

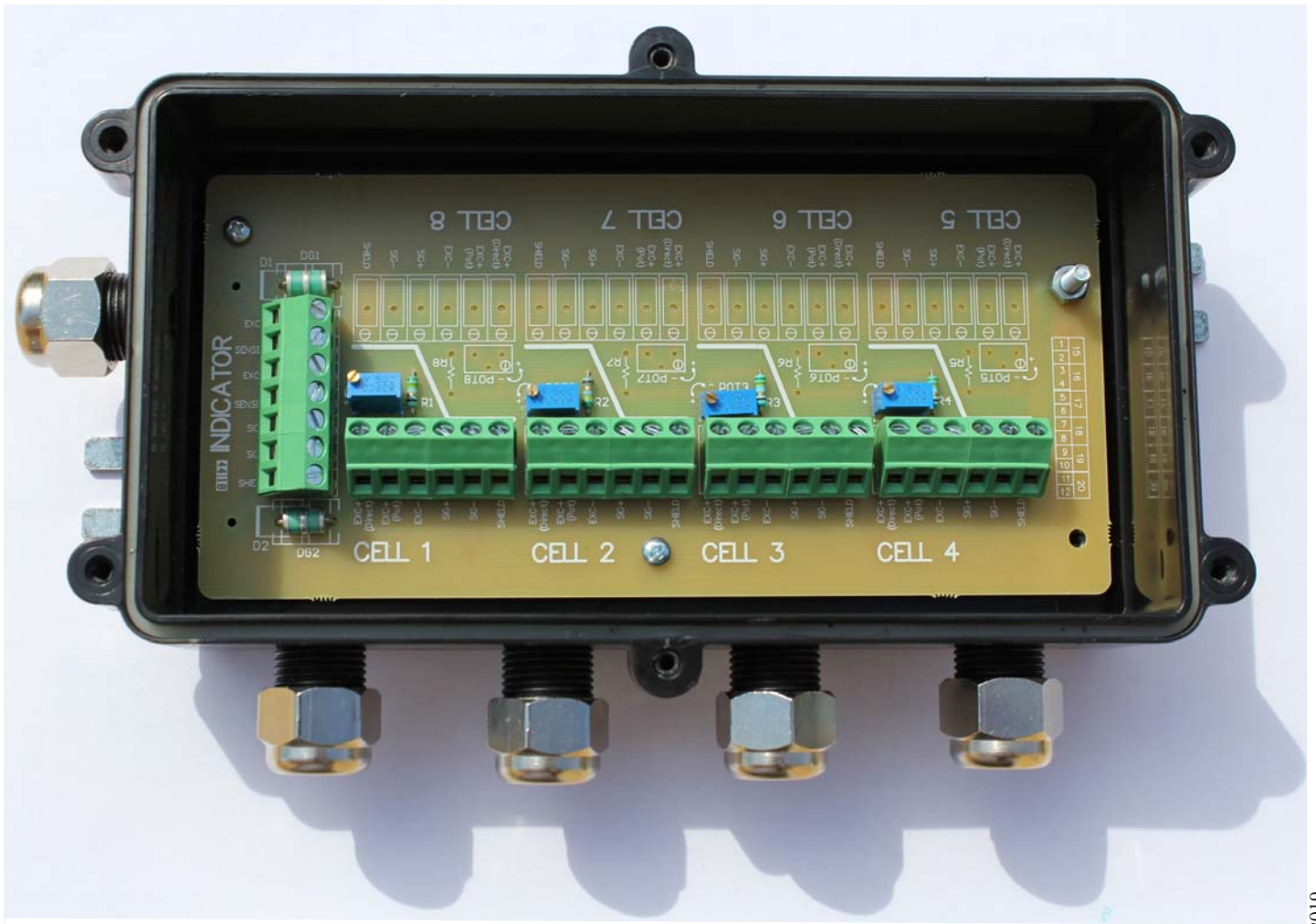
NORDIC TRANSDUCER

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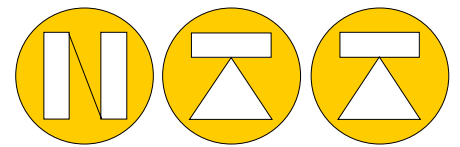


## CAJA-A-PLG

Junction box for 4-8 load cells in High Resistant ABS Plastic IP68 protection !



