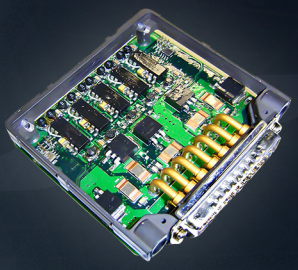
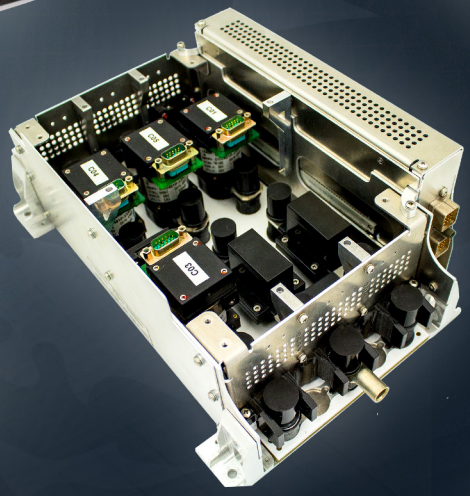
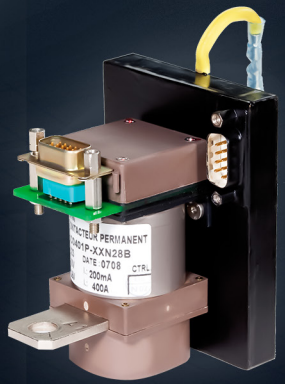
LEACH® INTERNATIONAL
CORPORATION

LEACH® 100TH ANNIVERSARY
EST. 1919

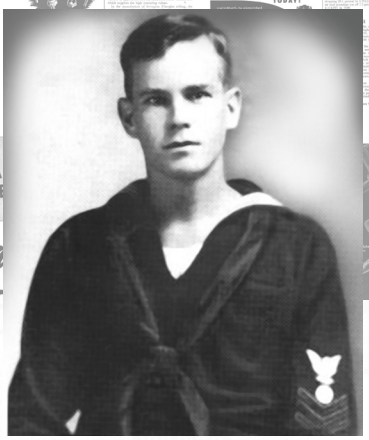
SHORT FORM CATALOG



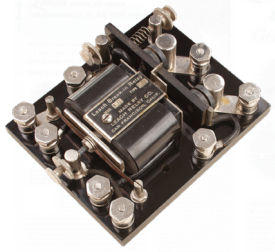




Solutions for Power Switching and Control



Today's broad range of products can trace its heritage back to 1919 with the development of a single product in a small laboratory in San Francisco. As a radio operator in the U.S. Navy during World War I, Val Leach conceived the idea for a break-in relay to eliminate many of the frustrations he experienced with the erratic nature of early two-way radio communications. His automatic antenna switch and power relay became the company's first product. Operations were moved to Los Angeles, CA in 1929, and, during the next ten years, the product family was broadened to include other types of relays including time delay relays, aircraft switches, power monitor, power distribution, and aircraft relays for the communications and electrical industries. It was not long before Leach relays became known to aircraft manufacturers and products were developed specifically for aircraft power switching as well as for aircraft communications.



LEACH 100TH ANNIVERSARY EST. 1919

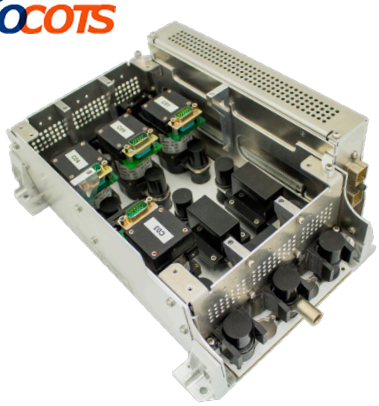
TABLE OF CONTENTS

POWER DISTRIBUTION SYSTEMS

Leach International Corporation offers a variety of power distribution configurations from electromechanical power management to fully integrated SSPC power management, including control logic and protection. Designed with LEACH® components, these assemblies satisfy all specific customer program conditions and requirements for both primary and secondary distribution systems.

