



KC Winch  
Model 40.210 – 11 kW




# Manual

**KC** Denmark A/S

Research Equipment  
Limnology • Oceanography • Hydrobiology

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	<p align="center"><b>Manual for Winch, 11 kW</b></p>	<p align="center"><b>Model no. 40.210</b></p>
	<p> <b>Caution</b> <b>This winch is very dangerous in unskilled hands and serious precautions must be taken to avoid accidents.</b></p> <p><b>The safety cover must always be in the secured position to avoid any contact with the drum and the wire during operation.</b></p> <p><b>KC Denmark A/S is not, and cannot be held, responsible for any damage(s) made to equipment or to operators who ignore safety precautions or because of misuse or wrong operation.</b></p> <p><b>Before operating the winch for the first time, always check the lubricant level for the gear box, see item #9.</b></p>	
	<p><b>Preparation:</b></p>	
<p>1</p>	<p>The winch has 4 additional stands; they must be removed before installing. The winch must be secured on a plain and stable surface before use.</p> <p>Fasten with 4 bolts. To avoid any damage or injury, you must ensure free space for the wire in all positions.</p>	
<p>2</p>	<p>The rack for the brake resistors is placed next to the winch. Secure the connector to the winch. The brake resistor must be placed on a well ventilated place and protected from rain and humidity.</p> <p>The rack must be connected properly, otherwise the winch isn't operational.</p>	

## Operating the winch

Ensure the proper power supply is available.

Standard delivery demands 3 x 400 V AC/50 Hz + ground. Optional 3 x 500 V AC/60 Hz.

- 3 Faulty connection or voltage may damage the winch.

Power supply is connected to the EEC plug and turning the switch clockwise will turn on the power.



**Caution**



- 4 The winch has a total of 3 emergency stops, located at each end of the winch and the last one can be found on the handheld control box. Pushing one of the stops will activate the winch's brake system immediately.



**Caution**

- 5 **Loosen the mechanical emergency break before use by turning anti clockwise until it stops.** Otherwise, you might cause serious damage to the winch.



6	<ol style="list-style-type: none"> <li>1. The main switch is turned clockwise to position 1. See item 3 for location of the switch.</li> <li>2. Press the green "Activate" button.</li> <li>3. The joystick controls the wire direction and the speed of the winch. The more you press the higher speed.</li> </ol>	
7	<p> <b>Caution</b></p> <p>When changing direction of the wire, return the joystick to neutral position. It is very important the drum has stopped before you activate the joystick in the opposite direction.</p> <p>By emergency or in need of a fast stop press the emergency switch and the winch will stop immediately. Two emergency switches are located on the winch, one switch at each end.</p>	

## Meter and speed counter

Standard delivery of the winch does not include a counter. Adding a counter demands a meter wheel, too. A standard counter will count the meter length with a resolution of 10 cm. Optionally it can be replaced by a 2-display counter measuring the length as well as the speed of the wire.

### Power supply:

The counter needs an external power supply of 10 – 24 V AC or DC. Power consumption: Max. 200 mA. Upon request it can be delivered with built-in batteries, power supply or charger.

### Connection for power supply:

Brown and blue wire: 10 – 24 V AC or DC.  
No need for polarity. Yellow/green wire: Earth.  
No needs for connecting to ground.

Before inserting the cable on the meter wheel check out the counting direction of the wheel by manually turning of wheel.

### Connection for meter wheel:

Attach the Subconn connector to the meter wheel.

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### Operation:

Push the green button to start the counter and the night visibility.

When you lower the equipment and it hits the sea level, you can reset the counter to zero by pushing the red button.

### The display:

The display will show the cable length with a resolution of 10 cm. Built-in light for night visibility and for easy read-out even in strong sun light.

### The digits:

The very first digit will show a maximum of 3 bars. The upper and lower bar indicates the counting impulses and at the middle the bar will show the power supply has been connected.

### Heating element:

The counter has an internal heating element to prevent condensate water. (Always connected, regardless of the position of the green button).

