DANAK
PROD Reg. nr 7026

FORCE Certification

EU Type Examination Certificate

No. 0200-MID-02734

ECI check/catch weigher

AUTOMATIC CHECKWEIGHING / CATCHWEIGHING INSTRUMENT

Issued by **FORCE Certification**
EU - Notified Body No. 0200

In accordance with the requirements in Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on Measuring Instruments (MID).

Issued to **ESiT Elektronik Sistemler Imalat ve Ticaret Ltd. Sti.**
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Çekmeköy,
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In respect of An automatic catchweighing instrument designated ECI check/catch weigher with variants of modules of load receptors, load cells and peripheral equipment.
Accuracy class XIII(1), XIIII(2) Y(a) or Y(b)
Maximum capacity: 3 kg ≤ Max ≤ 60 kg
Verification scale interval: e ≥ 1 g
Number of verification scale intervals: n ≤ 3000
(however, dependent on environment and the composition of the modules).
Variants of modules and conditions for the composition of the modules are set out in the annex.

The conformity with the essential requirements in Directive 2014/32/EC Annex 1 and the specific requirements in Annex XIII, chapter I & II are met by the application of OIML R51:2006, OIML D11:2004 section 12 & 13 applying severity level 3, WELMEC Guide 7.2, and WELMEC Guide 8.16-1:2013.

The principal characteristics and approval conditions are set out in the descriptive annex to this certificate.

The annex comprises 13 pages.

Issued on **2017-09-12**
Valid until **2027-09-12**

Signatory: J. Hovgård

FORCE Certification references:
Task no.: 116-33786 and ID no.: 0200-MID-02734

Descriptive annex

Contents

1. Name and type of instrument and modules

The automatic weighing instrument designated ECI check/catch weigher is an automatic checkweighing / catchweighing instrument consisting of an ECI electronic weighing indicator connected to a separate load receptor of type Hexaline, Octaline or Decaline and peripheral equipment such as printers or other devices, as appropriate.

The instrument is a self-indicating automatic checkweighing / catchweighing instrument with single-interval.

The modules appear from Sections 3.2, 3.3, and 3.4; the principle of the composition of the modules is set out in Sections 6.1 and 10.

2. Description of the construction and function

2.1 Construction

2.1.1 ECI weighing indicator

The weighing controller of the ECI automatic chech/catch weigher is Esit's indicator type ECI.

The indicator consists of analogue to digital conversion, microprocessor control circuitry, power supply, keyboard, non-volatile memory for storage of calibration and weight data, option boards and a weight display contained within a single plastic enclosure intended for panel mount.

The module is specified in Section 3.2.

2.1.2 Load cells

Set out in Section 3.3.

2.1.3 Load receptor

Set out in Section 3.4.

2.1.4 Interfaces and peripheral equipment

Set out in Section 4.

2.1.1 Functions and devices

The automatic weighing instrument has the following permitted functions and devices that are subject to the Measuring Instrument Directive:

- Power up test
- Initial zero setting device (max. 20 % of Max)
- Semiautomatic zero setting device (max 4 % of Max)
- Zero tracking device (max 4 % of Max)
- Automatic zero setting device (max 4 % of Max)
- Tare weighing mode
- Alibi memory (optional)
- Gravity compensation
- Detection of significant fault

2.1.1 Software version

The software version of the ECI weighing controller is displayed at start-up.
The approved software version is 1.4.x.

