



OIML Member State
Japan



OIML Certificate N°
R76/1992-JP1-12.02

OIML CERTIFICATE OF CONFORMITY

Issuing Authority

Name: National Metrology Institute of Japan /National Institute of
Advanced Industrial Science and Technology (NMIJ/AIST)
Address: AIST Tsukuba Central 3-9
Tsukuba Ibaraki 305-8563, Japan
Person responsible: Dr. Tamotsu Nomakuchi, President of AIST

Applicant

Name: Unipulse Corporation
Address: 9-11 Nihonbashi Hisamatsucho, Chuo-ku, Tokyo 103-0005, Japan

Manufacturer of the certified type

Name: Unipulse Corporation Technical Center
Address: 1-3 Sengendainishi, Koshigaya, Saitama 343-0041, Japan

Identification of the certified type

Non-automatic weighing instruments
Type: F701-S
Further characteristics see page 2

This certificate attests the conformity of the above identified type (represented by the sample or samples identified in the associated Evaluation Report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

R76-1, Edition 1992, including amendment 1 (1994),
for accuracy class: **III**

This certificate relates only to the metrological and technical characteristics of the type of instrument covered by the relevant OIML Recommendation identified above.

This certificate does not bestow any form of legal international approval.



OIML Member State
Japan

OIML Certificate N°
R76/1992-JP1-12.02

The conformity was established by the results of tests and examinations provided in the associated:

Evaluation Report N° 24-02 (Test Report N° 12-01/R76:1992 that includes 56 pages.)

The Issuing Authority
NMIJ/AIST



Dr. T. Nomakuchi
President of AIST
2012-08-09

The OIML Member

Dr. Y. Miki
2012-08-09

Characteristics:

Type	F701-S		
Class	III		
Max	120 kg		
e	0.02 kg	0.05 kg	0.1 kg
n	6 000	2 400	1 200
Min	0.40 kg	1.0 kg	2.0 kg
Tare-weighing rang	≤ 100 % of Max		
Temperature range	-10 °C ~ +40 °C		
Power supply	AC 100 V~240 V, 50/60 Hz		

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated Evaluation Report is not permitted, although either may be reproduced in full.



Evaluation Report

Non-automatic weighing instruments

Issuing Authority

Name : National Metrology Institute of Japan /National Institute
of Advanced Industrial Science and Technology (NMIJ/AIST)
Address : AIST Tsukuba Central 3, Tsukuba Ibaraki 305-8563, Japan

Applicant : Unipulse Corporation

Manufacturer : Unipulse Corporation Technical Center

Applied Type : F701-S

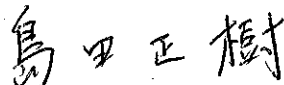
Evaluation Report Number : 24-02

This report ensures the conformity of the applied type with the requirements of the OIML R76-1(edition 1992), including Amendment 1(1994), on the basis of evaluation of the attached test report (N° 12-01/R76:1992).

Evaluator :

Masaki Shimada
Legal Metrology Division
NMIJ/AIST

Signature :



Date:

2012. 8. 6

Supervisor :

Shigeki Yamaguchi
Head of Legal Metrology Division
NMIJ/AIST

Signature :



Date :

2012. 8. 6

Description

Technical data

Type	F701-S		
Class	III		
Max	120 kg		
e	0.02 kg	0.05 kg	0.1 kg
n	6 000	2 400	1 200
Min	0.40 kg	1.0 kg	2.0 kg
Tare-weighing rang	$\leq 100\%$ of Max		
Temperature range	$-10\text{ }^{\circ}\text{C} \sim +40\text{ }^{\circ}\text{C}$		
Power supply	AC 100 V~240 V, 50/60 Hz		

Interfaces

One or several of the following interfaces may be incorporated:

- Serial data interface RS-485 (to connect Personal computer etc.)
- I/O SINK (to connect I/O SW and LAMP etc.)

Devices that may be connected

For applications subject to mandatory verification:

-Additional devices (e.g. Personal computer) as suitable for connection to weighing instruments.

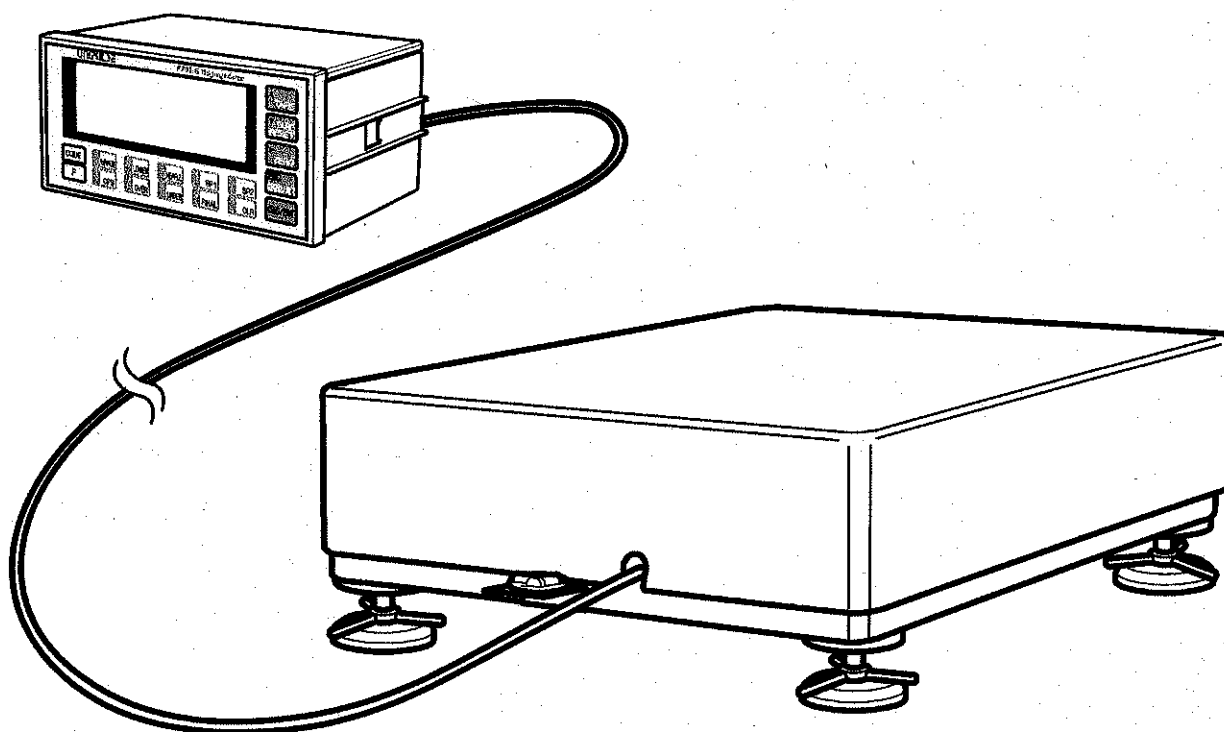
For applications not subject to mandatory verification, any peripheral devices may be connected.

Securing locations

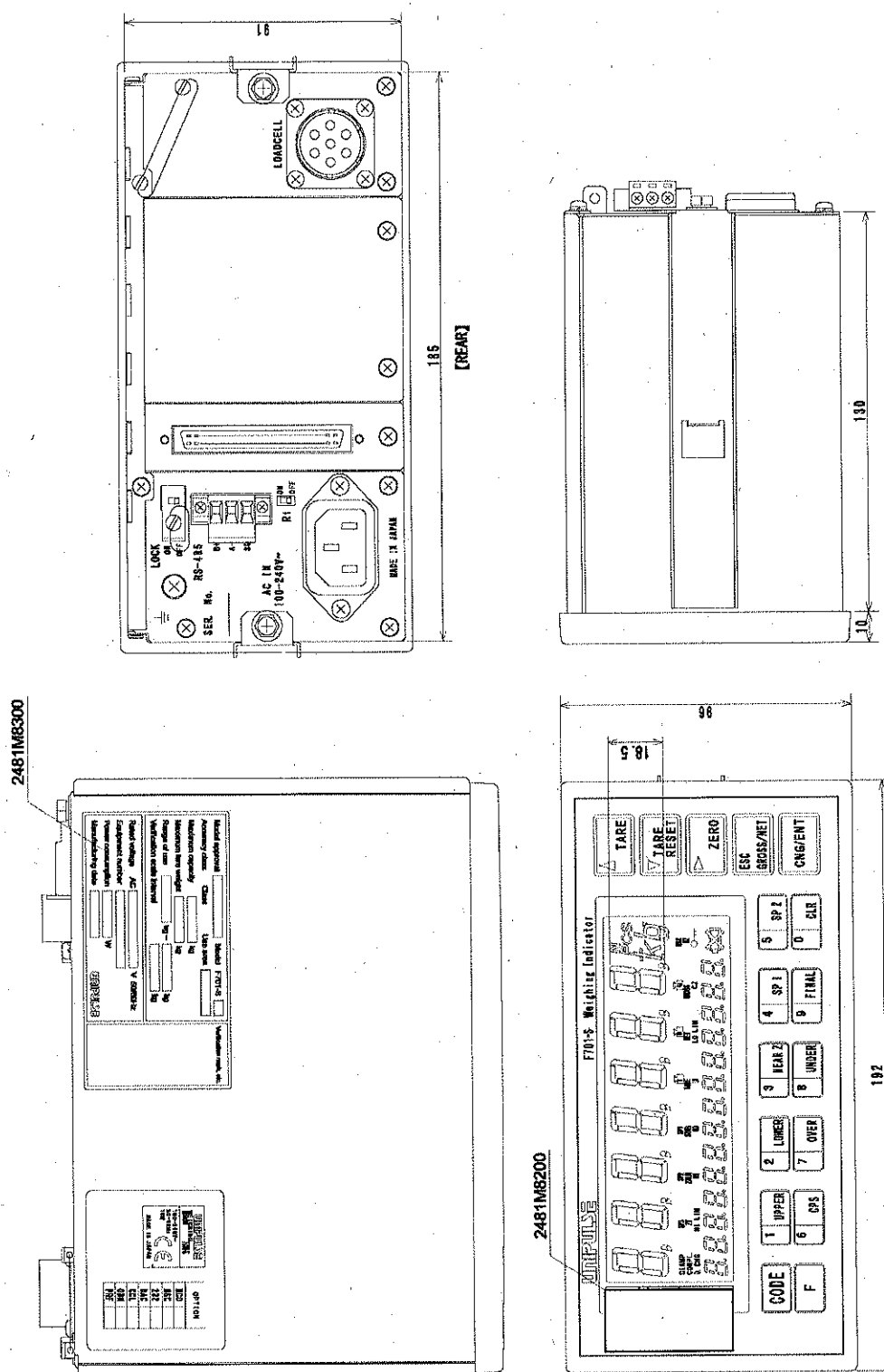
If securing (sealing) is required, instruments can be protected by wire locked screws and void seals at the locations on the page 37.

Drawing Name	Drawing Number
Dimension	F701-S General Dimensions 2481M8800
	F701-S Dimensions 2481M8000
	F701-S EXCLUSIVE PLATFORM SCALE Dimensions 2481M8500
Exploded view	F701-S Structure 2481M8100
	F701-S EXCLUSIVE PLATFORM SCALE Structure 2481M8600
Load cell	Z6FC6 Dimensions/Specifications 2389M0045
Display Sheet	F701-S Display sheet Dimensions 2481M8900
Descriptive Marking Sticker	F701-S Approval Panel 2481M8200
	F701-S Weighing Spec Panel 2481M8300
Block chart	WIRING DIAGRAM 2481E1000
	INDICATOR BLOCK DIAGRAM 2481FB0100
Circuit Diagram	MAIN BOARD 2481E01A0(1)~(4)
	ANALOG BOARD 2481E0200(1) ~ (2)
	ION BOARD 2481E0400(1) ~ (3)
	PS BOARD 2481E05A0(1) ~ (3)
	485LOCK BOARD 2481E0600(1) ~ (2)
Board Layout	MAJOR PARTS 2481FB1000(1) ~ (2)
	MAIN BOARD SILK(L1) 2481E01A0SA
	ANALOG BOARD SILK(L1) 2481E0200SA
	ION BOARD SILK(L1) 2481E0400SA
	ION BOARD SILK(L4) 2481E0400RB
	PS BOARD SILK(L1) 2481E05A0SA
	PS BOARD SILK(L2) 2481E05A0RB
	485LOCK BOARD SILK(L1) 2481E0600SA
Sealing	F701-S SEAL 2481M8400

Dimension

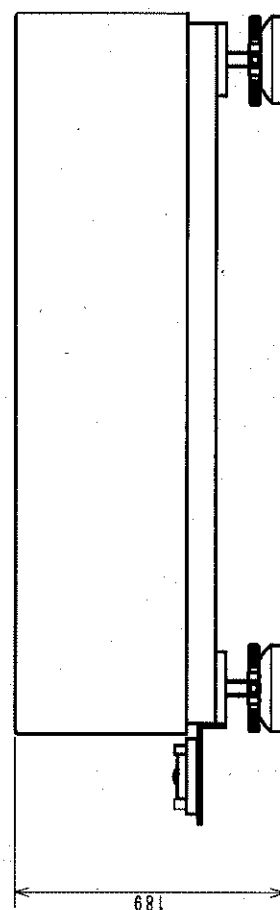
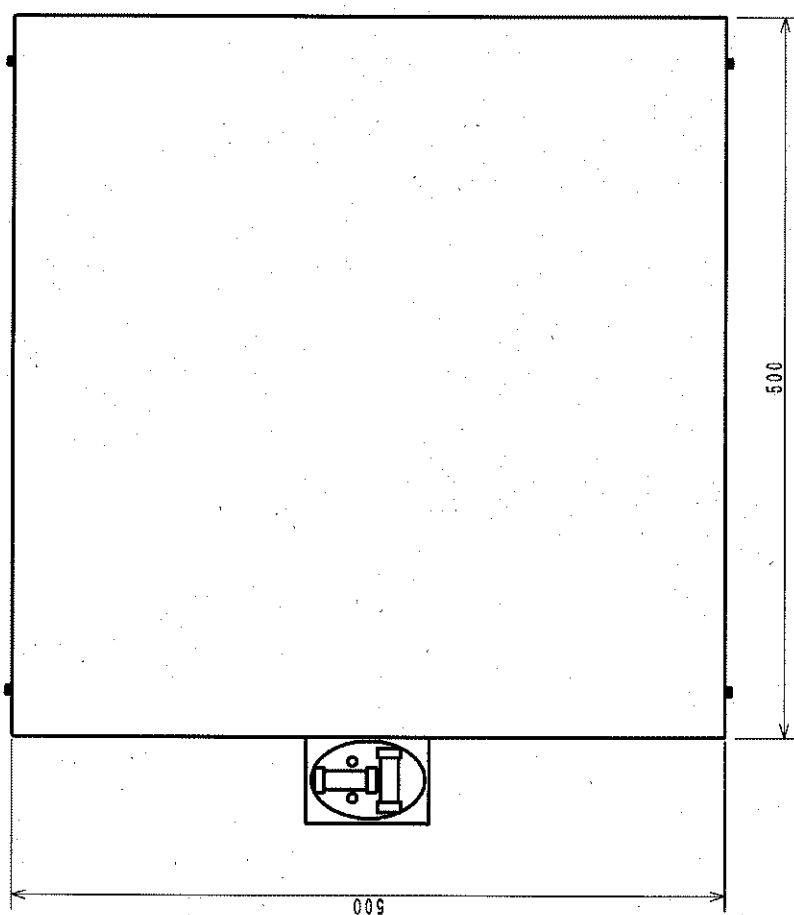
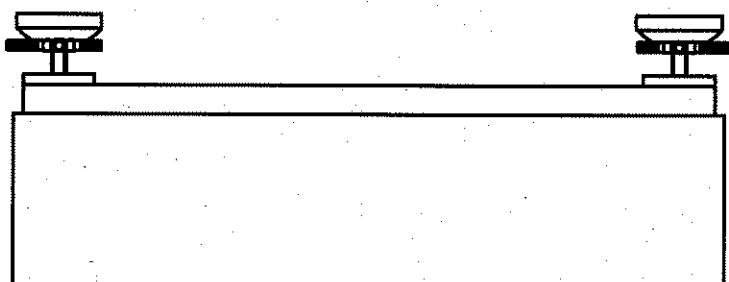