Key Features and Concepts Include:

- Modular concept
- Reconfigurable design
- Options for simple or complex packaging
- Distributed or integrated architecture
- Ventilated or environmentally sealed assemblies
- Line replaceable
- Advanced electronic control logic that includes:
  - Built in Test (BIT)
  - Fully re-programmable control logic
  - Current sensing
  - Circuit protection
  - Logic and protection control



Key Features:

- Programmable channels, operating modes, and I^2T trip curves
- Optimized packaging, weight, and footprint
- Communication data buses for control and reporting(ARINC 429, CAN, RS422/485, MIL-STD-1553, Ethernet, etc.)
- Built in test (BIT) reporting
- Architectures to achieve safety and environmental requirements
- Full GUI for development
- 270 Vdc Capability

LEACH PRODUCT TYPES AND SPECIFICATIONS

Product Types:

Subminiature Relays *(Low level to 75 Amps)*

For decades, LEACH® subminiature relays have set the industry standard for technology and reliability. With their proven high performance in the most demanding applications, they are ideal for critical subsea, shipboard, ground-based, space, and aerospace applications.

Balanced Armature Relays *(10 Amps to 25 Amps)*

LEACH® balanced armature relays have been used in commercial and military aircraft, trucks, buses, ships, and tanks – applications that call for proven durability, high performance and long life. Several terminal mounting styles, dust-resistant, moisture-resistant and hermetically-sealed enclosures. A variety of operating ratings and characteristics are available.

Power Contactors *(25 Amps to 700 Amps)*

LEACH® power contactors are available with optional auxiliary contacts in sealed and unsealed models."Smart" programmable contactors and special mounting styles are also available.

Time Delay Relays *(150 mAmps to 25 Amps)*

LEACH® time delay devices combine the proven capability of industry standard relays with highly reliable hybrid microelectronics timing circuits.

Power Monitors and Sensors *(up to 10 Amps)*

Designed to meet the requirements of MIL-R-28894, LEACH® power monitors and sensors constantly monitor and protect critical AC or DC circuits.

Solid-state Power Controllers *(1 Amp to 220 Amps)*

Ideal for applications where reliability is key and size and weight are major concerns; LEACH® SSPCs employ a FET output stage and are constructed using thick-film technology, they are hermetically sealed, and mainly metal enclosures.

Product Specifications:

MIL-PRF-39016

This specification covers relays rated from low level to 2 Amps used primarily in electronic and communication equipment. All relays are Established Reliability (ER), and hermetically-sealed types.

MIL-PRF-6106

This specification establishes general requirements for electromechanical relays with contact ratings from 25 amperes resistive (unless otherwise specified) and upward for use in electrical applications. Auxiliary contacts may be rated at lower currents. Relays covered by this specification are capable of meeting the electrical and environmental requirements when mounted directly to the structure of aircraft, missile, spacecraft, ship, and other primary vehicles or in ground support and shipboard equipment. Other ratings may be as specified.

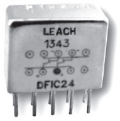
MIL-PRF-83536

This specification covers the general requirements for electromagnetic, hermetically sealed relays for use in aircraft, missile, spacecraft, ship, and other primary vehicles or in ground support equipment. These relays are designed to operate over the full range from low level to power switching with contact ratings up to 25 amperes alternating current (AC) or direct current (DC).

MIL-PRF-83726

This specification establishes the general requirements for time delay relays that are a combination of hybrid microcircuits, solid state electronics with an integral electromagnetic relay, or solid state output. Relays covered by this specification are intended for use in aerospace and associated ground support electrical and electronic systems and equipment