3. Technical data

The automatic weighing instruments and its modules are set out as follows:

3.1 Automatic catchweighing / checkweighing instrument

Type:	ECI check/catch weigher
Accuracy class:	XIII(1), XIIII(2), Y(a) or Y(b)
Maximum capacity (Max):	3 kg to 60 kg
Minimum capacity (Min):	≥ 20×e for XIII(1) and Y(a) ≥ 10×e for XIIII(1) and Y(b)
Verification scale interval (e):	≥ 1 g
Weighing range:	Single-interval
Number of Verification Scale Intervals (n):	≤ 3000 for XIII(1) and Y(a) ≤ 1000 for XIIII(1) and Y(b)
Maximum tare effect:	≤ 100 % of Max
Conveyor speed:	1 m/s for Hexaline 0.67 m/s for Octaline and Decaline
Temperature range:	-10° to 40° C
Weighing mode:	dynamic
Electromagnetic class:	E2
Humidity:	Non-condensing
Extra warm-up time:	4 minutes, if e < 1.6 µV None, if e ≥ 1.6 µV
Maximum time between aotumatic zero-setting:	32 minutes, if e < 1.6 µV 51 minutes, if e ≥ 1.6 µV

3.2 Weighing controller / indicator

The weighing controller / indicator has the following characteristics:

Type:	ECI
Accuracy class:	III
Weighing range:	Single interval
Maximum number of Verification Scale intervals:	10000
Maximum subtractive tare effect:	-Max,
Fractional factor:	p'i = 0.5
Minimum input voltage per VSI:	1.0 µV
Minimum input voltage:	0.5 mV
Excitation voltage:	10 VDC
Circuit for remote sense:	Active

Minimum input impedance:	87 ohm
Maximum input impedance:	1100 ohm
Operating temperature range:	-10 °C to +40 °C
Mains power supply:	12-24 VDC
Maximum cable length between junction box and ECI:	420 m/mm^2
Peripheral interface:	Set out in Section 4

3.2.1 Connecting cable between the indicator and a junction box for load cell(s), if any

3.2.1.1 4-wire system

Cable between Indicator and load cell(s):	4 wires (no sense), shielded
Cable length:	The certified length of the load cell cable.

3.2.1.2 6-wire system

Cable between Indicator and load cell(s):	6 wires (sense), shielded

Maximum cable length between indicator and junction box (J-box) for load cell(s), if any:

- Option 1: 420 m/mm2

In case the (n) for the weighing instrument is less than (n) mentioned above, the following apply:

- Option 2:

Coefficient of temperature of the span error of the indicator: Es = 0.0005 [% / 25K].
Coefficient of resistance for the wires in the J-box cable: Sx = 0.0049 [% / ohm].

L/Amax = 295.86 / Sx * (emp / n - Es) [m / mm^2] in which emp = p'I * mpe * 100 / e

From this, the maximum cable length for the weighing instrument may be calculated with regard to (n) for the actual configuration of the instrument.

3.3 Load cells

3.3.1 General acceptance of modules

Any load cell(s) may be used for instruments under this certificate of type approval provided the following conditions are met:

1) There is a respective Part / Evaluation / Test Certificate (EN 45501) or an OIML Certificate of Conformity (R60:2000) issued for the load cell by a Notified Body responsible for type examination under Directive 2014/31/EU.

2) The certificate contains the load cell types and the necessary load cell data required for the manufacturer's declaration of compatibility of modules (WELMEC 2:2015), and any particular installation requirements). A load cell marked NH is allowed only if humidity testing to EN 45501 has been conducted on this load cell.

3) The compatibility of load cells and indicator is established by the manufacturer by means of the compatibility of modules form, contained in the above WELMEC 2 document, or the like, at the time of EU verification or declaration of EU conformity of type.

4) The load transmission must conform to one of the examples shown in the WELMEC 2.4 Guide for load cells.

3.4 Load receptors

3.4.1 Hexaline

Maximum capacity:	3 kg to 6 kg
Reduction ratio	1
Load cells	Load cell according to section 3.3.1
Drawings	see figure 4

3.4.2 Octaline

Maximum capacity:	6 kg to 15 kg
Reduction ratio	1
Load cells	Load cell according to section 3.3.1
Drawings	see figure 5

3.4.3 Decaline

Maximum capacity:	15 kg to 60 kg
Reduction ratio	1
Load cells	Load cell according to section 3.3.1
Drawings	see figure 6

3.5 Composition of modules

In case of composition of modules, EN 45501:2015 annex F shall be satisfied.