Data-Sensocar-Samlebokse-CAJA-A-PLG\_2019

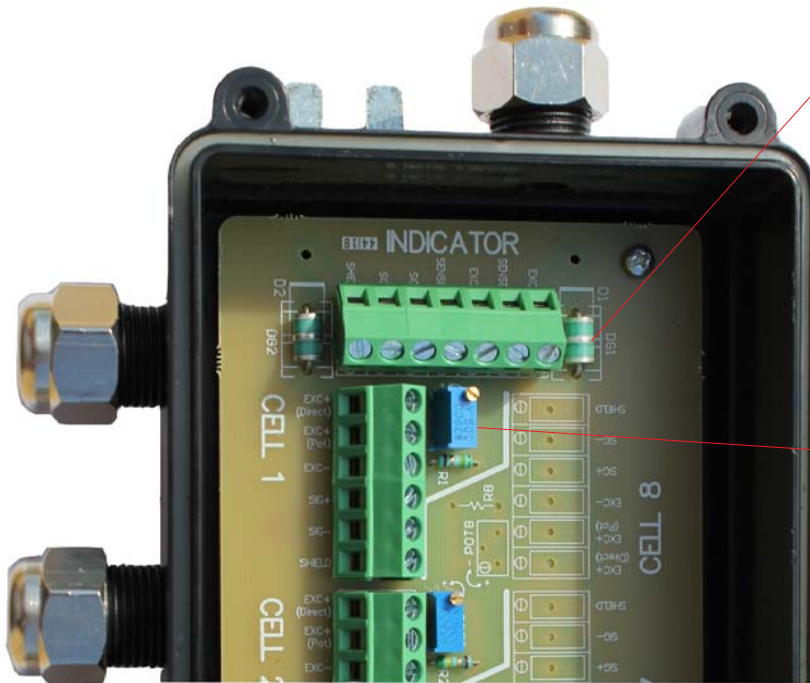


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**CAJA/N-RA 4-8 load cells Strong J-Box IP68 protection**

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2 gas-fuses to protect against atmospheric discharges



At long distance between Load Cells and instrument say more than 10m where severe temperature changes can be the case from say from summer to winter it is a very good thing to use sense wires, it can be done by using 5 x0,35 wires ! please looka page 6&7

Potentiometre: Normally with our load cells it's not nessacery to use these, they are used if you have bigger differences say from corner to corner on a platform scale, but if good load cells are used it is recommended to find out the reson for this as there typically are a mechanical reason & solution for it. So normal good load cells shall be connected on EXC+ (Direct) & not so good ones use EXC+ (Pot)