Dimension



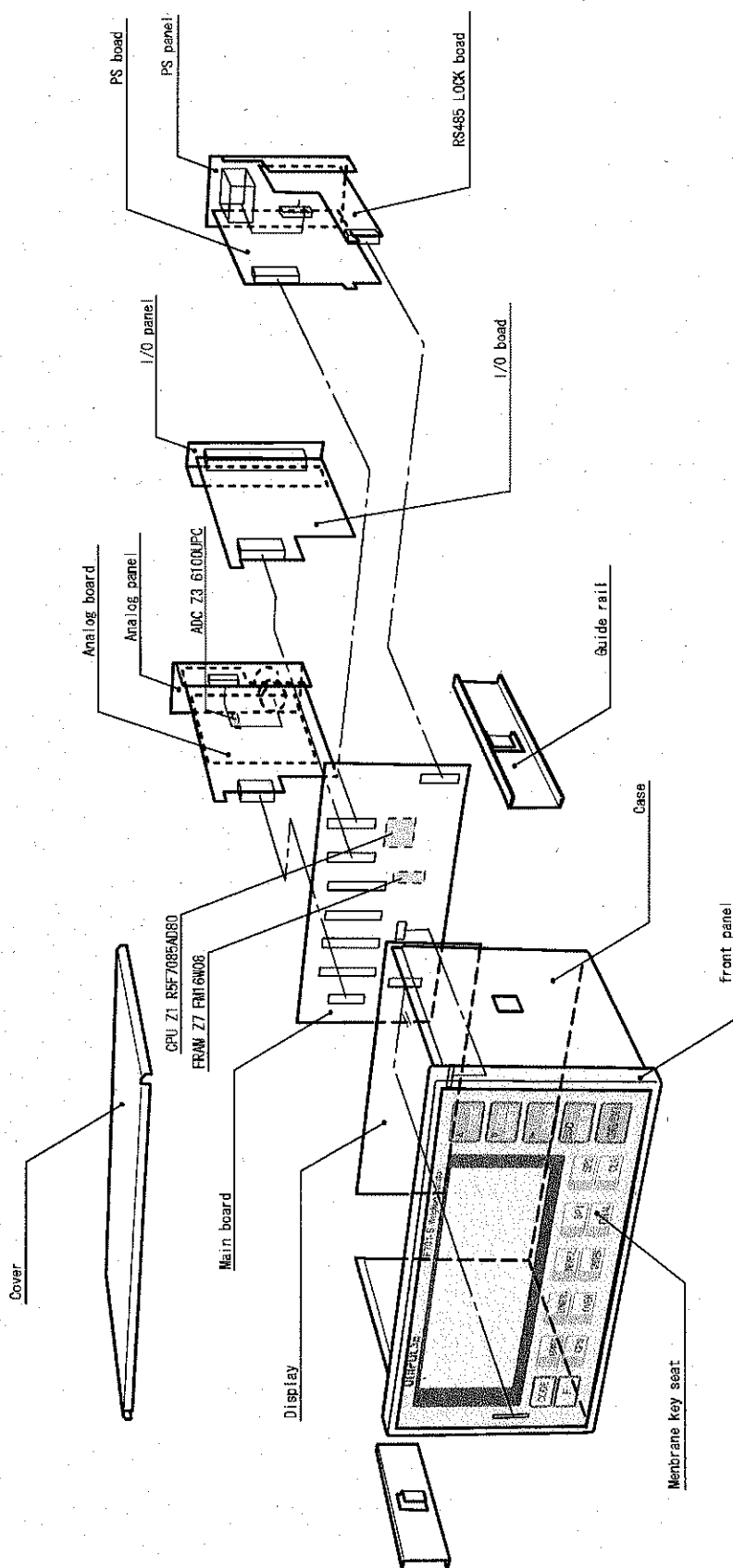
Unit : mm

Dimension

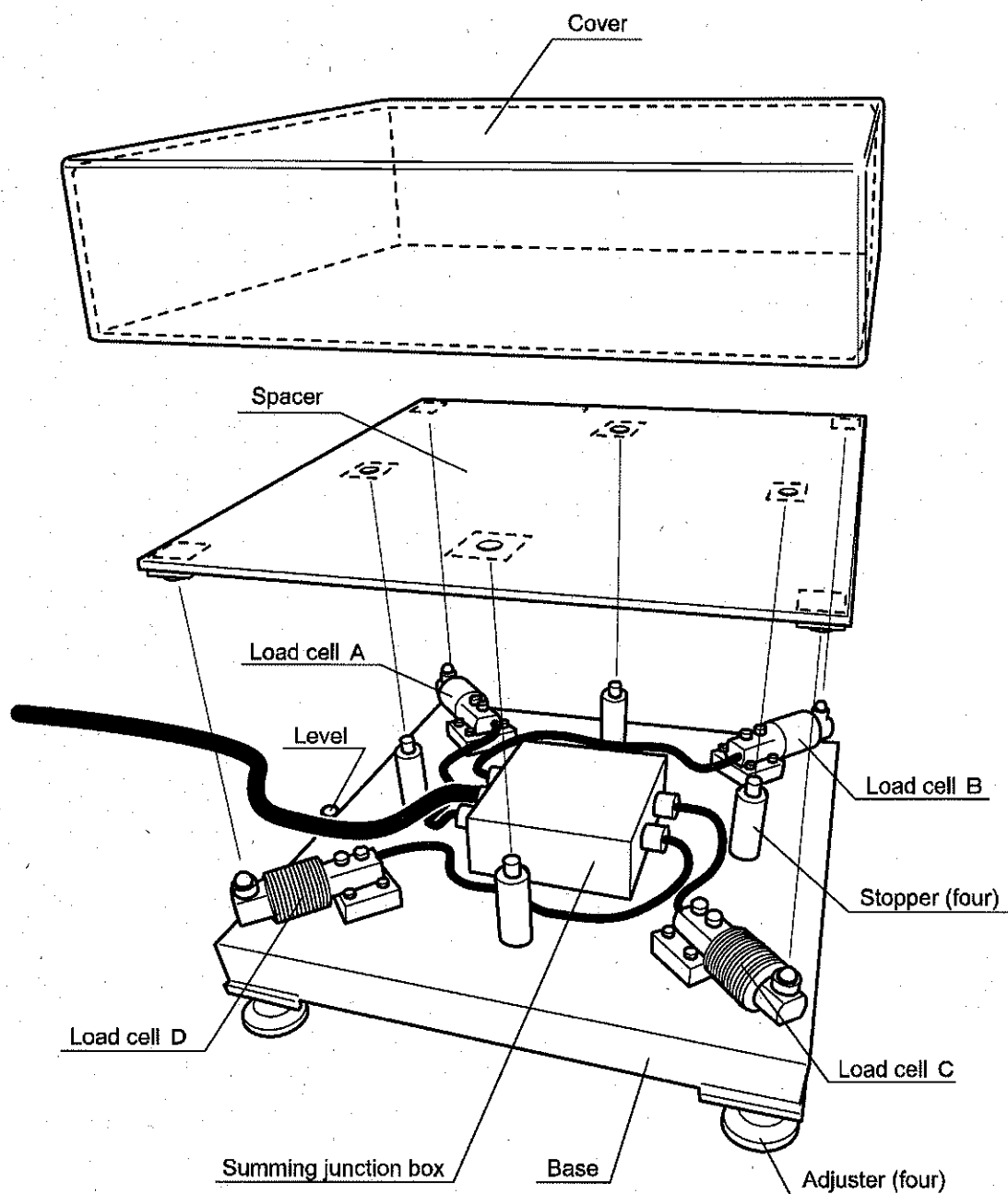


Unit:mm

Exploded view



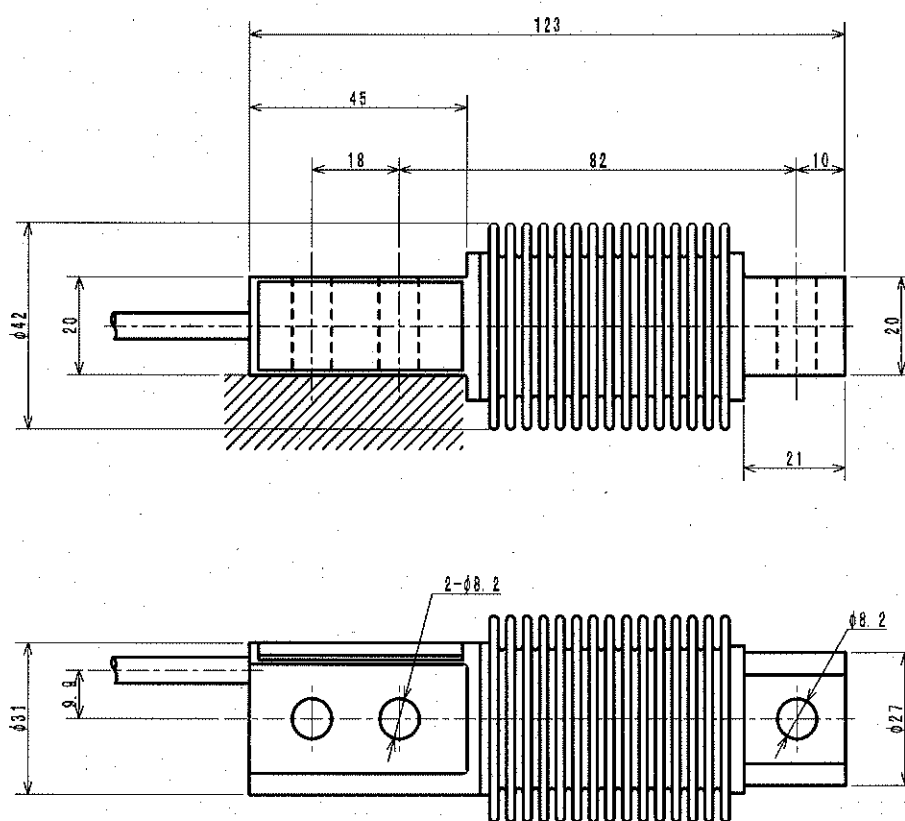
Exploded view



Load cell

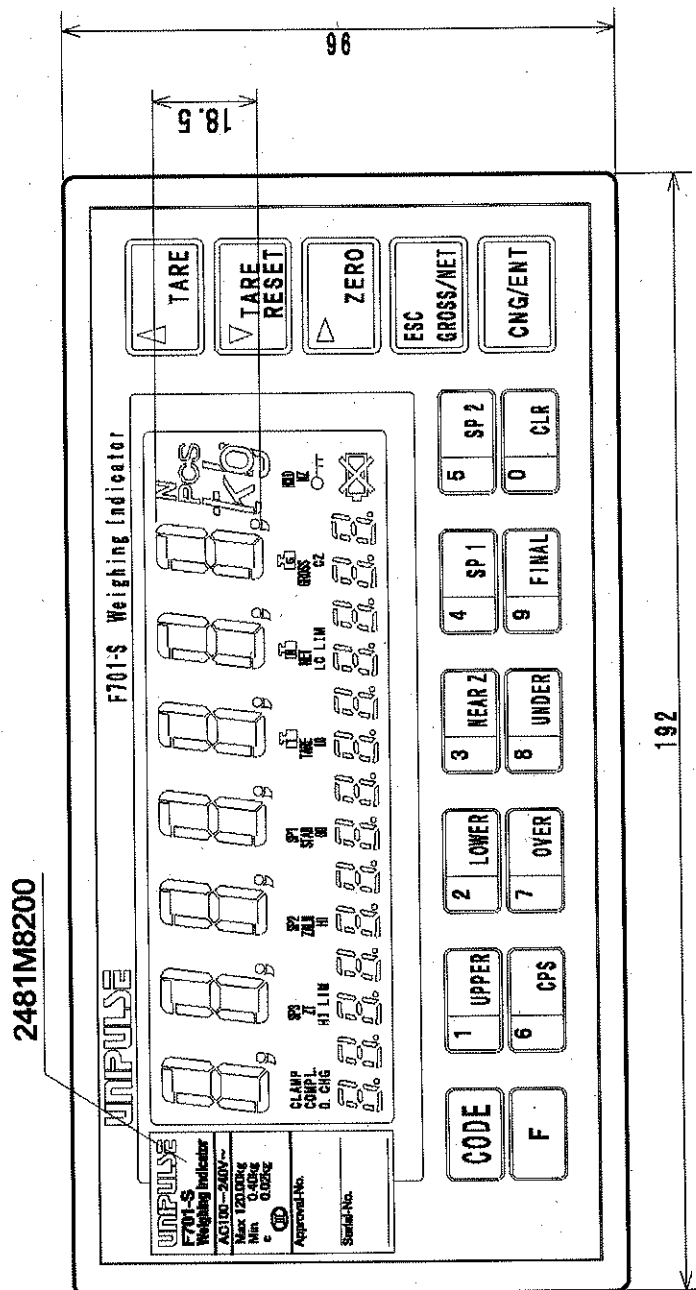
〈Specifications〉

Model	Z6FC6-50KG
Rated capacity (kg)	50
Rated output (mV/V)	2±0.05
Non-linearity (%R.O.)	±0.0110
Hysteresis (%R.O.)	±0.0080
Creep (%R.O./30min.)	±0.0083
Compensated temperature range (°C)	-10~+40
Safe temperature range (°C)	-30~+70
Temperature effect	Zero balance (%R.O./10°C)
	Output (%R.O./10°C)
Interterminal resistance	Input (Ω)
	Output (Ω)
Maximum excitation voltage (V)	12
Insulation resistance (MΩ)	5000 or more
Safe overload (%R.C.)	150
Maximum safe overload (%R.C.)	300
Maximum safe side overload (%R.C.)	100
Deflection at rated (±15%) (mm)	0.27
Loadcell material	Stainless steel
Weight (kg)	0.5



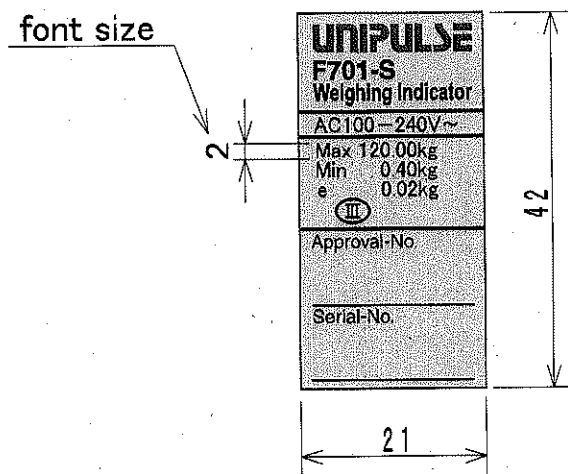
Unit:mm

Display Sheet



Unit:mm

Descriptive Marking Sticker



NOTE) 1. Approval Panel should use a Void seal. (It is invalid once it removes.)

Unit:mm

F701-S Approval Panel

2481M8200

Descriptive Marking Sticker

font size

2

Model approval		Model	F701-S		Verification mark, etc.	
Accuracy class	III	Class		Use area		
Maximum capacity		kg				
Maximum tare weight		kg				
Range of use		kg ~		kg		
Verification scale interval				kg		
Rated voltage	AC		V	50/60Hz		
Equipment number						
Power consumption		W				
Manufacturing date						
UNIPULSE						

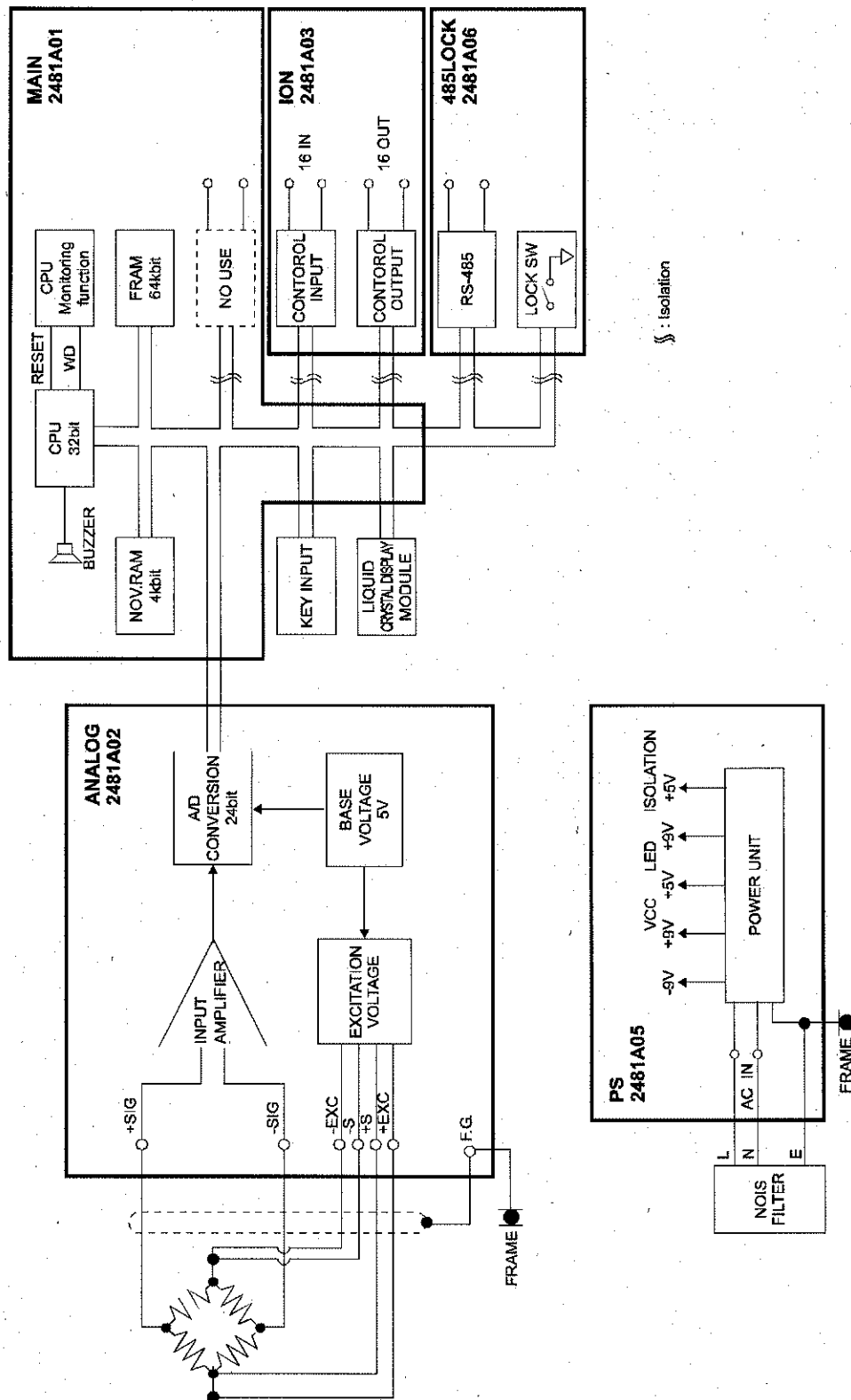
48

90

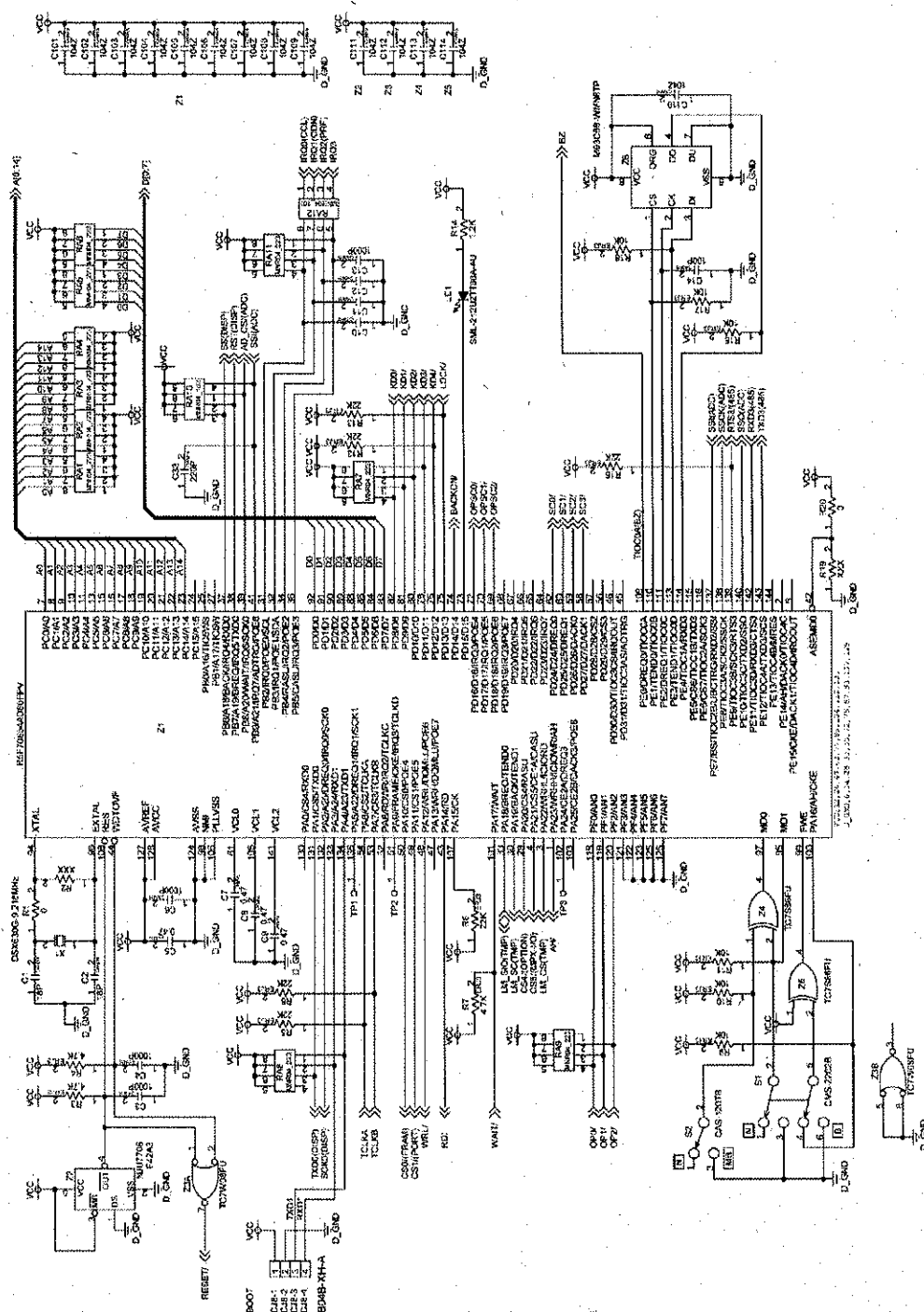
NOTE) 1. Weighing Spec Panel should be a product made of void seal.
(It is invalid once it is removed.)