3.6 Documents

The documents filed under No. 116-33786 are valid for the weighing instruments described here.

4. Interfaces and peripheral equipment

4.1 Interfaces

The ECI controller may be equipped with one or more of the following protective interfaces located on the main board or on separate interface boards.

- RS-232C
- RS-485 / RS-422
- USB
- Modbus (optional)
- Profibus (optional)
- Ethernet IP (optional)
- Analogue Output (optional)
- Digital I/O (optional)

The interfaces do not have to be secured.

4.2 Peripheral equipment

Connection between the controller and peripheral equipment shall be done by screened cables.
The instrument may be connected to any simple peripheral device with a CE mark of conformity.

5. Approval conditions

5.1 Zero drift correction

The instrument can be configured for automatic zero drift correction. The function is disabled when the SETUP menu shows "drift 0". When the function is disabled and the indicator is secured (see section 7.1.1) the function cannot be enabled.

This zero drift function is not covered by this type approval.

5.2 Compatibility of modules

In case of composition of modules, EN 45501:2015 annex F shall be satisfied.

6. Special conditions for verification

6.1 Composition of modules

The environmental conditions should be taken into consideration by the composition of modules for a complete weighing instrument, for example instruments with load receptors placed outdoors and having no special protection against the weather.

The composition of modules shall agree with Section 5.2.

7. Securing and location of seals and verification marks

7.1 Securing and sealing

Seals shall bear the verification mark of the manufacturer or alternative mark of a notified body according to ANNEX II, module D or F of Directive 2014/32/EU.

7.1.1 Weighing controller

Access to the configuration and calibration facilities is achieved by sealing the access to calibration switch with a sticker (see figure 2).

Sealing of the enclosure - to secure the electronics against dismantling/adjustment - is accomplished with a brittle plastic sticker across the assembly of the enclosure (see figure 2).

7.1.2 Weighing controller - load cell connector - load receptor

Securing of the load cell connector with the weighing controller is done by means of a brittle sticker.

7.1.3 Junction box for load cells

The junction box, if any, is sealed by means of brittle stickers or with wire and seal.

7.1.4 Peripheral interfaces

All peripheral interfaces are "protective"; they neither allow manipulation with weighing data or legal setup, nor change of the performance of the weighing instrument in any way, which would alter the legality of the weighing.

8. Location of CE mark of conformity and inscriptions

8.1 Indicator

8.1.1 CE mark

The CE mark of conformity and the supplementary metrological marking according to article 20 to 22 of Directive 2014/32/EU shall be located on the identification plate.

8.1.2 Inscriptions

The identification plate shall bear the following inscriptions:

- Manufacturer's trademark and / or name
- Postal address of manufacturer
- Type designation
- Serial number
- Accuracy class
- Max, Min and e = (these shall additional be duplicated near the display unless the identification plate is located near the display)
- Temperature range: -10 °C / +40 °C
- Electromagnetic class: E2
- Humidity: Non-condensing
- Maximum weighing speed
- Type examination certificate number

9. Pictures

Figure 1 ECI controller.

