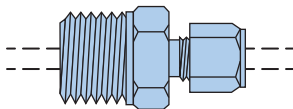
PIPE STRAP BAYONET ADAPTER

Order Symbol: **FP-4-2**
 L Length (in inches)
 Std. L=2"
 Actual Tube or Pipe O.D. (in inches)

Pipe strap adapters are available to fit any size tube or pipe. They provide an excellent means to achieve surface temperature measurements while allowing for easy replacement of thermocouple probes.

COMPRESSION FITTINGS

SINGLE THREADED



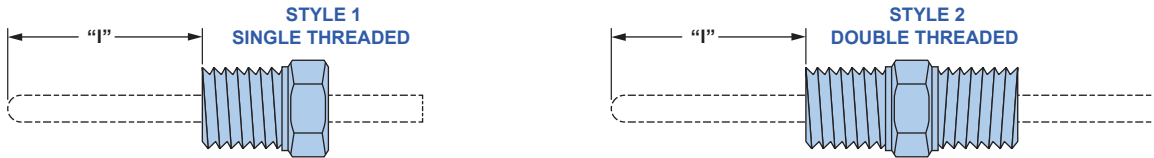
ORDER SYMBOL*	THREAD NPT SIZE	MATERIAL	AVAILABLE TO FIT THESE SHEATH O.D. SIZES
CB11	1/8"	Brass	0.063", 0.125", 0.188", 0.250"
CF11	1/8"	Stainless Steel	0.063", 0.125", 0.188", 0.250"
CB12	1/4"	Brass	0.063", 0.125", 0.188", 0.250", 0.312", 0.375"
CF12	1/4"	Stainless Steel	0.063", 0.125", 0.188", 0.250", 0.312", 0.375"
CB13	3/8"	Brass	0.125", 0.250", 0.312", 0.375"
CF13	3/8"	Stainless Steel	0.125", 0.250", 0.312", 0.375"
CB14	1/2"	Brass	0.125", 0.250", 0.375", 0.500"
CF14	1/2"	Stainless Steel	0.125", 0.188", 0.250", 0.375", 0.500"
CB16	3/4"	Brass	0.250", 0.375", 0.500"
CF16	3/4"	Stainless Steel	0.250", 0.375", 0.500"

Readjustable compression fittings with Teflon sealant ferrules are available upon request. When ordering fittings with Teflon ferrules, simply add a "T" after the order symbol. Example: CF14T-250. When an "1/8" vent hole is required add a "V" after the order symbol. Example CF14V-250.

*When ordering fittings as a part of an assembly, the order symbol alone includes all the information required as the fitting will be sized to match the assembly. When ordering fittings separately, the sheath O.D. size must be included. Example: CB12-250. Other materials available upon request.

ACCESSORIES

FIXED FITTINGS – ARE BRAZED OR WELDED TO THE SHEATH

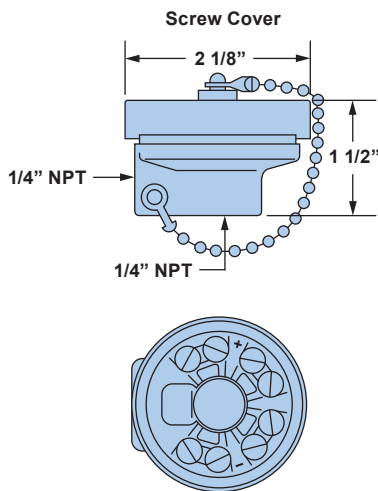


ORDER SYMBOL		THREAD SIZE	MATERIAL	AVAILABLE TO FIT THESE SHEATH O.D. SIZES
STYLE 1	STYLE 2			
F11	F21	1/8" NPT	304SS	0.063, 0.125, 0.188 & 0.250
F12	F22	1/4" NPT	304SS	0.063, 0.125, 0.188, 0.250, 0.313 & 0.375
F14	F24	1/2" NPT	304SS	0.063, 0.125, 0.188, 0.250, 0.313, 0.375 & 0.500
F16	F26	3/4" NPT	304SS	0.063, 0.125, 0.188, 0.250, 0.313, 0.375 & 0.500
F18	F28	1" NPT	304SS	0.063, 0.125, 0.188, 0.250, 0.313, 0.375 & 0.500

