

PRODUCT PORTFOLIO



Transtronic sells, installs and produce our in-house developed electrical and mechanical aiming indicators for customers working in harsh environment within rock drilling industry.

We support our rock drilling customers to achieve higher accuracy leading to more efficient drilling which will result in higher profitability and less environment impact.

Increased flexibility = Increased productivity

**TRANSTRONIC®**



TRANSTRONIC®

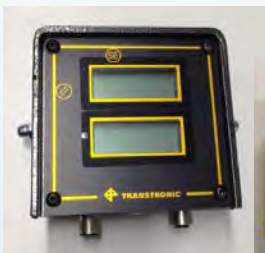
INKLINATOR 2R

Angle measurement
for bench drilling rigs.
Non cab rigs



INKLINATOR CMD

Angle and length
measurement.
for bench drilling rigs.



INKLINATOR CMX BENCH

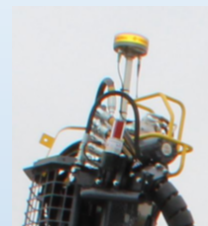
Angle and length measurement
for bench drilling rigs. Display
and master units are separated
for easy mounting.

Available options:

Laser height reference

GNSS Level height reference

GPS compass for the correct
drilling direction.



TRANSTRONIC®

INKLINATOR CMX Tuneling

Total instrument for tunnel drilling rigs.

The system measures the vertical and horizontal angles on one feeder.

Now possible to use 2pc length sensors for telescopic feeders.



INKLINATOR CMX Production

Angle and length measurement instrument for underground production rigs without boom.



INKLINATOR CMX-UNI Angle

and length measurement for underground production rigs, tunnel/bolters and pure bolters with boom mounted feeders.



Transducers:

1&2 axis angle transducer $\pm 60^\circ$ & 360°

1 axis angle transducer

with roll over function

Length transducer cylinder feeder

Length transducer chain

feeder 1", 1 1/4", 1 1/2", 2"

Boom joint transducer $\pm 180^\circ$

Sight $\pm 180^\circ$

Temp sensor -50 - +150°C

Pressure sensor 0 - 10/100/250/400 bar

Flow sensor

GPS-Compass

Laser sensor

GPS-Level as height reference

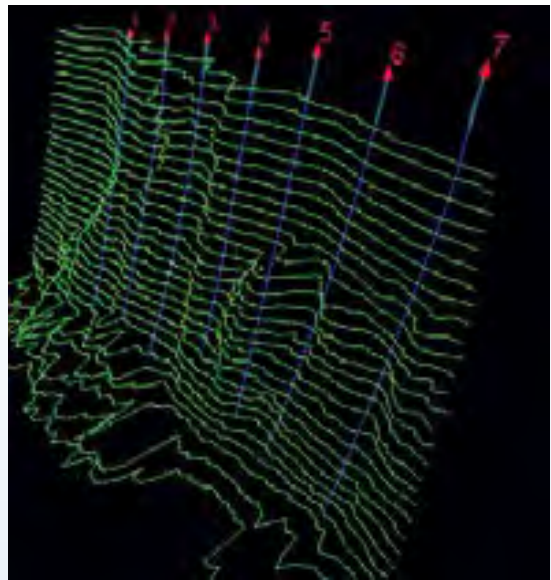




TRANSTRONIC®

Blast Design (In Nordic countries)

Scan the stuff, make the drill pattern, import the pattern to the drill rig. Drill the holes and measure the drill deviation and evaluate the result before you charge and blast with full control.



Upcoming product:

North Seeking Gyro

This Gyro is a rugged device with CAN-Open and WIFI connectivity to an instrument system or a handheld unit. 5 min startup with highly accurate and reliable data in drill rig alignment.



TRANSTRONIC®

2 axis angular transducer

022562, 022563, 022564, 022566

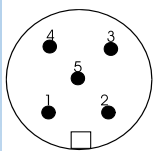
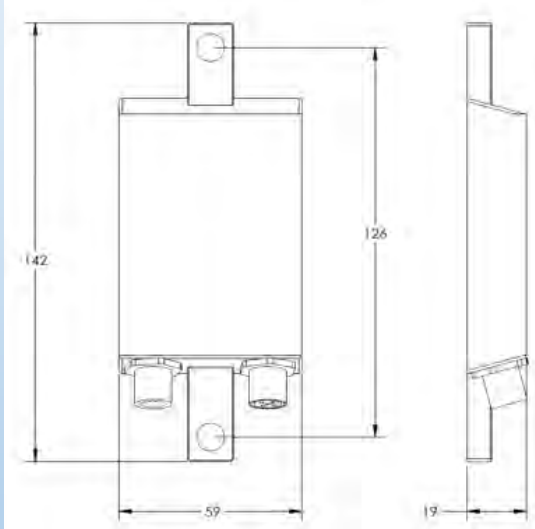


The transducer measures the angles compared to gravity.

The transducer has 2 connectors for the CAN-Open communication including power supply

The device is built to be used in harsh environment where high accuracy is needed.

Normally used in a system together with other transducers to form a complete angle measuring instrument.

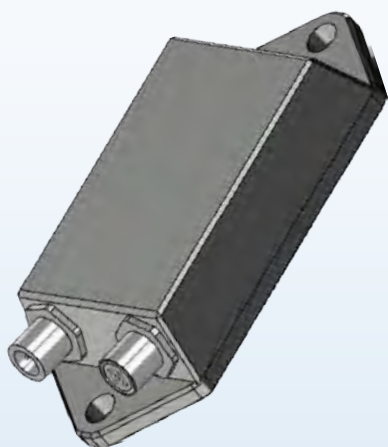


PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Technical data

Supply voltage	10 – 30 VDC
Power supply	<35mA
Measurement range	022562; 2 * $\pm 180^\circ$, 125kbit 022563; 2 * $\pm 180^\circ$, 125kbit 022564; 2 * $\pm 180^\circ$, 250kbit 022566; 2 * $\pm 180^\circ$, 125kbit flat
Accuracy	$\pm 0,2^\circ$
Resolution	Better than 0,01°
Temp. stability	$\pm 130 \cdot 10^{-6} / ^\circ\text{C}$
Bus Connection	CAN-Open
Housing	Aluminum, anodized (option, Stainless steel)
Mounting	2 * M8 screws
Connection	Standard M12 A-code plug, 5 pin Male/Female
Operating temp.	-40 - +70°C
Protection	IP67

2 axis transducer for displaying angles in both vertical planes, 022570



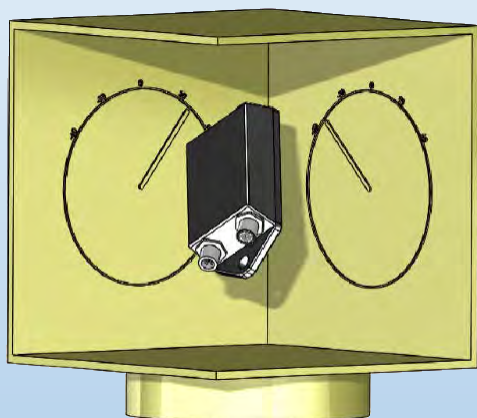
The transducer measures the angles compared to gravity and displays angles in both vertical planes.

The transducer has 2 connectors for the CAN-Open communication including power supply

The device is built to be used in harsh environment where high accuracy is needed.

The new way of calculating and display angles, increase the possibilities to measure vertical angles more accurate in a bigger measurement range.

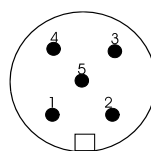
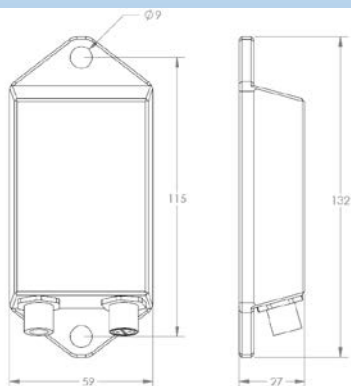
The angles are presented as vectors projected on the vertical planes.



Technical data

Supply voltage	10 – 30 VDC
Power supply	<35mA
Measurement range	Plumbline $\pm 60^\circ$, upwards and downwards
Accuracy	$\pm 0,25^\circ$
Resolution	Better than $0,01^\circ$
Temp. stability	$\pm 130 \cdot 10^{-6} / ^\circ\text{C}$
Bus Connection	CAN-Open

Housing	Aluminum
Mounting	2 * M8 screws
Connection	Standard M12 A-code plug, 5 pin Male/Female
Operating temp.	-40 - +70°C
Protection	IP67



PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Vertical transducer with roll over function for tunnel, 012425



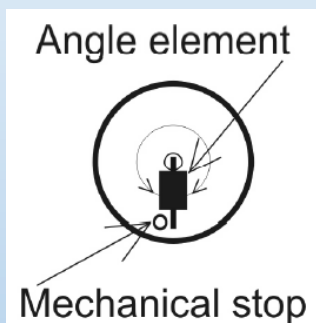
The transducer measures the vertical angle compared to gravity. It compensates for the roll over movement of a tunnel feeder.

340° mechanical movement range.

The transducer has 2 connectors for the CAN-Open communication including power supply

The device is built to be used in harsh environment where high accuracy is needed.

Normally used in a tunnel system together with other transducers to form a complete angle measuring instrument.



