LOAD CELLS
FORCE TRANSDUCERS.

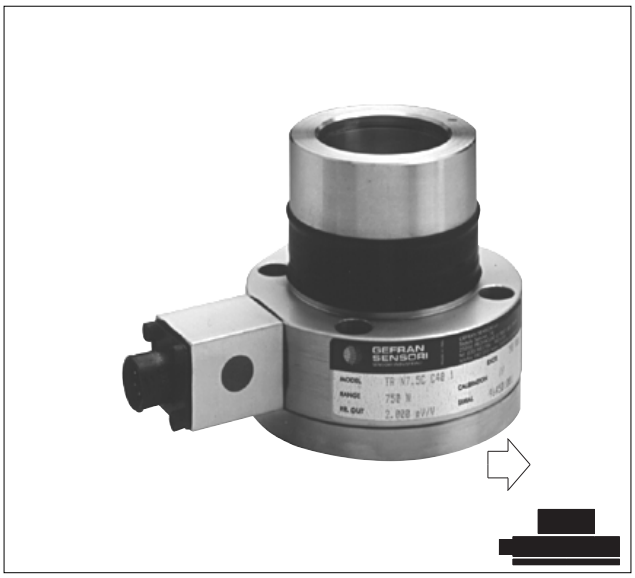
GEFRAN

CONTENTS

LOAD CELLS / FORCE TRANSDUCERS

TR

FORCE TRANSDUCER FOR MEASURING THE TENSION ON FIXED OR ROTATING SPINDLES



Main features

- *Range of measurement: from 100 N to 1kN*
- *Accuracy class: 0,5%*
- *Corrosion resistant*
- *Internally generated calibration signal*
- *Orientation of the axis of maximum sensitivity for 35° independently from the position of the fixing holes*
- *Grade of protection: IP65 (DIN 40050)*
- *Integrated protection against overloads*

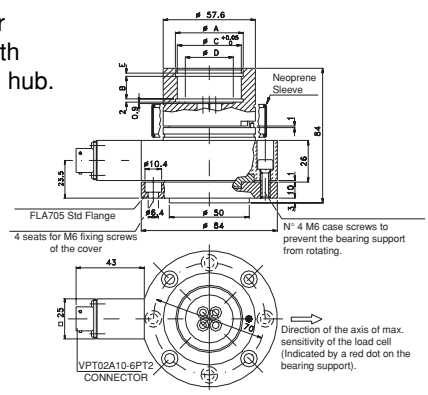
TR series force transducers are used to measure the tension that plastic films or tapes exert on the guide rollers of the machinery used to coil them.
Mounted at the ends of a fixed or transmission shaft on the machine chassis, they perform the function of force sensors and bearing for the ends of the shaft.
They are used on both fixed and rotating shafts.
TR transducers are supplied with the adaptor flange for fixing, with 4 M6 screws or with one central M10 or M12 screw.

TECHNICAL DATA

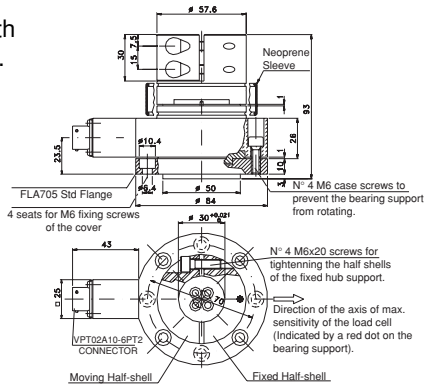
Accuracy		0,5%
Nominal full scale load (Ln)		100N...1kN
Nominal output at FSO		2mV/V
Output tolerance at Ln		<± 1% FSO
Combined errors: Non linearity Histeresis, Repeatibility		< ± 0,5% FSO
Creep (after 30 min. at Ln)		< ± 0,06% FSO
Zero load out of balance signal		< ± 1% FSO
Thermal drift in compensated range	Sensitivity	< ± 0,005% FSO°C
	Zero	< ± 0,01% FSO°C
	Calibration	-
Nominal bridge resistance		350 Ohm
Isolation resistance		> 10 GOhm
Nominal supply voltage		10V
Maximum supply voltage		15 V
Compensated temperature range		-10...+50°C
Maximum temperature range		-20...+60°C
Storage temperature range		-30...+80°C
Permitted static load		100% Ln
Maximum applicable load		300% Ln
Rupture load		> 500% Ln
Maximum static lateral load		150% Ln
Maximum elastic deformation at Ln		< 0,5 mm
Grade of protection (DIN40050)		IP65
Electr. connections: Connector		VPT02A10-6PT2
Elastic element material		Anodised aluminium
Case material		Anodised aluminium (Flange and bearing in AISI 303)

MECHANICAL DIMENSIONS

Model for rollers with revolving hub.



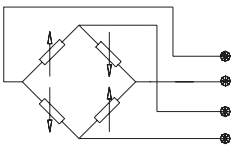
Model for rollers with fixed hub.



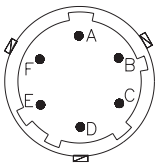
Bearing	øA	B	øC	øD	E
35x15 H11	37	14,5	35	20	1,6
40x17 H12	42,5	14,25	40	30	1,85

Dimensions mm. (± 0,1)
Recommended torque for M6 fixing screws: **7Nm**

ELECTRICAL CONNECTIONS



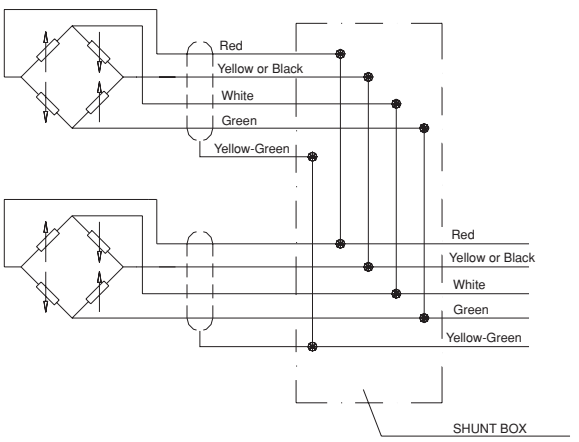
	CABLE OUTPUT	CABLE CONNECTION
	A	Red
	B	Yellow or Black
	C	White
	D	Green



VPT02A10-6PT2
CONNECTOR

If the transducer is supplied complete with prewired connection cable, the colour code is that indicated in the table.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

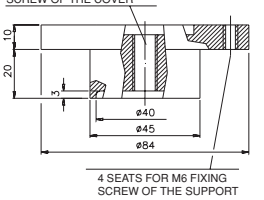
CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

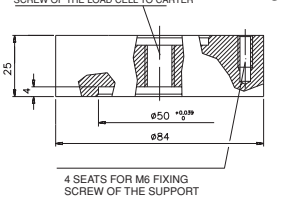
FLANGE

Standard adaptor flange (see mechanical dimensions drawing) **FLA705**
Central fixing **FLA711**
Central fixing **FLA715**

SEAT FOR M10* FIXING SCREW OF THE COVER **FLA711**



SEAT FOR M12* FIXING SCREW OF THE LOAD CELL TO CARTER **FLA715**



***** Recommended torque **75Nm**

OPTIONAL ACCESSORIES

Radial bearing with stop ring (UNI7437-75)
and spacer 35 mm **PKIT 602**
40 mm **PKIT 600**
Female cable connector
Grade of protection IP65 **CON 300**
TR application manual **DOC467**

ORDER CODE

Force transducer **TR** □ □ □ □

MEASUREMENT RANGE (N)	
0 - 100	**N1C**
0 - 200	**N2C**
0 - 350	**N3.5C**
0 - 500	**N5C**
0 - 750	**N7.5C**
0 - 1000	**N1M**

EXTERNAL DIAMETER	
35 mm bearing	**C35**
40 mm bearing	**C40**
30 mm shaft spindle	**P30**

FLANGE	
FLA 705 (standard)	**1**
FLA711	**2**
FLA715	**3**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: TR-N3.5C-C40-1
TR force transducer, measurement range 350N, external bearing diameter of 40mm with normal mounting and standard flange.

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UNI EN 29001 - ISO 9001
Certificato nr. 9115.GEF1

cod. 84723 - 08/01

CM

LOAD CELL FOR COMPRESSION APPLICATIONS

Main features

- *Range of measurement: from 100 to 50.000 Kg*
- *Accuracy class: 0,1%*
- *All stainless steel construction*
- *Corrosion resistant*
- *Internally generated calibration signal*
- *Grade of protection: IP67 (DIN 40050)*

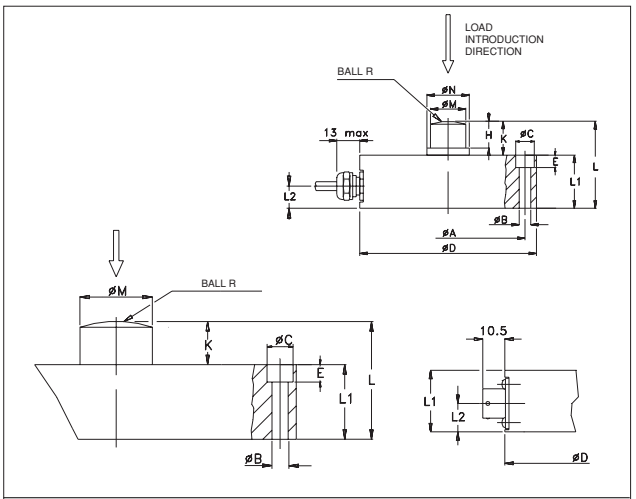
CM series load cells are strain gauge transducers used to measure loads in static and dynamic applications, in compression, with high accuracy.
They are machined from a single block of metal, so the primary sensing element, the mountings and the case contain no welds allowing smaller dimensions and an enhanced grade of protection. The configuration of the point of measurement, with 8 strain gauges, reduces errors caused by imperfect applications of the load.
Typical applications of load cells connected in parallel are: silos, hoppers, large weighing platforms.
The stainless steel construction is suitable for use in aggressive environments in the chemical and petrochemical industries.

TECHNICAL DATA

Accuracy		0,1%
Nominal full scale load (Ln)		100...50.000 Kg
Nominal output at FSO		2mV/V
Output tolerance at Ln		<± 0,2% FSO
Combined errors: Non linearity Histeresis, Repeatibility		< ± 0,1% FSO
Creep (after 30 min. at Ln)		< ± 0,06% FSO
Zero load out of balance signal		< ± 1% FSO
Calibration signal *		80%FSO ± 1%
Thermal drift in compensated range	Sensitivity	< ± 0,01% FSO°C
	Zero	< ± 0,01% FSO°C
	Calibration	< ± 0,01% FSO°C
Nominal input resistance		700 Ohm
Nominal output resistance		700 Ohm
Isolation resistance		> 10 GOhm
Nominal supply voltage		10 V
Maximum supply voltage		15 V
Compensated temperature range		-10...+50°C
Maximum temperature range		-20...+60°C
Storage temperature range		-30...+80°C
Permitted static load		130% Ln
Permitted dinamic load		100% Ln
Maximum applicable load		150% Ln
Rupture load		> 300% Ln
Maximum elastic deformation at Ln		< 0,2 mm
Grade of protection (DIN40050)		Cable: IP67 Connector: IP65
Electr. connections: Connector		VPT02A10-6PT2
Screened cable		6x0,25 / 5 m.
Elastic element material		Stainless steel

***** The exact value is indicated on the instrument nameplate

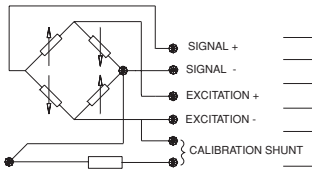
MECHANICAL DIMENSIONS



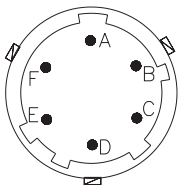
	Ln (Kg)			
	100 2000	**3500 7000**	**10000 30000**	**50000**
ø A	87	98,5	102,2	125
ø B	6,5	10,5	13	17
ø C	10,5	16,5	19	25
ø D	100	120	126	155
E	6	10	12,5	16,5
H	11,7	17,5	-	-
K	15,7	21,5	14	16
L	45,7	51,5	54	77
L1	30	30	40	61
L2	13,5	13,5	17	27
ø M	20	24	35	45
ø N	24	30	-	-
R	30	30	50	100
VITI	6XM6	6XM6	6XM12	6XM16
Nm*	9	60	100	200

Dimensions mm. (± 0,1) * Recommended torque with UNI 5931 screws of resistance class 10.9 according to UNI 3740.

ELECTRICAL CONNECTIONS



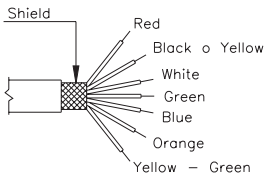
	CONNECTOR OUTPUT	CABLE OUTPUT
	A	Red
	B	Black
	C	White
	D	Green
	E – F	Blue-Orange



VPT02A10-6PT2
CONNECTOR

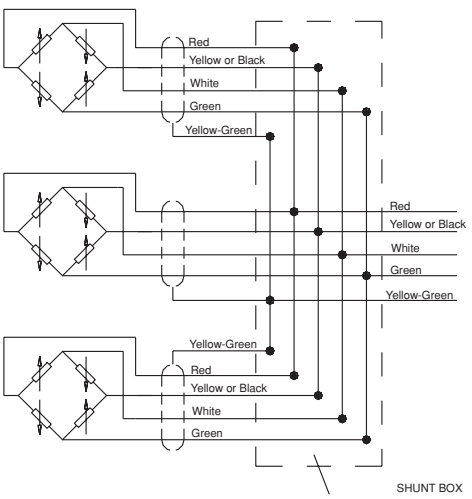
If the transducer is supplied complete with prewired connection cable, the colour code is that indicated in the table.

