



# Richardson Electronics

Engineered Solutions

## Avionics Components & Equipment Guide



# About Richardson

Richardson Electronics continues to support the avionics industry with our vast inventory of high quality avionics components used in equipment manufactured by Allied Signal/Honeywell, Rockwell Collins, and several other OEMs.

Richardson Electronics' distribution centers in the U.S. and Europe are ISO 9002 registered and are committed to providing the highest standard of quality and service to its customers. The Company has a presence in 50 countries through more than 70 sales offices and 36 stocking locations. Furthermore, AOG requirements are fulfilled by offering 24-hour emergency service.



*Richardson Electronics' Corporate Headquarters in LaFox, Illinois.*

## TSOA & PMA Certification

(TSOA) Technical Standard Order Authorization & (PMA) Parts Manufacturers' Approval

Richardson Electronics is able to meet FAA and foreign government regulations by supplying documentation requirements on TSOA and PMA certified parts for traceability. Additionally, as the exclusive distributor of Litton airborne weather magnetrons, we can supply TSOA certification for all Litton airborne weather magnetrons.

The TSOA documents provide a matrix outlining traceability for weather radar magnetrons to the Original Equipment Manufacturers (OEM) weather radar system. TSOA certification conforms to the Federal Aviation Regulations (FAR) Part 21. Subpart O; Technical Standard Order Authorization (TSOA) and is in accordance with (FAR) Technical Standard Order TSO-C63C, Airborne Weather and Ground Mapping Pulsed Radar.

PMA documents also trace components to the (OEM) systems. PMA certification conforms to the Federal Aviation Regulations (FAR) Part 21.303 for Parts Manufacturing Approval. It is also in accordance with (FAR) Part 45.15, Replacement and Modification Parts.

## Tubes, Power Tetrodes

Richardson supplies a wide range of tetrodes used in communication equipment and flight simulators for commercial and military applications.

Part Number	OEM Number or Fed. Stocking No.	Part Number	OEM Number or Fed. Stocking No.	Part Number	OEM Number or Fed. Stocking No.
4657	65-83999G01	4CX250FG/8621	256-0169-010 254-0981-000 256-0147-000	8560AS	65-83382D02 65-83382D03
8121	256-0145-000	4CX350A/8321	374-0102-000 256-0148-010	8930/DX393A	—
4CX1500B/8660	7164415P66 V12-0002-000 600023-423-001 10257042	4CX350AC	—	8930-JAN	—
4CX1500BM/Y757	256-0193-010	4PR65A/8187	—	Y152	—
4CX250BM	—	6884-JAN	254-0983-000 256-0118-000	Y584	256-0185-011

*The products listed above only represent a portion of the products available from Richardson Electronics. Call with your requirements.*

# Magnetrons

Richardson stocks the widest selection of commercial replacement weather radar magnetrons in the world. These magnetrons can be used in airborne, weather, ground or military radar applications. They are available in X , S , C and Ku band. All Litton airborne weather magnetrons are TSOA approved.



Part Number	OEM Number or Fed. Stocking No.
<b>2J42H/QKH1806</b>	1712169-1
<b>5586</b>	5960-00-166-7692
<b>5657</b>	5960-00-166-7693
<b>5795</b>	—
<b>6510</b>	4J52A 5960-00-669-6807 5960-99-000-5018 5960-00-206-3386 5960-99-037-5146
<b>6517</b>	5960-00-061-0484
<b>7006</b>	5960-00-889-4077
<b>7008</b>	5960-00-583-0872 5940-00-892-0609 F1103A
<b>7208</b>	5960-00-882-4424
<b>4J52A-JAN</b>	5960-00-669-6807
<b>5J26</b>	5960-21-862-3471
<b>6027H</b>	5960-99-714-5244
<b>6344A/QK235</b>	—
<b>6521A</b>	1717613-1
<b>6M70</b>	—
<b>7156A</b>	QK662A
<b>DX276</b>	5960-00-763-6751
<b>ET120</b>	5960-00-905-2718
<b>ET128</b>	5960-99-118-8791
<b>ET128A/M5052</b>	5960-99-118-8791
<b>ET128B/M5051</b>	5960-99-118-0159
<b>ET130</b>	QKH1709
<b>ET131D</b>	5960-01-113-4309 SFD354H
<b>L3106/L3106A</b>	—
<b>L3431A</b>	1710028-4

