

承 認 書

Specification for approval

客 戶 名 稱 Customer	升力科技有限公司
品 名 規 格 Description	VI 5.0mm 180 度 Series
料 號 Part no.	VI0201520000G
客 戶 料 號 Your part no.	158161002073500
發 送 日 期 Sending date	2012/3/1

內部簽核(Signature):

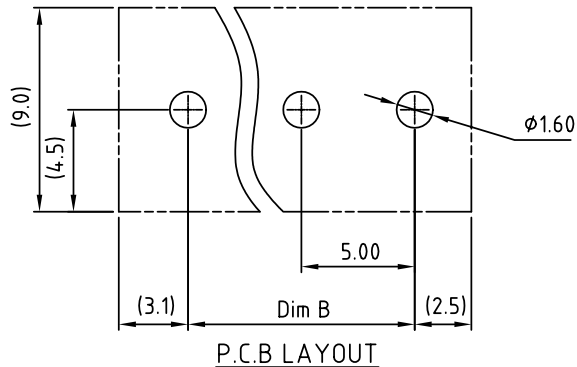
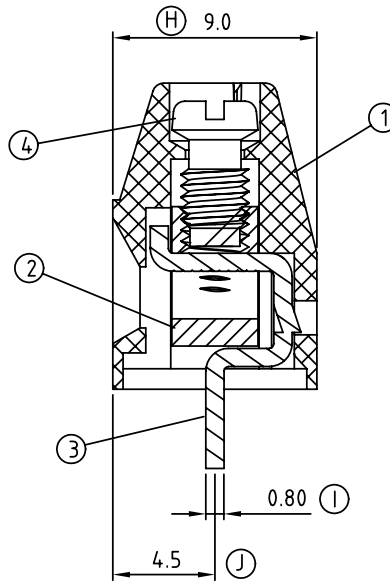
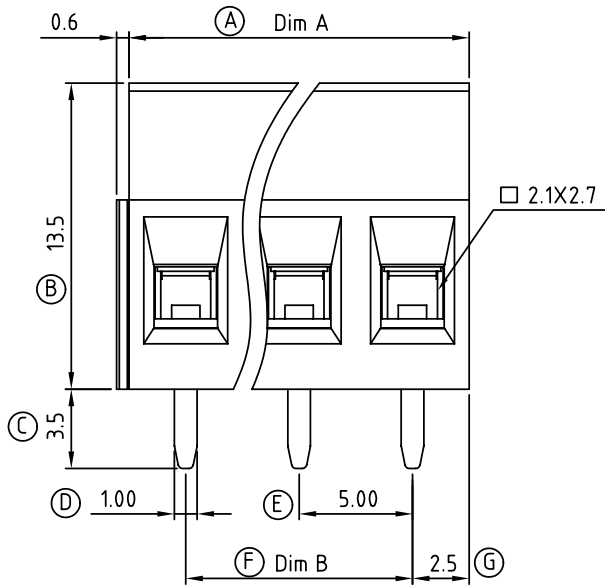
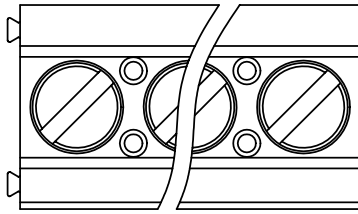
審 核(Approval)	送 樣(Checkle)
	王秋芳

微傑科技股份有限公司  
Anytek Technology Corporation  
台北縣汐止市新台五路一段 81 號 18 樓  
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N = Number of poles  
Dim A = N x 5.0  
Dim B = (N - 1) x 5.0

	Dim A	Dim B
2-6p	$\pm 0.15$	$\pm 0.10$
7-12p	$\pm 0.20$	$\pm 0.20$
13-18p	$\pm 0.30$	$\pm 0.25$
19-24p	$\pm 0.40$	$\pm 0.30$

SIGN	DATE	DESCRIPTION	APPROVER
△	8/07'06	Added FIMKO standard	梁仁松
△	01/18'07	Soldering temperature changed from 245° to 250°	Tason
△	01/18'07	Part NO is Changed	Tason
THIS IS CAD DRAWING, DO NOT REVISE MANUALLY!!!			

#### Material:

- Item 1 Terminal housing :Thermoplastic (UL 94V-0)
- Item 2 Clamp : Brass ,Ni plated
- Item 3 Wire guard solder pin : Brass ,Tin plated
- Item 4 Terminal screw: Steel Zinc plating"-slot type

#### △ Electrical cULus/FIMKO

- Voltage rating: 300VAC/300VAC
- Current rating: 16A/17.5A
- Wire range: 0.5 ~ 1.5mm<sup>2</sup>
- Solid wire(AWG): 12-28
- Stranded wire(AWG): 12-28
- Torque: 3.5Lb-In./0.5Nm
- Screw: M3
- Wire strip length: 6-7mm
- Withstanding Voltage: 1.6KV/2.5KV
- Operating temperature: -40°C to +115°C
- Soldering temperature: 250°C±10°C/5 Sec
- Safety Approval:

#### △ VI xx 01 x 2 xxxx G

02 2 CONTACTS  
03 3 CONTACTS  
...  
24 24 CONTACTS

0 Black  
5 Green  
6 Blue  
8 Grey

0000:"@ "Logo (Standard ) Pb < 40,000ppm (RoHS)  
000A:"ANYTEK"Logo  
Any special item by customer request, please contact sales department.

# ANYTEK

## CUSTOMER COPY

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TITLE		VI 5.0 SERIES 180° wire inlet (without cover)							
PART NO.		VIxx01x2xxxxG			DWG NO.		8VI0003		
APPROVED		CHECKED	DESIGNED	DRAWN	CUST NO.		Tolerance		
			熊海燕 2007.01.18	熊海燕 2007.01.18		UNIT: mm		X.	±0.50
						SCALE: NONE		X.X	±0.30
						SHEET: 01/01		X.XX	±0.10
						REV.: F		X°	±1°

# ANYTEK® 恩尼特克電子科技有限公司

## 可靠度規範

序號	測試項目	測試條件	判定標準
1	接觸阻抗	產品五金件接觸阻抗 $\leq$ 規格值	$\leq 20\text{m}\Omega$ (歐規); $\leq 30\text{m}\Omega$ (美規); $GA \leq 50\text{m}\Omega$
2	絕緣阻抗	$5000\text{M}\Omega \cdot 1000\text{VDC}$	產品無變化
3	耐高壓	$2500\text{VAC}$	漏電流 $< 0.3\text{mA}$ , 不可擊穿本體
4	扭力	$5.0\text{kgf}\cdot\text{cm}$	端子不轉動、破裂螺紋無滑牙, 塑膠無破裂
5	壓線拔出力	1-H系列: 壓單芯/多芯線最大&最小規格AWG, 分別抽三 Pole測試 2-其他系列: 壓多芯線最小規格AWG	依UL486E Table14.1
6	粘錫性	在 $250\pm 5^\circ\text{C}$ 的爐溫時, 以 $2.5\pm 0.5\text{cm/s}$ 的速度放入, 5秒鐘後均速取出。	粘錫面積 $\geq 95\%$
7	阻燃試驗	BODY點燃後離火	10秒內即熄滅, 且不溶不滴
8	鹽霧試驗	實驗時間: 鍍三價鉻96H, 其余48H (根據客戶需求)	五金件腐蝕(脫皮、生鏽)面積 $\leq 5\%$

# Technical data sheet

AWT 8/96 001/004

## FRIANYL A63 RV0

Nylon 6.6 for injection moulding, flame retardant, free of halogen and phosphorus rated UL 94 V0.

