



**DELLNER
BUBENZER**



MONITORING SYSTEM CMB-3 FOR SB AND SF BRAKES

BRAKING UNLIMITED

MONITORING SYSTEM CMB-3 FOR SB AND SF BRAKES

NEW FEATURES

- Profibus or Profinet system possible
- Automatic power supply range switch 110-240 V AC
- One CMB-3 box can handle up to:
 - 2 brakes SB28 / SB23 / SB16
 - 2 brakes SF10...SF40
 - 1 dual caliper brake SF50
- Cable for sensors have a plug M12 on each end for easy troubleshooting
- Same type of box for SF and SB brake types

FEATURES

- Industrial display with 4 rows of 20 characters for indication of measurement data and error messages
- High ambient temperature range -20°C.....+70°C
- Protection class IP65
- Internal keypad for parameter change.
- Up to 20 m cable length from sensor to electronic box (Option).
- Brake operation cycle counter (up to 100 million Cycles)
- One common error relay contact
- Profibus / Profinet:
All scaled measures signals and error bits are transferred by bus system to the main control PLC. No expensive analogue inputs are required in control PLC.

OPTIONS

- Stainless steel electronic box IP66
- Sunshine protection cover for outdoor use

After many years of successful operation in the market, the brake condition monitoring systems CMB-2 have been improved.

The new system CMB-3 can handle double amount of sensors.



1. Parts of CMB-3 system for SB brakes

1.1 Pad wear sensors:

If the minimum brake pad thickness is reached, the sensors (A) send a signal to the CMB-3.

1.2 Temperature sensors:

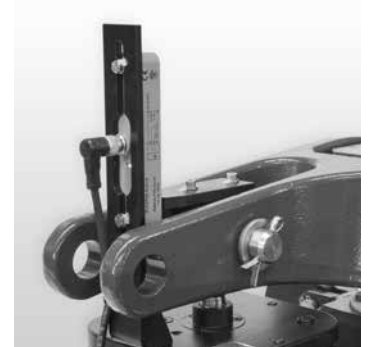
A pair of Pt100 sensors (B) measures the temperature of the each brake pad. If the temperature is too high or if the temperature is unequal from left to right side the unit generates a signal that is displayed in the panel. This error signal is given also on the Profibus / Profinet connection.

1.3 Stroke sensor:

The analogue sensor measures the position of the thruster piston rod. The reserve stroke is measured and checked that it is at the perfect position of 10 mm when the brake is correctly closed. The maximum measurement range is 100 mm.

1.4 Force sensor:

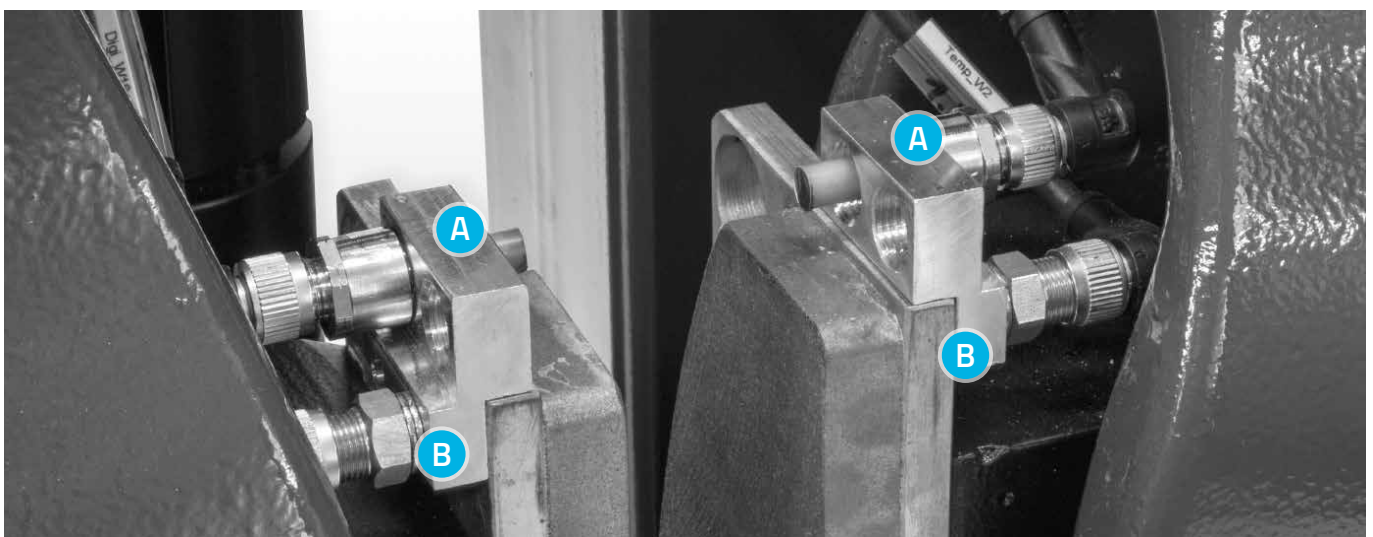
One load cell pin, located in the top of one brake lever, measures the contact force in the closed condition of the brake. This signal is used to detect an incorrect setting or broken spring.