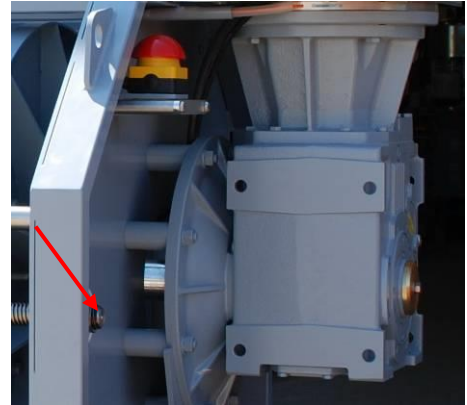
### Interface:

The counter can be equipped with various interfaces for RS-232, RS-485 or for USB. On request, special software can be offered.

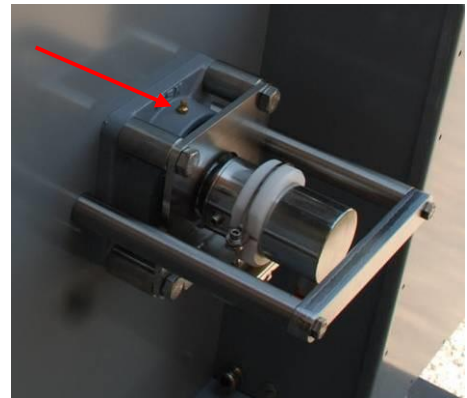


## Maintenance

The ball bearing must be greased at the least every 6 months.



The ball bearing must be greased at the least every 6 months.

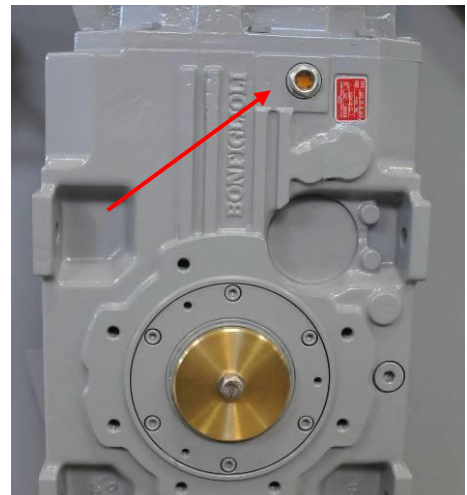


9

For the gearbox the lubricant oil must be checked periodically. Check that the correct level has been reached via the sight glass. Max. 50 % visible through the glass. Top up as necessary. Do not overfill; it will cause excessive heat and potential damage to the gear.

Recommended lubricants or equivalent types:

BP Energol GR-XP 220  
Shell Omala 220



The spindle and the guiding system must be greased as needed.



## Safety information



**Caution**

**Disconnect power supply to avoid any unattended operation causing accident to personnel and winch.**

All maintenance, inspection and repairs must only be done by an expert maintenance technician fully familiar with the attendant hazards.

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Persons charged with working on the winch and the accessories must be trained specially for the purpose with special abilities and experience in this area as well as being equipped with the appropriate tools and individual safety equipment. Failure to meet these requirements constitutes a risk to personal health and safety and economic damages.

When working on the unit in areas which are difficult to access or hazardous, ensure that adequate safety precautions have been taken for the operator and others in compliance with the provisions of law on health and safety at work.

Replace worn component with original spare parts. Use the lubricants (oil and grease) recommended by the manufacturer.