**CAJA Junction box.**

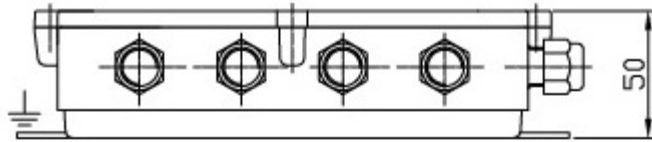
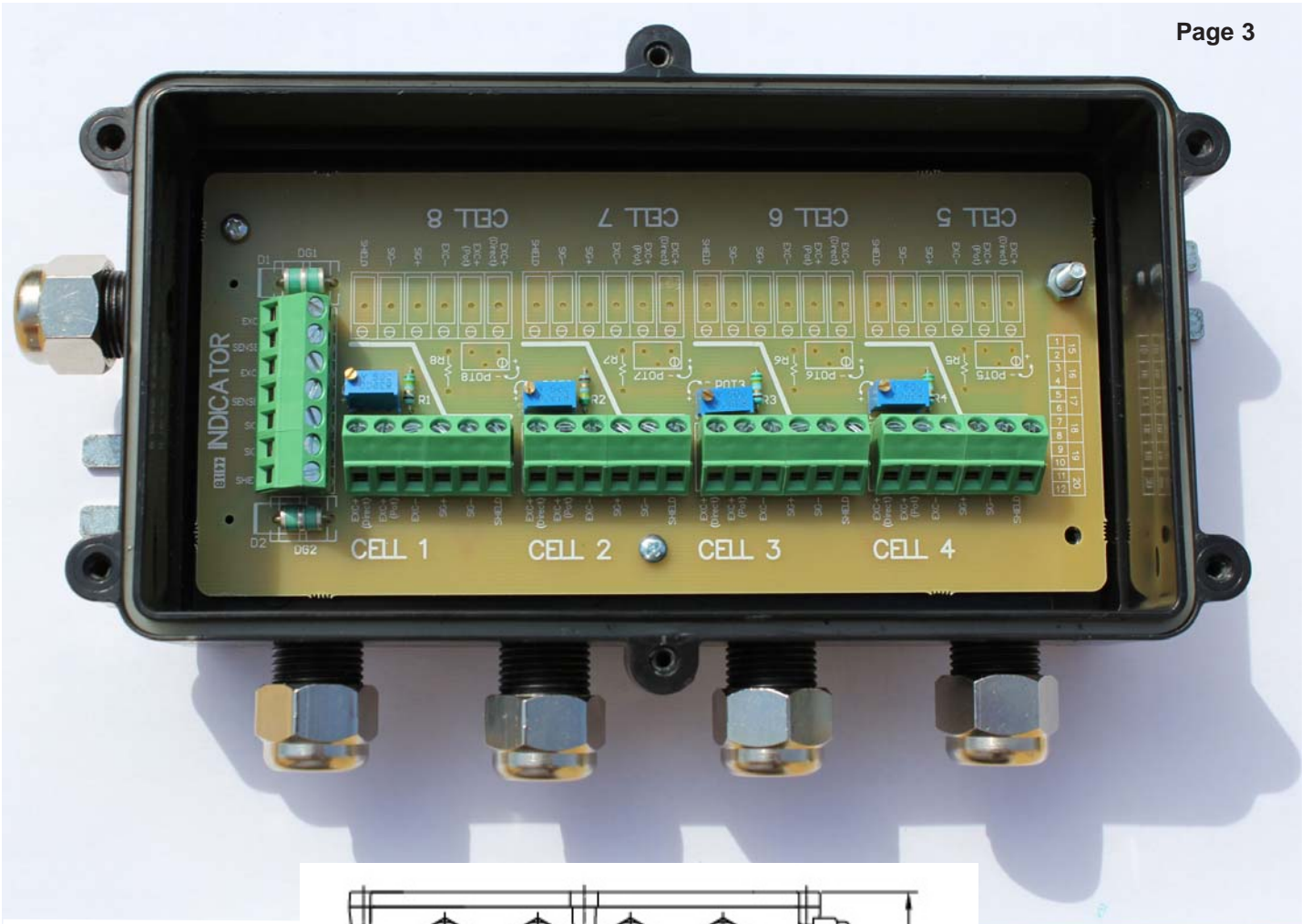
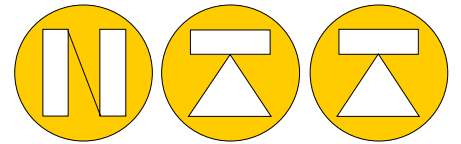
- Supply to Load Cell + = EXC+
- Supply to Load Cell - = EXC-
- Signal + from Load Cell = SIG+ (SG+)
- Signal - from Load cell = SIG- (SG-)
- Load cell with 6 wire then connect SENSE+ to EXC. + & SENSE - to EXC-.

