




規格承認書  
APPROVAL SHEET

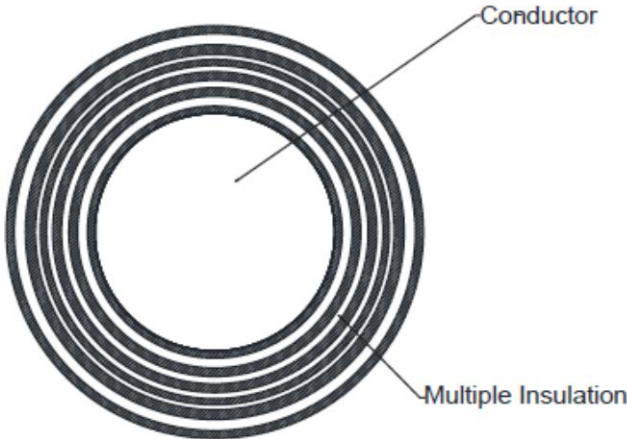
适用标准:	<input type="checkbox"/>	UL/CSA	<input type="checkbox"/>	EN	<input type="checkbox"/>	BS	<input type="checkbox"/>	SAA	<input type="checkbox"/>	GB
Standard type:	<input type="checkbox"/>	PSE	<input type="checkbox"/>	KS	<input type="checkbox"/>	IRAM	<input type="checkbox"/>	NBR	<input checked="" type="checkbox"/>	IEC
品名: Part name:	完全绝缘线									
客户名称: Customer:										
产品编码: Part number:	FIW3-9 series, Fully Insulated Wire									
规格描述: Description:	FIW3-9									
日期: Date:	2023.2.20									
制作 (Prepared by)	审核 (Checked by)			批准 (Approved by)			盖章 (Stamped)			
Hui Jiang	Yongxiang Gao			Yongxiang Gao						
客户确认签回栏 (confirmed & signed back by Customer)										
检验 (Inspected by)	审核 (Checked by)			核准 (Approved by)			盖章 (Stamped)			

1. 适用范围 Scope

此规格是依据 IEC 60317-56 相关安规要求而设计，主要应用于电子设备及电器用绕线或配线。

This specification is designed based on the safety requirements of IEC 60317-56, which is used for windings and wirings of electrical machines and apparatus.

2. 产品结构 Structure of the wire

项目 Item		摘要 Summary	
1	导体 Conductor	材质 Material	铜线 Bare Copper
2	绝缘 Insulation	材质 Material	Polyurethane
3	结构简图 Figure		

### 3. 特性 Characteristics

特性参见表 1

The characteristics shall be as given in Table 1.

### 4. 检查 Inspection

检查分为抽样检查和出货检查, 根据表 1 规定的项目和测试方法进行。

The inspection is consisted of sampling inspection and OQC inspection, using the testing methods stated in Table 1.

### 5. 标记 Marking

线轴及包装上的适当地方, 必须标记出以下事项。

The following items shall be marked on each bobbin at appropriate position.

- (1) 品名规格 Product description
- (2) 颜色 (除黄色外) Color (not including yellow)
- (3) 长度 Length
- (4) 轴号 Bobbin number
- (5) 生产日期 The date of manufacturer
- (6) 制造商名称 Manufacturer's name

## 6. 客户存放注意事项 Notes of storage for customer

建议客户在以下的条件下进行 FIW 线的存放。

打开包装后，必须将 FIW 线尽快使用。

存放包装好的 FIW 产品时，应避开高温高湿，日光直射的场所，同时应防止灰尘。

When the wire is stored by the customer, the following conditions are recommended. The unpacked wire should be used promptly. The packed wire should be stored avoiding high humidity, high temperature, sunshine, and dust.

温度 Temperature	湿度 Relative Humidity	保管期限 Storage Term	备注 Remark
-25 ~ 45°C	5 ~ 75%	1 年 One year	超过存放期限后，建议进行耐电压，绝缘击穿，可挠性的检查。 Please check the Withstand voltage, Breakdown voltage, Flexibility when storage is out of the storage time.

