



Ruggedized High Speed Data Transmission

The solution for outdoor / indoor data transmission
in harsh environments.

**2 technical solutions for High
Speed Data Transmission**



Standard version with 4 contacts #16
Quadrax version with 1 cell

Excellent Data Transmission



1 Gbps per Quadrax
100 Mbps with standard contacts

Compliant to railway standards



NFF61030
I2F3 according to NFF16101 & NFF16102
(Fire & smoke standards)

Standardization oriented



Standard shell
Standard contacts
Standard accessories



SOURIAU on the railway market



Standard

The SOURIAU solution offers a wide range of connector layouts providing a simplified process from purchasing to harnessing: 1 type of contact to order, to manage, to stock, to crimp for a wide range of connectors.

SOURIAU's standardisation policy is the best compromise between technology and cost.



SOURIAU connectors ensure the continuity of the network with railway qualified connectors integrating new technologies: copper contacts, Quadrax and fibre optics to transfer high speed Ethernet and other data protocols.



SOURIAU, along with its customers is committed to the research of energy efficiency and sustainability.

The use of lightweight materials, fiber optics and high contact density contribute to the weight reduction of train equipments and help railway operators to save energy.

Railway VGE1 / FER1-Quadrax



Technical features

Mechanical

- Durability: 500 mating/unmating cycles
- Vibration resistance: Following NFF 61030, sinusoidal vibration from 10 to 100Hz, acceleration: 2g
- Shock: Acceleration: 30g
Duration: 18 ms Following NFF 61030
- Shell: Aluminum alloy
Conductive plating - 500 hours salt spray resistant

Electrical

- Contacts resistance, following NFF 61030:
Contact #16: 2.5 mΩ max
Quadrax Contacts #20: ≤ 6 mΩ, ≤ 2 mΩ (cell)
- Withstanding voltage:
Contact #16: 2550 Veff
Quadrax between contacts #20: ≥ 1000V
Quadrax between cell / contacts #20 : ≥ 500V

Environmental

- ROHS compliant
- Operating temperature: From -40°C to +100°C
- Dry heat test: 100 ° for 96 hours
- Salt spray resistance: 500 hours
- Sealing level: IP67, 1m deep for 30 minutes max, coupled with appropriate backshell and grommet or accessories
- Fire and smoke: Insert material: I2F3 following NFF 16101-16102 and UL 94 VO
- Insert: Hard thermoplastic, I2F3 following to NFF 16101-16102 and UL 94VO

Data transmission performances

High speed data transmissions with layouts 18-19 and 18A1

Tests following IEC 11-801

For cabling specifications please contact us.

18-19

Cat. 5 level obtained with 4 contacts #16

Exemple of performances with a 18-19 connector and a 2 pairs cable, for cabling specification, consult us:

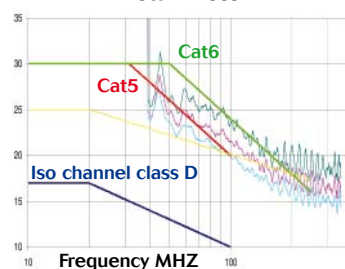
Standard version with 4 contacts #16:
Cat. 5 - 100 Mbps

18-19

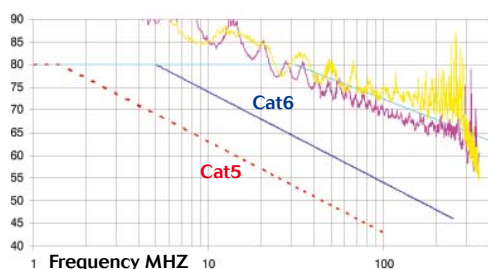


4 Contacts
Ø1.6 mm (#16)

Return Loss



Next



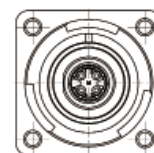
Quadrax-18A1

Cat. 6 level obtained with 1 contact Quadrax

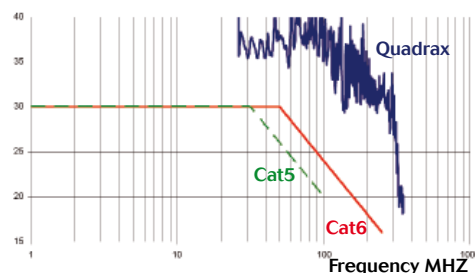
Exemple of performances with a 18A1 connector and a Quadrax cable:

Quadrax version: Cat. 6 - 1 Gbps

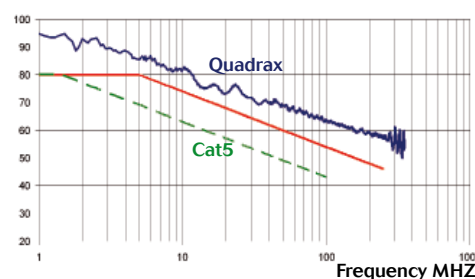
18A1



Return Loss



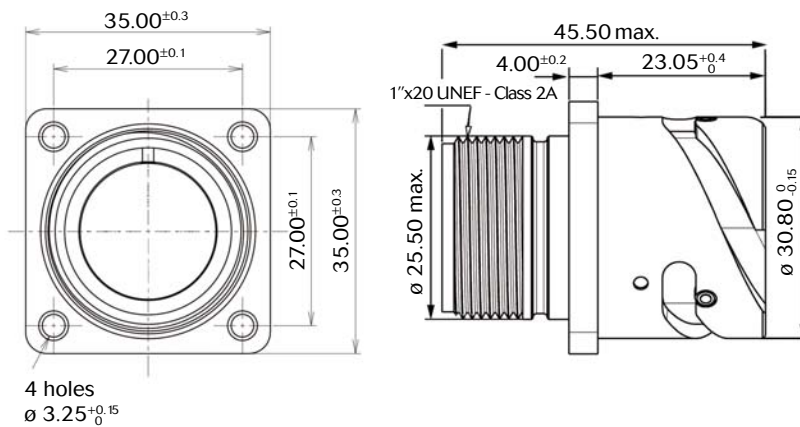
NEXT





Receptacle

VGE1 receptacle



Shell size	Layout	Number of contact	Contact size	Contact type	Orientation ⁽¹⁾	Part numbers ⁽²⁾
18	18-19	10	#16	Male	O, N, X, y	VGE1 B 1819 PN
				Female		VGE1 B 1819 SN
	18A1	1	Quadrax	Male	N	VGE1 B 18A1 PN
				Female		VGE1 B 18A1 SN

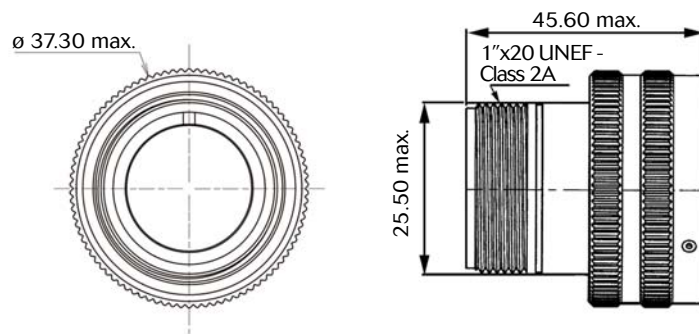
2: example of Part numbers with orientation «N». «N» can be replaced by other orientation
 3: receptacle + insert without contacts

Note : all dimensions are in mm



Plug

VGE1 plug



Shell size	Layout	Number of contact	Contact size	Contact type	Orientation ⁽¹⁾	Part numbers ⁽²⁾
18	18-19	10	#16	Male	O, N, X, Y	VGE1 D 18 19 PN
				Female		VGE1 D 18 19 SN
	18A1	1	Quadrax	Male	N	VGE1 D 18A1 PN
				Female		VGE1 D 18A1 SN

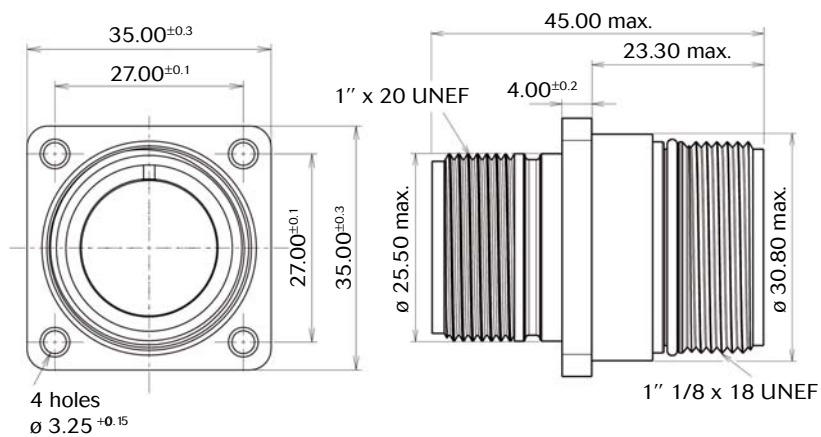
2: example of Part numbers with orientation «N». «N» can be replaced by other orientation
 3: receptacle + insert without contacts

Note : all dimensions are in mm



Receptacle

FER1 receptacle



Shell size	Layout	Number of contact	Contact size	Contact type	Orientation ⁽¹⁾	Part numbers ⁽²⁾
18	18-19	10	#16	Male	O, N, X, Y	FER1 B 18 19 PN
				Female		FER1 B 18 19 SN
18	18A1	1	Quadrax	Male	N	FER1 B 18A1 PN
				Female		FER1 B 18A1 SN