Stroke sensor

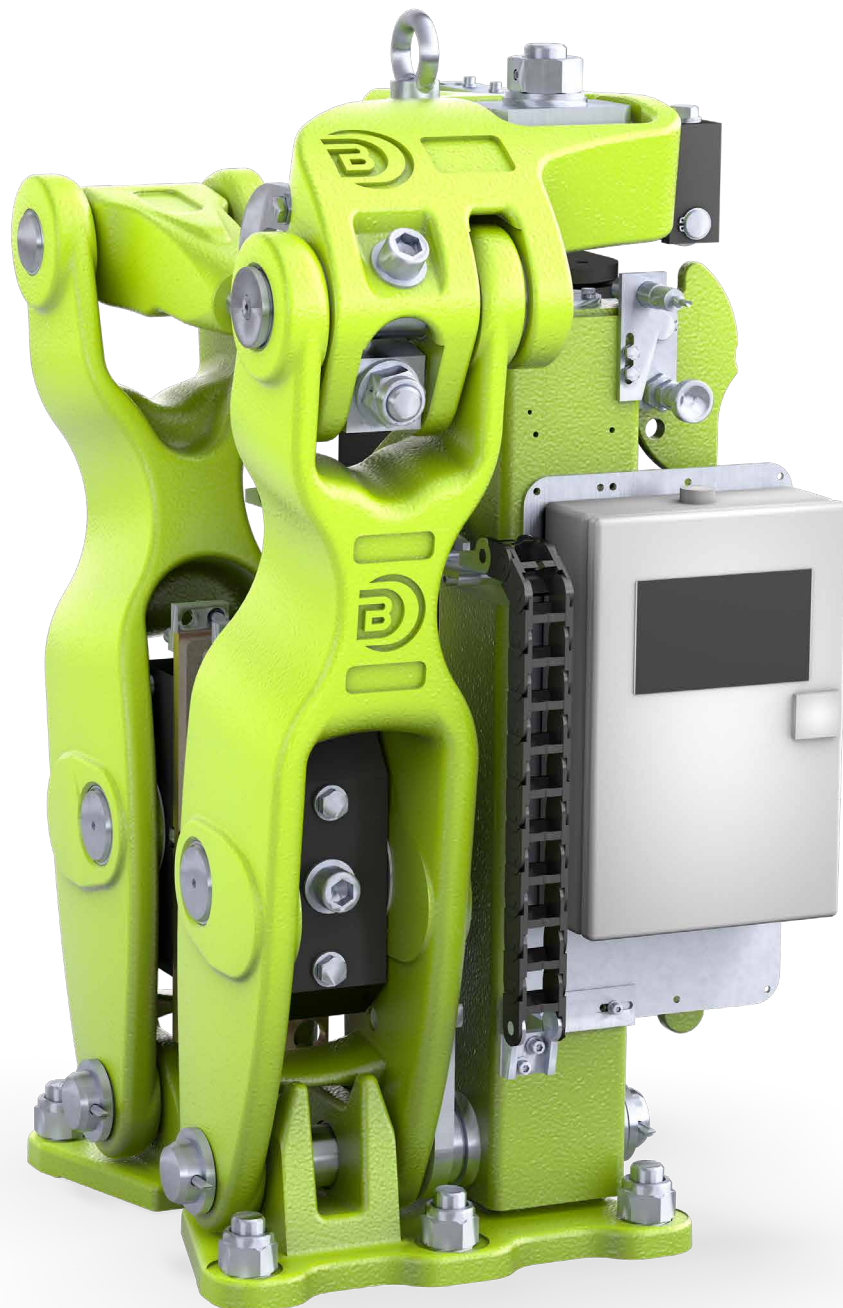


Force sensor



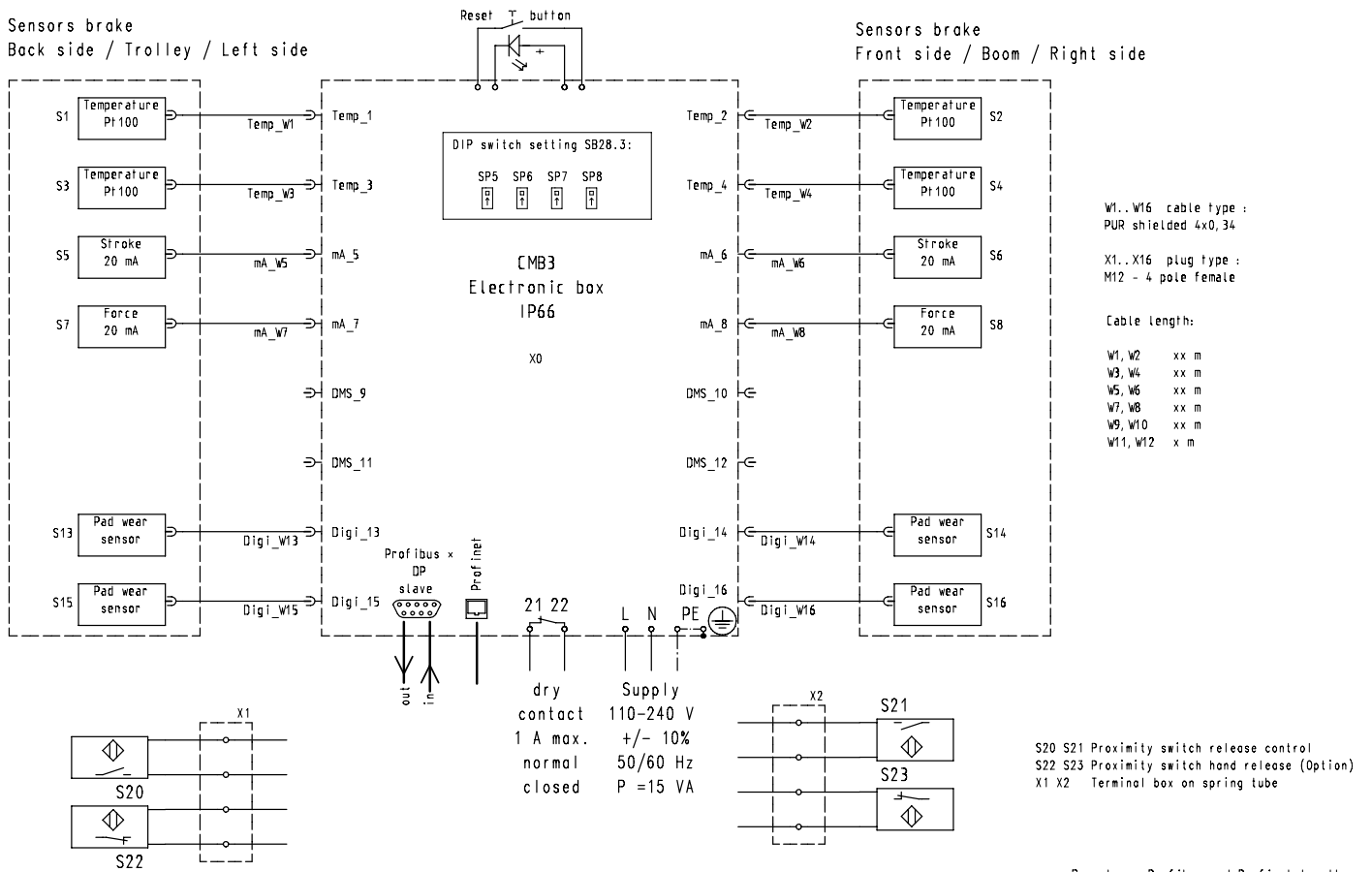
Pad wear and temperature sensors

Brake type SB28.3 with BUEL thruster and CMB-3 monitoring system.