## 7. 包装及重量 Packaging and Weight

### 7.1 包装 Packaging

根据导体的直径，确定适当的线轴大小，选用适当的包装方法,以防止运输过程受伤，松散和打结。

The wires shall be wound on suitable bobbin, and adequately packaged to avoid scratch, loosening or tangle during transportation.

### 7.2 重量 Weight

重量换算请参考表 5 Conversion of weight please refer to Table 5

Table 1 Specification

项目 Item	特性 Characteristics	参考标准 Standard	检查 Inspection	
			抽样检查 Sampling inspection	出货检查 OQC inspection
1	外观 Appearance 光滑、均匀、不易剥落 Smooth, uniformity and the film coating is not removing easily	IEC 60317-0-7 part 3.3	○	○
2	尺寸 Dimensions 与表 2 的数值一致 As specified in Table 2	IEC 60317-0-7 part 4 IEC 60851-2.3	○	○
3	导体电阻 Conductor Resistance 与表 2 的数值一致 As specified in Table 2	IEC 60317-0-7 part 5 IEC 60851-5.3	○	○
4	伸长率 Elongation 与表 3 的数值一致 As specified in Table 3	IEC 60317-0-7 part 5 IEC 60851-3.1	○	—
5	绝缘击穿电压 Breakdown Voltage 与表 3 的数值一致 As specified in Table 3	IEC 60317-0-7 part 14 IEC 60851-5.4	○	○
6	耐软化 Resistance to cut through 245°C 以上 Not less than 245°C	IEC 60317-0-7 part 10 IEC 60851-6.4	○	—
7	可挠性 Flexibility 通过皮膜上的龟裂, 看不到导体 Film coating shall show no cracking	IEC 60317-0-7 part 8 IEC 60851-3.5	○	—
8	耐热冲击 (200°C /30Min) Resistance to heat shock 通过皮膜上的龟裂, 看不到导体, 与表 4 的数值一致 Film coating shall show no cracking, as specified in Table 4	IEC 60317-0-7 part 9 IEC 60851-6.3.1	○	—
9	可焊性 Solderability 390 ± 5°C 可以焊锡 Able to solder at 390 ± 5°C	IEC 60317-0-7 part 17 IEC 60 851-4.5	○	—
10	额定工作电压 Working Voltage Max. 600 Vrms, 848 Vpeak	IEC 61558	○	—