	Testing Standard	Unit	Values
<b>Product Features</b>			
Abbreviation	ISO 1043	--	----
Density	ISO 1183	g/cm <sup>3</sup>	1,15
Viscosity index	ISO 307	ml/g	135
Water absorption at saturation (+23 °C)	ISO 62	%	6-7
Water absorption (+23 °C)	ISO 62	%	1,8-2,5
Shrinkage longitudinal	ISO 294-4 **	%	1,4-1,7
Shrinkage transvers	ISO 294-4 **	%	1,2-1,4
<b>Material Constants for Flammability</b>			
Flammability	UL-94	HB-V0	V0
Automobile interior fittings: thickness =1mm	FMVSS 302	----	----
Glow Wire GWF1	DIN EN 60695-2-12	----	960
Glow Wire GWIT	DIN EN 60695-2-13	----	775
<b>Mechanical features</b>			
Tensile modulus	ISO 527	N/mm <sup>2</sup>	3600
Tensile strength	ISO 527	N/mm <sup>2</sup>	85
Tensile elongation at break	ISO 527	%	12
Flexural strength	ISO 178	N/mm <sup>2</sup>	----
Charpy impact (+23 °C)	ISO 179/1eU	kJ/m <sup>2</sup>	NB
Charpy impact (-30 °C)	ISO 179/1eU	kJ/m <sup>2</sup>	NB
Charpy impact, notched (+23 °C)	ISO 179/1eA	kJ/m <sup>2</sup>	4
Charpy impact, notched (-30 °C)	ISO 179/1eA	kJ/m <sup>2</sup>	3
Surface hardness	ISO 2039-1	N/mm <sup>2</sup>	130
<b>Thermal features</b>			
Melting point	ISO 11357-1	°C	256
Distorsion temp. under load (Meth. A)	ISO 75	°C	85
Distorsion temp. under load (Meth. B)	ISO 75	°C	185
Temp. index applied to 50% falling of tensile strength after 20 000h	IEC 216-1	°C	130
<b>Electrical features</b>			
Volume resistivity	IEC 60093	OHM cm	1 E 15
Surface resistivity	IEC 60093	OHM	----
Dissipation factor (1MHz)	IEC 250	----	0,02
Comparative figure of tracking CTI 50 drops	IEC 60112	----	----
Tracking index (CTI 100)	IEC 112	----	600
Comparative figure of tracking CTI-M 50 drops	IEC 60112	----	----
Tracking index (CTI-M 100)	IEC 112	----	600

\* All values freshly molded, for variations please look in the product description

\*\* Plate 60x60x2mm

# Technical data sheet

AWT 8/96 001/003



Product

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## FRIANYL A63 RV0

### Applications

Parts for the electrical-, construction- and traffic industry.

### Processing Guidelines

Recommended material temperature 260-290 °C, mold temperature 60-80 °C, granular clamp <0,1%. Build-up pressure about 5-10bar hydraulic pressure. Please read our brochure "Processing guidelines of injection molding" for further information.

### Pre-Treatment and Drying

The moisture proof and vacuum packed PA-granular can usually be processed without any special pre-treatment, except for large packages. The drying time depends on the humidity. We recommend at about 0,2% humidity a drying time of 4-8 hours at 80 °C. The maximum humidity for injection molding should be less than 0,15%, of sensitive parts less than 0,1%. FRIANYL-granulars are packed with a residual moisture content of <0,15%.

### Post-Treatment and conditioning

Our PA-types must be annealed to achieve their specific characteristics. The conditions should be the same as of the surroundings of the end product. Usually the humidity at standard conditioning atmosphere is about 1,5-2,5%, at immersion in water 7-9%. There might be slight changes like a volume- or longitudinal increase of about 0,1-0,3%/ per weight percentage of type and process. Attention to the changing shrinkage at an additional heat treatment.

Need more information? [Click Here](#) to go to the iQ™ for Plastics database

Component - Plastics

E86034

**NILIT PLASTICS EUROPE GMBH & CO KG**

NIEDERMATT 11, UTZENFELD 79694 DE

**A 63 V0**

Polyamide 66 (PA66), "FRIANYL", furnished as granular material

Color	Min Thk (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
ALL	0.38	V-0	4	0	125	90	115
	0.75	V-0	4	0	125	95	115
	1.5	V-0	2	0	125	95	120
	3.0	V-0	1	0	125	95	120

Comparative Tracking Index (CTI): **0**

Dimensional Stability (%): -

High-Voltage Arc Tracking Rate (HVTR): -

High Volt, Low Current Arc Resis (D495): -

Dielectric Strength (kV/mm): -

Volume Resistivity (10<sup>x</sup> ohm-cm): -

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 1992-10-22

Last Revised: 2004-06-11

Underwriters Laboratories Inc®



## IEC and ISO Test Methods

Test Name	Test Method	Units	Thickness Tested (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	0.38	V-0 (ALL)
			0.75	V-0 (ALL)
			1.5	V-0 (ALL)
			3.0	V-0 (ALL)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m <sup>2</sup>	-	-
ISO Izod Impact	ISO 180	kJ/m <sup>2</sup>	-	-
ISO Charpy Impact	ISO 179-2	kJ/m <sup>2</sup>	-	-
Underwriters Laboratories Inc®				

The materials covered in this database are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. THE FINAL ACCEPTANCE OF THE COMPONENT IS DEPENDENT UPON ITS INSTALLATION AND USE IN COMPLETE PRODUCTS SUBMITTED TO UNDERWRITERS LABORATORIES INC.