Typical position of the CMB-3 unit.
(Other options available)

1.5 Electrical diagram CMB-3 for SB brakes



2. Parts of CMB-3 system for SF brakes



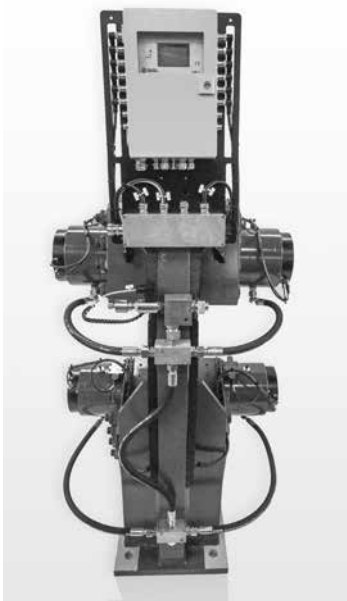
Temperature sensor



Stroke sensor (right)



Force sensor



Brake type: Two SF24 on console with one CMB3.

2.1 Temperature sensors:

A pair of Pt100 sensors measures the temperature of the each brake pad. If the temperature is too high or if the temperature is unequal from left to right side the unit generates a signal that is displayed in the panel. This error signal is given also on the Profibus / Profinet connection.

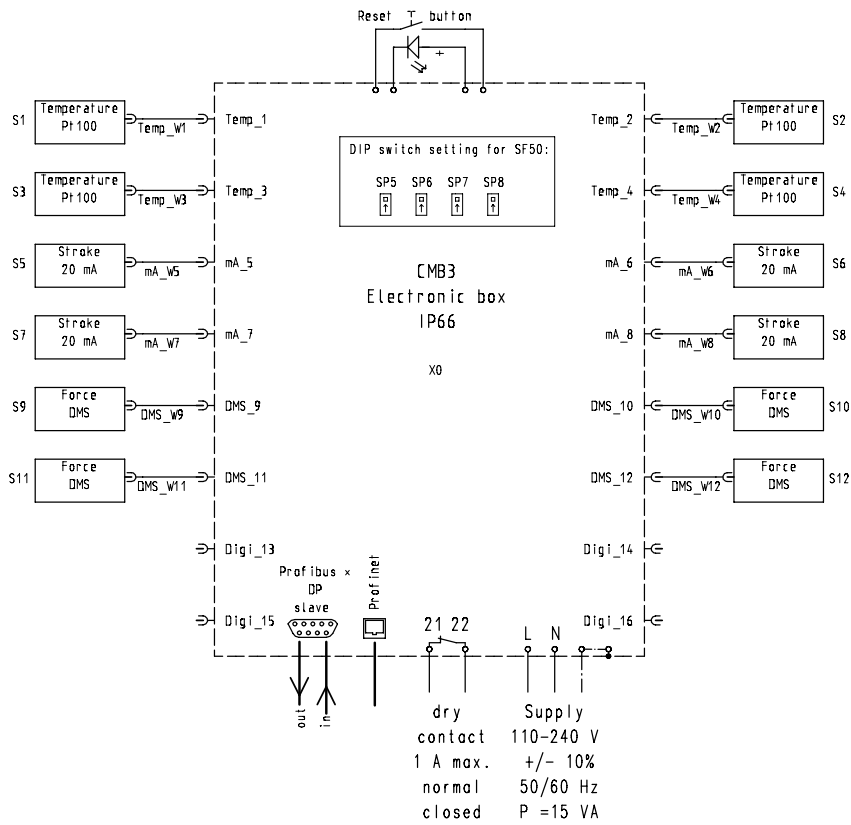
2.2 Stroke sensor:

Analogue sensors measure the stroke of each cylinder. If the stroke exceeds the maximum of 2.5 mm, a warning signal and an error message will be generated. The maximum measurement range is 3 mm.

