

# C16i...

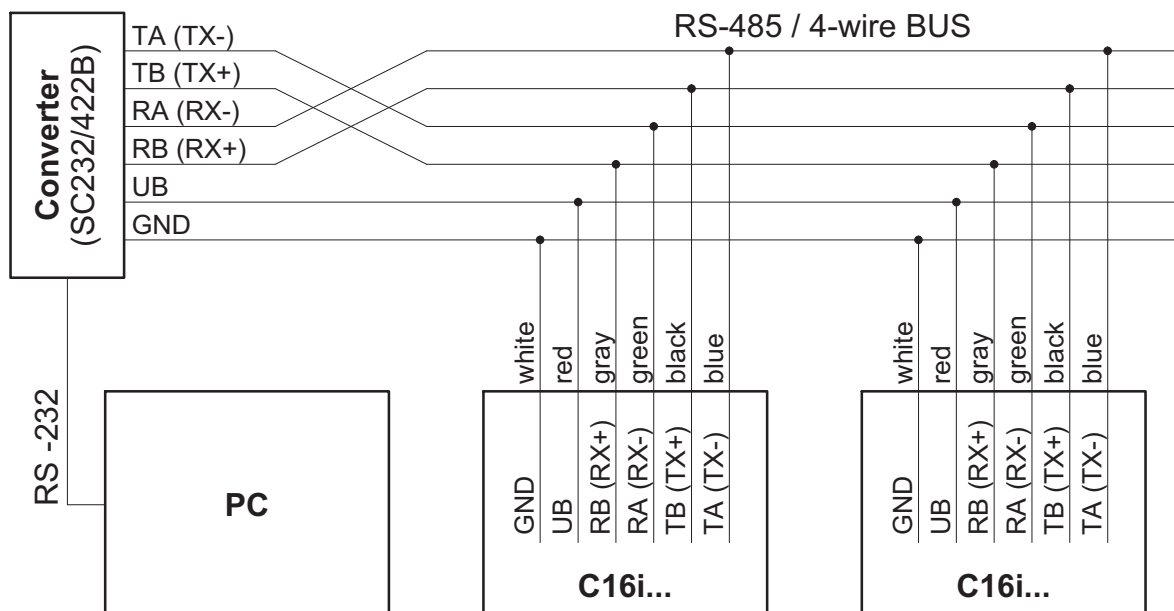
## Digital load cells

### Special features

- Digital signal (RS-485 / 4-wire)
- Nominal (rated) loads: 20 t ... 60 t
- Self-restoring function
- Simple installation
- Rust-resistant materials, laser-welded, IP68/IP69K
- Verifiable up to 4000 divisions, test report as per OIML R60
- Legal for trade up to 10 000 d (NTEP Class III LM)
- Meets EMC requirements in accordance with EN 45 501 and EN 55 011
- Integrated overvoltage protection