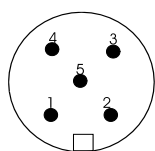
Technical data

Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement range	
Rotation	340°
Vertical	±40°
Accuracy	Better than ±0,25°
Resolution	±0,01°
Bus Connection	CAN-Open

Housing Steel housing, zinc plated
Mounting In an adjustable bracket with 2 x M12 bolts

Connection Standard M12 A-code plug, 5 pin Male/Female

Operating temp. -40 - +70°C
Protection IP67



PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Vertical angle sensor , with roll over function, 012401-1/2

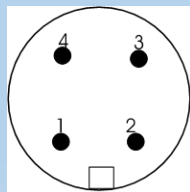
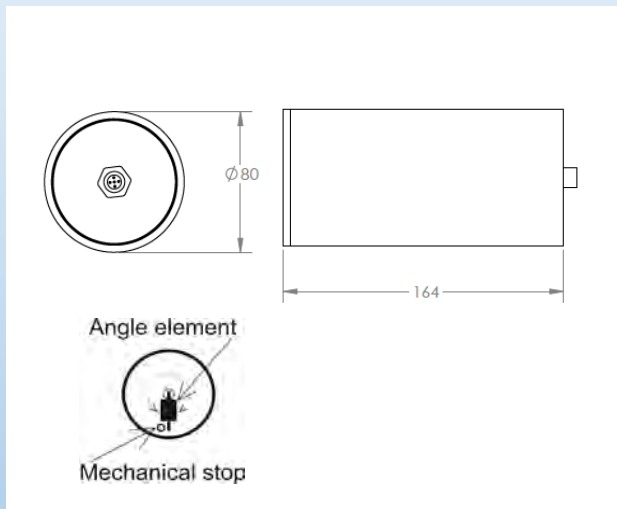


A one axis angle sensor with a pendulum inside, for accurate measuring the vertical angle, along the sensors centerline independent of the sensors radial rotation.

Typical used as vertical angle sensor for the feeder on tunnel rigs.

Ratio metric signal output.

The transducer has 1 connector for the communication including power supply.



PIN	Signal
1	8..15V DC (Supply voltage)
2	GND / 0V
3	Signal

Technical data

Supply voltage 8 – 15 VDC

Power supply <100mA

Measuring range:

Vertical electrical Accuracy $\pm 40^\circ$
 $\pm 0.2^\circ$

Rotation 340° mechanical stop

Housing Steel housing, zink plated and black chrome

Mounting In a customized holder/protection bracket

Connections Standard M12 A-code plug, 4 pin Male

Operating temp. Protection -30 - +70°C
IP67

Sight

022625B, 022626B, 022627B



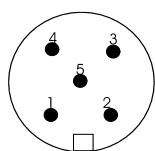
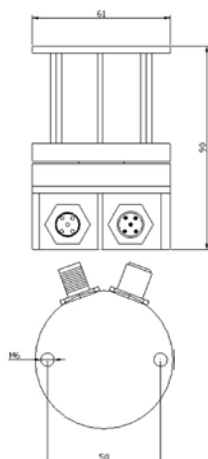
The sight is used to point out the desired blasting direction.

Endless 360° movement range.

The transducer has 2 connectors for the CAN-Open communication including power supply

The device is built to be used in harsh environment where high accuracy is needed.

Normally used in a system together with other transducers to form a complete angle measuring instrument.



PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Technical data

Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement range	360°
Accuracy	Better than $\pm 0,25^\circ$
Resolution	$\pm 0,001^\circ$
Bus Connection	CANopen

0202625B	node 1, 125kbit/s
0202626B	node 54, 125kbit/s
0202627B	node 54, 250kbit/s

Housing	Steel housing, zinc plated
Mounting	2* M6 screws
Shaft	Connection plate for multiple connection possibilities.
Connection	Standard M12 A-code plug, 5 pin Male/Female
Operating temp.	-40 - +70°C
Protection	IP67

Boom joint angular transducer 022725



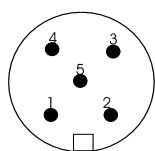
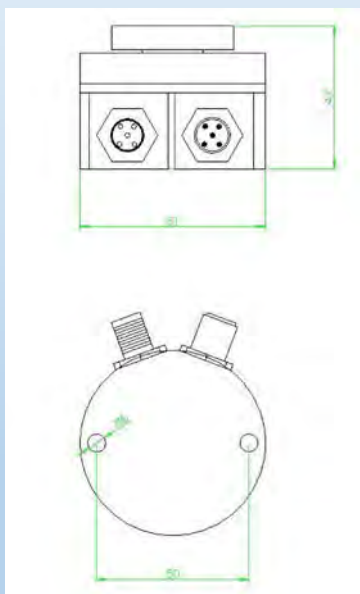
The boom joint transducer measures a non gravity depended angular movement.

Endless 360° movement range.

The transducer has 2 connectors for the CAN-Open communication including power supply

The device is built to be used in harsh environment where high accuracy is needed.

Normally used in a system together with other transducers to form a complete angle measuring instrument.



PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Technical data

Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement range	360°
Accuracy	Better than $\pm 0,25^\circ$
Special version	Better than $\pm 0,1^\circ$
Special version	Reinforced bearings for large radial forces
Resolution	$\pm 0,001^\circ$
Bus Connection	CANOpen
Housing	Steel housing, zinc plated
Mounting	2* M6 screws
Shaft	Connection plate for multiple connection possibilities.
Connection	Standard M12 A-code plug, 5 pin Male/Female
Operating temp.	-40 - +70°C
Protection	IP67

Boom joint angular transducer, 022722



The boom joint transducer measures a non gravity depended angular movement.

Endless 360° movement range.

The transducer has 2 connectors for the CAN-Open communication including power supply.

The device is built to be used in harsh environment where high accuracy is needed.

Normally used in a system together with other transducers to form a complete angle measuring instrument.

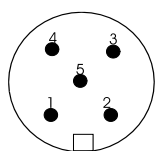
Technical data

Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement range	360°
Accuracy	Better than $\pm 0,25^\circ$
Special version	Better than $\pm 0,1^\circ$

Resolution	$\pm 0,001^\circ$
Bus Connection	CANOpen

Housing	Steel housing, zinc plated
Mounting	4* M6 screws
Shaft diam.	10mm

Connection	Standard M12 A-code plug, 5 pin Male/Female
Operating temp.	-40 - +70°C
Protection	IP67



PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Boom joint angular transducer, 022723

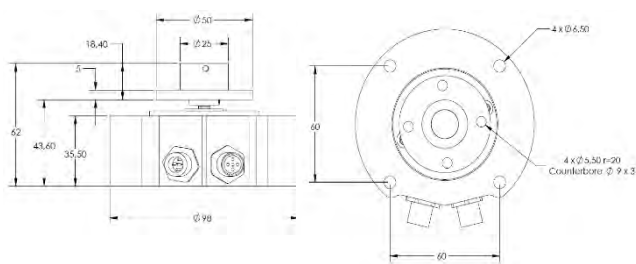


The boom joint transducer measures a non gravity depended angular movement.

The transducer has 2 connectors for the CAN-Open communication including power supply

The device is built to be used in harsh environment where high accuracy is needed.

Normally used in a system together with other transducers to form a complete angle measuring instrument.



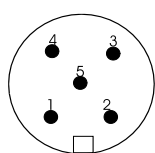
Technical data

Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement range	360°
Accuracy	Better than $\pm 0,25^\circ$
Special version	Better than $\pm 0,1^\circ$

Resolution	$\pm 0,001^\circ$
Bus Connection	CAN-Open

Housing	Steel housing, zinc plated
Mounting	4* M6 screws
Mechanical connect.	Flexible joint
Connection	Standard M12 A-code plug, 5 pin Male/Female

Operating temp.	-40 - +70°C
Protection	IP67



PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Boom joint angular transducer, 022724



The boom joint transducer measures a non gravity depended angular movement.

The transducer has 2 connectors for the CAN-Open communication including power supply

The device is built to be used in harsh environment where high accuracy is needed.

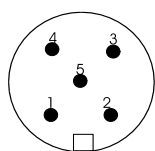
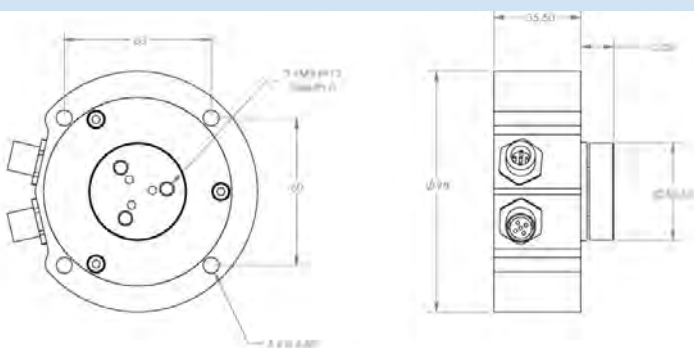
Normally used in a system together with other transducers to form a complete angle measuring instrument.

Technical data

Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement range	360°
Accuracy	Better than $\pm 0,25^\circ$
Special version	Better than $\pm 0,1^\circ$

Resolution	$\pm 0,001^\circ$
Bus Connection	CAN-Open
Stand alone certified	EN 13309:2010

Housing	Steel housing, zinc plated
Mounting	4x M6 screws
Mechanical conect.	Flange 3x M6
Connection	Standard M12 A-code plug, 5 pin Male/Female
Operating temp.	-40 - +70°C
Protection	IP67



PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Boom joint angular transducer 022746



The boom joint transducer measures a non gravity depended angular movement.

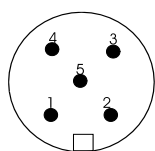
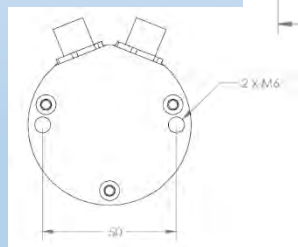
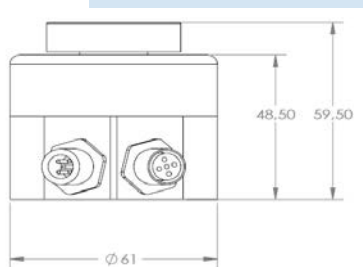
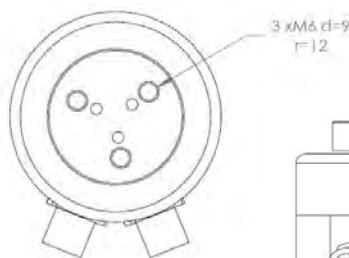
Endless 360° movement range.

The transducer has 2 connectors for the CAN-Open communication including power supply

The device is built to be used in harsh environment where high accuracy is needed.

Normally used in a system together with other transducers to form a complete angle measuring instrument.

Reinforced bearings for large radial forces.



PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Technical data

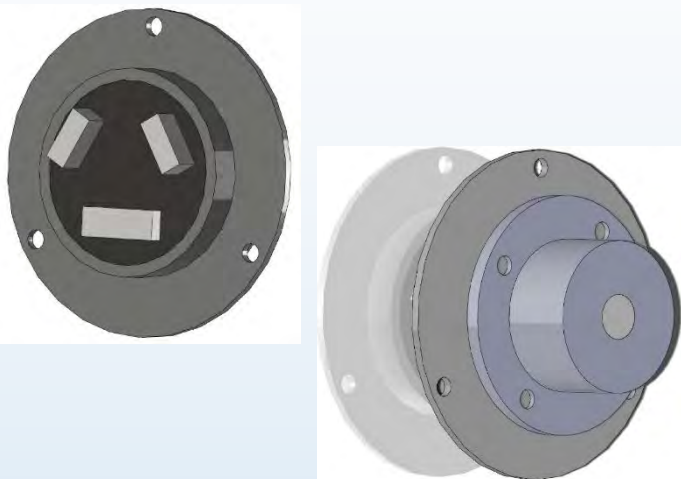
Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement range	360°
Accuracy	Better than $\pm 0,1^\circ$
Radial forces	Dynamic 3000N Static 1600N

Resolution	large radial forces $\pm 0,001^\circ$
Bus Connection	CAN-Open

Housing	Steel housing, zinc plated
Mounting	2* M6 screws
Shaft	Connection plate for multiple connection possibilities.

Connection	Standard M12 A-code plug, 5 pin Male/Female
Operating temp.	-40 - +70°C
Protection	IP67

Boom Joint Transducer, 022760

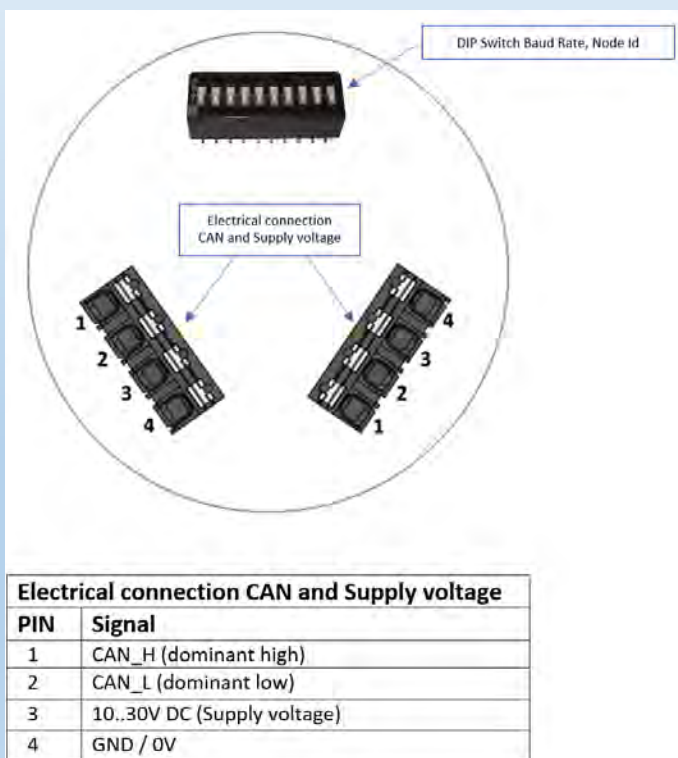


The Boom Joint Sensor measures mechanical angles.

Parameter setting of the sensor and zero point is possible

DIP Switch for adjustable Node ID and Boud rate, 10 positions

Easy connection through terminal block



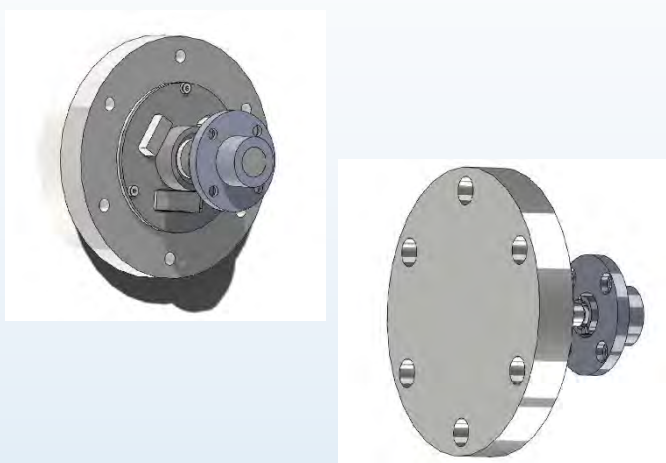
Technical data

Supply voltage	10 – 30 VDC
Power supply	100mA
Measurement range	+/-180 degrees
Accuracy better than	+/- 0.1 degrees
Bus Connection	CANOpen (ISO11896)
Comm. profile	DS301 DSP-406 for absolute linear encoder
Nod ID	Adjustable 1-127, through DIP-switch
Baud Rate	Adjustable through DIP-switch

Mechanical data:

Housing	Aluminium housing, anodized
Vibration resistance	Broadband noise, 20G in all axis 20-2000Hz
Connection	Terminal block for operating voltage and CAN-bus, 4-pins
Operating temp.	-30 - +50°C
Storage temp.	-40 - +85°C
Protection	IP67

Boom Joint Transducer, 022761

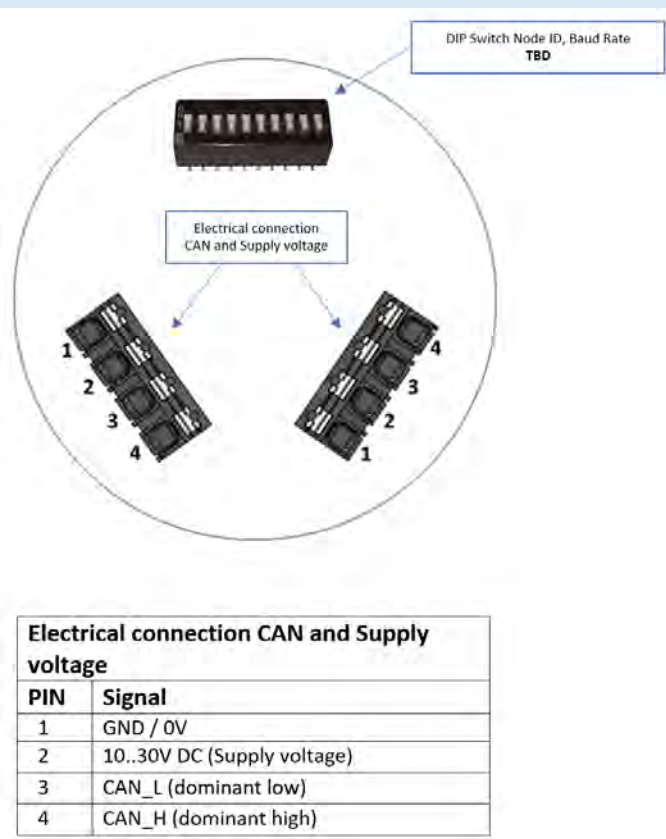


The Boom Joint Sensor measures mechanical angles.

Parameter setting of the sensor and zero point is possible

DIP Switch for adjustable Node ID and Boud rate, 10 positions

Easy connection through terminal block



Technical data

Supply voltage	10 – 30 VDC
Power supply	100mA
Measurement range	+/-180 degrees
Accuracy better than	+/- 0.1 degrees
Bus Connection	CANOpen (ISO11896)
Comm. profile	DS301 DSP-406 for absolute linear encoder
Nod ID	Adjustable 1-127, through DIP-switch
Baud Rate	Adjustable through DIP-switch

Mechanical data:

Housing	Aluminium housing, anodized
Vibration resistance	Broadband noise, 20G in all axis 20-2000Hz
Connection	Terminal block for operating voltage and CAN-bus, 4-pins
Operating temp.	-30 - +50°C
Storage temp.	-40 - +85°C
Protection	IP67

Boom joint angular transducer Submersible



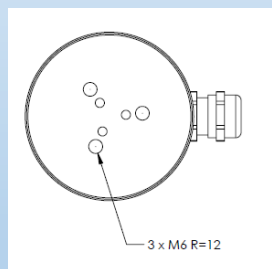
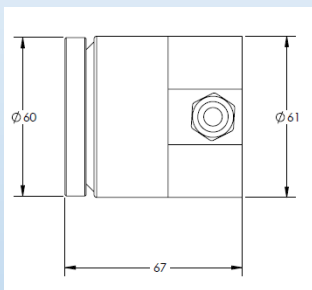
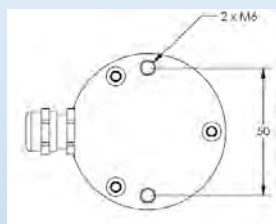
The boom joint transducer measures a non gravity depended angular movement.

The device is built to be used in in submersible environment where high accuracy is needed.
Housing in stainless steel
Endless 360° movement range.

The transducer has a 5m fixed cable with a IP69K connector in the end for the CAN-Open communication including power supply

Normally used in a system together with other transducers to form a complete measuring instrument.

Reinforced bearings for large radial forces.



Technical data

Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement range	360°
Accuracy	Better than $\pm 0,1^\circ$
Radial forces	Dynamic 3000N Static 1600N

Resolution	$\pm 0,001^\circ$
Bus Connection	CAN-Open

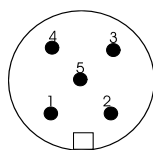
Housing	Stainless steel
Shaft sealing	2 sealing rings and 1 V-ring
Mounting	2* M6 screws
Shaft	Connection plate for multiple connection possibilities.

Connection	Fixed cable with IP96K M12 A-code 5 pin male plug
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Cable length	Standard 5m Other length on demand
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Operating temp.	-40 - +70°C
Protection	IP68 Submersible to 20m

PIN	Signal
1	Not Connected
2	10..30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)



Length transducer, wire, 022735, 022736



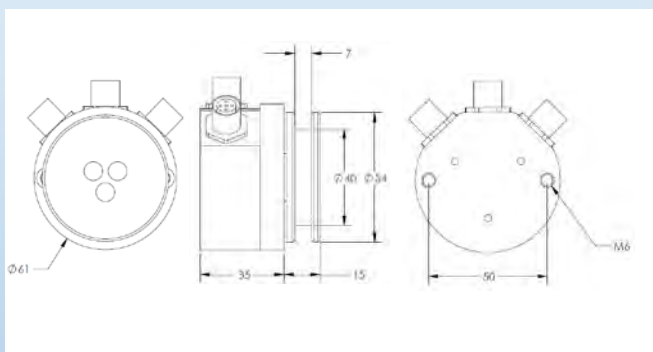
The length transducer measures length of a linear movement with a wire in a loop around it's measuring wheel.