2.3 Force sensor:

Analogue strain gauge sensors, located in the spring housing, measures the contact force of each cylinder on the closed (set) brake. If the force drops below the rated force of the brake, a warning signal and error message will be generated.

2.4 Electrical diagram CMB-3 for SF brakes

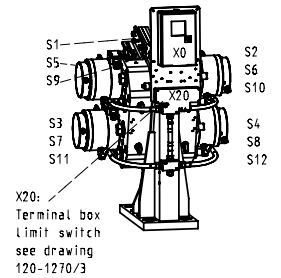


W1..W16 cable type :
 PUR shielded 4x0,34

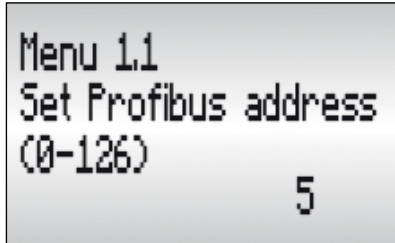
X1..X16 plug type :
 M12 - 4 pole female

Cable Length:

W1, W2 1,2 m
 W3, W4 1,5 m
 W5, W6 1,2 m
 W7, W8 1,5 m
 W9, W10 1,0 m
 W11, W12 1,3 m



x Do not use Profibus and Profinet together



Profibus



Keypad

3. Control Elements

3.1 Display:

All measured analogue signals, digital signals and error messages are shown on the display in English language. Other languages are available on request. The display is readable under direct sunshine and has a LED backlight for use in a dark environment, such as steel mills.

3.2 Keypad:

With the internal keypad, the user can adjust parameters such as changing the temperature display from Celsius (°C) to Fahrenheit (°F) or setting of the Profibus address.

3.3 Reset Function

The LED pushbutton on top of the electronic box indicates a wrong brake adjustment by a flashing red light. After the problem on the brake is solved, the status of the CMB-3 can be reset to normal operation by pushing the button.

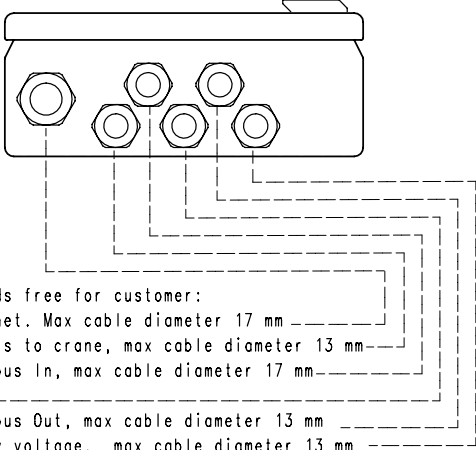
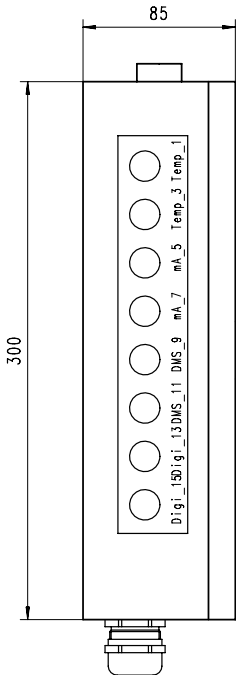
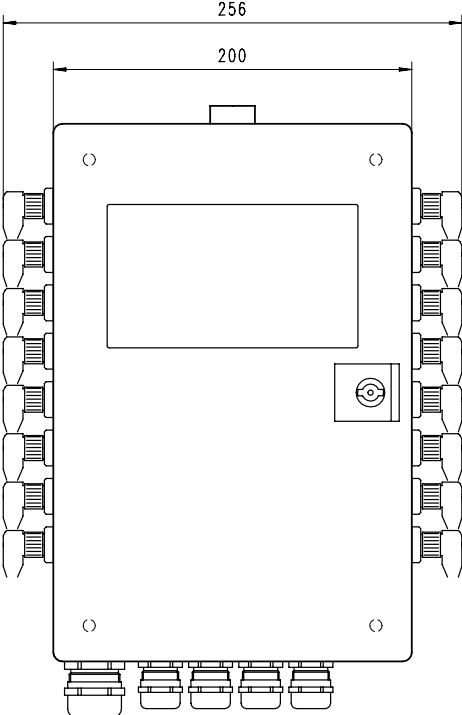
3.4 Profibus or Profinet

All measured data (scaled) and warning signals are transferred to the main control PLC. No expensive analogue inputs (6 pc per brake) are required in the main PLC. The address of the DP slave can be easily set using the internal keypad. More than 100 brakes can be connected to one bus master on the main PLC.

