



TEST REPORT
ANSI/ISA 71.04
Environmental Conditions for Process Measurement and Control Systems:
Airborne Contaminants

Report Number. : 64.105.19.30966.01

Date of issue : 2020-01-15

Total number of pages : 27

Applicant's name : Beijing HollySys Intelligent Technology Co.,Ltd.

Address : No. 2 Disheng Middle Road, Beijing Economic Technological,
Development Area, 100176 Beijing, PEOPLE'S REPUBLIC OF
CHINA

Test specification:

Standard : ANSI/ISA 71.04-2013

Test procedure : Test report

**Non-standard test
method** : N/A

Test Report Form No. : ANSI/ISA 71.04_A

Test Report Form(s) Originator.... : TUV SUD

Master TRF : 2016-12

This test report is based on the content of the standard (see above). The test report considered selected clauses of the a.m. standard(s) and experience gained with product testing. It was prepared by TUV SUD Product Service GmbH.

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Test item description : LKC Self-controllable large PLC system

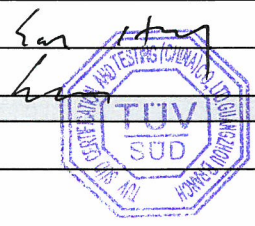
Trade Mark : HollySys

Manufacturer : Same as applicant

Model/Type reference : LK130C, LK921C, LK221C, LK244C, LK249C, LK241C, LK232C,
LK235C, LK610C, LK710C, LK410C, LK411C, LK512C, LK430C,
LK117C

Ratings : 24VDC, 6A



Testing procedure and testing location:		
☒	Testing Laboratory:	TÜV SÜD Certification and Testing (China) Co.,Ltd. Guangzhou Branch
Testing location/ address		5F, Communication Building, 163 Pingyun Rd, Huangpu West Ave., 510656 Guangzhou, People's Republic of China
Tested by (name + signature).....:		San Huang
Approved by (name + signature)		Song Lei
		
☐	Testing procedure: TMP	
Testing location/ address		
Tested by (name + signature).....:		
Approved by (name + signature)		
☐	Testing procedure: WMT	
Testing location/ address		
Tested by (name + signature).....:		
Witnessed by (name + signature)		
Approved by (name + signature)		
☐	Testing procedure: SMT	
Testing location/ address		
Tested by (name + signature).....:		
Approved by (name + signature)		
Supervised by (name + signature)....:		



List of Attachments (including a total number of pages in each attachment): N/A	
Summary of testing:	
Tests performed (name of test and test clause): This report 64.105.19.30966.01 is based on report 64.105.19.30769.01. LKC Self-controllable large PLC system is test combine with Safety Self-controllable PLC System for Discrete Industry, they have 9 common parts, detail refer to page 5. Testing requirements specified by client according to ANSI/ISA 71.04-2013, gas corrosion level G3(Group A) harsh level.	Testing location: Suzhou LABone Testing Services Technology Co.,Ltd Building 2-3, No.5, Huasheng East Road, Zhoushi Town, Kunshan City, Jiangsu rovince, China, 215314
Summary of compliance with National Differences List of countries addressed: N/A	
Copy of marking plate N/A	



Test item particulars	Fire Resistant Electric Cable
Classification of installation and use.....	N/A
Supply Connection	N/A
.....	
Possible test case verdicts:	
- test case does not apply to the test object..... : N/A	
- test object does meet the requirement..... : P (Pass)	
- test object does not meet the requirement..... : F (Fail)	
Testing	
Date of receipt of test item..... : 2019-10-17	
Date (s) of performance of tests : 2019-10-17 to 2019-11-28	
General remarks:	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.	
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 6.2.5 of IEC 60335-1:	
The application for obtaining a CB Test Certificate ☐ Yes includes more than one factory location and a ☒ Not applicable declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)..... : Beijing Hollysys Electronics Technology Co.,Ltd. No. 2 Disheng Middle Road, Beijing Economic Technological, Development Area, 100176 Beijing, PEOPLE'S REPUBLIC OF CHINA	



General product information:

LKC Self-controllable large PLC system and Safety Self-controllable PLC System for Discrete Industry, include below module:

LKC Self-controllable large PLC system			Safety Self-controllable PLC System for Discrete Industry		
Model name	Product	Quantity	Model name	Product	Quantity
LK130C	4-Slot backplane module	1	LK123	6-slot backplane module	1
LK921C	24V power conversion module	1			
LK221C	Main control module	1	LK210	Main control module	1
LK244C	Redundant communication module	1	LK244C	Redundant communication module	1
LK249C	DP master communication module	1	LK249	DP master communication module	1
LK241C	Powerlink master communication module	1	LK241C	Powerlink master communication module	1
LK232C	Profibus-DP bus repeater module	1			
LK235C	Powerlink communication adaptation module	1			
LK610C	24V 16-channel non isolated leakage type digital input module	1	LK610C	24V 16 -channel non isolated leakage type digital input module	1
LK710C	16 -channel transistor digital output module	1	LK710C	16 -channel transistor digital output module	1
LK410C	8- channel voltage type analog input module	1	LK410C	8- channel voltage type analog input module	1
LK411C	8- channel current type analog input module	1			
LK512C	8- channel voltage current type analog output module	1	LK512C	8- channel voltage current type analog output module	1
LK430C	6-channel non isolated thermal resistance analog input module	1			
LK117C	11-slot LK series PLC expansion backplane module	1			
			LK254	Profibus-DP slave to CANopen master gateway module	1
			LK247	Modbus -TCP slave to Ethernet / IP master gateway module	1
			LK210T	Modbus TCP slave to Ethernet cat master gateway module	1

ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Initial measurements			
Functional check		Functional check is done, all function is ok, see annex table 1	P
Visual inspection		Appearance checked, see annex table 2	P

Final measurements			
Functional check		Functional check is done, all function is ok, see annex table 1	P
Visual inspection		Appearance checked, see annex table 2	P

Work with load or without load		All output terminals connected with functional checking		P
Test requirements according to G3 harsh level of table B1				
Temperature and humidity	H ₂ S concentration	SO ₂ concentration	CL ₂ concentration	NO ₂ concentration
25°C Relative humidity 75%	<50mm ³ /mm ³	<300mm ³ /mm ³	<10mm ³ /mm ³	<1250mm ³ /mm ³
Supplementary information: Test duration is 30 days. After testing, EUT no visible change, and metal parts of the EUT showing no corrosion discoloration. Measurement of gaseous air pollutants methods selected for this environment characterization.				

ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Annex table 1 for Functional check:

G3 anticorrosion test results of safety controllable PLC system for discrete industry

Serial number	Test purpose	Test input	Expected output	Conclusion
1	Verify the integrity of the tested system	Check the model and quantity of G3 anti-corrosion sample module	LK921C (1pcs), LK221C (1pcs), LK249C (1pcs), LK244C (1pcs), LK241C (1pcs), LK117C (1pcs), LK610C (1pcs), LK710C (1pcs), LK410C (1pcs), LK411C (1pcs), LK512C (1pcs), LK232C (1pcs), LK235C (1pcs), LK130C (1pcs), LK430C (1pcs)	Pass
2	Verify the basic functions of LK921C	1. Connect the 24VDC power supply to the input port DC IN-1 of lk921c, power on normally, and observe the status of DC out, DC IN-1 and DC IN-2 indicators of LK921C; 2. Connect the 24VDC power supply to the input port DC IN-2 of lk921c, power on normally, and observe the status of DC out, DC IN-1 and DC IN-2 indicators of LK921C;	1. After access to DC IN-1 port, DC out light is on for a long time, DC IN-1 light is on for a long time, and DC IN-2 light is not on; 2. After the DC IN-2 port is connected, the DC out light is on for a long time, the DC IN-1 light is not on, and the DC IN-2 light is on for a long time;	Pass

ANSI/ISA 71.04-2013				
Clause		Requirement + Test	Result - Remark	Verdict
3	Verify the basic functions of the system under profibus-DP bus	1. Connect the X1 network port and PC network port of LK221C with Ethernet cable, insert LK232C module in the first slot of LK117C expansion backplane, and then insert LK610C, LK710C, LK410C, LK512C, LK411C, LK512C and LK430C modules in the second, third, fourth, fifth, sixth, seventh and tenth slots successively; 2. LK232C module is connected to DB9 port of LK249C through DP connecting wire, all channels of LK710C module and LK610C channel are directly connected with short wire, all channels of LK512C and LK410C channel are directly connected with short wire, all channels of LK512C and LK411C channel are directly connected with short wire; 3. Use PC to open at software to compile and install configuration Engineering (engineering configuration LK710C outputs the Tus and flare according to 1s interval, and two LK512C outputs the code value 27648) and run it; 4. Observe the run lights of LK232C, LK610C, LK710C, LK410C, LK411C, LK512C, LK430C and LK254 modules on the lk117c expansion backplane; 5. Observe the channel light status of LK610C and LK710C modules; 6. Observe LK410C, LK411C and LK512C channel code values on at software.	1. Run light of LK232C, LK610C, LK710C, LK410C, LK411C, LK512C, LK430C, LK254 module is on for a long time 2. The channel of LK610C and LK710C will flash alternately in accordance with the interval of 1s; 3. The channel online code value of LK512C module is 27648, and that of LK410C and LK411C modules is $27648 \pm 0.2\%$.	Pass