SUBMINIATURE RELAYS *1 - 2 Amps*

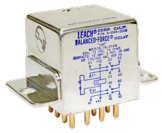


Leach Series:	E, D	GP2, GP2A, GP250		W260, WB260, F250		GP5	
Rating:	1 Amp	2 Amps		2 Amps		2 Amps	
Contact configuration:	2 PDT	2 PDT		2 PDT		2 PDT	
Style:	Non-latch or Latch	Latch		Non-latch		Non-latch	
Designed to:	MIL-PRF-39016	MIL-PRF-39016		MIL-PRF-39016		MIL-PRF-39016	
Qualified or in accordance to:	M39016/34 ESCC3601/012 ESCC3602/019 CECC16101/023	M39016/45 ESCC3602/003 ESCC3602/010		M39016/6 M39016/22 CECC16101/014 CECC16101/021		M39016/6 CECC16101/014 ESCC3601/003	
Electrical Data	**E, D**	**GP2, GP2A, GP250**		**W260, WB260, F250**		**GP5**	
Contact load rating (voltage):	28 VDC	28 VDC	115 VAC, 400 Hz	28 VDC	115 VAC, 400 Hz	28 VDC	115 VAC, 400 Hz
Resistive:	1	2	0.3	2	0.3	2	0.3
Inductive:	0.2	0.75		0.75		0.75	
Motor:							
Lamp:	0.1	0.16				0.16	
Nominal coil voltage(s):	6 to 48 VDC	6 to 26 VDC		5 to 60 VDC		6 to 26 VDC	
Coil Power @ Nominal:	0.5 W / 0.25 W	1 W		1 W		1.4 W	
Coil Power @ Pick Up:	0.13 W / 0.06 W	0.28 W		0.28 W		0.28 W	
Operate time, max. (ms):	4	4		4		4	
Environmental Data	**E, D**	**GP2, GP2A, GP250**		**W260, WB260, F250**		**GP5**	
Sinusoidal vibration (g):	30 @ 70-3000 Hz 70 @ 70-2000 Hz	30 @ 70-3000 Hz 20 @ 70-3000 Hz		30 @ 70-3000 Hz 20 @ 70-3000 Hz		30 @ 70-2000 Hz	
Shock (g):	75 - 100	100		50 - 100		100	
Temperature range	-65°C to +125°C	-65°C to +125°C		-65°C to +125°C		-65°C to +125°C	
Mechanical Data	**E, D**	**GP2, GP2A, GP250**		**W260, WB260, F250**		**GP5**	
Weight, max:	<0.129 oz. (4 g.)	<0.353 oz. (10 g.)		<0.32 oz. (10 g.)		<0.354 oz. (11 g.)	
Dimensions, max. (in.):	0.504 x 0.236 x 0.409	0.810 x 0.410 x 0.410		1.32 x 0.90 x 0.41		0.803 x 0.409 x 40	
Sockets available				S250, SF250CE32E, HRCW		S250, SF250CE32E, HRCW	
Mounting styles:	4	4		5		4	
Terminal types:	4	3		3		3	

