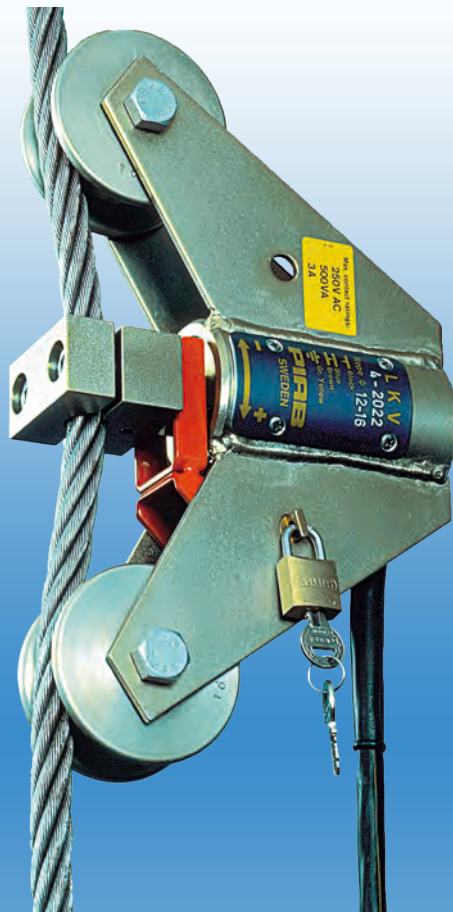
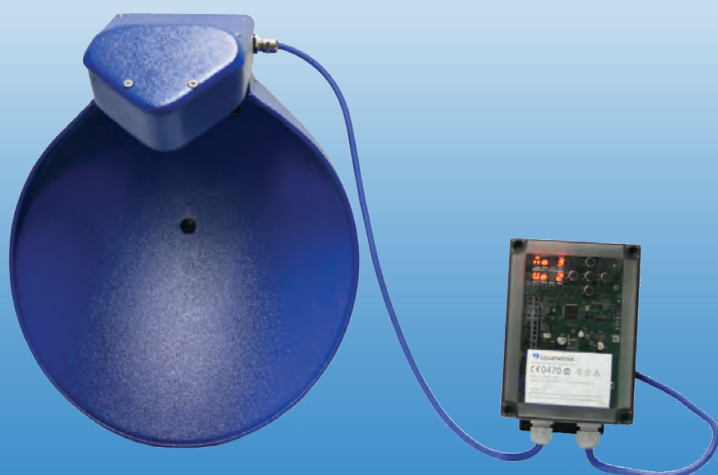




GIGAsense

QUALITY AND SERVICE TAKEN SERIOUSLY



PIAB

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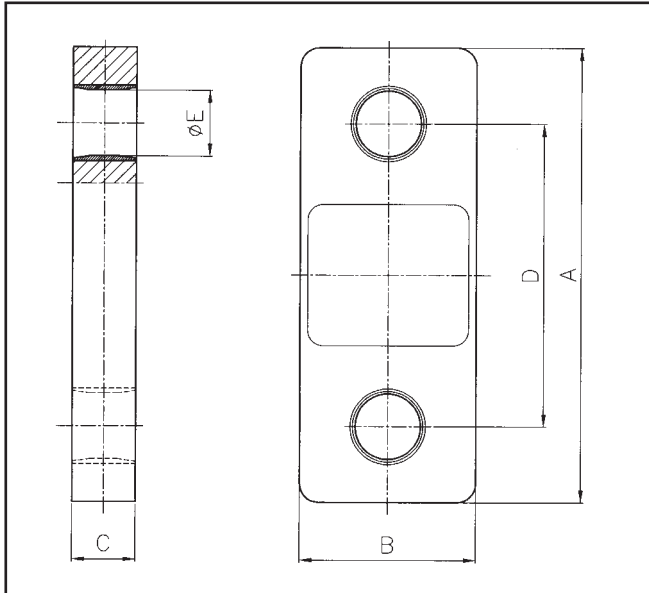
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Wireless Load Cell / Load Link with Readout Instrument



Lightweight Load Cell made from High Tensile Alloy
Capacities from 5000 kg to 200 000 kg



Wireless Transmitter Specification	
Power Supply	2 x AAA Battery
Supply Current	13mA (1k Ω bridge)
Bridge Excitation	5 Vdc
Bridge Resistance	>350 Ω
Reading Rate	2.5 /second
Input Range	0.2 to 2.5 mV/V
Non-Linearity	<0.01 % Full Scale
Temp. Range	-20 to 60 $^{\circ}$ C
Zero Tempco	0.2 μ Volts/ $^{\circ}$ C typ.
Span Tempco	<30 ppm/ $^{\circ}$ C
Radio Power	10mW
Radio Freq.	2.4 GHz
Range	100m direct line of sight
Standard Functions	
On/Off Switch	
Input Range Selector	
Transmission L.E.D.	
Overload warning	at R.C. x 105%
Low Battery Indication	

Type		LW-5	LW-10	LW-20	LW-50	LW-100	LW-200
Capacity - WLL (kg)		5000	10 000	20 000	50 000	100 000	200 000
Weight (kg)		1.6	3.0	5.0	12.0	27.0	65.0
Resolution		0.000	0.000	0.00	0.00	0.00	0.00
Safety Factor - S.F.	5 times WLL						
Display	8-Digit 9 mm LCD						
Unit (one)	kg, tonne (metric ton), kN, dN, N, lb x 1000 or lb						
Max Deviation	+/- 0.5 % of Applied Load						
Protection Class	IP65						
Dimension A (mm)		250	290	320	410	540	690
Dimension B (mm)		95	101	127	152	210	310
Dimension C (mm)		35	50	55	75	120	145
Dimension D (mm)		170	180	200	250	320	396
Dimension E (mm)		27	48	55	76	100	135
Readout Instr. Dim	Type: LI-500 Dim.: Height = 152 mm Width = 90 mm Depth = 35 mm						



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PIAB LKVE

Force Transmitter



The PIAB LKVE is a force transmitter which is attached to a stationary rope part. PIAB LKVE gives a 4-20mA output signal. It has high repeatability, is made for use in aggressive industrial environments and fully conforms to IP 67.



Range of Application

The PIAB LKVE combined with a PIAB Electronic Unit or a PIAB Crane Safety Monitor is intended for use as an overload guard or a slack rope

switch in lifting equipment and is made in a range for forces up to 16000 kp in single rope part and for max. 44 mm rope diameter.

Function

The PIAB LKVE consists of a load cell with amplifier and an electronic signal processing unit.

The PIAB LKVE is attached to a stationary rope part. The rope is deflected through a slight angle between the two wheels and the clamping jaw. When loaded, the rope tends to straighten and applies a force on the load cell. The foil gauge of the load cell is fed with a

constant tension from the transmitter amplifier. A signal is received in return, which is proportional to the force on the load cell. This signal is amplified and is converted to a current signal of 4 - 20 mA.

The strong signal makes it possible for the distance between the force transmitter and the electronic unit to be up to 550 yards (500 m).

Protection against corrosion

The PIAB LKVE is Zinc coated and yellow chromated. The bearings of the hardened wheels are sealed with O-rings and lubricated with MoS.

The load cell and the amplifier are hermetically sealed and meet the requirements for international protection specification class IP 67 according to IEC 144.

Safety

The PIAB LKVE is not directly included in the rope system and does not affect the construction of the lifting equipment.

The clever design of the clamping jaw keeps the measurement test result unaffected by the changes in the rope diameter that occur after some use.

Together with PIAB electronics, the PIAB LKVE is protected against faulty operation and adopts overload mode in all combinations of cable break-downs or short circuits that can arise due to cable damage.

The load cell can be mechanically overloaded by 100% nominal load without affecting the accuracy of measurement.

Measuring signal

The PIAB LKVE gives a defined output of 4-20 mA, which is hard to disturb. The strong signal manages serial resistances of up to 250 ohm and the cable can therefore be lengthened without special demands on joints or cable lengths.

The unshielded cable, 4x1/16 sq. inch (4x1.5 mm²) transfers supply voltage to the transmitter amplifier and load cell as well as measuring signal to the PIAB Electronic Unit. The cable can be placed close to other live cables without affecting the measuring signal.

PIAB LKVE is also available without transducer amplifier and is then called LKVEI. The impedance of the transducer bridge is 350Ω and the sensitivity 1.6 mV/V nominally. Recommended supply voltage 10 VDC.

TYPE	MAX.SWITCH VALUE IN LB.(KG)	FOR WIRE DIMENSION Ø IN INCHES AND (MM)			DEADWEIGHT IN LB. (KG)	DIMENSIONS IN INCHES AND (MM)				
						A	B	C	D	E
LKVE 1	2200 (1000)	3/16-	5/16	(5-8)	10 (5)	7.8740 (200)	10.7087 (272)	4.8031 (122)	1.1024 (28)	2.1654 (55)
LKVE 2	4400 (2000)	5/16-	15/32	(8-12)						
LKVE 4	8800 (4000)	15/32-	5/8	(12-16)						
LKVE 8	17600 (8000)	5/8-	25/32	(16-20)	26 (12)	11.8110 (300)	15.9853 (406)	5.5118 (140)	1.5354 (39)	2.4803 (63)
LKVE 12	26000 (12000)	25/32-	15/16	(20-24)						
		15/16-	1.7/64	(28-32)						
LKVE 16	35000 (16000)	1.7/64-	1.1/4	(28-32)	48 (21)	11.8110 (300)	15.9853 (406)	5.5118 (140)	1.5354 (39)	2.4803 (63)
		1.1/2-	1.3/4	(40-44)						
		1.1/4-	1.27/64	(32-36)						

Applications for the **PIAB** LKVE



In order to avoid damage caused by overloading in multi-point lifting, the PIAB LKVE protects each lift and the various combinations simultaneously.