ANSI/ISA 71.04-2013				
Clause	Requirement + Test	Result - Remark	Verdict	
4	Check the basic functions of the system under the Powerlink bus	1. Connect the X1 network port and PC network port of LK221C with Ethernet cable, insert LK235C module in the first slot of LK117C expansion backplane, and then insert LK610C, LK710C, LK410C, LK512C, LK411C, LK512C and LK430C modules in the second, third, fourth, fifth, sixth, seventh and tenth slots successively; 2. X1 network port (or x2 network port) of LK235C module is connected with LK241C network port (x1 or x2) through network cable, all channels of LK710C module and LK610C channel are directly connected with short wire, all channels of LK512C and LK410C are directly connected with short wire, all channels of LK512C and LK411C are directly connected with short wire; 3. Use PC to open at software to compile and install configuration Engineering (engineering configuration LK710C outputs the Tus and flare according to 1s interval, and two LK512C outputs the code value 27648) and run it; 4. Observe the RUN lights of modules LK235C, LK610C, LK710C, LK410C, LK411C, LK512C, LK430C and LK254 on the LK117C expansion backplane; 5. Observe the channel light status of LK610C and LK710C modules; 6. Observe LK410C, LK411C and LK512C channel code values on at software.	1. Run light of LK235C, LK610C, LK710C, LK410C, LK411C, LK512C, LK430C, LK254 module is on for a long time 2. The channel of LK610C and LK710C will flash alternately in accordance with the interval of 1s; 3. The channel online code value of LK512C module is 27648, and that of LK410C and LK411C modules is $27648 \pm 0.2\%$.	Pass

ANSI/ISA 71.04-2013				
Clause	Requirement + Test		Result - Remark	Verdict
5	Verify the basic functions of LK221C	1. LK221C normally compiles, installs and runs. Connect the Ethernet cable to X1 and X2 network ports of PC and LK221C module respectively, and check the status of link light; 2. Check the hardware information and version number of LK221C through the auxiliary tool of at software;	1. Check the hardware information and version number of LK221C through the auxiliary tool of at software 2. The software and hardware version information of LK221C module can be read through at software.	Pass
6	Verify the basic functions of LK249C	1. Compile and install the project according to the method of use case 3, and observe the channel light status of LK610C and LK710C; 2. Unplug the DP connection line of LK249C and observe the channel light status of LK610C and LK710C modules.	1. After installation, the channel lights of LK610C and LK710C are on and off alternately, with a period of 1s; 2. After unplugging the DP connection line, the channel lights of LK710C and LK610C stop flashing.	Pass
7	Verify the basic functions of LK241C	1. Compile and install the project according to the method of use case 4, and observe the channel light status of LK610C and LK710C; 2. Unplug the Ethernet cable of LK241C and observe the channel light status of LK610C and LK710C modules.	1. After installation, the channel lights of LK610C and LK710C are on and off alternately, with a period of 1s; 2. After unplugging the Ethernet cable, the channel lights of LK710C and LK610C stop flashing	Pass
8	Verify the input and output of the extended IO digital quantity module	1. According to the method of use case 3, the hardware is configured, the project is compiled and installed, and the channel light status of LK610C and LK710C modules is observed; 2. Online observation of LK610C and LK710C through at software	1. The channels of LK610C and LK710C are on and off alternately with an interval of 1s; 2. Through at software, it was observed that the online values of LK710C and LK610C changed alternately from true to false, and the cycle was 1s.	Pass

ANSI/ISA 71.04-2013						
Clause		Requirement + Test		Result - Remark		Verdict
9	Verify the input, output and accuracy of the extended IO analog module	1. Use case 3 to configure the hardware, compile and download the project; 2. Open at software to observe the channel values of LK410C and LK411C online and record the maximum and minimum values. The observation time shall not be less than 1 minute;		Record the test values of LK410C and LK411C before and after the experiment		
			Data before experiment		Data after experiment	
			LK410C	LK411C	LK410C	LK411C
		channel 1	27707	27663	27708	27664
		channel 2	27658	27666	27658	27673
		channel 3	27717	27649	27718	27652
		channel 4	27658	27664	27659	27669
		channel 5	27651	27663	27653	27664
		channel 6	27658	27654	27658	27656
		channel 7	27656	27671	27658	27677
		channel 8	27651	27653	27653	27656
10	Verify that the system supports dual redundancy	1. Build the test system and auxiliary system into a group of redundant systems (the redundant system is composed of LK244C module connected by network cable), insert LK232C module in the first slot of LK117C expansion backplane, LK610C and LK710C modules in the second and third slots, and compile and install the configuration Engineering (the same as case 3 project); 2. Disconnect one of the two power supply modules LK920C in the redundant system, and observe the channel light status of LK610C and LK710C; 3. Disconnect one DP connecting line of two DP master station modules LK249C in the redundant system, and observe the channel light status of LK610C and LK710C;		1. After the input power of any LK920C module is disconnected, the channel lights of LK610C and LK710C modules are still on and off alternately; 2. After disconnecting the DP connecting line of any LK249C module, the channel lights of LK610C and LK710C modules are still on and off alternately;		Pass