3.5 Data Interface Table

Signals from CMB3 brake to customer PLC over Profibus or Profinet						Signals from customer PLC to CMB3 over Profibus or Profinet			
Data type	Offset (Byte):	SB-brake on Left side box SF-brake top side	Offset (Byte):	SB-brake on right side box SF-brake bottom side	Metric system Example	Unit	Data type	Offset (Byte):	
INT	0	Brake pad temperature (left side)	32	Brake pad temperature (left side)	-50.... + 600	°C	Bool	0.0	Reset 1 = Reset
INT	2	Brake pad temperature (right side)	34	Brake pad temperature (right side)	-50.... + 600	°C	Bool	0.1	
INT	4	Stroke	36	Stroke	-1,0... + 100,0	mm	Bool	0.2	
INT	6	Stroke (SF only: right side cylinder)	38	Stroke (SF only: right side cylinder)	-1,0... + 100,0	mm	Bool	0.3	
INT	8	Contact force	40	Contact force	-10,0..... + 450,0	KN	Bool	0.4	
INT	10	Contact force (SF only: right side cylinder)	42	Contact force (SF only: right side cylinder)	-10,0..... + 450,0	KN	Bool	0.5	
INT	12		44				Bool	0.6	
INT	14		46				Bool	0.7	
INT	16		48				Bool	1.0	
INT	18		50				Bool	1.1	
INT	20		52				Bool	1.2	
INT	22		54				Bool	1.3	
INT	24		56				Bool	1.4	
DWORD	26	Brake cycle counter	58	Brake cycle counter	0....99999999		Bool	1.5	
Bool	30.0	Heartbeat Bit 1 Hz	62.0	Heartbeat Bit 1 Hz	0....1		INT	1.6	
Bool	30.1	Common Warning Bit	62.1	Common Warning Bit	0....1	0 = warning	INT	1.7	
Bool	30.2	Common Error Bit	62.2	Common Error Bit	0....1	0 = error	INT	2	
Bool	30.3	Temperature warning	62.3	Temperature warning	0....1	0 = warning	INT	4	
Bool	30.4	Temperature error	62.4	Temperature error	0....1	0 = error	INT	6	
Bool	30.5	Contact force warning	62.5	Contact force warning	0....1	0 = warning			
Bool	30.6	Contact force error	62.6	Contact force error	0....1	0 = error			
Bool	30.7	Stroke warning	62.7	Stroke warning	0....1	0 = warning			
Bool	31.0	Stroke error	63.0	Stroke error	0....1	0 = error			
Bool	31.1	Air gap warning	63.1	Air gap warning	0....1	0 = warning			
Bool	31.2	Air gap error	63.2	Air gap error	0....1	0 = error			
Bool	31.3	Pad wear 1 (SB only)	63.3	Pad wear 1 (SB only)	0....1	0 = error			
Bool	31.4	Pad wear 2 (SB only)	63.4	Pad wear 2 (SB only)	0....1	0 = error			
Bool	31.5		63.5		0....1	0 = error			
Bool	31.6		63.6		0....1	0 = error			
Bool	31.7	Release control	63.7	Release control	0....1	1 = brake is open			
		Total 32 Bytes / 16 Words			Total 32 Bytes / 16 Words				
							Total 8 Bytes / 4 Words		

Dimensions CMB-3



- Cable glands free for customer:
- M25: Profinet. Max cable diameter 17 mm
 - M20: Signals to crane, max cable diameter 13 mm
 - M20: Profibus In, max cable diameter 17 mm
 - M20: spare
 - M20: Profibus Out, max cable diameter 13 mm
 - M20: Supply voltage, max cable diameter 13 mm



DELLNER BUBENZER



DELLNER BUBENZER

Germany GmbH

Friedrichshuettenstr. 1

57548 Kirchen-Wehbach

Germany

+49 2741 9488 0

info.de@dellnerbubenzner.com

www.dellnerbubenzner.com