### Cable assignment



# Specifications C16i C3

Type	C16i C3				
Nominal (rated) load ( $E_{max}$ )		20 t	30 t	40 t	60 t
Accuracy class per OIML R60		C3 (0.0180 %)			
Number of load cell verification intervals ( $n_{LC}$ )		3000 (10 000 NTEP III LM)			
Minimum load cell verification interval ( $v_{min}$ )	% of $E_{max}$	0.0100 (0.006 NTEP III LM)			0.0083 (0.006 NTEP III LM)
Minimum load cell verification interval ( $e_{min}$ ) per EN 45 501 [... LC = max. number of load cells]	kg	5 [6 LC] 10 [10 LC]	10 [10 LC]	10 [6 LC] 20 [10 LC]	10 [4 LC] 20 [10 LC]
Nominal (rated) sensitivity ( $C_n$ )	digit	1 000 000			
Sensitivity tolerance	%	±0.03			
Temperature coefficient of sensitivity ( $TK_C$ ) <sup>1)</sup>	% of $C_n$ / 10 K	±0.0080 <sup>1)</sup>			
Temperature coefficient of zero signal ( $TK_0$ )		±0.0140		±0.0116	
Relative reversibility error ( $d_{hy}$ ) <sup>1)</sup>	% of $C_n$	±0.0170 <sup>1)</sup>			
Non-linearity ( $d_{lin}$ ) <sup>1)</sup>		±0.0180 <sup>1)</sup>			
Creep upon loading ( $d_{cr}$ ) over 30 min.		±0.0167			
Minimum dead load output return (DR), 30 min.		±0.0167 (±0.0150 NTEP III LM)			
Reference excitation voltage ( $U_{ref}$ )	V (DC)	12			
Nominal (rated) supply voltage range ( $B_U$ )		8.5 ... 15 <sup>2)</sup>			
Rated current consumption	mA	50 <sup>2)</sup>			
Resolution	Bits	20 (at 1 Hz)			
Data rate	1 / sec	200   100   50   25   12   6   3   2   1			
Filter mode 0	Hz	8 ... 0.05 (low-pass)			
Filter mode 1		8 ... 3 (low-pass)			
Asynchronous interface		RS-485 / 4-wire (cable length up to 500 m)			
Baudrate	baud	1200 ... 115200			
Bus nodes		max. 32			
Nominal ambient temperature range ( $B_T$ )	°C	-10 ... +40			
Operating temperature range ( $B_{tu}$ )		-20 ... +70			
Storage temperature range ( $B_{tl}$ )		-50 ... +85			
Limit load ( $E_L$ )	% of $E_{max}$	150			
Breaking load ( $E_d$ )		> 350			
Relative perm. vibrational stress ( $F_{srel}$ ) (oscillation width as per DIN 50100)		70			
Nominal (rated) load ( $E_{max}$ )		20 t	30 t	40 t	60 t
Nominal (rated) displacement at $E_{max}$ ( $s_{nom}$ ), approx.	mm	0.65	0.75	0.85	1.22
Weight (G) with cable, approx.	kg	2.2	2.4	3.0	3.8
Degree of protection per EN60529 (IEC529)		IP68 (test conditions 1 m water column/100 h) IP69K (water at high pressure, steam cleaner)			
Material		Stainless steel Stainless steel Viton Thermoplastic elastomer			
Measuring body + housing					
Cable entry					
Seal					
Cable sheath					

<sup>1)</sup> The values for non-linearity ( $d_{lin}$ ), relative reversibility error ( $d_{hy}$ ) and temperature coefficient of sensitivity ( $TC_S$ ) are recommended values. The sum of these values is within the cumulative error limit for  $p_{LC} = 0.8$  according to OIML R60.

<sup>2)</sup> Refer to table for power supply in the mounting instructions!

## Specifications C16i C4

Type	C16i C4			
Nominal (rated) load ( $E_{max}$ )		30 t	40 t	60 t
Accuracy class per OIML R60		C4		
Number of load cell verification intervals ( $n_{LC}$ )		4000		
Minimum load cell verification interval ( $v_{min}$ )	% of $E_{max}$	0.0100		0.0083
Minimum load cell verification interval ( $e_{min}$ ) per EN 45 501 [... LC = max. number of load cells]	kg	10 [10 LC]	10 [6 LC] 20 [10 LC]	10 [4 LC] 20 [10 LC]
Nominal (rated) sensitivity ( $C_n$ )	digit	1 000 000		
Sensitivity tolerance	%	±0.03		
Temperature coefficient of sensitivity ( $TK_C$ ) <sup>1)</sup>	% of $C_n$ / 10 K	±0.0070 <sup>1)</sup>		
Temperature coefficient of zero signal ( $TK_0$ )		±0.0140	±0.0116	
Relative reversibility error ( $d_{hy}$ ) <sup>1)</sup>	% of $C_n$	±0.0140		
Non-linearity ( $d_{lin}$ ) <sup>1)</sup>		±0.0120		
Creep upon loading ( $d_{cr}$ ) over 30 min.		±0.0125		
Minimum dead load output return (DR), 30 min.		±0.0125		
Reference excitation voltage ( $U_{ref}$ )	V (DC)	12		
Nominal (rated) supply voltage range ( $B_U$ )		8.5 ... 15 <sup>2)</sup>		
Rated current consumption	mA	50 <sup>2)</sup>		
Resolution	Bits	20 (at 1 Hz)		
Data rate	1 / sec	200   100   50   25   12   6   3   2   1		
Filter mode 0	Hz	8 ... 0.05 (low-pass)		
Filter mode 1		8 ... 3 (low-pass)		
Asynchronous interface		RS-485 / 4-wire (cable length up to 500 m)		
Baudrate	baud	1200 ... 115200		
Bus nodes		max. 32		
Nominal ambient temperature range ( $B_T$ )	°C	-10 ... +40		
Operating temperature range ( $B_{tu}$ )		-20 ... +70		
Storage temperature range ( $B_{tl}$ )		-50 ... +85		
Limit load ( $E_L$ )	% of $E_{max}$	150		
Breaking load ( $E_d$ )		> 350		
Relative perm. vibrational stress ( $F_{srel}$ ) (oscillation width as per DIN 50100)		70		
Nominal (rated) load ( $E_{max}$ )		30 t	40 t	60 t
Nominal (rated) displacement at $E_{max}$ ( $s_{nom}$ ), approx.	mm	0.75	0.85	1.22
Weight (G) with cable, approx.	kg	2.4	3.0	3.8
Degree of protection per EN60529 (IEC529)		IP68 (test conditions 1 m water column/100 h) IP69K (water at high pressure, steam cleaner)		
Material Measuring body + housing Cable entry Seal Cable sheath		Stainless steel Stainless steel Viton Thermoplastic elastomer		