Can also be supplies as ATEX godkendt CE Certificate LOM 12ATEX2029 X

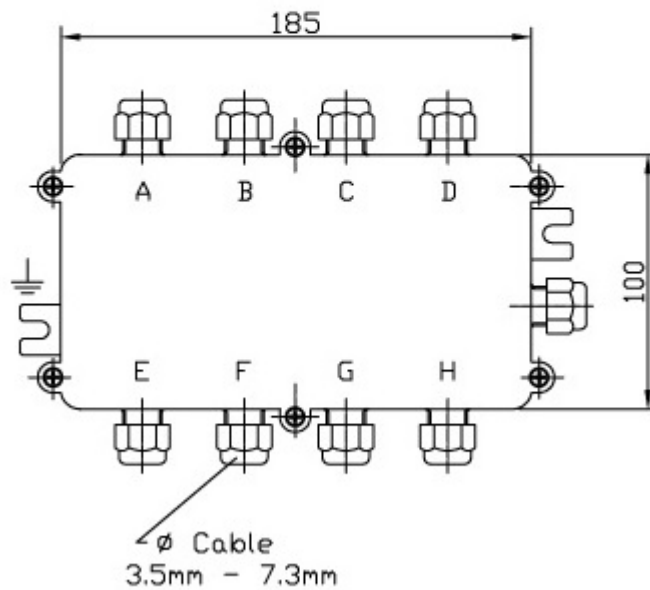
**ATEX class is:**

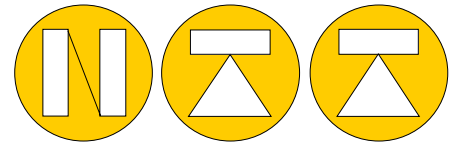
- Ex II 1GD
- Ex ia III 85 °C Da // Ex ia T4..T6 Ga





4 células: Salidas A, B, C, D  
 6 células: Salidas A, B, C, E, F, G, H  
 8 células: Salidas A, B, C, D, E, F, G, H





## Color codes for load cell supplied by NTT from 2023

### Names for load cell wires:

**Power Supply** +/- to the load cell can be named with many different names as:  
 +/- -Excitation, Exc., Exct., Excitat., In +/-, Input +/- ( to the cell )

**Signal** from the load cell can be named as: Signal +/-, out +/-, output +/-

**Sense** will normally be named Sense or Sen +/-

Do you have an instrument and load cell with 6 wires then please use all 6, if only 4 wire load cell Sense + shall be connected to Exc.+ and Sense - to Exc. - via a jump wire

### Vishay Revere Transducers

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>	<u>sense+</u>	<u>sense-</u>
<b>Green</b>	<b>black</b>	<b>white</b>	<b>red</b>	<b>yellow</b>	<b>blue</b>
<i>Relevant for:</i> V-RTE model: ACB - HCB - HPS- SHB 6 wire					

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>	<u>sense+</u>	<u>sense-</u>
<b>Green</b>	<b>black</b>	<b>white</b>	<b>red</b>		
<i>Relevant for:</i> V-RTE, ASC - ALC - BSP- SHB 4 wire					

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>	<u>sense+</u>	<u>sense-</u>
<b>Red</b>	<b>black</b>	<b>green</b>	<b>white</b>	<b>blue</b>	<b>brown</b>
<i>Relevant for:</i> V-RTE, 642C - 652 - & VTH 3410					

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>		
<b>Red</b>	<b>black</b>	<b>green</b>	<b>white</b>		
<i>Relevant for:</i> V-RTE Model: 363 - 9363 - 5123 - 9123 - 4158 -5102 - 9102-9103					

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>		
<b>Pink</b>	<b>grey</b>	<b>brown</b>	<b>white</b>		
<i>Relevant for:</i> Vishay / Revere Model: RLC					

### Vishay Tedea Huntleigh

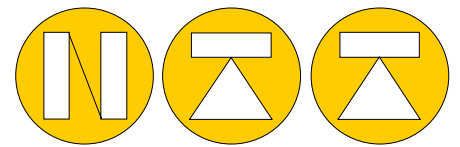
<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>		
<b>Green</b>	<b>black</b>	<b>red</b>	<b>white</b>		
<i>Relevant for:</i> V-TH model:-1004					

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>	<u>sense+</u>	<u>sense-</u>
<b>Green</b>	<b>black</b>	<b>red</b>	<b>white</b>	<b>blue</b>	<b>brown or yellow</b>
<i>Relevant for:</i> V-TH model: 1010/1015					

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>	<u>sense+</u>	<u>sense-</u>
<b>Green</b>	<b>black</b>	<b>red</b>	<b>white</b>	<b>blue</b>	<b>brown</b>
<i>Relevant for:</i> VTH model: 1042, 1130, 1140, 1241/42, 1250, 1252, 1260, 1320, 1410, 1510, 240, 606, 615/16 9010					