6x0.25
Screened cable



* The screen is isolated from the transducer body.
It is recommended that the ground is connected at the instrument end.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

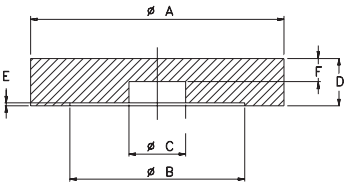
CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

Female cable connector
Grade of protection IP65 **CON 300**

Self alignement plate
(Max. inclination 3°)



NOMINAL LOAD Kg

	≤ 2000	≤ 7000	≤ 30000	≤ 50000
ø A	100	120	126	155
ø B	74	100	105	130
ø C	24	28	37	47
D	20	25	32	50
F	11	12	22	39
E	1,25	1,5	2	3
COD	**PIA700**	**PIA701**	**PIA702**	**PIA703**

Dimensions mm. (± 0,1)

ORDER CODE

Load cell **CM** □□□□

MEASUREMENT RANGE (Kg)	
0 - 100	**K1C**
0 - 200	**K2C**
0 - 350	**K3.5C**
0 - 500	**K5C**
0 - 700	**K7C**
0 - 1000	**K1M**
0 - 2000	**K2M**
0 - 3500	**K3.5M**
0 - 5000	**K5M**
0 - 7000	**K7M**
0 - 10000	**K10M**
0 - 20000	**K20M**
0 - 30000	**K30M**
0 - 50000	**K50M**

ELECTRICAL CONNECTIONS	
6x0,25 5m screened cable	**F**
VPT02A10-6PT2 connector	**C**

SENSITIVITY	
2mV/V version	**S**
3mV/V version (range 500...5000Kg) only	**R**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: CM - K10M - F - S
CM load cell, range 0 - 10.000 kg, cable connection and 2mV/V standard sensitivity.

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UNI EN 29001 - ISO 9001
Certificato nr. 9115.GEF1

cod. 84675 -08/01

CU

COMPACT LOAD CELL
FOR COMPRESSION APPLICATIONS

Main features

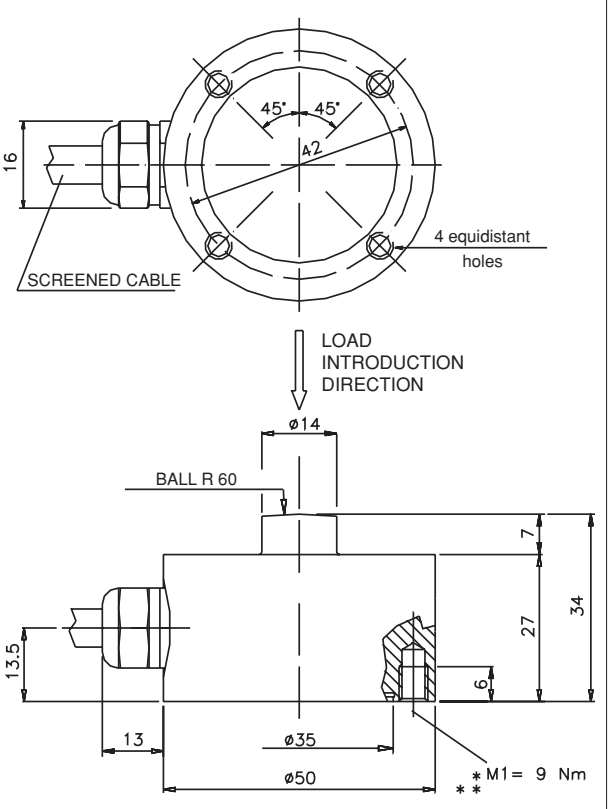
- *Range of measurement: from 50 to 1.000 kg*
- *Accuracy class: 0,2%*
- *All stainless steel construction*
- *Corrosion resistant*
- *Grade of protection: IP67 (DIN 40050)*
- *Compact size*

The CU range of load cells are designed for the measurement of static or dynamic loads in compression. All the transducers are calibrated as load cells in units of mass (Kg). The CU series is supplied for nominal loads from 50Kg to 1t. This model has an IP67 protection degree so it can be used in aggressive atmospheres often found in the chemical industries. The transducer body is machined from a single piece of stainless steel with no welding. This means that it is highly resistant to mechanical shock and vibration. The compact size means that these cells can be placed in positions that are difficult to acess and where little space is available.

TECHNICAL DATA

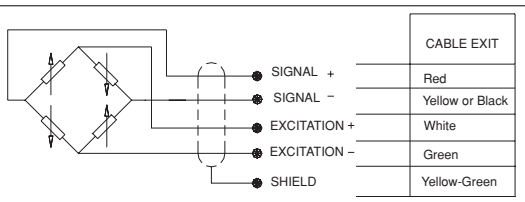
Accuracy	0,2%
Nominal full scale load (Ln)	50...1.000 kg
Nominal output at FSO	2mV/V
Output tolerance at Ln	<± 0,2% FSO
Combined errors: Non linearity Histeresis, Repeatibility	< ± 0,2% FSO
Creep (after 30 min. at Ln)	< ± 0,06% FSO
Zero load out of balance signal	< ± 1% FSO
Thermal drift in compensated range Sensitivity / Zero / Calibration	< ± 0,01% FSO°C < ± 0,01% FSO°C -
Nominal input resistance	350 Ohm
Nominal output resistance	350 Ohm
Isolation resistance	> 10 GOhm
Nominal supply voltage	10 V
Maximum supply voltage	15 V
Compensated temperature range	-10...+50°C
Maximum temperature range	-20...+60°C
Storage temperature range	-30...+80°C
Permitted static load	130% Ln
Permitted dinamic load	100% Ln
Maximum applicable load	150% Ln
Rupture load	> 300% Ln
Maximum elastic deformation at Ln	< 0,2 mm
Grade of protection (DIN40050)	IP67
Electr. connections screened cable	4x0,25 / 5 m.
Elastic element material	Stainless steel

MECHANICAL DIMENSIONS



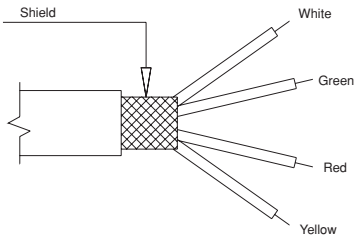
Dimensions mm. (± 0,1)
* Recommended torque
** UNI 5931 screws of resistance class 10.9 according to UNI 3740

ELECTRICAL CONNECTIONS



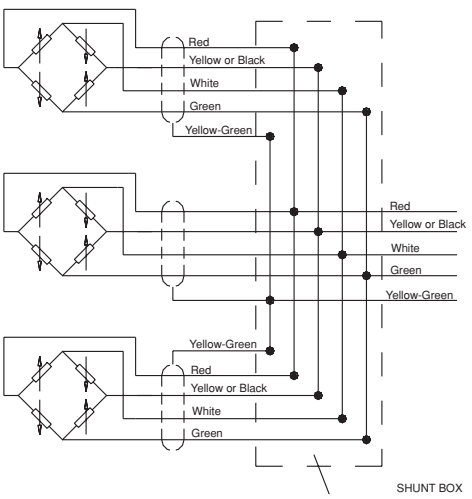
CABLE EXIT
Red
Yellow or Black
White
Green
Yellow-Green

4x0.25
Screened cable



* The screen is isolated from the transducer body.
It is recommended that the ground is connected at the instrument end.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

ORDER CODE

Load cell **CU** ☐☐

MEASUREMENT RANGE (kg)	
0 - 50	**K5D**
0 - 100	**K1C**
0 - 200	**K2C**
0 - 500	**K5C**
0 - 1000	**K1M**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: CU - K5D
CU load cell, measurement range 0 - 5 0kg.

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UNI EN 29001 - ISO 9001
Certificato nr. 9115.GEF1

cod. 84669 - 08/01

AM

MINIATURE FORCE TRANSDUCER FOR COMPRESSION APPLICATIONS

Main features

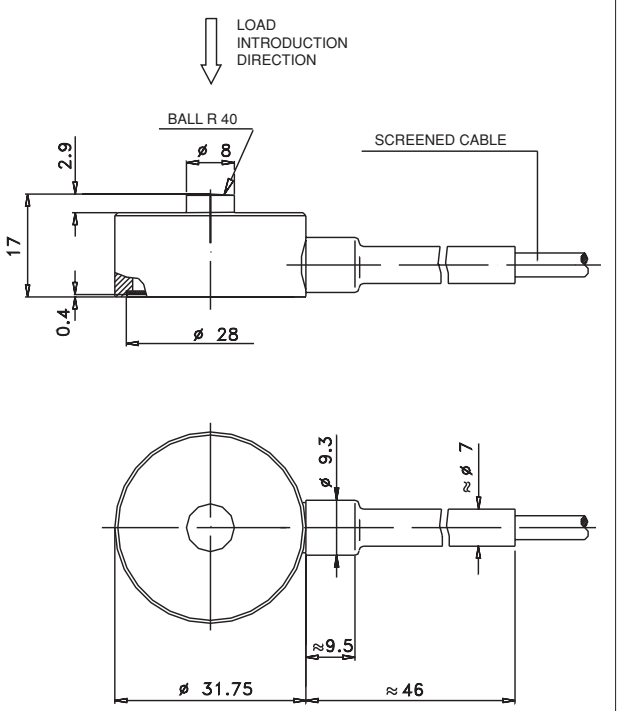
- *Range of measurement: from 5 to 20 kN*
- *Accuracy class: 1%*
- *All stainless steel construction*
- *Corrosion resistant*
- *Grade of protection: IP65 (DIN 40050)*
- *Small size*

The AM force transducers series have been designed to measure static and dynamic compression forces.
They are particularly suitable for monitoring pounding operations in compression which require a rugged transducer, insensitive to high resonance frequencies caused by non-homogeneous leads in dynamic sequences.
The accuracy and the stability are not affected by continuous cycling under harsh conditions even with dynamic loads.
The small size of the AM force transducers makes them ideal for retrofitting in existing equipment.

TECHNICAL DATA

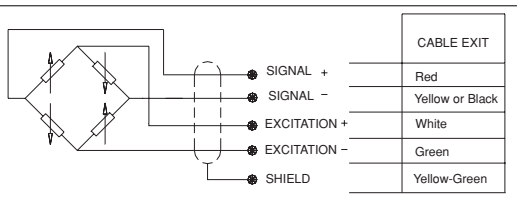
Accuracy	1%
Nominal full scale load (Ln)	5...20 kN
Nominal output at FSO	2mV/V
Output tolerance at Ln	<± 5% FSO
Combined errors: Non linearity Histeresis, Repeatibility	< ± 1% FSO
Creep (after 30 min. at Ln)	< ± 0,2% FSO
Zero load out of balance signal	< ± 1% FSO
Thermal drift in compensated range: Sensitivity Zero Calibration	< ± 0,02% FSO°C < ± 0,04% FSO°C -
Nominal bridge resistance	350 Ohm
Isolation resistance	> 10 GOhm
Nominal supply voltage	10 V
Maximum supply voltage	15 V
Compensated temperature range	-20...+50°C
Maximum temperature range	-20...+60°C
Storage temperature range	-30...+80°C
Permitted static load	130% Ln
Permitted dynamic load	100% Ln
Maximum applicable load	150% Ln
Rupture load	> 300% Ln
Maximum static lateral load	40% Ln
Maximum elastic deformation at Ln	< 0,2 mm
Grade of protection (DIN40050)	IP65
Electr. connections screened cable	4x0,15 / 2 m.
Elastic element material	Stainless steel

MECHANICAL DIMENSIONS

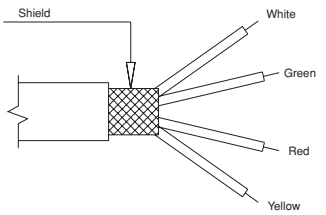


Dimensions mm. (± 0,1)

ELECTRICAL CONNECTIONS

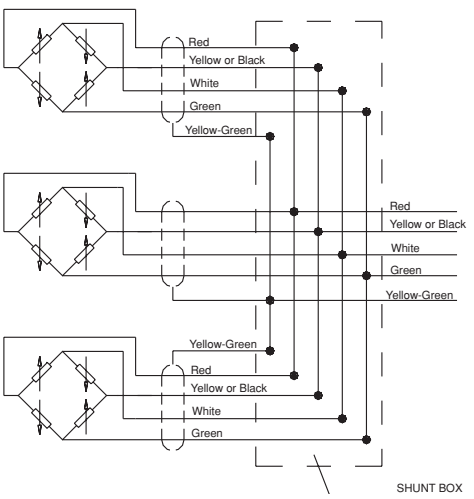


4x0.25
Screened cable



* The screen is isolated from the transducer body.
It is recommended that the ground is connected at the instrument end.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
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It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

ORDER CODE

Force transducer **AM** □□

MEASUREMENT RANGE (kN)	
0 - 5	**KN5U**
0 - 10	**KN1D**
0 - 20	**KN2D**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: AM - KN5U
AM force transducer with range of measurement 0 - 5 kN.