[Notice of Disclaimer](#)





# 邢台钢铁有限责任公司

XINGTAI IRON AND STEEL CORP., LTD

## 产品质量证明书

INSPECTION CERTIFICATE

地址: 河北省邢台市钢铁南路262号  
ADD: 262Gangtie Road, Xingtai, Hebei,  
China  
电话: (86)0319-2044055  
(TEL): (86)0319-2044626

邢钢质字(J)-070

订货单位 CUSTOMER	温州宏泰紧固件有限公司	证书号: CERTIFICATE NO	09016283	车号 TRAIN NO	4837702
收货单位 PURCHASER	温州宏泰紧固件有限公司	开证日期 DATE OF ISSUE	2009-03-11	重量合计(t) TOTAL WEIGHT	29.503
合同号: CONTRACT NO	XG-XS-09020142*	交货标准: SPECIFICATION	GB/T 6478-2001	盘数合计(件) TOTAL QTY	14.000

批号 HEAT NO	产品名称 PRODUCT	牌号 GRADE	规格 SIZE (mm)	盘数 (件) QTY	重量 WEIGHT (t)	化学成份 CHEMICAL COMPOSITION(%)						显微检验 M.E.T		
						C	Si	Mn	S	P	Alt	脱碳层 DEC (mm)	夹杂 INCLUSION (级)	晶粒度 G.S (级)
340901934	高速线材	ML08AL	Φ6.5mm	14	29.503	0.07	0.05	0.43	0.008	0.008	0.074	—	—	—

批 号 HEAT NO	拉伸试验 TENSILE TEST				冷弯试验 C.B.T	顶锻试验 C.H.T	硬 度 HARDNESS TEST			冲击试验 IMPACT TEST(J)	*低倍检验 MACROETCHING TEST	
	屈服强度 Rel. Y.S(MPa)	抗拉强度 Rm T.S(MPa)	伸长率 A E.L(%)	面缩率 Z R.A(%)							疏松 POROSITY(级)	偏析 SEGREGATION(级)
340901934	-	370	-	68.0	-	1/2合格	-	-	-	-	0.5	0

吊钩质量检验

材料检验

THE COPY OF THE INSPECTION CERTIFICATE IS INEFFECTIVE LEGALLY.

备注  
REMARK

1、质量证明书复印件不具有同等法律效应 THE COPY OF THE INSPECTION CERTIFICATE IS INEFFECTIVE LEGALLY.  
2、热轧交货 DELIVERY AFTER HOT ROLLING  
3、DEC=DECARBURIZATION C.H.T=COLD HEADING TEST G.S=GRAIN SIZE Y.S=YIELD STRENGTH T.S=TENSILE STRENGTH  
E.L=ELONGATION R.A=REDUCTION OF AREA C.B.T=COLD BEND TEST C.H.T=COLD HEADING TEST M.E.T=MICROSCOPIC EXAMINATING TEST

邢钢质字(J)-070  
材料检验专用章  
SEAL  
签证人: 李红艳  
VIAL  
签发人:

产品牌号		规格			状态	生产日期			生产批号
<u>H62</u>		<u>0.8<sup>*</sup>/1.0<sup>*</sup>/1.5<sup>*</sup>/1.4<sup>*</sup>/0.3/0.4*305</u>			Y <sub>2</sub>	2008.8			
化学成份					物理性能				技术执行标准
铜 (%)	锌 (%)	铅 (%)	磷 (%)	铁 (%)	抗拉强度 (N/mm <sup>2</sup> )	延伸率 (%)	维氏硬度 (HV)	深冲值 (mm)	按GB/T2059-2000 标准执行
60.5-62.0	37.9-39.4	≤0.05	≤0.006	≤0.12	/	/	110-130°	1.57	
签证人		签发日期			材料成份按GB2060-89标准执行，其厚度、板型、公差及表面均符合本公司出厂内控标准。				
蔡肖玲		2008.9.6							

产品牌号		规格			状态	生产日期			生产批号
H62		0.45/0.5/0.6 <sup>±</sup> /0.7 <sup>±</sup> *305			Y <sub>2</sub>	2008.8			
化学成份					物理性能				技术执行标准
铜 (%)	锌 (%)	铅 (%)	磷 (%)	铁 (%)	抗拉强度 (N/mm <sup>2</sup> )	延伸率 (%)	维氏硬度 (HV)	深冲值 (mm)	按GB/T2059-2000 标准执行
60.5~62.0	37.9~39.4	≤0.05	≤0.006	≤0.12	/	/	110~130	/	
签证人		签发日期			材料成份按GB2060-89标准执行, 其它如板型、公差及表面均符合本公司出厂内控标准。				
蔡肖玲		2008.9.6							



# Integration Report

Report No.: RLSZII110181253907

Page 1 of 14

**Applicant** : ANYTEK ELECTRONIC TECHNOLOGY (SZ) CO., LTD.

**Address** : A BUILDING NO.10, JIALE ROAD, CENTRAL COMMUNITY, PING-DIH STREET LONG KANG DISTRICT SHENZHEN GUANGDONG CHINA.

**Report on the submitted samples said to be:**

**Sample Name** : Rising Clamp System (升降式系列)

**P.O.No** : VN,ER,TV,VQ,ED,YO,YP,YQ,YA,T2,TP,ES,TZ,V3,TO,YC,EK,TU, TI,YD,VI,VJ,EQ,YE,YF,YR,YG,YS,YL,YM,EB,YB,YN,YH,YT,YI, KP,T7,KO,VV,KQ,VP,EJ,EL,E4,V4,VT,ER,TG,E6,K6,K7

**Sample Received Date** : Oct. 18, 2011

**Completed Date** : Oct. 20, 2011

**Client Requested** : As specified by client, to integrate the test reports submitted by client.

**List of component about product:** Please refer to the following page(s) .

**Integration results:** Please refer to the following page(s) .

Inspected by Vargas Approved by



Date Oct. 20, 2011

No. 33674268

# Integration Report

Report No.: RLSZI1110181253907

Page 2 of 14

List of component about product:

## Rising Clamp System (升降式系列)

Sample No.	Sample Names	Material	Sample Description	Report No.	Third Party	Tested Date
01	Terminal housing	NL66 Black Plastic	Black solid	RLSZD001050210009	CTI	Oct.12,2011
02	Terminal housing	NL66 White Plastic	White solid	RLSZD001050210008	CTI	Oct.12,2011
03	Terminal housing	NL66 Blue Plastic	Blue solid	RLSZD001050210003	CTI	Oct.12,2011
04	Terminal housing	NL66 Gray Plastic	Gray solid	RLSZD001050210007	CTI	Oct.12,2011
05	Terminal housing	NL66 Green Plastic	Green solid	RLSZD001050210002	CTI	Oct.12,2011
06	Terminal housing	NL66 Red Plastic	Red solid	RLSZD001050210005	CTI	Oct.12,2011
07	Terminal housing	NL66 Coffee Plastic	Coffee solid	RLSZD001050210006	CTI	Oct.12,2011
08	Terminal housing	NL66 Yellow Plastic	Yellow solid	RLSZD001050210001	CTI	Oct.12,2011
09	Terminal housing	NL66 Orange Plastic	Orange solid	RLSZD001050210004	CTI	Oct.12,2011
10	Terminal housing	NL46 Black Plastic	Black solid	RLSZD001050210012	CTI	Oct.12,2011
11	Terminal housing	PA6T Black Plastic	Black solid	RLSZD001050210010	CTI	Oct.12,2011
12	Terminal housing	PA6T Purple-red Plastic	Purple solid	RLSZD001050210011	CTI	Oct.12,2011
13	Terminal housing	PBT Blue Plastic	Blue solid	RLSZD001050210013	CTI	Oct.12,2011
14	Terminal housing	PBT Gray Plastic	Gray solid	RLSZD001050210014	CTI	Oct.12,2011
15	Terminal housing	PBT Green Plastic	Green solid	RLSZD001050210015	CTI	Oct.12,2011