<sup>1)</sup> The values for non-linearity ( $d_{lin}$ ), relative reversibility error ( $d_{hy}$ ) and temperature coefficient of sensitivity ( $TC_S$ ) are recommended values. The sum of these values is within the cumulative error limit for  $p_{LC} = 0.8$  according to OIML R60.

<sup>2)</sup> Refer to table for power supply in the mounting instructions!

### Options for C16i...

- Cable length 20 m ( $E_{max} = 20 \text{ t} + 30 \text{ t}$ )
- Cable length 40 m ( $E_{max} = 20 \text{ t} \dots 60 \text{ t}$ )
- Cable with metal mesh, 20 m ( $E_{max} = 20 \text{ t} \dots 60 \text{ t}$ )

**Dimensions and mounting parts** (in mm; 1 mm = 0.03937 inches)

**Built-in variant 1:**  
C16 ... + C16/ZOU44A (max. load per load cell = 40 t)

Fastening bolts shown rotated by 90°

**View from above**

**Built-in variant 2:**  
C16... + EPO3/50 t + C16/EPU44A

1 C16/ZOU44A  
2 EPO3/50 t  
3 C16/EPU44A  
4 Cable length (standard):  
 20 t + 30 t = 12 m;  
 40 t + 60 t = 20 m  
5 Dowel pin Ø10 x 30 (rotation stop),  
 Sealing sleeve and hose clamp  
 included in load cell scope of supply

Ø 5,4 mm Standard  
 Ø 6,4 mm With option metal mesh (20R)

Built-in variant 1	E <sub>max</sub> C16...	Thrust pieces top + bottom (1 set = 2 pieces)		A	B	C	R ball	a <sub>max</sub> <sup>2)</sup>	S <sub>max</sub> <sup>3)</sup>	F <sub>R</sub> <sup>4)</sup> (% of applied load)	
		C16/ZOU44A <sup>1)</sup>								at S <sub>max</sub>	at S = 1 mm
	20 t			200	150	123	130	5°	13	6.4	0.49
	30 t			200	150	123	160	5°	13	9.9	0.76
	40 t			200	150	123	180	5°	13	12.2	0.94
	60 t			260	210	157	220	3°	11	5.7	0.52

Built-in variant 2	E <sub>max</sub> C16...	Thrust pieces		A	B	C	R ball	a <sub>max</sub> <sup>2)</sup>	S <sub>max</sub> <sup>3)</sup>	F <sub>R</sub> <sup>4)</sup> (% of applied load)	
		top	bottom							at S <sub>max</sub>	at S = 1 mm
	20 t	EPO3/50 t	C16/EPU44A	229	150	123	130	5°	13	6.4	0.49
	30 t			229	150	123	160	5°	13	9.9	0.76
	40 t			229	150	123	180	5°	13	12.2	0.94
	60 t			289	210	157	220	3°	11	5.7	0.52

1) Max. loading: 40 t  
2) Max. perm. misalignment

3) Max. permissible lateral displacement of load application  
4) Restoring force

## Accessories (to be ordered separately)

### Thrust pieces

#### Built-in variant 1:

- **C16/ZOU44A** Thrust pieces (stainless) for top and bottom (1 set = 2 pieces), can be used with C16.../≤60 t up to a **max. load per load cell of 40 t**, incl. 3 eccentric discs

#### Built-in variant 2:

- **EPO3/50t** Thrust piece for top, incl. clamping ring
- **C16/EPU44A** Thrust piece for bottom, incl. 3 eccentric discs

### Evaluation electronics

- **DIS2116** (see separate data sheet)

### Serial converter

- **Interface converter SC232/422B** (see separate data sheet)