The PIAB LKVE force transmitter together with a PIAB Electronic Unit or PIAB Crane Safety Monitor protects people and property.

9102-1_110128

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PIAB Dynamometer



For accurate measurement of tension forces. The PIAB Dynamometer is an extremely robust and reliable instrument. The PIAB Dynamometer conforms to Protection Class IP67 acc. to IEC529.



Range of Application

The PIAB Dynamometer is an all-weather instrument, equally suitable for use in the laboratory as out in

the field for weighing and measuring mechanical forces.

Function

The pull rod movement operates the scale drum through a square thread stem.

The power-absorbing element consists of specially made Belleville

type spring washers, designed to be entirely free from wear.

The spring washers cannot be overloaded.

Safety

Safety factor 5:1, guaranteed to withstand a load of 5 times full scale reading before rupture. The resistance to rupture is tested by the National Swedish Institute for Materials Testing. The PIAB Dynamometer may be overloaded by 100% without impairing the accuracy.

The PIAB Dynamometers, types M-G, have drop-forged steel eye brackets (SIS 2174, St 52-3N acc. to DIN 17100, 50 D acc. to BS 4360); giving a guaranteed impact resistance to -20°C.

The O-ring of the pull rod is protected by a neoprene rubber membrane. On instantaneous unloading, e.g. breaking test, the return movement of the pull rod is retarded by a specially made spring washer. The PIAB Dynamometer is approved by the National Board of Occupational Safety and Health for integral connection in the carrying system of a lifting device and for weighing of test loads in connection with inspection.

Dynamometer for remote reading

The PIAB Dynamometer used for remote reading is supplied with a builtin precision potentiometer. The potentiometer is directly connected to the scale mechanism of the PIAB instrument.

The electrical resistance of the potentiometer varies in proportion to

the load on the dynamometer.

The resistance is indicated on a receiving instrument, calibrated individually and marked with the same serial number as the dynamometer. The electrical connections are made on a connection block in a surface mounted connection box.

Contact function

The PIAB Dynamometer can be equipped with a built-on adjustable Switch Head. Using a microswitch, which is directly influenced by the pull rod, the PIAB Dynamometer

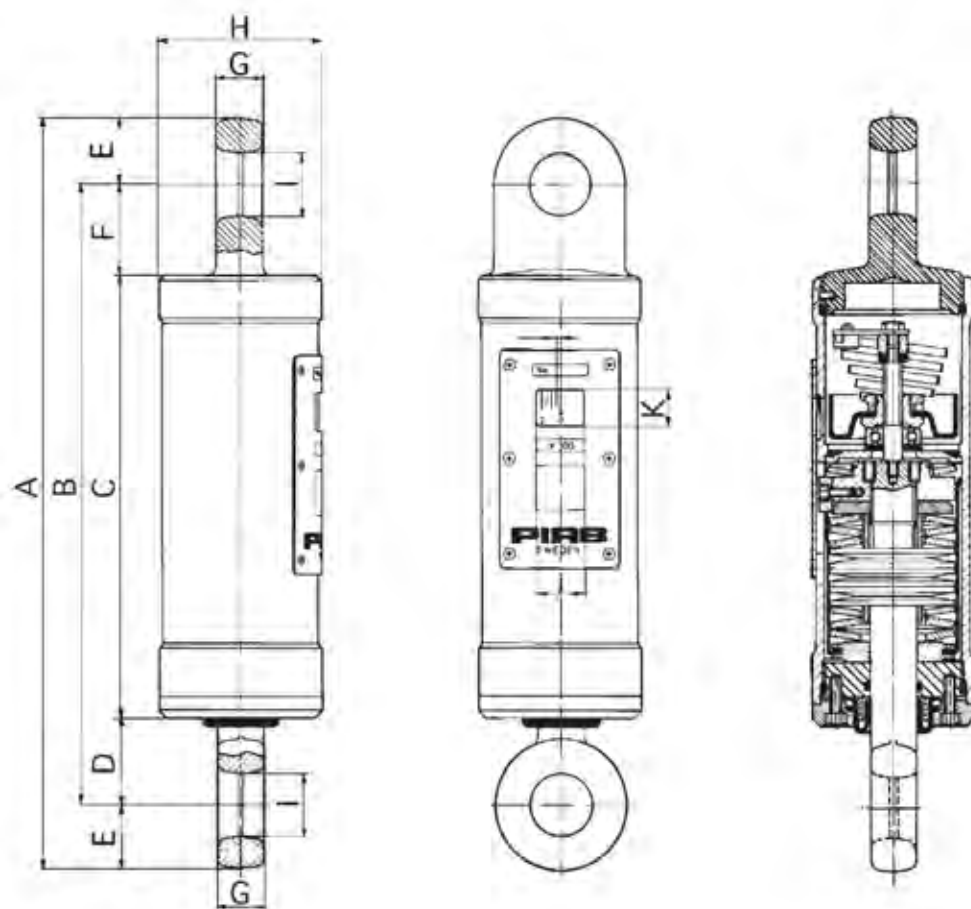
gives an electrical contact function at a preset value. For further technical specifications please refer to PIAB Info 9116-1 PIAB Switch Head Dynamometer.

Protection against corrosion

The PIAB Dynamometer is fully pressure tight and each instrument is pressure tested. The external surfaces are zinc plated with clear

chromate passivation.

If the PIAB Dynamometer is to be used in a very corrosive atmosphere, it can be polyester lacquered.



Technical Data

INACCURACY

±0,6% of the max.capacity.

WORKING TEMPERATURE

Max.+60°C.

TAREING

The dynamometer can be tared to approx.10% of the full scale. To obtain best accuracy the dynamometer should be supplied calibrated for a known tare.

SCALE

White lacquered with black graduation. The dynamometer can be graduated in kg, kp, N, lb., cwt. etc.

PROTECTION CLASS

IP 67, IEC 529 NEMA 4X

ART. NO.	TYPE	CAPAC-ITY	GRADUATION		DEAD WEIGHT	MEASURES IN MM									
			1	MM		A	B	C	D	E	F	G	H	I	JxK
300015	K*	0-250 kg	5 kg	2,2	1,9 kg	266	230	165	42	18	23	20	50	17	24x20
300020	A*	0-500kg	10 kg	2											
300025	B*	0-1000 kg	20 kg												
** 300030	Bx1,5	0-1500 kg	50 kg	3,6	2,3 kg	292	256	191	42	18	23	20	50	17	
300030	M	0-2000 kg	25 kg	2,3	7,8 kg	395	327	234	45	34	48	25	86	33	26x20
300035	O	0-3000 kg	50 kg	2,5											
300040	Q	0-5000 kg	50 kg	2,5											
300045	S	0-10000 kg	100 kg	3,5	26,5 kg	495	385	260	60	55	65	45	149	56	
300050	U	0-20000 kg	200 kg	4,2	78 kg	675	505	300	102	85	103	70	228	81	65x23
300055	G	0-25000 kg	200 kg												
300060	E	0-50000 kg	250 kg	2,7	115 kg	831	631	387	123	100	121	95	234	115	

The pull rod movement at full load is approximately 10 mm.

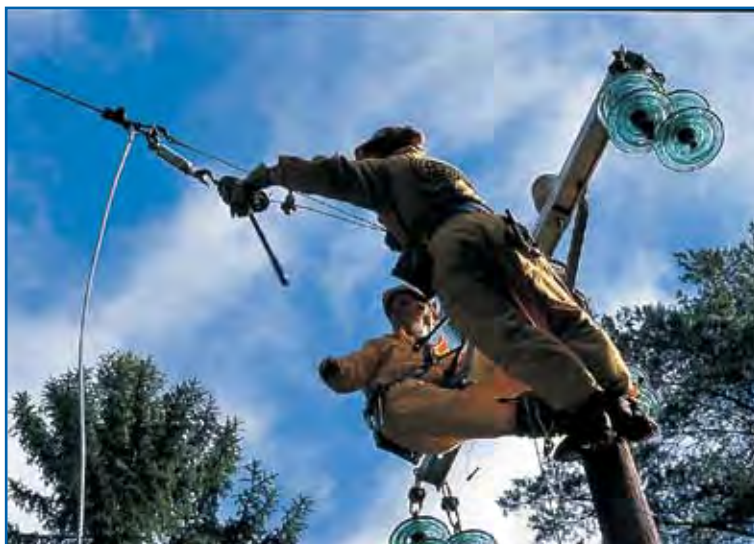
*On the types K-B with built-in potentiometer the length increases by 56 mm.

We reserve the right to change the specifications without notice.

**) Safety factor 4:1

Applications for the **PIAB** Dynamometer

In line construction it is important to control the installed tension of conductors according to type and conditions. For field work light and robust equipment is especially important. The PIAB Dynamometers are used for this duty all over the world.



Obligatory standards of control for occupational safety and health require that safety ropes and belts are regularly and properly checked.