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UNI EN 29001 - ISO 9001
Certificato nr. 9115.GEF1

cod. 84705 -08/01

TC

LOAD CELL FOR TENSION/COMPRESSION APPLICATIONS

Main features

- *Range of measurement: from100 to 20.000 Kg*
- *Accuracy class: 0,2%*
- *All stainless steel construction*
- *Corrosion resistant*
- *Internally generated calibration signal*
- *Grade of protection: IP67 (DIN 40050)*

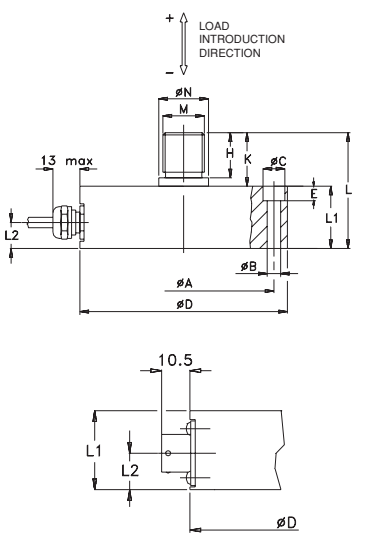
TC series load cells are strain gauge transducers used to measure loads in static and dynamic applications, in tension and compression, with high accuracy (industrial weighing, laboratory testing, automation, etc). The TC series is machined from a single block of metal, so the primary sensing element, the mountings and the case contain no welds allowing smaller dimensions and an enhanced grade of protection. The configuration of the point of measurement, with 8 strain gauges, reduces errors caused by imperfect application of the load.Typical applications of load cells connected in parallel are: silos, hoppers, large weighing platforms, and with suitable accessories, suspended loads. The stainless steel construction is suitable for use in aggressive environments in the chemical and petrochemical industries.

TECHNICAL DATA

Accuracy		0,2%
Nominal full scale load (Ln)		100...20.000 Kg
Nominal output at FSO		2mV/V
Output tolerance at Ln		<± 0,2% FSO
Combined errors: Non linearity Histeresis, Repeatibility		< ± 0,2% FSO
Creep (after 30 min. at Ln)		< ± 0,06% FSO
Zero load out of balance signal		< ± 1% FSO
Calibration signal *		80%FSO ± 1%
Thermal drift in compensated range	Sensitivity	< ± 0,01% FSO°C
	Zero	< ± 0,01% FSO°C
	Calibration	< ± 0,01% FSO°C
Nominal input resistance		700 Ohm
Nominal output resistance		700 Ohm
Isolation resistance		> 10 GOhm
Nominal supply voltage		10 V
Maximum supply voltage		15 V
Compensated temperature range		-10...+50°C
Maximum temperature range		-20...+60°C
Storage temperature range		-30...+80°C
Permitted static load		130% Ln
Permitted dinamic load		100% Ln
Maximum applicable load		150% Ln
Rupture load		> 300% Ln
Maximum elastic deformation at Ln		< 0,2 mm
Grade of protection (DIN40050)		Cable IP67 Connector IP65
Electr. connections: Connector Screened cable		VPT02A10-6PT2 6x0,25 / 5 m.
Elastic element material		Stainless steel

***** The exact value is indicated on the instrument nameplate.

MECHANICAL DIMENSIONS

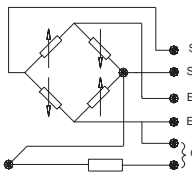


Ln (Kg)

	100 2000	3500 5000	7000 10000	20000
ø A	87	98,5	125	135
ø B	6,5	10,5	13	17
ø C	10,5	16,5	19	25
ø D	100	120	155	170
E	6	10	12,5	21
H	21	33,6	45	65
K	25	37,6	50	70
L	55	67,6	90	131
L1	30	30	40	61
L2	13,5	13,5	20	27
M	M20x1,5	M24x2	M39x3	M52x3
ø N	24	30	45	55
VITI	6xM6	6xM10	8xM12	8xM16

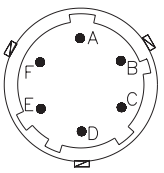
Dimensions mm. (± 0,1)

ELECTRICAL CONNECTIONS



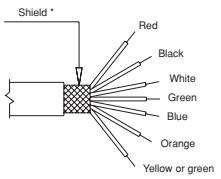
	CONNECTOR OUTPUT	CABLE OUTPUT
	A	Red
	B	Black
	C	White
	D	Green
	E-F	Blue-Orange

NB.: The output signal is positive for traction loads and for calibration, and negative for compression loads.



VPT02A10-6PT2
CONNECTOR

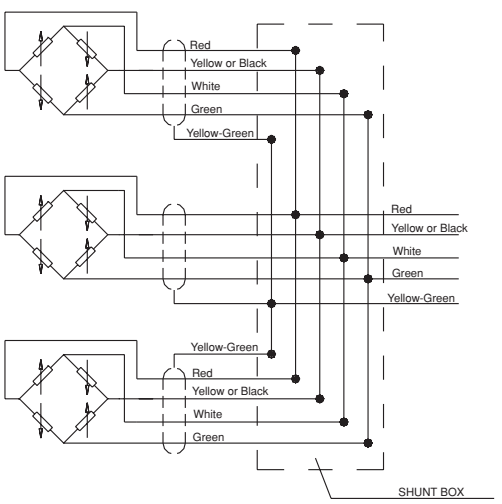
If the transducer is supplied complete with prewired connection cable, the colour code is that indicated in the table.



6x0.25
Screened cable

* The screen is isolated from the transducer body. It is recommended that the screen is connected to ground at the instrument end.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

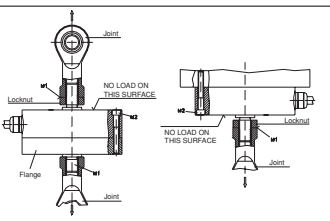
Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

Female cable connector Grade of protection IP65	**CON 300**
Flange and ball joint	**see table**

APPLICATION NOTES

Flange mounting for suspended loads



Wall mounting

Nominal load	M1* (Nm)	M2** (Nm)	Flange code	Joint code	Locknut recommended
100 - 700	60	20	FLA700	SND020	-
1000 - 2000	300	20	FLA700	SND020	-
3500 - 5000	500	90	FLA701	SND024	M24x2-h=10
7000 - 10000	2500	125	FLA702	SND040	M39x3-h=16
20000	4500	300	FLA704	SND060	M52x3-h=20

* Recommended tightening torque between ball-joint and locknut or flange
**Recommended tightening torque with UNI5931 screws with 10.9 resistance class according to UNI3740

ORDER CODE

Load cell **TC** □ □ □ □

MEASUREMENT RANGE (Kg)	
0 - 100	**K1C**
0 - 200	**K2C**
0 - 350	**K3.5C**
0 - 500	**K5C**
0 - 700	**K7C**
0 - 1000	**K1M**
0 - 2000	**K2M**
0 - 3500	**K3.5M**
0 - 5000	**K5M**
0 - 7000	**K7M**
0 - 10000	**K10M**
0 - 20000	**K20M**

ELECTR. CONNECTIONS	
6x0,25 5m screened cable	**F**
VPT02A10-6PT2 Connect.	**C**

SENSITIVITY	
2mV/V version	**S**
3mV/V version (range 500...5000Kg)only	**R**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: TC - K10M - F - S
TC load cell, measurement range 0 - 10.000 kg, cable connection and 2mV/V standard sensitivity.

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TU

COMPACT LOAD CELL FOR TENSION/COMPRESSION APPLICATIONS

Main features

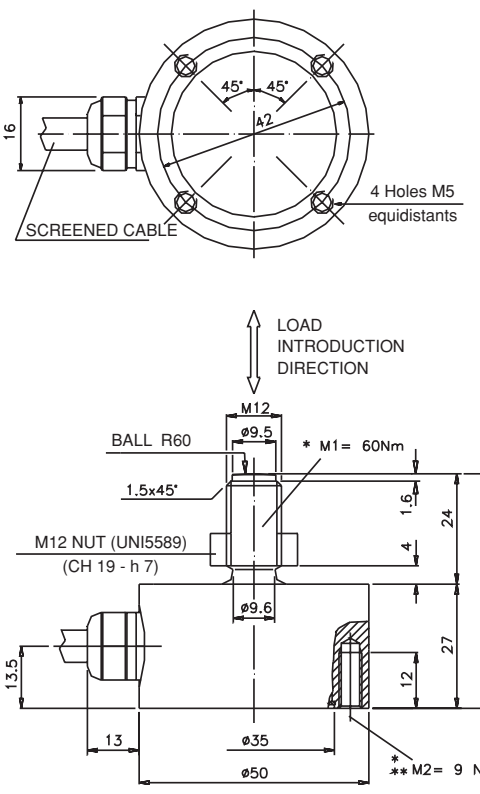
- *Range of measurement: from 50 to 1000 kg*
- *Accuracy class: 0,2%*
- *All stainless steel construction*
- *Corrosion resistant*
- *Grade of protection: IP67 (norme DIN 40050)*
- *Compact size*

The TU range of load cells are designed for the measurement of static or dynamic loads in compression or traction. All the transducers are calibrated as load cells in units of mass (Kg). The TU series is supplied for nominal loads from 50Kg to 1t.
This model has an IP67 protection degree so it can be used in aggressive atmospheres often found in the chemical industries. The transducer body is machined from a single piece of stainless steel with no welding. This means that it is highly resistant to mechanical shock and vibration.
The compact size means that these cells can be placed in positions that are difficult to acess and where little space is available.

TECHNICAL DATA

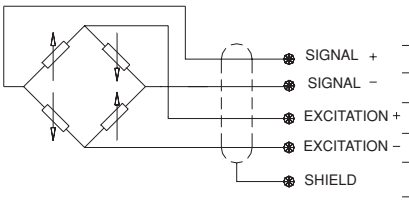
Accuracy	0,2%
Nominal full scale load (Ln)	50...1000 kg
Nominal output at FSO	2mV/V
Output tolerance at Ln	<± 0,2% FSO
Combined errors: Non linearity Histeresis, Repeatibility	< ± 0,2% FSO
Creep (after 30 min. at Ln)	< ± 0,06% FSO
Zero load out of balance signal	< ± 1% FSO
Thermal drift in Sensitivity compensated Zero range Calibration	< ± 0,01% FSO°C < ± 0,01% FSO°C -
Nominal input resistance	350 Ohm
Nominal output resistance	350 Ohm
Isolation resistance	> 10 GOhm
Nominal supply voltage	10 V
Maximum supply voltage	15 V
Compensated temperature range	-10...+50°C
Maximum temperature range	-20...+60°C
Storage temperature range	-30...+80°C
Permitted static load	130% Ln
Permitted dinamic load	100% Ln
Maximum applicable load	150% Ln
Rupture load	> 300% Ln
Maximum elastic deformation at Ln	< 0,2 mm
Grade of protection (DIN40050)	IP67
Electr. connections screened cable	4x0,25 / 5 m.
Elastic element material	Stainless steel

MECHANICAL DIMENSIONS



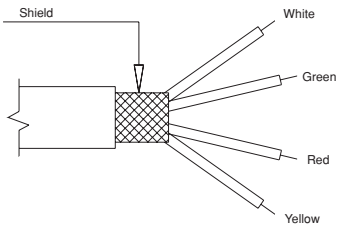
Dimensions mm. (± 0,1)
* Recommended torque
** UNI 5931 screws of resistance class 10.9 according to UNI 3740

ELECTRICAL CONNECTIONS



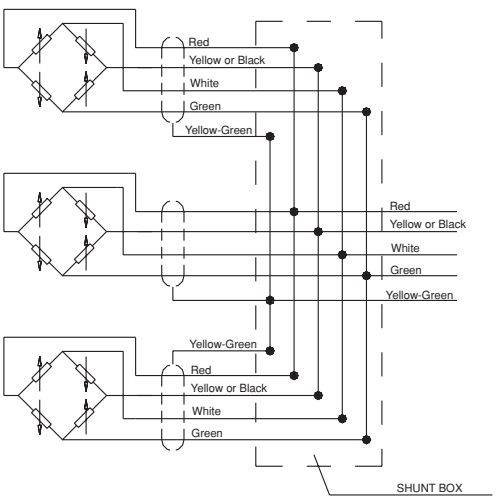
	CABLE EXIT
	Red
	Yellow or Black
	White
	Green
	Yellow-Green

4x0.25 Screened cable



* The screen is isolated from the transducer body.
It is recommended that the ground is connected at the instrument end.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

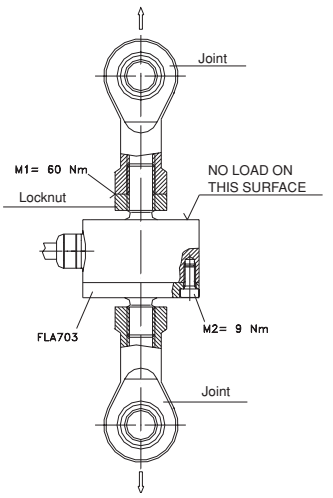
Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

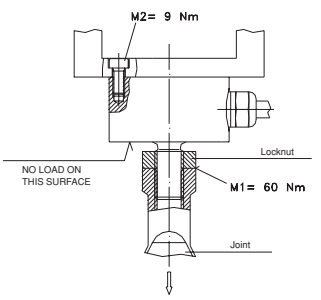
Flange for applying suspended loads	**FLA 703**
Ball joint	**SND022**

APPLICATION NOTES

Mounting with double joint and flange for suspended loads



Wall mounting with ball joint.



ORDER CODE

Load cell **TU** □□

MEASUREMENT RANGE (kg)	
0 - 50	**K5D**
0 - 100	**K1C**
0 - 200	**K2C**
0 - 500	**K5C**
0 - 1000	**K1M**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: TU - K5D
TU load cell, measurement range 0 - 50 kg.