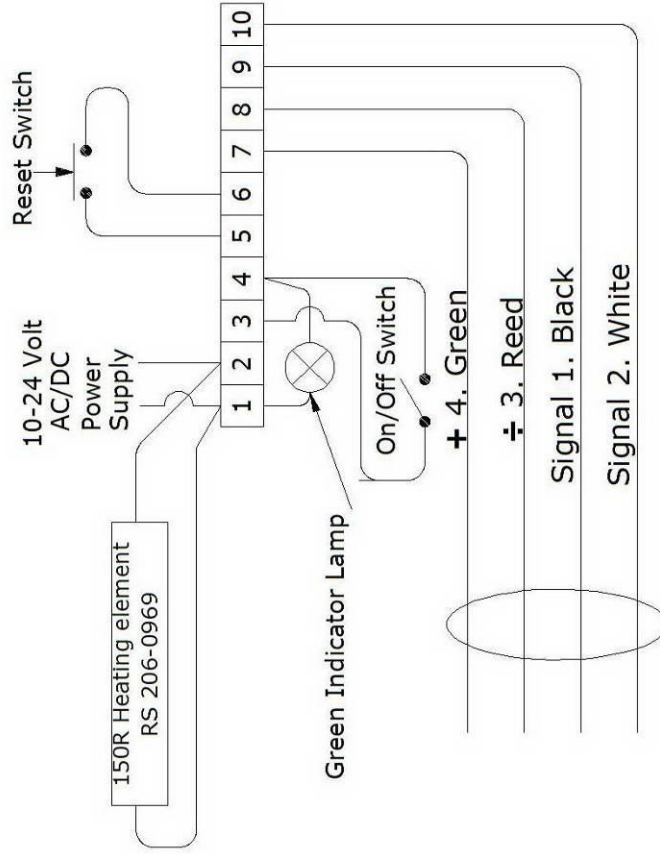
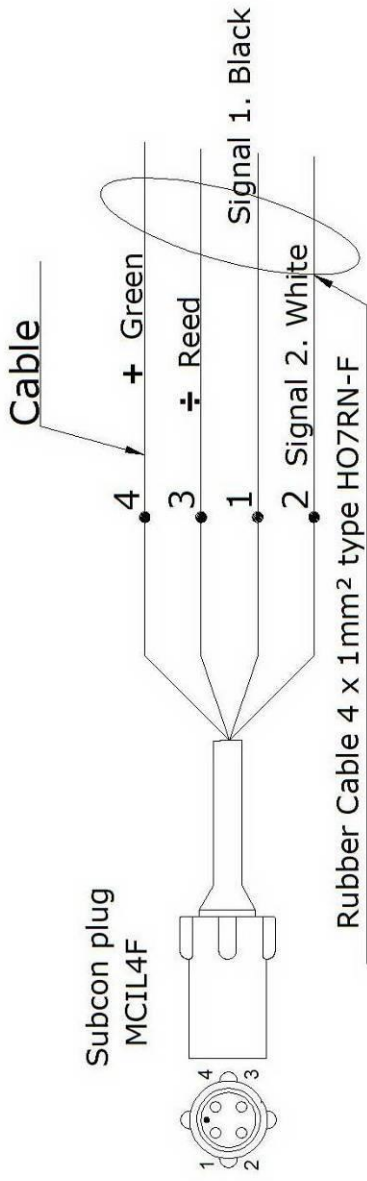


## Technical data for winch 40.210

Item	Details
<b>Capacity:</b>	1200 m of 10,52 mm conductor cable
<b>Electrical:</b>	
Supply:	3 x 400 V AC/50 Hz. Optional: 3 x 500 V AC/60 Hz
	Rev. 1440/min
Speed regulation:	Regulated by a frequency converter, ABB, 11 kW.
Control box:	AISI 304 stainless steel, 3 mm Enclosure rating: IP 65
Control box:	AISI 304 stainless steel, Enclosure rating: IP 65
Emergency brakes: Total qty: 3 pcs:	1 pc at each end of the winch + 1 brake on the control box,
<b>Motor</b>	
Main motor:	Bonfiglioli 11 kW, with electro magnetic brake, 3 x 400 V AC/50 Hz. Rev. 1440/min.
Gear motor for cable guiding system:	Bonfiglioli, 24 V DC/200 W. Rev. 1500/min. Worm gear, Bonfiglioli MVF 49, Ratio 18:1. Max. 60 Nm
<b>Mechanical:</b>	
Material:	AISI 304 Stainless steel
Main rack:	Square tube, 100 x 100 x 4 mm, AISI 304 stainless steel.
Side plates:	Steel plate, 8 mm, AISI 304 stainless steel. Reinforced with tubes, AISI 304 stainless steel, 60 x 40 x 3 mm.
Drum and disc brake:	8 mm AISI 304 stainless steel
Finish:	The drum and the disc brake: Electro polish Main rack: Painting RAL 5010.
Drum:	Outer diameter: 750 mm Inner diameter: 580 mm. Width: 1200 mm
Drum rev.:	0 – 41 rev./min. Adjustable
Drum capacity:	1200 m of ø10,52 mm conductor wire.
Wire speed:	1 <sup>st</sup> layer: Approx. max. 1,25 m/sec.
Angle-gearbox	Bonfiglioli, type A603 - 2800 Nm Ratio 34,3:1
Tractive force:	1 <sup>st</sup> layer: (Empty drum): 2180 Nm 750 mm: (Full drum)
Brake system 1:	DC brake motor
Brake system 2:	Disc brake (operated by hand), made of 8 mm AISI 316 stainless steel.
Ball bearings:	AISI 304 stainless steel flange ball bearings, 3 pcs Ø30 mm.
Protection shield:	Transparent Polycarbonate, 6 mm
Weight, standard without wire, approx.:	1000 kg