# Integration Report

Report No.: RLSZII110181253907

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List of component about product:

## Rising Clamp System (升降式系列)

Sample No.	Sample Names	Material	Sample Description	Report No.	Third Party	Tested Date
16	Terminal housing	PBT Black Plastic	Black solid	RLSZD001050210016	CTI	Oct.12,2011
17	Terminal housing	PBT Orange Plastic	Orange solid	RLSZD001050210017	CTI	Oct.12,2011
18	Terminal housing	PBT Red Plastic	Red solid	RLSZD001050210018	CTI	Oct.12,2011
19	Terminal housing	PBT White Plastic	White solid	RLSZD001050210019	CTI	Oct.12,2011
20	Terminal housing	PBT Purple Plastic	Purple solid	RLSZD001050210020	CTI	Oct.12,2011
21	Terminal housing	PBT Coffee Plastic	Coffee solid	RLSZD001050210021	CTI	Oct.12,2011
22	Terminal housing	PPS Black Plastic	Black solid	RLSZD001050210022	CTI	Oct.12,2011
23	Terminal housing	PPS Beige-yellow Plastic	Beige solid	RLSZD001050210023	CTI	Oct.12,2011
24	Terminal housing	ABS Green Plastic	Green solid	RLSZD001050210024	CTI	Oct.12,2011
25	Terminal housing	PA9T Black Plastic	Black solid	RLSZD001050210025	CTI	Oct.12,2011
26	Terminal housing	PC Transparent Plastic	Transparent solid	RLSZD001050210026	CTI	Oct.12,2011
27	Male contact pin	C2680 (H65/H62) brass	Golden color metal	RLSZD001050210033	CTI	Oct.12,2011
28	Male contact pin/Flange nut	C3604 Copper alloy (Pb<40000ppm)	Golden color metal	RLSZD001050210028	CTI	Oct.12,2011
29	Male contact pin/Flange nut	C3601 Copper alloy (Pb<40000ppm)	Golden color metal	RLSZD001050210029	CTI	Oct.12,2011

# Integration Report

Report No.: RLSZI1110181253907

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List of component about product:

## Rising Clamp System (升降式系列)

Sample No.	Sample Names	Material	Sample Description	Report No.	Third Party	Tested Date
30	Male contact pin/Flange nut	C3601 Copper alloy (cd<5ppm)	Golden color metal	RLSZD001050210030	CTI	Oct.12,2011
31	Male contact pin/Flange nut	Copper alloy (Pb<100ppm)	Golden color metal	RLSZD001050210031	CTI	Oct.12,2011
32	Female contact	C1100 Pure Copper	Cupreous color metal	RLSZD001050210032	CTI	Oct.12,2011
33	Female contact	5210 phosphor bronze	Cupreous color metal	RLSZD001050210034	CTI	Oct.12,2011
34	Female contact	C5191 phosphor bronze	Cupreous color metal	RLSZD001050210035	CTI	Oct.12,2011
35	Female contact	K88 High conductive copper	Cupreous color metal	RLSZD001050210036	CTI	Oct.12,2011
36	Female contact	M702 High conductive copper	Cupreous color metal	RLSZD001050210037	CTI	Oct.12,2011
37	Clamp/Iron block	Spcc Iron plate	Silver-gray metal	RLSZD001050210039	CTI	Oct.12,2011
38	Terminal screw/Flange screw	C1018 Iron wire	Gray metal	RLSZD001050210027	CTI	Oct.12,2011

# Integration Report

Report No.: RLSZI1110181253907

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## Integration results:

No.  Limit	Content (mg/kg)					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBBs)	Polybrominated Diphenyl Ethers (PBDEs)
	1000 mg/kg	1000 mg/kg	100 mg/kg	1000 mg/kg	1000 mg/kg	1000 mg/kg
01	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
02	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
03	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
04	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
05	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
06	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
07	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
08	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
09	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
10	11	N.D.	N.D.	N.D.	N.D.	N.D.
11	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
13	12	N.D.	N.D.	N.D.	N.D.	N.D.
14	16	N.D.	N.D.	N.D.	N.D.	N.D.
15	8	N.D.	N.D.	N.D.	N.D.	N.D.
16	21	N.D.	N.D.	N.D.	N.D.	N.D.
17	19	N.D.	N.D.	N.D.	N.D.	N.D.
18	16	N.D.	N.D.	N.D.	N.D.	N.D.
19	23	N.D.	N.D.	N.D.	N.D.	N.D.
20	13	N.D.	N.D.	N.D.	N.D.	N.D.
21	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
22	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
23	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
24	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
25	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
26	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
27	38	N.D.	N.D.	/	/	/
28	29160 <sup>#</sup>	N.D.	24	/	/	/

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## Integration results:

No.  Limit	Content (mg/kg)					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBBs)	Polybrominated Diphenyl Ethers (PBDEs)
	1000 mg/kg	1000 mg/kg	100 mg/kg	1000 mg/kg	1000 mg/kg	1000 mg/kg
29	29320 <sup>#</sup>	N.D.	26	/	/	/
30	21810 <sup>#</sup>	N.D.	N.D.	/	/	/
31	26	N.D.	N.D.	/	/	/
32	N.D.	N.D.	N.D.	/	/	/
33	N.D.	N.D.	N.D.	/	/	/
34	84	N.D.	N.D.	/	/	/
35	N.D.	N.D.	N.D.	/	/	/
36	N.D.	N.D.	N.D.	/	/	/
37	N.D.	N.D.	N.D.	/	/	/
38	N.D.	N.D.	N.D.	/	/	/

Tested Item	Conclusion			
	No.27	No.28	No.29	No.30
Hexavalent Chromium (Cr(VI))	Negative	Negative	Negative	Negative

Tested Item	Conclusion			
	No.31	No.32	No.33	No.34
Hexavalent Chromium (Cr(VI))	Negative	Negative	Negative	Negative