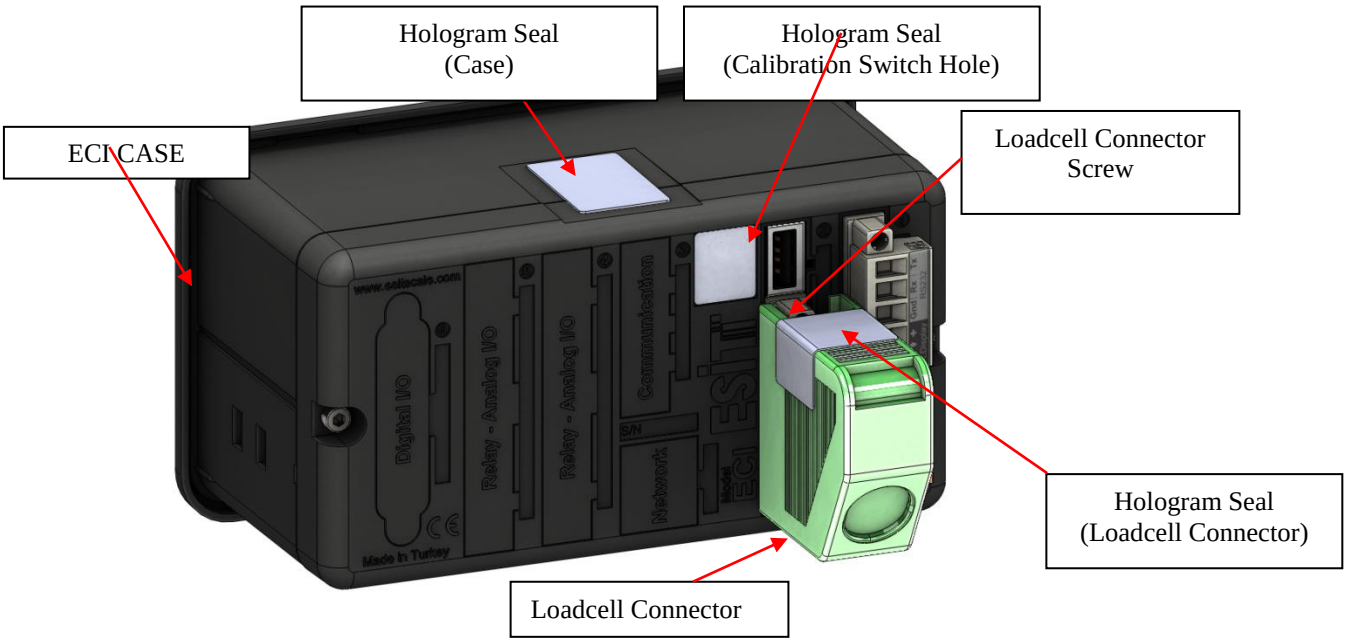

Figure 2 Sealing of ECI controller.

Figure 3 Control rack of ECI check/catch weigher.