SUBMINIATURE RELAYS *Low level - 10 Amps*

Leach Series:	X, XL, XA		Y, YL, YA		YC, YCL, YCA		XC, XCL		F600, F601
Rating:	Low level to 5 Amps		Low level to 5 Amps		Low level to 10 Amps		Low level to 10 Amps		Low level to 10 Amps
Contact configuration:	2 PDT		4 PDT		3 PDT		1 PDT		6 PDT
Style:	Non-latch and Latch		Non-latch and Latch		Non-latch and Latch		Non-latch and Latch		Non-latch
Designed to:	XA, XL: MIL-PRF-6106 X: MIL-PRF-83536		YA, YL: MIL-PRF-6106 Y: MIL-PRF-83536		YCL, YCA: MIL-PRF-6106 YC: MIL-PRF-83536		MIL-PRF-6106		M83536/25, 26
Qualified to:	X: M83536/1, 2 XL: M6106/38		Y: M83536/5, 6 YL: M6106/39		YC: M83536/21, 22 YCL: M6106/40				CECC16101/020 CECC16303/806
Electrical Data	**X, XL, XA**		**Y, YL, YA**		**YC, YCL, YCA**		**XC, XCL**		**F600, F601**
Contact rating (Amps)	28 VDC	115 VAC 400 Hz	28 VDC	115 VAC 400 Hz	28 VDC	115 VAC 400 Hz	28 VDC	115 VAC 400 Hz	28 VDC
Resistive:	5	5	5	5	10	10	10	10	10
Inductive:	3	5	3	5	6	8	6	8	8
Motor:	2	3	2	3	4	4	4	4	4
Lamp:	1	1	1	1	2	2	2	2	2
Nominal coil voltage(s)									
Coil Power @ Nominal:									
Coil Power @ Pick Up:									
DC Non-latch::	6/12/28/48 VDC		6/12/28/48 VDC		6/12/28/48 VDC		6/12/28/48 VDC		12/28/48/110/ VDC
DC Latch:	6/12/28 VDC		6/12/28 VDC		6/12/28 VDC		6/12/28 VDC		
AC Coil:	28, 115/200 VAC 50-400 Hz		28, 115/200 VAC 50-400 Hz		28, 115/200 VAC 50-400 Hz				28, 115 VAC 60-400 Hz
Coil resistance(s) (Ohms)	**X, XL, XA**		**Y, YL, YA**		**YC, YCL, YCA**		**XC, XCL**		**F600, F601**
DC Non-latch::	30/125/500/1600		25/100/400/1275		25/100/400/1275		25/125/500/1600		
DC Latch:	43/182/730		37/148/600		600		730		
AC Coil, Current, I max.	.100/.040/.024		.120/.040/.028		.120/.040/.028				0.06
Operate time, max. (ms)									
DC Non-latch::	4		6		6		6		15
DC Latch:	4		6		15		6		
AC Coil:	12		15		6				20
Release time, max. (ms)									
DC Non-latch::	4		6		6		6		10
AC Coil:	4		25		25				50
Bounce time, max. (ms):	1.0		1.0		1.0		1.0		1.0
Environmental Data	**X, XL, XA**		**Y, YL, YA**		**YC, YCL, YCA**		**XC, XCL**		**F600, F601**
Sinusoidal vibration (g):	30 @ 70-3000 Hz		30 @ 70-3000 Hz		30 @ 70-3000 Hz		30 @ 70-3000 Hz		30 @ 75-3000 Hz
Shock (g):	50 - 200		50 - 200		50 - 200		100 - 200		50
Temperature range	-70°C to +125°C		-70°C to +125°C		-70°C to +125°C		-70°C to +125°C		-65°C to +125°C
Mechanical Data					**YC, YCL, YCA**		**XC, XCL**		**F600, F601**
Weight, max:	0.56 oz (16 g.)		1.06 oz. (30 g.)		1.09 oz. (31 g.)		.56 oz. (16 g.)		3.054 oz. (95 g.)
Dimensions, max. (in.):	0.810 x 0.410 x 0.640		0.810 x 0.810 x 0.640		0.810 x 0.810 x 0.640		0.810 x 0.410 x 0.640		1.484 x 1.024 x 1.012
Sockets available	**X, XL, XA**		**Y, YL, YA**		**YC, YCL, YCA**		**XC, XCL**		**F600, F601**
Non-latch DC Coil:	SO-1064-001		SO-1066-001		SO-1065-001		SO-1064-10425		S600
Latch DC Coil:	SO-1064-003		SO-1066-003		SO-1065-003		SO-1064-10534		SF600
Non-latch AC Coil:	SO-1064-10445		SO-1066-10385		SO-1065-10392				S601
28 VAC Coil:	SO-1064-10444		SO-1066-10386		SO-1065-10393				S601
Mounting styles:	5		5		5		5		4
Terminal types:	4		3		3		4		4