Table 2 Dimensions of FIW

Nominal Diameter (mm)	Tolerance (±mm)	Max. Resistance (Ω/m)	Overall Diameter													
			FIW3		FIW4		FIW5		FIW6		FIW7		FIW8		FIW9	
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
			mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
0.080	0.003	3.703	0.102	0.108	0.109	0.122	0.123	0.136	0.137	0.150	0.151	0.164	0.165	0.178	0.179	0.192
0.090	0.003	2.900	0.114	0.120	0.121	0.134	0.135	0.148	0.149	0.162	0.163	0.176	0.177	0.190	0.191	0.204
0.100	0.003	2.333	0.126	0.132	0.133	0.148	0.149	0.164	0.165	0.180	0.181	0.196	0.197	0.212	0.213	0.228
0.110	0.003	1.917	0.138	0.145	0.146	0.162	0.163	0.179	0.180	0.196	0.197	0.213	0.214	0.230	0.231	0.247
0.112	0.003	1.848	0.140	0.147	0.148	0.164	0.165	0.181	0.182	0.198	0.199	0.215	0.216	0.232	0.233	0.249
0.120	0.003	1.604	0.150	0.158	0.159	0.176	0.177	0.194	0.195	0.212	0.213	0.230	0.231	0.248	0.249	0.266
0.125	0.003	1.475	0.155	0.163	0.164	0.181	0.182	0.199	0.200	0.217	0.218	0.235	0.236	0.253	0.254	0.271
0.127	0.003	1.428	0.158	0.166	0.167	0.186	0.187	0.206	0.207	0.226	0.227	0.246	0.247	0.266	0.267	0.286
0.130	0.003	1.361	0.161	0.169	0.170	0.189	0.190	0.209	0.210	0.229	0.230	0.249	0.250	0.269	0.270	0.289
0.140	0.003	1.170	0.172	0.181	0.182	0.201	0.202	0.221	0.222	0.241	0.242	0.261	0.262	0.281	0.282	0.301
0.150	0.003	1.0159	0.183	0.193	0.194	0.215	0.216	0.237	0.238	0.259	0.260	0.281	0.282	0.303	0.304	0.325
0.160	0.003	0.8906	0.195	0.205	0.206	0.227	0.228	0.249	0.250	0.271	0.272	0.293	0.294	0.315	0.316	0.337
0.180	0.003	0.7007	0.218	0.229	0.230	0.253	0.254	0.277	0.278	0.301	0.302	0.325	0.326	0.349	0.350	0.373
0.200	0.003	0.5657	0.240	0.252	0.253	0.277	0.278	0.302	0.303	0.327	0.328	0.352	0.353	0.377	0.378	0.402
0.220	0.003	0.4662	0.263	0.276	0.277	0.303	0.304	0.330	0.331	0.357	0.358	0.384	0.385	0.411	0.412	0.438
0.224	0.003	0.4495	0.267	0.280	0.281	0.307	0.308	0.334	0.335	0.361	0.362	0.388	0.389	0.415	0.416	0.442
0.226	0.003	0.4414	0.273	0.288	0.289	0.318	0.319	0.348	0.349	0.378	0.379	0.408	0.409	0.438	0.439	0.468
0.250	0.004	0.3628	0.298	0.312	0.313	0.342	0.343	0.372	0.373	0.402	0.403	0.432	0.433	0.462	0.463	0.492
0.280	0.004	0.2882	0.330	0.345	0.346	0.376	0.377	0.407	0.408	0.438	0.439	0.469	0.470	0.500	0.501	0.531
0.300	0.004	0.2506	0.353	0.369	0.370	0.400	0.401	0.431	0.432	0.462	0.463	0.493	0.494	0.524	0.525	0.555
0.315	0.004	0.2270	0.368	0.384	0.385	0.415	0.416	0.446	0.447	0.477	0.478	0.508	0.509	0.539	0.540	0.570
0.320	0.004	0.2198	0.377	0.393	0.394	0.424	0.425	0.455	0.456	0.486	0.487	0.517	0.518	0.548	0.549	0.579
0.330	0.004	0.2066	0.387	0.403	0.404	0.434	0.435	0.465	0.466	0.496	0.497	0.527	0.528	0.558	0.559	0.589
0.340	0.004	0.1944	0.397	0.413	0.414	0.444	0.445	0.475	0.476	0.506	0.507	0.537	0.538	0.568	0.569	0.599
0.355	0.004	0.1782	0.412	0.428	0.429	0.459	0.460	0.490	0.491	0.521	0.522	0.552	0.553	0.583	0.584	0.614
0.400	0.005	0.1407	0.460	0.478	0.479	0.509	0.510	0.540	0.541	0.571	0.572	0.602	0.603	0.633		

Nominal Diameter (mm)	Tolerance (±mm)	Max. Resistance (Ω/m)	Overall Diameter											
			FIW3		FIW4		FIW5		FIW6		FIW7		FIW8	
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
			mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
0.450	0.005	0.1109	0.514	0.533	0.534	0.564	0.565	0.595	0.596	0.626	0.627	0.657	0.658	0.688
0.455	0.005	0.1084	0.522	0.542	0.543	0.583	0.584	0.624	0.625	0.665	0.666	0.706	0.707	0.737
0.500	0.005	0.08959	0.567	0.587	0.588	0.628	0.629	0.669	0.670	0.710	0.711	0.751		
0.560	0.006	0.07153	0.631	0.653	0.654	0.694	0.695	0.735	0.736	0.776	0.777	0.817		
0.630	0.006	0.05638	0.705	0.728	0.729	0.769	0.770	0.810	0.811	0.851	0.852	0.892		
0.650	0.007	0.05310	0.730	0.754	0.755	0.795	0.796	0.836	0.837	0.877	0.878	0.918		
0.710	0.007	0.04442	0.790	0.814	0.815	0.855	0.856	0.896	0.897	0.937	0.938	0.978		
0.800	0.008	0.03500	0.885	0.911	0.912	0.962	0.963	1.013	1.014	1.064				
0.900	0.009	0.02765	0.990	1.018	1.019	1.069	1.070	1.120	1.121	1.171				
1.000	0.010	0.02240	1.095	1.124	1.125	1.175	1.176	1.226	1.227	1.277				
1.120	0.011	0.01786	1.218	1.248	1.249	1.309	1.310	1.370						
1.250	0.013	0.01435	1.350	1.381	1.382	1.442	1.443	1.503						