This electrical overhead traveling crane is protected against overload by a PIAB Dynamometer in the hookline anchorage, giving the crane operator the actual load on the hook together with overload warnings and power shunt.



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PIAB Automatic Lifting Hook IS



Automatically hooks up, safety locks and releases. The risk for injury is dramatically reduced. No climbing or helpers injured or squeezed by the load in the dangerous loading or drop zone.

New Concept Saves Time and Increases Safety

Lifting operations with mobile cranes and industrial hoists can safely be managed by the operator alone. He can remain at the controls during lifting and release operation.

The IS Hook is available in 5 sizes from 2 to 20 tons. It is easy to operate, has rugged design and a high reliability.

HOOK UP

Lifting eye or sling.

LIFT

When the PIAB IS Hook is engaged, the load tension automatically safety locks the hook and housing assembly.

LOWER

After completed lifting operation the PIAB IS Hook is lowered until it tilts into release position and opens.

RELEASE

The PIAB IS Hook automatically frees itself from the load and is ready for the next lifting operation.

APPLICATIONS

Blasting mats, pipes, pumps, machines, gas bottles, big bags and general lifting.

The PIAB IS Hook consists of hook, housing and link. Forged hook, housing and link are of high-grade alloy steel. Unloaded, the spring loaded hook is pulled up against the housing in an open, ready-to-load position where it can easily be hooked onto a sling, lifting eye or other attached hardware.

When the PIAB IS Hook is engaged, the load tension closes the hook opening, and the safety latch is automatically locked.

The hook remains safety locked even if it is unloaded. It is therefore possible to safely set down the load and make sling adjustments.

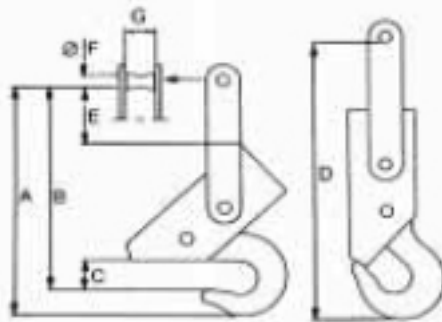
To release the safety lock after completed lifting operation, the hook is lowered until the upper link has tilted approx. 60° in relation to the housing.

When the lock is released, the hook swings up into an open starting position.

The load is released, and the hook is ready for a new lifting operation.

The IS Hook is tested and approved by the Swedish Institute for Materials Testing.

Transport case is optional.



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IS	WORKING LOAD LIMIT TON		DIMENSIONS MM							WEIGHT APPROX. KG
	SAFETY FACTOR		A	B	C	D	E	F	G	
	4:1	5:1								
2	2	16	310	280	60	340	80	20	42	3,0
5	5	42	360	325	50	430	90	32	67	6,7
10	10	8	490	425	65	580	110	44	58	15
15	15	12	525	460	80	625	115	54	72	24
20	20	16	580	500	80	700	130	65	83	37

PIAB LL-Link

with Instrument



The PIAB LL Link is designed to measure forces and weights in an aggressive environment and conforms to the International Protection Specification Class IP 67 acc. to IEC 529.



DIMENSIONS OF TRANSPORT CASE

DIMENSIONS IN INCHES AND (MM)

4400 lb., 6600 lb.,
11000 lb. & 22000 lb.
(2, 3, 5 & 10 ton):
14.61/64x9.1/4x5.1/2"
(380x230x140 mm)
44000 lb. (20 ton):
18.1/2x9.54/64x5.1/2"
(470x250x140 mm)
110000 lb. (50 ton):
24.1/64x11.27/64x5.1/2"
(610x290x140mm)
165000 lb. (75 ton):
24.38/64x11.27/64x5.1/2"
(650x290x140mm)

Range of Application

The PIAB LL Link is designed to measure tension forces and weights. It is made to withstand extreme environmental conditions and conforms to the International Protection

Specification Class IP 67 (dust-proof and water pressure tight) acc. to IEC 529. For a very aggressive environment polyester lacquering is recommended.

Function

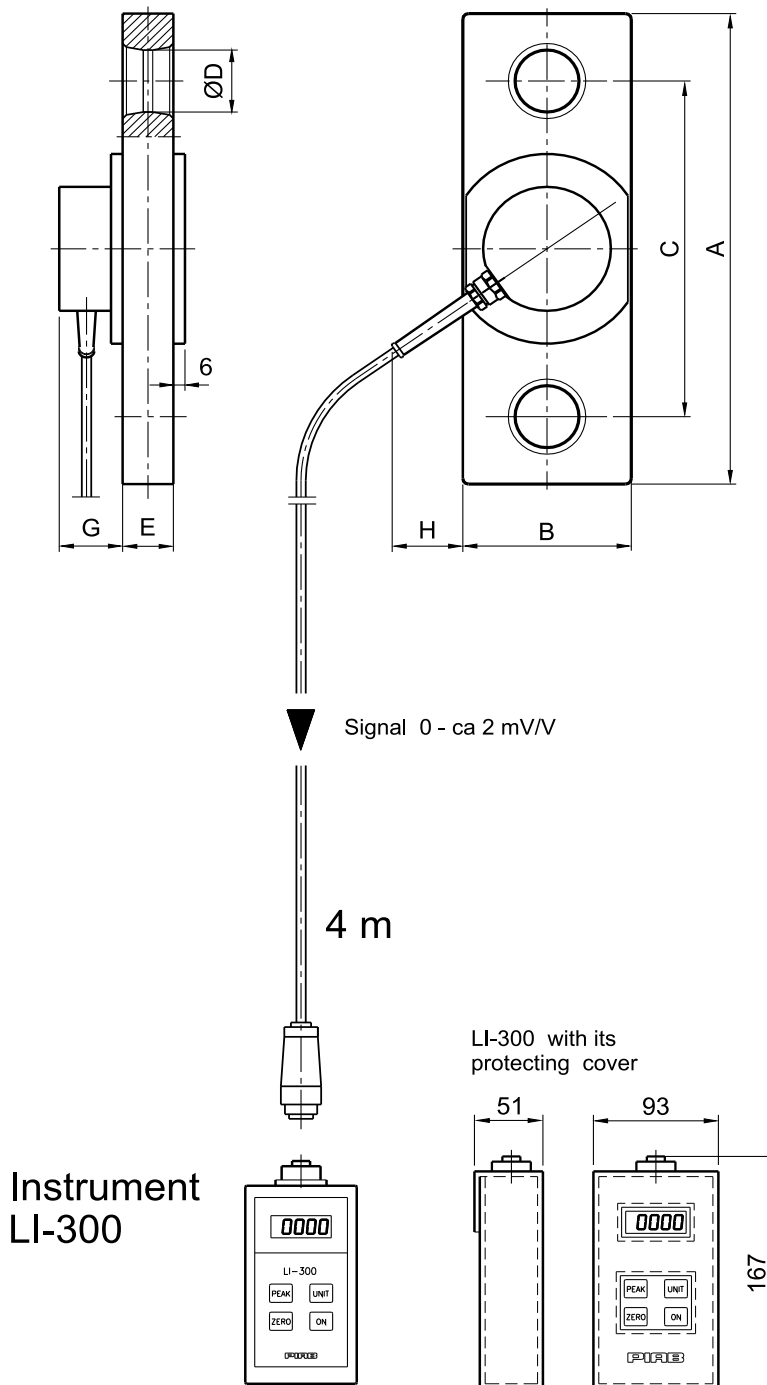
The tension force affecting the PIAB LL Link is measured by means of strain gauges. Four strain gauges are connected in a Wheatstone bridge and fed with a stabilized voltage. The signal output from the bridge is proportional to the force on the PIAB LL Link. The signal is amplified, converted and the force (weight) is

shown on the digital display (LCD) of the PIAB Remote Read-Out Instrument. The PIAB Remote Read-Out Instrument and the PIAB LL Link are operated by a built in 9V battery. An extension cable can be connected between the Link and Instrument.



The Link and Instrument are delivered in a tough transport case with space provided for a 33 ft. (10 m) extension cable.

Load Link type: LL (Load Cell)



Instrument
LI-300

ART.NO.	TYPE	CAPACITY LB. (TON)	RESOLUTION LI300 LB.(KG)	WEIGHT LB. (KG)	DIMENSIONS IN INCHES AND (MM)							
					A	B	C	D	E	F	G	H
302332	LL-2	0-440 0 (0-2)	2 (1)	5.7 (2.6)	8.1/8 (205)	2.46/64 (69.3)	5.58/64 (150)	1.1/64 (26)	25/32 (20)	15/64 (6)	1.7/32 (31)	2.43/64 (68)
302337	LL-3	0-6600 (0-3)	2 (2)	5.9 (2.7)	8.1/8 (205)	2.54/64 (72.4)	5.58/64 (150)	1.1/64 (26)	25/32 (20)	15/64 (6)	1.7/32 (31)	2.43/64 (67)
302342	LL-5	0-11000 (0-5)	5 (2)	11.1 (5.0)	10.10/64 (258)	3.34/64 (89.6)	7.15/64 (184)	1.22/64 (34)	1.1/16 (27)	15/64 (6)	1.11/32 (34)	2.9/32 (58)
302347	LL-10	0-22000 (0-10)	10 (5)	15.6 (7.1)	11.52/64 (300)	3.49/64 (96)	8.1/32 (204)	1.52/64 (46)	1.3/8 (35)	15/64 (6)	1.11/32 (34)	2.13/64 (56)
302352	LL-20	0-44000 (0-20)	20 (10)	42.7 (19.4)	16.35/64 (420)	5.51/64 (147)	11.27/64 (290)	2.23/64 (60)	1.27/32 (47)	15/64 (6)	1.27/64 (36)	2 (50)
302362	LL-50	(0-50) 0-110000	50 (20)	66.0 (30.0)	21.17/64 (540)	7.23/64 (187)	13.50/64 (350)	3.47/64 (95)	1.27/32 (47)	15/64 (6)	1.27/64 (36)	1.3/16 (30)
302377	LL-75	(0-75) 0-165000	100 (50)	110.0 (50.0)	22.2/64 (560)	7.23/64 (187)	13.50/64 (350)	3.47/64 (95)	3.1/32 (77)	15/64 (6)	1.27/64 (36)	1.3/16 (30)

Technical Data

LL LINK

ACCURACY

± 0.15 % of the max. capacity.