SUBMINIATURE RELAYS *Low level - 75 Amps*



Leach Series:	J, JL, JA		K, KL, KA		JC, JCA, JCL JS, JSA, JL		KC, KCA, KCL		KD, KDA, KDL		KM, KX KXD, KXL, KXDL	
Rating:	Low level to 12 Amps ‡		Low level to 12 Amps ‡		Low level to 25 Amps		Low level to 25 Amps		Low level to 25 Amps		50-75 Amps	
Contact configuration:	2 PDT		4 PDT		1 PDT		3 PDT		3 PST/NO, 2 Amps 1 PDT Aux.		1 PST/DM or DB, 2 Amps 1 PST	
Style:	Non-latch and Latch		Non-latch and Latch		Non-latch and Latch		Non-latch and Latch		Non-latch and Latch †		Non-latch and Latch	
Designed to:	MIL-PRF-83536		MIL-PRF-83536		MIL-PRF-6106		MIL-PRF-6106		MIL-PRF-6106		MIL-PRF-6106	
Qualified to:	M83536/9, 10, 11, 12, 13		M83536/15, 16, 17, 18, 19		JC, JS: M6106/19 JCL: M6106/20		KC: M83536/32/33 KCL: MS27742		KD, KDA: M6106/13 KDL: M6106/12			
Electrical Data	**J, JL, JA**		**K, KL, KA**		**JC, JCA, JCL, JS, JSA, JL**		**KC, KCA, KCL**		**KD, KDA, KDL**		**KM, KX, KXD, KXL, KXDL**	
Contact rating (Amps):	28 VDC	115 VAC 400 Hz	28 VDC	115 VAC 400 Hz	28 VDC	115 VAC 400 Hz	28 VDC	115 VAC 400 Hz	28 VDC	115 VAC 400 Hz	28 VDC	115 VAC 400 Hz
Resistive:	12	12	12	12	25	25	25	25	25	25	75	50
Inductive:	8	8	8	8	12	15	12	15	12	15	20	15
Motor:	4	4	4	4	10	10	10	10	10	10	20	8
Lamp:	2	2	2	2	5	4	5	5	5	5	10	
Nominal coil voltage(s):												
Coil Power @ Nominal:												
Coil Power @ Pick Up:												
DC Non-latch:	6/12/28/48 VDC		6/12/28/48 VDC		6/12/28/48 VDC		6/12/28/48 VDC		6/12/28/48 VDC		6/12/28 VDC	28 VDC
DC Latch:	6/12/28/48 VDC		6/12/28/48 VDC		6/12/28/48 VDC		6/12/28/48 VDC		6/12/28/48 VDC		6/12/28 VDC	28 VDC
AC Coil:	28, 115/200 VAC 50-400 Hz		28, 115/200 VAC 50-400 Hz		28, 115/200 VAC 50-400 Hz		28, 115/200 VAC 50-400 Hz		28, 115/200 VAC 50-400 Hz			
Coil resistance(s) (Ohms)	**J, JL, JA**		**K, KL, KA**		**JC, JCA, JCL, JS, JSA, JL**		**KC, KCA, KCL**		**KD, KDA, KDL**		**KM, KX, KXD, KXL, KXDL**	
DC Non-latch:	20/80/320/1000		18/70/290/890		20/80/320/1000		18/70/290/890		18/70/290/890		18/70/290	290
DC Latch:	38/150/600/1600		28/112/450/1500		38/150/600/1600		28/112/450/1500		28/112/450/1500		28/112/450	450
AC Coil, Current, I max.:	.240/.040/.024		.120/.040/.028		.100/.040/.024		.120/.040/.028		.120/.040/.028		-	120
Operate time, max. (ms)												
DC Non-latch:	10		15		10		15		15		15	
DC Latch:	10		15		10		15		15		15	
AC Coil:	15		20		15		20		20			
Release time, max. (ms)												
DC Non-latch:	10		15		10		15		15		15	
AC Coil:	50		50		50		50		50			
Bounce time, max. (ms):	1.0		1.0		1.0		1.0		1.0 (Aux. 4)		1.0	1.0 (Aux. 4)
Environmental Data	**J, JL, JA**		**K, KL, KA**		**JC, JCA, JCL, JS, JSA, JL**		**KC, KCA, KCL**		**KD, KDA, KDL**		**KM, KX, KXD, KXL**	
Sinusoidal vibration (g):	30 @ 70-3000 Hz		30 @ 70-3000 Hz		30 @ 70-3000 Hz		30 @ 70-3000 Hz		30 @ 70-3000 Hz		30 @ 70-3000 Hz 20 @ 70-3000 Hz	
Shock (g):	100 - 200		100 - 200		100 - 200		100 - 200		100 - 200		50	
Temperature range	-70°C to +125°C		-70°C to +125°C		-70°C to +125°C		-70°C to +125°C		-70°C to +125°C		-70°C to +125°C	
Mechanical Data	**J, JL, JA**		**K, KL, KA**		**JC, JCA, JCL, JS, JSA, JL**		**KC, KCA, KCL**		**KD, KDA, KDL**		**KM, KX, KXD, KXL**	
Weight, max. (oz./grams):	1.4 oz. (40 g.)		DC: 2.5 oz. (71 g.) AC: 2.7 oz. (77 g.)		1.6 oz. (45 g.)		3.0 oz. (85 g.)		3.0 oz. (85 g.)		3.0 oz. (85 g.)	
Dimensions, max. (in.): (L x W x H)	DC:1.025 x 0.525 x 1.010 AC: 1.025 x 0.525 x 1.125		1.025 x 0.025 x 1.010		DC:1.015 x 0.515 x 1.000 AC:1.015 x 0.515 x 1.125		1.025 x 1.025 x 1.010		1.025 x 1.025 x 1.010		1.025 x 1.025 x 1.70	
Sockets available	**J, JL, JA**		**K, KL, KA**		**JC, JCA, JCL, JS, JSA, JL**		**KC, KCA, KCL**		**KD, KDA, KDL**		**KM, KX, KXD, KXL**	
Non-latch DC Coil:	SO-1049-8309		SO-1048-8308		SO-1063-9033		SO-1057-8912		SO-1059-8914			
Latch DC Coil:	SO-1055-8690		SO-1056-8691		SO-1063-9036		SO-1058-8913		SO-1060-8915			
Non-latch AC Coil:	SO-1049-8772		SO-1048-8776		SO-1063-9034		SO-1062-8917		SO-1061-8916			
28 VAC Coil:	SO-1055-8774		SO-1048-8779									

‡MIL-PRF-83536 rated at 10 Amps.