Part Number	OEM Number or Fed. Stocking No.
<b>L4193A/7008</b>	5960-01-210-8284
<b>L4193B</b>	—
<b>L4193H/7008</b>	—
<b>L4194</b>	—
<b>L4495</b>	—
<b>L4570</b>	167362
<b>L4581</b>	5960-01-046-4482 VMX1090
<b>L4601C/MG5254</b>	4005433-0001 3611710-0001
<b>L4642/L4642A</b>	4004505-0002
<b>L4651</b>	3601715-0001 021-00076-0000
<b>L4652B</b>	3718389-1
<b>L4666</b>	—
<b>L4667A</b>	3718495-1 3718495-2
<b>L4675</b>	—
<b>L4681</b>	—
<b>L4693</b>	3603247-0001 5960-01-112-827
<b>L4695</b>	257-0261-020 842-0001-010
<b>L4697A</b>	257-0261-010
<b>L4698B</b>	3718621-6
<b>L4702</b>	021-0057-00101
<b>L4704</b>	3718389-3
<b>L4706</b>	021-00084-0002
<b>L4727</b>	1006053 1717613-1 5960-01-224-7151
<b>L4733S</b>	—
<b>L4798A</b>	—

Part Number	OEM Number or Fed. Stocking No.
<b>L4800</b>	3718621-7
<b>L4942/QKH2039</b>	1712169-2
<b>L5047</b>	2068364-0701
<b>L5191</b>	1717527-1
<b>L5274/L5274B</b>	1718011-1
<b>L5362B</b>	4004505-0001
<b>L5536A</b>	1718640C 5960-01-070-0696
<b>L6344A</b>	5960-00-968-3852
<b>L6543</b>	—
<b>L7156B</b>	—
<b>M1224BS</b>	—
<b>M1366A/2J42H</b>	1712169-1
<b>M1380</b>	—
<b>M1443</b>	021-0039-00
<b>M5064H</b>	021-0039-00
<b>M5083A</b>	5960-99-782-4007
<b>MA2822</b>	021-0047-00
<b>MA2823-2</b>	257-0261-030
<b>MA2824B</b>	2069145-0001
<b>MA2824H</b>	7007740-2
<b>MA2829</b>	—
<b>MA2876B</b>	2072724-0001
<b>MA2876HB</b>	7007740-1
<b>MA2841</b>	3718621-4
<b>MA2866</b>	021-00057-0000
<b>PMA2823-1</b>	257-0261-020

The products listed above only represent a portion of the products available from Richardson Electronics. Call with your requirements.

# Planar Triodes/Cavities

Richardson is the world's largest distributor of planar triodes. Our selection ranges from many discontinued, hard-to-find and obsolete types to new production JAN devices. PMA documentation is available for select part numbers.



Part Number	OEM Number or Fed. Stocking No.
322	CAA322
6503	2C37
7211	—
7486	1064791
7698	1064790
7911	—
8533	378-0123-000
8536	0134612-000
8745	044-4930-040 5960-00-469-4654
8755	378-0147-000 006276 5960-00-469-4654
8933	910633-2 5960-01-026-9005 5960-00-181-0452
13971	1712267-1 5960-00-004-5819
14811	—
15371	3718327-1 021-0030-01 021-00031-0000 5960-99-118-5925
15375	021-0050-0000
16231	021-0034-00 5930-00-930-4256
16841	—
18651	—
21351	3718327-2 021-0045-0000
13971S	—
P15371AL	5960-99-118-5925 021-0031-00

Part Number	OEM Number or Fed. Stocking No.
15375AL	021-0050-0000
16231AL	021-0034-00 5930-00-930-4256
17701-1	—
17701-1CA	8030002451-5
17701-2CA	8030002451-6
17701-3	—
17701-4	MIS12970 4013100P001D
17701-5	—
17701AL	256-0176-010
17701-Y	805000729
18651-1	256-0175-010
18651-2	256-0175-020
18651-3	256-0175-010 256-0175-030
18651AL	256-0175-010 256-0175-030
2C39A	256-0114-00
6442-JAN	—
7077-JAN	254-0973-000 5960-00-688-6706
7211-JAN	—
7289/3CX100A5	374-0115-000 257-0157-000 5960-15-R71-2770
7462-JAN	5960-00-752-5462
7486AL	254-0988-000 256-0200-020
7486-JAN	A55258-436 TK9127 5960-99-644-9523