Unit:mm

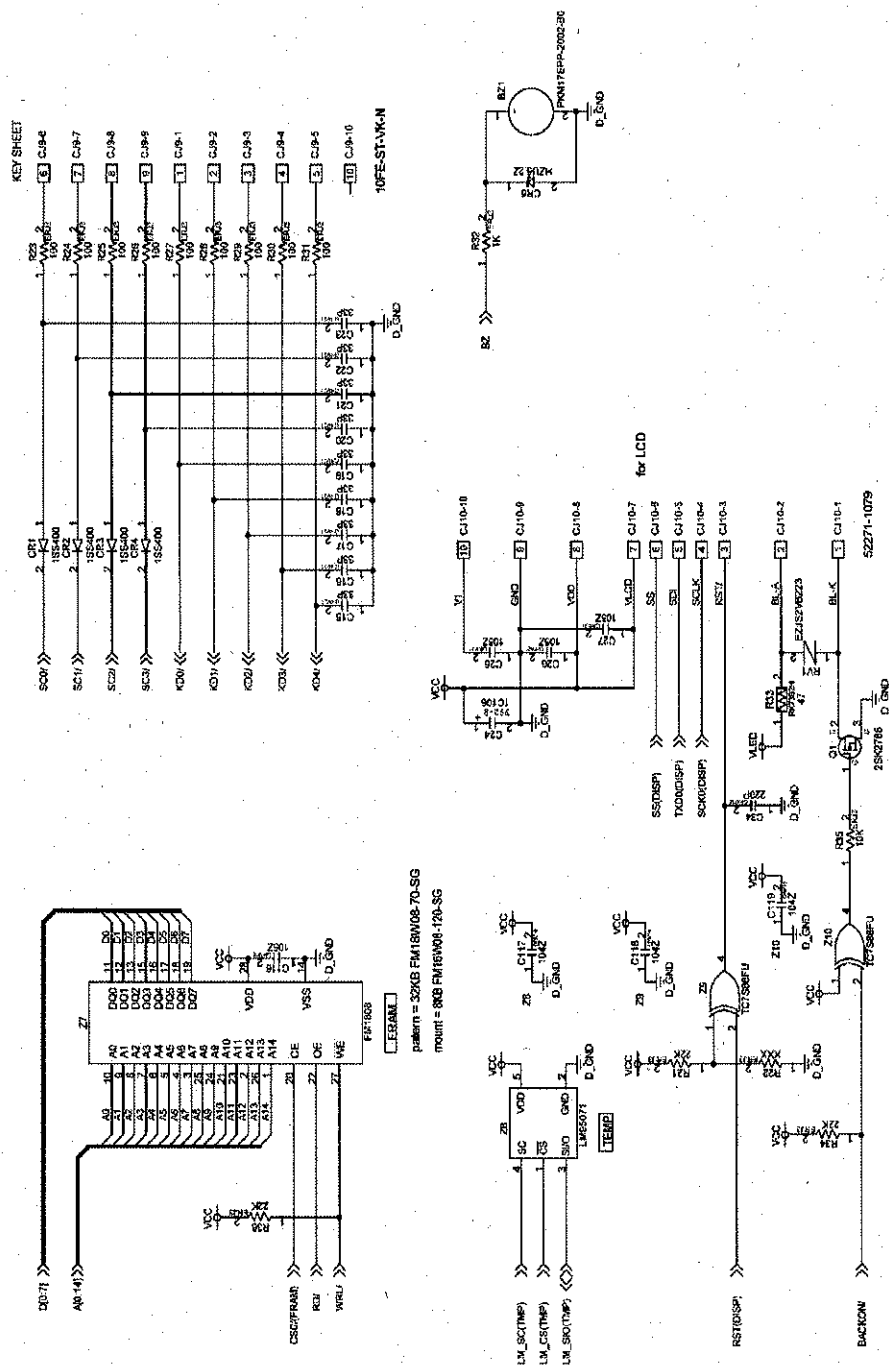
Block chart



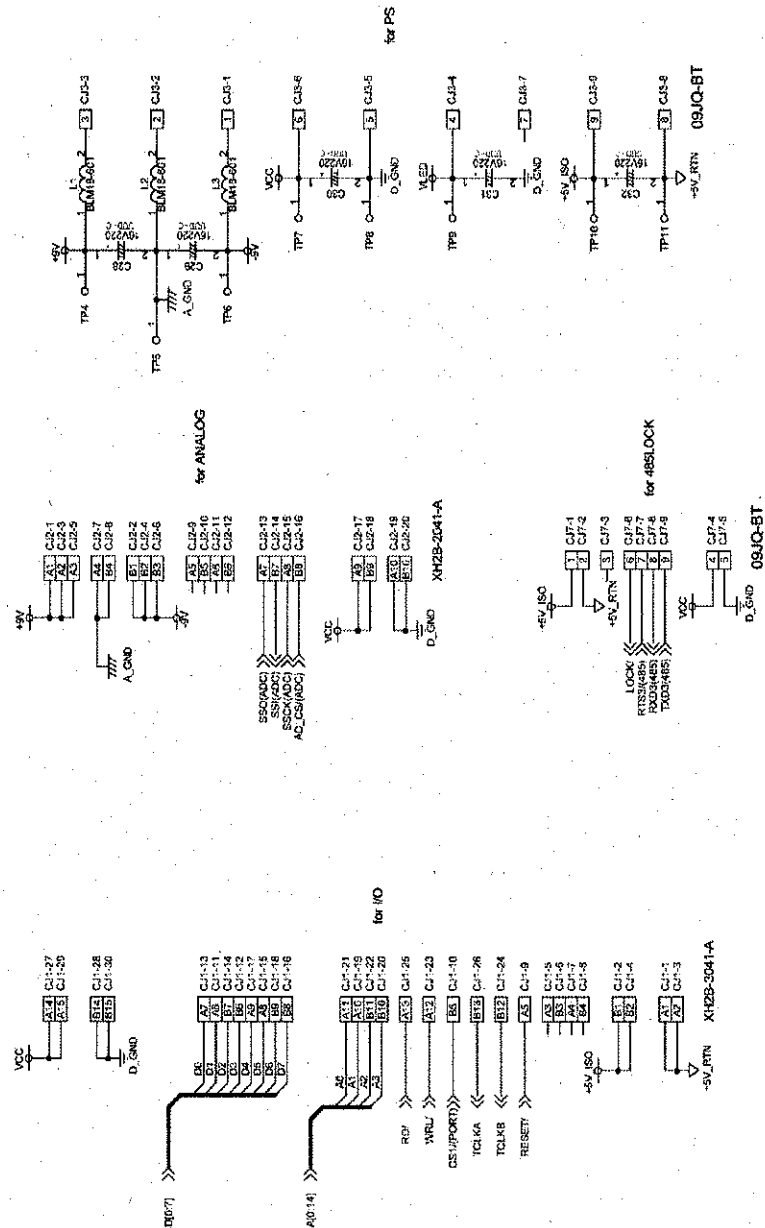
Circuit Diagram



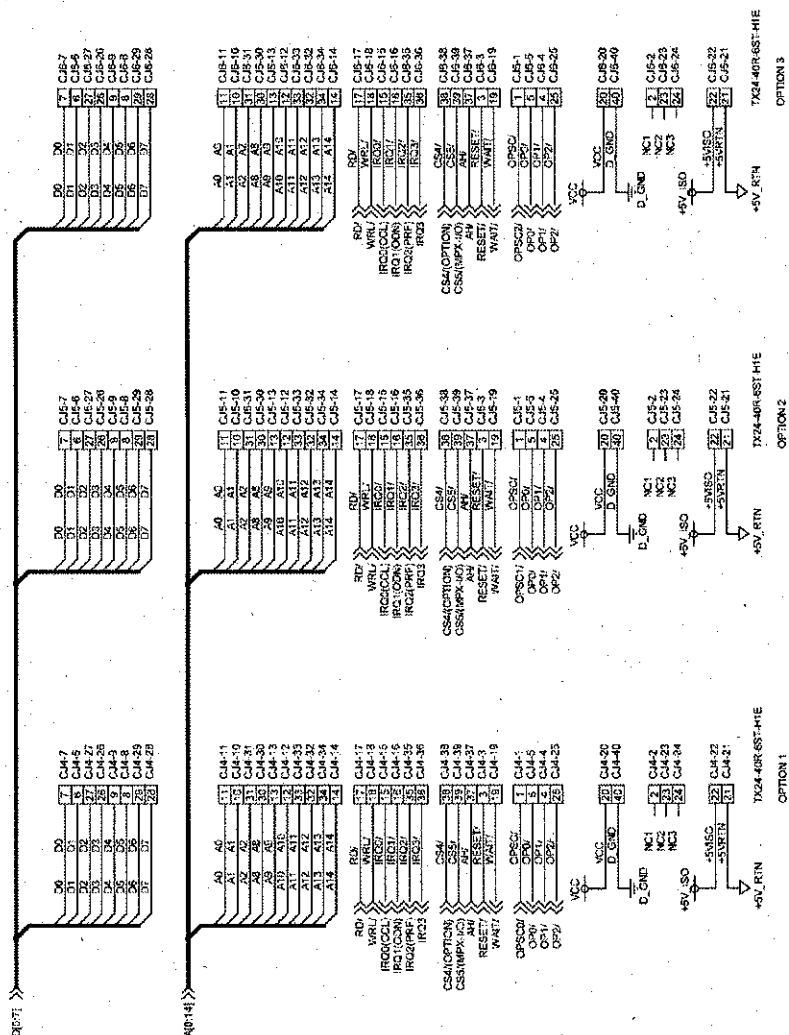
Circuit Diagram



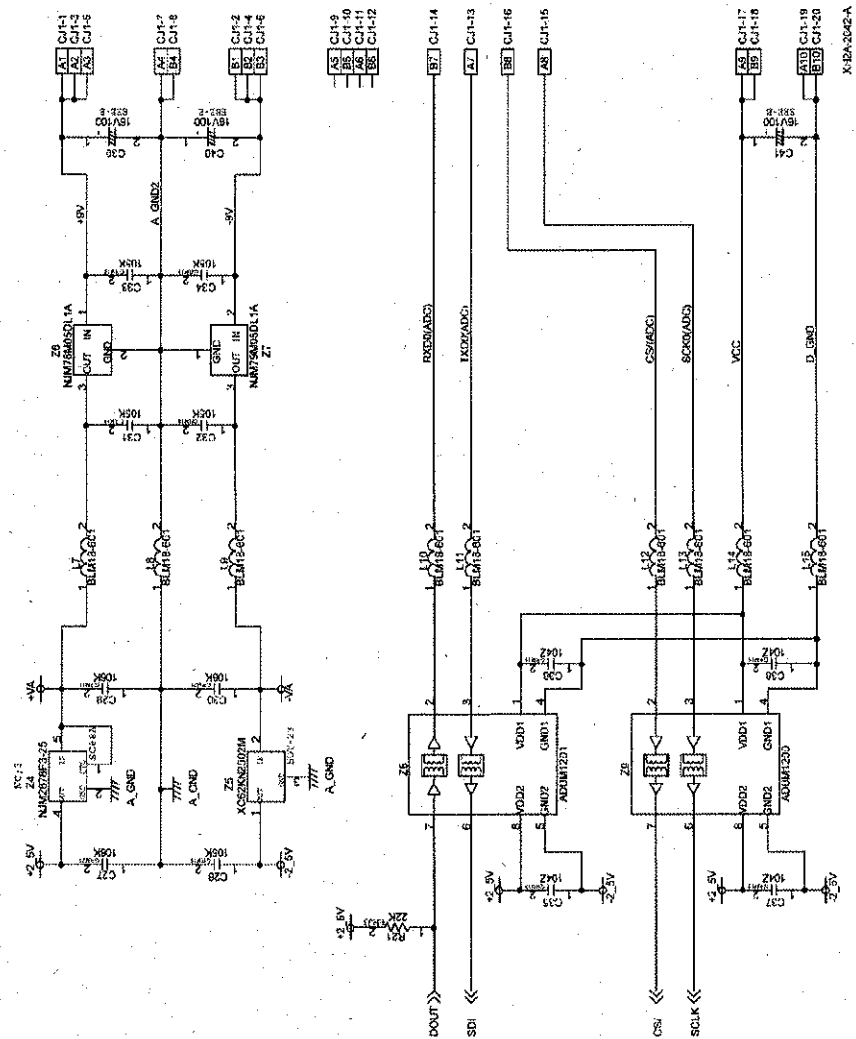
Circuit Diagram



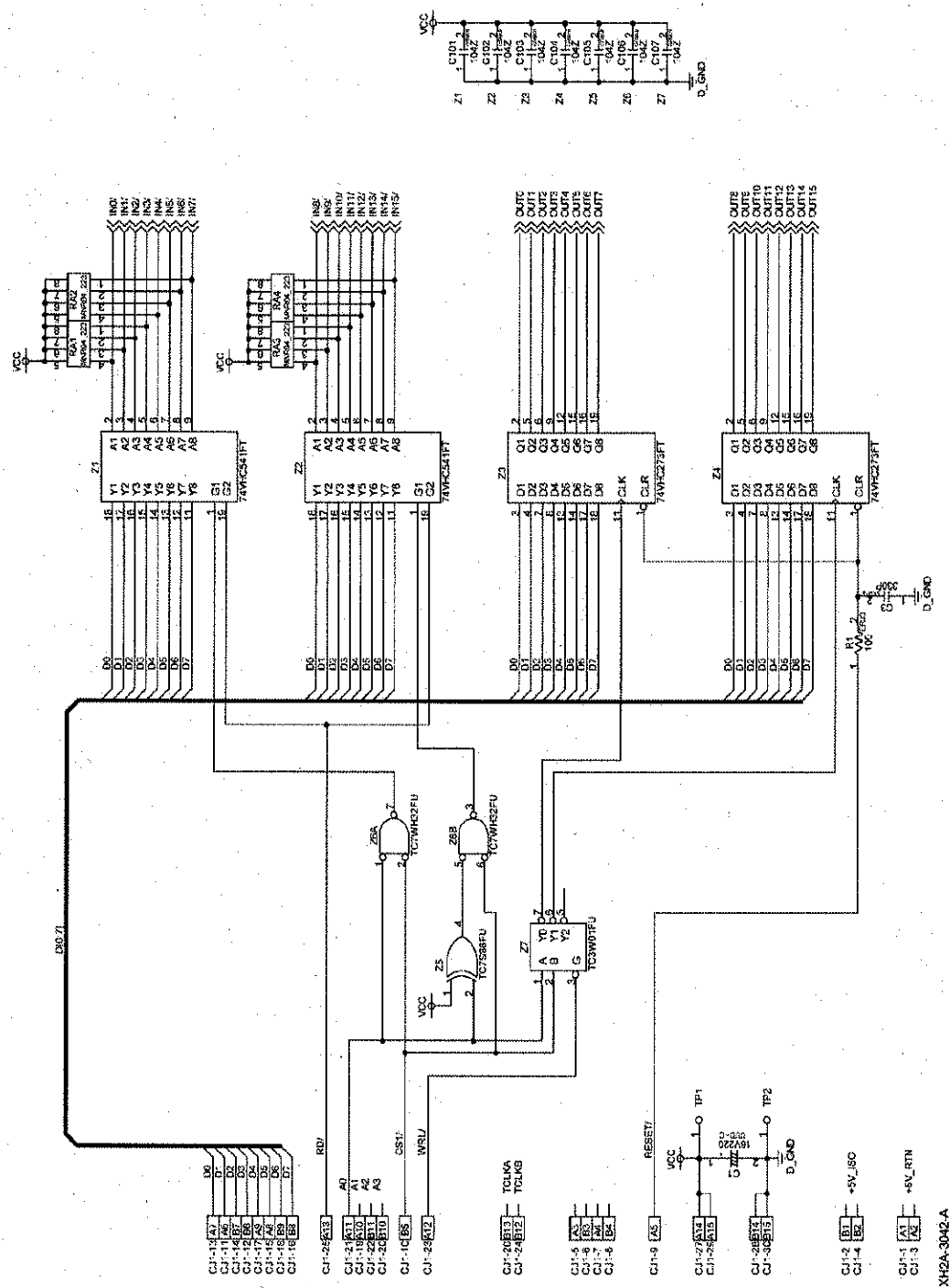
Circuit Diagram



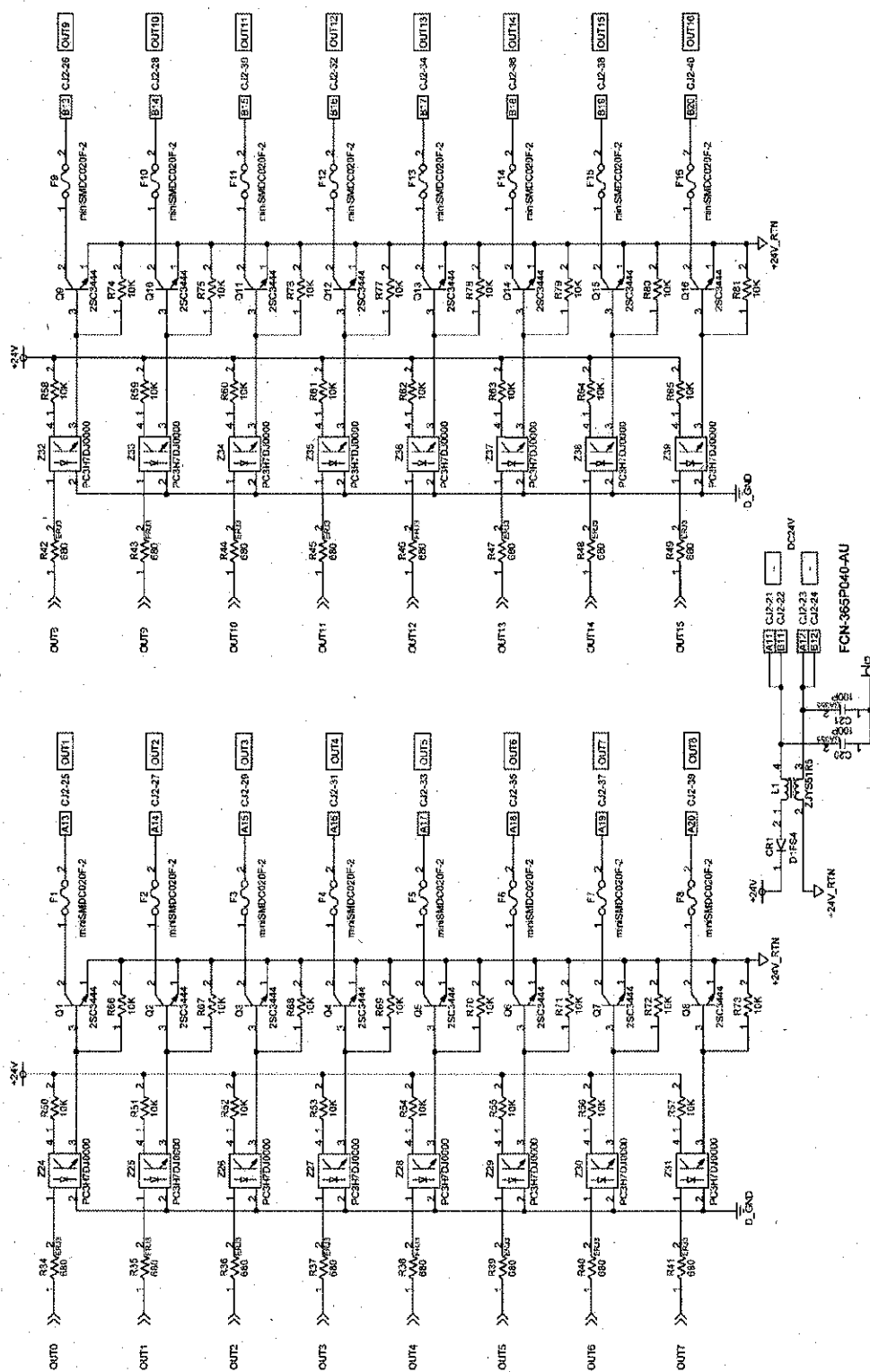
Circuit Diagram



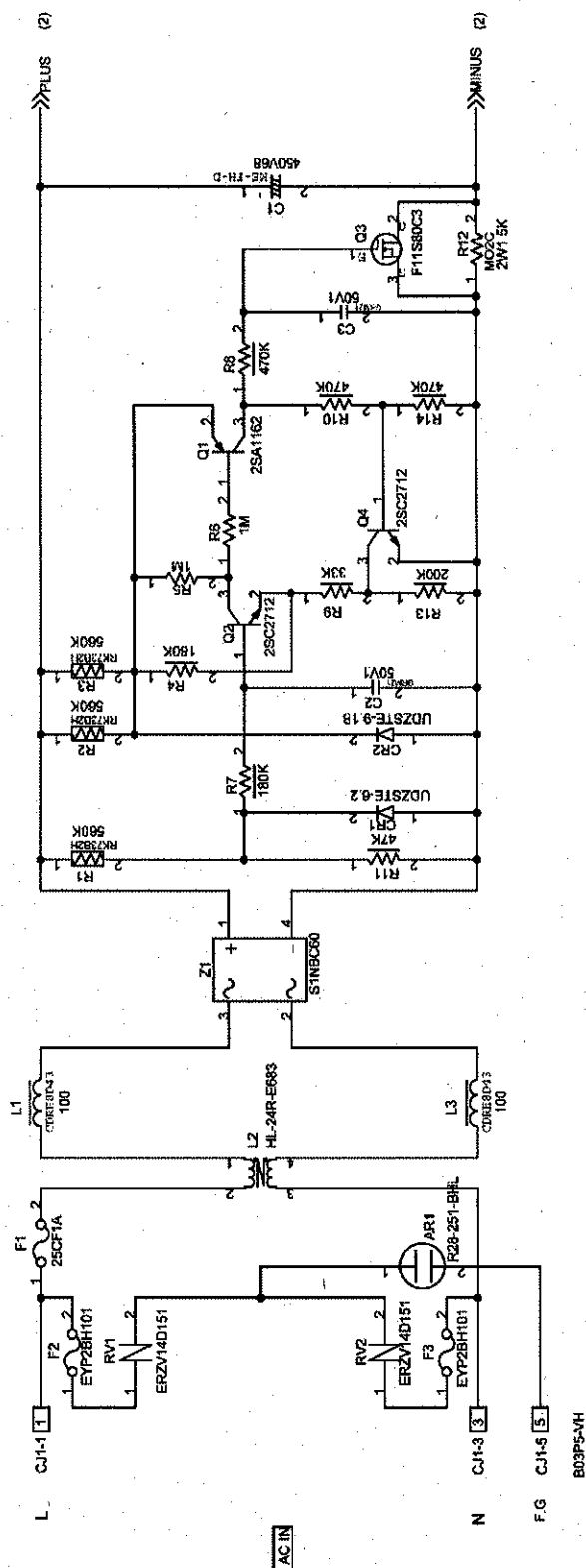
Circuit Diagram



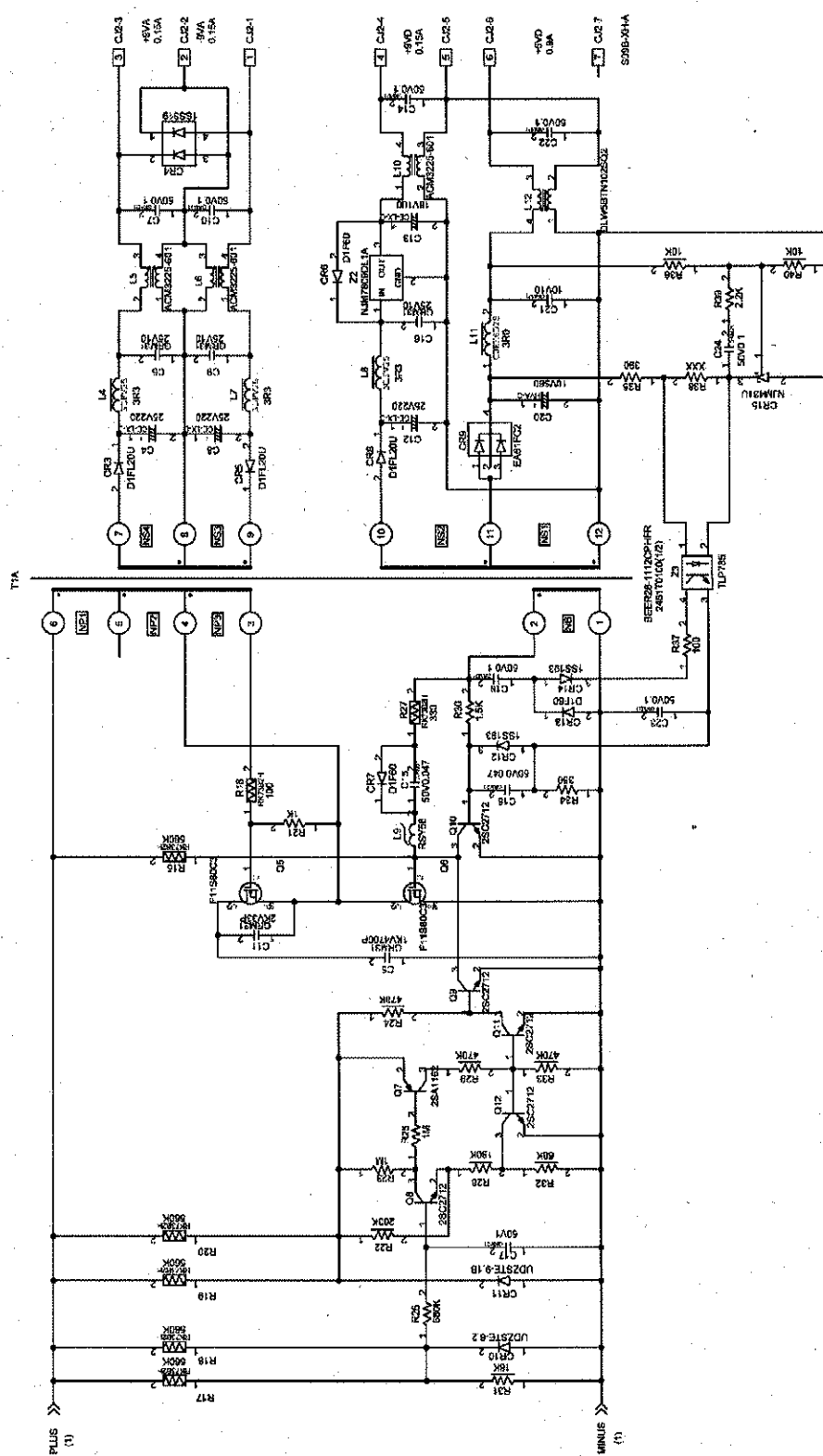
Circuit Diagram



Circuit Diagram

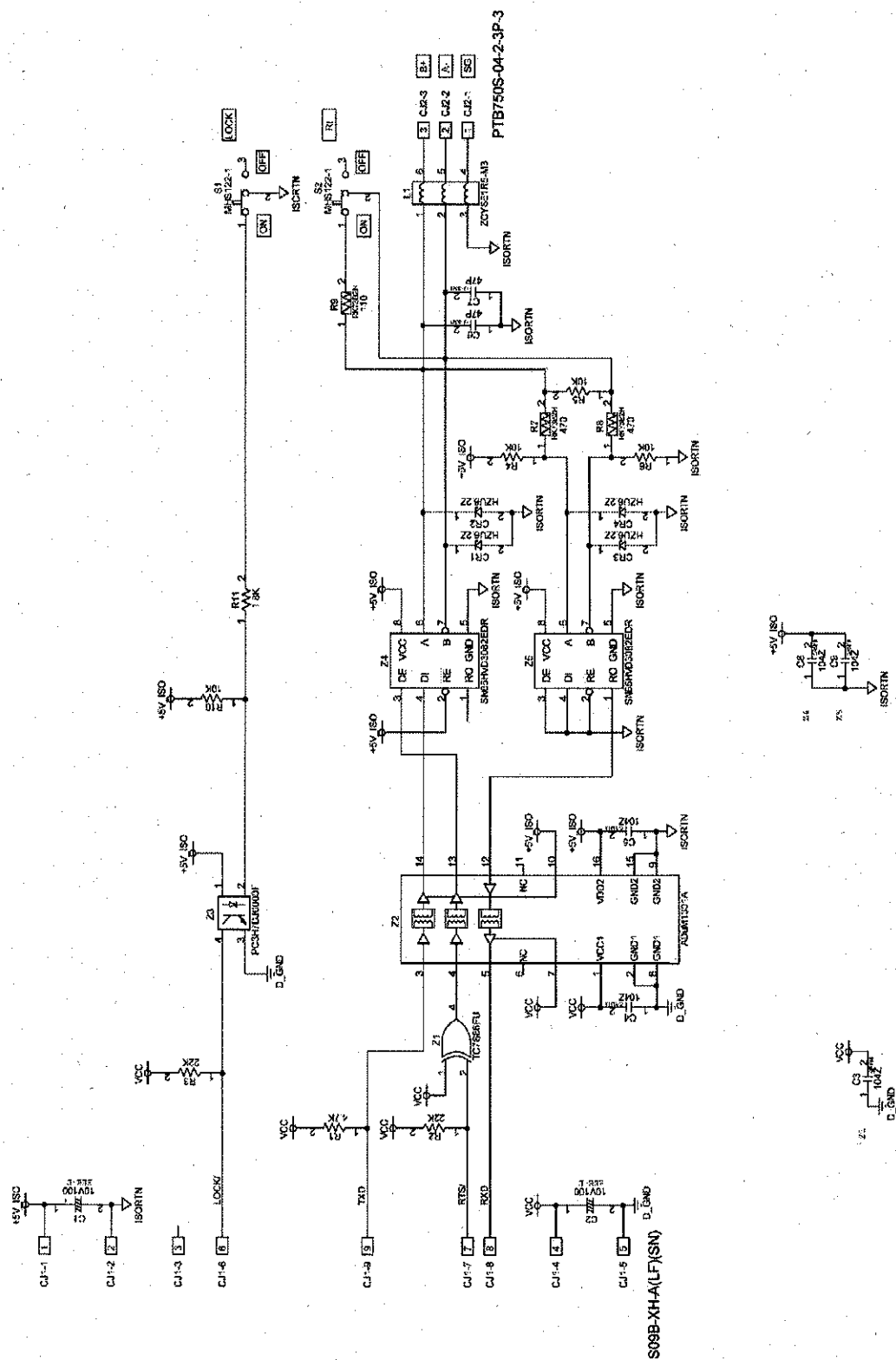


Circuit Diagram

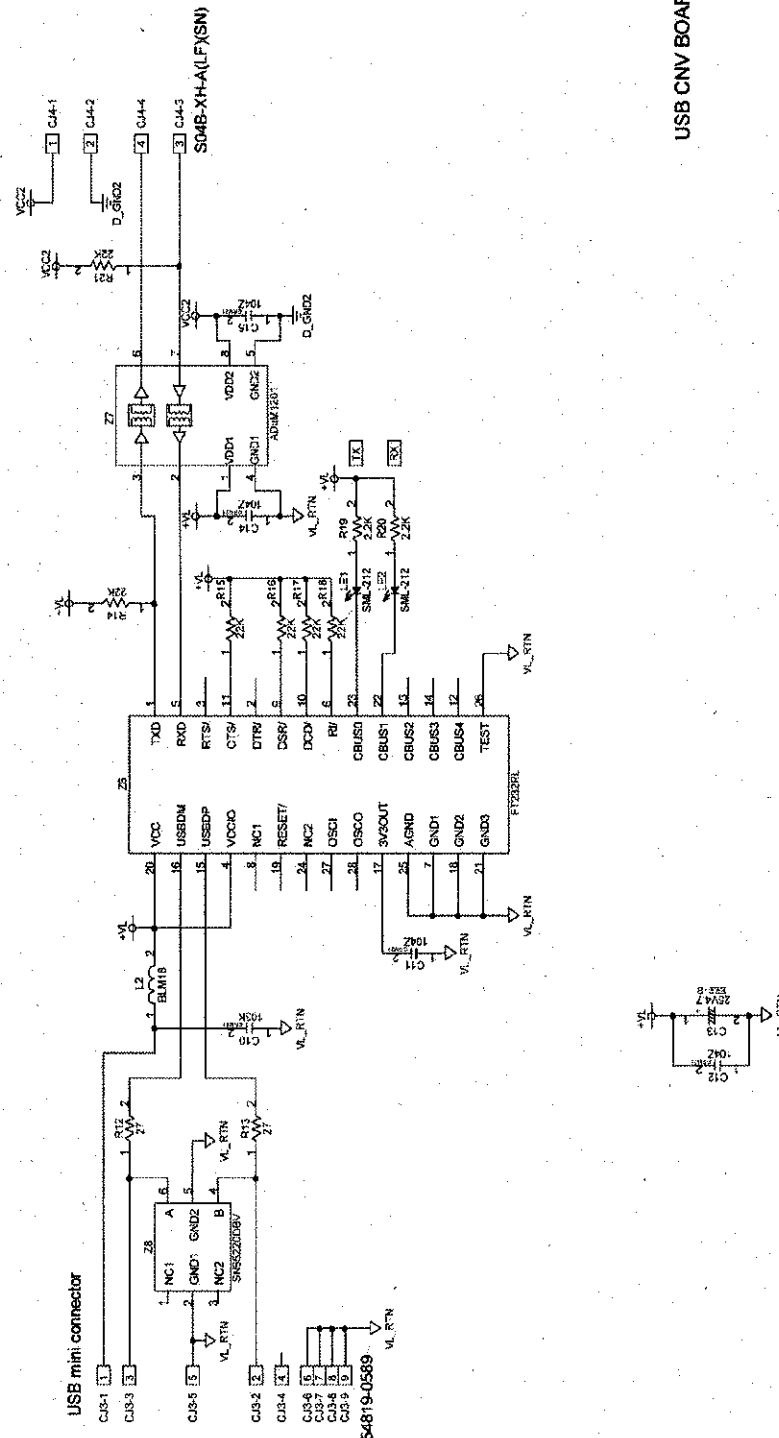


The schematic diagram illustrates a Class D amplifier circuit. The power supply is derived from a transformer (T1B) through a bridge rectifier (CR17) and a large electrolytic filter capacitor (C27, 28V130). The main amplifier stage consists of a MOSFET (MD50ZT1) configured as a Class D amplifier. The gate of the MOSFET is driven by a gate driver (CR18, EAF12C2) which is biased by a bootstrap network (C32-C38, L13). The output of the MOSFET is filtered by a network of capacitors (C33-C35, L14) and connected to a load (JFA1). The circuit also includes a feedback network (C36, C37, C38, L14) and a bootstrap network (C32-C38, L13) to ensure proper operation.