The wires both ends has to be mounted with a fixed distance between them.

Normally used as a length sensor, measuring the drilled depth on drilling rigs. Attached to the cradle.

The transducer has 2 connectors for the CAN-Open communication including power supply and one connector with 2 digital inputs.

022736 has the termination resistor built in. therefore only one CAN-Open connector.



Technical data

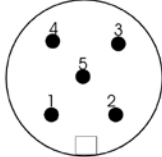
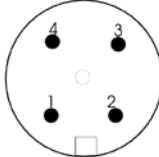
Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement wheel	Diameter 40.0mm
Digital inputs	2
Type	Signal 1: Active high/ Signal 2: Active low

Bus Connection	CANOpen (ISO11896)
Nod ID	Default 1

Housing	Steel housing, zinc plated
Mounting	2 * M6 screws

Connections	
CAN-bus	Standard M12 A-code plug, 5 pin Male/Female
Digital Input	Standard M12 A-code plug, 4 pin Male

Operating temp.	-40 - +70°C
Protection	IP67

(5 pin "micro" style connector CAN)		(4pin "micro" style connector CAN)	
			
PIN	Signal	PIN	Signal
1	Not Connected	1	10...30V DC (Supply voltage)
2	10...30V DC (Supply voltage)	2	Signal 1 active Low
3	GND / 0V	3	GND / 0V
4	CAN_H (dominant high)	4	Signal 2 active High
5	CAN_L (dominant low)		

Length transducer, 022737

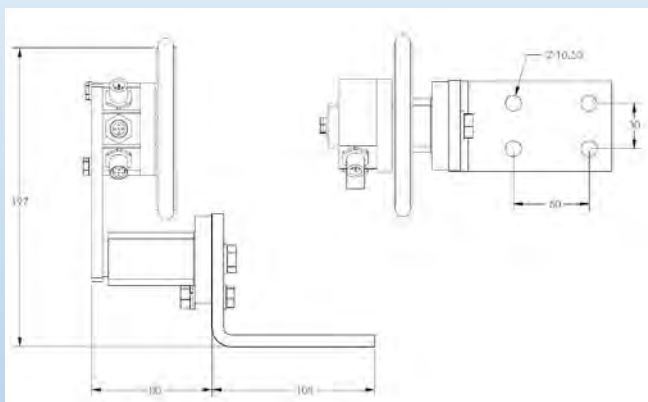


The length transducer measures length of movement through the rotation of its friction wheel, Laying against a rotating pulley wheel or a linear movement.

Often used to measure length on piling rigs.

Keeps the friction against the measured surface via a spring loaded mounting bracket.

The transducer has 2 connectors for the CAN-Open communication including power supply and one connector with 2 digital inputs.



Technical data

Supply voltage 10 – 30 VDC
Power supply <100mA

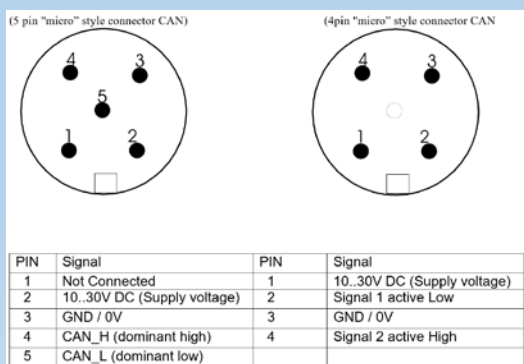
Digital inputs 2
Type Signal 1: Active high/
Signal 2: Active low

Bus Connection CANOpen (ISO11896)
Nod ID Default 1

Housing Steel housing, zinc plated
Mounting 2 * M6 screws

Connections
CAN-bus Standard M12 A-code plug,
5 pin Male/Female
Digital Input Standard M12 A-code plug,
4 pin Male

Operating temp. -40 - +70°C
Protection IP67



Length transducer, 022739

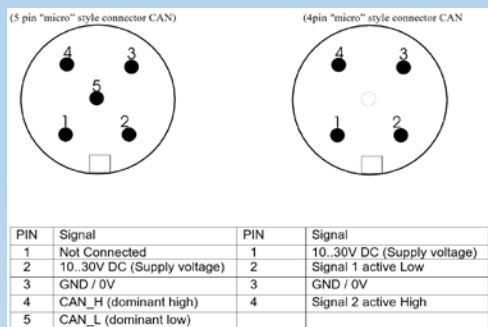
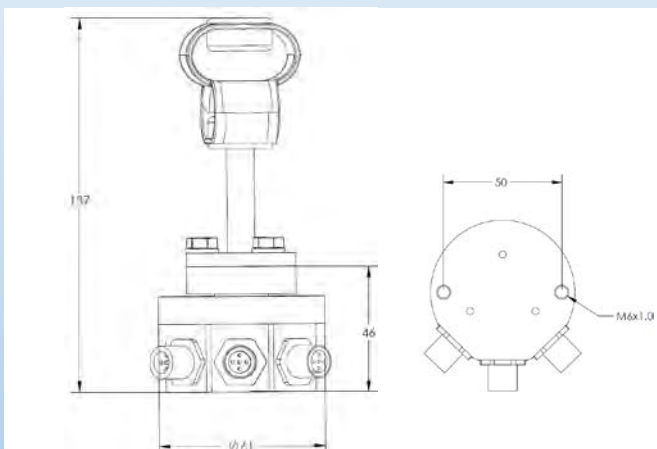


The length transducer measures length coming from a rotating movement.

The transducer connects through a flexible coupling to the driveshaft of the motor for the movement of the cradle.

Normally used as a length sensor, measuring the drilled depth on drilling rigs.

The transducer has 2 connectors for the CAN-Open communication including power supply and one connector with 2 digital inputs.



Technical data

Supply voltage	10 – 30 VDC
Power supply	<100mA
Digital inputs	2
Type	Signal 1: Active high/ Signal 2: Active low
Bus Connection	CANOpen (ISO11896)
Nod ID	Default 1
Housing	Steel housing, zinc plated
Mounting	2 * M6 screws
Shaft diameter	10mm, cut to length
Connections	
CAN-bus	Standard M12 A-code plug, 5 pin Male/Female
Digital Input	Standard M12 A-code plug, 4 pin Male
Operating temp.	-40 - +70°C
Protection	IP67

Length transducer, wire 022747



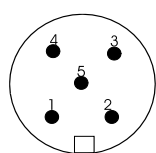
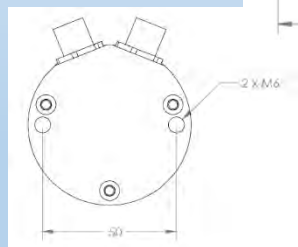
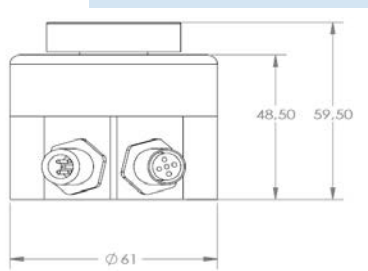
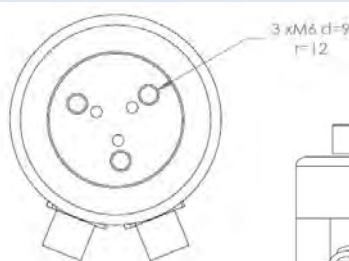
The length transducer measures length of a linear movement with a wire in a loop around it's measuring wheel.

The wires both ends has to be mounted with a fixed distance between them.

Normally used as a length sensor, measuring the drilled depth on drilling rigs. Attached to the cradle.

The transducer has 2 connectors for the CAN-Open communication including power supply and one connector with 2 digital inputs.

Reinforced bearings for large radial forces.



PIN	Signal
1	Not Connected
2	10...30V DC (Supply voltage)
3	GND / 0V
4	CAN_H (dominant high)
5	CAN_L (dominant low)

Technical data

Supply voltage	10 – 30 VDC
Power supply	<100mA
Measurement wheel	Diameter 40.0mm
Digital inputs	2
Type	Signal 1: Active high/ Signal 2: Active low
Radial forces	Dynamic 3000N Static 1600N

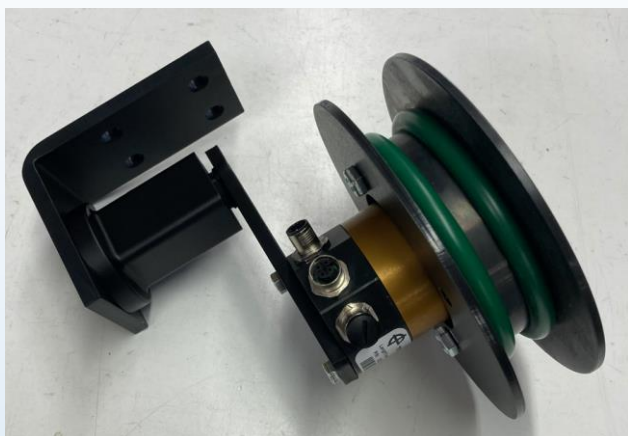
Bus Connection	CAN-Open (ISO11896)
Nod ID	Default 1

Housing	Steel housing, zinc plated
Mounting	2 * M6 screws

Connections	
CAN-bus	Standard M12 A-code plug, 5 pin Male/Female
Digital Input	Standard M12 A-code plug, 4 pin Male

Operating temp.	-40 - +70°C
Protection	IP67

Length transducer, 022747-OPT.4 & OPT.5



The length sensor measures the length by pressing a pulley wheel against a steel rope.

Two PUR O-rings keeps the friction against the rope.

The tension against the steel rope is controlled with a flexible spring-loaded unit.