MATERIAL

High-tensile steel, zink coated and white chromated. Extra: polyester lacquering.

INTERNATIONAL PROTECTION SPECIFICATION CLASS

IP 67 acc. to IEC 529.

TEMPERATURE RANGE

+4°F+158°F (-20°C – +70°C).

OVERLOAD

50 % without affecting the accuracy.

SAFETY FACTOR

5:1.

CABLE

Screened, 13 ft. (4 m) length as a standard.

EXTENSION CABLE

Optional; complete with connections in 17 ft. (5 m) or 33 ft. (10 m) lengths.

INSTRUMENT LI 300

GRADUATION

ton and kN, or ton and lb.

DISPLAY

LCD, 0-19999, height of figures 12 mm.

TEMPERATURE RANGE

+4°F+158°F (-20°C – +70°C).

TAREING

0-100%.

CAPACITY/RESOLUTION

LL 2, 2 lb. (1 kg)
LL 3, 2 lb. (2 kg)
LL 5, 5 lb. (2 kg)
LL 10, 10 lb. (5 kg)
LL 20, 10 lb. (10 kg)
LL 50, 50 lb. (20 kg)
LL 75, 100 lb. (50 kg)

BATTERY

9 V (6LR61), alkaline or lithium.

OPERATING TIME

Approx. 50 hours with a lithium battery.

INTERNATIONAL PROTECTION SPECIFICATION CLASS

IP 65. ABS plastic with case.

CONNECTION

7-pin plug for transducer cable.

POWER CONSUMPTION

21 mA.

MISCELLANEOUS

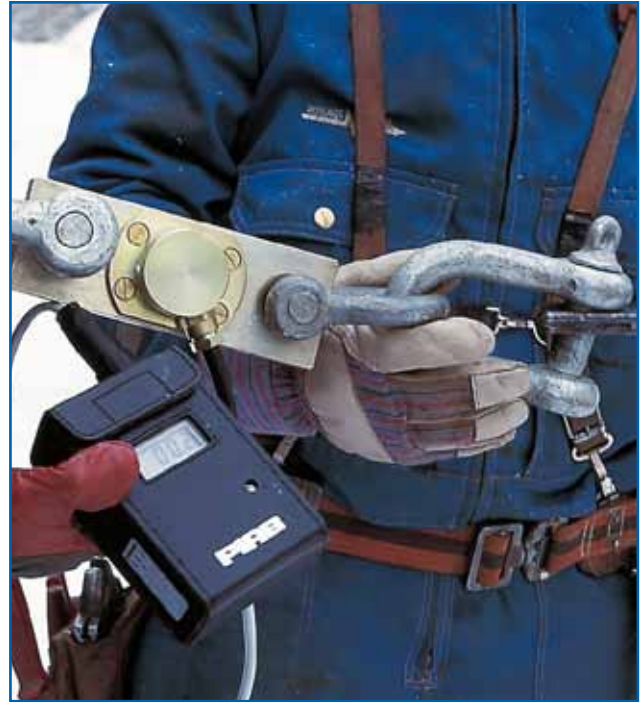
Peak hold. A 6-wire system with sensing compensates for voltage drop over long cable lengths between transducer and instrument.

The displayed value is not affected by the cable length. Weight: approx. 0.55 lb. (0.25 kg) without case.

Examples of the **PIAB** LL Link in Use



Testing the PIAB LL Link.



Here the PIAB LL Link and PIAB Instrument are used when weighing engine parts.



Check-up on lifting tools.



Test of towing winch at an ice-breaker.

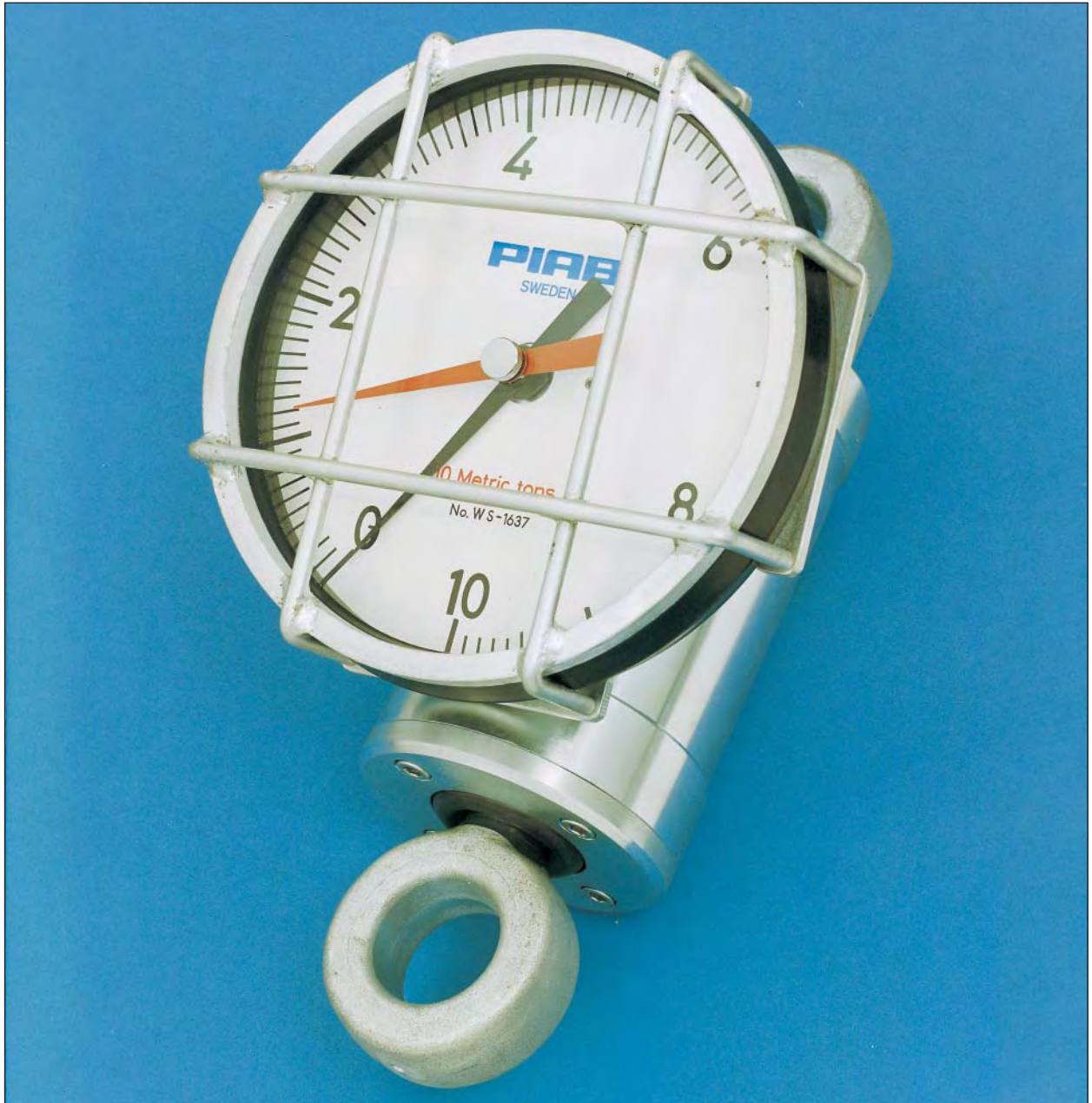
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PIAB Craneweigher



For weighing and force measurement where the demands for accuracy, reliability and safety are high. The PIAB Craneweigher is constructed for continuous service under the most severe conditions.

TECHNICAL DATA

ACCURACY

±0.5% of the max. capacity.

WORKING TEMPERATURE

Max. 140°F (+60°C).

If the crane weigher is used above objects emitting strong radiant heat, e.g. in foundries, it should be equipped with the heat radiation shield and machine glass.

TAREING

The crane weigher can be tared to approx. 10% of the full scale.

SCALE

Ø 11-15/64" inclined 20° to facilitate reading from below. The scale is white lacquered with black graduation. It is also available with intermediate graduation.

MAX. DEFLECTION

Approx. 330°.

GRADUATION

The crane weigher can be graduated in kg, kp, N, lb, cwt, etc.



RANGE OF APPLICATION

The PIAB Crane weigher is an all-weather instrument and may be supplied with remote-reading instruments for weighing and for measuring mechanical forces.