Part Number	OEM Number or Fed. Stocking No.
7698-JAN	—
7815AL	256-0197-010
7815-JAN	254-0986-00 5960-00-082-3688
7815N	—
7815X	1712356
7815R/3CPX100A5	31292-0002 1066369 014625-003
7815R-JAN	5960-00-044-2709
7842-JAN	—
7855KAL	6014616-001 6014616-2 14614-2
8533-JAN	—
8533W	100G3124-2
8538B	152757 5960-00-529-0583
8538B-JAN	—
8538L	—
8538T	—
8741/Y640	5960-00-145-4770
8755-JAN	—
8906AL	256-0192-010 256-0192-020
8933	SM-A-586587 910633-2 5960-01-026-9005 5960-00-181-0452
8942/Y670A	77A-00-0017
8944/Y602	1005524 100G3145-1-1

The products listed above only represent a portion of the products available from Richardson Electronics. Call with your requirements.

# Planar Triodes/Cavities

Part Number	OEM Number or Fed. Stocking No.	Part Number	OEM Number or Fed. Stocking No.	Part Number	OEM Number or Fed. Stocking No.
8980-JAN	2C37	NLA580-9	8030000580-9 803000580-9 5960-01-077-4551	Y690A	848099-1
A0897	A856-8018			Y724	—
CAA322	322	PC2080A/ C2080A	277-0446-030 021-0038-00 63002-0001	Y739E	—
EE160AL	—			Y739G	8829400007-1 5960-01-067-1356
EE171/Y602B	403147 5960-01-026-8933	P7815AL	256-0152-00	Y749	—
ML7815	—	Y2177	—	Y779	1815525
ML7815AL	256-0197-020 6014625-1	Y-602B	EE171/Y602B	Y822-1	8008-1551-1 5960-01-167-8796
ML7855	—	Y2211	—	Y825	256-0190-020
ML7855KAL	—	Y483	C10611-1 288779801 2887798-1 MLEE116	Y828	090-001890
ML8533	—	Y513	—	Y840	—
ML8533R2	MCL27B1196 MCL10461-C	Y519	—	YC234	—
ML8533R2S	—	Y540	090-00-001770 090-01770 265010P001	YD1047	—
ML8533S	—	Y540A	10177373 5960-01-043-3206	YD1048	—
ML8536	60134612-000 B159250-0000 134612-0000 5960-00-391-6493	Y543	—	YD1102	—
ML8538	910633-2	Y599A	—	YU122	—
ML8538B	—	Y602A	619674-1	YU132	—
ML8538T	—	Y634	373078-1 26510P002	YU133	—
ML8741	134613-0000 159251-000000 B159251-0000 2699374 60134613-000 5960-00-145-4770	Y641	—	YU141	—
ML8906AL	256-0192-030	Y641-1	—	YU147	5960-01-071-5342
MLEE58L/Y503	256-0190-010	Y641-2	—	YU152A	MLEE173 50-0004 5960-01-065-0271
MLEE64Y	FF64Y 265010P1 7528272P2 41111-703-00-9	Y654	700735-01	YU160	—
NLA580-10	8030000580-10 5960-01-077-4551	Y673	—	YU163	—
NLA580-11	8030000580-11 5960-01-078-2149	Y678W	A856-5018-1	YU175	—
		Y688	090-001818 265011P001	YU176A	—
		Y688B	P265011P1 5960-01-079-9849	YU189	—
		Y690	—	YU214	—

The products listed above only represent a portion of the products available from Richardson Electronics. Call with your requirements.

Visit our on-line catalog at [catalog.rell.com](http://catalog.rell.com). Place your orders conveniently from one of the industry's most comprehensive electronic component catalogs.

# Lamps



Richardson now offers the following types of aircraft lamps: aircraft reflector lamps, quartz/halogen lamps, miniature and subminiature incandescent lamps, light emitting diodes, LED displays, based LED lamps, solid state panel mount indicators, solid state backlight panels for signage and value added assemble services. Below is a list of FAA-PMA approved lamps for aircraft.