ANSI/ISA 71.04-2013				
Clause	Requirement + Test		Result - Remark	Verdict
10	Verify the basic functions of LK247	1. Connect the network port x2.1 (or x2.2) of LK247 and the X2 port of LK221C with the network cable; 2. Connect the network port X1 of LK247 module with the network port of PC by network cable; 3. Open prompt command on PC to Ping X1 network port;	Can ping normally	Pass
11	Determination of corrosion state of sample appearance after experiment		After the test, the metal structure parts are allowed to lose lustre, discolour or produce corrosion products. As long as there is no problem affecting the electrical performance and mechanical reliability, it can be judged that the appearance corrosion condition is qualified	Pass

ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Annex table 2 for photo:

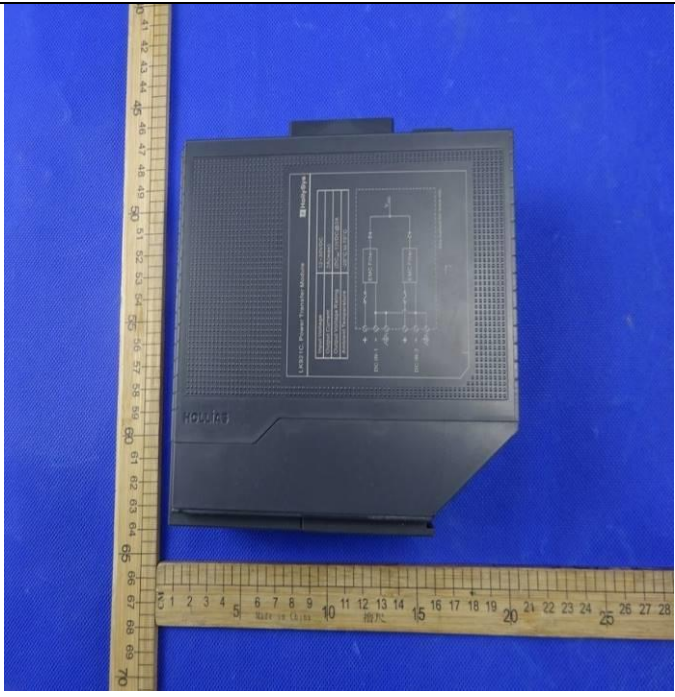
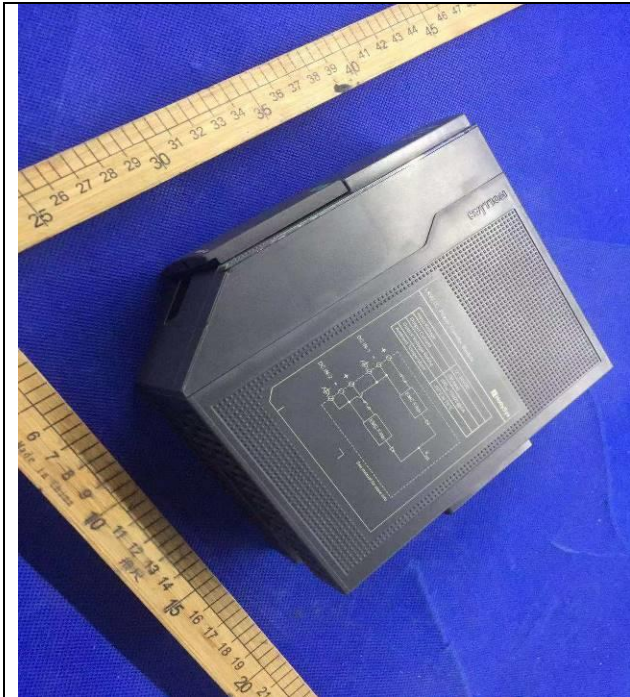
Overview for System:

Before testing	During testing	After testing
		

Overview for LK921C:

Before testing	After testing
	

ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict



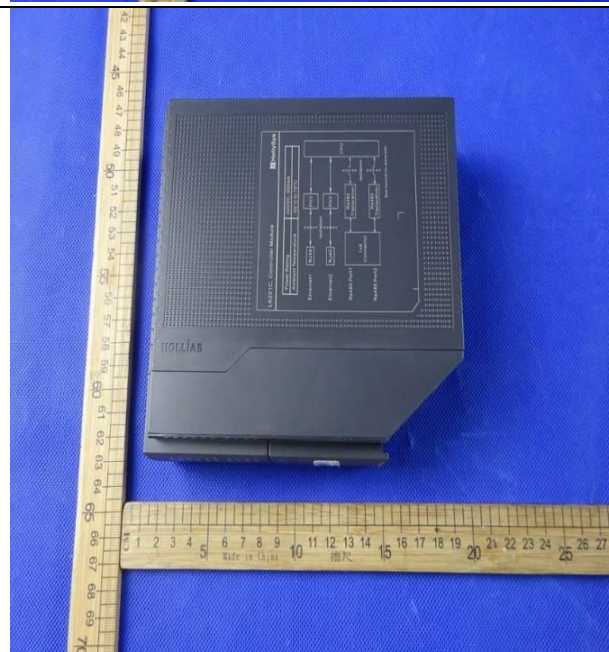
ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK221C:

Before testing



After testing



ANSI/ISA 71.04-2013

Clause	Requirement + Test	Result - Remark	Verdict
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Overview for LK249C:

Before testing



After testing



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Project No: 64.105.19.30966.01
Rev.: 00
Date: 2020-01-15
Page: 16 of 27

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Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK244C:

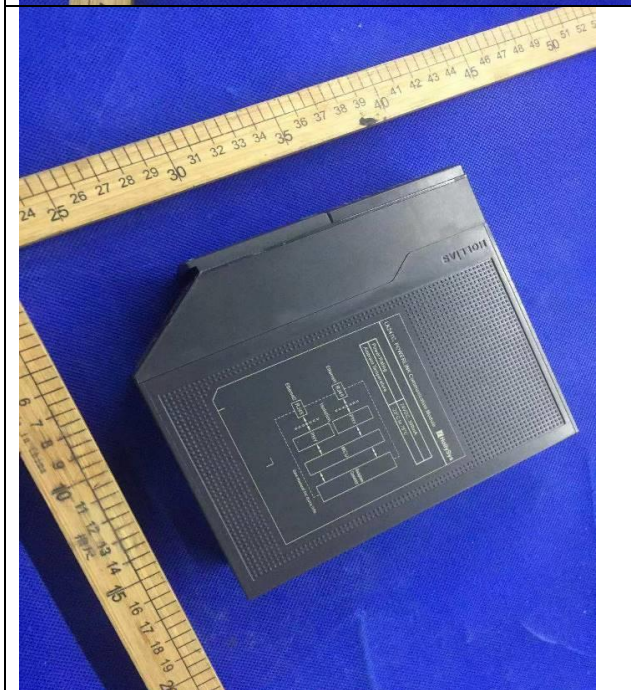
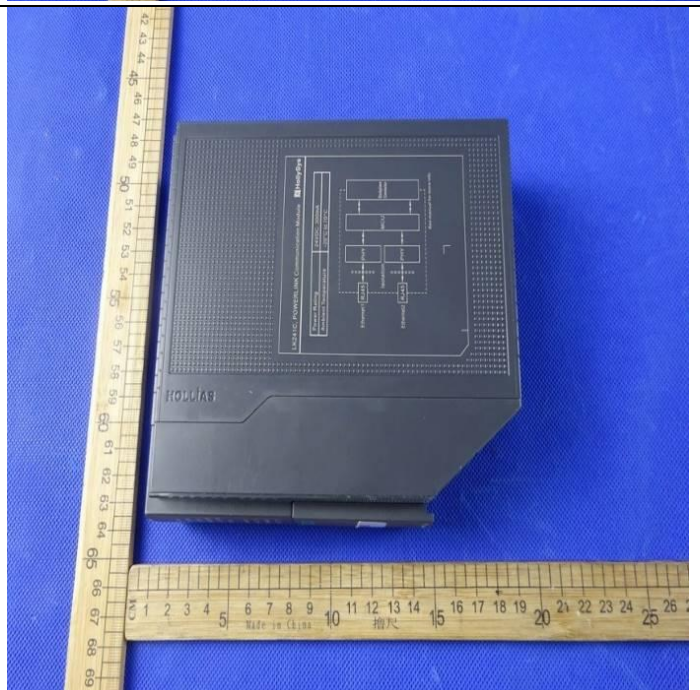
Before testing



After testing



ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK241C:	
Before testing	After testing
	
	

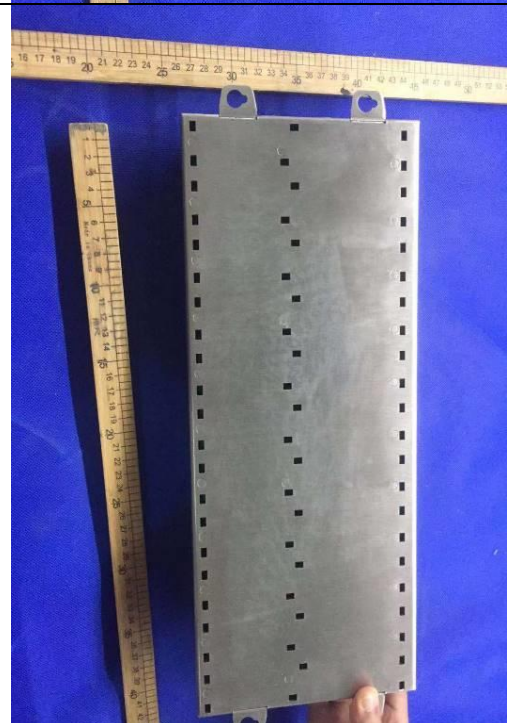
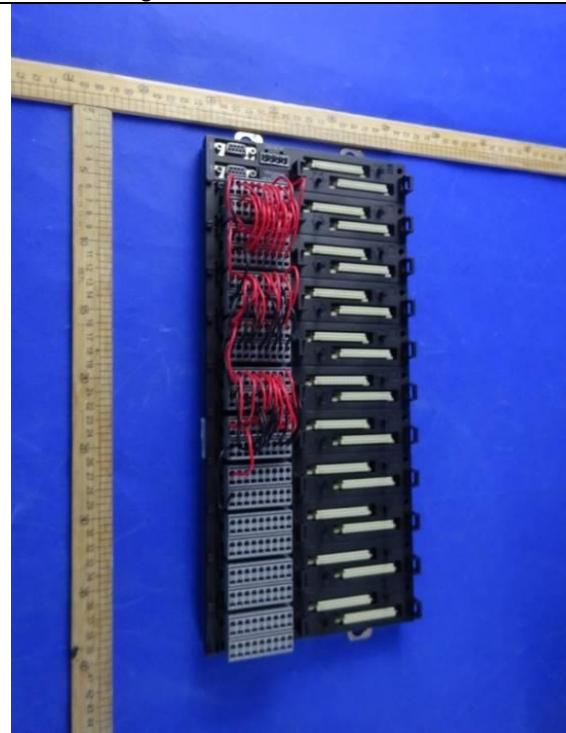
ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK117C:

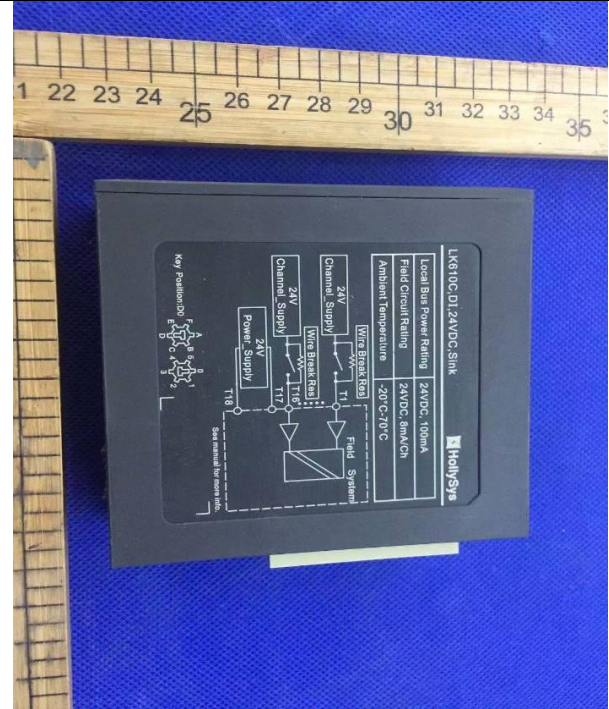
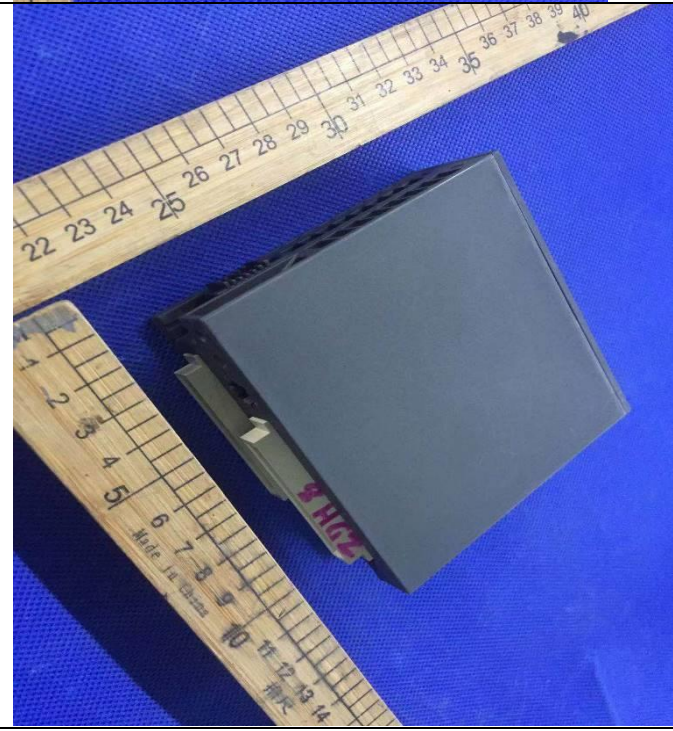
Before testing