FUNCTION

The pull rod operates the pointer through a spring loaded floating transmission mechanism. This allows the PIAB Crane weigher to withstand very severe shock loads and rapid unloading. The power-

The PIAB Crane weigher is exceptionally well suited for measurements in breaking tests, as the maximum load pointer remains at the breaking point or maximum value reached.

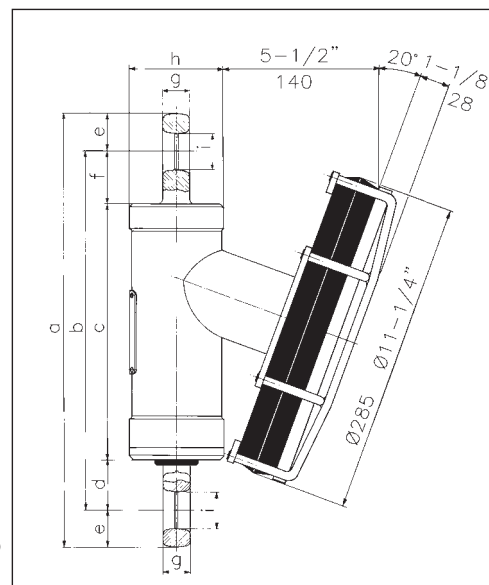
absorbing element consists of specially made Belleville type spring washers, so designed as to be entirely free from wear. The spring washers cannot be overloaded.

SAFETY

Safety factor 5:1. Guaranteed to withstand a load of 5 times full scale reading before rupture. The crane weigher may be overloaded by 100% without impairing the accuracy. The scale is protected by thick acrylic glass and a heavy duty removable wire shield.

The O-ring of the pull rod is protected by a neoprene rubber membrane. On instantaneous unloading, e.g. breaking test, the return movement of the pull rod is retarded by a specially made spring washer.

The pull rod movement at full load is approximately 25/64". We reserve the right to change without notice.



ART.NO.	TYPE	CAPACITY	GRADUATION	DEAD WEIGHT	MEASUREMENTS IN INCHES AND (mm)									
					a	b	c	d	e	f	g	h	i	
300420	WA	500 kg	5 kg	35 lb (16 kg)	15-9/16" (395)	12-7/8" (327)	9-7/32" (234)	1-49/64" (45)	1-11/32" (34)	1-57/64" (48)	63/64" (25)	3-25/64" (86)	1-19/64" (33)	
300421	NWA	5 kN	50 N											
300422	WC	1100 lb	10 lb											
300425	WB	1000 kg	10 kg											
300426	NWB	10 kN	100 N											
300427	WD	2200 lb	20 lb											
300430	WM	2000 kg	20 kg	53 lb (24 kg)	16-1/4" (413)	12-15/16" (329)	9-1/16" (230)	1-49/64" (45)	1-21/32" (42)	2-11/64" (55)	1-3/16" (30)	4-51/64" (122)	1-37/64" (40)	
300431	NWM	20 kN	200 N											
300432	WN	4400 lb	50 lb											
300435	WO	3000 kg	20 kg	79 lb (36 kg)	19-1/2" (495)	15-5/32" (385)	10-15/64" (260)	2-23/64" (60)	2-11/64" (55)	2-9/16" (65)	1-49/64" (45)	5-55/64" (149)	2-13/64" (56)	
300436	NWO	30 kN	200 N											
300437	WP	6600 lb	50 lb											
300440	WQ	5000 kg	50 kg	196 lb (89 kg)	26-37/64" (675)	19-7/8" (505)	11-13/16" (300)	4-1/64" (102)	3-11/32" (85)	4-1/16" (103)	2-3/4" (70)	8-31/32" (228)	3-3/16" (81)	
300441	NWQ	50 kN	500 N											
300442	WR	11000 lb	100 lb											
300445	WS	10000 kg	100 kg	196 lb (89 kg)	26-37/64" (675)	19-7/8" (505)	11-13/16" (300)	4-1/64" (102)	3-11/32" (85)	4-1/16" (103)	2-3/4" (70)	8-31/32" (228)	3-3/16" (81)	
300446	NWS	100 kN	1 kN											
300447	WT	22000 lb	200 lb											
300450	WU	2000 kg	200 kg	196 lb (89 kg)	26-37/64" (675)	19-7/8" (505)	11-13/16" (300)	4-1/64" (102)	3-11/32" (85)	4-1/16" (103)	2-3/4" (70)	8-31/32" (228)	3-3/16" (81)	
300451	NWU	200 N	2 kN											
300452	WV	44000 lb	500 lb											
300455	WG	25000 kg	200 kg	196 lb (89 kg)	26-37/64" (675)	19-7/8" (505)	11-13/16" (300)	4-1/64" (102)	3-11/32" (85)	4-1/16" (103)	2-3/4" (70)	8-31/32" (228)	3-3/16" (81)	
300456	NWG	250 kN	2 kN											
300457	WH	55000 lb	500 lb											

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PIAB RTM 20D

Rope Tension Meter



The PIAB RTM 20D can be used in applications where accurate measurement in pre loaded wire ropes is required. Such applications can be stay ropes, suspension ropes, catenary ropes etc. The PIAB RTM 20D is applied direct to the rope and the measured tension value is presented digitally.



Range of Application

The PIAB RTM 20D was designed to swiftly and accurately measure the tension in fixed or stationary ropes or cables i.e. guy wires for masts and/or towers or other guyed constructions.

The PIAB RTM 20D will also be very useful in determining the tension in overhead suspension ropes for railways catenaries.

The PIAB RTM 20D can be used to measure tension forces up to 20 metric ton and for wire ropes with a diameter of up to 38 mm. Thanks to the use of microprocessor technology the PIAB RTM 20D can be calibrated on up to 10 different wire rope dimensions/types. The digital read out display will clearly show the tension of the wire rope selected. No calibration tables are required.

Function

The PIAB RTM 20D is very simple and handy to use. Simply hold and "clip" it to the rope to be tested and use the large hand screw to deflect the rope to a fixed angle.

The resultant force will then affect the load cell and measure

the tension in the wire rope.

The resultant signal is digitally processed and displayed in a graduation selected and pre programmed.

The PIAB RTM 20D can be graduated in kN, klb. or in metric ton.

Safety

The PIAB RTM 20D is a delicate testing instrument for swift, handy and accurate testing of pretensioned stationary ropes.

Thanks to the design of the instrument it can temporarily be overloaded with 100% of its nominal capacity without affecting the accuracy of the instrument.

Tempered outer rope supports and centre clamping jaw give the instrument a long service life with accurate measurements.

The PIAB RTM 20D is delivered in

a robust and light weight transport case (760 x 400 x 170 mm) for easy handling and protection of the instrument.

Technical Data

CAPACITY, MEASUREMENT RANGE

2,0 ton
5,0 ton
10 ton
20 ton

ROPE DIAMETERS

From 6 mm up to 38 mm.

NUMBERS OF ROPES TO BE STORED

Up to 10 (factory programmed).

ACCURACY

2-6% of max. capacity
(dependent on wire rope type and characteristics).

DISPLAY

Digits 12 mm, LCD, 0-19999.

BATTERY

9 V standard, 6LR61 or equivalent.

OPERATING TIME

25 hours.

MATERIAL

Corrosion and weather resistant,
side plates anodised aluminium.

DIMENSION

135x 380 x 685*) mm.

WEIGHT

6,2 kg net.

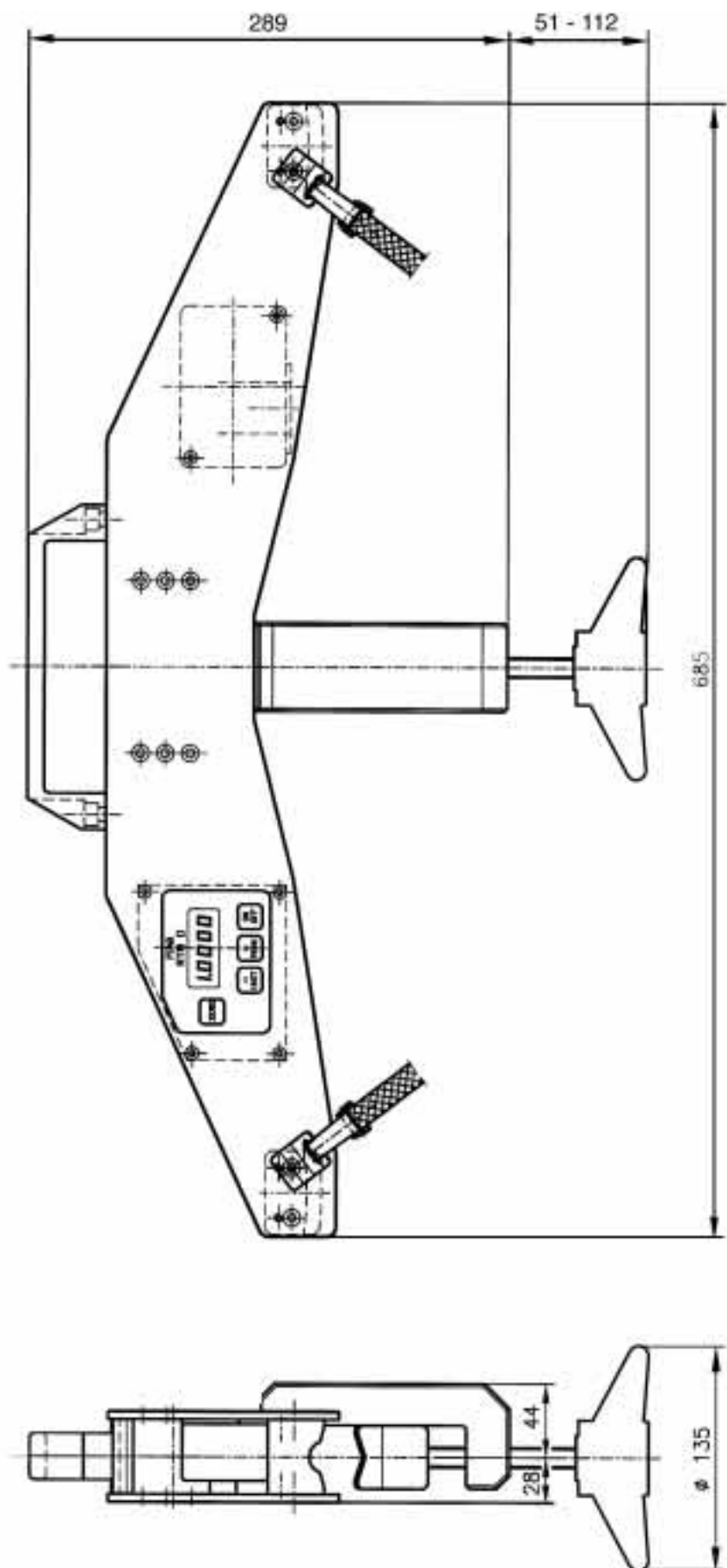
ENVIROMENT:

TEMPERATURE RANGE

-20 to +60 degrees Centigrade.

PROTECTION CLASS

Conforms to class IP 65
according to IEC 529.
NEMA 13.



Applications for the **PIAB** RTM 20D



The PIAB RTM 20D is in use when installing/inspecting suspension and catenary ropes.



The rapid growth of mobile telephones all over the world need a lot of transmission masts. For accurate operation the masts have to be guyed in a stable position, unaffected by strong winds. Control of tension in the various supporting stay ropes is easily made by using PIAB RTM 20D.



Also when stay ropes are difficult to reach the lightweight RTM 20D is easy to handle. The picture shows control of tension from a crane operated working platform.

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PIAB REMOTE DISPLAY



PIAB Remote Display is developed for demanding industrial applications, both indoors and outdoors.

The LED characters give an excellent and very bright light with a very good visibility over long distances.

TECHNICAL DATA

Art.No.	301277	301278
Character size:	165 mm (6,5 in)	230 mm (9,0 in)
Max.visibility:	65 meter (210ft)	90 meter (300ft)
Range:	0 - 999 (optional 4 digits)	0 - 999 (Optional 4 digits)
Dimensions (WxHxD)	900 x 320 x 35 mm	900 x 320 x 35 mm
Power supply:	230 VAC (24 VDC)	
Analogue input:	4 - 20 mA or 0 - 10 VDC	
Serial communication ports:	RS232; RS485	
Operating temperature:	-40 to +50 Celsius	
Protection class:	IP65	

Then light-emitting diode (LED) is a semi-conductor of gallium, aluminium, arsenide (GaAlAs). When voltage is applied to the material, the energy level of the electrons undergo changes. At a continuous change of energy, photons are set free, which perceive as light. Since the LED is matter itself, it doesn't burn out. Service life is practically unlimited. The LED characters give an excellent and very bright light, which is very visible both indoors and outdoors.



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PIAB INFO 0103-1

PIAB Load Cells



PIAB Electronic Load Cells are designed to meet high specification demand in modern industrial force measurement.

MODEL / CAPACITY	TENSION		COMPRESSION & TENSION					
								
BROCHURE NO.	9302-1		9722-1	9723-1	9724-1	9725-1	9726-1	9727-1
50 Kgf						+	+	
100						+	+	
250						+	+	
500				*		+	+	*
1000			*	*				*
2000	+		*	*				*
3000	+							
3500								*
5000	+		*	*				*
10000	+	+			+			*
20000	+				+			*
35000					+			
50000	+	+			+			*
75000	+							
100000		+						
150000		+						
200000		+						

PIAB Load Cells

PIAB is a Swedish company which since more than 40 years, develops, manufactures and markets high quality instruments for force and load measurement.

Throughout the years new high performance load cells and instrument have been developed from long experience and know-how.

PIAB has an extended network of distributors all over the world and a high proportion (approx. 80%) of it's products are exported.

PIAB Force Measurement has, since 1994, been certified according to SS-EN ISO 9001.



PIAB LOAD PIN SLC and LCA Transducer Amplifier



The Load Pin can be dimensioned to replace an existing shaft. The Load Pin/ Transducer Amplifier are compatible with all PIAB electronic systems for overload protection and load indication. The SLC and LCA are made for use in aggressive environments and fully conform to IP 67.



Range of Application

When overload protection and/ or load indication is to be installed in a conveyor/crane or other device, the PIAB SLC may be the ideal solution. The Load Pin can easily replace the existing shaft at an equalizing pulley or in other parts of the construction.

The Load Pin should be installed as close as possible to the force/load for best accuracy.

Both the Load Pin and the Amplifier are designed to withstand extreme environmental conditions for a long operation time.

Function

The PIAB SLC Load Pin is designed as a shaft. Built into the shaft is a number of foil-strain-gauges for sensing of the de-formation of the shaft during exposure to load. Shear forces appear in the section between the support and the applied load. Those shear forces are relative to the load on the Load Pin. Since the strain-gauges are positioned in the centre of the Load Pin little or no influence is derived from bending or torsion

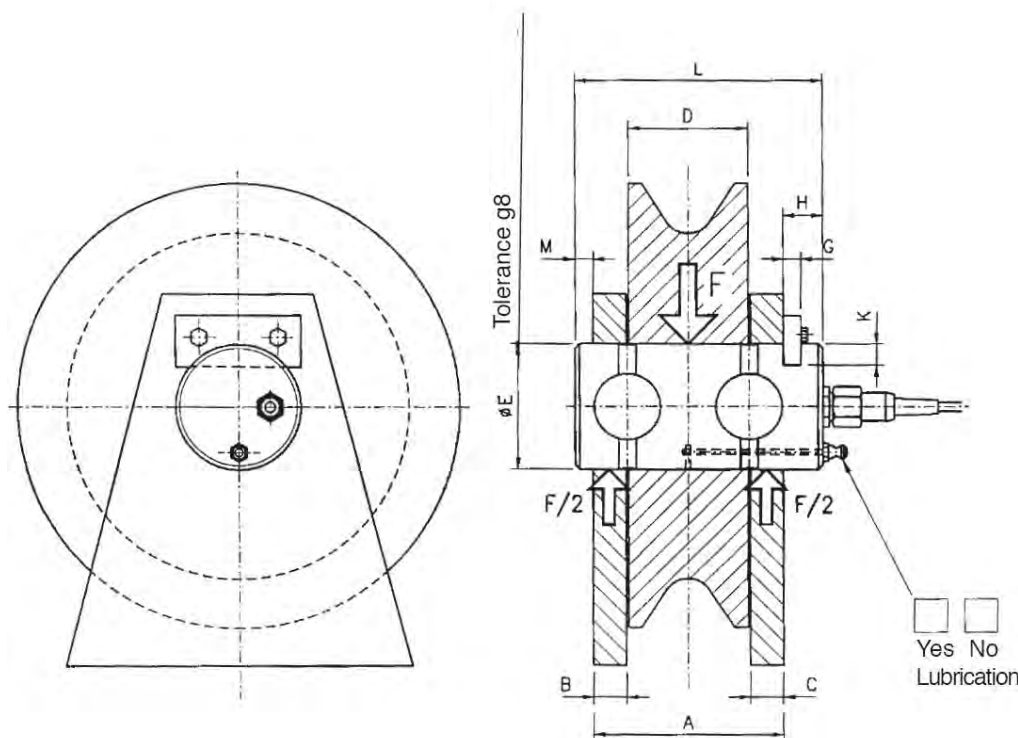
forces. The strain gauges shall be fed with 10 VDC from PIAB Amplifier LCA. The strain gauges delivers a signal to the amplifier (mV/V). This is converted in the LCA Amplifier to a current signal of 4-20 mA which is extremely resistant to interference. The Transducer Amplifier should be installed as close as possible to the Load Pin. The Load Pins can be designed within very wide limits for dimensions and capacities.

PIAB LCA Transducer Amplifier for Current Signal Output

The PIAB LCA Transducer Amplifier, Art. No. 301281, is an instrument amplifier with "chopper"-input. A DC Power Supply 10VDC for strain gauges is integrated with the Am-

plifier. The Amplifier converts the mV/V signal from the Transducer to a robust, standardized "Current Signal" of 4-20 mA.