Table 3 Breakdown Voltage

Nominal Diameter (mm)	Elongation Min. Percentage (%)	Dielectric Strength, Min. Breakdown						
		FIW3 Min.(v)	FIW4 Min.(v)	FIW5 Min.(v)	FIW6 Min.(v)	FIW7 Min.(v)	FIW8 Min.(v)	FIW9 Min.(v)
0.080	14	1782	2349	3483	4617	5751	6885	8019
0.090	15	1944	2511	3645	4779	5913	7047	8181
0.100	16	2106	2673	3969	5265	6561	7857	9153
0.110	17	2128	2736	4028	5320	6612	7904	9196
0.112	17	2128	2736	4028	5320	6612	7904	9196
0.120	17	2280	2964	4332	5700	7068	8436	9804
0.125	17	2280	2964	4332	5700	7068	8436	9804
0.127	18	2356	3040	4560	6080	7600	9120	10640
0.130	18	2356	3040	4560	6080	7600	9120	10640
0.140	18	2432	3192	4712	6232	7752	9272	10792
0.150	19	2508	3344	5016	6688	8360	10032	11704
0.160	19	2660	3496	5168	6840	8512	10184	11856
0.180	20	2888	3800	5624	7448	9272	11096	12920
0.200	21	3040	4028	5928	7828	9728	11628	13528
0.220	21	3268	4332	6384	8436	10488	12540	14592
0.224	21	3268	4332	6384	8436	10488	12540	14592
0.226	22	3572	4788	7068	9348	11628	13908	16188
0.250	22	3648	4788	7068	9348	11628	13908	16188
0.280	22	3800	5016	7372	9728	12084	14440	16796
0.300	23	4028	5320	7676	10032	12388	14744	17100
0.315	23	4028	5320	7676	10032	12388	14744	17100
0.320	23	4332	5624	7980	10336	12692	15048	17404
0.330	23	4332	5624	7980	10336	12692	15048	16030
0.340	23	4332	5624	7980	10336	12692	15048	16030
0.355	23	4332	5624	7980	10336	12692	15048	16030
0.400	24	4200	5530	7700	9870	12040	14210	
0.450	25	4480	5880	8050	10220	12390	14560	
0.455	25	4690	6688	9030	11900	14770	17640	
0.500	25	4690	6160	9030	11900	14770		
0.560	26	3763	4982	7155	9328	11501		
0.630	27	3975	5247	7420	9593	11766		
0.650	28	4240	5565	7738	9911	12084		
0.710	28	4240	5565	7738	9911	12084		
0.800	28	4505	5936	8109	10282			
0.900	29	4770	6307	8480	10653			
1.000	30	5035	6625	8798	10971			
1.120	30	4406	6603	8930				
1.250	31	4700	6204	9071				