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cod. 84681-08/01

TH

FORCE TRANSDUCER FOR TENSION/COMPRESSION APPLICATIONS

Main features

- *Range of measurement: from 10 to 100 kN*
- *Accuracy class: 0,1%*
- *All stainless steel construction*
- *Corrosion resistant*
- *Internally generated calibration signal*
- *Grade of protection: IP65 (DIN 40050)*

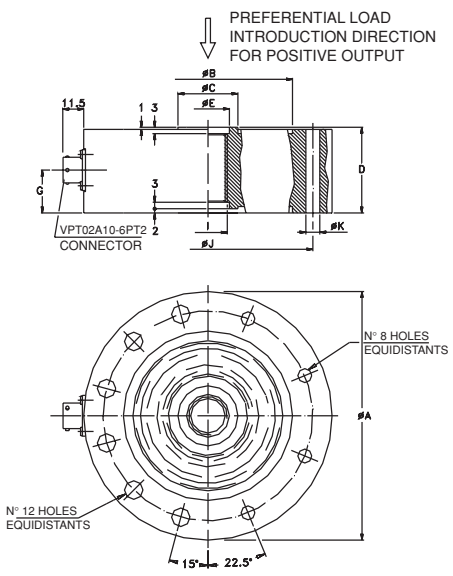
The TH series force transducers are ideal for systems that measure tension or compression force in industrial applications, where accuracy and reliability are important, even in harsh environments.
The disposition of the (8) strain gauges of the measurement bridges uses the deformation produced by the shear force of the applied load. It is thus possible to make accurate force transducers that are rugged and insensitive to lateral loads.
The transducer is machined from a solid block of stainless steel and contains no welds or joints. The electrical circuit is protected by sealed formed stainless steel plates.

TECHNICAL DATA

Accuracy	0,1%
Nominal full scale load (Ln)	10...100 kN
Nominal output at FSO	2mV/V
Output tolerance at Ln	<± 1% FSO
Combined errors: Non linearity Histeresis, Repeatibility	< ± 0,1% FSO
Creep (after 30 min. at Ln)	< ± 0,06% FSO
Zero load out of balance signal	< ± 1% FSO
Calibration signal *	80%FSO ± 1%
Thermal drift in compensated range — Sensitivity	< ± 0,02% FSO°C
Thermal drift in compensated range — Zero	< ± 0,02% FSO°C
Thermal drift in compensated range — Calibration	< ± 0,02% FSO°C
Nominal input resistance	700 Ohm
Nominal output resistance	> 10 GOhm
Nominal supply voltage	10 V
Maximum supply voltage	18 V
Compensated temperature range	-20...+50°C
Maximum temperature range	-20...+60°C
Storage temperature range	-30...+80°C
Permitted static load	130% Ln
Maximum applicable load	150% Ln
Rupture load	> 300% Ln
Carico statico laterale max.	150% Ln
Maximum elastic deformation at Ln	< 0,1 mm
Grade of protection (DIN40050)	IP65
Electr. connections: Connector	VPT02A10-6PT2
Elastic element material	Stainless steel
Case material	Stainless steel

***** The exact value is indicated on the instrument nameplate.

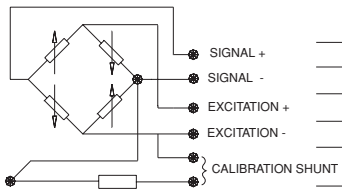
MECHANICAL DIMENSIONS



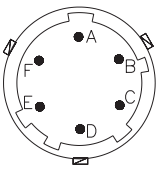
	Ln (kN)				
	10	**20**	**30**	**50**	**100**
ø A	116		154		
ø B	79		110		
ø C	28		59		
D	40		45		
ø E	20		35		
I	M18x1,5		M30x2		
ø J	98		130		
ø K	6,5		11		
Viti nr.	8xM6		12xM10		
Nm*	20		90		

Dimensions mm. (± 0,1)
* Recommended torque with UNI 5931 screws of resistance class 10.9 according to UNI 3740.

ELECTRICAL CONNECTIONS



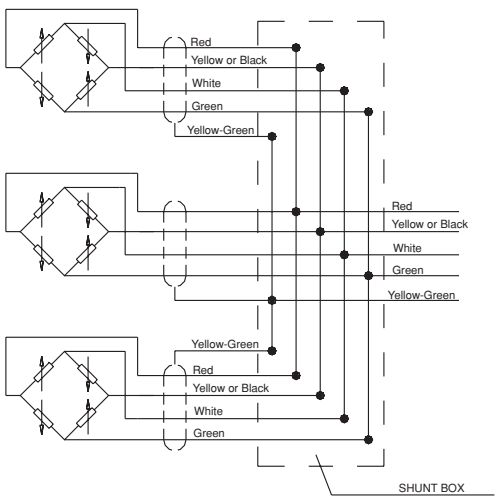
	CONNECTOR OUTPUT	CABLE OUTPUT
	A	Red
	B	Black
	C	White
	D	Green
	E-F	Blue-Orange



VPT02A10-6PT2
CONNECTOR

If the transducer is supplied complete with prewired connection cable, the colour code is that indicated in the table.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

ORDER CODE

Force transducer **TH** □□

MEASUREMENT RANGE (kN)	
0 - 10	**KN1D**
0 - 20	**KN2D**
0 - 30	**KN3D**
0 - 50	**KN5D**
0 - 100	**KN1C**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Es.: TH - KN5D
TH force transducer, with measurement range 0 - 50 kN.

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Certificato nr. 9115.GEF1

cod. 84699 -08/01

CC (B - C)

CYLINDRICAL FORCE TRANSDUCER FOR INDUSTRIAL APPLICATIONS

Main features

- *Range of measurement: from 750 to 1.500 kN*
- *Accuracy class: 0,5%*
- *Internally generated calibration signal*
- *All stainless steel construction*
- *Corrosion resistant*
- *Grade of protection: IP65 (norme DIN 40050)*

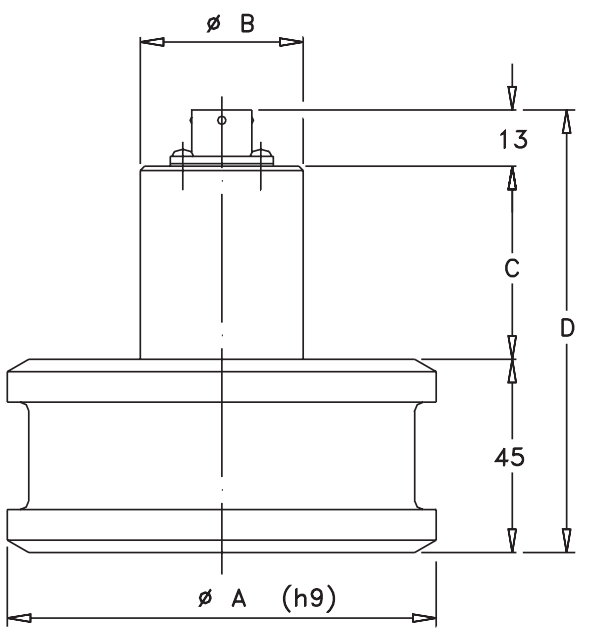
The CC force transducers have been designed for use in the plastics industry where it is required to measure the reaction force to the extrusion pressure that is present on the casing of the gearbox along the axis of the extruder screw.
These models, fitted in contact with the thrust bearings, measure a force whose valve, after suitable correction, is equal to extrusion pressure multiplied by the screw area.
The CC cylindrical force transducers are all stainless steel construction and configured in such a way that the body, airtight welded, acts also as the case, making a unit that is smaller than the CT series.
The connector in the shank is on the same axis as the transducer, which in some cases alows easier installation.

TECHNICAL DATA

Accuracy	0,5%
Nominal full scale load (Ln)	750...1500 kN
Nominal output at FSO	2mV/V
Output tolerance at Ln	<± 1% FSO
Combined errors: Non linearity Histeresis, Repeatibility	< ± 0,5% FSO
Creep (after 30 min. at Ln)	< ± 0,06% FSO
Zero load out of balance signal	< ± 1% FSO
Calibration signal *	80%FSO ± 1%
Thermal drift in compensated range — Sensitivity Zero Calibration	< ± 0,02% FSO°C < ± 0,02% FSO°C < ± 0,02% FSO°C
Nominal input resistance	700 Ohm
Isolation resistance	> 10 GOhm
Nominal supply voltage	10 V
Maximum supply voltage	15 V
Compensated temperature range	-20...+50°C
Maximum temperature range	-20...+60°C
Storage temperature range	-30...+80°C
Permitted static load	130% Ln
Maximum applicable load	150% Ln
Rupture load	> 300% Ln
Carico statico laterale max.	40% Ln
Maximum elastic deformation at Ln	< 0,1 mm
Grade of protection (DIN40050)	IP65
Electr. connections: Connector	VPT02A10-6PT2
Elastic element material	Stainless steel
Case material	Stainless steel

***** The exact value is indicated on the instrument nameplate.

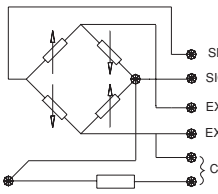
MECHANICAL DIMENSIONS



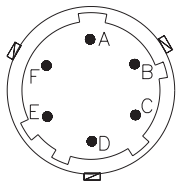
mod.	Ln (kN)	øA	øB	C	D
CCB	750	100	38	45	103
CCC	1500	120	38	45	103

Dimensions mm. (± 0,1)

ELECTRICAL CONNECTIONS



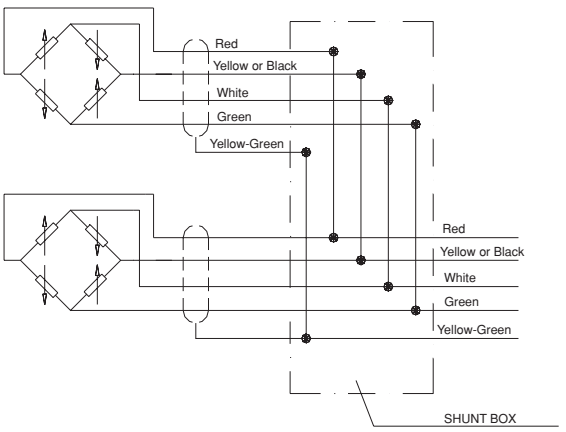
CONNECTOR OUTPUT	CABLE OUTPUT
A	Red
B	Black
C	White
D	Green
E-F	Blue-Orange



VPT02A10-6PT2
CONNECTOR

If the transducer is supplied complete with prewired connection cable, the colour code is that indicated in the table.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

Connectors

Female cable connector
Grade of protection IP65 **CON300**

APPLICATION NOTES

For a correct use of the transducer, it is necessary to ensure that the load is evenly distributed over the application surfaces shown in the diagram.
It is essential to centre the transducer using the circular crow of diameter **A** and to apply the load installing the transducer between two grinded surfaces perpendicular to the direction of the applied load.

ORDER CODE

Force transducer **CC** □ □ □

MODEL
B
C

Mod.	MEASUR. RANGE (kN)	
CCB	0-750	**KN7.5C**
CCC	0-1500	**KN1.5M**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: CCB - KN7,5C
CC force transducer, model B, measurement range 0 - 750 kN.

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Certificato nr. 9115.GEF1

cod. 84711 - 08/01

CT (A - B - C - D)

TOROIDAL FORCE TRANSDUCER FOR INDUSTRIAL APPLICATIONS

Main features

- *Range of measurement: from 100 to 3000 kN*
- *Accuracy class: 0,5%*
- *Elastic element in stainless steel*
- *Corrosion resistant*
- *Internally generated calibration signal*
- *Grade of protection: IP65 (DIN 40050)*

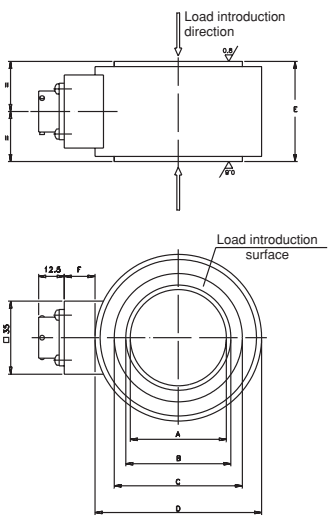
The CT series force transducers, have been specially designed for use in polymer processing in applications where it is required to measure the reaction force produced by the extrusion pressure on the gearbox along the axis of the screw. They measure a force whose value is indicative of the extrusion pressure over the area of the screw.
The CT series force transducers can also be used in all other applications where it is required to measure the forces on shafts or columns and in any application where the geometry demands a toroidal form load cell.