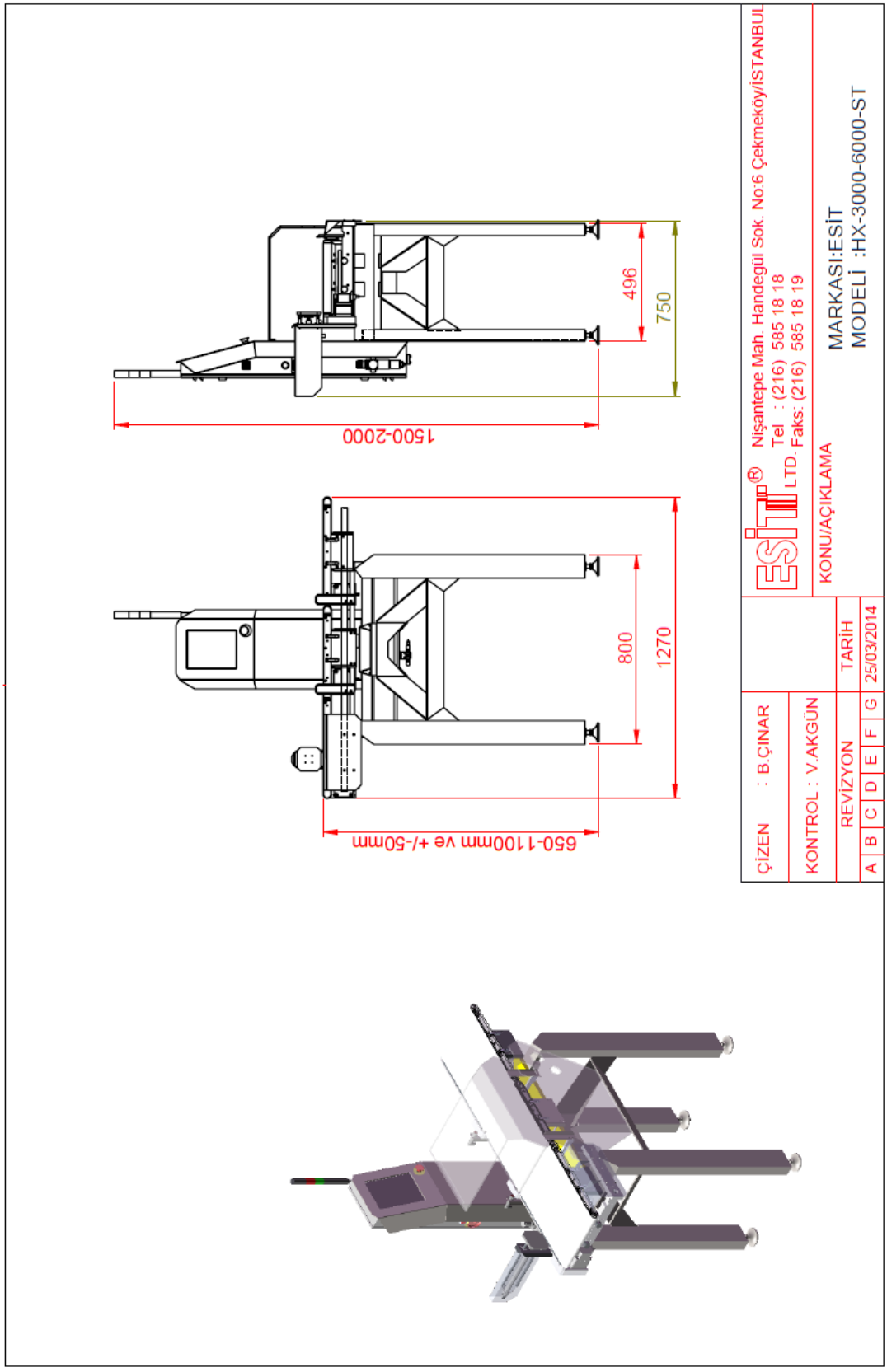

Figure 4 Hexaline load receptor.