### Technical data for slip ring device

Circuit resistance:	<60 mohm
Insulation resistance at 500 VDC – 50% RH	>1000 Mohm
Dynamic resistance (noise):	<15 mohm
Current:	Max. 5 A each conductor.
Voltage:	500 V AC – 750 V DC
Speed (bidirectional)	1000 rpm. Max.
Temperature range:	-30 to +85°C.
Cross talk:	<40 db at 2 MHz
Enclosure rating: (The slip ring itself)	IP 67
Rotation system:	Ball bearing supported
Slip ring life:	30.000 hours at 50 rpm. Depending on type and cycle of use).



- Colour code for  
MCIL4F cable
1. Black wire signal 1
  2. White wire signal 2
  3. Reed wire ÷ 3
  4. Green wire + 4

5 or 10 Meter Subconn Connector Cable MCIL4F  
from MacArtney Esbjerg  
+45 76 13 20 00

Dato 5-12-2006

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KC

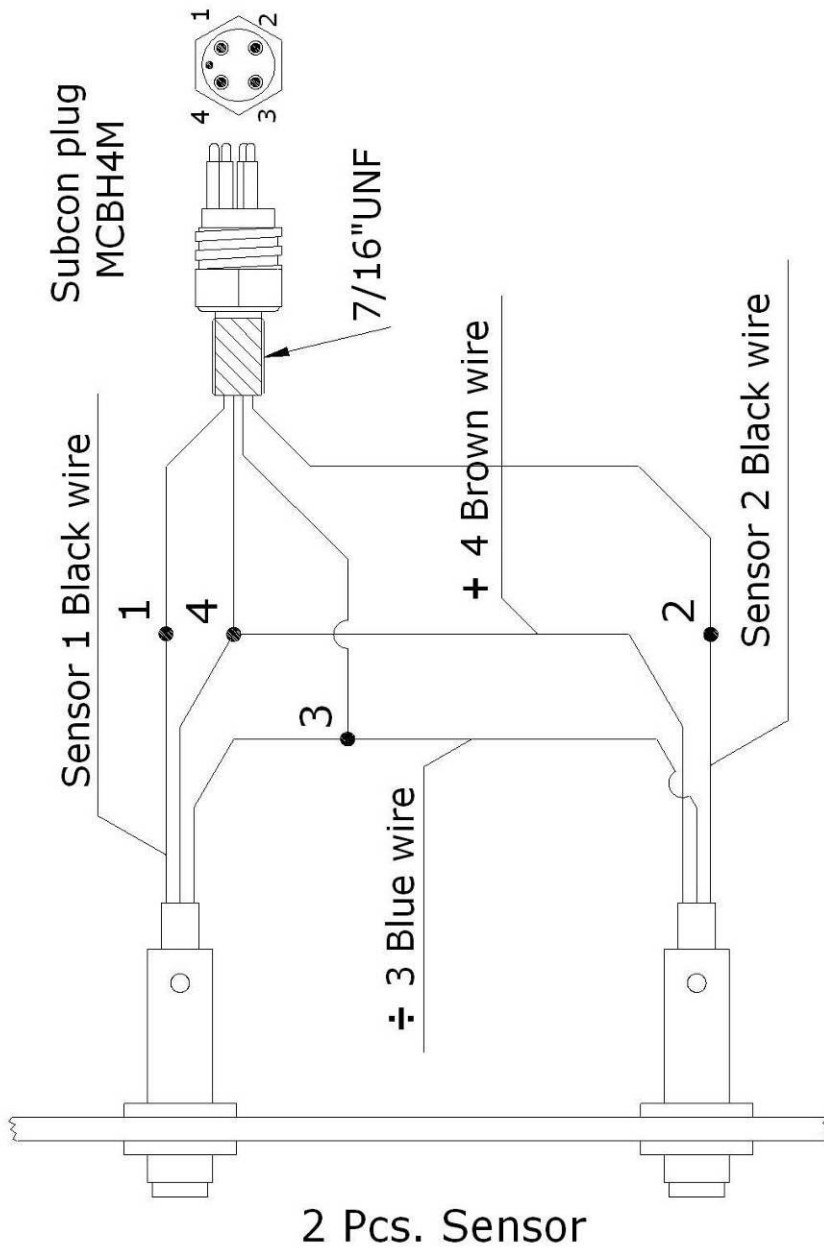
Connection diagram for  
Meter Counter and Wheel