SPRING-LOADED FITTINGS



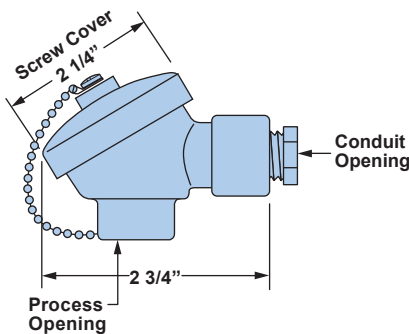
ORDER SYMBOL		THREAD NPT SIZE	MATERIAL	SPRING TYPE	AVAILABLE SHEATH SIZES
STYLE 1	STYLE 2				
SF14	SF24	1/2" NPT	304SS	Adjustable	0.125, 0.188, 0.250, 0.312 & 0.375
SB14	-	1/2" NPT	BRASS	Adjustable	0.125, 0.188, 0.250, 0.312 & 0.375
SPF14	SPF24	1/2" NPT	304SS	Adjustable with Liquid-tight O-Ring	0.125, 0.188 & 0.250



Miniature Weatherproof Thermoset Plastic Head

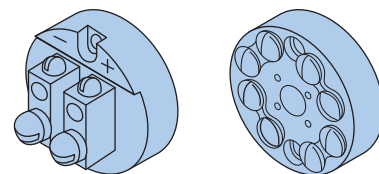
1/4" NPT x 1/4" NPT with 4 Integral Terminals

Part Number	Ambient Temperature Rating
N22	350° F
W22	800° F



Miniature Aluminum Head (Type M)

Part Number: M44* (1/2" x 1/2" NPT)
(Use "120" Series Terminal Blocks)
Max No. of Terminals: 4 + Ground
*See note on page A-18

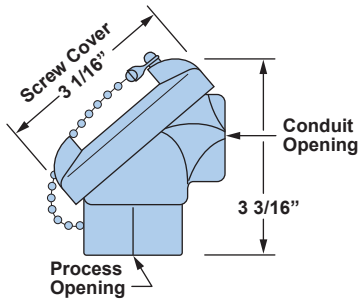


Ceramic Terminal Blocks

Fit Miniature Head Type: M

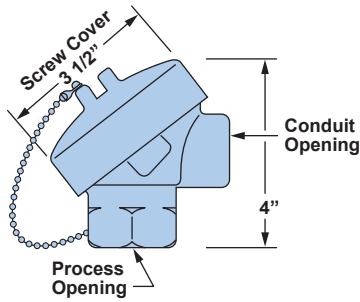
Part Number	Description
CP122	2 - Terminals
CP124	4 - Terminals

TERMINAL HEADS & CONNECTOR BLOCKS



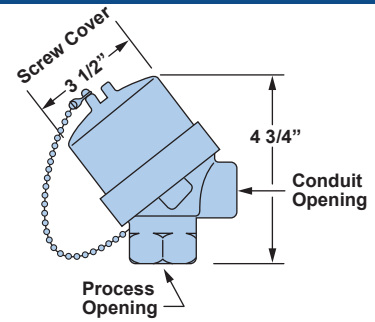
Standard Weatherproof Heads
(Use "162 Series" Ceramic Terminal Blocks)
Max. number of terminals: 6+Ground.

Part Number ¹	Type	Description
P46*	P	Polypropylene
PW46*	PW	White Polypropylene ² (FDA Compliant)
Q46*	Q	Aluminum
R46*	R	Cast Iron



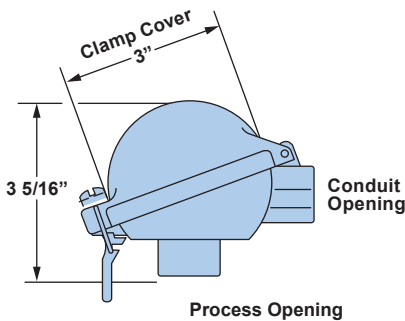
Large Weatherproof Heads
(Use "162 Series" Ceramic Terminal Blocks)
Max. number of terminals: 6+Ground.