Normally used as a length sensor, measuring the drilled depth on drilling and piling rigs.

Comes in two versions for 3/4" (20mm) and 1" (25mm) steel ropes.

The transducer has two connectors for the CAN-Open communication including power supply and one connector with two digital inputs.

Technical data

Supply voltage 10 – 30 VDC
Power supply <100mA

Digital inputs 2
Type Signal 1: Active high/
Signal 2: Active low

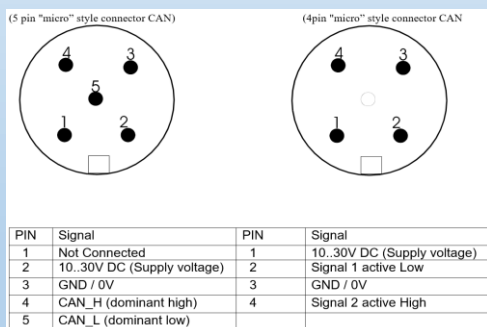
Bus Connection CANOpen (ISO11896)
Nod ID Default 1

Housing & bracket Steel housing, zinc plated
Mounting 4* M8 bolts

Connections
CAN-bus Standard M12 A-code plug,
5 pin Male/Female
Digital Input Standard M12 A-code plug,
4 pin Male

Operating temp. -40 - +70°C
Protection IP67

Versions:
022747-OPT.4 Steel rope diameter
3/4"=20mm
022747-OPT.5 1"=25mm



Length transducer, wire, 022417

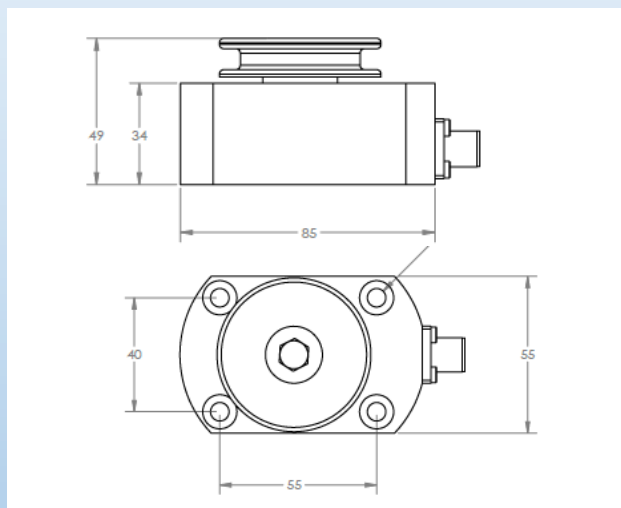



The length transducer measures length of a linear movement with a wire in a loop around it's measuring wheel.

The wires both ends has to be mounted with a fixed distance between them.

Normally used as a length sensor, measuring the drilled depth on drilling rigs. Attached to the cradle.

The transducer has 1 connectors for the communication including power supply.

Pin	Signal
1	10-30VDC (Supply voltage)
2	GND / 0V
3	Signal B
4	Signal A

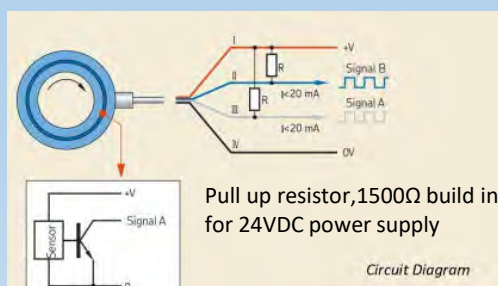
Technical data

Supply voltage 24 – 30 VDC
Power supply <100mA
Measurement wheel Diameter 40.0mm

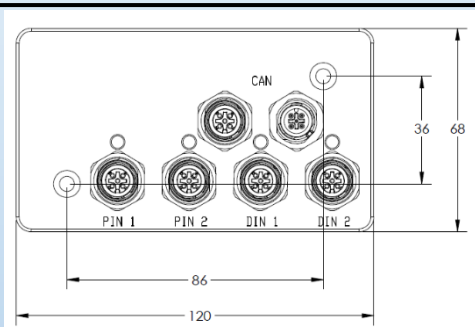
Housing Aluminum Oxidized
 Sealed backside for longer life on the bearing.
Mounting 4 * 6.5 mm counter bored holes for Allen bolts.

Connections Standard M12 A-code plug, 4 pin Male

Operating temp. -40 - +70°C
Protection IP67



Length sensor, chain 022468



Schematic diagram CAN
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	Not Connected
5		pin - 2	10...30V DC (Supply voltage)
2	1	pin - 3	GND
		pin - 4	CAN-High
		pin - 5	CAN-Low

Schematic diagram Digital in 1, in 2
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	10...30V DC (Supply voltage)
5		pin - 2	Active low input (Yellow Led)
2	1	pin - 3	GND
		pin - 4	Active high input (Green Led)
		pin - 5	Not Connected

Schematic diagram Pulse in 1, in 2
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	10...30V DC (Supply voltage)
5		pin - 2	Not Connected
2	1	pin - 3	GND
		pin - 4	Pulse input (Red Led)
		pin - 5	Not Connected

The length transducer measures the movement of the chain that moves the cradle, in both directions.

The measurement is done by 2 proximity switches, against the sprockets on a sprocket wheel.

Often used together with bracket for proximity switches.

Normally used as a length sensor, measuring the drilled depth on drilling rigs.

The transducer has 2 connectors for the CAN-Open communication including power supply and one connector with 2 digital inputs.

Technical data:

Supply voltage	10 – 30 VDC
Power supply	<100mA

Fixed settings for sprocket wheel.	¾", 1", 1¼", 1½", 2" and custom value.
------------------------------------	--

Signal inputs	2; PNP/NPN compatible
Digital inputs	2; PNP/NPN compatible

Bus Connection	CANOpen (ISO11896)
Nod ID	Default 40

Housing	Aluminum housing, Black anodized
Mounting	2xM4 hex bolts

Connections	Standard M12 A-code plug,
CAN-bus	5pin male/female

Signal Input	Standard M12 A-code plug,
Digital Input	5 pin female
	Standard M12 A-code plug,
	5 pin female

Operating temp.	-40 - +70°C
Protection	IP67

Counter, RPM, Flow sensor 022477

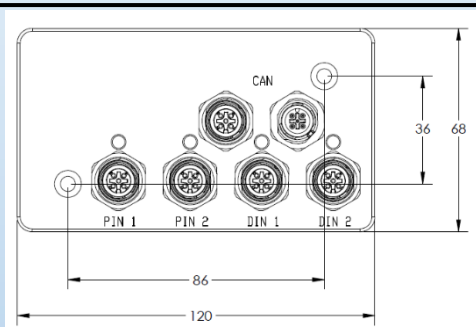


The sensor can be used as a pulse counter, measure RPM or flow depending on settings and attached signal source.

The sensor work with 1input signals.

The measurement is done by a proximity switch or with a flow meter.

The transducer has 2 connectors for the CAN-Open communication including power supply and connectors for 2 digital inputs.



Schematic diagram CAN
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	Not Connected
5		pin - 2	10...30V DC (Supply voltage)
2	1	pin - 3	GND
		pin - 4	CAN-High
		pin - 5	CAN-Low

Schematic diagram Digital in 1, in 2
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	10...30V DC (Supply voltage)
5		pin - 2	Active low input (Yellow Led)
2	1	pin - 3	GND
		pin - 4	Active high input (Green Led)
		pin - 5	Not Connected

Schematic diagram Pulse in 1, in 2
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	10...30V DC (Supply voltage)
5		pin - 2	Not Connected
2	1	pin - 3	GND
		pin - 4	Pulse input (Red Led)
		pin - 5	Not Connected

Technical data

Supply voltage 10 – 30 VDC
Power supply <100mA

Settings for Counter, RPM, Flow

Signal inputs 1; PNP,NPN compatible
Digital inputs 2; PNP,NPN compatible

Bus Connection CANOpen (ISO11896)
Nod ID Default 40

Housing Aluminum housing,
Black anodized
Mounting 2xM4 hex bolts

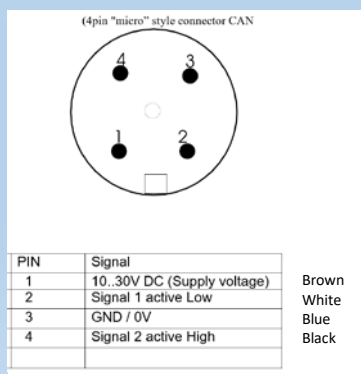
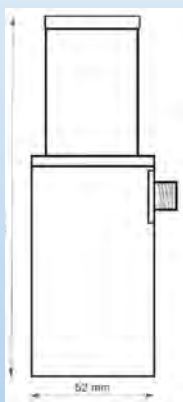
Connections
CAN-bus Standard M12 A-code plug,
pin male/female
Signal Input Standard M12 A-code plug,
5 pin female
Digital Input Standard M12 A-code plug,
5 pin female

Operating temp. -40 - +70°C
Protection IP67

Laser sensor, 023418



The laser sensor is a height detecting instrument. The laser sensor receives a laser beam from a rotating laser transceiver which is mounted at a given height. With this height as a starting reference the driller knows the reference-height and from this the total drilled length can be calculated and this to ensure a flat lower surface after blasting.



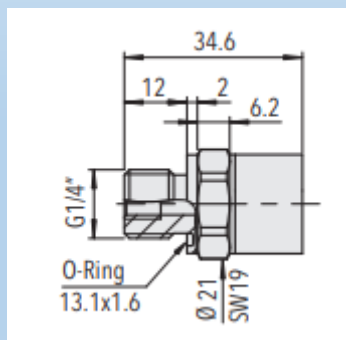
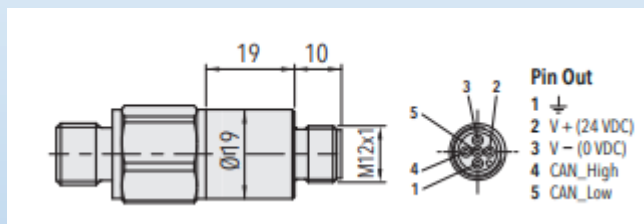
Technical data

Supply voltage	11 – 35 VDC
Type of laser for detection	Rotating visible red, 630-680nm wavelength
Max distance for detection	150m (1mW transceiver)
Detection range horizontal	360 degrees
Detecting range vertical	40mm
Enclosure	IP65, splash-proof
Working temp.	-20 - +50 degrees



The image shows two types of pressure transducers. On the left is a linear pressure transducer, which is a cylindrical metal device with a black label that reads 'OMEGA' and 'PRESSURE TRANSDUCER'. It has a threaded port on the left and a larger threaded port on the right. On the right is a differential pressure transducer, which is a black, T-shaped device with three ports. It has two ports at the top, one with a green cap and one with a silver cap, and a single port at the bottom with a silver cap.