Tested Item	Conclusion			
	No.35	No.36	No.37	No.38
Hexavalent Chromium (Cr(VI))	Negative	Negative	Negative	Negative



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## Integration results:

Tested Item(s)	Content (mg/kg)				
	No.01	No.02	No.03	No.04	No.05
<b>Three Phthalates</b>					
Dibutyl phthalate(DBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Butylbenzyl phthalate(BBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate(DEHP)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.06	No.07	No.08	No.09	No.10
<b>Three Phthalates</b>					
Dibutyl phthalate(DBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Butylbenzyl phthalate(BBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate(DEHP)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.11	No.12	No.13	No.14	No.15
<b>Three Phthalates</b>					
Dibutyl phthalate(DBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Butylbenzyl phthalate(BBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate(DEHP)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.16	No.17	No.18	No.19	No.20
<b>Three Phthalates</b>					
Dibutyl phthalate(DBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Butylbenzyl phthalate(BBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate(DEHP)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)					
	No.21	No.22	No.23	No.24	No.25	No.26
<b>Three Phthalates</b>						
Dibutyl phthalate(DBP)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Butylbenzyl phthalate(BBP)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Di-2-ethylhexyl phthalate(DEHP)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

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## Integration results:

Tested Item(s)	Content (mg/kg)				
	No.01	No.02	No.03	No.04	No.05
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.06	No.07	No.08	No.09	No.10
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.11	No.12	No.13	No.14	No.15
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.16	No.17	No.18	No.19	No.20
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)					
	No.21	No.22	No.23	No.24	No.25	No.26
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)					
	No.01	No.02	No.03	No.04	No.05	No.06
Dimethyl Fumarate(DMF)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)					
	No.07	No.08	No.09	No.10	No.11	No.12
Dimethyl Fumarate(DMF)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)						
	No.13	No.14	No.15	No.16	No.17	No.18	No.19
Dimethyl Fumarate(DMF)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)						
	No.20	No.21	No.22	No.23	No.24	No.25	No.26
Dimethyl Fumarate(DMF)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

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## Integration results:

Tested Item(s)	Content (mg/kg)				
	No.01	No.02	No.03	No.04	No.05
Perfluorooctanoic Acid(PFOA)	N.D.	N.D.	N.D.	N.D.	N.D.
Perfluorooctane Sulfonates(PFOS)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.06	No.07	No.08	No.09	No.10
Perfluorooctanoic Acid(PFOA)	N.D.	N.D.	N.D.	N.D.	N.D.
Perfluorooctane Sulfonates(PFOS)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.11	No.12	No.13	No.14	No.15
Perfluorooctanoic Acid(PFOA)	N.D.	N.D.	N.D.	N.D.	N.D.
Perfluorooctane Sulfonates(PFOS)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.16	No.17	No.18	No.19	No.20
Perfluorooctanoic Acid(PFOA)	N.D.	N.D.	N.D.	N.D.	N.D.
Perfluorooctane Sulfonates(PFOS)	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)					
	No.21	No.22	No.23	No.24	No.25	No.26
Perfluorooctanoic Acid(PFOA)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Perfluorooctane Sulfonates(PFOS)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.01	No.02	No.03	No.04	No.05
<b>Halogen(s)</b>					
Fluorine (F)	N.D.	N.D.	N.D.	N.D.	N.D.
Chlorine (Cl)	121	N.D.	N.D.	N.D.	214
Bromine (Br)	111	N.D.	N.D.	325	N.D.
Iodine (I)	N.D.	N.D.	N.D.	N.D.	N.D.

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## Integration results:

Tested Item(s)	Content (mg/kg)			
	No.06	No.07	No.08	No.09
<b>Halogen(s)</b>				
Fluorine (F)	N.D.	N.D.	N.D.	N.D.
Chlorine (Cl)	N.D.	130	277	235
Bromine (Br)	N.D.	N.D.	N.D.	N.D.
Iodine (I)	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.01	No.02	No.03	No.04	No.05
<b>Polycyclic Aromatic Hydrocarbons(PAHs)</b>					
Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthylene	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthene	N.D.	N.D.	N.D.	N.D.	N.D.
Fluorene	N.D.	N.D.	N.D.	N.D.	N.D.
Phenanthrene	N.D.	N.D.	N.D.	N.D.	N.D.
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Chrysene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[b]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[k]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Indeno[1,2,3-cd]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Dibenzo[a,h]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[g,h,i]perylene	N.D.	N.D.	N.D.	N.D.	N.D.

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## Integration results:

Tested Item(s)	Content (mg/kg)				
	No.06	No.07	No.08	No.09	No.10
<b>Polycyclic Aromatic Hydrocarbons(PAHs)</b>					
Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthylene	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthene	N.D.	N.D.	N.D.	N.D.	N.D.
Fluorene	N.D.	N.D.	N.D.	N.D.	N.D.
Phenanthrene	N.D.	N.D.	N.D.	N.D.	N.D.
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Chrysene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[b]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[k]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Indeno[1,2,3-cd]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Dibenzo[a,h]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[g,h,i]perylene	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)				
	No.11	No.12	No.13	No.14	No.15
<b>Polycyclic Aromatic Hydrocarbons(PAHs)</b>					
Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthylene	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthene	N.D.	N.D.	N.D.	N.D.	N.D.
Fluorene	N.D.	N.D.	N.D.	N.D.	N.D.
Phenanthrene	N.D.	N.D.	N.D.	N.D.	N.D.
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Chrysene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[b]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[k]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Indeno[1,2,3-cd]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Dibenzo[a,h]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[g,h,i]perylene	N.D.	N.D.	N.D.	N.D.	N.D.

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## Integration results:

Tested Item(s)	Content (mg/kg)				
	No.16	No.17	No.18	No.19	No.20
<b>Polycyclic Aromatic Hydrocarbons(PAHs)</b>					
Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthylene	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthene	N.D.	N.D.	N.D.	N.D.	N.D.
Fluorene	N.D.	N.D.	N.D.	N.D.	N.D.
Phenanthrene	N.D.	N.D.	N.D.	N.D.	N.D.
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Chrysene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[b]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[k]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Indeno[1,2,3-cd]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.
Dibenzo[a,h]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[g,h,i]perylene	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)					
	No.21	No.22	No.23	No.24	No.25	No.26
<b>Polycyclic Aromatic Hydrocarbons(PAHs)</b>						
Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Acenaphthene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Fluorene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Phenanthrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chrysene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[b]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[k]fluoranthene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[a]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Indeno[1,2,3-cd]pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Dibenzo[a,h]anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo[g,h,i]perylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.