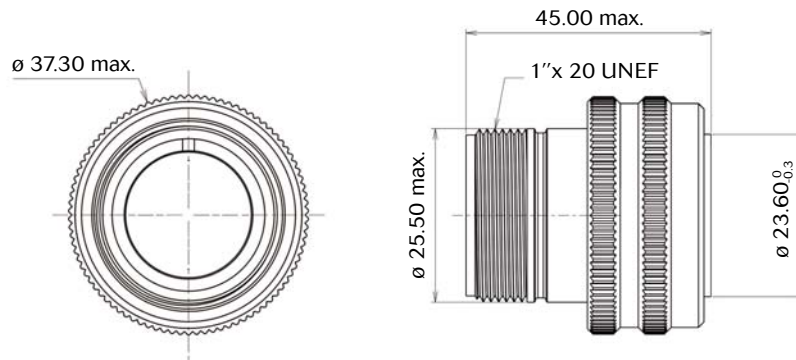
2: example of Part numbers with orientation «N». «N» can be replaced by other orientation
 3: receptacle + insert without contacts

Note : all dimensions are in mm



Plug

FER1 plug



Shell size	Layout	Number of contact	Contact size	Contact type	Orientation ⁽¹⁾	Part numbers ⁽²⁾
18	18-19	10	#16	Male	O, N, X, Y	FER1 D 18 19 PN
				Female		FER1 D 18 19 SN
18	18A1	1	Quadrax	Male	N	FER1 D 18A1 PN
				Female		FER1 D 18A1 SN

2: example of Part numbers with orientation «N». «N» can be replaced by other orientation
 3: receptacle + insert without contacts

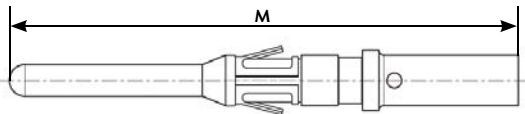
Note : all dimensions are in mm

Railway VGE1 / FER1-Quadrax

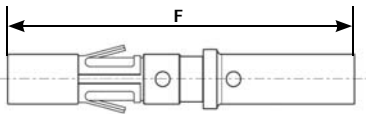


Machined crimp contact (for layout 18-19)

Part numbers & dimensions



Male contact
#16



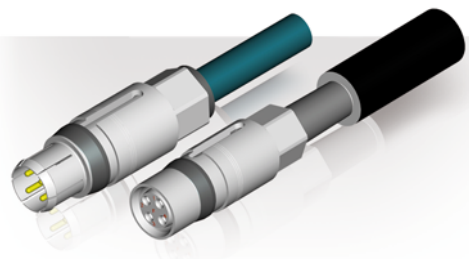
Female contact
#16

Contact size		Wire size		Plating	Part numbers		Insulator Ø	Contact length	
#	mm	AWG	mm ²		Male	Female		Male (M)	Female (F)
#16	1.6	22-20	0.32-0.52	Gold	RM20M12K	RC20M12K	1.2-2.2	26.2	18.2
#16	1.6	20-16	0.5-1.5	Gold	RM16M23K	RC16M23K	1.2-3	26.2	18.2
#16	1.6	16-14	1.5-2.5	Gold	RM14M30K	RC16M30K			
#16	1.6	16-14	1.5-2.5	Gold	RM14M50K	RC14M50K			

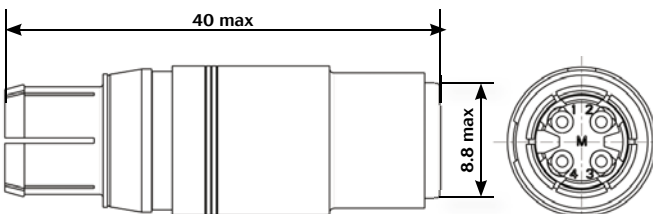
Quadrax cell (for layout 18A1)

Part numbers

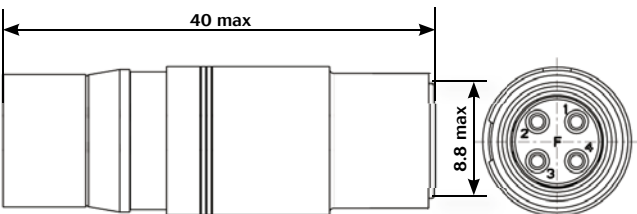
Line wire size		Cell plating	Part numbers		Max line wire insulator Ø
AWG	mm ²		Male	Female	
24-18	0.21-0.93	Silver	83802035A	83802034A	1.2-2.11 mm



Dimensions



Male weight: 16gr



Female weight: 17gr

To define a backshell, please refer to VGE1 / FER1 catalog or consult us. For other contact type consult us.

For further information, click here www.railway-connectors.com
Or contact us click here contactindustry@souriau.com

Note : all dimensions are in mm