TECHNICAL DATA

Accuracy	0,5%
Nominal full scale load (Ln)	100...3000 kN
Nominal output at FSO	2mV/V
Output tolerance at Ln	<± 1% FSO
Combined errors: Non linearity Histeresis, Repeatibility	< ± 0,5% FSO
Creep (after 30 min. at Ln)	< ± 0,06% FSO
Zero load out of balance signal	< ± 1% FSO
Calibration signal *	80%FSO ± 1%
Thermal drift in Sensitivity compensated Zero range Calibration	< ± 0,02% FSO°C < ± 0,02% FSO°C < ± 0,02% FSO°C
Nominal input resistance	700 Ohm
Isolation resistance	> 10 GOhm
Nominal supply voltage	10 V
Maximum supply voltage	15 V
Compensated temperature range	-20...+50°C
Maximum temperature range	-20...+60°C
Storage temperature range	-30...+80°C
Permitted static load	130% Ln
Maximum applicable load	150% Ln
Rupture load	> 300% Ln
Maximum static lateral load	40% Ln
Maximum elastic deformation at Ln	< 0,1 mm
Grade of protection (DIN40050)	IP65
Electr. connections: Connector	VPT02A10-6PT2
Elastic element material	Stainless steel
Case material	Anodize aluminium

***** The exact value is indicated on the instrument nameplate.

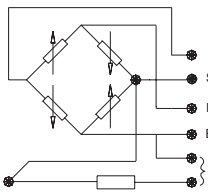
MECHANICAL DIMENSIONS



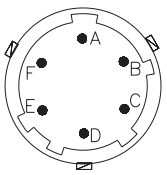
Dimensions mm. (± 0,1)

mod.	Ln (kN)	A	B	C	D	E	F
CTA	100	46	54,2	57,8	80	45	15
	200		52,6	59,7			
	300		50,7	61,4			
CTB	200	70	76,2	81,3	101	45	45
	300		74,9	82,5			
	500		72,2	84,9			
	750		72	84,7			
CTC	500	94	102,8	112,1	140	60	45
	750		100,2	114,2			
	1000		97,9	116,5			
	1500		95,3	118,6			
CTD	1500	110	124,1	146,2	196	60	80
	2000		120,1	149,6			
	2500		115,8	152,9			
	3000		111,4	156			

ELECTRICAL CONNECTIONS



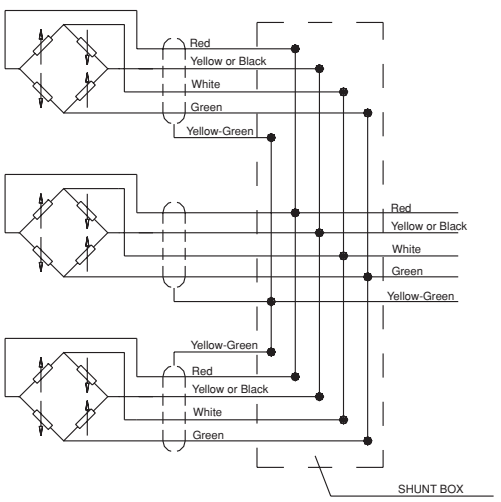
	CONNECTOR OUTPUT	CABLE OUTPUT
	A	Red
	B	Black
	C	White
	D	Green
	E-F	Blue-Orange



VPT02A10-6PT2
CONNECTOR

If the transducer is supplied complete with prewired connection cable, the colour code is that indicated in the table.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

Connectors

Female cable connector
Grade of protection IP65 **CON300**

APPLICATION NOTE

For a correct use of the transducer, it is necessary to ensure that the load is evenly distributed over the application surfaces shown in the diagram.
It is essential to centre the transducer using the circular crown of diameter **C** and to apply the load installing the transducer between two grinded surfaces perpendicular to the direction of the applied load.

ORDER CODE

Force transducer **CT** ☐ ☐ ☐

MODEL
A
B
C
D

Mod.	MEASUR. RANGE (kN)	
CTA	0-100	KN1C
	0-200	KN2C
	0-300	KN3C
CTB	0-200	KN2C
	0-300	KN3C
	0-500	KN5C
	0-750	KN7.5C
CTC	0-500	KN5C
	0-750	KN7,5C
	0-1000	KN1M
	0-1500	KN1.5M
CTD	0-1500	KN1.5M
	0-2000	KN2M
	0-2500	KN2.5M
	0-3000	KN3M

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: CTC - KN1M
CT force transducer, model C, measurement range 0 - 1000 kN.

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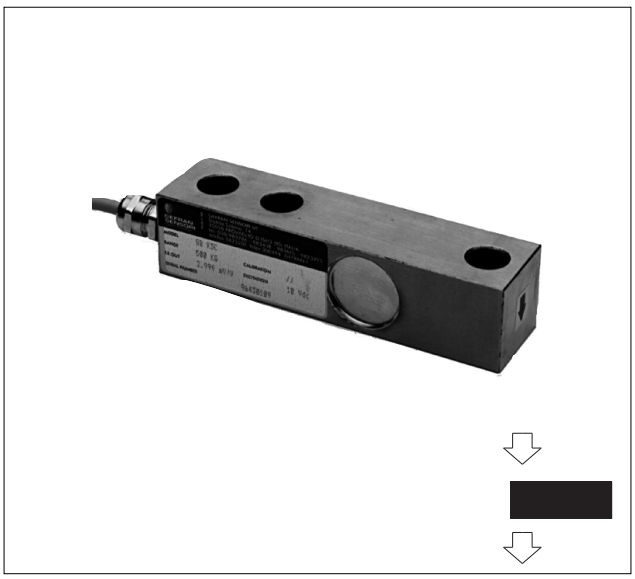
SB

LOW PROFILE SHEAR LOAD CELL



Main features

- *Range of measurement: from 500 to 5.000 Kg*
- *Accuracy class: D (OIML IR60)*
- *All stainless steel construction*
- *Corrosion resistant*
- *Insensitive to lateral loads*
- *Low profile*
- *Class of protection: IP66 (DIN 40050)*

The principle of measurement of the SB series of load cells is the deformation caused by the shear generated by the applied load. They are compact load cells with an all stainless steel construction that are extremely rigid towards the measured load and lateral or transverse loads.
The SB series load cells are the ideal solution for industrial weighing applications such as storage silos, weighing platforms and dosing systems.

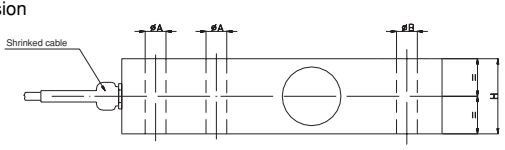
TECHNICAL DATA

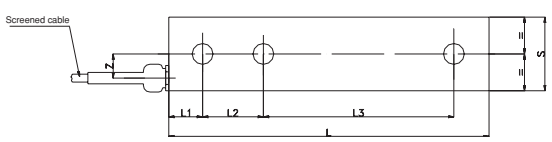
Accuracy (OIML IR60)	D1
Divisions	1000
Nominal full scale load (Ln)	500...5.000 Kg
Nominal full scale output FSO	3mV/V
Output tolerance at Ln	<± 0,2% FSO
Combined errors*: Non linearity Histeresis, Repeatibility	< ± 0,03% FSO
Creep (after 30 min. at Ln)	< ± 0,03% FSO
Zero load out of balance signal	< ± 0,5% FSO
Thermal drift in compensated range * Sensitivity Zero Calibration	< ± 0,005% FSO°C < ± 0,01% FSO°C -
Nominal input resistance	350 Ohm
Nominal output resistance	350 Ohm
Isolation resistance	> 10 GOhm
Nominal supply voltage	10 V
Maximum supply voltage	15 V
Compensated temperature range	-10...+40°C
Maximum temperature range	-20...+60°C
Storage temperature range	-30...+80°C
Permitted static load	130% Ln
Maximum applicable load	150% Ln
Rupture load	> 300% Ln
Maximum elastic deformation at Ln	< 0,6 mm
Grade of protection (DIN40050)	IP66
Electr. connections screened cable	4x0,25 / 5 m.
Elastic element material	Stainless steel

***** The combined error and sensitivity thermal drift as a whole are within the limits defined by the OIML IR60

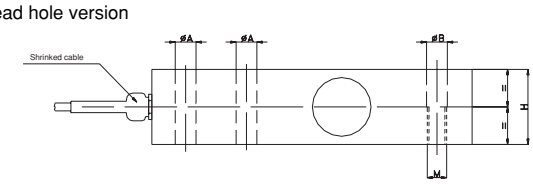
MECHANICAL DIMENSIONS

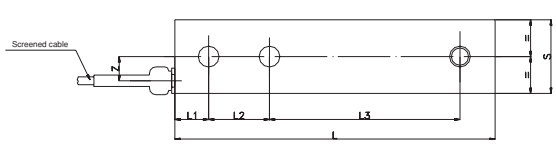
Hole version





Thread hole version

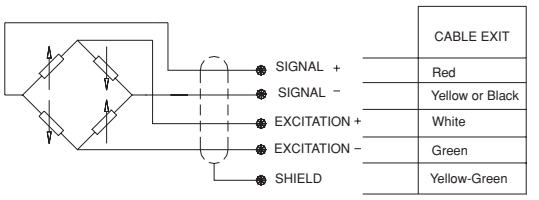




	Ln (Kg)	
	500/1000/2000	**5000**
ø A	13,4	20,5
ø B	13,4	20,5
M	M12	M18x1,5
H	31,75	47,6
S	31,75	38
L	130	171,5
L1	15,75	19,1
L2	25,4	38,1
L3	76,2	95,3
Z	9	11,5
Nm*	135	660

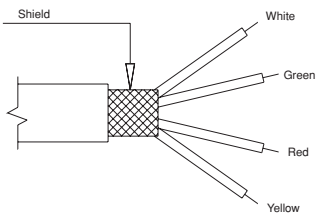
Dimensions mm. (± 0,1)
* Recommended torque with UNI 5931 screws of resistance class 10.9 according to UNI 3740

ELECTRICAL CONNECTIONS



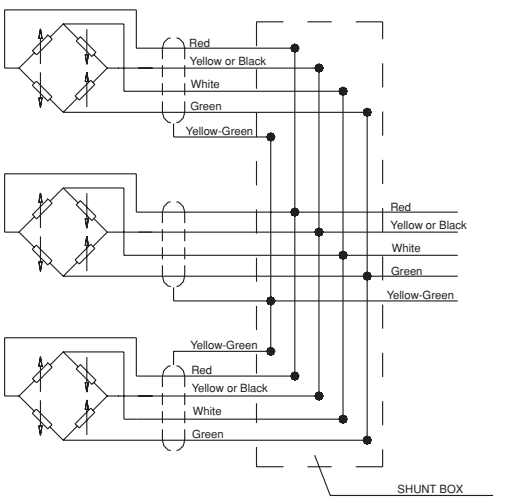
	CABLE EXIT
SIGNAL +	Red
SIGNAL –	Yellow or Black
EXCITATION +	White
EXCITATION –	Green
SHIELD	Yellow-Green

4x0.25
Screened cable



* The screen is isolated from the transducer body.
It is recommended that the ground is connected at the instrument end.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

ORDER CODE

Load cell **SB** ☐ ☐ ☐

MEASUREMENT RANGE (Kg)	
0 - 500	**K5C**
0 - 1000	**K1M**
0 - 2000	**K2M**
0 - 5000	**K5M**

LOAD APPLICATION HOLE	
Hole version *	**FP**
Thread hole version	**FF**

***** not available for 0...5.000 Kg version

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex1.: **SB - K1M - FP**
SB load cell, measurement range 0-1.000 kg.
Load application hole without thread.

Ex2.: **SB - K1M - FF**
SB load cell, measurement range 0-1.000 kg.
Load application hole with thread

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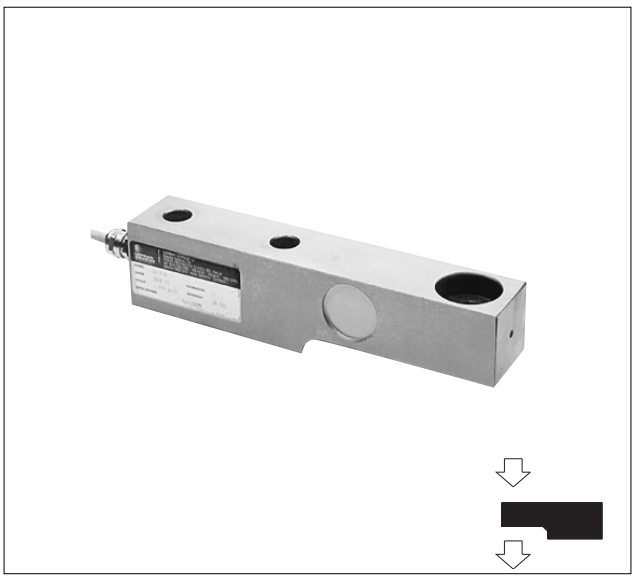
SH

SHEAR TYPE LOAD CELL



Main features

- *Range of measurement: from 500 to 10.000 Kg*
- *Accuracy class: D1 (OIML IR60)*
- *All stainless steel construction*
- *Corrosion resistant*
- *Insensitive to lateral loads*
- *Grade of protection: IP66 (DIN 40050)*

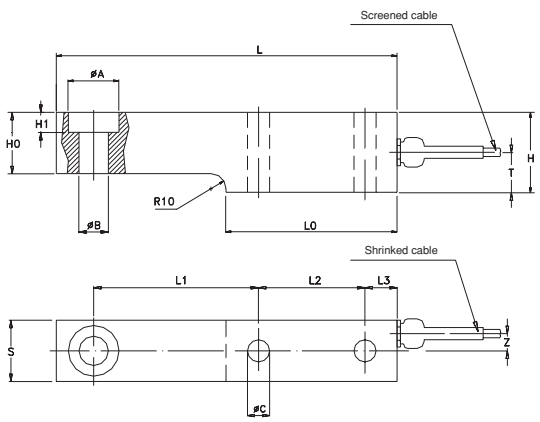
The principle of measurement of the SH series load cells is the deformation caused by the shear generated by the applied load. The result is a transducer that is extremely rigid both for the measured load and of lateral or transverse loads which have little effect on it.
The high degree of accuracy, good level of thermal compensation, the grade of protection make the SH series load cells safe for use in the most severe conditions.