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>	<u>sense+</u>	<u>sense-</u>
<b>Blue</b>	<b>black</b>	<b>white</b>	<b>red</b>	<b>green</b>	<b>gray</b>
<i>Relevant for:</i> VTH Model -220, 343, 355, 3510					

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>		
<b>Red</b>	<b>blue</b>	<b>green</b>	<b>yellow</b>		
<i>Relevant for:</i> VTH-Model: 601					



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## Color codes for load cell supplied by **NTT** from 2023

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### Names for load cell wires:

**Supply** to the load cell can be named +/- -Excitation, Exc., Exct., In +/-, Input m.m.

**Signal** from the load cell can be named: Signal +/-, out +/-, output +/-

**Sense** will normally be named Sense or Sen +/-

Do you have an instrument and load cell with 6 wires then please use all 6, if only 4 wire load cell Sense + shall be connected to Exc.+ and Sense - to Exc. -

### Nordic Transducer / Nordisk Transducer Teknik

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>	<u>shield</u>
<b>Red</b>	<b>black</b>	<b>green</b>	<b>white</b>	<b>yellow</b>

Relevant for: NTT model. BBS-D4 - ET-3 - ET-4 - GY-2 - MS-1 - 9212 - 9223 - 9223W, TCS-9310 - TCSW-9310, TCTN-9110 - PE-1/ 2

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>
<b>Red</b>	<b>black</b>	<b>white</b>	<b>yellow</b>

Relevant for: NTT, C2S, C8S, CBS, CM35, D100, D200, TC4, TS, TCS, T-20,

<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>	<u>sense+</u>	<u>sense-</u>
<b>Red</b>	<b>black</b>	<b>green</b>	<b>white</b>	<b>yellow</b>	<b>blue</b>

Relevant for:

#### **NTT & all Sensocar Models.**

AC1, AC2, AC3, BL- BLC, CS-A, DCO-2, 3, 4, PL.50, BS-1-2, FX-1, FX-2, CO-1, CO-2, TA-1, S-1, S2, SP-A, TR-1, TR-2,

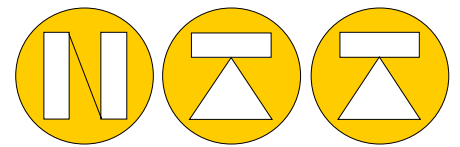
<u>Exct. +</u>	<u>Exct. -</u>	<u>signal +</u>	<u>signal -</u>	<u>sense+</u>	<u>sense-</u>
<b>Blue</b>	<b>black</b>	<b>white</b>	<b>red</b>	<b>green</b>	<b>gray</b>

Relevant for: NTT model A-SBT10 & 3510



*Please also control that there is no mixe of load cells which look similar but do have different ohm values & mV/V output*

**REMEMBER TO MOUNT THE LOAD CELLS IN A MANNER SO THEY DO GIVE A POSITIVE OUTPUT SIGNAL AT THESE CONNECTIONS.**



Cables length used with Load Cells under temperature changes over time, also from summer to winter. Standard load cells do typical have 3-5m cables fix mounted, weighbridges and big load cells do typical have 10-20 meter cables. Shield is typical not connected to body on load cells for normal commercial weighing, but the shield can be connected inside the J-Box. Several load cells are then connected in parallel inside these Junction boxes typical with 4 wires, if the wire to Instrument then become long say over 10 meter, then the J-Box output can be used with 6 wires so temperature changes will be compensated by using the SENSE wires.

The explanation under here from an older partner do explain the relationship between cable resistance at 4 contra 6 wires

### Load cell applications suggestions

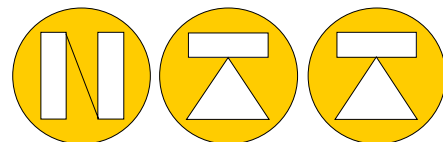
#### If to use 4 or 6 wire connection.