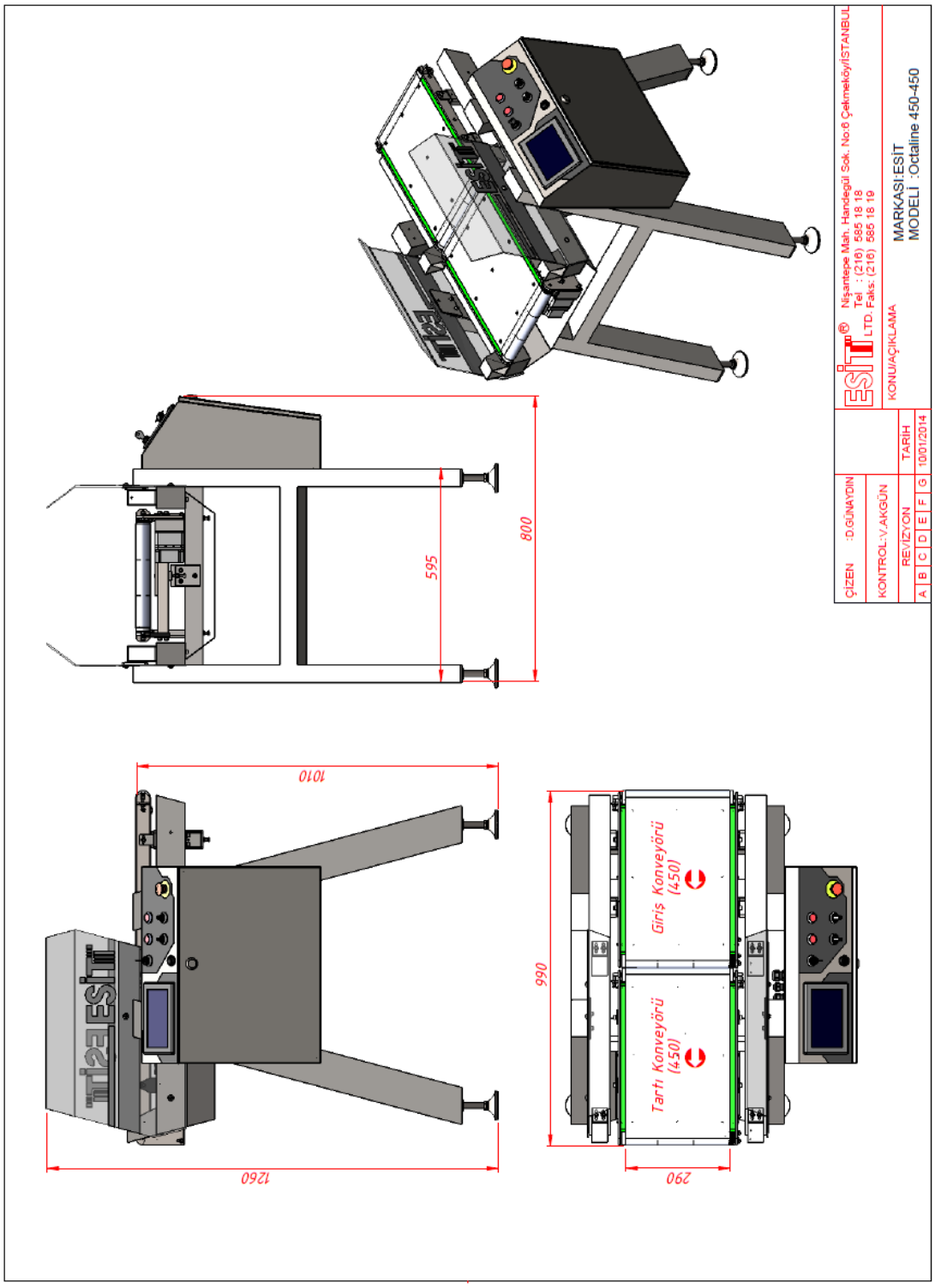

Figure 5 Octaline load receptor.