Normally delivered in a kit with a split connector to get CAN-in and CAN-out.



10 bar/ max 20bar
100 bar/ max 200bar
250 bar/ max 500bar
400 bar/ max 800bar

comes with split connector and 10m cable



Flow sensor 002300-MODMAG DN25



The sensor measures the flow, in the flow circuit it is connected into.

The flow sensor can be used as a pulse counter or flow meter depending on settings in the attached electronic box/sensor (022472 or 022477).

The media must be conductive to be measurable. Everything from tap water to mud, is possible to measure on. The lining of the sensor is made of NBR rubber for long life use.

The transducer has 2 connectors for the CAN-Open communication including power supply and connectors for 2 digital inputs.

Technical data

Supply voltage 10 – 30 VDC
Power supply <100mA

Bus Connection CANOpen (ISO11896)
Nod ID Default 40- 49
Housing Steel
Mounting DIN-flange DN25
Lining Hard rubber, NBR

Connections

CAN-bus Standard M12 A-code plug, 5 pin male/female
Signal Input Standard M12 A-code plug, 5 pin female

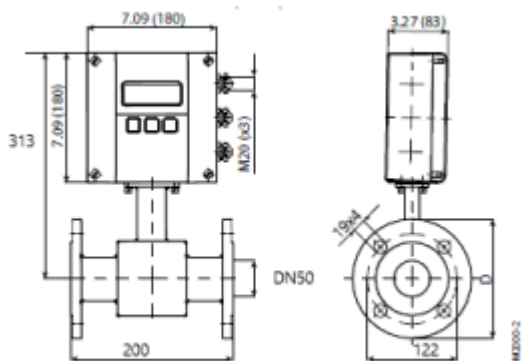
Operating temp.
Flow meter 0 - +80°C
Electronic box -40 - + 70°C
Protection IP67

Versions
002300-MODMAG
DN25

max 353 l/min

- option

With 10m cable



Schematic diagram CAN
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	Not Connected
5	2	pin - 2	10...30V DC (Supply voltage)
1	3	pin - 3	GND
2	4	pin - 4	CAN-High
5	1	pin - 5	CAN-Low

Schematic diagram Digital in 1, in 2
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	10...30V DC (Supply voltage)
5	2	pin - 2	Active low input (Yellow Led)
1	3	pin - 3	GND
2	4	pin - 4	Active high input (Green Led)
5	1	pin - 5	Not Connected

Schematic diagram Pulse in 1, in 2
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	10...30V DC (Supply voltage)
5	2	pin - 2	Not Connected
1	3	pin - 3	GND
2	4	pin - 4	Pulse input (Red Led)
5	1	pin - 5	Not Connected

Flow sensor 002300-VCX



The sensor measures the flow in the hydraulic circuit it is connected into.

The flow can be used as a pulse counter, measure RPM or flow depending on settings in the attached electronic box/sensor (022472 or 022477).

Together with electronic box/sensor 022468 it can be used as a length sensor.

The transducer has 2 connectors for the CAN-Open communication including power supply and connectors for 2 digital inputs.

Mechanical size and hydraulic connection varies between the versions.

Schematic diagram CAN
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	Not Connected
5		pin - 2	10..30V DC (Supply voltage)
2	1	pin - 3	GND
		pin - 4	CAN-High
		pin - 5	CAN-Low

Schematic diagram Digital in 1, in 2
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	10..30V DC (Supply voltage)
5		pin - 2	Active low input (Yellow Led)
2	1	pin - 3	GND
		pin - 4	Active high input (Green Led)
		pin - 5	Not Connected

Schematic diagram Pulse in 1, in 2
Pin assignment M12 socket, 5-pos, A-coded, socket side view.

3	4	pin - 1	10..30V DC (Supply voltage)
5		pin - 2	Not Connected
2	1	pin - 3	GND
		pin - 4	Pulse input (Red Led)
		pin - 5	Not Connected

Technical data

Supply voltage 10 – 30 VDC
Power supply <100mA

Bus Connection CANOpen (ISO11896)
Nod ID Default 40- 49
Housing Cast iron
Mounting Against mounting plate with BSP threading.

Connections
CAN-bus Standard M12 A-code plug, 5 pin male/female
Signal Input Standard M12 A-code plug, 5 pin female

Operating temp.
Flow meter -40 - +120°C
Electronic box -40 - + 70°C
Protection IP67

Versions
002300-VC1 max 80 l/min
002300-VC3 max 160 l/min
002300-VC5 max 250 l/min

- option With 10m cable

Pressure switch

002400-XX

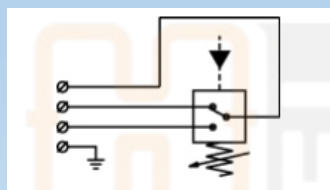
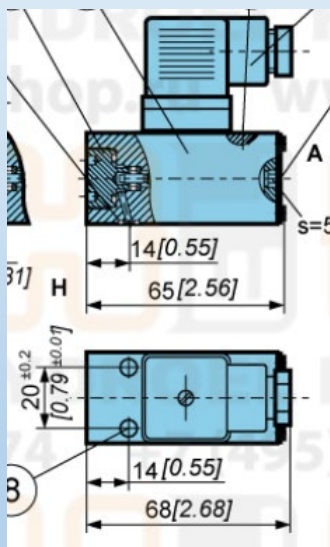


The switch measures the pressure in the hydraulic circuit it is connected to and has an adjustable trigger point.

The switch is a potential free relay output.

Connects normally to a digital input to an I/O box or other input.

Comes with a 5m cable



Technical data

Supply voltage 10 – 30 VDC
Switching capacity 5A

Housing Aluminum
Mounting
Against media G1/4
Against surface 2x M5

Connections
Electrical Switching relay output
 Plug-in connector for solenoids
 ISO 4400

Operating temp. -20 - +70°C

Protection -40 - + 70°C
 IP67

Versions
002400-70 9-70 bar
002400-250 20-250 bar

I/O box 026770

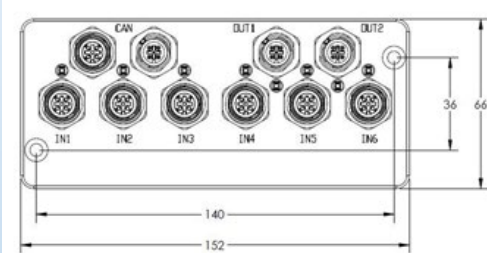


The I/O box works as a connection between a software and the machine it is connected to.

The 6 inputs has the possibility to use both PNP and NPN sensor signals (active high and active low).

The 2 outputs has potential free switching relay contacts.

The transducer has 2 connectors for the CAN-Open communication including power supply and one connector with 2 digital inputs.



Schematic diagram CAN

Pin assignment M12 socket, 5-pos, A-coded, socket side view.

pin - 1	Not Connected
pin - 2	10...30V DC (Supply voltage)
pin - 3	GND
pin - 4	CAN-High
pin - 5	CAN-Low

Schematic diagram Digital in 1...6

Pin assignment M12 socket, 5-pos, A-coded, socket side view.

pin - 1	10...30V DC (Supply voltage)
pin - 2	Active low input (Yellow Led)
pin - 3	GND
pin - 4	Active high input (Green Led)
pin - 5	Not Connected

Schematic diagram Digital out 1, out 2

Pin assignment M12 socket, 5-pos, A-coded, socket side view.

pin - 1	COM
pin - 2	Not Connected
pin - 3	Not Connected
pin - 4	NO
pin - 5	NC

Technical data:

Supply voltage 10 – 30 VDC

Power supply <100mA

Signal inputs 6; PNP/NPN compatible

Digital inputs 2; PNP/NPN compatible

Bus Connection CANOpen (ISO11896)
Nod ID Default 40

Housing Aluminum housing,
Black anodized
Mounting 2xM4 hex bolts

Connections
CAN-bus

Standard M12 A-code plug,
5pin male/female

Signal Input Standard M12 A-code plug,
5 pin female

Digital output Standard M12 A-code plug,
5 pin male

Operating temp. -40 - +70°C
Protection IP67

INKLINATOR[®] GPS COMPASS

with CAN open interface



The GPS compass uses GPS satellites to measure the direction of the drill rig with good accuracy. The compass replaces the sight on the CMI bench instrument.

This will increase the quality since all holes will be parallel in the correct blasting direction, overcoming aiming errors due to bad visibility, darkness and operator errors.

Specification:

Data interface	CAN bus with CAN open protocol
Accuracy	< 0.5 degrees
Power supply	24 VDC, 0.2 A
Enclosure	IP67
Working temperature	-30 - +50 degrees C



TRANSTRONIC AB

GNSS-Level 022921 / 022961



A height reference system with base/rover function.

The base unit is placed on a known height and the rover in the top of the feeder on the drill rig.

The Rover calculates its height compared to the base

Correction data are sent from the base to the rover via radio modems.

Base has 2 hot swappable batteries and 12VDC power inlet.

Can be placed on a tripod or on a fixed location like building with a continuous 12VDC power source.