Installation example of PIAB SLC Load Pin

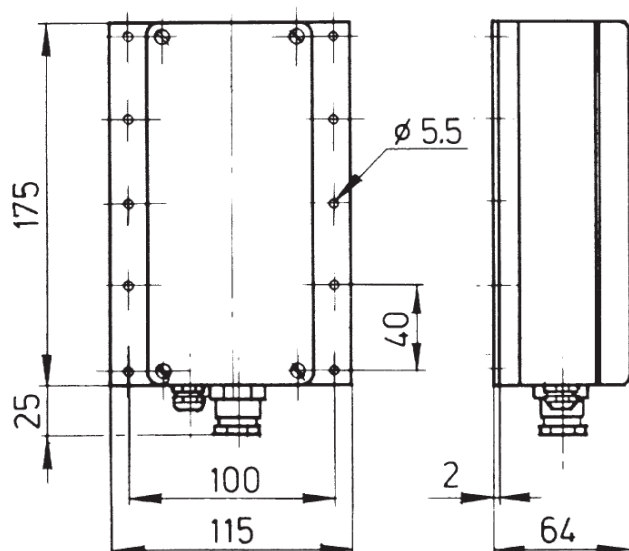


Design dimensions when ordering a PIAB SLC LoadPin. (To be filled in by the customer)

A	B	C	D	E	Tol:	G	H	K	L	M

Force F = metric ton. F= Force to the Load Pin when crane is loaded to Safe Working Load (SWL).

PIAB LCA Load Cell Amplifier



Technical Data

PIAB SLC

CAPACITY

Minimum 500 kg.

DIAMETER

Minimum 20 mm.

INACCURACY

Typical value approx. 1% of rated capacity for Load Pin in equalization pulley close to the load. (Installation-dependant)

MATERIAL

High-tensile alloy steel.

PROTECTION SPECIFICATION

IP 67, according to IEC 529.

TEMPERATURE RANGE

-20°C – +70°C.

OVERLOAD

Can occasionally be overloaded up to 100% of rated capacity.

SAFETY FACTOR

5:1 (Guaranteed safety against rupture 5 times nominal load.).

CABLE

Length 5 m as standard.

SIGNAL OUTPUT

0,5-1,5 mV/V.

DIMENSIONS

See figure.

Technical Data

PIAB LCA

TRANSDUCER INPUT

For strain gauges of 350 ohm impedance, up to max. 4 each in parallel.

TEMPERATURE RANGE

-20°C – +70°C.

POWER SUPPLY

15 to 30 VDC.

CURRENT DRAIN

Max. 70 mA at full load on one load cell.

PROTECTION CLASS

IP 67, according to IEC 529.
NEMA 4X

DIMENSIONS

See figure.

Applications for **PIAB** Load Pins and LCA



PIAB Load Pin SLC installed on a EOT as overload guard.



PIAB Load Pin SLC mounted in an equalisation sheave.



Top view of the PIAB LCA Load Cell Amplifier without top cover. It gives an output signal of 4-20mA.

9604-1_110323 © Gigasense AB

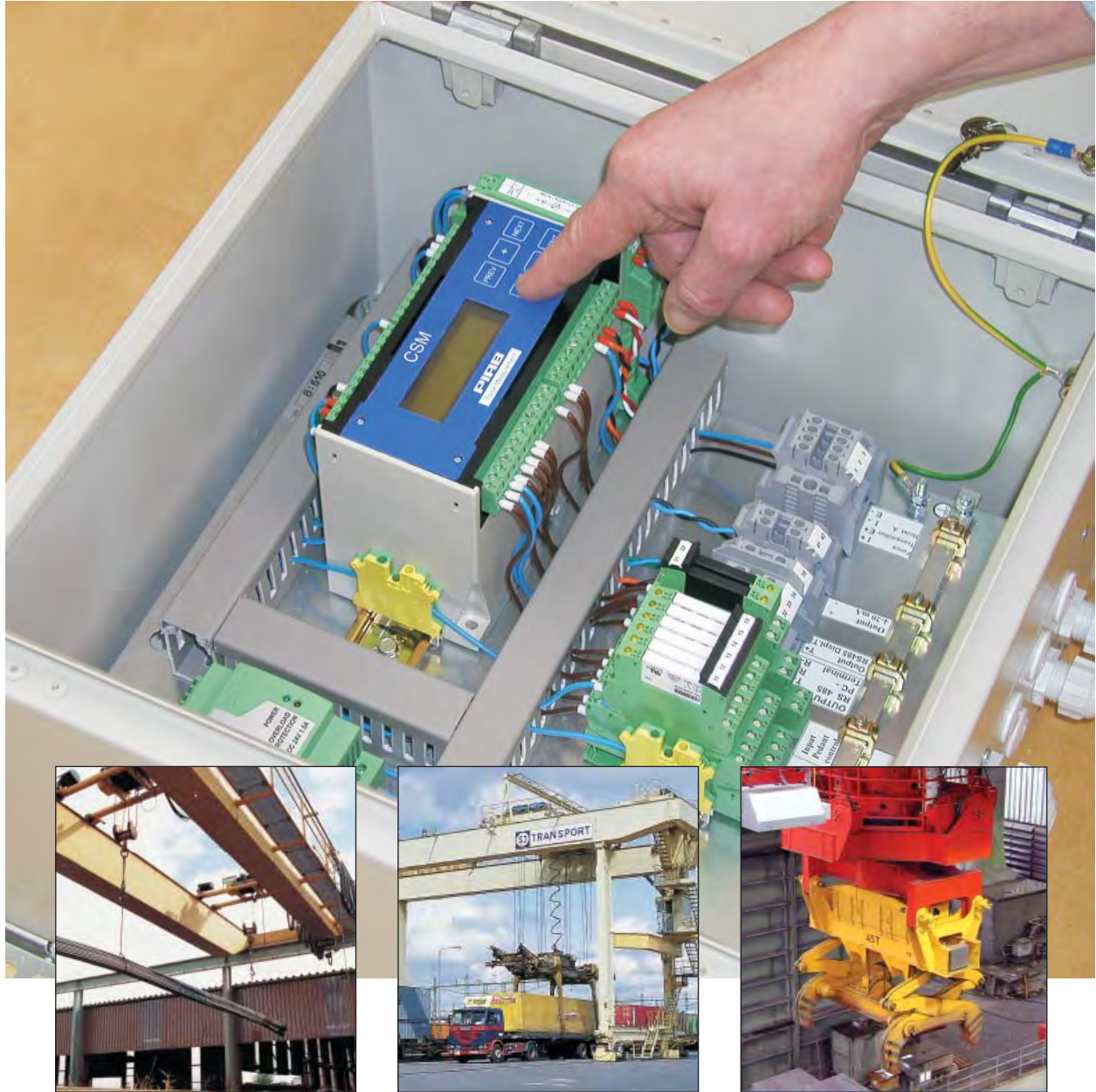
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PIAB CSM Electronic Unit

for Overload Protection and Operation Recording of Lifting Devices



PIAB Crane Safety Monitor (CSM) is an electronic control unit to be used in overload protection systems. The CSM evaluates and computes signals from force transmitters and can be set for alarm at preset alarm limits. By installing the CSM, hazards for personnel and material can be avoided. The CSM will also record the operation of the hoist. The CSM is designed for indoor and outdoor operation in aggressive and demanding industrial environments.



Range of Application

The CSM unit evaluates and computes signals from one or more force transmitters. The PIAB CSM is designed to be easily incorporated into new lifting equipment or to be retrofitted into existing systems. The calibration and operation

of the CSM has been simplified in comparison with existing overload protection systems. All adjustments and controls are made with six pushbuttons at the display panel. No potentiometers to adjust!

Function

The PIAB CSM controls and monitors the following functions and operations:

- Limits for slack rope control, load difference and overload, individual and overall.
- Display of individual and overall loads.
- Display of load peak values.
- Display of total service time.
- Display of overload service time.

- Display of full load hours, Safe Working Period (SWP) and Condition Monitoring according to ISO 12482-1.

Options:

- Load boom angle.
- Allowed load difference between two parallel working lifting gears.
- RS485 output to remote display, computer or to fieldbus converter to Profibus DP, etc.

Safety

- PIAB CSM Units are self-checking. Malfunction of the force transmitter or cable will indicate overload.
- Protects personnel and property against hazards due

- to overload.
- Records crane operations.
- An entry code protects all calibrations and settings against unauthorized interference.