Part Number ¹	Type	Description
A46*	A	Aluminum
C46*	C	Cast Iron



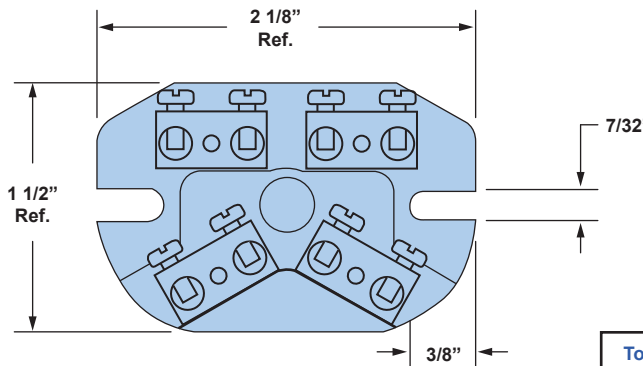
Large Dome Cover Weatherproof Heads
(Use "162 Series" Ceramic Terminal Blocks)
Max. number of terminals: 6+Ground.

Part Number ¹	Type	Description
D46*	D	Cast Iron



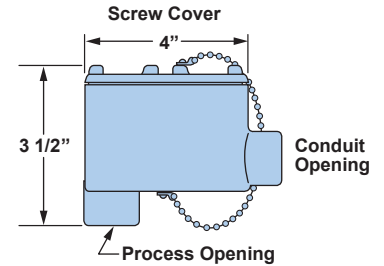
Weatherproof Aluminum Head
(Use "162 Series" Terminal Blocks)
Max No. of Terminals: 6 + Ground

Part Number ¹	Type	Description
H44*	H	1/2" x 1/2" NPT
H46*	H	1/2" x 3/4" NPT



163 Series Ceramic terminal blocks
Fits All Heads, must be used for 8g- wire

Part Number	Number of Terminals
CP163B	2
CP163D	4



Large Explosion Proof Heads
(Standard Terminal Block is CP129)
Max No. of Terminals: 6 + Ground

Part Number ¹	Type	Description
E46*	E	Aluminum
F46*	F	Cast Iron/Aluminum

To Order Any Head On This Page

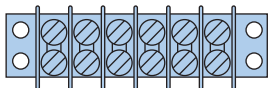
- C 4 6 B**
- Connector block if required.
 - B – 2 Terminals C – 3 Terminals
 - D – 4 Terminals F – 6 Terminals
 - Conduit Opening (See table A below)
 - Process Opening (See table A below)
 - Head Type
- If a tapped internal ground screw is required insert a "G" in front of the part number.

Table A - Connection Sizes (All heads on this page)

NPT SIZE	ORDER CODES	Available on Head Types	
		PROCESS	CONDUIT
1/2	4	All	All
3/4	6	All except H+P	All
1	8	A B C D E F & R	E & F

Notes:

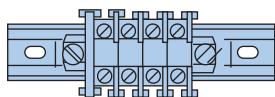
- * To order heads complete with terminal block add suffix to specify the number of terminals required B=2 terminals, C=3 terminals, etc.
- 1. Unless otherwise noted, all head part numbers shown are for heads with 0.5" NPT process openings and 0.75" NPT conduit openings. See Table A for other available sizes.
- 2. PW series heads may be specially ordered with molded-in terminals. To order insert an "M" before the number of terminals required. Example: PW46MF would have 6 molded-in terminals.
- 3. Type E & F explosion proof heads are approved for Class 1, Groups B, C, & D; Class 2, Groups E, F & G; Class 3, All Groups.
- 4. Type F explosion proof heads have cast iron bodies with aluminum covers.
- 5. Aluminum & Cast Iron heads are available with epoxy coating add an "X" after the type designation. Example: QX46D.
- 6. Some NPT sizes are achieved through the use of reducing bushings.



CP129 & CP130 Terminal Strips
CP129 (3/8" spacing) is standard in E & F type heads.
CP130 (7/16" spacing) available with compensated terminals is commonly used in junction boxes.