TECHNICAL DATA

Accuracy (OIML IR60)	D1
Divisions	1000
Nominal full scale load (Ln)	500...10.000 Kg
Nominal output at FSO	2mV/V
Output tolerance at Ln	<± 0,2% FSO
Combined errors: Non linearity Histeresis, Repeatibility	< ± 0,05% FSO
Creep (after 30 min. at Ln)	< ± 0,05% FSO
Zero load out of balance signal	< ± 1% FSO
Calibration signal *	80%FSO ± 1%
Thermal drift in Sensitivity compensated Zero range Calibration	< ± 0,005% FSO/°C < ± 0,01% FSO/°C -
Nominal input resistance	350 Ohm
Nominal output resistance	350 Ohm
Isolation resistance	> 10 GOhm
Nominal supply voltage	10 V
Maximum supply voltage	15 V
Compensated temperature range	-10...+40°C
Maximum temperature range	-20...+60°C
Storage temperature range	-30...+80°C
Permitted static load	130% Ln
Maximum applicable load	150% Ln
Rupture load	> 300% Ln
Maximum elastic deformation at Ln	< 0,7 mm
Grade of protection (DIN40050)	IP66
Electr. connections screened cable	4x0,25 / 5 m.
Elastic element material	Stainless steel

***** The combined errors and thermal drift of sensitivity are within the framework defined by the OIML IR60

MECHANICAL DIMENSIONS

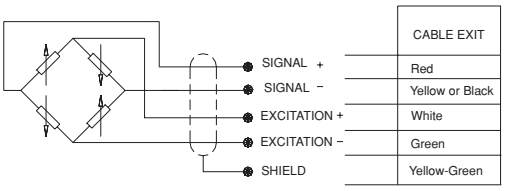


Ln (Kg)

	500/1000/2000	5000/7500	10000
ø A	30,2	41,3	51
ø B	17,5	25,5	32
ø C	13,2	22,5	27
H	47,6	70	82,6
H0	36,5	47,8	63,5
H1	11,9	15,9	20,7
L	203,2	235	279,4
L0	102	118	140
L1	98,3	123,7	139,7
L2	63,5	66,5	82,6
L3	19,1	20,6	25,4
S	36,5	47,6	60,3
T	23,8	46	51
Z	10,25	16	21
Nm*	135	660	1150

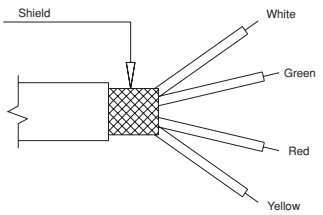
Dimensions mm. (± 0,1)
Recommended torque with UNI 5931 screws of resistance class 10.9 according to UNI 3740

ELECTRICAL CONNECTIONS



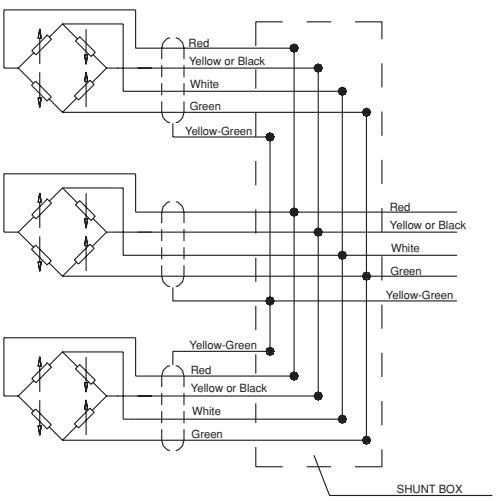
	CABLE EXIT
SIGNAL +	Red
SIGNAL –	Yellow or Black
EXCITATION +	White
EXCITATION –	Green
SHIELD	Yellow-Green

4x0.25
Screened cable



* The screen is isolated from the transducer body.
It is recommended that the ground is connected at the instrument end.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

ORDER CODE

Load cell **SH** ☐ ☐

MEASUREMENT RANGE (Kg)	
0 - 500	**K5C**
0 - 1000	**K1M**
0 - 2000	**K2M**
0 - 5000	**K5M**
0 - 7500	**K7.5M**
0 - 10000	**K10M**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: SH - K10M
SH load cell, measurement range 0 - 10.000 kg.

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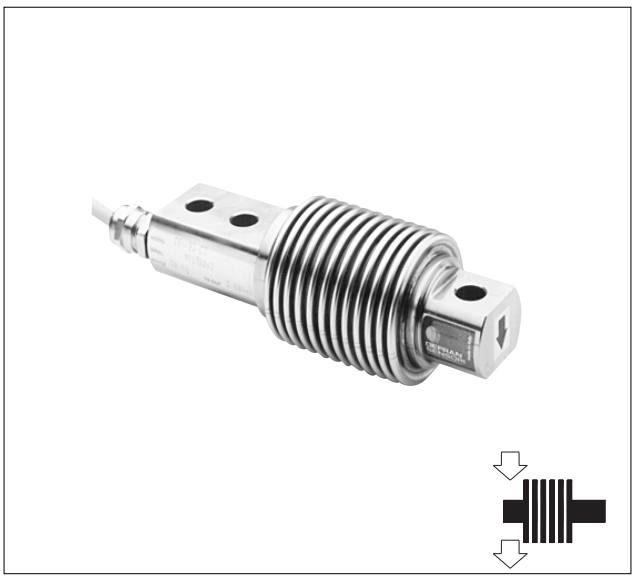
CB

DEFLECTION LOAD CELL



Main features

- *Range of measurement: from 20 to 200 Kg*
- *Accuracy class: C (OIML IR60)*
- *All stainless steel construction*
- *Corrosion resistant*
- *Grade of protection: IP67 (DIN 40050)*

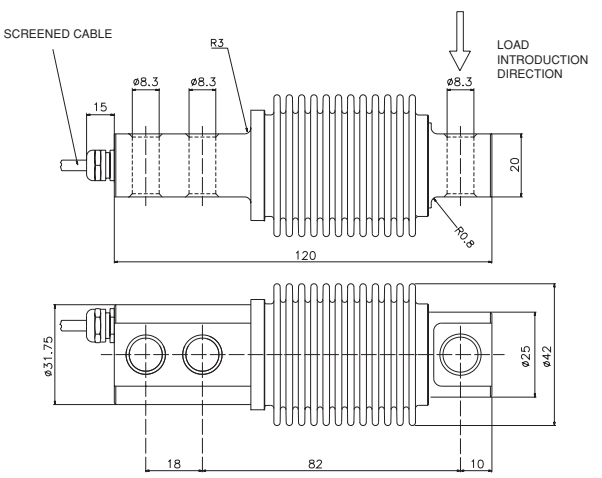
CB series load cells are designed for trouble free application in industrial environments. The cell body and the protective bellows of the strain gauge are in corrosion resistant stainless steel and the bellows are welded using microplasma torch. CB load cells are supplied in three grades of accuracy and characteristics.
The 1000 division is the most economical and suitable for most applications. The 2000 division version has a good price/performance ratio. The 3000 division is available if higher accuracy is required.
CB load cells are used in particularly hostile enviroments in the food, petrochemical and pharmaceutical industries and in all applications that demand components in stainless steel and IP67 grade of protection.

TECHNICAL DATA

Accuracy (OIML IR60)	C1	C2	C3
Divisions	1000	2000	3000
Nominal full scale load (Ln)	20...200 kg		
Nominal output at FSO	2 mV/V		
Output tolerance at Ln (%FSO)	< ± 0,5	< ± 0,5	< ± 0,2
Combined errors: Non linearity Histeresis, Repeatibility	C1 < ± 0,05 % FSO C2/C3 < ± 0,03 % FSO		
Creep (after 30 min. at Ln)%FSO	< ± 0,05	< ± 0,025	< ± 0,017
Zero load out of balance signal	< ± 1% FSO		
Thermal drift in compensated range * %FSO°C Sensitivity Zero Calibration	< ± 0,003 < ± 0,009	< ± 0,0015 < ± 0,006 -	< ± 0,0015 < ± 0,004
Nominal input resistance	350 Ohm		
Nominal output resistance	350 Ohm		
Isolation resistance	> 10 GOhm		
Nominal supply voltage	10 V		
Maximum supply voltage	15 V		
Compensated temperature range	-10...+40°C		
Maximum temperature range	-20...+50°C		
Storage temperature range	-25...+70°C		
Permitted static load	130% Ln		
Maximum applicable load	150% Ln		
Rupture load	>300% Ln		
Maximum elastic deformation at Ln	< 0,5 mm		
Grade of protection (DIN40050)	IP67		
Electr. connections screened cable	4x0,25 5m.		
Elastic element material	Stainless steel		

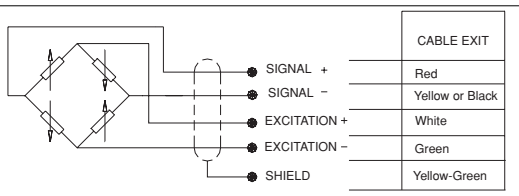
***** The combined errors and thermal drift of sensitivity are within the framework defined by the OIML IR60

MECHANICAL DIMENSIONS



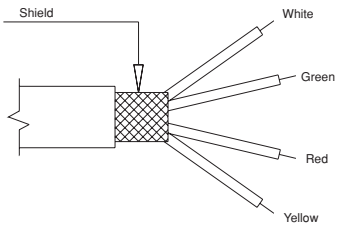
Dimensions mm. (± 0,1)
Recommended torque with UNI 5931 screws of resistance class 10.9 according to UNI 3740 - **20Nm**.

ELECTRICAL CONNECTIONS



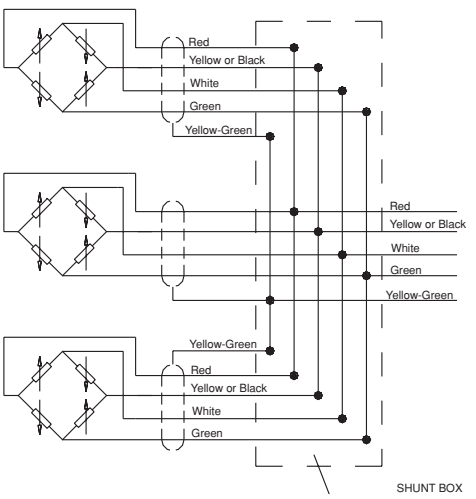
CABLE EXIT
Red
Yellow or Black
White
Green
Yellow-Green

4x0.25
Screened cable



* The screen is isolated from the transducer body.
It is recommended that the ground is connected at the instrument end.

Cells connected in parallel



In systems that use several cells, the parallel connection automatically sums the loads on each individual cell.
Using this method of measurement, the maximum load will be the sum of the loads on the individual cells and the sensitivity will be the average value of these cells.
It is important that the user ensures that no cell is stessed beyond its maximum rating under any load condition.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

ORDER CODE

Load cell **CB** □ □ □

MEASUREMENT RANGE (Kg)	
0 - 20	**K2D**
0 - 50	**K5D**
0 - 100	**K1C**
0 - 200	**K2C**

ACCURACY CLASS OIML	
C1 1000 divisions	**C1**
C2 2000 divisions	**C2**
C3 3000 divisions	**C3**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: **CB - K1C - C2**
CB load cell, measurement range 0-100 kg., accuracy class C2/2000 divisions.

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Certificato nr. 9115.GEF1

cod. 84729 - 08/01

OC

LOW PROFILE LOAD CELL FOR PLATFORMS

Main features

- *Range of measurement: from 5 to 100 kg*
- *Accuracy class: C (OIML IR60)*
- *May be mounted directly on the weighing platform*
- *Humidity resistant: conform to OIML IR60*
- *Low cost*
- *Applicable Platform: 400 x 400 mm*
- *Certified by NMI Institute according to:* ***OIML IR60 Certificate nr. TC2330***

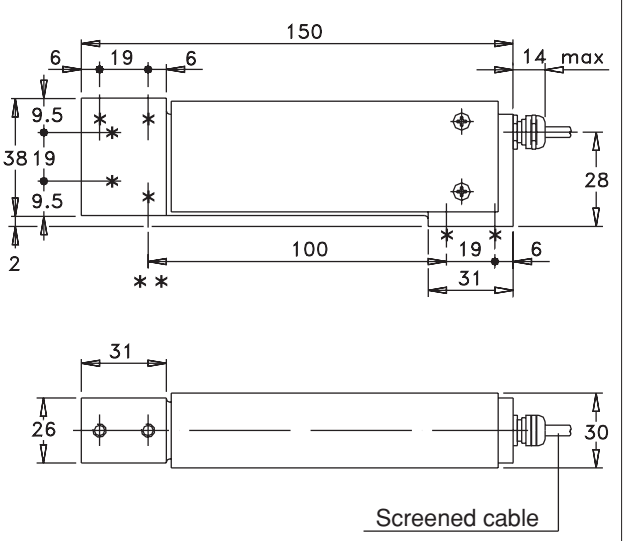
The OC series load cells have been designed for all applications requiring accurate weighing of loads on a platform, as well as for general applications in conformity with the OIML standards.
In all these cases, the OC load cell is the heart of the mechanical design. Infact they provide automatic compensation for eccentric loads on platforms up to 400x400mm without the need of mechanical calibrations.
The OC series low profile load cells are used in weighing machines for piece counting, bottling, dosing, weighing parcels, fiscal weighing, pharmaceutical weighing, etc.