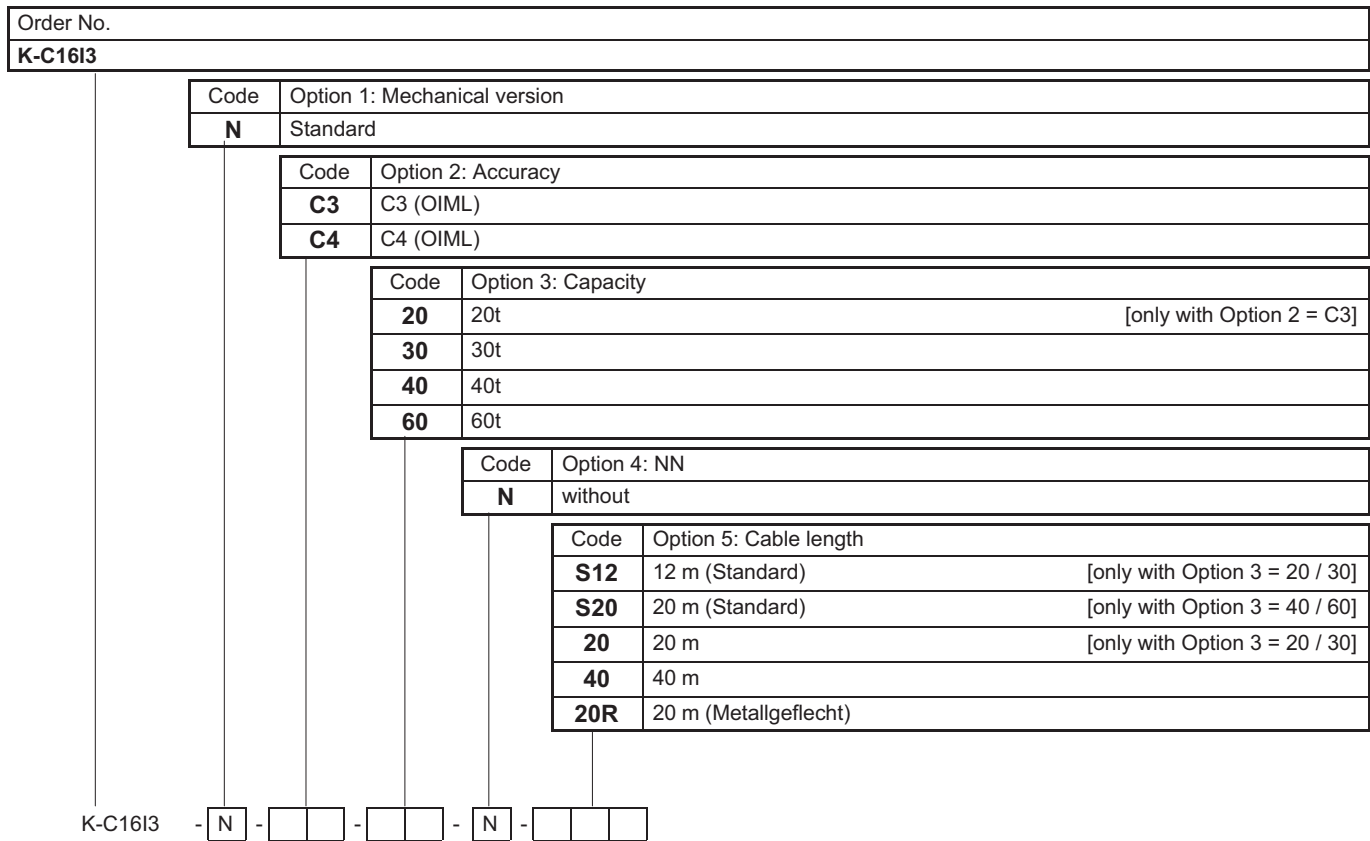
1)

- Conversion of RS-232 into 4-wire RS-422/485 or into 2-wire RS-485 (switchable)
- Electrical isolation
- High EMC security (metal housing)
- Operating voltage range 8 ... 30 V DC
- Incl. power supply unit <sup>1)</sup> and PC connection cable

<sup>1)</sup> **Note:** The power supply unit delivers 15 V DC / 530 mA and is therefore suitable for supplying voltage for up to 8x C16i.

**Please refer to the table for power supply in the load cell mounting instructions!**

# C16i3 Load cells, optional versions



Subject to modifications.  
 All product descriptions are for general information only. They are not to be understood as a guarantee of quality or durability.

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