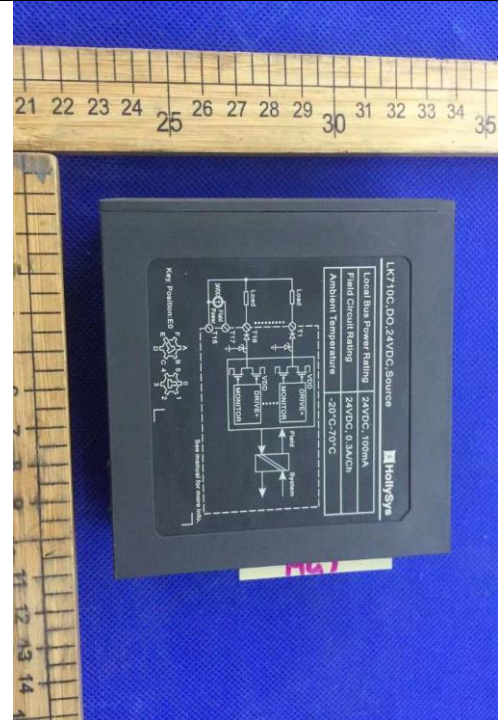
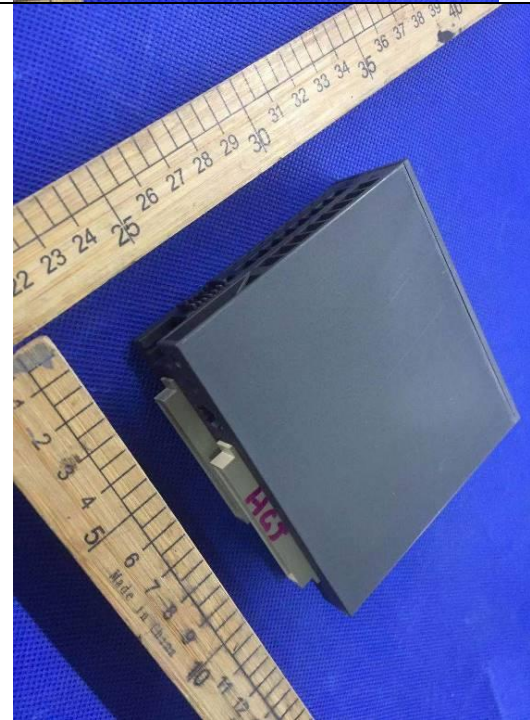
After testing



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Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK610C:	
Before testing	After testing
	
	

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Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK710C:			
Before testing		After testing	
			
			

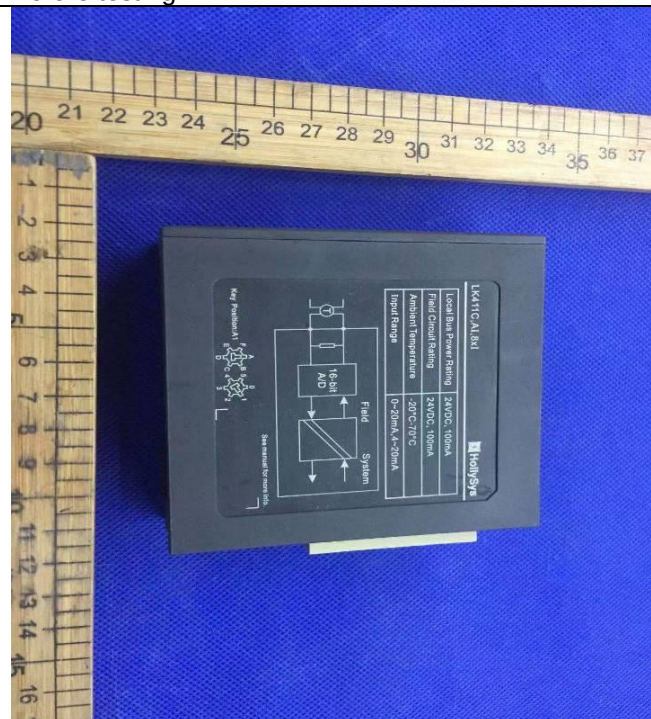
ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK410C:	
Before testing	After testing
	
	

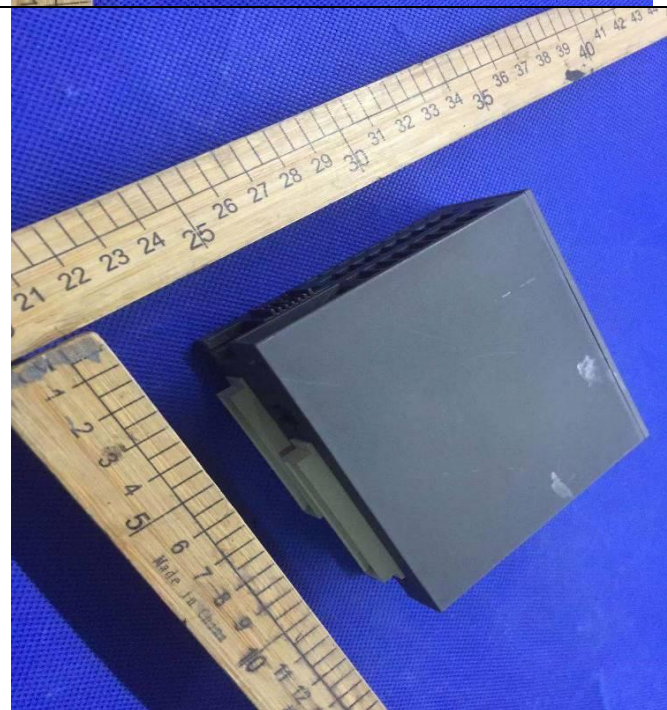
ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK411C:

Before testing



After testing



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Project No: 64.105.19.30966.01
Rev.: 00
Date: 2020-01-15
Page: 23 of 27

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ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK512C:

Before testing



After testing



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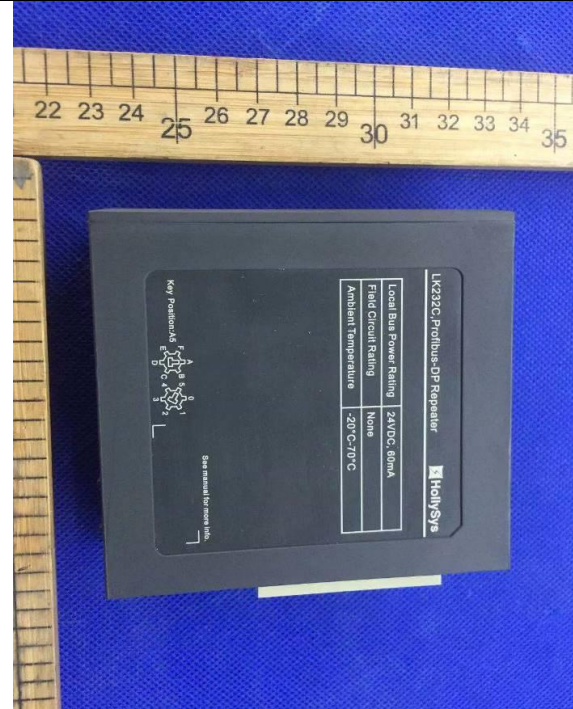
Project No: 64.105.19.30966.01
Rev.: 00
Date: 2020-01-15
Page: 24 of 27

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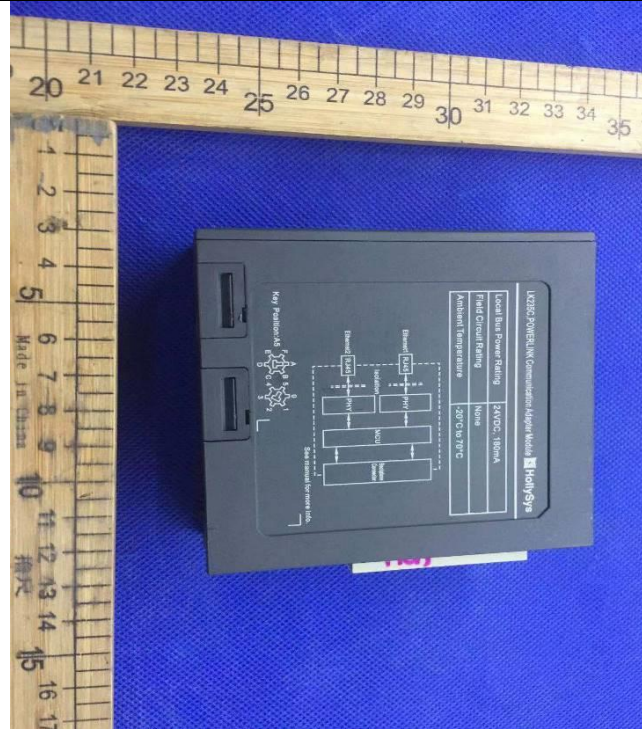
ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK232C:			
Before testing		After testing	
			
			

ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK235C:

Before testing

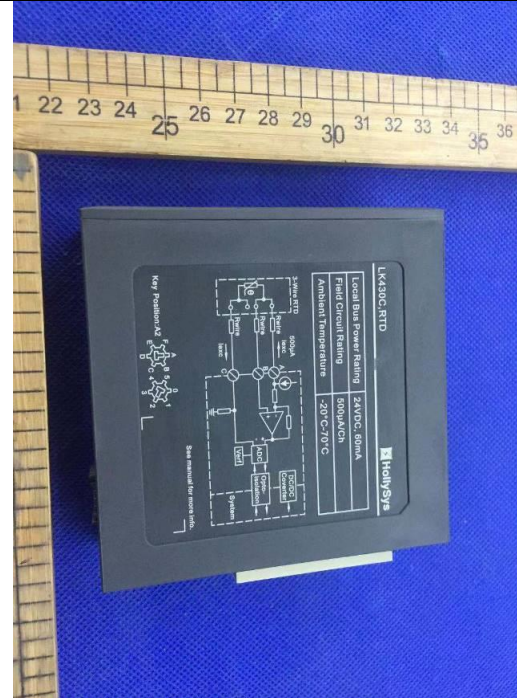


After testing



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ANSI/ISA 71.04-2013			
Clause	Requirement + Test	Result - Remark	Verdict

Overview for LK430C:			
Before testing		After testing	
			
			

--END OF REPORT--