30.363





Wheel



Subconn Connector MCBH4M  
from MacArtney Esbjerg  
+45 76 13 20 00

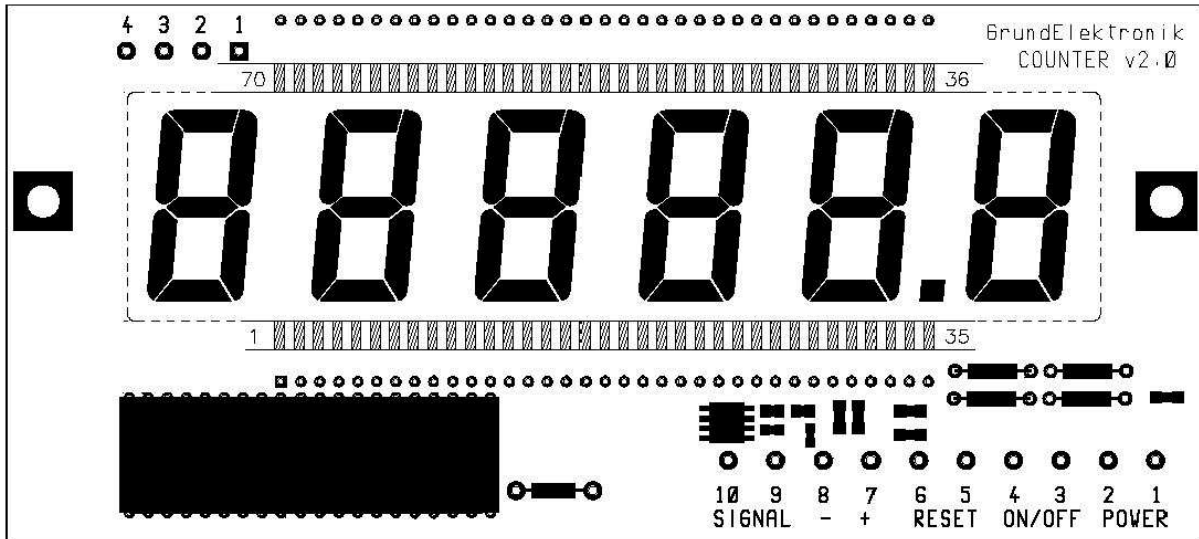
Dato	5-12-2006	KC	
KC Denmark - Research Equipment Lignings- og Registrationsbureau Tlf. +45 86 82 83 47 / Fax. +45 86 82 83 50			
Connection diagram for Meter Counter and Wheel			30.368

## Meter Counter Version 2.2

Electronic are supplied from a rectified DC or AC power supply 10..50V 4W

Inductive sensors are supplied after the rectifier 10..30V

Circuit board dimensions 72mm x160mm



10 pole terminals:

1,2 Power DC or AC supply

3,4 Switch to power ON counter

5,6 Push switch to reset the counter

7,8,9,10 Connection to inductive sensor 1+2

4 pole terminals are for Communication with Counter via RS232, RS485 or USB

	RS232	RS485	USB
1	Not connected	Not connected	V+
2	TX	A	D-
3	RX	B	D+
4	GND	GND	V-

Communication = 9600 BAUD, parity = none, data = 8, stop = 1 Modbus RTU

01 03 00 00 00 02 C4 0B

read holding reg - read count

01 03 04 CC CC CC 00 crc

reply read count = CCCCCC = count BCD

01 10 00 00 00 02 04 CC CC CC 00 crc

preset holding reg - set counter

01 10 00 03 00 01 02 00 01 67 90

preset holding reg - reset counter

Examples:

01 03 00 00 00 02 C4 0B

01 03 04 01 23 45 00 38 95

01 10 00 00 00 02 04 01 23 45 00 31 09

01 10 00 00 00 02 41 C8

01 10 00 03 00 01 02 00 00 A6 63

01 10 00 03 00 01 F1 C9

read holding reg - read count

response on read count = 1234,5 m

set counter = 1234,5 m

response on set counter

reset counter = 0,0 m

response on reset counter

Answer time is about 15ms

Left digit is used for status information, if digit is blank:

A = Indicate signal on input 1

D = Indicate signal on input 2

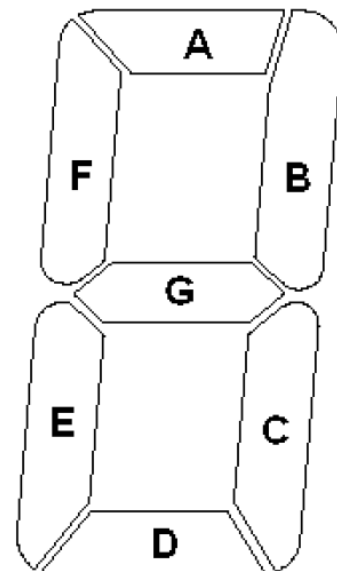
G = Indicate signal on reset input

F = Toggle Read Counter on communication

E = Toggle Reset Counter on communication

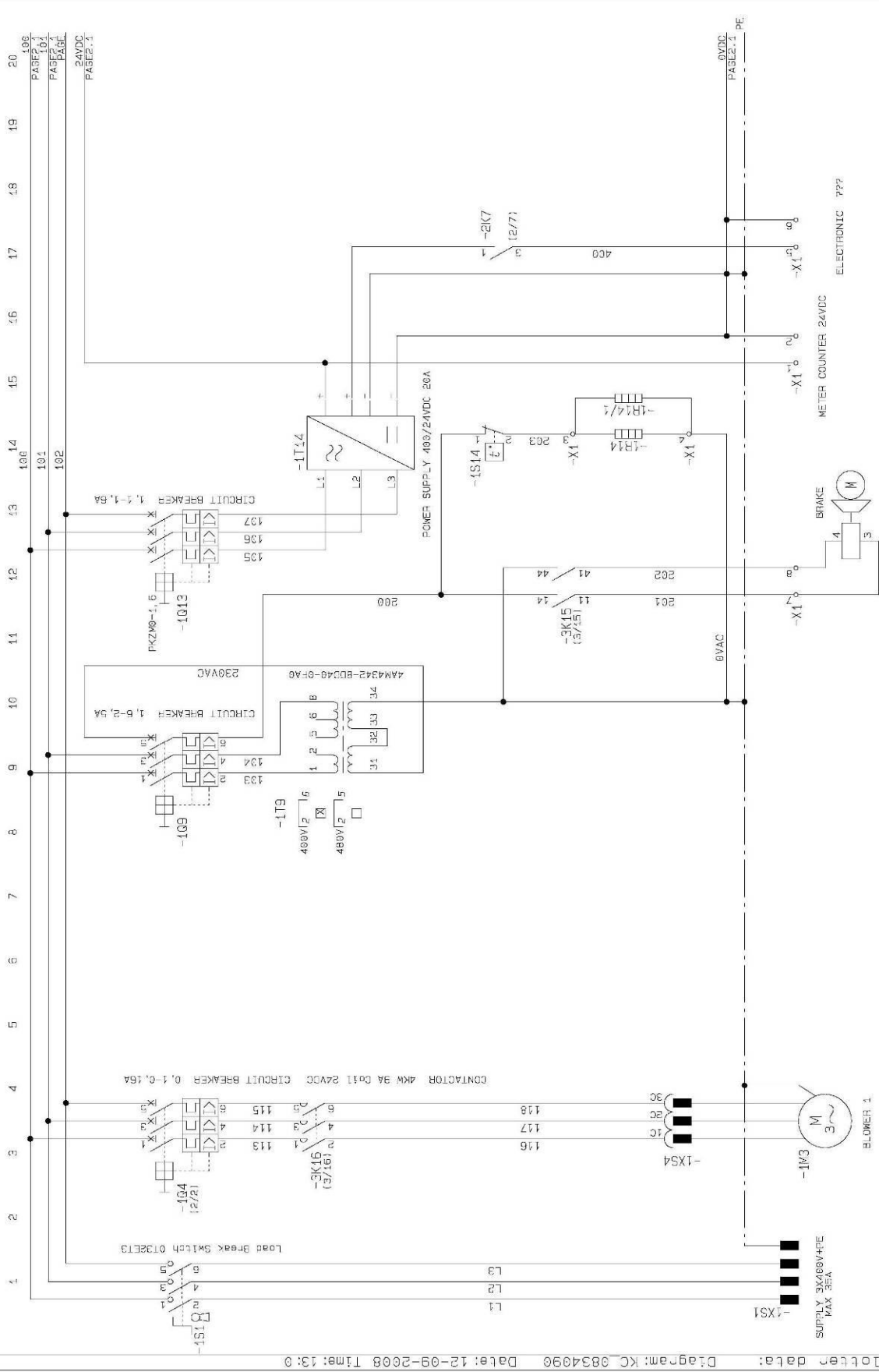
B = Toggle at CRC error on communication