Circuit Diagram

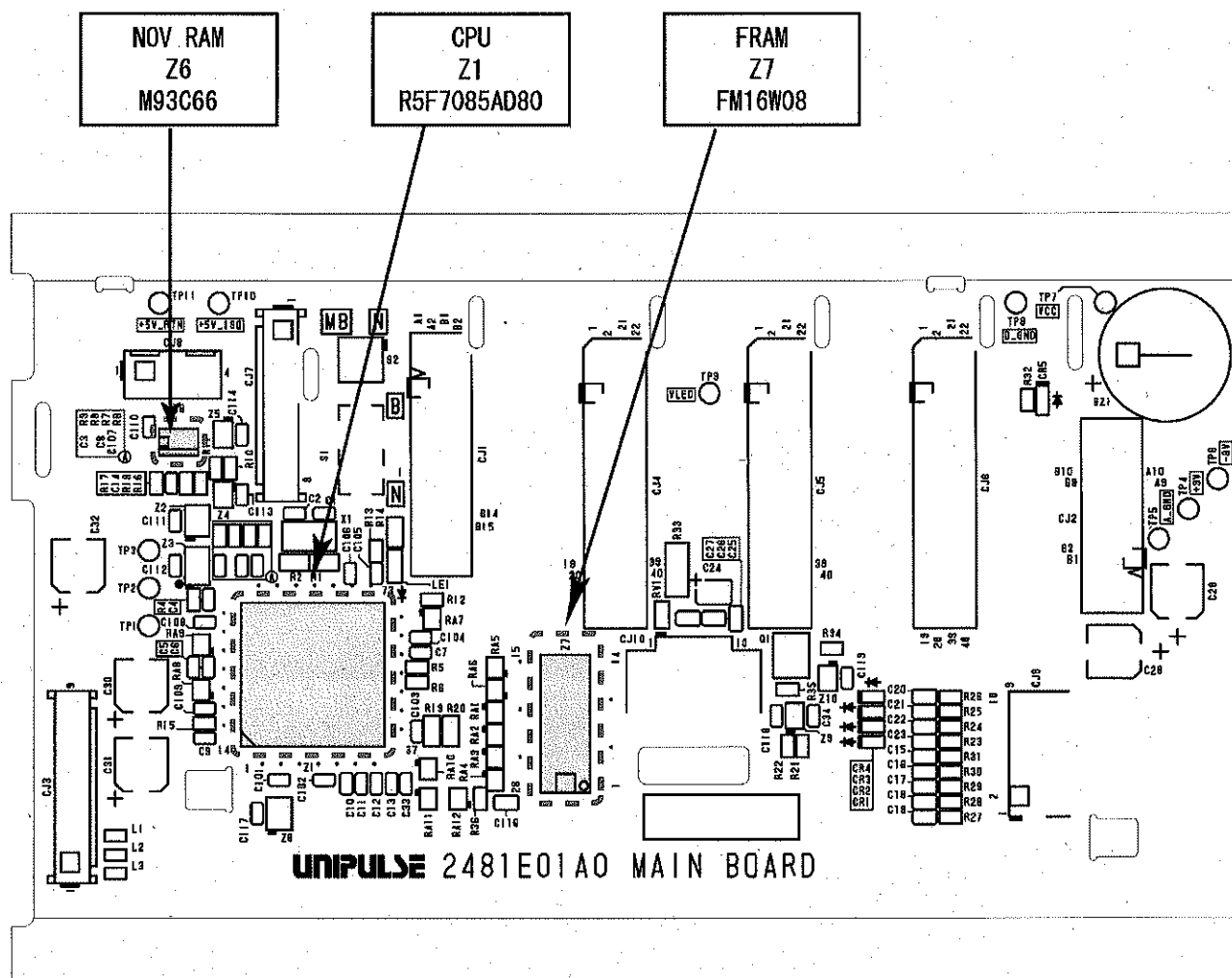


Circuit Diagram

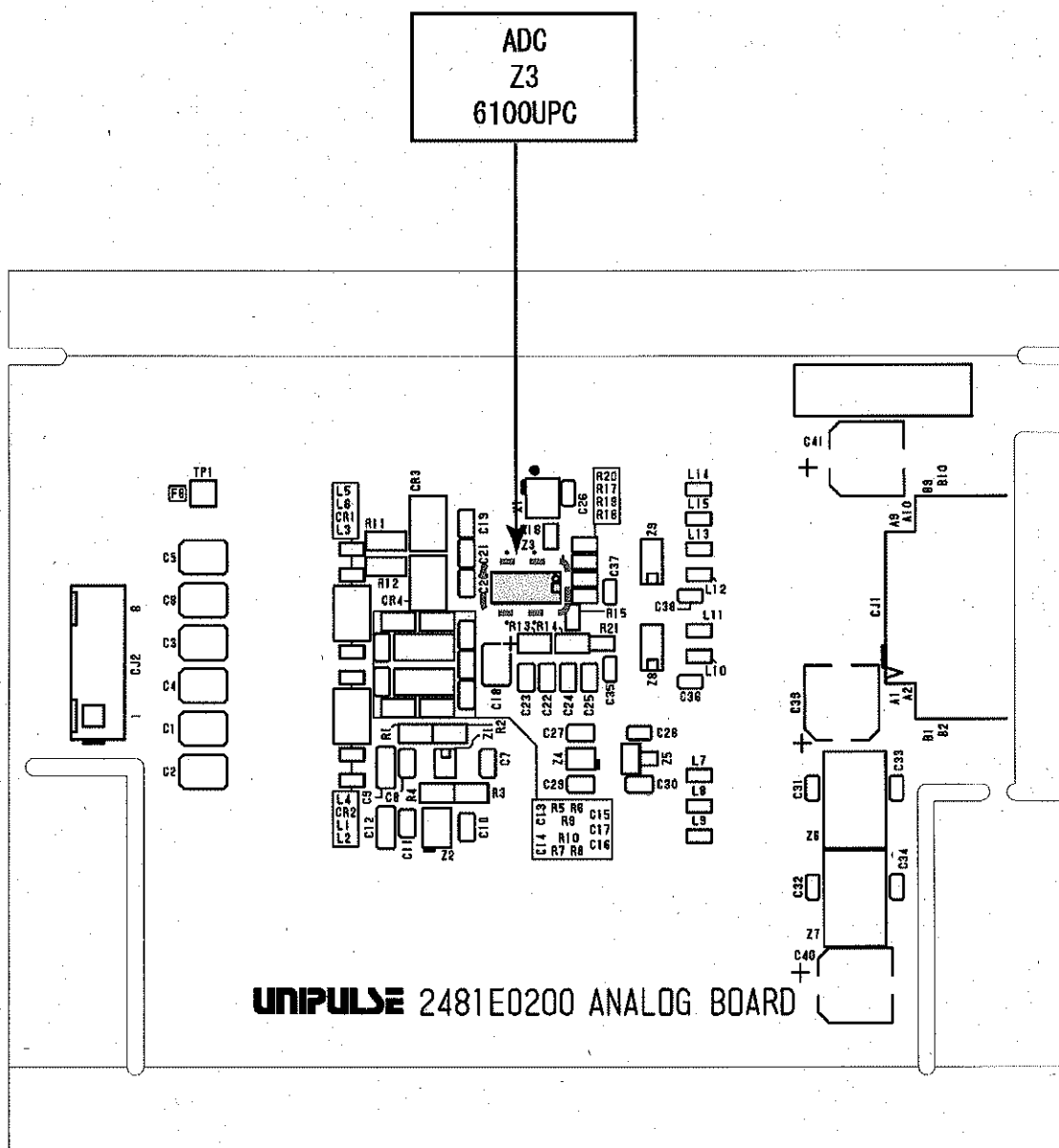


USB CNV BOARD

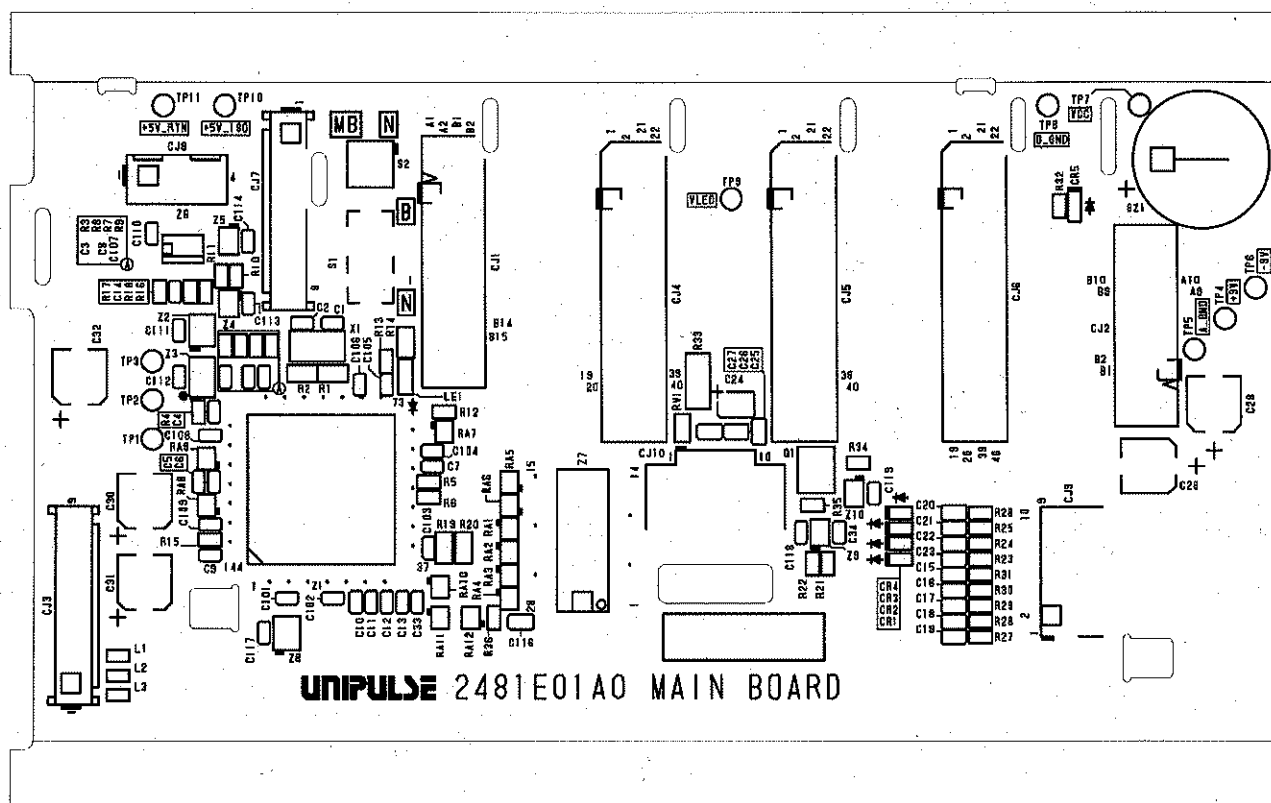
Board Layout



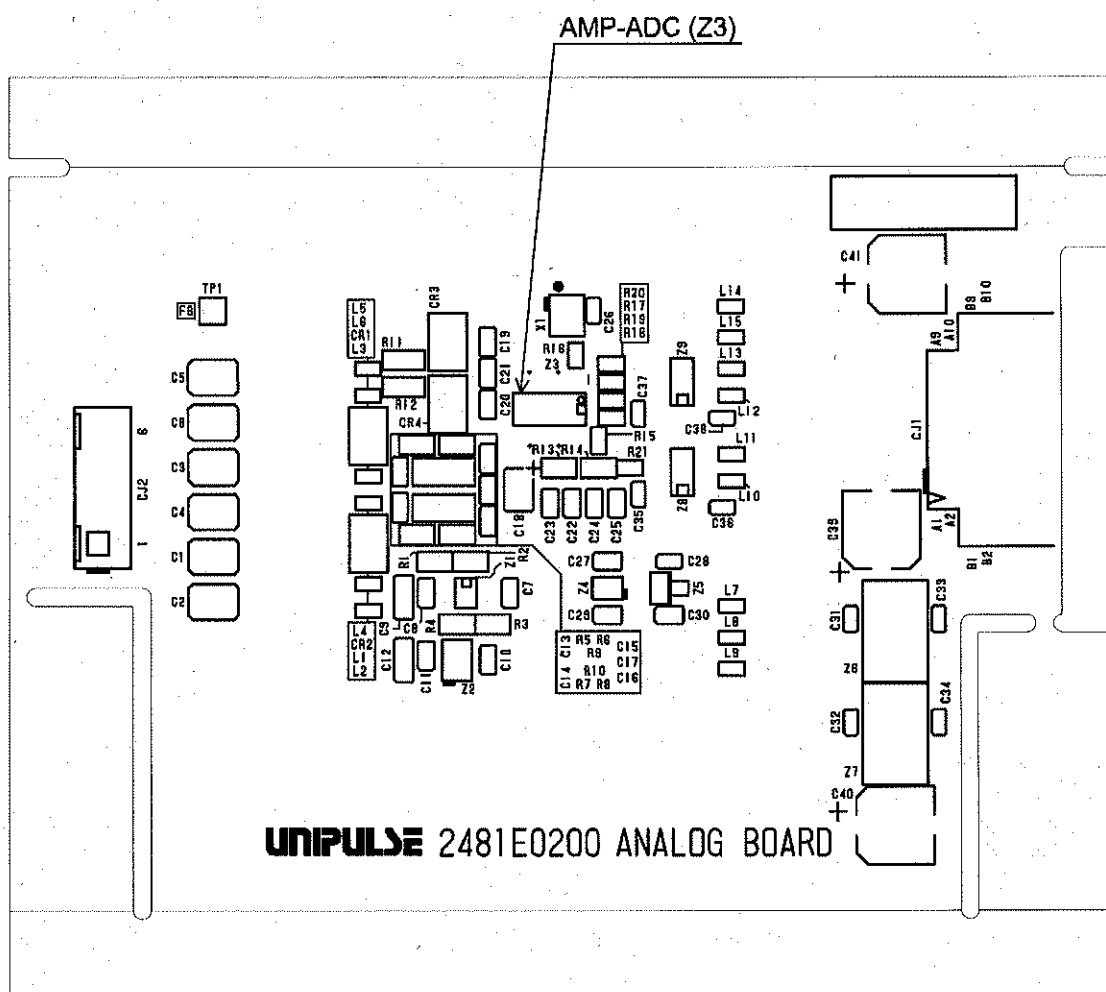
Board Layout



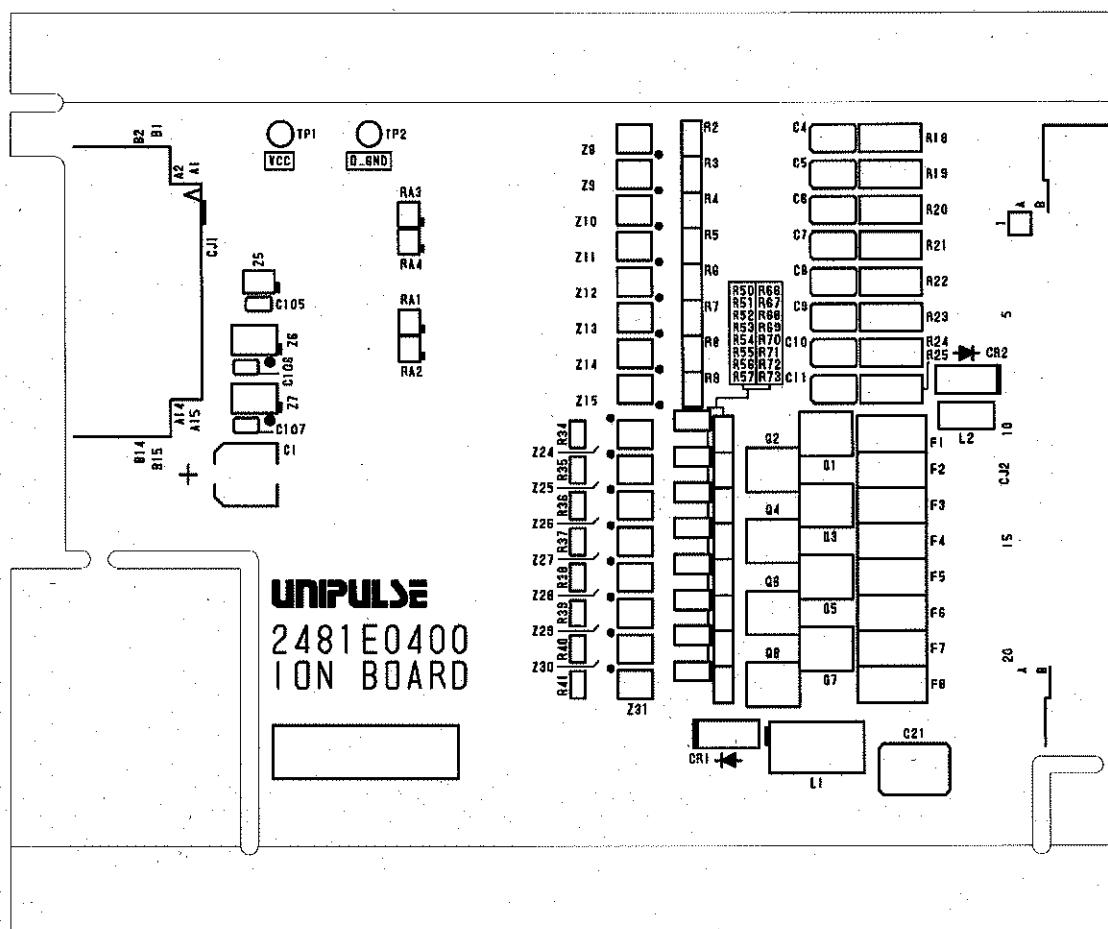
Board Layout



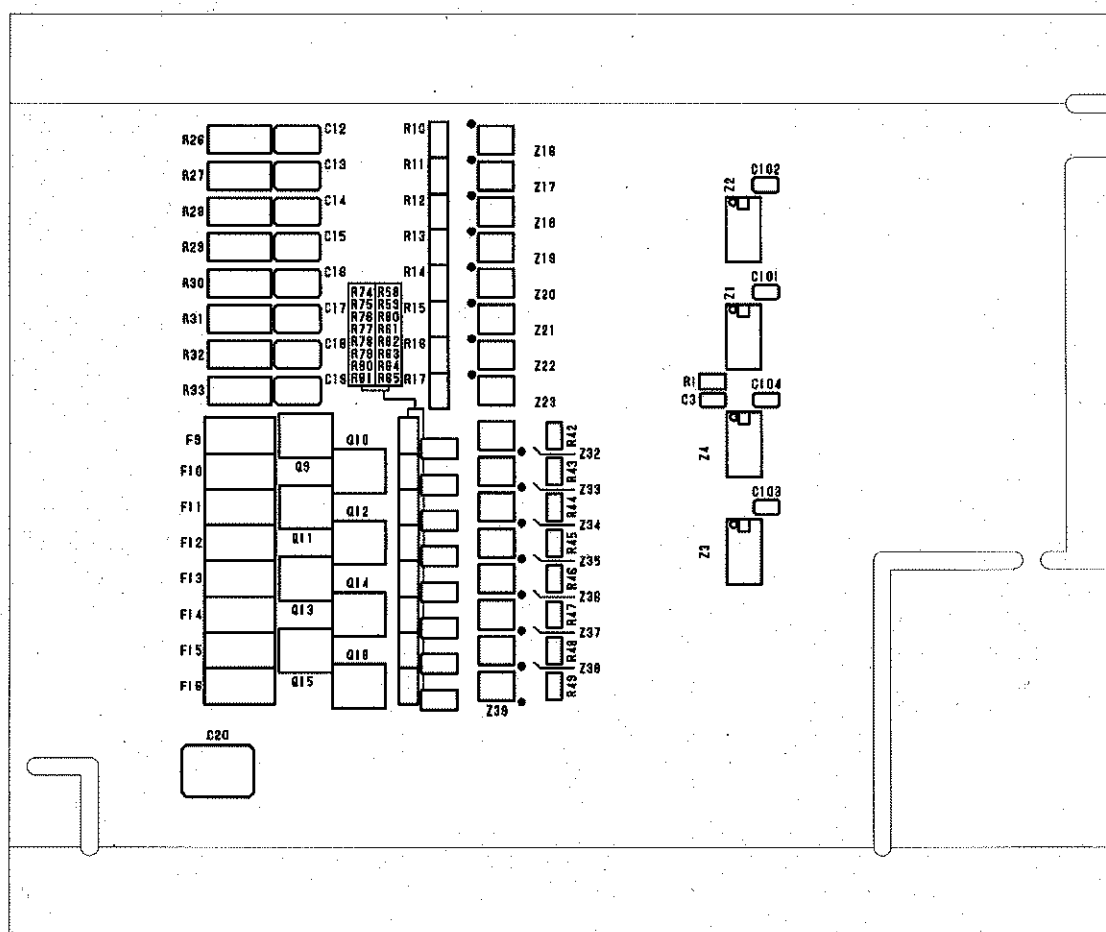
Board Layout



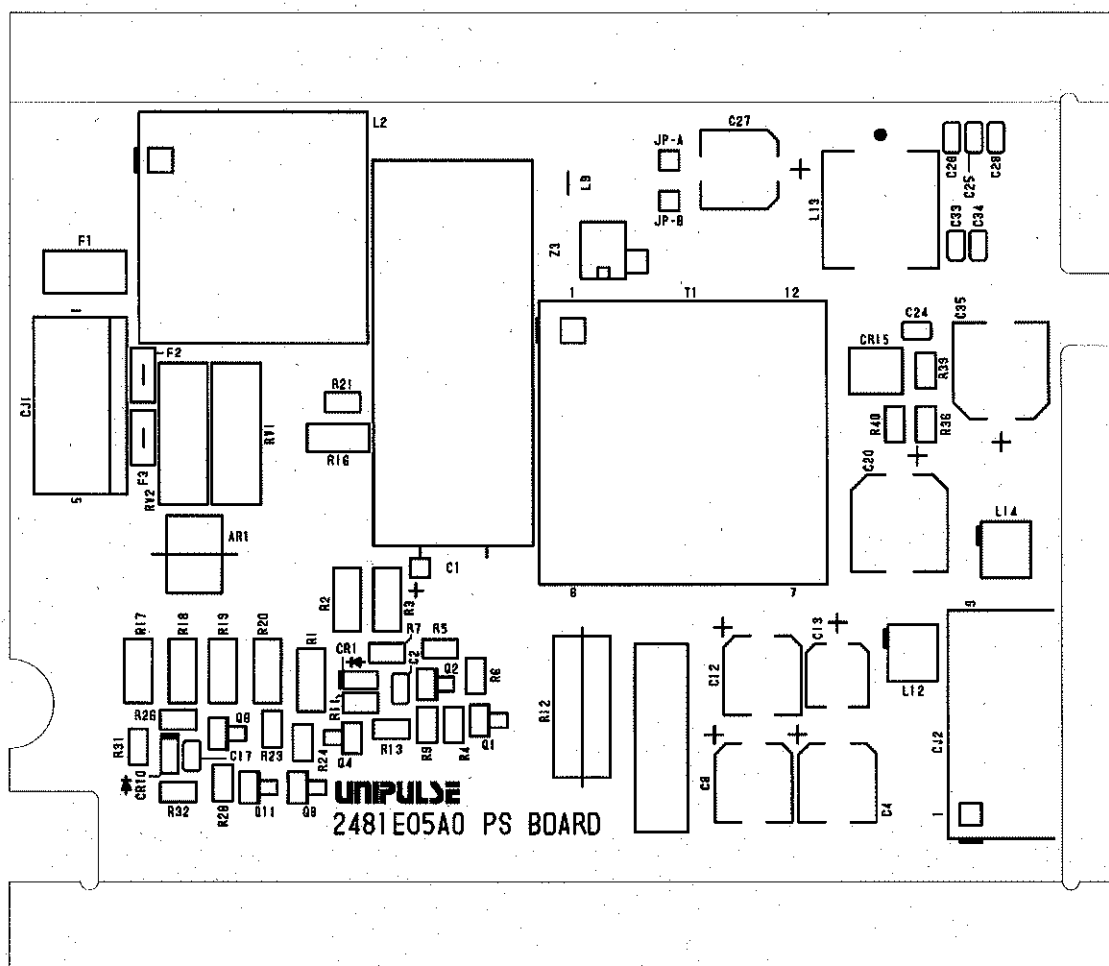
Board Layout



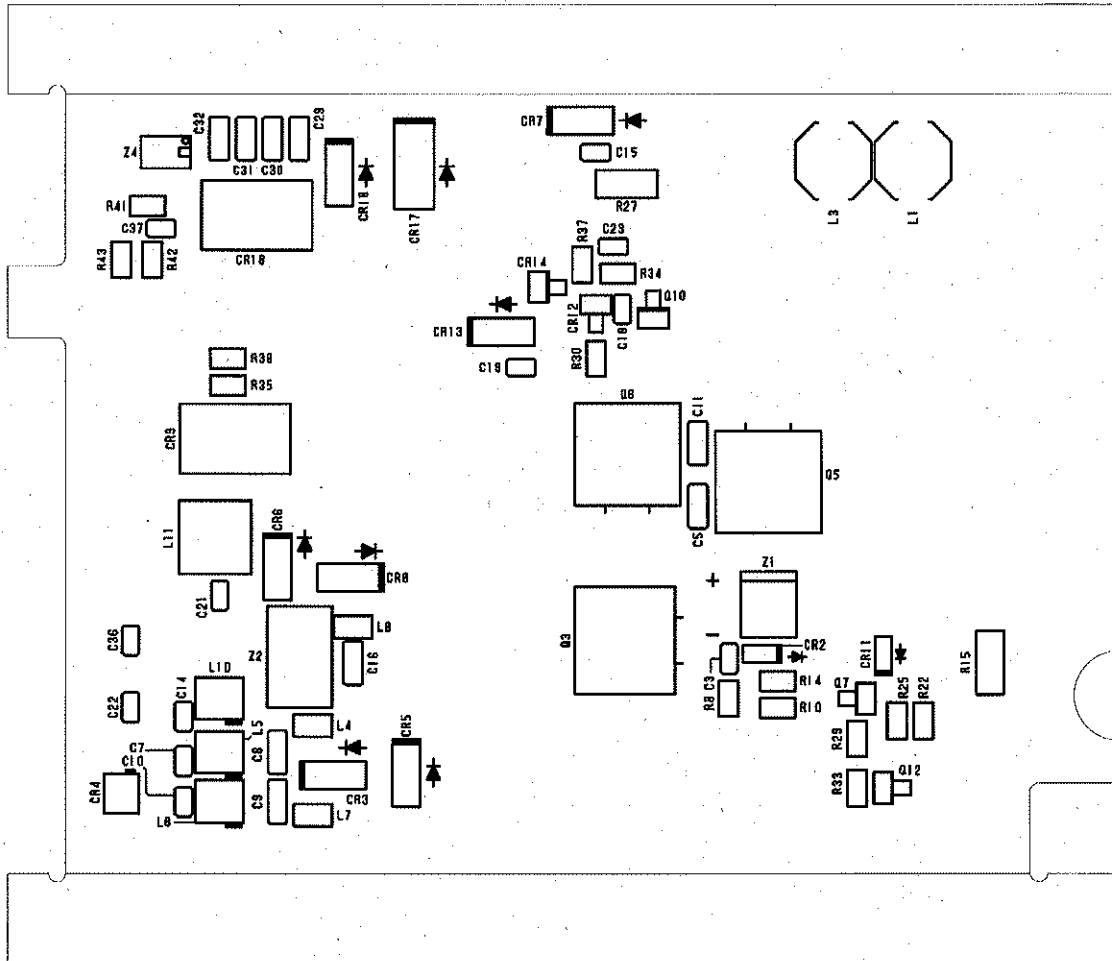
Board Layout



Board Layout



Board Layout



Board Layout

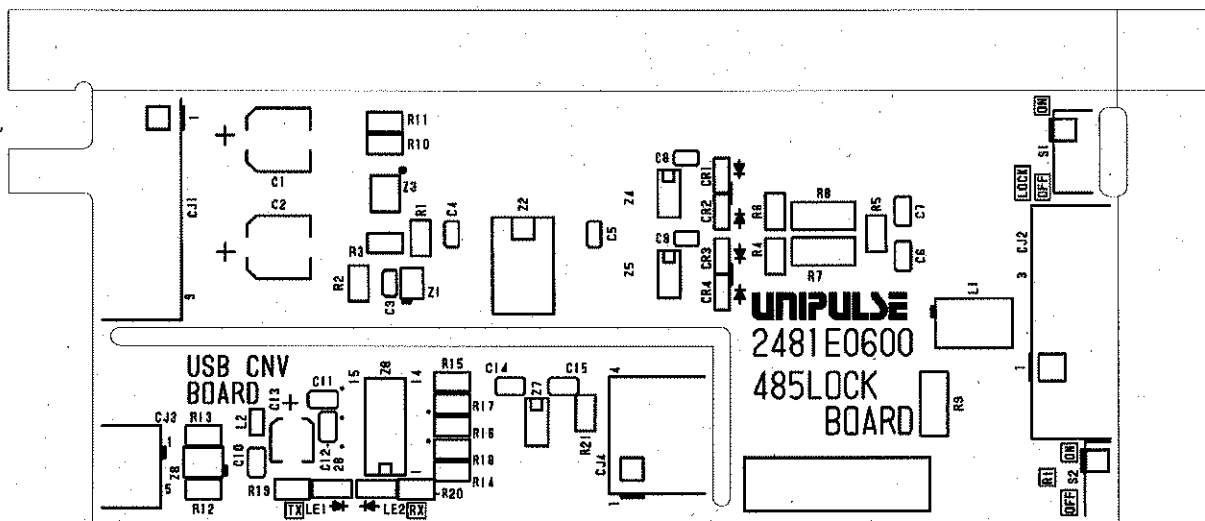


Diagram of the rear panel of the device. The panel features a 'LOADCELL' connector at the top, a 'SERIAL' port in the center, and a 'LOCK' switch at the bottom. The text 'MADE IN JAPAN' is printed on the right side. The diagram also shows the internal wiring and components, including a 'SERIAL' port and a 'LOCK' switch.

NOTE 1) Void seals is invalid once it is removed.
NOTE 2) The wire is sealed with a tin crimp bead.



Test Report

Non-automatic weighing instruments

Project number : OIML92-12-01
Test report number : 12-01 / R76:1992
Test specifications : OIML R76-1 (edition 1992),
including Amendment 1(1994)

Applicant : Unipulse Corporation
Manufacturer : Unipulse Corporation Technical Center
Date of application : 2012-6-4
End of Test : 2012-7-18

Testing Laboratory

Name : National Metrology Institute of Japan /National Institute of
Advanced Industrial Science and Technology (NMIJ/AIST)
Address : AIST Tsukuba Central 3, Tsukuba Ibaraki 305-8563, Japan

Signature:

A handwritten signature in black ink, appearing to read "Y. Koyano", is written over the printed name.

Yasuhiro Koyano

Chief of Legal Weighing Metrology Section
Mechanical Metrology Division

Date:

2012. 7. 24

OIML R76-2
Edition 1993(E)

CONTENTS

MODEL : F701-S

GENERAL INFORMATION CONCERNING THE PATTERN	: Page
INFORMATION CONCERNING TEST EQUIPMENT USED FOR PATTERN EVALUATION	: 3-4
SUMMARY OF PATTERN EVALUATION	: 5
TESTS DATA	: 6
	: 7-56

GENERAL INFORMATION CONCERNING THE PATTERN

Application N°: 24-005
 Pattern designation: F701-S
 Manufacturer: Unipulse Corporation Technical Center
 Applicant: Unipulse Corporation
 Instrument category: Non-automatic weighing instruments

☒ Complete instrument ☐ Module(★)

Accuracy class: ☐ I ☐ II ☒ III ☐ IIII

☒ Self- ☐ Semi-self ☐ Non-self-indicating

Min = 0.4 kg

e = 0.02 kg Max = 120 kg d = g n = 6000

e₁ = kg Max₁ = kg d₁ = g n =
 e₂ = kg Max₂ = kg d₂ = g n =

T = + T = - 120.00 kg

U_n = AC100-240 V U_{min} = V U_{max} = V f = 50/60 Hz Battery, U = V

Zero-setting device:

☐ Non-automatic

☒ Semi-automatic

☐ Automatic zero-setting

☐ Initial zero-setting

☒ Zero tracking

Tare device:

☐ Tare balancing

☒ Tare weighing

☒ Preset tare device

☒ Subtractive tare

☐ Additive tare

☐ Combined zero/tare device

Initial zero-setting range = - % Temperature range: -10/40 °C

Printer: ☐ Built-in ☐ Connected ☐ Non present but ☒ No connection
 Connectable

Instrument submitted: F701-S

Loadcell:

Identification N°: A

Manufacturer: HBM

Connected equipment: SW-BOX

Type: Z6FC6

Capacity: 50kg

Interfaces:
 (number,nature) RS-485,I/O SINK

Number: 4

Remarks: see following page

Classification
 symbol:

Date of report: 2012-7-12

Evaluation period: 2012-6-5 — 2012-7-18

Observer: Fukuda, Otani, Takahashi, Nemoto

(★) The test equipment (simulator or a part of a complete instrument) connected to the module shall be defined in the test form(s) used.

GENERAL INFORMATION CONCERNING THE PATTERN
(continued)

Use this space to indicate additional remarks and/or information: connections equipment, interfaces and load cells, choice of the manufacturer regarding protection against disturbances (5.1.1.a or 5.1.1.b), etc.

INFORMATION CONCERNING TEST EQUIPMENT
USED FOR PATTERN EVALUATION

Function	Manufacturer	Type	Identification	Range
Weight 2 g	Akiyama	stainless-steel	No identification (For additional load)	
Weight 200 g	Byakko	stainless-steel	N° :12,14	
Weight 5 kg	Akiyama	stainless-steel	N° :10	
Weight 10 kg	Akiyama	stainless-steel	N° :13	
Weight 20 kg	Akiyama	stainless-steel	N° :16,17,18,19,23, 25	
Voltage	Kikusui	PCR2000W	AL001776	AC 1-300V DC 1.4-424V 1-500Hz
Burst	Noise Ken	FNS-2002	FNS0330137	0-4.6kV
ESD	Noise Ken	ESS-2000	ESS03X2247	0.2-30kV
Power reduction	Noise Ken	VDS-2002	VDS0370058	30V-240V
EMI	EMPOWER	2048	1003	0.01MHz-250MHz
EMI	IFI	SMIC-100	2193-4393	200MHz-1000MHz
Antenna	SCHAFFNER	CBL6144	1018	26MHz-3GHz
Temp.	SHINYEI	TRH-CA	3587	-20-80°C
Rel.hum.				20-99.9%RH
	Rotronic	HP101A-L25W1W	22922 001	-20-60°C
				0-100%RH
Bar. Pressure	Yokogawa	MT110-265242	12W521726 E	0-130kPa

SUMMARY OF PATTERN EVALUATION

Application N°: 24-005

Pattern designation: F701-S

	TESTS	Report page	PASSED	FAILED	Remarks
1	Weighing performance Initial Temp 23°C 20°C 40°C -10°C 5°C 20°C	7 8 9 10 11 12	X X X X X X		
2	Temperature effect on no-load indication	13	X		
3.1	Eccentricity using weights	14	X		
3.2	Eccentricity using a rolling load				N. A.
4.1	Discrimination	15	X		
4.2	Sensitivity				N. A.
5	Repeatability	16	X		
6.1	Zero return	17	X		
6.2	Creep	18	X		
7	Stability of equilibrium	19	X		
8	Tilting	20	X		
9	Tare	21-22	X		
10	Warm-up time	23	X		
11	Voltage variations	24-26	X		
12.1	Short time power reductions	27	X		
12.2	Electrical bursts a) Power supply lines b) I/O circuits and communication lines	28 29	X X		
12.3	Electrostatic discharges a) Direct application b) Indirect application(contact discharges only)	30,32 31 33	X X		
12.4	Immunity to radiated electromagnetic fields	34-35	X		
13	Damp heat, steadystate a) Initial test(at reference temperture) b) Test at high tempertureand 85%relative humidity c) Final test(at reference temperture)	36 37 38	X X X		