Technical data:

Base: 022921

Supply voltage	12VDC battery or 230VDC adapter
Power supply	100mA
Radio modem range	>1000m
Survey-in time	1 min
Working time on two batteries	Approx. 5 work days
Mechanical data:	
Housing	Aluminum anodized
Mounting	5/8 UNC, standard survey eq.
Connections:	
External power/USB	Standard M12 A-code plug, 8 pin Male
Radio antenna	2.4GHz
Operating temp.	-30 - +70°C
Storage temp.	-40 - +85°C
Protection	IP67

Technical data:

Rover: 022961

Supply voltage	10 – 30 VDC
Power supply	<100mA
Bus Connection	CAN-Open
Height accuracy	< 3cm
Mechanical data:	
Housing	Aluminum anodized
Mounting	5/8 UNC, standard survey eq.
Connections	
CAN-bus	Standard M12 A-code plug, 5 pin Female Internal termination
Radio antenna	2.4GHz
Operating temp.	-30 - +70°C
Storage temp.	-40 - +85°C
Protection	IP67



TRANSTRONIC®

INKLINATOR® 2R



Small size and Cost effective

Easy to mount + Easy to read = Easy to use

Inklinator 2R measures side and inclination angles which makes it possible to drill in predestinated directions (inclinations)

The **advantage** with this system is considerable as it gives **less drill meters** per ton of rock, **lower consumption of explosives**, reduced time for alignment etc.



TRANSTRONIC®

Installation:

- Mount the instrument on a place in the feeder where is is easy to read.
- Connect the power supply
- Zero set the instrument by applying a magnet on the Z

Operation:

- Turn the sight toward an aiming point as far away as possible
- Adjust the feeder to match the requested drill angle



Specification:

Measurement range std.	side angle	+/- 30 deg
	inclination angle	+/- 30 deg
Accuracy, all transducers better than, 0,3 deg		
Power supply, 10 – 30 VDC, 0,2 A		
Dimensions: w=150mm, h=		



TRANSTRONIC®



Devibench RD

Hole deviation measuring

**TRANSTRONIC®**

Transtronic AB S-731 24 Köping, Sweden Phone +46 221 84 770

www.transtronic.se

Technical Specifications

Specification:

Measurement range:	Azimuth: 0 - 360° Pitch angle: $\pm 40^\circ$ from vertical plane Roll angle: $\pm 40^\circ$ from vertical plane
Accuracy:	Azimuth $< 0,5^\circ$ Pitch/roll $< 0,2^\circ$
Communication:	RS232 9600baud, no parity, 8 data bits, 1 stop bit
String format:	NMEA, \$HCXPR, <heading>, <roll>, *checksum<CR><LF>
Material	Aluminium DURAL
Probe diameter:	35mm, 1 3/8"
Probe length:	XXcm
Cable length:	Standard: 40m, marking every meter Optional: Up to 400m
Power supply:	7 – 15 VDC, 45mA
Enclosure:	IP68
Working temperature:	-40 - +85 °C

North Seeking Gyro 098100

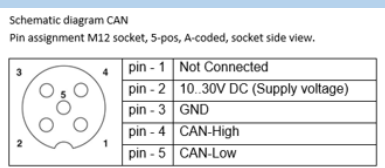
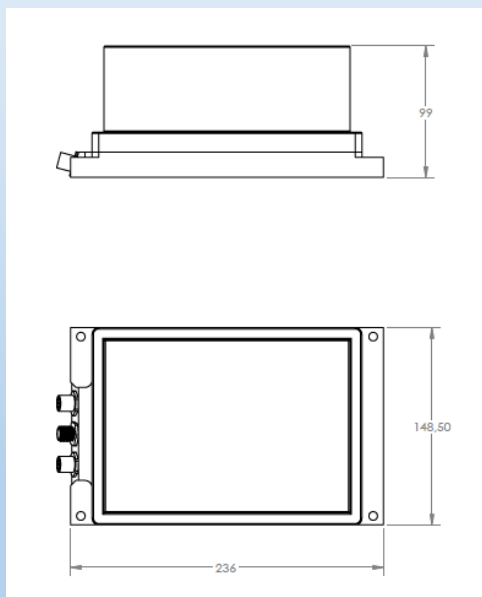


The gyro measures the north direction and calculates the sensors azimuth. The azimuth and, the roll and pitch angles are calculated and delivered as output values.

Primarily used as a direction reference of the carrier on the drill rig. The horizontal drill angle can be set to a true azimuth.

A future version will function as a battery powered handheld instrument. This version can then be placed directly against the feeder or drill rod and showing the angles on a handheld Android unit.

The transducer has 2 connectors for the CAN-Open communication including power supply



Technical data

Supply voltage	10 – 30 VDC
Power supply	500mA
Accuracy	
Azimuth	±0,8° RMS
Roll & Pitch	±0,8° RMS?
Start time, north seeking	5 min
Drift	±0,5° / 8h ±1,5° / 24h
Bus Connection	CAN-Open (ISO11896) WIFI
Nod ID	Default 12
Housing	Aluminum
Mounting	4 x M6 bolts
Connections:	
Power Supply	Standard M12 A-code plug, 5 pin male
CAN-bus	Standard M12 A-code plug, 5 pin male/female
Operating temp.	+5 - + 55°C
Protection	IP67
Versions	Handheld battery powered with WIFI connection to an Android display unit

INKLINATOR® CMX Bench

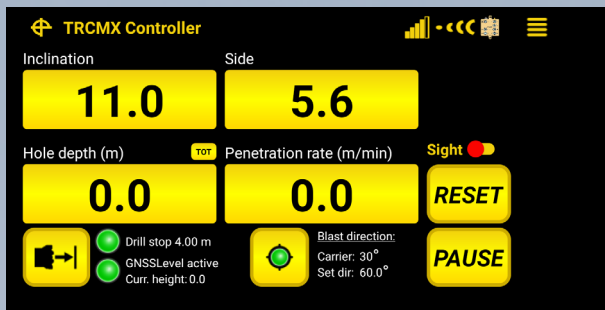


The **INKLINATOR** CMX Bench is a modular instrument system for all types of bench rigs. The master box is designed without displays and can be placed almost anywhere on the rig. Hidden under hatches, away from rain and snow. The display is a rugged IP68 Android phone and it communicates with the master box via a WIFI connection.

All settings at the installation, as well as all drilling related handling during the regular drilling, is done in the Android phone.

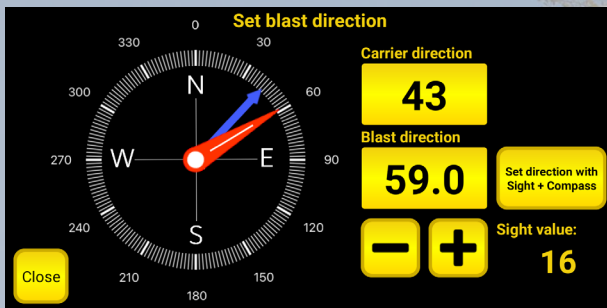
Several helpful graphical tools are implemented in the software. All for improving the drilling process.

All traditional features and options are available.

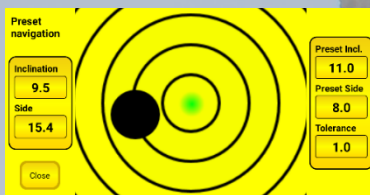


The TRCMX controller app
Main display with data fields and buttons

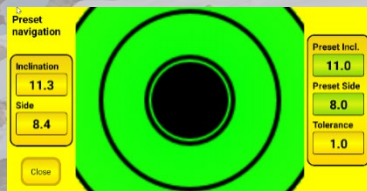
All fields showing live data is retrieved from the CMX master.



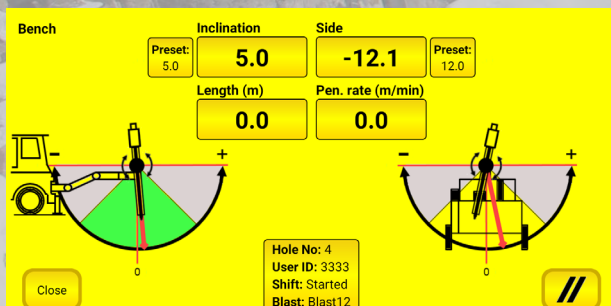
In the screen compass, the red pointer shows the set blast direction, and the blue pointer shows current carrier direction derived from the mounted GNSS Compass.



When navigating, the screen shows a black dot that moves with the angles on the feeder. The mission is to center the dot to the bulls-eye. As the dot approaches preset angle values, the image is zoomed in.



When the dot reaches the set angular values and is within the set tolerance, the dot is centered and the board background and each preset angle fields turns green.



Min drillstop (cm):

120

When min. drillstop in cm are set, then holes will be drilled at least to this level regardless of set drillstop depth or length.



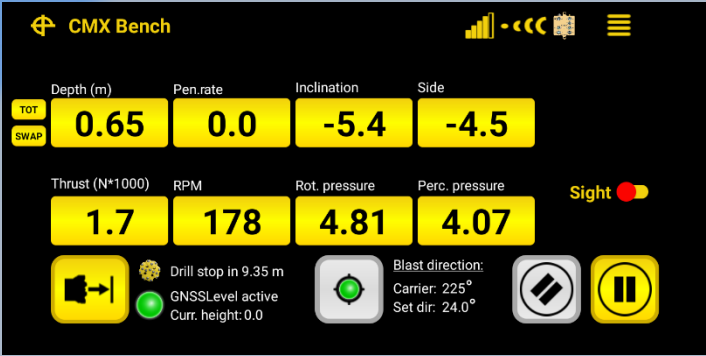
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INKLINATOR® CMX Exploration



The **INKLINATOR** CMX-Exploration is designed for Exploration drill rigs. The CMX-Exploration is a **modular system** that displays, collects, and log drilling data for documentation and statistical use. This improves the quality, accuracy and control of the drilling operation which in turn improves the productivity.

MWD-data logging is possible to add. This to make a geological evaluation of the rock regarding the rock hardness and detection of crack zones with water intrusion.



Main drilling screen.

The screen shows visible data when MWD data option is activated. Angles, drilled length and rate of penetration.

With MWD-data activated, the resulting Trust, RPM and the pressure on the rotation Can be seen on the screen in real time.

If wanted, a length stop can be set.

Kit:

The master unit communicates with the sensors via a CAN-Open network and can be mounted in a protected place.

The Android display are mounted on the operating panel.