C = Toggle Set Counter on communication





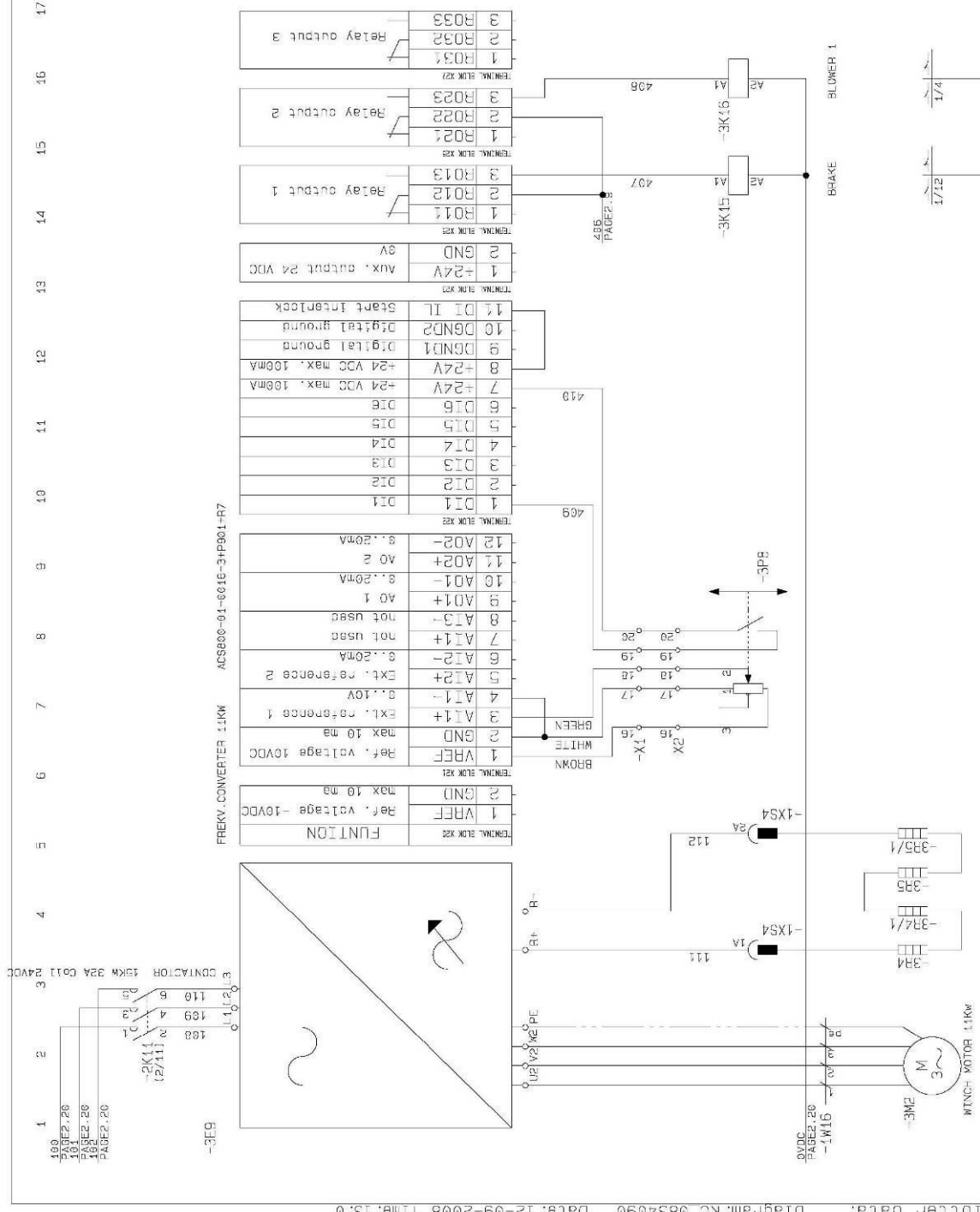
MAIN SUPPLY



Plotter data: Diagram: KC\_0834090 Date: 12-09-2008 Time: 13:0

<p>Pløbrøvej 15 DK-5600 Sillebyvej Tlf. 85 82 74 41 Fax 85 82 74 05</p>	<p>Client: KC Denmark Research Equipment Project: Winch nr. 40.210-1-9-06 EIVA Prep: PKP</p>	<p>Rev: A</p>	<p>Dwg no: 08 34 090 Func.: Plac.: +C1 Date: 08.09.2008 Page: 1</p>
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Client: KC Denmark Research Equipment  
 Project: winch nr. 40.210-1-9-05 EIVA  
 Prep: PKP

Plotter data: Diagram: KC 0834090 Date: 12-09-2008 Time: 13:0

Rev: A

Dwg no: 08 34 090  
 FUNC.: Plac.: +C1  
 Date: 08.09.2008 Page: 3

**Spare parts for motor, gear and external components  
11 kW Winch 40.210.**

<b>Qty.</b>	<b>Order no.</b>	<b>Beskrivelse - Dansk</b>	<b>Description - English</b>
1	A603 UH60-34.3-P160	Vinkeltandhjulsgear, byggeform B3, hulaksel, Ø60 mm	Bonfiglioli Angle gear 160/ B5 Standard: B3, Hollow shaft Ø60mm
1	2969600083	Bonfiglioli Flange Type C For Gear A60 + F60	Bonfiglioli Flange Type C For Gear A60 + F60
1	BN160M - 4 FD07 B5	Bonfiglioli motor, 11 kW, 1440 rev/min. B5 3 X 400 V 50 HZ, RUS	Bonfiglioli motor, 11 kW, 1440 rev/min. B5 3 X 400 V 50 HZ, RUS
1	UCF 212 D1	Firkantet Flangeleje 4-Huls	Square flange ball bearing with 4 holes
1	PSF40CR	Flangeleje. RHP Rustfri stål. 117,5 X 117,5 mm	Flange ball bearing. RHP Stainless steel. 117,5 X 117,5 mm
1	BC240-24-1500-200 63	Bonfiglioli. DC-Motor B14	Bonfiglioli. DC-Motor B14