BALANCED ARMATURE RELAYS *10 - 25 Amps*





Leach Series:	9330	9274	9324	9325	9339
Rating:	10 Amps	15 Amps	25 Amps	25 Amps	25 Amps
Contact configuration:	2 PDT	4 PDT	3 PST/NO	3 PST-CO/NO	3 PST/NO w/ 2 Amps, 1 PDT
Designed to:	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106
Qualified to:	MS24149	MS24568	MS27418	MS27706	MS6106/41
Electrical Data	**9330**	**9274**	**9324**	**9325**	**9339**
Contact rating (Amps)					
@ 28 VDC					
Resistive:	10	10	25 †	25 **	25
Inductive:	10	10	15 †	15	15
Motor:	6	6	20 †	20	20
Lamp:	2	3	10 †	10 **	10
@ 115 VAC, 400 Hz, 3Ø	**9330**	**9274**	**9324**	**9325**	**9339**
Resistive:	10	15	25 †	25 **	25
Inductive:	10	10	25 †	25 **	25
Motor:	6	8 **	20 †	20	20
Lamp:	2	4 **	10 †	10 ††	10 ‡‡
@ 115 VAC, 50/60 Hz, 3Ø	**9330**	**9274**	**9324**	**9325**	**9339**
Resistive:	6	10	25 †	25 **	25
Inductive:	4	6	25 †	25 **	25
Motor:	3	4	12 †	12	12
Lamp:	1.5	2	10 †	10 **	10
Nominal coil voltage(s):	28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz*	28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz
Resistance, Ohms ±10%:	160Ω	92Ω	160Ω	160Ω (each coil)	160Ω
@ 25° C for 28 VDC					
Operate time, max. (ms)	**9330**	**9274**	**9324**	**9325**	**9339**
DC Coil:	20	25	20	20	20
AC Coil:	20	25	20	20	25
Release time, max. (ms)					
DC Coil:	20	20	10	10	10
AC Coil:	50	50	50	50	50
Bounce time, max. (ms):	2	N/O 3, N/C 5	2	5	2 Aux. 4
Environmental Data	**9330**	**9274**	**9324**	**9325**	**9339**
Sinusoidal vibration (g):	10 @ 15-1500 Hz	10 @ 1000-2000 Hz	10 @ 55-1500 Hz	10 @ 55-1500 Hz	10 @ 55-1500 Hz
Shock (g):	25	50	50	25	50
Temperature range	-70°C to +125°C	-70°C to +125°C	-70°C to +125°C	-70°C to +125°C	-70°C to +125°C
Mechanical Data	**9330**	**9274**	**9324**	**9325**	**9339**
Weight, max. (oz./lbs.):	7.04 oz.	12.80 oz.	10.56 oz.	22.7 oz.	7.04 oz.
Dimensions, max. (in.):	2.50 x 1.625 x 2.60	2.062 x 2.062 x 1.807	1.531 x 1.531 x 1.680	3.54 x 3.00 x 3.20	1.531 x 1.531 x 1.680
(L x W x H)					
Option(s) available:	Suppressed DC coil	Suppressed DC coil	Suppressed DC coil	Suppressed DC coil	Suppressed DC coil

* Max. temp. limited to +85° C.

** Value exceeds Mil-Spec.

† 440 VAC 60 Hz delta rating, 3.5 amp resistive.

†† 25 amp resistive load transfer rating.

‡‡ Aux. ratings 2 amp resistive, lamp inductive, 0.5 amp lamp.