TECHNICAL DATA

Accuracy (OIML IR60)	C1	C2	C3
Divisions	1000	2000	3000
Nominal full scale load (Ln)	5...100 kg		
Nominal full scale output FSO	2 mV/V		
Output tolerance at Ln	< ± 10% FSO		
Combined error * (Linearity,Histeresis, Repetibility)	C1 < ± 0,05 % FSO C2/C3 < ± 0,03 % FSO		
Creep (after 30 min. at Ln) %FSO	< ± 0,05	< ± 0,025	< ± 0,017
Zero load out of balance signal	< ± 10% FSO		
Thermal drift in compensated * range %FSO°C — Sensitivity	< ± 0,003	< ± 0,0015	< ± 0,0015
Thermal drift in compensated * range %FSO°C — Zero	< ± 0,009	< ± 0,006	< ± 0,004
Thermal drift in compensated * range %FSO°C — Calibration		-	
Error for eccentric load (with 1/3 Ln) on 400 x 400 platform (%FSO)	< ± 0,05	< ± 0,03	< ± 0,03
Nominal input resistance	430 Ohm		
Nominal output resistance	350 Ohm		
Isolation resistance	> 10 GOhm		
Nominal supply voltage	10 V		
Maximum supply voltage	15 V		
Compensated temperature range	-10...+40°C		
Maximum temperature range	-20...+50°C		
Storage temperature range	-25...+70°C		
Permitted static load	100% Ln		
Maximum applicable load	150% Ln		
Maximum elastic deformation at Ln	< 0,5 mm		
Protection / Case	Silicon / Nylon 66 G20 W0		
Electr. connections: screened cable	4x0,25 1m.		
Elastic element material	Aluminium		

***** The combined errors and thermal drift of sensitivity are within the framework defined by the OIML IR60

MECHANICAL DIMENSIONS

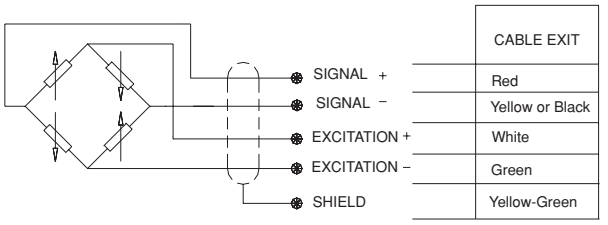


* 7 M6 HOLES WITH THREAD DEPTH OF 10 mm

** SEAT FOR SHEAR PIN

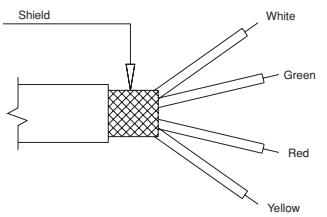
Dimensions mm. (± 0,1)
Recommended torque for M6 fixing screws: **7Nm**

ELECTRICAL CONNECTIONS



	CABLE EXIT
SIGNAL +	Red
SIGNAL –	Yellow or Black
EXCITATION +	White
EXCITATION –	Green
SHIELD	Yellow-Green

4x0.25
Screened cable



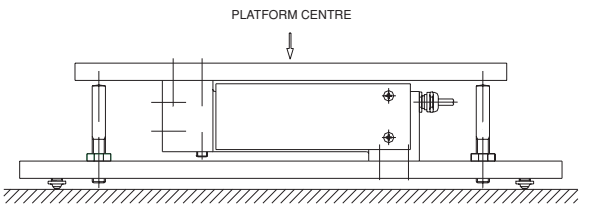
* The screen is isolated from the transducer body.
It is recommended that the ground is connected at the instrument end.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

APPLICATION NOTES



Example of a load cell for a platform with overload end stops fitted under the corners and on the load cell itself.

ORDER CODE

Load cell **OC** ☐☐☐

MEASUREMENT RANGE (kg)	
0 - 5	**K5U**
0 - 7.5	**K7.5U**
0 - 10	**K1D**
0 - 20	**K2D**
0 - 35	**K3.5D**
0 - 50	**K5D**
0 - 75	**K7.5D**
0 - 100	**K1C**

CLASS OF ACCURACY OIML	
C1 1000 divisions	**C1**
C2 2000 divisions	**C2**
C3 3000 divisions	**C3**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: OC - K1D - C2
OC load cell, measurement range 0 - 10 kg, accuracy class C2/2000 divisions.

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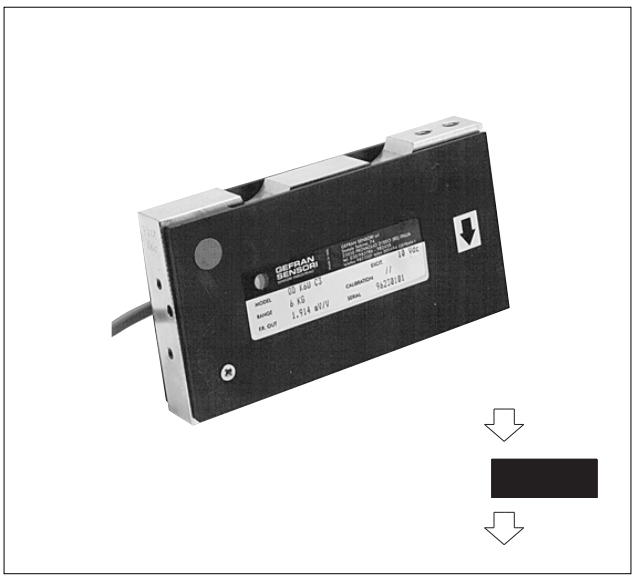
OD

LOAD CELL FOR PACKAGING AND DOSING APPLICATIONS



Main features

- *Range of measurement: 6 - 10 -15 kg*
- *Accuracy class: C (OIML IR60)*
- *May be mounted directly on the weighing platform*
- *Applicable Platform : 400x400 mm.*
- *Grade of protection: conform to humidity test OIML IR60*
- *Certified by NMI Institute according to:*
  OIML IR60 Certificate nr. TC2772

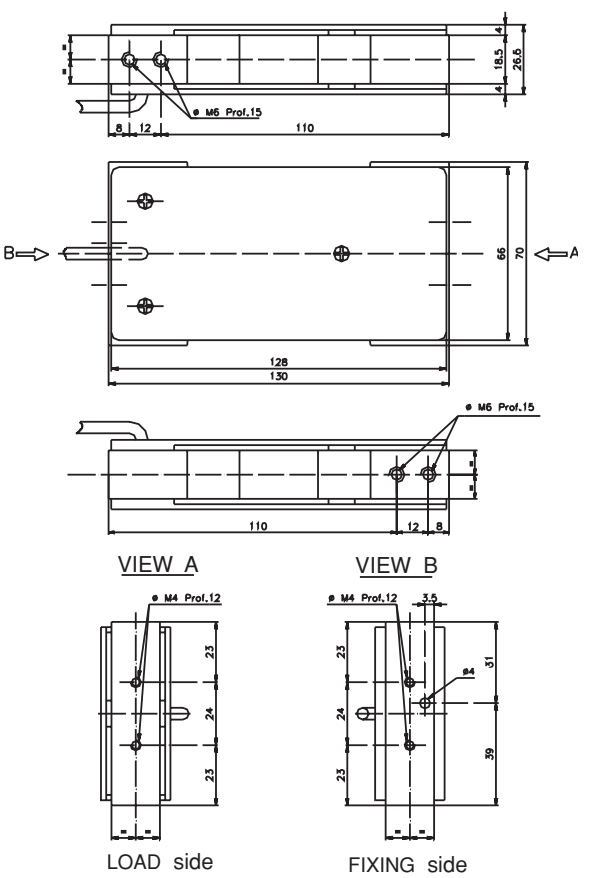
The OD series load cells have been designed for all applications requiring accurate weighing of loads on a platform, as well as for general applications in conformity with the OIML standards. In all these cases, the OD load cell is the heart of the mechanical design. Infact they provide automatic compensation for eccentric loads on platforms up to 400x400mm without the need of mechanical calibrations and have mechanical stops which allow the installation without particular adjustments.
The OD series low profile load cells are used in weighing machines for piece counting, bottling, dosing, weighing parcels, fiscal weighing, pharmaceutical weighing, etc.

TECHNICAL DATA

Accuracy (OIML IR60)		C1	C2	C3
Divisions		1000	2000	3000
Nominal full scale load (Ln)		6...15 kg		
Nominal full scale output FSO		2 mV/V		
Output tolerance at Ln		< ± 10% FSO		
Combined errors * (Linearity, Histeresis, Repeatibility)		C1 < ± 0,05 % FSO C2/C3 < ± 0,03 % FSO		
Creep (after 30 min. at Ln)%FSO		< ± 0,05	< ± 0,025	< ± 0,017
Zero load out of balance signal		< ± 10% FSO		
Thermal drift in compensated * range %FSO°C	Sensitivity	< ± 0,003	< ± 0,0015	< ± 0,0015
	Zero	< ± 0,009	< ± 0,006	< ± 0,004
	Calibration		-	
Error for eccentric load (with 1/3 Ln) on 400 x 400 platform (%FSO)		< ± 0,05	< ± 0,03	< ± 0,03
Nominal input resistance		430 Ohm		
Nominal output resistance		350 Ohm		
Isolation resistance		> 10 GOhm		
Nominal supply voltage		10 V		
Maximum supply voltage		15 V		
Compensated temperature range		-10...+40°C		
Maximum temperature range		-20...+50°C		
Storage temperature range		-25...+70°C		
Permitted static load		100% Ln		
Maximum applicable load		150% Ln		
Rupture load		>300% Ln		
Maximum elastic deformation at Ln		< 0,3 mm		
Protection		Silicon, case nylon 66G20W0		
Electr. connections: screened cable		4x0,25 / 1 m.		
Elastic element material		Aluminium		

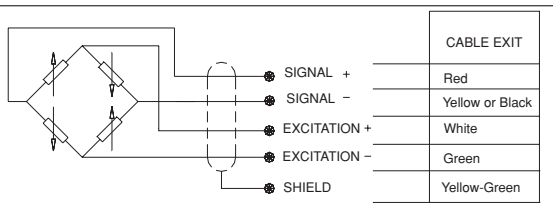
***** The combined errors and thermal drift of sensitivity are within the framework defined by the OIML IR60

MECHANICAL DIMENSIONS



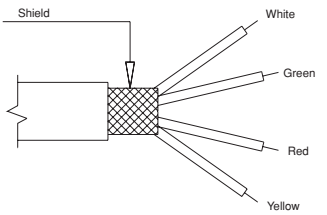
Dimensions mm. (± 0,1)
Recommended torque for fixing screws **7 Nm**

ELECTRICAL CONNECTIONS



CABLE EXIT
Red
Yellow or Black
White
Green
Yellow-Green

4x0.25
Screened cable



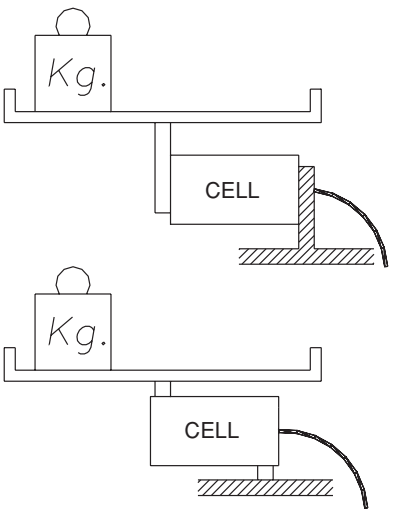
* The screen is isolated from the transducer body.
It is recommended that the ground is connected at the instrument end.

CONVERSION TABLE

Kg	N	Lb
1	9.807	2.205
0.102	1	0.225
0.454	4.448	1

OPTIONAL ACCESSORIES

APPLICATION NOTES



ORDER CODE

Load cell **OD** □ □ □

MEASUREMENT RANGE (Kg)	
0 - 6	**K6U**
0 - 10	**K1D**
0 - 15	**K1,5D**

CLASS OF ACCURACY OIML	
C1 1000 divisions	**C1**
C2 2000 divisions	**C2**
C3 3000 divisions	**C3**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

Ex.: **OD - K1D - C2**
OD load cell, measurement range 0-10 kg.
Clas of accuracy C2/2000 divisions.

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cod. 84663 - 08/01

CIR

STRAIN GAUGE TRANSDUCER AMPLIFIER

Main features

- *Linearity error <0,02%FSO*
- *Voltage or current output*
- *Low thermal drift <0,01%FSO/°C*
- *Compact size*

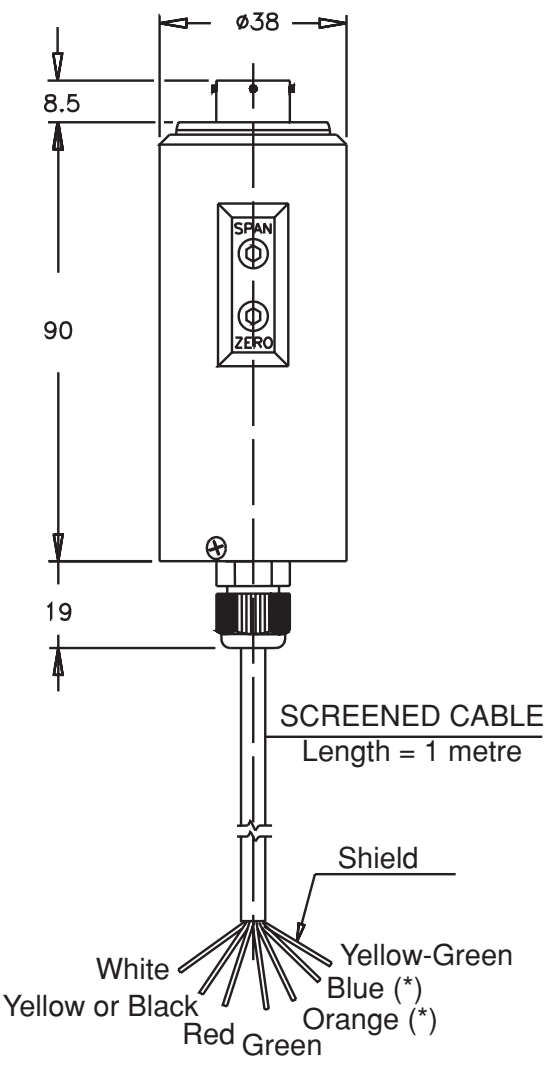
The CIR voltage or current amplifiers have been designed to enable the user to adapt non-amplified strain gauge transducers (load cells, pressure transducers) to acquisition systems, PLC, instrumentation with high level inputs.
The availability of the output in voltage or current enables the signal to be carried over long distances or used in intelligent automation systems.