1	MVF 49/P 18:1 63/B14	Bonfiglioli snekkegear	Bonfiglioli worm gear
1	3965049271	Bonfiglioli Flange F/VF49	Bonfiglioli Flange F/VF49
1	ACS800-01-0020-3+P90	ABB Frekvensomformer, 11,0/15,0 kW, IP21. 400 V, + P901 + R704	ABB frequency converter. 11,0/ 15,0KW, IP21. 400 V, + P901 + R704
1	25973504201	Impulsgiver MIG 350-42-01	Magnetic impulse device MIG 350-42-01
1	2597090111	Impulsgiver MIG 90-11-1	Magnetic impulse device MIG 90-11-1
1	360406	Walther Mellemlid 32A 3 P+J	Walther female connector, 3 P + G
1	661406	Walther App. Stik 32A 3 P+J	Walther Male Panel Mounted Socket-Outlet, 3 P + G
1	OHY2RJ	ABB Drejeregreb Rød/Gul IP65F. OT16ET-OT125ET-1SCA22353R3060	ABB Handle Red/Yellow IP65F. OT16ET-OT125ET-1SCA22353R3060
1	OT63ET3	ABB LASTBR. 32A 3P for frontmontage. 1SCA022352R6870	ABB Load Break Switch, 1SCA022352R6870
8	570101501108	NSK 6202 DDU C3 Kugleleje	NSK 6202 DDU C3 ball bearing
8	25 35 07	Simmerring	Packing
1	30 47 07	Simmerring	Packing
1	A2D200-AI 18-01	EMS Ventilator 400V/50Hz	EMS Fan 400V/50Hz
2	FAK-R/V/KC02/IY	K-M Nødstop M.2B Fod/Grovh. kontakt	K-M Emergency stop, M.2B
1	PF340250000018D	TER Joystick, 2 Stil. A-B 10K	TER Joystick, 2 pos. A-B 10K
1	ZH8760222282	Bremse modstand, CBT-V 760 BHT 282 22R	Brake resistor, CBT-V 760 BHT 282 22R
4	IM12-04BNS-ZWK SICK	Induktive sensorer	Inductive sensors

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**KC** Denmark A/S

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