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## Integration results:

Tested Item(s)	Content (mg/kg)					
	No.01	No.02	No.03	No.04	No.05	No.06
Arsenic (As)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)					
	No.07	No.08	No.09	No.10	No.11	No.12
Arsenic (As)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)					
	No.13	No.14	No.15	No.16	No.17	No.18
Arsenic (As)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)					
	No.19	No.20	No.21	No.22	No.23	No.24
Arsenic (As)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Tested Item(s)	Content (mg/kg)						
	No.25	No.26	No.27	No.28	No.29	No.30	No.31
Arsenic (As)	N.D.	N.D.	N.D.	33	56	N.D.	N.D.

Tested Item(s)	Content (mg/kg)						
	No.32	No.33	No.34	No.35	No.36	No.37	No.38
Arsenic (As)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

**Note:** -MDL = Method Detection Limit

-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

-Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm<sup>2</sup> sample surface area used.

# Integration Report

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**Remark: According to RoHS directive 2002/95/EC and 2011/534/EU**

**# Lead is exempted as an alloying element in Copper containing up to 4% (40000 mg/kg) by weight.**

**Disclaimer:**

- ★ The integration report is not equivalent to the chemical test report, all the test results are based on the test report submitted by the client.
- ★ If this disclaimer contradicts any other terms and conditions of CTI, this disclaimer will prevail.

\*\*\* End of report \*\*\*

This report is considered invalidated without the Special Seal for Inspection of the CTI. This report shall not be altered, increased or deleted. The results shown in this test report refer only to the sample(s) tested. Without written approval of CTI, this test report shall not be copied except in full and published as advertisement.

Building C, Hongwei Industrial Zone, Baoan 70 District, Shenzhen

File E202113  
Project 05CA14852

June 21, 2005

REPORT

On

COMPONENT - TERMINAL BLOCKS

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Taipei, Taiwan

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## DESCRIPTION

## PRODUCT COVERED:

USR, CNR      Component - Terminal Blocks

Cat. No. VI, followed by 02 or 03, followed by 0 through 5, followed by 0, 1, 2 or 3, followed by 0, 5, 6, 8 or C, followed by 0 thru 2, followed by two alphanumeric digits or blank.

Cat. No. VI, followed by 02 or 03, followed by 0 through 5, followed by 0, 1, 2 or 3, followed by 0, 5, 6, 8 or C, followed by 0 thru 2, followed by four alphanumeric digits, followed by F, G or H.

Cat. No. VI, followed by 02 thru 24, followed by 2, followed by 0, 1, 2 or 3, followed by 0, 5, 6, 8 or C, followed by 3, 4 or 5, followed by four alphanumeric digits, followed by F, G or H.

Cat. No. VI, followed by 02 thru 24, followed by 0, followed by 0 or 1, followed by 0, 5, 6, 8 or C, followed by 3, 4 or 5, followed by four alphanumeric digits, followed by F, G or H.

## GENERAL CHARACTER AND USE:

The terminal blocks covered by this Report are intended for use in the following applications and within the ratings specified.

## RATINGS:

Application - Commercial appliances (such as business and EDP equipment, etc.)

Terminal Type -

Series No.	Front	Back
VI	Pressure Wire Connector	Soldering Post

Type Wiring - Factory and Field wiring.

Series	Wire Range AWG	Wire Type	FW	Torque, in-lbs (N·m)	Voltage V	Current A	UG	CA
VI	12-28 Str/Sol	CU	2	3.5 (0.4)	300	16	B, D	2 (115), 4

**Note A - These limited ratings are applicable to a terminal block for use in or with industrial control equipment whereby the load on any single circuit of the terminal block does not exceed 15 A at 51-150 V, 10 A at 151-300 V, or 5 A at 301-600 V, or the maximum ampere rating, whichever is less.**

NOMENCLATURE - See ILLs. 1 and 19.

## TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Products designated USR have been investigated using requirements contained in UL 1059, the Standard for Terminal Blocks.

Products designated CNR have been investigated using requirements contained in Canadian Standard CSA C22.2 No. 158, Terminal Blocks.

## Conditions of Acceptability -

For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

1. The insulating bodies are molded of polymeric materials, as specified in the following tabulation. The suitability of these materials shall be determined in the end use application.

Series No.	Material Manufacturer Name and Grade Designation	Base Material Temperature Rating, °C
*VI	<b>Nilit Plastics Europe</b> GMBH & Co., KG, (E86034), Cat. No. A 63 V0.	115

2. The tightening torque of Cat. No. VI Series for field wiring pressure wire connector terminals is recorded in the Ratings section of this Report. This torque value shall be marked on the end-use product for those categories which require torque markings for field terminated conductors.

3. The field wiring terminals of terminal block Cat. No. VI Series have been evaluated using the Standard for Equipment Wiring Terminals For Use With Copper Conductor, UL486E. The suitability of these terminals shall be determined in the end-use investigation.

4. These terminal blocks consist of a construction that exposes the live parts underneath the terminal block. Spacings were not measured from the bottom of the live parts to the terminal block mounting surface since the terminal block is intended to be mounted to a circuit board (utilizes solder post). Spacing measurements are recommended as part of the end product investigation if the terminal is mounted to a surface other than a printed circuit or if printed circuit board traces are routed under the terminal block.

## CONSTRUCTION DETAILS:

The product shall be constructed in accordance with the following description.

Marking - See Sec. Gen for additional information. The marking of a terminal block shall include:

1. The Recognized Company name, trademark (a) or file number "E202113" and catalog numbers on the terminal block.
2. The catalog numbers, wire range, ampere and voltage rating on the terminal block, shipping carton, or stuffer sheet placed in the shipping carton.
3. The assigned torque values on the device, on the shipping carton, on a stuffer sheet within the shipping carton, or in the manufacturer's catalogue.

Corrosion Protection - All parts are of corrosion resistant material or are suitably plated to resist corrosion.

Spacings - The following minimum spacings in inches (millimeters) shall be maintained between uninsulated live parts of opposite polarity, uninsulated live parts, and uninsulated grounded parts other than the enclosure or exposed metal parts.

Series No.	V	Through Air	Over Surface
VI	151-300	(#) 3/32 (2.4)	(#) 3/32 (2.4)

(#) Note - The field wiring terminals of Cat. No. VI Series are provided with recessed terminal pockets to prevent projecting strands of wire.

Insulation Material - When the insulation parts are molded or fabricated from regrind materials, blending of material, use of pigment, colorants, flame retardants, or similar means, the parts shall be Recognized Component Fabricated Parts (QMMY2) and meet the following criteria. When a Recognized Component Fabricated Part is involved, the molder's ID should be on the part, on the parts carton or on a specification sheet with the carton. Also, on the part, shipping carton, specification sheet with the carton or invoice should be a parts ID (original equipment manufacturer's part designation), molding date and material ID.

Insulating Material Color - All insulating material are any color other than green and yellow.

Any copper alloy being utilized contains more than 80 percent copper and less than 15 percent zinc.



**DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**  
**of 27 January 2003**  
**on the restriction of the use of certain hazardous substances in electrical and electronic equipment**

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 95 thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(2)</sup>,

Having regard to the opinion of the Committee of Regions <sup>(3)</sup>,

Acting in accordance with the procedure laid down in Article 251 of the Treaty in the light of the joint text approved by the Conciliation Committee on 8 November 2002 <sup>(4)</sup>,

Whereas:

- (1) The disparities between the laws or administrative measures adopted by the Member States as regards the restriction of the use of hazardous substances in electrical and electronic equipment could create barriers to trade and distort competition in the Community and may thereby have a direct impact on the establishment and functioning of the internal market. It therefore appears necessary to approximate the laws of the Member States in this field and to contribute to the protection of human health and the environmentally sound recovery and disposal of waste electrical and electronic equipment.
- (2) The European Council at its meeting in Nice on 7, 8 and 9 December 2000 endorsed the Council Resolution of 4 December 2000 on the precautionary principle.
- (3) The Commission Communication of 30 July 1996 on the review of the Community strategy for waste management stresses the need to reduce the content of hazardous substances in waste and points out the potential benefits of Community-wide rules limiting the presence of such substances in products and in production processes.
- (4) The Council Resolution of 25 January 1988 on a Community action programme to combat environmental pollution by cadmium <sup>(5)</sup> invites the Commission to pursue without delay the development of specific measures for such a programme. Human health also has

to be protected and an overall strategy that in particular restricts the use of cadmium and stimulates research into substitutes should therefore be implemented. The Resolution stresses that the use of cadmium should be limited to cases where suitable and safer alternatives do not exist.

- (5) The available evidence indicates that measures on the collection, treatment, recycling and disposal of waste electrical and electronic equipment (WEEE) as set out in Directive 2002/96/EC of 27 January 2003 of the European Parliament and of the Council on waste electrical and electronic equipment <sup>(6)</sup> are necessary to reduce the waste management problems linked to the heavy metals concerned and the flame retardants concerned. In spite of those measures, however, significant parts of WEEE will continue to be found in the current disposal routes. Even if WEEE were collected separately and submitted to recycling processes, its content of mercury, cadmium, lead, chromium VI, PBB and PBDE would be likely to pose risks to health or the environment.
- (6) Taking into account technical and economic feasibility, the most effective way of ensuring the significant reduction of risks to health and the environment relating to those substances which can achieve the chosen level of protection in the Community is the substitution of those substances in electrical and electronic equipment by safe or safer materials. Restricting the use of these hazardous substances is likely to enhance the possibilities and economic profitability of recycling of WEEE and decrease the negative health impact on workers in recycling plants.
- (7) The substances covered by this Directive are scientifically well researched and evaluated and have been subject to different measures both at Community and at national level.
- (8) The measures provided for in this Directive take into account existing international guidelines and recommendations and are based on an assessment of available scientific and technical information. The measures are necessary to achieve the chosen level of protection of

<sup>(1)</sup> OJ C 365 E, 19.12.2000, p. 195 and OJ C 240 E, 28.8.2001, p. 303.

<sup>(2)</sup> OJ C 116, 20.4.2001, p. 38.

<sup>(3)</sup> OJ C 148, 18.5.2001, p. 1.

<sup>(4)</sup> Opinion of the European Parliament of 15 May 2001 (OJ C 34 E, 7.2.2002, p. 109), Council Common Position of 4 December 2001 (OJ C 90 E, 16.4.2002, p. 12) and Decision of the European Parliament of 10 April 2002 (not yet published in the Official Journal). Decision of the European Parliament of 18 December 2002 and Decision of the Council of 16 December 2002.

<sup>(5)</sup> OJ C 30, 4.2.1988, p. 1.

<sup>(6)</sup> See page 24 of this Official Journal.

human and animal health and the environment, having regard to the risks which the absence of measures would be likely to create in the Community. The measures should be kept under review and, if necessary, adjusted to take account of available technical and scientific information.

- (9) This Directive should apply without prejudice to Community legislation on safety and health requirements and specific Community waste management legislation, in particular Council Directive 91/157/EEC of 18 March 1991 on batteries and accumulators containing certain dangerous substances <sup>(1)</sup>.
- (10) The technical development of electrical and electronic equipment without heavy metals, PBDE and PBB should be taken into account. As soon as scientific evidence is available and taking into account the precautionary principle, the prohibition of other hazardous substances and their substitution by more environmentally friendly alternatives which ensure at least the same level of protection of consumers should be examined.
- (11) Exemptions from the substitution requirement should be permitted if substitution is not possible from the scientific and technical point of view or if the negative environmental or health impacts caused by substitution are likely to outweigh the human and environmental benefits of the substitution. Substitution of the hazardous substances in electrical and electronic equipment should also be carried out in a way so as to be compatible with the health and safety of users of electrical and electronic equipment (EEE).
- (12) As product reuse, refurbishment and extension of lifetime are beneficial, spare parts need to be available.
- (13) The adaptation to scientific and technical progress of the exemptions from the requirements concerning phasing out and prohibition of hazardous substances should be effected by the Commission under a committee procedure.
- (14) The measures necessary for the implementation of this Directive should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission <sup>(2)</sup>.

HAVE ADOPTED THIS DIRECTIVE:

#### Article 1

#### Objectives

The purpose of this Directive is to approximate the laws of the Member States on the restrictions of the use of hazardous substances in electrical and electronic equipment and to contri-

bute to the protection of human health and the environmentally sound recovery and disposal of waste electrical and electronic equipment.

#### Article 2

#### Scope

1. Without prejudice to Article 6, this Directive shall apply to electrical and electronic equipment falling under the categories 1, 2, 3, 4, 5, 6, 7 and 10 set out in Annex IA to Directive No 2002/96/EC (WEEE) and to electric light bulbs, and luminaires in households.
2. This Directive shall apply without prejudice to Community legislation on safety and health requirements and specific Community waste management legislation.
3. This Directive does not apply to spare parts for the repair, or to the reuse, of electrical and electronic equipment put on the market before 1 July 2006.

#### Article 3

#### Definitions

For the purposes of this Directive, the following definitions shall apply:

- (a) 'electrical and electronic equipment' or 'EEE' means equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields falling under the categories set out in Annex IA to Directive 2002/96/EC (WEEE) and designed for use with a voltage rating not exceeding 1 000 volts for alternating current and 1 500 volts for direct current;
- (b) 'producer' means any person who, irrespective of the selling technique used, including by means of distance communication according to Directive 97/7/EC of the European Parliament and of the Council of 20 May 1997 on the protection of consumers in respect of distance contracts <sup>(3)</sup>:
  - (i) manufactures and sells electrical and electronic equipment under his own brand;
  - (ii) resells under his own brand equipment produced by other suppliers, a reseller not being regarded as the 'producer' if the brand of the producer appears on the equipment, as provided for in subpoint (i); or
  - (iii) imports or exports electrical and electronic equipment on a professional basis into a Member State.