TECHNICAL DATA

Model	Voltage B/C/M/N	Current E	meas. unit
Linearity error (FSO)	<0.02	<0.02	%
Primary sensor resistance (± 10%)	350 or 700	350 or 700	Ω
Primary sensor sensitivity	2 or 3	2 or 3	mV/V
Output load resistance	> 10	see diag.	KΩ
Supply voltage	15...30	12...30	Vdc
Current drain with sensor connected	< 33	≤ 20	mA
Supply voltage to transducer	10	0,9	Vdc
Output signal at zero	B/C = 0,1Vdc M/N = 0Vdc	E = 4mA	
Zero signal accuracy (FSO)	< ± 0,1	< ± 0,1	%
Zero adjustment (FSO)	> ± 10	> ± 10	%
Full scale output	B = 5,1Vdc C = 10,1Vdc M = 5Vdc N = 10Vdc	E = 20mA	
F.S. output accuracy	< ± 0,1	< ± 0,1	%
Span adjustment	> ± 10	> ± 10	%
Inverse polarity protection	YES	YES	
Accidental shortcircuit protection	YES	YES	
Response time (10...90%FSO)	≈ 6	≈ 6	ms
Output noise (RMS10...400Hz)	-60	-60	db
Temp. range: Compensated (%FSO) Working Storage	0...70 -10...+80 -50...+100	0...70 -10...+80 -50...+100	°C °C °C
Typical thermal drift of zero (%FSO/°C)	± 0,01	± 0,01	
Typical thermal drift of span (%FSO/°C)	± 0,01	± 0,01	
Length of output cable	1	1	mt
Case material	Stainless steel / Anodisez alum.		
Grade of protection	IP65	IP65	EN 60529

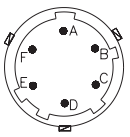
The electrical characteristics are those measured with
Vsupply.=24VRL = 1MΩ (Voltage) RL = 500 Ω (Current)
Amb.temp = 25°C

MECHANICAL DIMENSIONS



* Only for version Z

ELECTRICAL CONNECTIONS



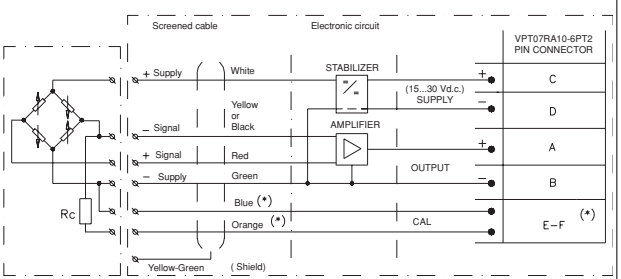
VPT02A10-6PT2
CONNECTOR

FEMALE CONNECT. PINS CON300	COLOR CODE OUTPUT CABLE
A	Red
B	Yellow / Black
C	White
D	Green
E	Blue
F	Orange

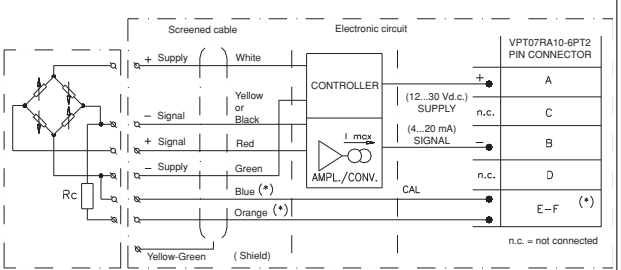
Connector and colour code of cable with prewired female connector.
The amplifiers are fitted with the VPT07RA10-6PT2 male connector. The function of the individual pins varies according to the type of output, as seen in the drawing for models B,C,E,M,N.

ELECTRICAL CONNECTIONS

Mod. B/C/M/N



Mod. E



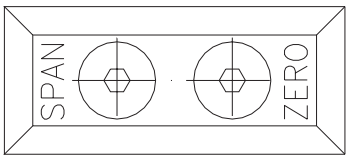
* Only in the version Z (maximum lenght of the calibration signal wires: 2 metres) the cable screen should be connected to the _V supply of the transducer.

OPTIONAL ACCESSORIES

Connectors

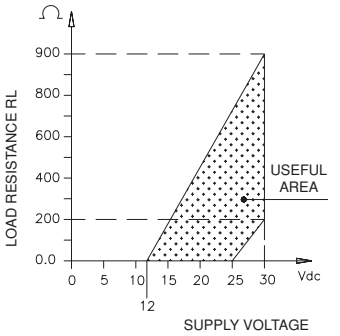
Female cable cponnector Protection degree IP66	**CON300**
Cables and assembled cables	**on request**

ADJUSTMENT



ZERO AND SPAN TRIMMERS
The user can adjust the amplifier zero and gain using two potentiometers (ZERO and SPAN respectively) which are easily accessible from the outside by removing two screws present on the case.

LOAD DIAGRAM



In the diagram shown here, the optimal ratio between the load and the transducer supply is shown for a 4...20mA output.
For a correct use, choose a combination of supply voltage and load resistance that falls within the shaded area.

ORDER CODE

CIR □ □ □ □

OUTPUT SIGNAL	
0,1...5,1Vdc	**B**
0,1...10,1Vdc	**C**
4...20mA 2 fili	**E**
0...5 Vdc	**M**
0...10Vdc	**N**

PRIMARY ELEMENT SENSITIVITY	
2 mV/V	**2**
3 mV/V	**3**

MEASUREMENT BRIDGE RESISTANCE	
350 Ohm	**M**
700 Ohm	**N**

CALIBRATION WIRES	
Not fitted	**0**
Fitted	**Z**

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CSQ
UNI EN 29001 - ISO 9001
Certificato nr. 9115.GEF1

cod. 84747 - 08/01

CIR-D

GALVANICALLY ISOLATED STRIAN GAUGE TRANSDUCER AMPLIFIER

Main features

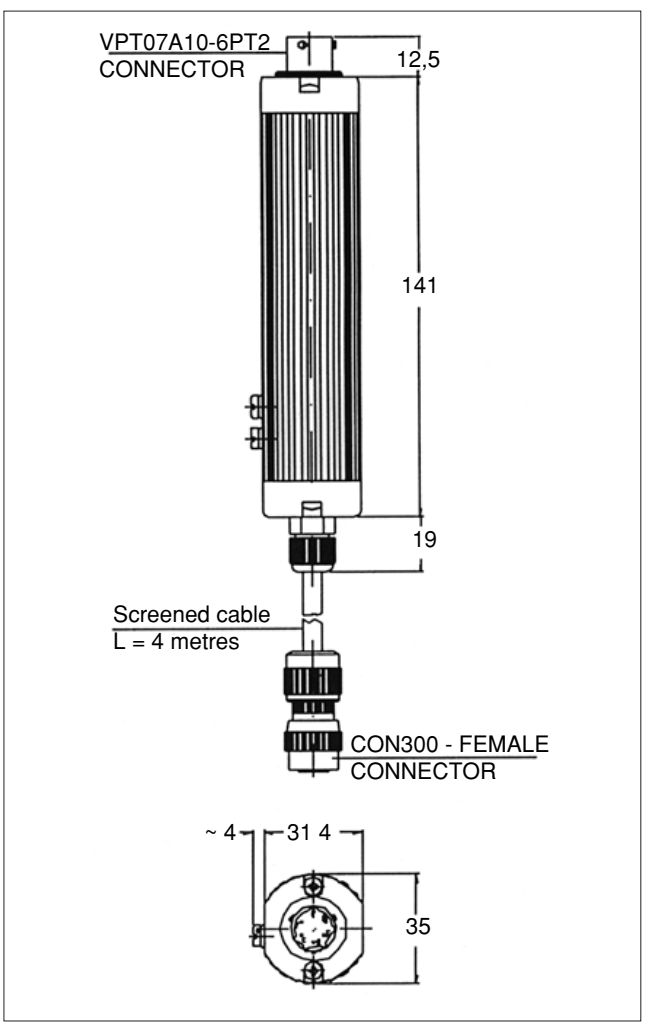
- *Galvanic isolation between the Supply Voltage and the Amplifier >500Vdc*
- *Linearity error > 0,02% full scale output*
- *Current output 3-wires*
- *Low thermal drift < 0,01% full scale/°C*
- *10Vdc transducer supply*

The CIR-D voltage or current amplifiers have been designed to enable the user to adapt non-amplified strain gauge transducers (load cells, pressure transducers) to acquisition systems, PLC, instrumentation with high level inputs. These amplifiers have galvanic isolation between the supply voltage and the transducer to increase the rejection of noise generated by the power supply itself. The availability of the output in current enables the signal to be carried over long distances or used in intelligent automation systems.

TECHNICAL SPECIFICATIONS

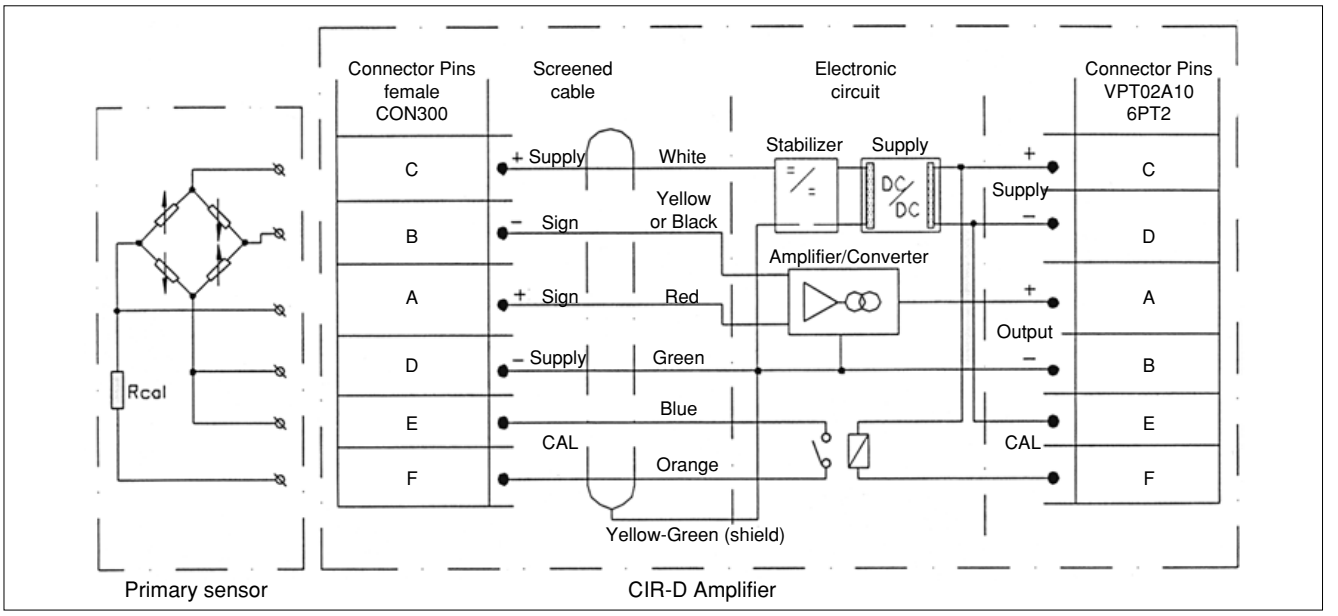
Linearity error	< 0.02%FSO
Galvanic isolation between Vsupply and Amplifier	> 500 Vdc
Primary sensor sensitivity	1 or 2mV/V
Primary sensor resistance	350Ω
Output load resistance	≤ 400Ω
Supply voltage	20...30Vdc
Current drain with sensor connected	< 70mA
Supply voltage to transducer	10Vdc
Output signal at zero	0mA
Zero signal accuracy	± 0,1%FSO
Zero adjustment	± 10%FSO
Full scale output	20mA
Full scale output accuracy	± 0,1%FSO
Span adjustment	± 10%FSO
Inverse polarity protection	Yes
Response time (10...90%FSO)	8ms
Output noise (RMS 10...400Hz)	0.05%FSO
Temperature range: Compensated Working Storage	0...70°C -10...+80°C -50...+100°C
Typical thermal drift of zero	± 0.01%FSO/°C
Typical thermal drift of span	± 0.01%FSO/°C
Case material	Anodised aluminium Nylon 66 CF40
Protection degree	IP65 - EN60529

MECHANICAL DIMENSIONS

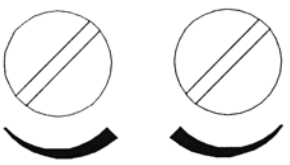


FSO: Full Scale Output (signal at full span).
The electrical characteristics are those measured with Vsupply = 24V - RL = 400 Ohm - Ambient temperature. = 25°C

ELECTRICAL CONNECTIONS



ADJUSTMENTS



ZERO and SPAN POTENTIOMETERS
The user can adjust the amplifier zero and gain using two potentiometers (ZERO and SPAN respectively) which are easily accessible from the outside by removing two screws present on the case.

OPTIONAL ACCESSORIES

Connectors

Female cable connector Protection degree IP66	**CON300**
Cables and assembled cables	**on request**

ORDER CODE

CIR-D □

INPUT SIGNAL	
1mV/V	**1**
2mV/V	**2**

Example:**CIR-D-1**
Strain gauge amplifier with 1 mV/V input signal.

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