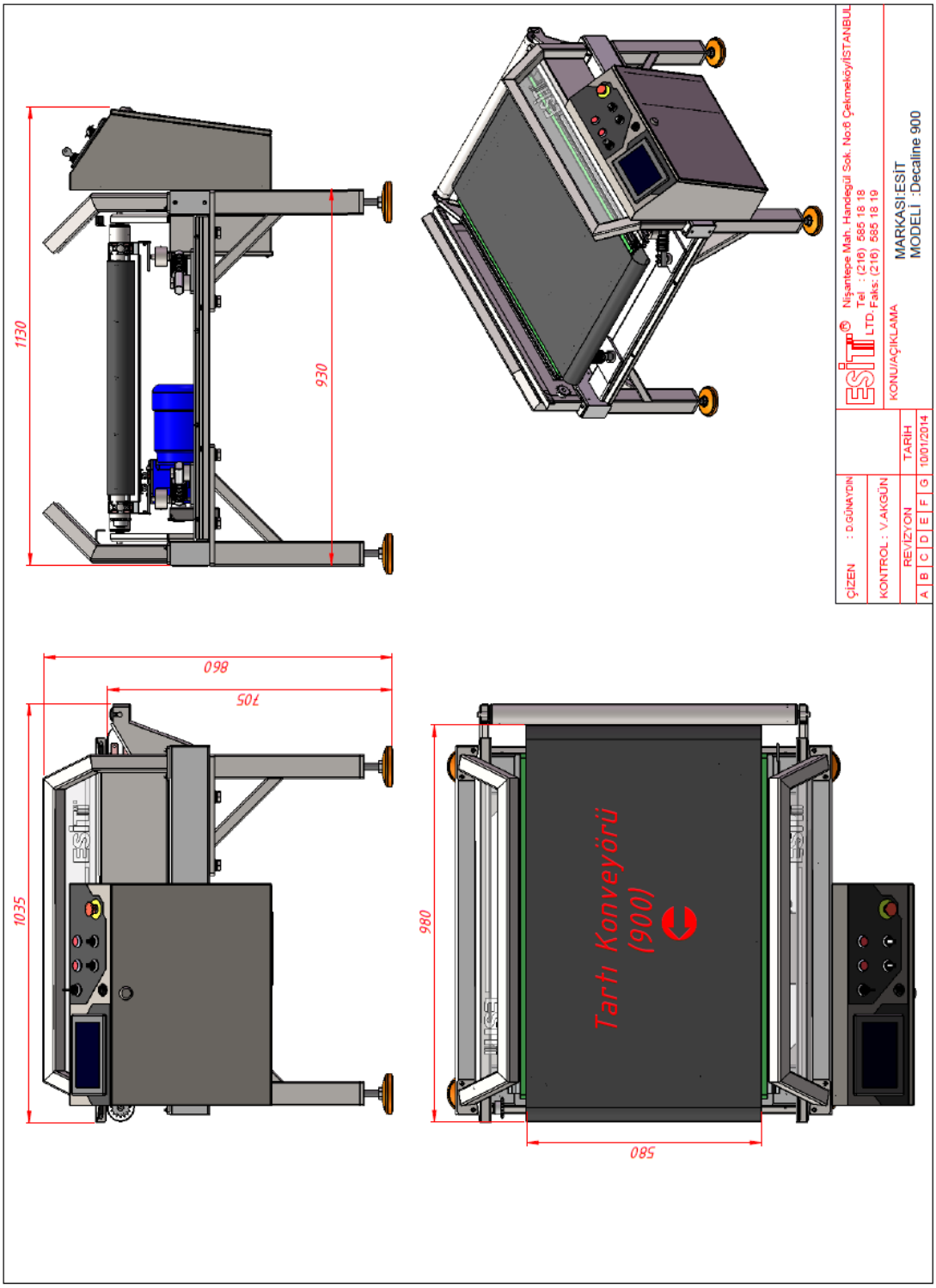

Figure 6 Decaline load receptor.

10. Composition of modules – an example

COMPATIBILITY OF MODULES

Ref.: WELMEC 2

Non-Automatic Weighing Instrument, single-interval.