* 1NO + 1NC auxiliary contact ** ± 20% @ 25°C † 2PDT auxiliary contact. May be associated with a Hall current sensor

AC/DC POWER CONTACTORS *25 - 100 Amps*




Leach Series:	9123	9213	9207	9124
Rating:	25 Amps	25-100 Amps	25-100 Amps	50 Amps
Contact configuration:	3 PST/NO DM	3 PST/NO, 4 PST/NO 2 P/NO, 2 P/NC DB-DM	3 PST/NO DM, 2P/NO, 2P/NC DB-DM	3 PST/NO DB
Designed to:	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106
Qualified to:	MS27997		DESC Spec 84192	MS27222
Electrical Data	**9123**	**9213**	**9207**	**9124**
Contact rating (Amps)				
@ 28 VDC				
Resistive:	25	25-100 *	25-100 *	50
Inductive:	25	25-100 *	25-100 *	50
Motor:	25	25-100 *	25-100 *	50
Lamp:				
@ 115 VAC, 400 Hz, 3Ø	9123	9213	9207	9124
Resistive:	25	25-100 *	25-100 *	50
Inductive:	25	25-100 *	25-100 *	50
Motor:	25	25-100 *	25-100 *	50
Lamp:				
@ 115 VAC, 50/60 Hz, 3Ø	9123	9213	9207	9124
Resistive:	15	50 *	50 *	30
Inductive:	15	50 *	50 *	30
Motor:	7	50 *	50 *	15
Lamp:				
Nominal coil voltage(s):	28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz
Resistance, Ohms ±10%:	50Ω	44.5Ω	44.5Ω	50Ω
@ 25° C for 28 VDC	9123	9213	9207	9124
Operate time, max. (ms)				
DC Coil:	25	30	30	25
AC Coil:	30	40	40	30
Release time, max. (ms)				
DC Coil:	10	20	20	10
AC Coil:	50	60	50	50
Bounce time, max. (ms):	2	10	10	2
Environmental Data	**9123**	**9213**	**9207**	**9124**
Sinusoidal vibration (g):	15 @ 55-1500 Hz	10 @ 55-1500 Hz	10 @ 55-1500 Hz	15 @ 55-1500 Hz
Shock (g):	50	50	50	50
Temperature range	-70°C to +125°C	-55°C to +71°C	-55°C to +85°C	-70°C to +125°C
Mechanical Data	**9123**	**9213**	**9207**	**9124**
Weight, max. (oz./lbs.):	20 oz.	44.8 oz.	28 oz.	20 oz.
Dimensions, max. (in.): (L x W x H)	3.73 x 3.305 x 2.50	4.22 x 4.23 x 4.53	3.63 x 3.62 x 2.875	3.73 x 3.305 x 2.50
Option(s) available:	Auxiliary 5 Amp contacts 440 VAC 60 Hz delta rating	Auxiliary 5-25 Amp contacts	Auxiliary 5-25 Amp contacts	Auxiliary 5 Amp contacts 440 VAC 60 Hz delta rating

* 440 VAC 60 Hz wye/delta rated. Sealed rotary, 1, 2, 3 and 4 pole.