Choosing between the 4 or 6 wire connection depends on both the impedance of the sensor connected to the instrument and the cable resistance (function of the cable cross-section and the length). Usually the 6 wire connection is preferred if the sensor impedance is low (say <1 kOhm) and the cable resistance is high (say >10 Ohm), but these values are not mandatory limits.

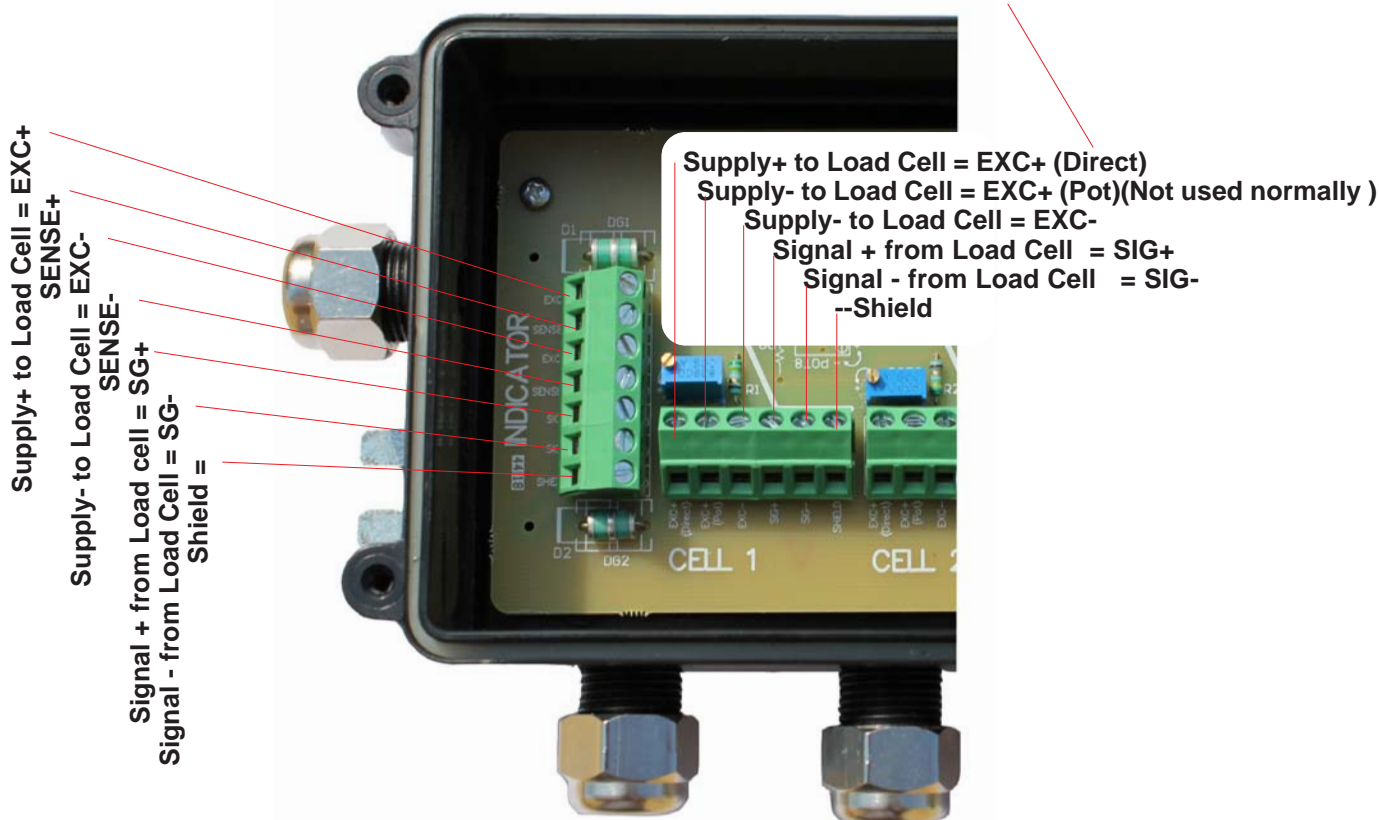
Referring to the following table and keeping in mind that the input sense impedance of the MD1010 & MD1010-R is 30 kOhm the error computation is:

Cable length	Conductor diameter	Sensor resistance	Connection	Cable resistance	Span error	Span drift 20-60 °C
50 m / 164 ft	1.0 mm / 0.04 in	1 kOhm	4 wire	2.2 Ohm	0.22 %	-0.035 % / -9 ppm/°C
50 m / 164 ft	1.0 mm / 0.04 in	120 Ohm	4 wire	2.2 Ohm	1.80 %	-0.29 % / -70 ppm/°C
100 m / 328 ft	1.0 mm / 0.04 in	1 kOhm	4 wire	4.4 Ohm	0.44 %	-0.070 % / -17 ppm/°C
100 m / 328 ft	1.0 mm / 0.04 in	120 Ohm	4 wire	4.4 Ohm	3.60 %	-0.58 % / -145 ppm/°C
50 m / 164 ft	1.5 mm / 0.06 in	1 kOhm	4 wire	0.98 Ohm	0.1 %	-0.016 % / -4 ppm/°C
50 m / 164 ft	1.5 mm / 0.06 in	120 Ohm	4 wire	0.98 Ohm	0.82 %	-0.13 % / -33 ppm/°C
100 m / 328 ft	1.5 mm / 0.06 in	1 kOhm	4 wire	1.97 Ohm	0.20 %	-0.03 % / -8 ppm/°C
100 m / 328 ft	1.5 mm / 0.06 in	120 Ohm	4 wire	1.97 Ohm	1.64 %	-0.26 % / -65 ppm/°C
50 m / 164 ft	1.0 mm / 0.04 in	1 kOhm	6 wire	2.2 Ohm	0.007 %	+0.001% / +0.25 ppm/°C
50 m / 164 ft	1.0 mm / 0.04 in	120 Ohm	6 wire	2.2 Ohm	0.007 %	+0.001% / +0.25 ppm/°C
100 m / 328 ft	1.0 mm / 0.04 in	1 kOhm	6 wire	4.4 Ohm	0.014 %	+0.002% / +0.50 ppm/°C
100 m / 328 ft	1.0 mm / 0.04 in	120 Ohm	6 wire	4.4 Ohm	0.014 %	+0.002% / +0.50 ppm/°C
50 m / 164 ft	1.5 mm / 0.06 in	1 kOhm	6 wire	0.98 Ohm	0.03 %	+0.005% / +1.25 ppm/°C
50 m / 164 ft	1.5 mm / 0.06 in	120 Ohm	6 wire	0.98 Ohm	0.03 %	+0.005% / +1.25 ppm/°C
100 m / 328 ft	1.5 mm / 0.06 in	1 kOhm	6 wire	1.97 Ohm	0.06 %	+0.010% / +2.50 ppm/°C
100 m / 328 ft	1.5 mm / 0.06 in	120 Ohm	6 wire	1.97 Ohm	0.06 %	+0.010% / +2.50 ppm/°C

Connecting a device with a four wire connection introduces a span error that can be zeroed if a field calibration is performed. However the cable resistance changes with temperature a so high cable resistance can be zeroed but still exhibit a span thermal coefficient which reduces the reading as the temperature rises. If the cost of a six wire connection is not a problem a better accuracy is obviously obtained.



EXC+ (Direct) used normally for NTT Load Cells Page 7

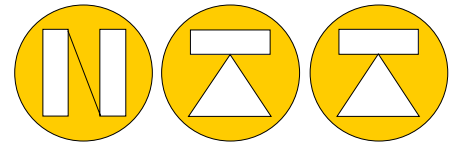


Longer cable than 8-10 meter Please use SENSE wiring then !

If the instrument do have Sense + & - terminals normally these has to be used then.  
You can the use UNITRONIC FD P PLUS 5x0,34 cable ( PUR ) where we only use + terminal

SENSE/REF minus do connect to EXC- on the instrument  
SENSE + wire do then go to SENSE + on CAJA J-box (SENSE also called REF ++)  
The 4 others will then be used for EXC +/- & signal +/-  
SHEILD to shield connection.  
The load cell it self do connect to the SHIELD in the J-Box, c shield on load cell cable is NOT connected to Load Cell body !!





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