Whoever exclusively provides financing under or pursuant to any finance agreement shall not be deemed a 'producer' unless he also acts as a producer within the meaning of subpoints (i) to (iii).

<sup>(1)</sup> OJ L 78, 26.3.1991, p. 38. Directive as amended by Commission Directive 98/101/EC (OJ L 1, 5.1.1999, p. 1).

<sup>(2)</sup> OJ L 184, 17.7.1999, p. 23.

<sup>(3)</sup> OJ L 144, 4.6.1997, p. 19. Directive as amended by Directive 2002/65/EC (L 271, 9.10.2002, p. 16).

## Article 4

**Prevention**

1. Member States shall ensure that, from 1 July 2006, new electrical and electronic equipment put on the market does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). National measures restricting or prohibiting the use of these substances in electrical and electronic equipment which were adopted in line with Community legislation before the adoption of this Directive may be maintained until 1 July 2006.

2. Paragraph 1 shall not apply to the applications listed in the Annex.

3. On the basis of a proposal from the Commission, the European Parliament and the Council shall decide, as soon as scientific evidence is available, and in accordance with the principles on chemicals policy as laid down in the Sixth Community Environment Action Programme, on the prohibition of other hazardous substances and the substitution thereof by more environment-friendly alternatives which ensure at least the same level of protection for consumers.

## Article 5

**Adaptation to scientific and technical progress**

1. Any amendments which are necessary in order to adapt the Annex to scientific and technical progress for the following purposes shall be adopted in accordance with the procedure referred to in Article 7(2):

- (a) establishing, as necessary, maximum concentration values up to which the presence of the substances referred to in Article 4(1) in specific materials and components of electrical and electronic equipment shall be tolerated;
- (b) exempting materials and components of electrical and electronic equipment from Article 4(1) if their elimination or substitution via design changes or materials and components which do not require any of the materials or substances referred to therein is technically or scientifically impracticable, or where the negative environmental, health and/or consumer safety impacts caused by substitution are likely to outweigh the environmental, health and/or consumer safety benefits thereof;
- (c) carrying out a review of each exemption in the Annex at least every four years or four years after an item is added to the list with the aim of considering deletion of materials and components of electrical and electronic equipment from the Annex if their elimination or substitution via design changes or materials and components which do not require any of the materials or substances referred to in

Article 4(1) is technically or scientifically possible, provided that the negative environmental, health and/or consumer safety impacts caused by substitution do not outweigh the possible environmental, health and/or consumer safety benefits thereof.

2. Before the Annex is amended pursuant to paragraph 1, the Commission shall *inter alia* consult producers of electrical and electronic equipment, recyclers, treatment operators, environmental organisations and employee and consumer associations. Comments shall be forwarded to the Committee referred to in Article 7(1). The Commission shall provide an account of the information it receives.

## Article 6

**Review**

Before 13 February 2005, the Commission shall review the measures provided for in this Directive to take into account, as necessary, new scientific evidence.

In particular the Commission shall, by that date, present proposals for including in the scope of this Directive equipment which falls under categories 8 and 9 set out in Annex IA to Directive 2002/96/EC (WEEE).

The Commission shall also study the need to adapt the list of substances of Article 4(1), on the basis of scientific facts and taking the precautionary principle into account, and present proposals to the European Parliament and Council for such adaptations, if appropriate.

Particular attention shall be paid during the review to the impact on the environment and on human health of other hazardous substances and materials used in electrical and electronic equipment. The Commission shall examine the feasibility of replacing such substances and materials and shall present proposals to the European Parliament and to the Council in order to extend the scope of Article 4, as appropriate.

## Article 7

**Committee**

1. The Commission shall be assisted by the Committee set up by Article 18 of Council Directive 75/442/EEC <sup>(1)</sup>.

2. Where reference is made to this paragraph, Articles 5 and 7 of Decision 1999/468/EC shall apply, having regard to Article 8 thereof.

The period provided for in Article 5(6) of Decision 1999/468/EC shall be set at three months.

3. The Committee shall adopt its rules of procedure.

<sup>(1)</sup> OJ L 194, 25.7.1975, p. 39.

*Article 8***Penalties**

Member States shall determine penalties applicable to breaches of the national provisions adopted pursuant to this Directive. The penalties thus provided for shall be effective, proportionate and dissuasive.

*Article 9***Transposition**

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before 13 August 2004. They shall immediately inform the Commission thereof.

When Member States adopt those measures, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. The methods of making such a reference shall be laid down by the Member States.

2. Member States shall communicate to the Commission the text of all laws, regulations and administrative provisions adopted in the field covered by this Directive.

*Article 10***Entry into force**

This Directive shall enter into force on the day of its publication in the *Official Journal of the European Union*.

*Article 11***Addressees**

This Directive is addressed to the Member States.

Done at Brussels, 27 January 2003.

*For the European Parliament*

*The President*

P. COX

*For the Council*

*The President*

G. DRYG

## ANNEX

**Applications of lead, mercury, cadmium and hexavalent chromium, which are exempted from the requirements of Article 4(1)**

1. Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.
2. Mercury in straight fluorescent lamps for general purposes not exceeding:
  - halophosphate 10 mg
  - triphosphate with normal lifetime 5 mg
  - triphosphate with long lifetime 8 mg.
3. Mercury in straight fluorescent lamps for special purposes.
4. Mercury in other lamps not specifically mentioned in this Annex.
5. Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.
6. Lead as an alloying element in steel containing up to 0,35 % lead by weight, aluminium containing up to 0,4 % lead by weight and as a copper alloy containing up to 4 % lead by weight.
7. — Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85 % lead),
  - lead in solders for servers, storage and storage array systems (exemption granted until 2010),
  - lead in solders for network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunication,
  - lead in electronic ceramic parts (e.g. piezoelectronic devices).
8. Cadmium plating except for applications banned under Directive 91/338/EEC <sup>(1)</sup> amending Directive 76/769/EEC <sup>(2)</sup> relating to restrictions on the marketing and use of certain dangerous substances and preparations.
9. Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators.
10. Within the procedure referred to in Article 7(2), the Commission shall evaluate the applications for:
  - Deca BDE,
  - mercury in straight fluorescent lamps for special purposes,
  - lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunications (with a view to setting a specific time limit for this exemption), and
  - light bulbs,as a matter of priority in order to establish as soon as possible whether these items are to be amended accordingly.

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<sup>(1)</sup> OJ L 186, 12.7.1991, p. 59.

<sup>(2)</sup> OJ L 262, 27.9.1976, p. 201.