14	Span stability	39-44	X		
15	Endurance a) Initial test c) Final test				N. A. N. A.
	EXAMINATIONS				
16	Examination of the construction	45			
17	Checklist	46-56	X		

1. WEIGHING PERFORMANCE (A.4.4)(A5.3.1)

(Determination Of The Initial Intrinsic error)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 5-Jun-12
 Observer: Otani/Nemoto
 Verification
 scale interval e: 0.02 kg
 Resolution during test
 (smaller than e):

Automatic zero-setting and zero-tracking device is:

☒ Non-existent ☐ Not in operation
☒ Out of working range ☐ In operation

	At start	At max	At end	
Temp.	23.0		23.0	°C
Rel.h	51.4			%
Time	09:11	09:18	09:25	
Bar.pres				hPa

(only class ①)

Initial zero-setting > 20% of Max

No

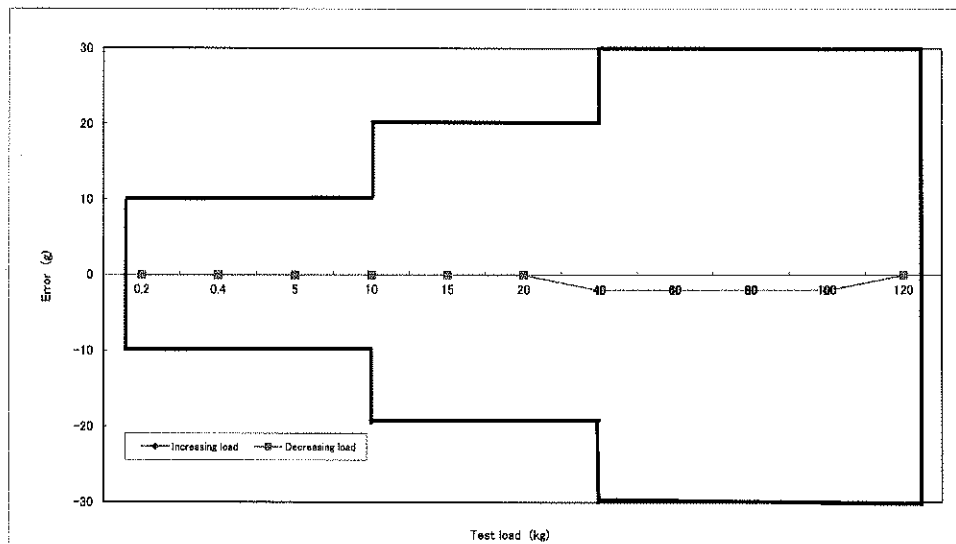
$$E = l + 1/2e - \angle L - L$$

Ec = E - Eo with Eo = error calculated at or near zero (*)

Load (L) kg	Indication (I) kg		Add. Load (ΔL) g		Error (E) g		Corrected error (Ec) g		mpe g
	↓	↑	↓	↑	↓	↑	↓	↑	
(*) 0.2	0.20	0.20	12	12	-2	-2	0	0	10
0.4	0.40	0.40	12	12	-2	-2	0	0	10
5	5.00	5.00	12	12	-2	-2	0	0	10
10	10.00	10.00	12	12	-2	-2	0	0	10
15	15.00	15.00	12	12	-2	-2	0	0	20
20	20.00	20.00	12	12	-2	-2	0	0	20
40	40.00	40.00	14	14	-4	-4	-2	-2	20
60	60.00	60.00	14	14	-4	-4	-2	-2	30
80	80.00	80.00	14	14	-4	-4	-2	-2	30
100	100.00	100.00	14	14	-4	-4	-2	-2	30
120	120.00	120.00	12	12	-2	-2	0	0	30

☒ PASSED ☐ FAILED

Remarks:



1. WEIGHING PERFORMANCE (A.4.4)(A5.3.1) (Temperature Test)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 12-Jun-12
 Observer: Fukuda
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

Automatic zero-setting and zero-tracking device is:

☐ Non-existent ☐ Not in operation
☒ Out of working range ☐ in operation

	At start	At max	At end	
Temp.	19.8		20.2	°C
Rel.h	52.4			%
Time	07:25	07:29	07:33	
Bar.pres				hPa

(only class ①)

Initial zero-setting > 20% of Max

No

Temperature effect on no-load indication

Time	Time	Temp	Indication(kg)	Add load (g)	P (kg)
At start					
At end	7:38	20.0	0.20	10	0.200

$$E = 1 + 1/2e - \Delta L - L$$

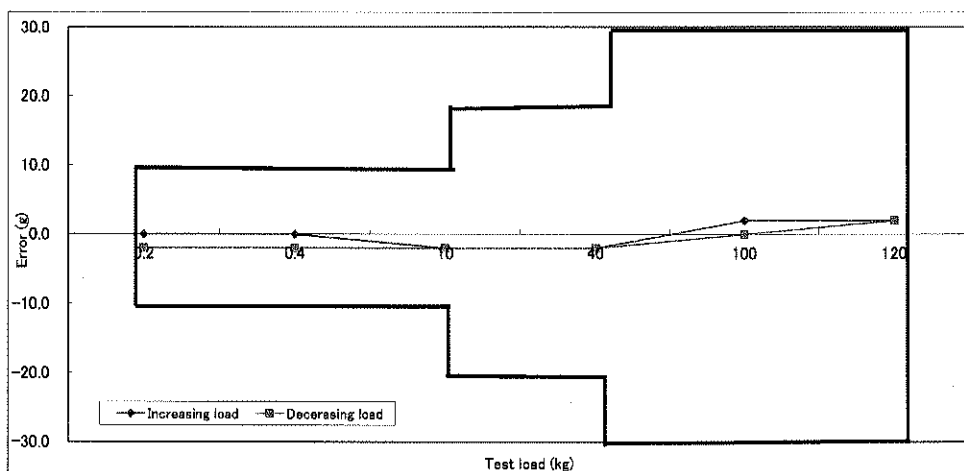
$E_c = E - E_0$ with E_0 = error calculated at or near zero(*)

Load (L) kg	Indication (I)		Add. Load (ΔL)		Error (E)		Corrected error (Ec)		mpe
	↓ kg	↑ kg	↓ g	↑ g	↓ g	↑ g	↓ g	↑ g	
(*) 0.2	0.20	0.20	8	10	2	0	0	-2	10
0.4	0.40	0.40	8	10	2	0	0	-2	10
10	10.00	10.00	10	10	0	0	-2	-2	10
40	40.00	40.00	10	10	0	0	-2	-2	20
100	100.00	100.00	6	8	4	2	2	0	30
120	120.00	120.00	6	6	4	4	2	2	30

☒ PASSED

☐ FAILED

Remarks:



1. WEIGHING PERFORMANCE (A.4.4)(A5.3.1) (Temperature Test)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 12-Jun-12
 Observer: Otani, Nemoto
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

Automatic zero-setting and zero-tracking device is:

☐ Non-existent ☐ Not in operation
☒ Out of working range ☐ In operation

	At start	At max	At end	
Temp.	40.0		40.1	°C
Rel.h	36.3			%
Time	15:01	15:06	15:10	
Bar.pres				hPa

(only class ①)

Initial zero-setting > 20% of Max

No

Temperature effect on no-load indication

Time	Time	Temp	Indication(kg)	Add load (g)	P (kg)
At start	15:01	40.0	0.18	2	0.188
At end	15:15	40.1	0.20	12	0.198

$$E = +1/2e - \Delta L - L$$

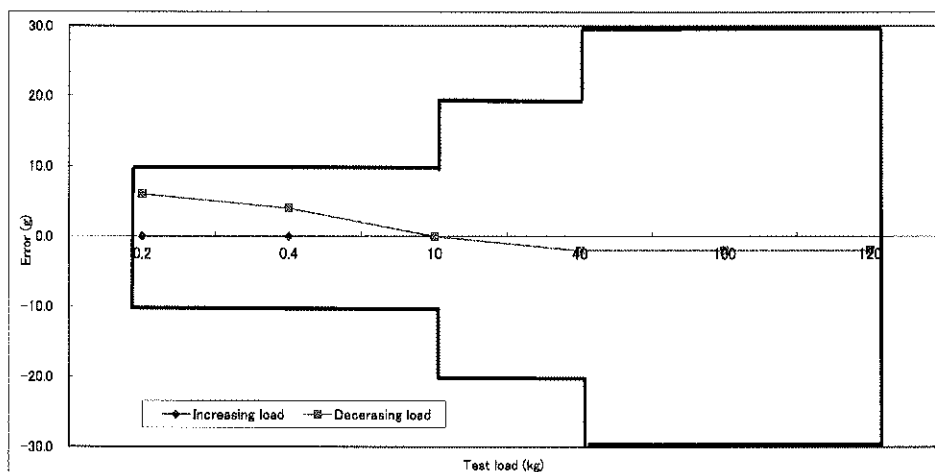
$E_c = E - E_0$ with E_0 = error calculated at or near zero(*)

Load (L) kg	Indication (I) kg		Add. Load (ΔL) g		Error (E) g		Corrected error (Ec) g		mpe g
	↓ kg	↑ kg	↓ g	↑ g	↓ g	↑ g	↓ g	↑ g	
(*) 0.2	0.18	0.20	4	18	-14	-8	0	6	10
0.4	0.38	0.40	4	20	-14	-10	0	4	10
10	9.98	9.98	4	4	-14	-14	0	0	10
40	39.98	39.98	6	6	-16	-16	-2	-2	20
100	99.98	99.98	6	6	-16	-16	-2	-2	30
120	119.98	119.98	6	6	-16	-16	-2	-2	30

☒ PASSED

☐ FAILED

Remarks:



1. WEIGHING PERFORMANCE (A.4.4)(A5.3.1) (Temperature Test)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 13-Jun-12
 Observer: Fukuda
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

Automatic zero-setting and zero-tracking device is:

☐ Non-existent ☐ Not in operation
☒ Out of working range ☐ In operation

	At start	At max	At end	
Temp.	-10.6		-10.4	°C
Rel.h	49.8			%
Time	07:26	07:28	07:30	
Bar.pres				hPa

(only class ①)

Initial zero-setting > 20% of Max

No

Temperature effect on no-load indication

Time	Time	Temp	Indication(kg)	Add load (g)	P (kg)
At start	7:26	-10.6	0.20	2	0.208
At end	7:35	-10.4	0.20	6	0.204

$$E = | +1/2e - \Delta L - L$$

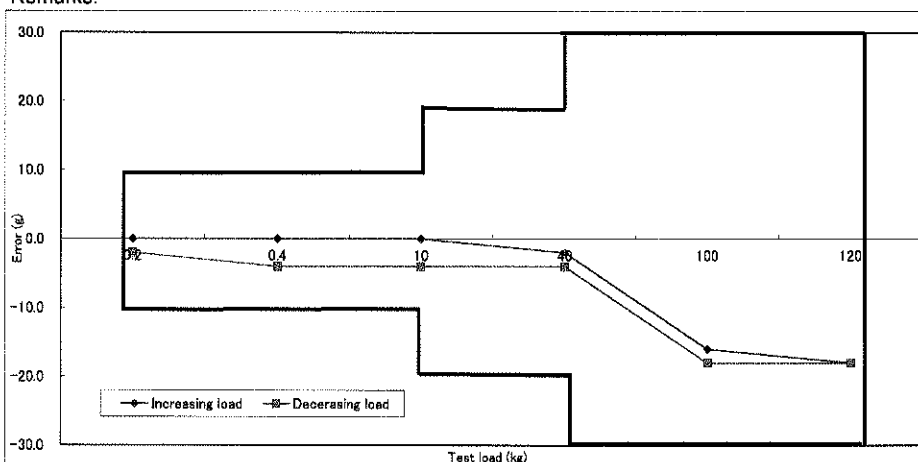
$E_c = E - E_o$ with E_o = error calculated at or near zero(*)

Load (L) kg	Indication (i)		Add. Load (ΔL)		Error (E)		Corrected error (Ec)		mpe
	↓ kg	↑ kg	↓ g	↑ g	↓ g	↑ g	↓ g	↑ g	
(*) 0.2	0.20	0.20	2	4	8	6	0.0	-2.0	10
0.4	0.40	0.40	2	6	8	4	0.0	-4.0	10
10	10.00	10.00	2	6	8	4	0.0	-4.0	10
40	40.00	40.00	4	6	6	4	-2.0	-4.0	20
100	100.00	100.00	18	20	-8	-10	-16.0	-18.0	30
120	120.00	120.00	20	20	-10	-10	-18.0	-18.0	30

☒ PASSED

☐ FAILED

Remarks:



1. WEIGHING PERFORMANCE (A.4.4)(A5.3.1) (Temperature Test)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 13-Jun-12
 Observer: Otani, Takahashi
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

Automatic zero-setting and zero-tracking device is:

☐ Non-existent ☐ Not in operation
☒ Out of working range ☐ In operation

	At start	At max	At end	
Temp.	4.8		5.3	°C
Rel.h	46.3			%
Time	14:56	15:00	15:04	
Bar.pres				hPa

(only class ①)

Initial zero-setting > 20% of Max

☐ No

Temperature effect on no-load indication

Time	Time	Temp	Indication(kg)	Add load (g)	P (kg)
At start	14:56	4.8	0.22	22	0.208
At end	15:10	5.1	0.20	10	0.200

$$E = I + 1/2e - \Delta L - L$$

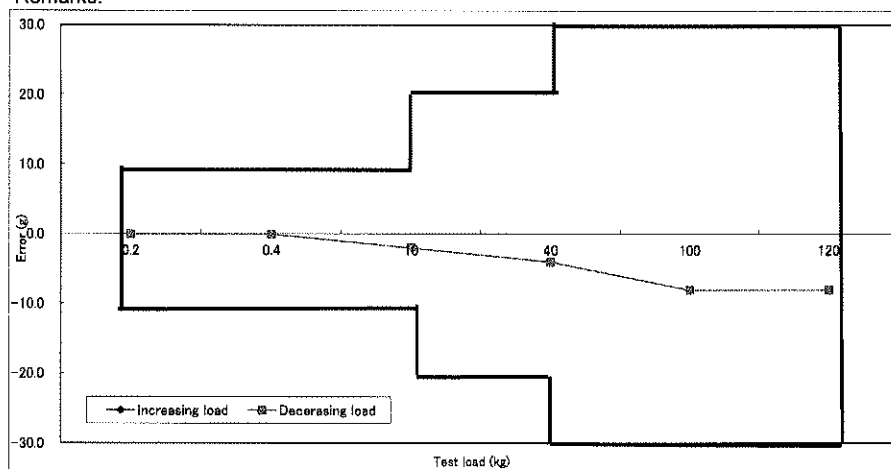
$E_c = E - E_o$ with E_o = error calculated at or near zero(*)