Micro Lamp	Replacement For Part Number:	Reference to PMA Supplement #
ML-43	GE P/N 43	# 13
ML-44	GE P/N 44	# 13
ML-93	GE P/N 93	# 13
ML-267	GE P/N 267	# 13
ML-305	GE P/N 305	# 13
ML-305F	GE P/N 305F	# 25
ML-307	GE P/N 307	# 13, 25
ML-311*	GE P/N 311	# 16
ML-311R	GE P/N 311R	# 16
ML-313	GE P/N 313	# 13, 25
ML-327	GE P/N 327	# 12, 25
ML-328	GE P/N 328	# 15
ML-330	GE P/N 330	# 12
ML-387	GE P/N 387	# 8, 25
ML-601AV	GRIMES P/N 601	# 23
ML-601-1	GRIMES P/N 601-1	# 8
ML-626	GRIMES P/N 626	# 8, 19
ML-632	GRIMES P/N 632	# 10
ML-633	GE P/N 1777	# 10
ML-685	(GE) P/N GE-632	# 17
ML-685AS15	GE P/N 685AS15	# 17
ML-687 BASIC	GRIMES P/N 687	# 22
ML-687-1	GRIMES P/N 687-1	# 22
ML-687-3	GRIMES P/N 687-3	# 22
ML-687-5	GRIMES P/N 687-5	# 22
ML-687-7	GRIMES P/N 687-7	# 22
ML-687-13	GRIMES P/N 687-13	# 22
ML-687-15	GRIMES P/N 687-15	# 22
ML-687-17	GRIMES P/N 687-17	# 22
ML-687-19	GRIMES P/N 687-19	# 22
ML-687-21	GRIMES P/N 687-21	# 22
ML-687-23	GRIMES P/N 687-23	# 22
ML-687-25	GRIMES P/N 687-25	# 22
ML-687-27	GRIMES P/N 687-27	# 22
ML-718	GRIMES P/N 718	# 17
ML-718AS15	GE P/N 718AS15	# 17
ML-1073	GE P/N 1073	# 13
ML-1163	GRIMES P/N 11631	# 4, 5, 6, 11, 19
ML-1308*	SYLVANIA P/N 1308	# 13

Micro Lamp	Replacement For Part Number:	Reference to PMA Supplement #
ML-1512	GRIMES P/N 1512	# 8
ML-1524	GRIMES P/N 1524	# 8
ML-1665IF	GE P/N 1665AF	# 13
ML-1683	GE P/N 1683	# 13
ML-1687	GRIMES P/N 16870	# 6, 11
ML-1777	GE P/N 1777	# 13
ML-1813	GE P/N 1818	# 13
ML-1815	GE P/N 1815	# 13
ML-1816	GE P/N 1816	# 13
ML-1820	GE P/N 1820	# 13
ML-1864	GE P/N 1864	# 13, 25
ML-1962B	GE P/N GE-(1962B GRIMES P/N LP-1962B)	# 20
ML-1962DZ	GE P/N (1962DZ GRIMES P/N LP-1962DZ)	# 19
ML-1970X	GE P/N 1970X	# 8
ML-1976	GE P/N 1976	# 7
ML-1978X	GE P/N 1978X	# 8, 19
ML-2232	GE P/N 2232 (SYL P/N 2232)	# 9
ML-2232-SB	GE P/N 2232 (SB SYL P/N 2232SB)	# 9
ML-2233	GE P/N 2233	# 9
ML-2233-SB	GE P/N 2233SB	# 9
ML-3011	GE P/N 3011	# 16
ML-4009BPE	OSHINO P/N OL-4009BPE	# 21
ML-4174-12	GRIMES-A-4174-12	# 3
ML-4174-24	GRIMES P/N A-4174-24	# 2, 3, 4, # 6, 11
ML-7079-12	GRIMES P/N 7079-12	# 2
ML-7079-24	GRIMES P/N A7079B-24	# 1, 2, 3, 4, 6, 11
ML-7265-100	OSHINO P/N OL-3071BPE	# 14, 18, 20
ML-7361	OSHINO P/N OL-783BP	# 14
ML-7387	OSHINO P/N OL-387BP	# 14
ML-7512-12	GRIMES P/N A-7512-12	# 3
ML-7512-24	GRIMES P/N A7512-24	# 2, 3, 4, # 6, 11
ML-7839-100	OSHINO P/N OL-6839BPE	# 14

\* To meet Aviation Standards add AD to part number. Ex. ML-311AV

The products listed above only represent a portion of the products available from Richardson Electronics. Call with your requirements.

# Test Equipment

Richardson carries a wide selection of test equipment for...

- ADF (Automatic Direction Finder)
- HF/VHF Com (Radio/Communications equip.)
- DME (Distance Measuring Equipment)
- NAV (Several types of navigational devices)
- Transponders / ATC
- Radar



Shown Above:  
ASI-2000, ASI-401-1 and the ASI-200-2B

Whether your shop is looking to establish testing capabilities or expand upon current capabilities, let Richardson Electronics be your source for test equipment.