Certificate of EU Type-Approval N°: TAC: 0200-MID-02734

INDICATOR A/D (Module 1)		Type:	ECI			
Accuracy class according to EN 45501 and OIML R76:		$Class_{ind}$ (I, II, III or IIII)		III		
Maximum number of verification scale intervals (n_{max}):		n_{ind}		10000		
Fraction of maximum permissible error (mpe):		p_1		0,5		
Load cell excitation voltage:		U_{exc}	[Vdc]	10		
Minimum input-voltage per verification scale interval:		Δu_{min}	[µV]	1		
Minimum load cell impedance:		R_{Lmin}	[Ω]	35		
Coefficient of temperature of the span error:		Es	[% / 25°C]			0,0005
Coefficient of resistance for the wires in the J-box cable:		Sx	[% / Ω]			0,0048
Specific J-box cable-Length to the junction box for load cells:		$(L/A)_{max}$	[m / mm²]			431
Load cell interface:			6-wire (remote sense)			
Additive tare, if available:		T^+	[% of Max]	0		
Initial zero setting range:		IZSR	[% of Max]	-10	/	10
Temperature range:		T_{min} / T_{max}	[°C]	-10	/	40
Test report (TR), Test Certificate (TC) or OIML Certificate of Conformity:						
LOAD RECEPTOR (Module 2)		Type:				
Construction:			Conveyor belt resting on weigh table			
Fraction of mpe:		p_2		0,5		
Number of load cells:		N		1		
Reduction ratio of the load transmitting device:		$R=F_M / F_L$		1		
Dead load of load receptor:		DL	[% of Max]	165		
Non uniform distribution of the load:	(NUD = 0 is acceptable)	NUD	[% of Max]	0		
Correction factor:		$Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$		2,75		
LOAD CELL ANALOG (Module 3)		Type:	HBM SP4M C3 MR			
Accuracy class according to OIML R60:		$Class_{LC}$ (A, B, C or D)		C		
Maximum number of load cell intervals:		n_{LC}		3000		
Fraction of mpe:		p_3		0,7		
Rated output (sensitivity):		C	[mV / V]	2		
Input resistance of single load cell:		R_{LC}	[Ω]	350		
Minimum load cell verification interval:	($v_{min\%}$ = 100 / Y)	$v_{min\%}$	[% of Emax]	0,00666		
Rated capacity:		E_{max}	[kg]	10		
Minimum dead load, relative:		$(E_{min} / E_{max}) * 100$	[%]	0		
Temperature range:		T_{min} / T_{max}	[°C]	-10	/	40
Test report (TR) or Test Certificate (TC/OIML) as appropriate:						
COMPLETE WEIGHING INSTRUMENT			Single-interval			
Manufacturer: ESIT		Type:	ECI Hexaline			
Accuracy class according to EN 45501 and OIML R76:		$Class_{WI}$ (I, II, III or IIII)		III		
Fractions: $p_i = p_1^2 + p_2^2 + p_3^2$:		p_i		1,0		
Maximum capacity:		Max	[kg]	3		
Number of verification scale intervals:		n		3000		
Verification scale interval:		e	[kg]	0,001		
Utilisation ratio of the load cell:		$\alpha = (Max / E_{max}) * (R / N)$		0,30		
Input voltage (from the load cells):		$\Delta_u = C * U_{exc} * \alpha * 1000 / n$	[µV/e]	2,00		
Cross-section of each wire in the J-box cable:		A	[mm²]	0,22		
J-box cable-Length:		L	[m]	1		
Temperature range to be marked on the instrument:	Not required	T_{min} / T_{max}	[°C]			
Peripheral Equipment subject to legal control:						

Acceptance criteria for compatibility				Passed, provided no result below is < 0	
$Class_{WI}$	<=	$Class_{ind}$ & $Class_{LC}$	(WELMEC 2: 1)	$Class_{WI}$:	PASSED
pi	<=	1	(R76: 3.5.4.1)	1 - pi =	0,0
n	<=	n_{max} for the class	(R76: 3.2)	n_{max} for the class - n =	7000
n	<=	n_{ind}	(WELMEC 2: 4)	n_{ind} - n =	7000
n	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n =	0
E_{min}	<=	DL * R / N	(WELMEC 2: 6d)	(DL * R / N) - E_{min} =	4,95
$v_{min} * \sqrt{N} / R$	<=	e	(R76: 4.12.3)	e - (v_{min} * √N / R) =	0,000
or (if v_{min} is not given)				Alternative solutions: ↑ ↓	
$(E_{max} / n_{LC}) * (\sqrt{N} / R)$	<=	e	(WELMEC 2: 7)	e - $((E_{max} / n_{LC}) * (\sqrt{N} / R))$ =	
Δu_{min}	<=	Δu	(WELMEC 2: 8)	$\Delta u - \Delta u_{min}$ =	1,00
R_{Lmin}	<=	R_{LC} / N	(WELMEC 2: 9)	(R_{LC} / N) - R_{Lmin} =	315
L / A	<=	$(L / A)_{max}^{WI}$	(WELMEC 2: 10)	$(L / A)_{max}^{WI}$ - (L / A) =	1508
T_{range}	<=	T_{max} - T_{min}	(R76: 3.9.2.2)	(T_{max} - T_{min}) - T_{range} =	20
Q * Max * R / N	<=	E_{max}	(R76: 4.12.1)	E_{max} - (Q * Max * R / N) =	1,8

Signature and date:

Conclusion . . . . . **PASSED**

This is an authentic document made from the program:
"Compatibility of NAWI-modules version 3.2".