Load (L) kg	Indication (I) kg		Add.Load (ΔL) g		Error (E) g		Corrected error (Ec) g		mpe g
	↓ kg	↑ kg	↓ g	↑ g	↓ g	↑ g	↓ g	↑ g	
(*) 0.2	0.20	0.20	12	12	-2	-2	0.0	0.0	10
0.4	0.40	0.40	12	12	-2	-2	0.0	0.0	10
10	10.00	10.00	14	14	-4	-4	-2.0	-2.0	10
40	40.00	40.00	16	16	-6	-6	-4.0	-4.0	20
100	100.00	100.00	20	20	-10	-10	-8.0	-8.0	30
120	120.00	120.00	20	20	-10	-10	-8.0	-8.0	30

☒ PASSED

☐ FAILED

Remarks:



1. WEIGHING PERFORMANCE (A.4.4)(A5.3.1) (Temperature Test)

Application N°: 24-005
Pattern designation: F701-S
Date: 14-Jun-12
Observer: Otani, Nemoto
Verification
scale interval e: 0.02 kg
Resolution during test 1count=
(smaller than e): g

Automatic zero-setting and zero-tracking device is:

☐ Non-existent ☐ Not in operation
☒ Out of working range ☐ In operation

	At start	At max	At end	
Temp.	19.7		20.0	°C
Rel.h	49.9			%
Time	08:51	08:56	09:01	
Bar.pres				hPa

(only class D)

Initial zero-setting > 20% of Max

No

Temperature effect on no-load indication

Time	Time	Temp	Indication(kg)	Add load (g)	P (kg)
At start	8:51	19.7	0.20	12	0.198
At end					

$$E = I + 1/2e - \Delta L - L$$

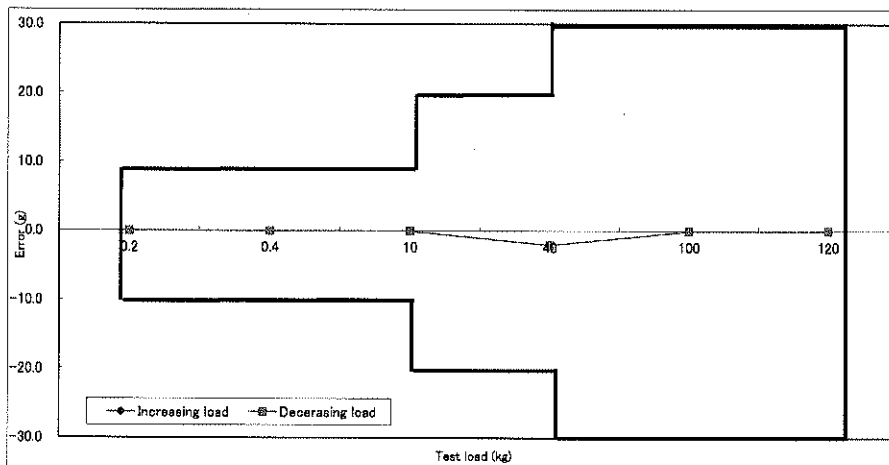
$E_c = E - E_0$ with E_0 = error calculated at or near zero(*)

Load (L)	Indication (I)		Add Load (ΔL)		Error (E)		Corrected error (E_c)		mpe
	↓ kg	↑ kg	↓ g	↑ g	↓ g	↑ g	↓ g	↑ g	
(*) 0.2	0.20	0.20	14	14	-4	-4	0.0	0.0	10
0.4	0.40	0.40	14	14	-4	-4	0.0	0.0	10
10	10.00	10.00	14	14	-4	-4	0.0	0.0	10
40	40.00	40.00	16	16	-6	-6	-2.0	-2.0	20
100	100.00	100.00	14	14	-4	-4	0.0	0.0	30
120	120.00	120.00	14	14	-4	-4	0.0	0.0	30

☒ PASSED

☐ FAILED

Remarks:



2. TEMPERATURE EFFECT ON NO-LAOD INDICATION(A.5.3.2)

Application N°: 24-005
 Pattern designation: F701-S
 Observer: Fukuda,Otani,Takahashi,Nemoto
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

Report page (*)	Date	Time	Temp °C	Zero- Indication kg	Add.load g	P kg	ΔP kg	Δ Temp °C	Zero- change (5°C) kg
10	12-Jun-12	7:38	20.0	0.20	10	0.200			
11	12-Jun-12	15:01	40.0	0.18	2	0.188	0.012	20.0	0.003
	12-Jun-12	15:15	40.1	0.20	12	0.198			
12	13-Jun-12	7:26	-10.6	0.20	2	0.208	0.010	50.7	0.001
	13-Jun-12	7:35	-10.4	0.20	6	0.204			
13	13-Jun-12	14:56	4.8	0.22	22	0.208	0.004	15.19	0.001
	13-Jun-12	15:10	5.07	0.20	10	0.200			
14	14-Jun-12	8:51	19.7	0.20	12	0.198	0.002	14.6	0.001

ΔP =difference of P for two consecutive tests at different temperatures

Δ Temp=difference of Temp for two consecutive tests at different temperatures

Check if the zero-change per 5°C is smaller than e (class ☒ ☒ ☒)

Check if the zero-change per 1°C is smaller than e (class ☒)

☒ PASSED ☐ FAILED

Remarks:

(*)Give the report page of the relevant weighing test where weighing tests and temperature effect on no-load indication test are conducted together (see R76-1,figure 10).

3. ECCENTRICITY (A.4.7)

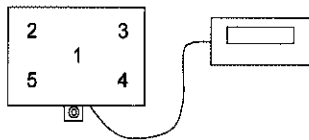
(3.1 eccentricity using weights(A.4.7.1,2and3))

Application N°: 24-005
 Pattern designation: F701-S
 Date: 6-Jun-12
 Observer: Fukuda
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	23.1			°C
Rel.h				%
Time	07:22			
Bar.pres				hPa

(only class ①)

Location of loads: mark on a sketch (see an example below) the successive locations of test loads, using numbers which shall be repeated in table below.



Also indicate in the sketch the location of the display or of another perceptible part of the instrument.

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

$$E = 1 + 1/2e - \Delta L - L$$

$E_c = E - E_0$ with E_0 = error calculated at or near zero(*)

	Load (L) kg	Location	Indication (I) kg	Add. load (ΔL) g	Error (E) g	Corrected error (Ec) g	mpe g
(*)	0.2	1	0.20	12	-2	0.0	10
	40	1	40.00	14	-4	-2.0	20
(*)	0.2	2	0.20	10	0	0.0	10
	40	2	40.00	16	-6	-6.0	20
(*)	0.2	3	0.20	12	-2	0.0	10
	40	3	40.00	10	0	2.0	20
(*)	0.2	4	0.20	12	-2	0.0	10
	40	4	40.00	12	-2	0.0	20
(*)	0.2	5	0.20	12	-2	0.0	10
	40	5	40.00	14	-4	-2.0	20

☒ PASSED ☐ FAILED

Remarks:

4.DISCRIMINATION AND SENSITIVITY

4.1 DISCRIMINATION

4.1.1 Digital indication(A.4.8.2)

Application N°: 24-005

Pattern designation: F701-S

Date: 6-Jun-12

Observer: Fukuda

	At start	At max	At end	
Temp.	23.1			°C
Rel.h				%
Time	07:32			
Bar.pres				hPa

Load (L) kg	Indication (I ₁) kg	Remove load (ΔL) g	Add.1/10d g	Extra load =1.4d g	Indication (I ₂) g	I ₂ -I ₁ g
0.4	0.40	12	2	28	0.42	0.02
60	60.00	8	2	28	60.02	0.02
120	120.00	10	2	28	120.02	0.02

Check if $I_2 - I_1 = d$
☒ PASSED ☐ FAILED

Remarks:

Application N°:

Pattern designation:

Date:

Observer:

	At start	At max	At end	
Temp.				°C
Rel.h				%
Time				
Bar.pres				hPa

Load (L)	Indication (I ₁)	Remove load	Add.1/10d	Extra load =1.4d	Indication (I ₂)	I ₂ -I ₁

Check if $I_2 - I_1 = d$
☐ PASSED ☐ FAILED

Remarks:

5. REPEATABILITY(A.4.10)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 6-Jun-12
 Observer: Fukuda
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	23.1			°C
Rel.h				%
Time	07:37			
Bar.pres				hPa
(only class ①)				

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☐	Out of working range	☒	In operation

Load(weighing 1-10) 60 kg

$$P = | + 1/2e - \Delta L$$

	Indication of load kg	Add.load (ΔL) g	P kg
1	60.00	14	59.996
2	60.00	14	59.996
3	60.00	14	59.996
4	60.00	14	59.996
5	60.00	14	59.996
6	60.00	14	59.996
7	60.00	14	59.996
8	60.00	14	59.996
9	60.00	14	59.996
10	60.00	14	59.996

Load(weighing 1-10) 120 kg

$$P = | + 1/2e - \Delta L$$

	Indication of load kg	Add.load (ΔL) g	P kg
11	120.00	12	119.998
12	120.00	12	119.998
13	120.00	12	119.998
14	120.00	12	119.998
15	120.00	12	119.998
16	120.00	12	119.998
17	120.00	12	119.998
18	120.00	12	119.998
19	120.00	12	119.998
20	120.00	12	119.998

 $P_{\max} - P_{\min}(\text{weighing 1-10})$ 0 g

mpe 30 g

 $P_{\max} - P_{\min}(\text{weighing 11-20})$ 0 g

mpe 30 g

☒ PASSED
 ☐ FAILED

Remarks:

6. TIME-DEPENDENCE

6.1 Zero return(A.4.11.2)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 7-Jun-12
 Observer: Fukuda
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	23.0		22.9	°C
Rel.h				%
Time				
Bar.pres				hPa
(only class ①)				

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

$$P = | +1/2e - \Delta L |$$

Time of reading	Load kg	Indication of zero kg	Add. load (ΔL) g	P kg
7:27	0.2	0.20	10	0.200
After loading for 0.5h Load= 120kg				
7:57	0.2	0.20	12	0.198

Change of zero indication:

$$|\Delta P| = 0.002 \text{ kg}$$

Check if $|\Delta P| \leq 0.5e$

☒	PASSED	☐	FAILED
-------------------------------------	--------	--------------------------	--------

Remarks:

6.TIME-DEPENDENCE

6.2 Creep(A.4.11.1)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 7-Jun-12
 Observer: Fukuda
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	23.0		22.9	°C
Rel.h				%
Time				
Bar.pres				hPa

(only class ①)

$$P = l + 1/2e - \Delta L$$

Time	Load kg	Indication kg	Add.load (ΔL) g	P kg	ΔP kg
7:27 0min	120	120.00	10	120.000	
7:32 5min		120.00	12	119.998	0.002
7:42 15min		120.00	14	119.996	0.004
7:57 30min		120.00	14	119.996	0.004

(*)

	1h				
	2h				
	3h				
	4h				

ΔP =difference between P at the start (0min)and P at a given time.

(*)if $|\Delta P| \leq 0.5e$ during the first 30 min and if the variation of $|\Delta P|$ between 15min and 30min $\leq 0.2e$,then the test is terminated.if not ,the test shall continue for the next 3.5 hour check that during the total 4 hours: $|\Delta P| \leq mpe$

☒ PASSED

☐ FAILED

Remarks:

7. STABILITY OF EQUILIBRIUM (A4.12)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 7-Jun-12
 Observer: Otani/Nemoto

	At start	At max	At end	
Temp.	22.9			°C
Rel.h				%
Time	10:05			
Bar.pres				hPa

In the case of printing or data storage

Load kg

$P=1+1/2e-\frac{1}{L}$

No.	First printed of stored value after disturbance and command kg	Reading during 5s after print-out or storage	
		Minimum kg	Maximum kg
1			
2			
3			
4			
5			

Check if only two adjacent figures appear: one begin the printed value

☐ PASSED ☐ FAILED

No.	Load kg	Indication kg	Add.Load g	Error g
Zero setting (load : 2.40 kg)				
1	0.2	0.20	10	0
2	0.2	0.20	10	0
3	0.2	0.20	12	-2
4	0.2	0.20	10	0
5	0.2	0.20	12	-2
Tare balancing (load : 5 kg)				
1	0.2	0.20	12	-2
2	0.2	0.20	12	-2
3	0.2	0.20	12	-2
4	0.2	0.20	12	-2
5	0.2	0.20	14	-4

Check the accuracy according to 4.5.2 for zero setting and 4.5.3 for balancing

☒ PASSED ☐ FAILED

Remarks:

8. TILTING(A.5.1.2and3)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 8-Jun-12
 Observer: Fukuda,Otani,Nemoto
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	23.5		24.9	°C
Rel.h				%
Time	09:15			
Bar.pres				hPa

(only class ①)

- ☐ Tilting 0.2% (Class ① ② ③)
☒ Tilting to the limiting value of level indicator (Class ① ② ③ and ④) if the tilting at this limiting value is greater than 0.2%
☐ Tilting to the limiting value of level indicator (class ① only) if the tilting is not greater than 0.2%, in which case the test shall not be performed.
☐ Tilting 5% if no level indicator on instrument liable to be tilted.

Give(if appropriate on a separate sheet)a sketch of the load receptor showing the location of the level indicator,if provided.

Automatic zero-setting and zero-tracking device is:

☐ Non-existent ☐ Not in operation
☒ Out of working range ☐ In operation

$P_v = i_v + 1/2e - \Delta L$ (v=1,2,3,4)

P_{vo} is the indication p_v corrected for the deviation from zero the instrument had prior loading

Load kg	i _{1a} kg	ΔL_1 g	i ₂ kg	ΔL_2 g	i ₃ kg	ΔL_3 g	i ₄ kg	ΔL_4 g	i ₅ kg	ΔL_5 g	P ₁ -P _v max or P _{1o} -P _{vo} max g
(L)		Center		Front		Rear		Left		Right	

Unloaded(*)

0.2	0.20	12	0.20	16	0.20	12	0.20	14	0.20	14	
P _v →	0.198		0.194		0.198		0.196		0.196		4

Loaded 2e = 40g

10	10.00	12	10.00	18	10.00	12	10.00	16	10.00	16	
P _v →	9.998		9.992		9.998		9.994		9.994		
P _{vo} →	10.000		9.998		10.000		9.998		9.998		2

Loaded mpe = 10 g

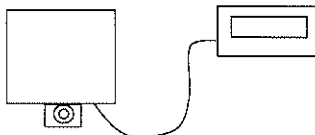
120	120.00	12	119.98	14	120.00	8	120.00	18	119.98	10	
P _v →	119.998		119.976		120.002		119.992		119.980		
P _{vo} →	120.000		119.982		120.004		119.996		119.984		18

mpe = 30 g

(*)No tilting test at no-load for instruments in class ① and in class ② not for direct sales to public.

☒ PASSED ☐ FAILED

Remarks:



9. TARE(WEIGHING TEST)(A.4.6.1)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 8-Jun-12
 Observer: Fukuda/Otani/Nemoto
 Verification
 scale interval e: 0.02 kg
 Resolution during test
 (smaller than e): d kg

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

First tare value

tare: 20.00 kg

tare indication -20.00 kg

	At start	At max	At end	
Temp.	25.1		25.4	°C
Rel.h				%
Time	09:34		09:41	
Bar.pres				hPa

(only class Φ)

$$E = I + 1/2e - \Delta L - L$$

$E_c = E - E_0$ with E_0 = error calculated at or near zero(*)

Load (L) kg	Indication (I) kg		Add.Load (ΔL) g		Error (E) g		Corrected error (E_c) g		mpe g
	↓ kg	↑ kg	↓ g	↑ g	↓ g	↑ g	↓ g	↑ g	
(*) 0.2	0.20	0.20	10	10	0	0	0	0	10
0.4	0.40	0.40	10	12	0	-2	0	-2	10
10	10.00	10.00	12	12	-2	-2	-2	-2	10
40	40.00	40.00	12	14	-2	-4	-2	-4	20
80	80.00	80.00	12	12	-2	-2	-2	-2	30
100	100.00	100.00	12	12	-2	-2	-2	-2	30

☒ PASSED

☐ FAILED

Remarks:

TARE(WEIGHING TEST)(cont.)

Second tare value

tare: kgtare indication kg

	At start	At max	At end	
Temp.	25.4		25.8	°C
Rel.h				%
Time	09:41		09:46	
Bar.pres				hPa
(only class ①)				

$$E = | +1/2e - \Delta L - L$$

$$E_c = E - E_o \quad \text{with } E_o = \text{error calculated at or near zero} (*)$$

Load (L) kg	Indication (I)		Add.Load (ΔL)		Error (E)		Corrected error (Ec)		mpa g
	↓ g	↑ g	↓ g	↑ g	↓ g	↑ g	↓ g	↑ g	
(*) 0.2	0.20	0.20	12	12	-2	-2	0	0	10
0.4	0.40	0.40	12	12	-2	-2	0	0	10
10	10.00	10.00	12	12	-2	-2	0	0	10
40	40.00	40.00	12	12	-2	-2	0	0	20
60	60.00	60.00	12	12	-2	-2	0	0	30
80	80.00	80.00	12	12	-2	-2	0	0	30

☒ PASSED☐ FAILED

Remarks:

10. WARM-UP TIME(A5.2)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 11-Jun-12
 Observer: Fukuda
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	23.1		23.0	°C
Rel.h				%
Time	7:26			
Bar.pres				hPa

(only class ①)

Duration of disconnection before test:

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

$E = l + 1/2e - \Delta L - L$

Eo=Error calculated at zero or near zero.(unloaded)

EI=Error calculated at load(loaded)

	Time	Load kg	Indication kg	Add.load g	Error g	EL-Eo g	mpe= 30 g
Unloaded	0 min	0.2	0.20	14	-4		
Loaded	7:26	120	119.98	4	-14	-10	
Unloaded	5 min	0.2	0.20	12	-2		
Loaded	7:31	120	120.00	20	-10	-8	
Unloaded	15 min	0.2	0.20	12	-2		
Loaded	7:41	120	120.00	16	-6	-4	
Unloaded	30 min	0.2	0.20	12	-2		
Loaded	7:56	120	120.00	12	-2	0	

(*)Counted from the moment an indication has first appeared.Check that $|EL-Eo| \leq mpe$

☒	PASSED	☐	FAILED
-------------------------------------	--------	--------------------------	--------

Remarks:

11. VARIATIONS OF VOLTAGE(A5.4)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 19-Jun-12
 Observer: Otani, Nemoto
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	22.4			°C
Rel.h				%
Time	09:02			
Bar.pres	1008.55			hPa
(only class				)

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

Marked nominal voltage or voltage range:

170	V
50	Hz

$E = I + 1/2e - \Delta L - L$

E_c with E_o =error calculated at or near zero(*)

Voltage	U (V)	Load (L) kg	Indication (I) kg	Add.load (ΔL) g	Error (E) g	Corrected error (E_c) g	mpa g
Reference value (**)	170	0.2	0.20	14	-4	0	10
		80	80.00	18	-8	-4	30
-15% (**)	85	0.2	0.20	12	-2	0	10
		80	80.00	18	-8	-6	30
+10% (**)	264	0.2	0.20	12	-2	0	10
		80	80.00	20	-10	-8	30
Reference value (**)	170	0.2	0.20	14	-4	0	10
		80	80.00	18	-8	-4	30

☒	PASSED	☐	FAILED
-------------------------------------	--------	--------------------------	--------

Remarks:

(**) In case a voltage-range is marked, use the average value as reference value and calculate upper and values of applied voltages according to A.5.4.

11. VARIATIONS OF FREQUENCY(A5.4)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 19-Jun-12
 Observer: Otani,Nemoto
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	22.5			°C
Rel.h				%
Time	09:12			
Bar.pres	1008.47			hPa

(only class I)

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

Marked nominal voltage or voltage range:

50	Hz
170	V

$E = 1 + 1/2e - \angle L - L$

E_i with E_o =error calculated at or near zero(*)

Frequency	U (Hz)	Load (L) kg	Indication (I) kg	Add.load ($\angle L$) g	Error (E) g	Corrected error (Ec) g	mpe g
Reference value (**)	50	0.2	0.20	14	-4	0	10
		80	80.00	18	-8	-4	30
-2% (**)	49	0.2	0.20	14	-4	0	10
		80	80.00	18	-8	-4	30
+2% (**)	51	0.2	0.20	14	-4	0	10
		80	80.00	18	-8	-4	30
Reference value(**)	50	0.2	0.20	14	-4	0	10
		80	80.00	18	-8	-4	30

☒ PASSED ☐ FAILED

Remarks:

(**) In case a voltage-range is marked, use the average value as reference value and calculate upper and values of applied voltages according to A.5.4.

11. VARIATIONS OF FREQUENCY(A5.4)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 19-Jun-12
 Observer: Otani,Nemoto
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	22.5			°C
Rel.h				%
Time	09:19			
Bar.pres	1008.31			hPa

(only class I)

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

Marked nominal voltage or voltage range:

60	Hz
170	V

$E = l + 1/2e - \angle L - L$

E_c (with E_o =error calculated at or near zero(*))

Frequency	U (Hz)	Load (L) kg	Indication (I) g	Add.load ($\angle L$) g	Error (E) mg	Corrected error (Ec) mg	mpe mg
Reference value (**)	60	0.2	0.20	14	-4	0	10
		80	80.00	18	-8	-4	30
-2% (**)	58.8	0.2	0.20	14	-4	0	10
		80	80.00	20	-10	-6	30
+2% (**)	61.2	0.2	0.20	14	-4	0	10
		80	80.00	20	-10	-6	30
Reference value (**)	60	0.2	0.20	14	-4	0	10
		80	80.00	20	-10	-6	30

☒ PASSED ☐ FAILED

Remarks:

(**) In case a voltage-range is marked, use the average value as reference value and calculate upper and values of applied voltages according to A.5.4.

12. ELECTRICAL DISTURBANCE

12.1 short time power reductions(B.3.1)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 21-Jun-12
 Observer: Otani, Nemoto
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	24.8			°C
Rel.h				%
Time	10:35			
Bar.pres	1002.61			hPa

Marked nominal voltage or voltage range: 170 V

Small test load kg	Disturbance				Result	
	Amplitude % of Un(*)	Duration cycles	Number of disturbance	Repetition interval (s)	Indication (I) kg	Significant fault(>e)
						No yes(remarks)
0.2 500 cycles	Without disturbance				0.20	
	0	0.5	10	10	0.20	x
	50	1	10	10	0.20	x
0.2 600 cycles	Without disturbance				0.20	
	0	0.5	10	10	0.20	x
	50	1	10	10	0.20	x

☒ PASSED
 ☐ FAILED

Remarks:

(*) In case a voltage-range is marked, use the average value as reference value Un .

12. ELECTRICAL DISTURBANCE

12.2 Electrical bursts(B.3.2)

a)Power supply lines

Application N°: 24-005
 Pattern designation: F701-S
 Date: 21-Jun-12
 Observer: Otani,Nemoto
 Verification
 scale interval e: 0.02 kg

	At start	At max	At end	
Temp.	25.0			°C
Rel.h	59.0			%
Time	10:55			
Bar.pres	1002.5			hPa

Power supply lines:test voltage 1kV,duration of the test 1 min at each polarity

Small test load kg	Disturbance			Polarity	Indication (I) kg	Result	
	L1 ↓ Ground	N ↓ Ground	PE ↓ Ground			Significant fault(>e)	
						No	Yes(remarks)
0.2	Without disturbance				0.20		
	x			Pos	0.20	x	
	x			Neg	0.20	x	
	Without disturbance				0.20		
		x		Pos	0.20	x	
		x		Neg	0.20	x	
	Without disturbance				0.20		
			x	Pos	0.20	x	
			x	Neg	0.20	x	
	Without disturbance						
	x			Pos			
	x			Neg			
	Without disturbance						
		x		Pos			
		x		Neg			
	Without disturbance						
			x	Pos			
			x	Neg			
	Without disturbance						
			x	Pos			

L=phase,N=neutral,PE=protective earth

☒ PASSED ☐ FAILED

Remarks:

12. ELECTRICAL DISTURBANCE

12.2 Electrical bursts(B.3.2)

b) I/O circuits and communication lines

Application N°: 24-005
 Pattern designation: F701-S
 Date: 21-Jun-12
 Observer: Otani,Nemoto
 Verification
 scale interval e: 0.02 kg

	At start	At max	At end	
Temp.	24.9			°C
Rel.h	59.2			%
Time	11:10			
Bar.pres	1002.5			hPa

I/O signals, data and control line : test voltage 0.5kV, duration of the test 1 min at each polarity

Small test load kg	Cable/interface	Polarity	Result	
			Indication (I) kg	Significant fault(>e) No Yes(remarks)
0.2	Without disturbance		0.20	
	LOAD CELL CABLE	Pos	0.20	x
		Neg	0.20	x
	Without disturbance		0.20	
	IN-OUT CABLE	Pos	0.20	x
		Neg	0.20	x
	Without disturbance		0.20	
	RS-485 CABLE	Pos	0.20	x
		Neg	0.20	x
	Without disturbance			
		Pos		
		Neg		

Explain or make a sketch indicating where the clamp is located on the cable; if necessary, use additional page.