To Order Specify

- CP130-12-K**
- Type of Optional Compensated Terminals (Available on CP130 only)
 - Number of Terminals (20 max.)
 - Part Number

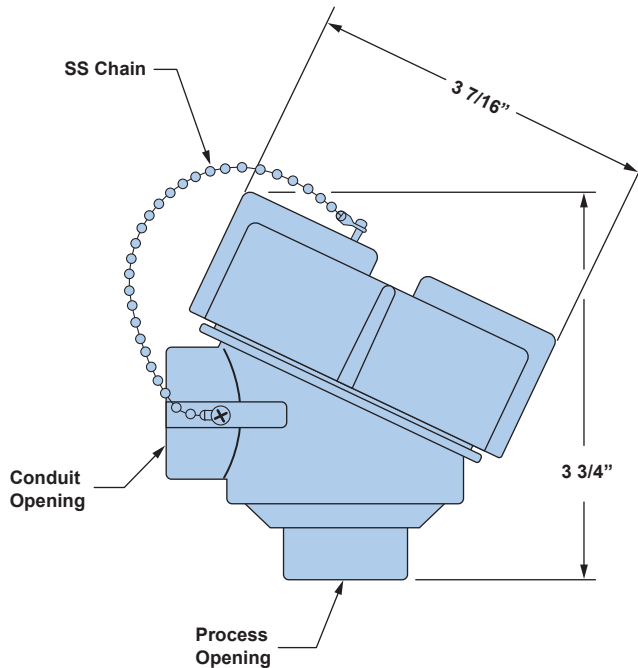


CP140 Tubular Clamp Type Terminal Strip
Commonly used in junction boxes. May be specified as an option for E & F type heads.

To Order Specify

- CP140-10**
- Number of Terminals
 - Part Number

TERMINAL HEADS & CONNECTOR BLOCKS



To Order Specify

- AE-46-D**
- Standard Terminal Block
 - B – 2 Terminal Block (CP162B)
 - C – 3 Terminal Block (CP162C)
 - D – 4 Terminal Block (CP162D)
 - F – 6 Terminal Block (CP162F)
 - Leave blank if no Terminal Block
 - Connection Code (See Table B)
 - Basic Part Number (See Table A)

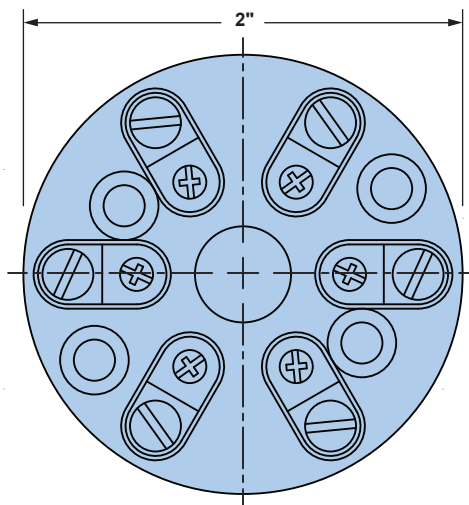
Part Number	Material
AE	Aluminum, Explosion Proof
AEX	Epoxy Coated Aluminum, Explosion Proof
SE	316SS, Explosion Proof

Code	Process Opening	Conduit Opening
44	1/2" NPT	1/2" NPT
45	1/2" NPT	M20 x 1.5
46	1/2" NPT	3/4" NPT
66	3/4" NPT	3/4" NPT

FM/CSA APPROVALS:
 CLASS 1, DIV. 1, GROUPS B, C & D and
 Dust Ignitionproof for Class II, Div. 1,
 Group E, F and G, Class III
 Type 4X and IP68

Ex II 2 G Ex d IIC Gb Ta, IP68
 II 2 D Ex tb IIIC Db Ta, IP68

IECEx Approvals:
 Ex d IIC Gb
 Ex tb IIIC Db



Part Number	Number of Terminals
CP162B	2
CP162C	3
CP162D	4
CP162E	5
CP162F	6

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REVISIONS			Sandelius Instruments, Inc.					
NO.	DATE	BY	713.861.1100 www.sandelius.com					
1.			TERMINAL BLOCK					
2.								
3.			DRAWN BY	TJM	SCALE	NTS	MATERIAL	Noted
4.			CHK'D		DATE	2/17/16	DRAWING NUMBER	
5.			TRACED		APP'D		CP163	