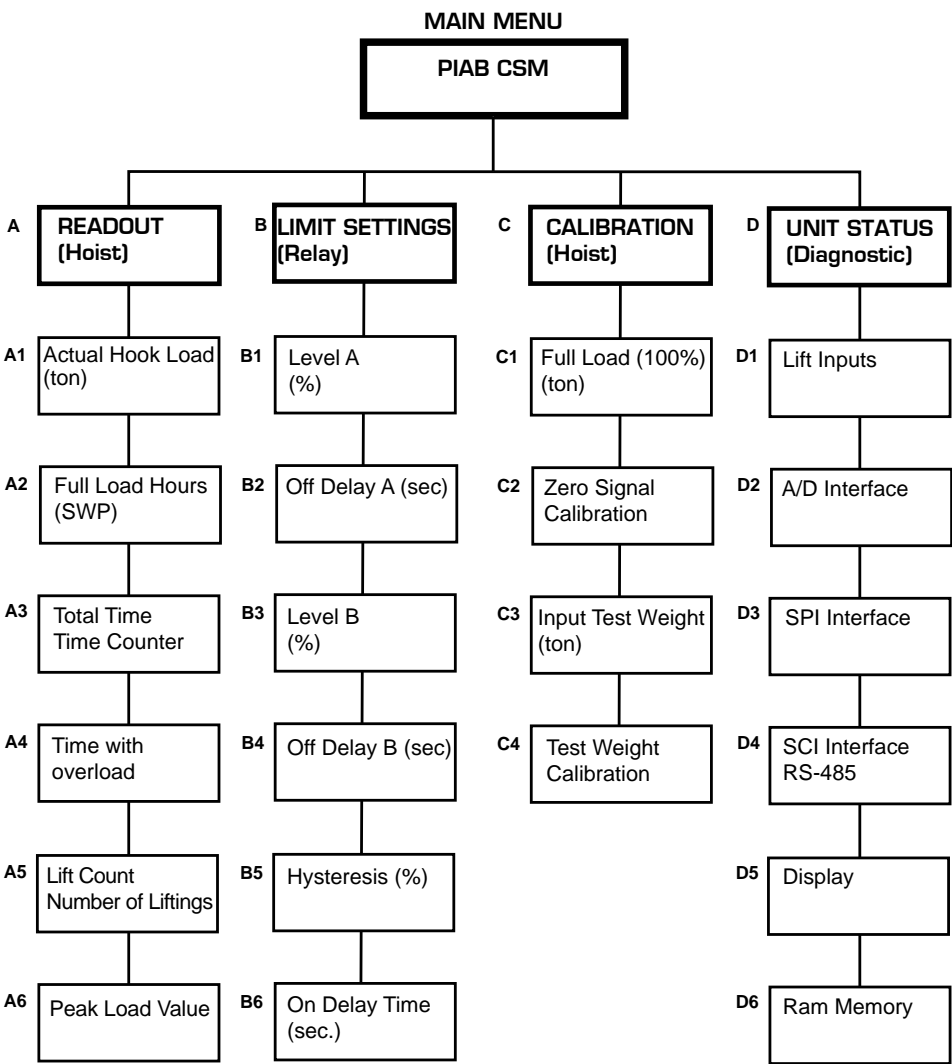
Economy

- Reduces crane maintenance, downtime and costs.
- To be used when selecting classification code for new lifting gear investments.
- Monitors the operational conditions of the crane as well as

the recommended service intervals.

This monitoring enables full utilisation during the crane's entire life period, SWP (Safe Working Period).

Description for **PIAB** CSM



Technical Data

OPERATING VOLTAGE
85-264 VAC, 47-440 Hz or
120-370 VDC.

ENCLOSURE
Dimensions 380x380x210 mm.

PROTECTION CLASS
IP65.

TEMPERATURE RANGE
-20°C to +70°C.

INPUT FORCE TRANSMITTERS
Current signal, 4-20 mA.

LIMIT SETTINGS
Two limit settings for each relay.

The switch limits can be set with
"on-" or "off-" delay up to 5 seconds.
Optionally, further limit settings can
be made.

Switching capacity 5 A, 250 VAC.
Higher switching capacity can be
achieved by installing contactors as
an option.

RECORDING OF HOISTING MOVEMENT
Two Inputs: low and high speed.
Voltages: 12 VDC, 24 VDC, 115
VAC or 230 VAC.

OUTPUT
RS 485 serial, can be used for
Remote Display or for other
purposes.

ANALOGUE OUTPUT
4 - 20 mA

DISPLAY (BUILT IN)
LCD, 2 rows each with 16
alphanumeric characters.
Height of characters is 5 mm,
back light.

SETTING OF SWITCH LEVELS/
PROGRAMMING
Simply with 6 push buttons at panel.

Examples of applications for **PIAB** CSM

Electrical Overhead Traveling Crane (EOT Crane) with two hoists
Equipped with force transmitters for individual overload protection for each hoist and overall overload protection and load indication (display).



Container Crane equipped with overload protection and load indication for each corner and side of the container, as well as overload protection and load indication for the total container weight.



EOT Crane for Handling Slabs in Steelworks. The PIAB LKVE-8 force trans-mitter is mounted at each of the eight wire rope dead-ends. The eight LKVE-8 together with the PIAB CSM electronic unit protect the crane against load imbalances and overloading. Current load or force on each force trans-mitter and total load can be read at the PIAB CSM display.



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GIGASENSE

Force Measurement

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GIGASENSE[®]

Anti-Collision System

for Track Bound Cranes



GIGASENSE[®] is a fail-safe (microwave technology) anti-collision system for track bound cranes (EOT) or similar equipment in tough industrial environment.

GIGASENSE anti-collision system is easy to install, robust, maintenance free and comes with built in self diagnostic functions to monitor the system.

TECHNICAL DATA

WORKING RANGE:
2 – 25 m (up to 40 m as option)

SPEED RANGE:
0.1 – 5 m/s relative speed between
two moving cranes

RELATIVE SPEED DEPENDENCE:
The alarm limits can be increased to
0 – 7 m per 1 m/s

LOWEST ALARM SPEED:
0.1 m/s (down to 0.05 m/s as option)

RELAY OUTPUTS:
3 pcs. altering relays
(250 VAC / 8A)

TEMPERATURE RANGE:
-25°C – +70°C

SUPPLY VOLTAGE:
230 VAC alt. 120 VAC 50/60Hz
(24 VDC as option)

TRANSPONDER BATTERY:
Lithium 1 Ah, lifetime > 10 years

TRANSMITTER FREQUENCY:
9.4 - 10.7 GHz
(country specific)

TRANSMITTER POWER:
< 0.5 mW

WEIGHT / DIMENSIONS
Antenna:
4.0 kg / 428 x 350 x 265 mm
Relay Box:
0.8 kg / 175 x 125 x 75 mm

GROSS WEIGHT / DIMENSION
for a packed Unit A + Unit B:
12.5 kg / 370 x 370 x 330 mm

CE 0682

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FUNCTION

The GIGASENSE anti-collision system controls and protects track bound cranes or similar machinery. Each crane has its own unit (A or B), which consist of an active antenna and a relay box.

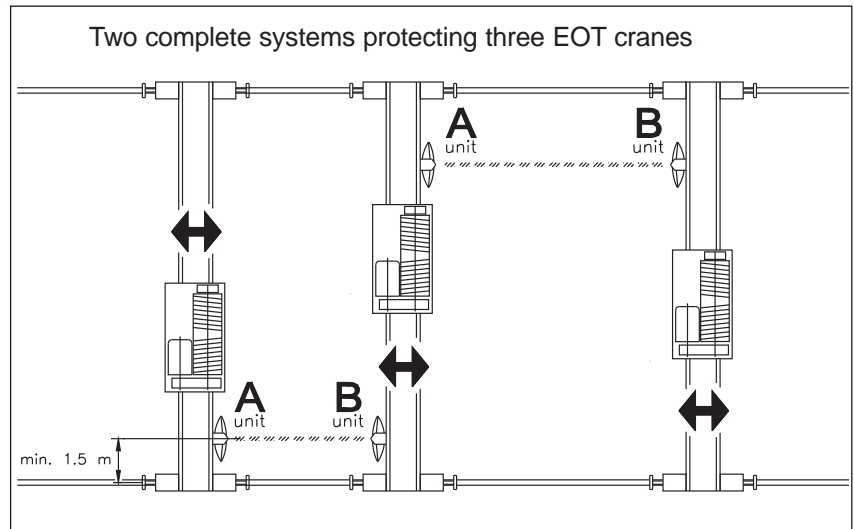
The antenna sends a microwave signal to the opposite unit. By using Doppler technique, the distance and relative speed are calculated.

The output from the electronics activates the preset relays in the relay box.

There are 3 relays in the relay box: Relay 1 = Warning (speed reduction).

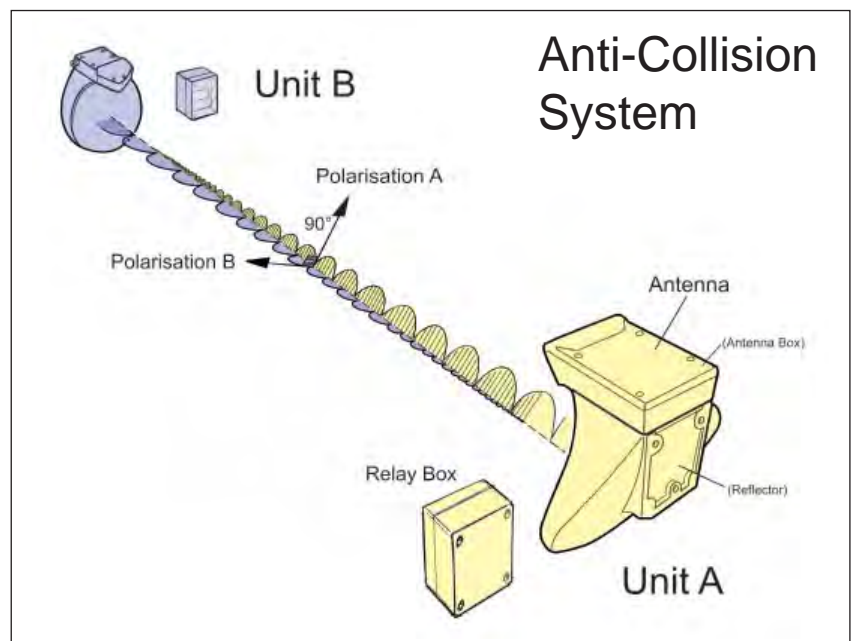
Relay 2 = Stops crane movement.

Relay 3 = Function control.



SAFETY

- Helps protect people and property.
- The units have a built in self diagnostic function that monitors the performance of the unit every three seconds.



ECONOMY

- Cuts crane repairs, downtime and costs.
- Easy and quick to install.
- Maintenance free.