☒ PASSED ☐ FAILED

Remarks:

12.3 ELECTROSTATIC DISCHARGES(B.3.3)

a) Direct application

Application N°: 24-005
 Pattern designation: F701-S
 Date: 21-Jun-12
 Observer: Otani, Nemoto
 Verification
 scale interval e: 0.02 kg

	At start	At max	At end	
Temp.	25.1			°C
Rel.h	59.7			%
Time	11:32			
Bar.pres	1002.2			hPa

☒ Contact discharges ☒ Paint penetration
☒ Air discharges Polarity(*) ☒ pos ☒ neg

Small test load kg	Discharges			Result	
	Test voltage (kV)	Number of discharge s	Repetition interval(s)	Indication (I) kg	Significant fault(> e)
					No Yes(remarks, test points)
0.2	Without disturbance			0.20	
	2	10	10	0.20	x
	4	10	10	0.20	x
	6	10	10	0.20	x
	8	(Air discharges)		0.20	x

	Without disturbance				
	2	10	10		
	4	10	10		
	6	10	10		
	8	(Air discharges)			

☒ PASSED ☐ FAILED

Remarks:

Note: If the EUT fails, the test point at which this occurs shall be recorded.

(*) IEC 801-2 specifies that the test shall be conducted with the most sensitive polarity.

ELECTROSTATIC DISCHARGES(cont.)

b) Indirect application (contact discharges only)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 21-Jun-12
 Observer: Otani, Nemoto
 Verification scale interval e: 0.02 kg

	At start	At max	At end	
Temp.	27.0			°C
Rel.h	59.2			%
Time	13:51			
Bar.pres	1001.9			hPa

 Polarity(*) ☒ pos ☒ neg

Horizontal coupling plane

USB

Small test load kg	Discharges			Result	
	Test voltage (kV)	Number of discharge s	Repetition interval(s)	Indication (I) kg	Significant fault(>e) No Yes(remarks)
0.2	Without disturbance			0.20	
	2	10	10	0.20	X
	4	10	10	0.20	X
	6	10	10	0.20	X

Vertical coupling plane

Small test load kg	Discharges			Result	
	Test voltage (kV)	Number of discharge s	Repetition interval(s)	Indication (I) kg	Significant fault(>e) No Yes(remarks)
0.2	Without disturbance			0.20	
	2	10	10	0.20	X
	4	10	10	0.20	X
	6	10	10	0.20	X

☒ PASSED ☐ FAILED

Remarks:

Note: If the EUT fails, the test point at which this occurs shall be recorded.

(*) IEC 801-2 specifies that the test shall be conducted with the most sensitive polarity.

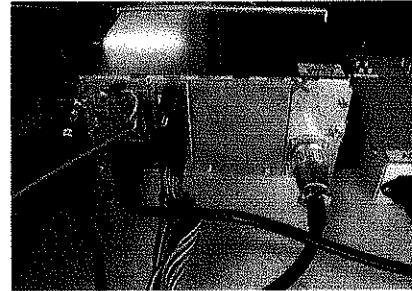
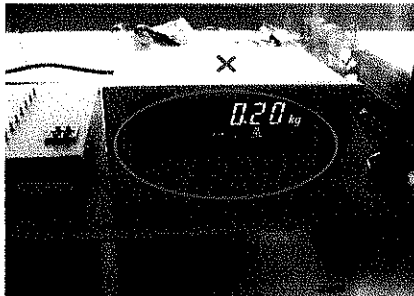
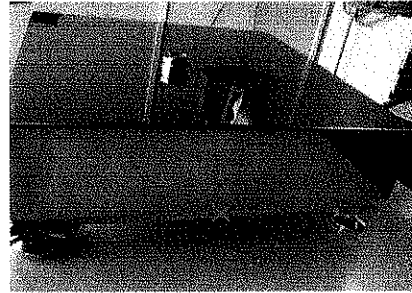
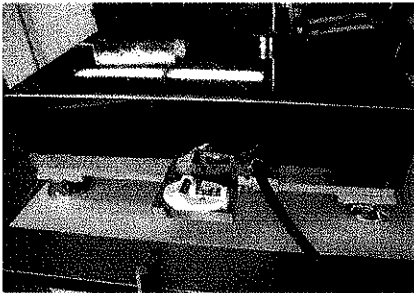
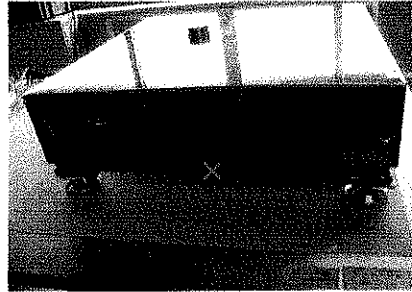
ELECTROSTATIC DISCHARGES(cont.)

Specification of test points of EUT (direct application),e.g.by photos or sketches

a)Direct application

Contact discharges: X

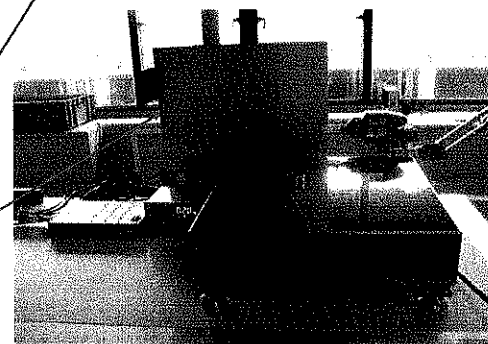
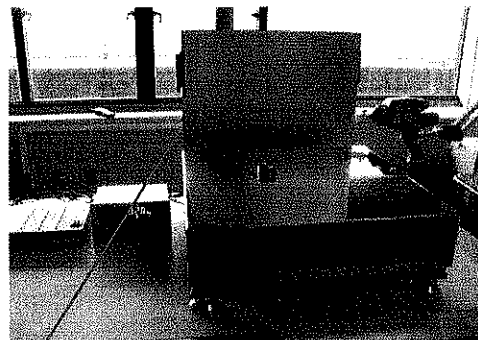
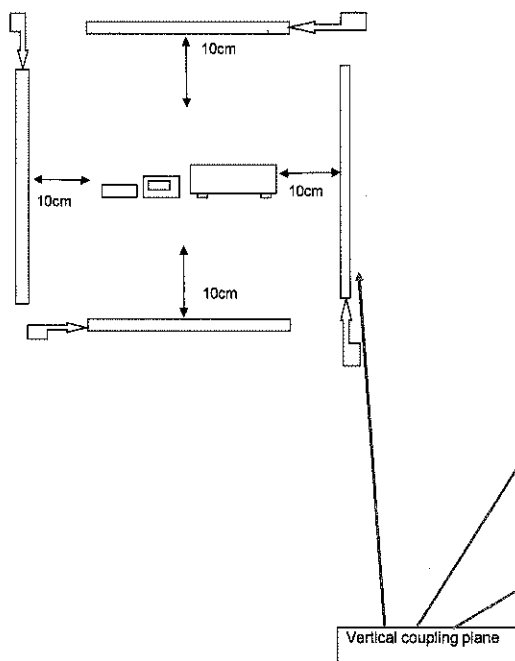
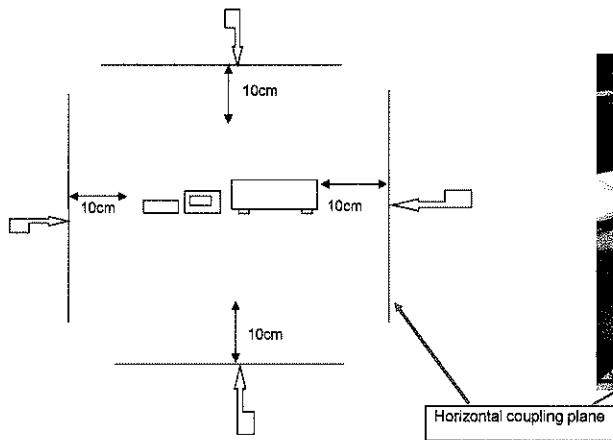
Air discharges: ○



ELECTROSTATIC DISCHARGES(cont.)

Specification of test points of EUT (direct application), e.g. by photos or sketches

b) Indirect application



12.4 Immunity to radiated electromagnetic fields(B.3.4)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 19-Jun-12 - 20-Jun-12
 Observer: Otani/Nemoto

	At start	At max	At end	
Temp.	23.7			°C
Rel.h	62.6			%
Time	11:25			
Bar.pres	1005.2			hPa

Rate of sweep: 3 s

Load: 0.2 kg Material load: paper

Discharges				Result	
Antenna	Frequency range (MHz)	Polarization	Facing EUT	Indication (I) kg	Significant fault(> e)
Without disturbance				No	Yes(remarks)
Bilog	26-1000	Vertical	Front	0.20	x
			Right	0.20	x
			Left	0.20	x
			Rear	0.20	x
		Horizontal	Front	0.20	x
			Right	0.20	x
			Left	0.20	x
			Rear	0.20	x
Bilog	26-1000	Vertical	Front		
			Left		
		Horizontal	Front		
			Left		
		Vertical	Front		
			Left		
		Horizontal	Front		
			Left		

Frequency range:26-1000MHz
 Field strength:3V/m
 Modulation:80%AM,1kHz sine wave

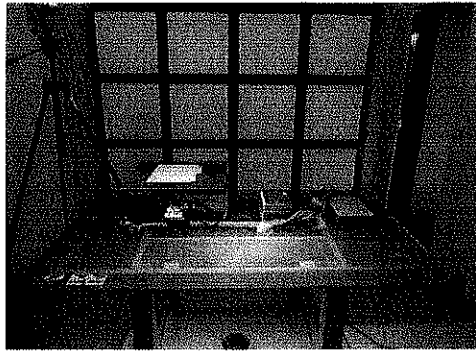
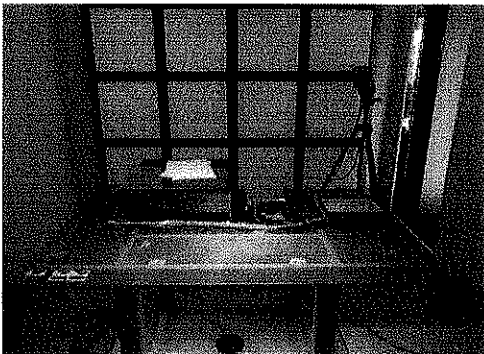
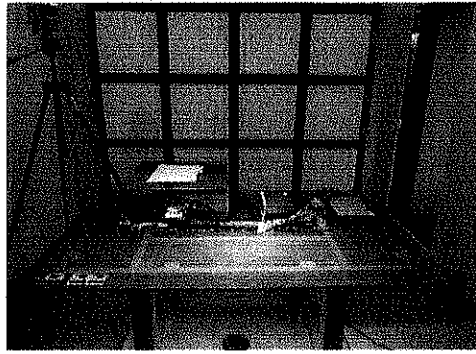
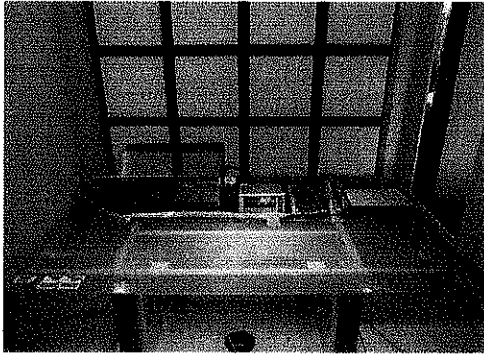
☒ PASSED ☐ FAILED

Remarks:

Note: If the EUT fails,the test point at which this occurs shall be recorded.

Immunity to radiated electromagnetic fields(cont.)

description of the set-up of EUT,e.g.by photos or sketches:



13. DAMP HEAT, STEADY STATE (B.2.2)

a) Initial test (at reference temperature)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 15-Jun-12
 Observer: Fukuda
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	20.0		20.1	°C
Rel.h	51.2		53.0	%
Time	7:36	7:38	7:41	
Bar.pres				hPa

(only class ①)

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

$$E = i + 1/2e - \Delta L - L$$

$$E_c = E - E_0 \quad \text{with } E_0 = \text{error calculated at or near zero} (*)$$

Load (L) kg	Indication (I) kg		Add.load (ΔL) g		Error (E) g		Corrected error (Ec) g		mpe g
	↓	↑	↓	↑	↓	↑	↓	↑	
(*) 0.2	0.20	0.20	14	14	-4	-4	0	0	10
0.4	0.40	0.40	14	14	-4	-4	0	0	10
10	10.00	10.00	12	14	-2	-4	2	0	10
40	40.00	40.00	14	14	-4	-4	0	0	20
100	100.00	100.00	12	14	-2	-4	2	0	30
120	120.00	120.00	10	10	0	0	4	4	30

☒	PASSED	☐	FAILED
-------------------------------------	--------	--------------------------	--------

Remarks:

DAMP HEAT, STEADY STATE (cont.)

b) Test at high temperature and 85% relative humidity

Application N°: 24-005
 Pattern designation: F701-S
 Date: 18-Jun-12
 Observer: Fukuda
 Verification
 scale interval e: 0.02 kg
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	39.8		39.9	°C
Rel.h	86.0		85.4	%
Time	7:14	7:17	7:20	
Bar.pres				hPa

(only class ①)

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

$$E = \pm 1/2e - \Delta L - L$$

$$E_c = E - E_0 \quad \text{with } E_0 = \text{error calculated at or near zero} (*)$$

Load (L) kg	Indication (I) kg		Add. load (ΔL) g		Error (E) g		Corrected error (Ec) g		mpe g
	↓	↑	↓	↑	↓	↑	↓	↑	
(*) 0.2	0.20	0.20	12	12	-2	-2	0	0	10
0.4	0.40	0.40	12	12	-2	-2	0	0	10
10	10.00	10.00	10	12	0	-2	2	0	10
40	40.00	40.00	10	16	0	-6	2	-4	20
100	100.00	100.00	14	14	-4	-4	-2	-2	30
120	120.00	120.00	14	14	-4	-4	-2	-2	30

☒	PASSED	☐	FAILED
-------------------------------------	--------	--------------------------	--------

Remarks:

DAMP HEAT,STEADY STATE (cont.)

c)Final test (at reference temperature)

Application N°: 24-005
 Pattern designation: F701-S
 Date: 18-Jun-12
 Observer: Otani,Nemoto
 Verification
 scale interval e: 0.02 g
 Resolution during test 1count=
 (smaller than e): g

	At start	At max	At end	
Temp.	19.8		20.1	°C
Rel.h	53.1		52.9	%
Time	15:02	15:07	15:11	
Bar.pres				hPa

(only class D)

Automatic zero-setting and zero-tracking device is:

☐	Non-existent	☐	Not in operation
☒	Out of working range	☐	In operation

$$E = I + 1/2e - \Delta L - L$$

$$E_c = E - E_0 \quad \text{with } E_0 = \text{error calculated at or near zero} (*)$$

Load (L) kg	Indication (I) kg		Add.load (ΔL) g		Error (E) g		Corrected error (Ec) g		mpe g
	↓	↑	↓	↑	↓	↑	↓	↑	
(*) 0.2	0.20	0.20	12	16	-2	-6	0	-4	10
0.4	0.40	0.40	12	14	-2	-4	0	-2	10
10	10.00	10.00	12	16	-2	-6	0	-4	10
40	40.00	40.00	14	18	-4	-8	-2	-6	20
100	100.00	100.00	14	16	-4	-6	-2	-4	30
120	120.00	120.00	14	14	-4	-4	-2	-2	30

☒	PASSED	☐	FAILED
-------------------------------------	--------	--------------------------	--------

Remarks:

14.SPAN STABILITY(B.4)

Application N°: 24-005
 Pattern designation: F701-S

Verification scale
 interval e: 0.02 kg

Resolution during test 1count=
 (smaller than e): g

Automatic zero-setting and zero-tracking device is:

☐ Non-existent ☐ Not in operation
☒ Out of working range ☐ In operation

Test load= 120 kg

Measurement No1: Initial measurement

Date: 5-Jun-12
 Observer: Otani,Nemoto
 Location: 023

	At start	At max	At end	
Temp.	23.0			°C
Rel.h	47.3			%
Time	09:27			
Bar.pres	1011.0			hPa

$E_0 = I_0 + 1/2e - \Delta L_0 - L_0$ $E_L = I_L + 1/2e - \Delta L - L$

	Indication of zero kg	Add.load (ΔL) g	E_0 g	Indication of load kg	Add.load (ΔL) g	E_L g	$E_L - E_0$ g	Corrected value(*)
1	0.20	12	-2	120.00	12	-2	0.0	
2	0.20	12	-2	120.00	12	-2	0.0	
3	0.20	12	-2	120.00	14	-4	-2.0	
4	0.20	12	-2	120.00	12	-2	0.0	
5	0.20	12	-2	120.00	14	-4	-2.0	

(*)When applicable,necessary corrections resulting from variations of temperature, pressure,etc..See remarks.

Average error = average($E_L - E_0$) = -0.8 g

($E_L - E_0$)max-($E_L - E_0$)min = 2 g

0.1e = 2 g

If $|(E_L - E_0) \text{ max} - (E_L - E_0) \text{ min}| \leq 0.1e$, the loading and reading will be sufficient for each of the subsequent measurements; if not, five loadings and readings shall be performed at each measurement.

Remarks:

SPAN STABILITY(cont.)

Subsequent measurements

For each of subsequent measurements(at least 7), indicate on the line"condition of measurement", as appropriate, if the measurement has been performed:

- after the temperature test, the EUT having been stabilized for at least 16h;
- after the humidity test, the EUT having been stabilized for at least 16h;
- after the EUT has been disconnected from the mains for at least 8h and then stabilized for at least 5h;
- after any change in the test location;
- under any other specific condition.

Measurement No2

Date: 6-Jun-12
 Observer: Fukuda
 Location: 023

	At start	At max	At end	
Temp.	23.0			°C
Rel.h	47.4			%
Time	07:19			
Bar.pres	1000.0			hPa

$$E_0 = I_0 + 1/2e - \angle L_0 - L_0$$

$$E_L = I_L + 1/2e - \angle L - L$$

	Indication of zero kg	Add.load (ΔL) g	E ₀ g	Indication of load kg	Add.load (ΔL) g	E _L g	E _L -E ₀ g	Corrected value(*)
	0.20	10	0	120.00	12	-2	-2.0	

(*)When applicable,necessary corrections resultingf from variations of temperature, pressure,etc..See remarks.

If five loadings and readings have been performed:

$$\text{Average error} = \text{average}(E_L - E_0) = \boxed{-2.0} \text{ g}$$

Remarks:

SPAN STABILITY(cont.)

Measurement: No 3

Date: 7-Jun-12
 Observer: Fukuda
 Location: 023

	At start	At max	At end	
Temp.	22.9			°C
Rel.h	49.2			%
Time	7:24			
Bar.pres	1005.6			hPa

$$E_0 = I_0 + 1/2e - \angle L_0 - L_0 \quad E_L = I_L + 1/2e - \angle L - L$$

	Indication of zero kg	Add.load (ΔL) g	E ₀ g	Indication of load kg	Add.load (ΔL) g	E _L g	E _L -E ₀ g	Corrected value(*)
	0.20	8	2	120.00	10	0	-2.0	

(*)When applicable,necessary corrections resultngf from variations of temperature, pressure,etc..See remarks.

If five loadings and readings have been performed:

$$\text{Average error} = \text{average}(E_L - E_0) = \boxed{-2.0} \text{ g}$$

Remarks:

Measurement: No 4

Date: 8-Jun-12
 Observer: Otani,Nemoto
 Location: 023

	At start	At max	At end	
Temp.	23.3			°C
Rel.h	49.8			%
Time	9:07			
Bar.pres	1005.7			hPa

$$E_0 = I_0 + 1/2e - \angle L_0 - L_0 \quad E_L = I_L + 1/2e - \angle L - L$$

	Indication of zero kg	Add.load (ΔL) g	E ₀ g	Indication of load kg	Add.load (ΔL) g	E _L g	E _L -E ₀ g	Corrected value(*)
	0.20	12	-2	120.00	12	-2	0.0	

(*)When applicable,necessary corrections resultngf from variations of temperature, pressure,etc..See remarks.

If five loadings and readings have been performed:

$$\text{Average error} = \text{average}(E_L - E_0) = \boxed{0.0} \text{ g}$$

Remarks:

SPAN STABILITY(cont.)

Measurement: No.5

Date: 11-Jun-12
 Observer: Otani, Nemoto
 Location: 023

	At start	At max	At end	
Temp.	23.1			°C
Rel.h	51.8			%
Time	13:04			
Bar.pres	1003.5			hPa

$$E_o = I_o + 1/2e - \angle L_o - L_o \quad E_L = I_L + 1/2e - \angle L - L$$

	Indication of zero kg	Add.load (ΔL) g	E _o g	Indication of load kg	Add.load (ΔL) g	E _L g	E _L -E _o g	Corrected value(*)
	0.20	12	-2	120.00	12	-2	0.0	

(*)When applicable,necessary corrections resultinfg from variations of temperature, pressure,etc..See remarks.

If five loadings and readings have been performed:

$$\text{Average error} = \text{average}(E_L - E_o) = 0.0 \text{ g}$$

Remarks:

Measurement: No 6

Date: 15-Jun-12
 Observer: Fukuda
 Location: 023

	At start	At max	At end	
Temp.	20.0			°C
Rel.h	51.2			%
Time	7:34			
Bar.pres	1016.3			hPa

$$E_o = I_o + 1/2e - \angle L_o - L_o \quad E_L = I_L + 1/2e - \angle L - L$$

	Indication of zero kg	Add.load (ΔL) g	E _o g	Indication of load kg	Add.load (ΔL) g	E _L g	E _L -E _o g	Corrected value(*)
	0.20	14	-4	120.00	12	-2	2.0	

(*)When applicable,necessary corrections resultinfg from variations of temperature, pressure,etc..See remarks.

If five loadings and readings have been performed:

$$\text{Average error} = \text{average}(E_L - E_o) = 2.0 \text{ g}$$

Remarks:

SPAN STABILITY(cont.)

Measurement: No.7

Date: 19-Jun-12
 Observer: Otani, Nemoto
 Location: 023

	At start	At max	At end	
Temp.	22.5			°C
Rel.h	35.4			%
Time	8:53			
Bar.pres	1008.6			hPa

$$E_0 = I_0 + 1/2e - \angle I_0 - L_0 \quad E_L = I_L + 1/2e - \angle I_L - L$$

	Indication of zero kg	Add.load (ΔL) g	E ₀ g	Indication of load kg	Add.load (ΔL) g	E _L g	E _L -E ₀ g	Corrected value(*)
	0.20	12	-2	120.00	16	-6	-4.0	

(*)When applicable,necessary corrections resultngf from variations of temperature, pressure,etc..See remarks.

If five loadings and readings have been performed:

$$\text{Average error} = \text{average}(E_L - E_0) = \boxed{-4.0} \text{ g}$$

Remarks:

Measurement: No 8

Date: 25-Jun-12
 Observer: Fukuda
 Location: 023

	At start	At max	At end	
Temp.	23.7			°C
Rel.h	45.2			%
Time	13:20			
Bar.pres	1008.8			hPa

$$E_0 = I_0 + 1/2e - \angle I_0 - L_0 \quad E_L = I_L + 1/2e - \angle I_L - L$$

	Indication of zero kg	Add.load (ΔL) g	E ₀ g	Indication of load kg	Add.load (ΔL) g	E _L g	E _L -E ₀ g	Corrected value(*)
	0.20	8	2	120.00	10	0	-2.0	

(*)When applicable,necessary corrections resultngf from variations of temperature, pressure,etc..See remarks.