Standard sensors are angle ang and length. Length measuring on/off is controlled with a pressure switch

Option MWD-data logging:
Pressure sensors on feed forward/backward, rotation and percussion.
RPM are measured with a proximity switch if Possible, otherwise a flowmeter.

Flushing water flow and pressure can also be measure and logged for detection of crack zones, with or without water inlet-



	A	B	C	D	E	F	G	H	I
1	Shift report								
2									
3	User ID	1118							
4	Shift start	2017-03-20 10:55							
5	Shift end	2017-03-20 10:57							
6	Blast name	Blast 5							
7	Total no holes	2							
8	Total length	4.56 m							
9	Average ROP	5.82 m/min							
10	Drill time	00:00:47							
11									
12	Shift Holes								
13	HoleNo	UserID	StartDateTime	EndDateTime	Inclination	SideAngle	DrillTime	DrillLength	AverageROP
14	[#]	[#]	[yyyy-mm-dd hh:mm:ss]	[yyyy-mm-dd hh:mm:ss]	[#]	[#]	[hh:mm:ss]	[m]	[m/min]
15	1	1118	2017-03-20 10:55	2017-03-20 10:56	10.3	16.6	00:00:19	1.76	5.56
16	2	1118	2017-03-20 10:56	2017-03-20 10:57	10.3	16.6	00:00:28	2.8	6.0
17									
18	Shift Events								
19	HoleNo	UserID	EventDateTime	DrilledLength	EventText				
20	[#]	[#]	[yyyy-mm-dd hh:mm:ss]	[m]	[#]				
21	1	1118	2017-03-20 10:56	1.1	User entered event 1				
22	2	1118	2017-03-20 10:57	1.46	User entered event 2				
23									

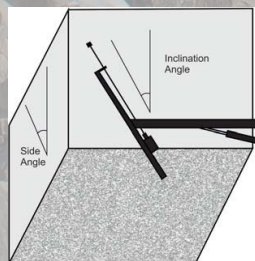
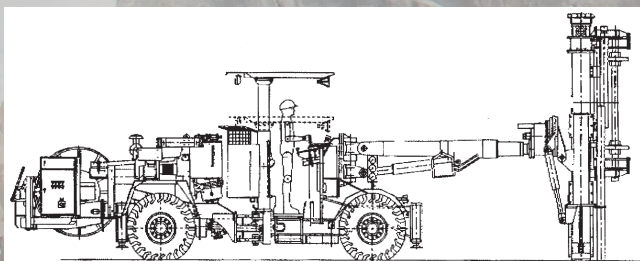
Export of logged data is done via the Android phone's WIFI or 5G connection to the internet. A csv. file can be sent to an e-mail addressor any cloud service.

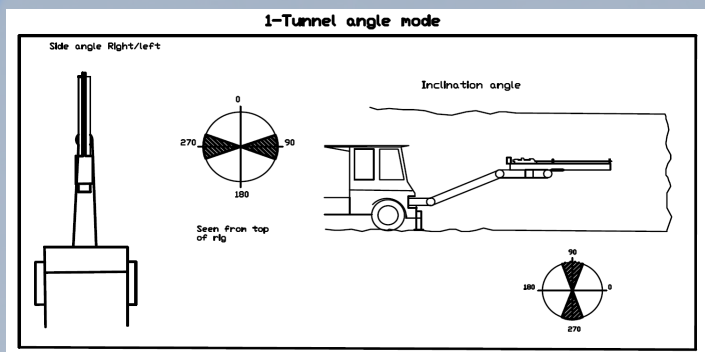


INKLINATOR® CMX UNI



The **INKLINATOR** CMX-UNI is designed for swinging boom drill rigs and tunnel rigs where you also want to drill holes for roof bolting. The CMX-UNI is a **modular system** that collects, displays and allows control of drilling-related information. This improves the quality and accuracy of the drilling operation which in turn improves productivity and working conditions for the operator and in all subsequent mining operations.

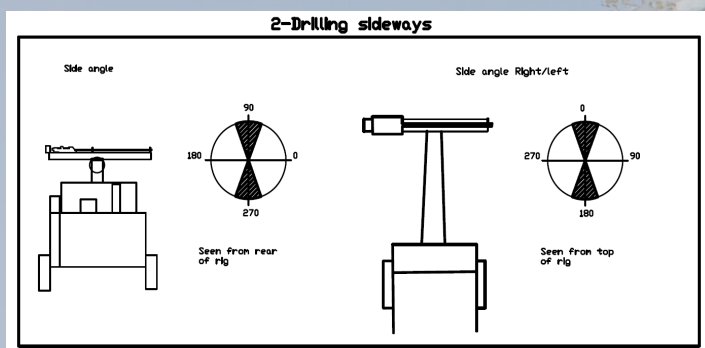




Mode 1 – Tunnel mode:

The system shows angles for a tunnel rig.

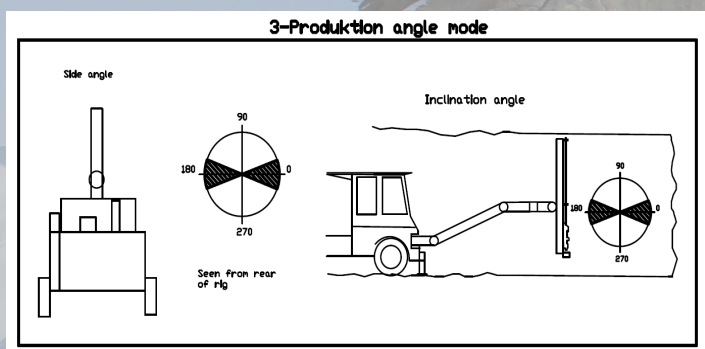
Upper display is dump angle and lower display side angle. If angle values are outside measurement range, the displayed angle values begin to flash. When this happens, change to “Production” or “Sideways” angle mode.



Mode 2 – Drilling sideways:

The system shows angles when drilling sideways.

Upper display is dump angle and lower display side angle. If angle values are outside measurement range, the displayed angle values begin to flash. When this happens, change to “Production” or “Tunnel” angle mode.



Mode 3 – Production mode:

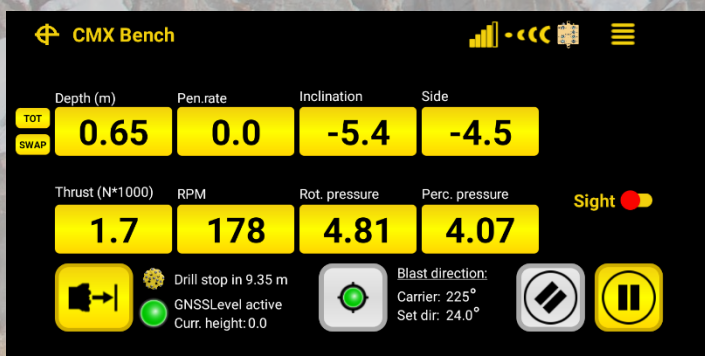
The system shows angles for a production rig.

Upper display is dump angle and lower display side angle. If angle values are outside measurement range, the displayed angle values begin to flash. When this happens, change to “Tunnel” or “Sideways” angle mode.

A mobile phone (Android) are used to show angles, drill length and penetration rate.

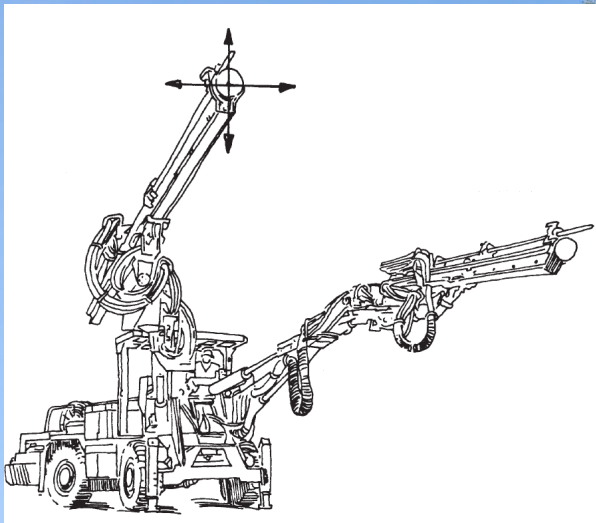
Options:

MWD data logging for geological evaluation
 Drill plan import/quality report export(coming)
 Height reference GNSS-Level
 GNSS Compass



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INKLINATOR® CMX Tunnel



The **INKLINATOR** CMX-Tunnel is designed for Tunnel Jumbos and is a **modular system** that displays vertical and horizontal angles. Collects, and log drilling data for documentation and statistical use. This improves the quality, accuracy and control of the drilling operation which in turn improves the productivity.

MWD-data logging is possible to add. This to make a geological evaluation of the rock regarding the rock hardness and detection of crack zones with water intrusion.



Main drilling screen.

The screen shows visible data. with length sensor is mounted.

Angles, drilled length and rate of penetration.

With a length sensor mounted, a length stop can be set.

Kit:

The master unit communicates with the sensors via a CAN-Open network and can be mounted in a protected place.

The Android display are mounted in the Cabin.

Standard sensors are two boom joint sensors for measuring the resulting horizontal angle and the vertical angle on the feeder. The vertical angle sensor is compensating for the roll over movement

Option length measuring:

Either a wire sensor is mounted or a flowmeter. Length measuring on/off is controlled with a pressure switch

Option MWD-data logging:

Pressure sensors on feed forward/backward, rotation and percussion.

RPM are measured with a proximity switch if Possible, otherwise a flowmeter.

Flushing water flow and pressure can also be measure and logged for detection of crack zones, with or without water inlet.

Export of logged data is done via the Android phone's WIFI or 5G connection to the internet. A csv. file can be sent to an e-mail addressor any cloud service.



	A	B	C	D	E	F	G	H	I
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13	HoleNo	UserID	StartDateTime	EndDateTime	Inclination	SideAngle	DrillTime	DrillLength	AverageROP
14	[#]	[#]	[yyyy-mm-dd hh:mm:ss]	[yyyy-mm-dd hh:mm:ss]	[#]	[#]	[hh:mm:ss]	[m]	[m/min]
15	1	1118	2017-03-20 10:55	2017-03-20 10:56	10.3	16.6	00:00:19	1.76	5.56
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