**Contact us today to learn about the thousands of items we can offer, such as:**

The **ASI-502** “control wizard” emulates most major avionics control functions for testing requirements. The “control wizard” is capable of controlling ADF, HF/VHF COM, DME, NAV, Transponder, or any other system that requires ARINC 429 serial, CSDB serial, or Parallel tuning methods including BCD and 2x5 ( 8.33 / 25 kHz). The “control wizard” eliminates the need for having multiple control heads in the shop because it comes pre-programmed with software containing up to 40 different programs that simulate different control head functions. Each ASI-502 is also equipped with a RS-232 / program input connector that allows the customer to add additional programs to their ASI-502 by downloading them from a computer.

The **ASI Test System** is a computer aided, modular system capable of testing a large variety of avionics equipment. Equipment tested includes the **Collins Pro Line 1,2 and 4 series, King Gold Crown series,** and **ARINC** standard avionics units. The heart of the ASI Test Systems is the **ASI-2000** mainframe, which provides power, test points and computer interface capabilities. The ASI-2000 interfaces with the PC through the use of an **ASI-401-1** interface panel and a **CTC-429** PC compatible card. The **ASI-200-X** series of plug-in adapters provide interface from the ASI-2000 to the various types of UUT (unit under test) such as the **Collins VIR-30/31/32/33/432/433** series of navigation receivers. This modularity is ideal for shops that do not dedicate one technician to one type of unit under test. Shops that do operate under more dedicated conditions should inquire about “stand alone” equipment that specifically test a particular unit.

These following panels are used in the testing and repair of Rockwell Collins Air Transport Series 700 and Series 900 avionics.

- **ASI-700-1** Indicator Discrete Function Unit (DFIU) is designed to test the Collins ARINC 700 series indicators and other Line Replacement Units (LRU).
- **ASI-700-2** ADF/GLU/ILS/MB/MLS/VOR Discrete Function Interface Unit (DFIU) is designed to test the Collins ARINC 700/900 series ADF/GLU/ILS/MB/MLS/VOR Line Replacement Units (LRU).
- **ASI-700-3** DME/LRA Discrete Function Interface Unit (DFIU) is designed to test the Collins 700/900 series DME.LRA Line Replacement Units (LRU).
- **ASI-700-4** HF/VHF Discrete Function Interface Unit (DFIU) is designed to test the Collins ARINC 700/900 series HF/VHF Line Replacement Units (LRU). The ASI-502 can be used in place of the HF/VHF control head.

\*\* All of the above units work in conjunction with an ARINC 429 Data Bus Generator (user supplied) to provide the LRU with all voltages, discretes, control inputs and outputs required for “by the book” testing per the Collins maintenance manual.

**Data sheets for the above equipment are available upon request.**

Richardson offers the highest quality components used in ...

- **CCTV Equipment for DMEs**
- **Transponders**
- **TACAN**
- **IFF**
- **MLS**
- **Flight Simulators**
- **VHF and UHF Communications**
- **Ground Navigation Equipment**
- **Facility Security**



#### **Corporate Headquarters**

Richardson Electronics  
40W267 Keslinger Road  
P.O. Box 393  
LaFox, IL 60147-0393  
Telephone: **(888) 735-7358**  
**(630) 208-2200**  
Fax: (630) 208-2550  
Internet: [industrial.rell.com](http://industrial.rell.com)  
E-Mail: [edg@rell.com](mailto:edg@rell.com)

Eastern Sales Region Hdqtrs.  
Ronkonkoma, NY  
Telephone: **(888) 735-7358**  
**(631) 468-3900**  
Fax: (631) 468-3950

Central Sales Region Hdqtrs.  
LaFox, IL  
Telephone: **(888) 735-7358**  
**(630) 208-2200**  
Fax: (630) 208-2550

Western Sales Region Hdqtrs.  
Woodland Hills, CA  
Telephone: **(888) 735-7358**  
**(818) 594-5600**  
Fax: (818) 594-5650