If five loadings and readings have been performed:

$$\text{Average error} = \text{average}(E_L - E_0) = \boxed{-2.0} \text{ g}$$

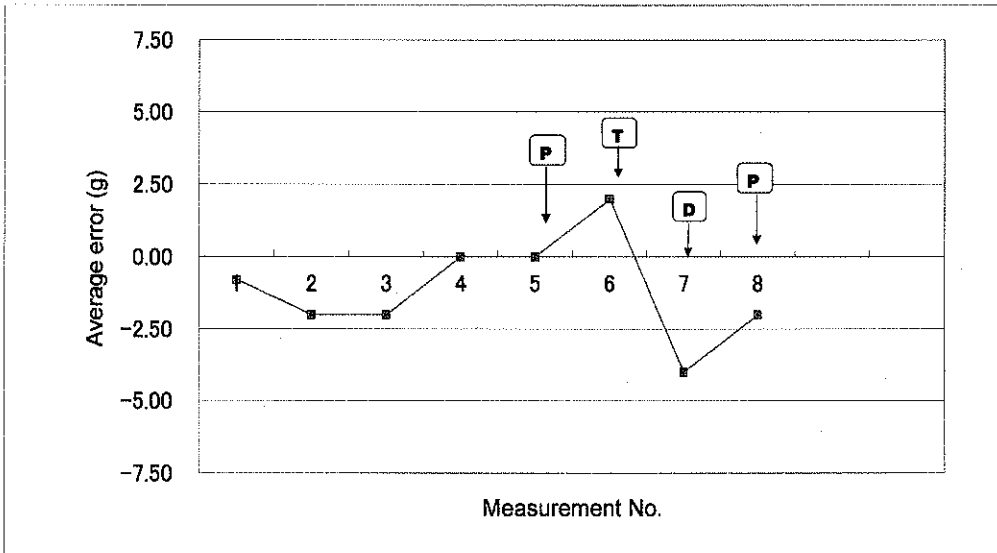
Remarks:

14 SPAN STABILITY(B.4.)

Application No: 24-005

Pattern designation: F701-S

Plot on the diagramme the indication of temperature test T, damp heat test D, and disconnections from the mains power supply P

Maximum Allowable Variations:
(MAV) : 0.5e 10 g☒ : 0.5mpe 15 gCheck if Average error MAV(No. 1-8) $\leq$ 0.5mpe 6.0 g☒ PASSED☐ FAILED

Remarks:

16 EXAMINATION OF THE CONSTRUCTION OF THE INSTRUMENT

Use this page to indicate any description or information pertaining to the instrument, additional to that already contained in this report and in the accompanying national pattern approval or OIML certificate. This may include a picture of the complete instrument, a description of its main components, and any remark which could be useful for authorities responsible for the initial or subsequent verification of individual instruments built according to the pattern. It may also include references to the manufacturer description.

Description :

Remarks :

17 CHECKLIST

Application No: 24-005

Pattern designation: F701-S

17.1 All types of weighing instruments except non-self-indicating instruments (6.1-6.9, R 76-1)

Requirement	Testing procedures		PASSED	FAILED	Remarks
Descriptive markings					
7.1.1	A.3	Compulsory in all cases:			
(+3.3.1)		manufacturer's mark or name	x		
		accuracy class	x		
		maximum capacity, Max, Max ₁ , Max ₂ ...	x		
(+3.3.1)		minimum capacity, Min	x		
		verification scale interval, e, e ₁ , e ₂ ...	x		
7.1.2	A.3	Compulsory if applicable:			
		name or mark of manufacturer's agent	/	/	
		serial number	x		
		identification marks on separate but associated units	/	/	
		pattern approval mark	---	---	Impossible to confirm now
		scale interval d (d < e)	/	/	
		maximum tare effect T (subtractive tare only if T ≠ Max)	/	/	
		maximum safe load, Lim (if Lim > Max + T)	/	/	
		special temperature limits	/	/	
		counting ratio	/	/	
		ratio between weight platform and load platform	/	/	
		range of plus/minus indication	/	/	
7.1.3	A.3	Additional markings:			
		not to be used for direct sales to the public	/	/	
		to be used exclusively for:	/	/	
		the stamp does not guarantee/guarantees only...	/	/	
		to be used only as follows:	/	/	
3.2		special applications clearly marked (weighing ranges in Classes I and II or II and III)	/	/	
4.16		near display "not to be used for direct sales to the public" (for instruments similar to those used for direct sales to the public)	/	/	
7.1.4	A.3	Presentation of markings:			
		indelible	x		
		easily readable	x		
		grouped together in a clearly visible place	x		
		Max, Min, e and d (d ≠ e) near display	x		
		possible to seal and apply a control mark/removal will result in destruction	/	/	
7.1.5.1	A.3	Instruments with several load receptors and load measuring devices:			
		identification mark, Max, Min and e of each load receptor on relating load measuring device (Lim and T = + if applicable)	/	/	

7.1.5.2	A.3	Separately-built main parts:		
		identification mark repeated in descriptive markings	/	/
4.1.1.3		Identification of devices:		
		which have been subject to separate type examination	/	/
Verification marks and sealing				
7.2.1	A.3	Verification mark:		
		cannot be removed	---	---
		easy application	---	---
		visibility without the instrument to be moved when it is in service	---	---
7.2.2		Verification mark support or space:		
		which ensures conservation of the mark	---	---
		for stamp, stamping area $\geq 200 \text{ mm}^2$	---	---
		for self-adhesive type, $\varnothing \geq 25 \text{ mm}$	---	---
4.1.2.4	A.3	Securing/sealing:		
		location	x	
		form	x	
		evidence, where software means are used	/	/
4.1.2.5		Span adjustment device (automatic and semi-automatic):	Existent ☒	Non-existent ☐
		external influence impossible after sealing	x	
4.1.2.6		Gravity compensation:	Existent ☒	Non-existent ☐
		external influence on or access to impossible after sealing	x	
8.2.1.1	A.1	Technical information and data:		
5.3.6.1	A.1	specific declaration of the manufacturer	/	/
		specifications of modules	/	/
		specifications of components	x	
3.5.4.2	A.1	fractions P_i (modules tested separately)	/	/
8.2.1.2	A.1	drawings	x	
		functional description	x	
		technical description with schematic diagrams for internal processing and exchange via interface	/	/
5.3.7		manufacture's lower limit of battery voltage	/	/
8.2.2	A.2	Examination of:		
		documents	x	
		functions (spot-checks)	x	
		test reports from other authorities	/	/
Indicating device				
4.2.1		Reading:		
4.3.1		reliable, easy and unambiguous	x	
		overall inaccuracy $\leq 0.2 \text{ e}$ (analogue indication)	/	/
		size, shape and clarity	x	
		by simple juxtaposition	x	
4.2.2.1	A.3	Units of:		
		mass	x	
		price	/	/

4.2.2.1		Form of Indications:		
		for one indication, one unit of mass	x	
		scale interval in the form (1,2 or 5) $\times 10^k$	x	
		same scale interval for all indicating devices, printing devices and tare weighing devices	x	
4.2.2.2		Form of digital indication:		
		at least one figure at right	x	
		Decimal sign:		
		shall maintain its position (scale interval changed automatically)	/	/
		separate at least one figure to the left and all to the right	x	
		Zero:		
		indication of zero figures	x	
		only one non-significant zero to the right	/	/
4.2.3		Limits:		
		preventing of indication above Max + 9 e	x	+9e
4.2.4		"Approximate" indication: Existent ☐ Non-existent ☒		
		scale interval > Max/100 without being smaller than 20 e	/	/
4.2.5		Semi-self indicating instruments:		
		extension of self-indication range $\leq$ self-indication capacity	/	/
4.3.1 4.3.2 4.3.3 4.3.4		Analogue Indication:		
		thickness and length of scale marks	/	/
		scale spacing	/	/
		limit of movement below zero and above capacity of self-indication	/	/
4.4.1		Changing of digital Indication:		
		after change in load, previous indication not longer than 1 s	x	
4.4.3		Extended digital indication: Existent ☐ Non-existent ☒		
		not allowed when there is a differentiated scale division	/	/
		while pressing key or	/	/
		at most, 5 s after manual command	/	/
		prevention of printing	/	/
4.4.4		Digital indications other than primary indications: Existent ☒ Non-existent ☐		
		quantities identified by units or symbols or signs there of	x	
		weight values (not weighed) shall be clearly identified or	x	
		display only temporarily on manual command and	/	/
		shall not be printed	/	/
4.4.5		Digital printing: Existent ☐ Non-existent ☒		
		clear and permanent	/	/
		figures ≥ 2 mm high	/	/
		name or symbol of units above column of values	/	/
		behind column of values	/	/
		printing impossible when equilibrium not stable	/	/

4.4.6		Memory storage: Existing ☐ Non-existent ☒ storage, transfer, totalizing, etc. inhibited when equilibrium not stable ☒ ☒
3.4.1		Auxiliary indicating device (Class 1 and 2 only; not allowed on multi-interval instruments) Existing ☐ Non-existent ☒ If existent, type: rider ☐ interpolation ☐ complementary ☐ differentiated scale division ☐
3.4.2		only to the right of decimal sign ☒ ☒ $d < e \leq 10 d$, $e = 10^k \text{ kg}$ or $e = 1 \text{ mg}$ for class 1 with $d < 1 \text{ mg}$ ☒ ☒
Differences between results		
3.6.3		Differences: between multiple indications: $\leq \text{mpe}$ ☒ ☒ between digital indications and printout : zero ☒ ☐
3.6.4		between two results: $\leq \text{mpe}$ for same load when method of balancing changed (semi-self-indicating) ☒ ☒
Level Indicator Existing ☒ Non-existent ☐		
3.9.1.1		Indicator: fixed firmly ☒ ☐ visible to the user ☒ ☐ Limiting value: shows that maximum tilt is being exceeded ☒ ☐
Zero-setting, -tracking and -indicating Existing ☐ Non-existent ☐		
Initial zero-setting ☐ ☒ Semi-automatic zero-setting ☒ ☐ Nonautomatic zero-setting ☐ ☒ Zero-tracking ☒ ☐ Zero-indicating ☒ ☐		
4.5.1	A.4.2.1	Effect: shall not alter Max ☒ ☐ Overall effect of: zero-setting ☒ ☐ $\leq 4 \%$ zero-tracking ☒ ☐ $\leq 4 \%$ initial zero-setting ☒ ☒
4.5.2	A4.2.3	Accuracy: deviation $\leq 0.25 e$ ☒ ☐ deviation $\leq 0.5 d$ (auxiliary indicating device) ☒ ☒
4.5.3		Multiple range: Existing ☐ Non-existent ☒ effective for greater weighing range (if switching when loaded possible) ☒ ☒
4.5.4		Control of zero-setting: separate from that of tare weighing device ☒ ☐ Semi-automatic zero-setting: functions only in stable equilibrium and ☒ ☐ if it cancels any previous tare operation ☒ ☒

4.5.5	A.4.2.2	Zero-indicating device (digital indication):																																												
		shows deviation $\leq 0.25 e$	x																																											
		not mandatory if auxiliary indicating device or rate of zero-tracking $\geq 0.25 d/s$	/	/																																										
4.5.6		Automatic zero-setting:																																												
		operates only when equilibrium stable and	/	/																																										
		indication has remained stable below zero at least 5 seconds	/	/																																										
4.5.7		Zero-tracking:																																												
		operates only when indication at zero or	x																																											
		at negative net value equivalent to gross zero and	x																																											
		equilibrium stable	x																																											
		corrections $\leq 0.5 d/s$	x																																											
		when operates after tare, the overall effect may be 4 % of Max	/	/																																										
<table border="0"> <tr> <td colspan="3">Tare devices</td><td>Existent</td><td>Non-existent</td></tr> <tr> <td>Tare weighing</td><td>☒</td><td></td><td>☒</td><td>☐</td></tr> <tr> <td>Tare balancing</td><td>☐</td><td></td><td>☐</td><td>☒</td></tr> <tr> <td>Combined zero-setting</td><td></td><td></td><td></td><td></td></tr> <tr> <td>and tare balancing</td><td>☐</td><td></td><td>☐</td><td>☒</td></tr> <tr> <td>Tare indicating</td><td>☒</td><td></td><td>☒</td><td>☐</td></tr> <tr> <td>Type:</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Additive</td><td>☐</td><td></td><td>Subtractive</td><td>☒</td></tr> </table>						Tare devices			Existent	Non-existent	Tare weighing	☒		☒	☐	Tare balancing	☐		☐	☒	Combined zero-setting					and tare balancing	☐		☐	☒	Tare indicating	☒		☒	☐	Type:					Additive	☐		Subtractive	☒	
Tare devices			Existent	Non-existent																																										
Tare weighing	☒		☒	☐																																										
Tare balancing	☐		☐	☒																																										
Combined zero-setting																																														
and tare balancing	☐		☐	☒																																										
Tare indicating	☒		☒	☐																																										
Type:																																														
Additive	☐		Subtractive	☒																																										
4.6.1		4.1 through 4.4 apply	x																																											
4.6.2		Tare weighing device:																																												
		$d_T = d$	x																																											
4.6.3	A.4.6.2	Accuracy:																																												
		better than $\pm 0.25 e$ (electronic instruments and instruments with analogue indication), $e=e_1$ for multi-interval	x																																											
		better than $\pm 0.5 d$ (mechanical instruments with digital indication and instruments with auxiliary indicating device)	/	/																																										
4.6.4		Operation range:																																												
		prevention of operation at at	x																																											
		or below its zero effect below	/	/																																										
4.6.5		prevention of operation above its maximum indicated effect	x																																											
		Visibility of operation:																																												
		operation indicated	x																																											
4.6.6		net with sign "NET", "Net", "net" or complete word (digital indication)	x																																											
		NET disappears if gross displayed temporarily	x																																											
		tare value or letter "T" (mechanical adding tare)	/	/																																										
4.6.7		Subtracting tare:																																												
		prevention of use above Max or indication that capacity is reached	x																																											
4.6.8		Multiple range:																																												
		operation effective in greater weighing ranges if switching when loaded possible	/	/																																										
4.6.8		Semi-automatic or automatic tare:																																												
		operation only in stable equilibrium	x																																											

4.6.9		Combined zero/tare:			
		accuracy (4.5.2)	/	/	
		zero-indicating device (4.5.5)	/	/	
		zero-tracking (4.5.7)	/	/	
4.6.10		Consecutive tare operations:			
		indicated or printed tare weight values clearly designated (if tare devices operative at the same time)	/	/	
4.6.11		Printing net or gross:			
		without designation	/	/	
		designation: by G or B (gross)	/	/	
		by N (only net printed)	/	/	
		designation of net and tare by N and T (if net printed with gross and/or tare)	/	/	
		instead of G, B, N and T, complete words	/	/	
		printing separately net and tare with identification (different tare devices)	/	/	
Preset tare			Existent	☒	Non-existent ☐
4.7.1		$d_T = d$ or automatically rounded to d	x		
		transferred from one range to another one with larger e_i , shall be rounded to the latter (multiple range)	/	/	
		tare value $\leq \text{Max}_i$ for the same net weight value (multi-interval) and calculated net value rounded to the scale interval for the same net weight value	/	/	
4.7.2		4.6.10 applies	/	/	
		cannot be modified/cancelled if tare operated after the preset tare is still in use	/	/	
		operates automatically if clearly identified with load	/	/	
4.7.3		4.6.5 applies	x		
		possibility to indicate preset tare	x		
		if calculated net printed then preset tare value is printed as well	/	/	
		4.6.11 applies	/	/	
		designation of preset tare by PT or complete word	/	/	
Locking devices			Existent	☐	Non-existent ☒
4.8.1		Positions:			
		only two stable positions	/	/	
4.8.2		weighing only in "weigh" position	/	/	
		positions clearly shown	/	/	
Multiple range			Existent	☐	Non-existent ☒
4.10		Weighing ranges:			
		range in operation clearly indicated	/	/	
		selection from smaller to greater range possible at any load (manual)	/	/	
		selection from smaller to the following greater range (automatic) possible only for load $\geq \text{Max}_i$ of smaller range	/	/	
		selection from a greater to a smaller range only when no load (manual)*	/	/	
		selection only from a greater to the smallest range only when no load (automatic)*	/	/	
		when no load tare cancelled and to $\pm 0.25 e_i$, both automatically (manual and/or automatic selection) (applicable only to the two above requirements marked *)	/	/	

Selection between load receptors, transmitting and measuring devices			Existent ☐	Non-existent ☒
4.11		compensation for unequal no-load effect	/	/
4.11.1		zero-setting without ambiguity and in accordance with 4.5	/	/
4.11.2		weighing impossible while selection	/	/
4.11.3		combinations easy identifiable	/	/
4.11.4			/	/
Load cells			Existent ☒	Non-existent ☐
4.12.1		$E_{max} \geq Q \cdot Max \cdot R/N$	/	/
4.12.2		$n_{Lc} \geq n$	/	/
		$n_{Lc} \geq n_i$ (multiple range/multi-interval)	/	/
		multi-interval $DR \leq 0.5 e_1 R/N$ or	/	/
		$n_{Lc} \geq Max_1/e_1$ if DR unknown	/	/
		multiple range $DR \leq e_1 R/N$ or	/	/
		$n_{Lc} \geq 0.4 Max_1/e_1$ if DR unknown	/	/
4.12.3		$V_{min} \leq e R/\sqrt{N}$ ($e = e_1$ multiple range/multi-interval)	/	/
"Plus" and "minus" comparator instruments				
4.13.1		Distinction of zones:		
		by "+" and "-" signs (analogue indication)	/	/
		by inscription (digital indication)	/	/
4.13.2		Scale:		
		with at least one scale division $d = e$ on either side of zero and	/	/
		value of $d = e$ shown at either end	/	/
Mechanical counting instruments with unit weigh receptor				
4.18.1		Scale:		
		with at least one scale division $d = e$ on either side of zero and	/	/
		value of $d = e$ shown on the scale	/	/
4.18.2		Counting ratio:		
		shown clearly above each counting platform or	/	/
		each counting scale mark	/	/

17.2 Instruments for direct sales to the public and price computing and labelling instruments

Requirement	Testing procedures		PASSED	FAILED	Remarks
Miscellaneous checkings (direct sales to the public)					
4.5.4		Combined semi-automatic zero-setting device and semi-automatic tare-balancing device operated by the same key:			
		not allowed	/	/	
4.8.1		"Prewrite" position:			
		not allowed	/	/	
4.14.10		Counting ratio:			
		1/10 or 1/100 (mechanical counting instrument)	/	/	
4.14.5		Impossibility of weighing during:			
		locking operation	/	/	
		adding or subtracting weights	/	/	
4.14.7		Auxiliary and extended indicating device:			
		not allowed	/	/	
4.14.9		When significant fault has been detected (electronic instruments):			
		visible or audible alarm provided for customer and (1)	/	/	
		data transmission prevented (1)	/	/	
		until user takes action or cause disappears	/	/	
Indication device (direct sales to the public)					
4.14.6		Primary indications (4.14.1) to both vendor and customer:			
		Double display: Existent ☐ Non-existent ☐			
		weight	/	/	
		information about correct zero position	/	/	
		tare operation	/	/	
		preset tare operation	/	/	
		Figures of primary indications:			
		same dimension and	/	/	
		high ≥ 9.5 mm (digital devices)	/	/	
		Instruments to be used with weights:			
		value of weights possible to distinguish	/	/	
Zero-setting device (direct sales to the public)					
4.14.2		Non-automatic zero-setting:			
		with tool only	/	/	

(1) Checked by verifying the compliance with documents [] or by simulating faults []; this check does not duplicate the disturbance tests 12.1 through 12.4.

Tare device (direct sales to the public)			
4.14.3		Tare on mechanical instrument with weights receptor:	
		not allowed	✓ / ✓
		Public is allowed to see whether tare:	
		is in use	✓ / ✓
		setting is altered	✓ / ✓
		only one tare may be in operation at any given time	✓ / ✓
		Recalling gross value:	
		with tare or preset tare in operation prohibited	✓ / ✓
4.14.3.1		Non-automatic tare:	
		displacement of 5 mm at most e	✓ / ✓
4.14.3.2		Semi-automatic tare:	
		reduction of value of tare not permitted and	✓ / ✓
		cancelling of tare effect only if no load on the receptor	✓ / ✓
		One of the following conditions fulfilled:	
		tare value indicated permanently in a separate display	✓ / ✓
		indicated with sign "-" when no load on the receptor	✓ / ✓
		effect cancelled automatically when unloading after net weighing	✓ / ✓
4.14.3.3		Automatic tare:	
		not allowed	✓ / ✓
4.14.4		Preset tare:	
		indicated on separate display clearly differentiated from weight display	✓ / ✓
		reduction of tare value not permitted and	✓ / ✓
		cancelling of tare effect only if no load on the receptor	✓ / ✓
		impossible to operate if tare device in operation	✓ / ✓
		cancelled at the same time as PLU if associated with PLU	✓ / ✓
Price computing instruments and price scales (direct sales to the public)			
4.15.1		Visible to both vendor and customer (4.14.6):	
		unit price	✓ / ✓
		price to pay	✓ / ✓
		if applicable number, unit price and price to pay for non-weighed articles, price totals	✓ / ✓
4.15.2 4.2 4.3.1-4.3.3		Price scales:	
		4.2 and 4.3.1 through 4.3.3 apply to unit price and price to pay scales	✓ / ✓
		error of price scale $ W \cdot U - P \leq e \cdot U$	✓ / ✓
4.15.3		Price computing:	
		multiplication of weight and unit price as indicated	✓ / ✓
		rounding to nearest interval of price to pay	✓ / ✓
		unit price: Price / (100 g or kg)	✓ / ✓
		Indications of weights, unit price and price to pay visible:	
		for at least 1 s after stable weight indication after any introduction of unit price and while load on load receptor	✓ / ✓
		freezing for ≤ 3 s and not possible to introduce or change unit price (if indication has been stable before and would otherwise be zero)	✓ / ✓
		printing weight, unit price and price to pay	✓ / ✓

		Stored in memory:			
		before printing	/	/	
		same data not to be printed twice for customer	/	/	
4.15.4		Additional functions for trade and management:			
		if all transactions are printed for customer and	/	/	
		shall not lead to confusion	/	/	
4.15.4.1		Prices-to-pay (positive or negative) of non-weighed articles:			
		weight indication zero or	/	/	
		weighing mode inoperative	/	/	
		prices shall be shown on price-to-pay display	/	/	
		Prices for more than one equal articles:			
		number of articles shown on weight or supplementary display and	/	/	
		without being taking for a weight and	/	/	
		article price shown on unit price or supplementary display	/	/	
4.15.4.2		Totalization of transactions on one or several tickets:			
		price total indicated on price-to-pay display and	/	/	
		printed accompanied by a special word or symbol and	/	/	
		reference to commodities whose prices are totalized if a separate ticket is issued for total	/	/	
		all pricee-to-pay shall be printed and price total shall be the algebraic sum of these prices	/	/	
		Totalization of transactions from linked instruments:			
		price-to-pay scale intervals of all connected instruments identical	/	/	
4.15.4.3		Instrument used by several vendors or to serve more than one customer at the same time:			
		connection between transactions and vendor or customer identified	/	/	
4.15.4.4		Cancelling previous transactions:			
		price-to-pay cancelled shall be printed with comment (transaction already printed)	/	/	
		transaction clearly differentiated from normal transactions (transaction displayed to customer)	/	/	
4.15.4.5		Printing additional information:			
		clearly correlated to transaction and	/	/	
		does not interfere with assignment of weight value to unit symbol	/	/	
4.15.5		Self-service instruments:			
		designation of product	/	/	
Price labelling instruments					
4.17		Display:			
		for weight	/	/	
		possibly to verify values of unit price and preset tare during the use of the instrument	/	/	
		Printing:			
		prevention of printing below Min	/	/	
		labels with fixed values of weight, unit price and price-to-pay allowed provided weighing mode made inoperative	/	/	

17.3 Electronic weighing instruments

Requirement	Testing procedures		PASSED	FAILED	Remarks
Disturbances					
5.1.1		not confusing with other messages that appear in the display	/	/	
5.2		Acting upon significant faults in case 5.1.1,b):			
		Instrument made automatically inoperative (1), or	/	/	
		visual or audible indication until user takes action or fault disappears (1)	/	/	
Display check					
5.3.1		Upon switch-on:			
		signs of indication are active and non-active long enough to be checked by operator	x		
External equipment					
5.3.6		Interface shall not allow:			
		- functions and measuring data to be inadmissibly influenced by peripheral devices or other connected instrument or disturbance	x		
5.3.6.1		- displaying data which could be mistaken for weighing result	x		
		- falsifying weighing results (displayed, processed, stored)	x		
		- changing adjustment factor or adjusting the instrument (except authorized cases)	x		
		- falsifying displayed primary indications (direct sales)	/	/	
5.3.6.2		need not be secured if functions in 5.3.6.1 cannot be performed or initiated	x		
5.3.6.3		shall transmit data so that peripheral device can meet requirements	x		
5.3.6		Functions performed or initiated through the interface meet relevant requirements of clause 4	x		
5.3.7		Battery operated instrument: if voltage below manufacturer's specified value			
		continues to function correctly or	/	/	
		indicates no weight	/	/	

(1) Checked by verifying the compliance with documents [] or by simulating faults []; this check does not duplicate the disturbance tests 12.1 through 12.4.