Table 4 Heat shock

Nominal Diameter (mm)	Mandrel diameter						
	Overall diameter range						
	FIW3	FIW4	FIW5	FIW6	FIW7	FIW8	FIW9
0.08-0.112	0.150	0.200	0.200	0.200	0.200	0.200	0.200
0.112-0.140	0.150	0.300	0.300	0.300	0.300	0.300	0.300
0.160	0.250	0.450	0.450	0.450	0.560	0.560	0.560
0.180	0.280	0.450	0.450	0.450	0.560	0.560	0.560
0.200	0.315	0.450	0.450	0.450	0.560	0.560	0.560
0.224	0.355	0.630	0.630	0.800	0.800	1.000	1.000
0.250	0.400	0.630	0.630	0.800	0.800	1.000	1.000
0.280	0.630	0.630	0.630	0.800	0.800	1.000	1.000
0.315	0.710	1.000	1.000	1.250	1.250	1.600	1.600
0.320	0.800	1.000	1.000	1.250	1.250	1.600	1.600
0.355	0.800	1.000	1.000	1.250	1.250	1.600	1.600
0.400	0.900	1.000	1.000	1.250	1.250	1.600	
0.450	1.000	1.120	1.120	1.800	2.000	2.000	
0.500	1.120	1.120	1.120	1.800	2.000		
0.560	1.250	1.400	1.400	1.800	2.000		
0.630	1.400	2.000	2.000	2.800	2.800		
0.710	1.600	2.000	2.000	2.800	2.800		
0.800	1.800	2.240	3.550	4.000			
0.900	2.000	4.000	5.000	6.000			
1.000	2.240	4.000	5.000	6.000			
1.120	3.550	4.000	5.000	6.000			
1.250	4.000	4.000	5.000				

NOTE: For intermediate nominal conductor diameters, the mandrel diameter of the next largest nominal conductor diameter shall be taken.

Table 5 Weight in kg for 1 km of FIW wire

Nominal Diameter (mm)	FIW3	FIW4	FIW5	FIW6	FIW7	FIW8	FIW9
	kg/km	kg/km	kg/km	kg/km	kg/km	kg/km	kg/km
0.080	0.049	0.052	0.056	0.060	0.064	0.068	0.073
0.090	0.062	0.065	0.069	0.074	0.078	0.083	0.088
0.100	0.077	0.080	0.085	0.091	0.096	0.102	0.108
0.110	0.092	0.097	0.102	0.108	0.115	0.122	0.129
0.112	0.096	0.100	0.106	0.113	0.118	0.125	0.133
0.120	0.111	0.115	0.122	0.129	0.136	0.144	0.152
0.125	0.119	0.124	0.131	0.139	0.145	0.153	0.162
0.127	0.123	0.128	0.136	0.144	0.152	0.162	0.172
0.130	0.130	0.134	0.141	0.150	0.158	0.168	0.178
0.140	0.149	0.155	0.164	0.173	0.180	0.191	0.201
0.150	0.170	0.178	0.188	0.199	0.207	0.219	0.232
0.160	0.194	0.202	0.212	0.224	0.232	0.245	0.258
0.180	0.244	0.254	0.267	0.281	0.291	0.306	0.323
0.200	0.300	0.312	0.327	0.342	0.354	0.371	0.389
0.220	0.365	0.373	0.394	0.407	0.425	0.446	0.467
0.224	0.376	0.386	0.407	0.421	0.439	0.460	0.481
0.226	0.384	0.397	0.419	0.435	0.457	0.482	0.507
0.250	0.468	0.479	0.507	0.522	0.545	0.571	0.597
0.280	0.584	0.600	0.625	0.648	0.671	0.701	0.730
0.300	0.670	0.688	0.713	0.740	0.763	0.797	0.825
0.315	0.736	0.755	0.782	0.808	0.833	0.868	0.896
0.320	0.762	0.782	0.809	0.838	0.869	0.902	0.937
0.330	0.809	0.830	0.857	0.879	0.910	0.948	0.976
0.340	0.857	0.878	0.906	0.930	0.960	0.997	1.027
0.355	0.932	0.954	0.988	1.013	1.038	1.076	1.107
0.400	1.179	1.205	1.243	1.266	1.298	1.340	
0.450	1.488	1.517	1.552	1.584	1.620	1.665	
0.455	1.524	1.555	1.616	1.648	1.699	1.762	
0.500	1.831	1.869	1.922	1.962	2.020		
0.560	2.291	2.335	2.394	2.439	2.500		
0.630	2.892	2.941	3.006	3.081	3.123		
0.650	3.082	3.134	3.201	3.268	3.322		
0.710	3.663	3.719	3.791	3.864	3.921		
0.800	4.640	4.705	4.799	4.882			
0.900	5.860	5.934	6.023	6.137			
1.000	7.222	7.303	7.412	7.524			
1.120	9.033	9.126	9.289				
1.250	11.223	11.326	11.506				