#### **Latin America**

**Brazil**  
São Paulo  
Telephone: +55 (11) 5186 9655  
Fax: +55 (11) 5186 9678

#### **Colombia**

Sante Fe de Bogota, DC  
Telephone: (57-1) 636-1028  
Fax: (57-1) 636-1005

#### **Mexico**

Mexico City  
Telephone: +52 55 5292-8029  
Fax: +52 55 5292-8030

#### **Guadalajara**

Telephone: +52 33 31230041  
+52 33 31230042  
Fax: +52 33 31220565

#### **Europe**

**Denmark**  
Hedenhusene  
Telephone: (+45) 4655-5630  
Fax: (+45) 4655-5631

#### **Finland**

Oulunsalo  
Telephone: +358-8-825-1100  
Fax: +358-8-825-1110

#### **France**

Colombes Cedex  
Telephone: +33 (1) 55.66.00.30  
Fax: +33 (1) 55.66.00.31

#### **Nozay**

Telephone: +33 (1) 69.80.71.33  
Fax: +33 (1) 69.80.76.28

#### **Germany**

Puchheim  
Telephone: +49 (89) 890 214-0  
Fax: +49 (89) 890 214-90

#### **Hamburg**

Telephone: +49 (40) 555 88 410  
Fax: +49 (40) 555 88 444

#### **Italy**

Sesto Fiorentino (FI)  
Telephone: +39 (055) 420831  
Fax: +39 (055) 4210726

#### **Agrate Brianza (MI)**

Telephone: +39 (039) 653145  
Fax: +39 (039) 653835

#### **Roma**

Telephone: +39 (06) 41.73.37.51  
Fax: +39 (06) 41.73.37.49

#### **Netherlands**

Amsterdam  
Telephone: +31 (0) 23 5560490  
Fax: +31 (0) 23 5560491

#### **Norway**

Torod  
Telephone: +47 333-86271  
Fax: +31 333-83106

#### **Sweden**

Stockholm  
Telephone: +46 8 564 705 90  
Fax: +46 8 760 4663

#### **Spain**

Madrid  
Telephone: +34 (91) 528 3700  
Fax: +34 (91) 467 5468

#### **Barcelona**

Telephone: +34 (93) 415 8303  
Fax: +34 (93) 415 5379

#### **United Kingdom**

Lincoln  
Telephone: +44 (1522) 542631  
Fax: +44 (1522) 545453

#### **Slough**

Telephone: +44 (1753) 733010  
Fax: +44 (1753) 733012

#### **Middle East**

Israel  
Ra'Anana  
Telephone: 972-9-7483232  
Fax: 972-9-7416510

#### **Asia/Pacific Rim/Australia**

**Australia**  
Castle Hill  
ABN 19 069 808 108  
Phone: +61 1300 882 819  
Fax: +61 (02) 9894 7481

#### **Bayswater**

ABN 19 069 808 108  
Phone: +61 1300 882 819  
Fax: +61 (3) 9738 1807

#### **China**

Beijing  
Telephone: +86-10-65885548  
Fax: +86-10-65885541

#### **Chengdu**

Telephone: +86-28-8620-3488  
Fax: +86-28-8620-3499

#### **Nanjing**

Telephone: 86-25-8320-0266  
Fax: 86-25-8320-0299

#### **Shanghai**

Telephone: +86 (21) 62351788  
Fax: +86 (21) 6440-1293

#### **Shenzhen**

Telephone: +86-755-82943736  
Fax: +86-755-82940656

#### **Japan**

Tokyo  
Telephone: +81 (3) 5844-0521  
Fax: +81 (3) 5844-0527

#### **Osaka**

Telephone: +81 (6) 6314-5557  
Fax: +81 (6) 6314-5558

#### **Korea**

Seoul  
Telephone: +82 (2) 539-4731  
Fax: +82 (2) 539-4730

#### **Malaysia**

Selangor  
Telephone: +60 (3) 5511-5421  
Fax: +60 (3) 5511-5423

#### **Philippines**

Pasig City  
Telephone: +63 (2) 636-8891  
Fax: +63 (2) 635-5721

#### **Singapore**

Telephone: +65 6487-5995  
Fax: +65 6487-5665

#### **Taiwan**

Taipei  
Telephone: +886 (2) 26983288  
+886 (2) 86915238  
Fax: +886 (2) 26983285

#### **Thailand**

Bangkok  
Telephone: +66 (2) 749-4402  
Fax: +66 (2) 749-4403

#### **Vietnam**

Ho Chi Minh City  
Telephone: +84 8997 4245  
+84 8997 4246  
Fax: +84 8997 4071

 **Richardson  
Electronics**  
**Engineered Solutions**

Call (888) 735-7358 (USA/Canada) • Visit us on the World Wide Web: [industrial.rell.com](http://industrial.rell.com)