* 1NO + 1NC auxiliary contact

** ± 20% @ 25°C † 2PDT auxiliary contact. May be associated with a Hall current sensor

AC/DC POWER CONTACTORS *50 - 400 Amps*




Leach Series:	HC Center-off	7064, 7264, 7401	H, HD, HP, HT, HTD, HPT ††	HL, HLT ‡
Rating:	50 Amps	50-400 Amps	60 Amps	60 Amps
Contact configuration:	3 PST-NO 1 PST-NO DM	1 PST/NO	3 PST, 3 PDT, 1 PDT-DB-DM	3 PST, 3 PDT, 1 PDT-DB-DM
Style:			Magnetic latch	Magnetic latch
Designed to:	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106
Qualified to:	MS27750	MS24166 MS24171/72 MS24178/79 MS24185	MS27751 M6106/26 and 43	MS27749
Electrical Data	**HC Center-off**	**7064, 7264, 7401**	**H, HD, HP, HT, HTD, HPT ††**	**HL, HLT ‡**
Contact rating (Amps)				
@ 28 VDC				
Resistive:	25	50-400	50	50
Inductive:	15	50-100	20	20
Motor:	15	50-400	20	20
Lamp:	10		10	10
@ 115 VAC, 400 Hz, 3Ø	**HC Center-off**	**7064, 7264, 7401**	**H, HD, HP, HT, HTD, HPT ††**	**HL, HLT ‡**
Resistive:	50		60	60
Inductive:	50 **		60	60
Motor:	30		40	40
Lamp:	15		15	15
@ 115 VAC, 50/60 Hz, 3Ø	**HC Center-off**	**7064, 7264, 7401**	**H, HD, HP, HT, HTD, HPT ††**	**HL, HLT ‡**
Resistive:	30		30	30
Inductive:	30		30	30
Motor:	30		30	30
Lamp:				
Nominal coil voltage(s):	6, 12, 28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	28 VDC	6, 12, 28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	6, 12, 28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz
Resistance, Ohms ±10% @ 25° C for 28 VDC:	6 VDC, 12Ω; 12 VDC, 50Ω; 28 VDC, 200Ω † 115 VAC, .100 Amp	6 VDC, 12Ω; 12 VDC, 50Ω;	6 VDC, 12Ω; 12 VDC, 50Ω; 28 VDC, 200Ω; 115 VAC, .090 Amp	6 VDC, 12Ω; 12 VDC, 50Ω; 28 VDC, 200Ω
Operate time, max. (ms)	**HC Center-off**	**7064, 7264, 7401**	**H, HD, HP, HT, HTD, HPT ††**	**HL, HLT ‡**
DC Coil:	35		50	35
AC Coil:	35	40	50	35
Release time, max. (ms)				
DC Coil:	25		25	
AC Coil:	80	15	80	
Bounce time, max. (ms):	3		3	3
Environmental Data	**HC Center-off**	**7064, 7264, 7401**	**H, HD, HP, HT, HTD, HPT ††**	**HL, HLT ‡**
Sinusoidal vibration (g):	10 @ 70-1000 Hz	2 @ 55-500 Hz	10 @ 70-1000 Hz	10 @ 70-1000 Hz
Shock (g):	50	25	50	50
Temperature range	-55°C to +71°C	-55°C to +71°C	-55°C to +71°C	-55°C to +71°C
Mechanical Data	**HC Center-off**	**7064, 7264, 7401**	**H, HD, HP, HT, HTD, HPT ††**	**HL, HLT ‡**
Weight, max. (oz./lbs.):	15 oz.	.59-2.6 lbs.	14 oz.	15 oz.
Dimensions, max. (in.): (L x W x H)	2.50 diameter x 3.13 4.41 x 2.0 x 3.75	2.76 x 2.1 x 2.56	2.50 diameter x 3.13	2.50 diameter x 3.13
Option(s) available:	Gasket sealed models	Special units upon request	Auxiliary 5 Amp contacts	Auxiliary 5 Amp contacts

**30 Amps for AC coil † ±20% @ 25°C †† HT (power transfer model) ‡ HLT (power transfer model)

AC/DC POWER CONTACTORS *50 - 450 Amps*



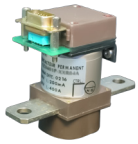


Leach Series:	W, WC, WL	A, AJ	Busbar Series - HB, ZB, WB	Plug-in Series	Modcon Series
Rating:	250-275 Amps	300-400 Amps	60-275 Amps	60 Amps	50, 90, 175, 350, 450 Amps
Contact configuration(s):	1 PDT-DM-DB, 3 PST/NO 1 PST/NO-DM, 1 PST/NC-DB	1 PST/NO DM	3 PST/NO	3 PST/NO	3 PST/NO 3 PDT
Style:	Non-latch, latch	Non-latch	Non-latch	Non-latch	Non-latch
Designed to:	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106
Qualified to:		M6106/33			
Electrical Data	**W, WC, WL**	**A, AJ**	**Busbar Series**	**Plug-in Series**	**Modcon Series**
Contact rating (Amps)					
@ 28 VDC					
Resistive:	125	300/400			
Inductive:	75	100/150			
Motor:	75	250/250			
Lamp:					
@ 115/200 VAC, 400 Hz, 3Ø	**W, WC, WL**	**A, AJ**	**Busbar Series**	**Plug-in Series**	**Modcon Series**
Resistive:	275		50 to 275	60	50 to 350
Inductive:	275		50 to 275		
Motor:	175				
Lamp:					
@ 115 VAC, 50/60 Hz Δ	**W, WC, WL**	**A, AJ**	**Busbar Series**	**Plug-in Series**	**Modcon Series**
Resistive:					
Inductive:					
Motor:					
Lamp:					
Nominal coil voltage(s):	28 VDC 115 VAC, 400 Hz (W/WC) 28 VDC Suppressed (W/WC)	6, 12, 28 VDC	28 VDC	28 VDC	28 VDC
Resistance, Ohms ±10% @ 25° C for 28 VDC:	(W) 90Ω; (WL) 9.8Ω (WC) 100Ω*	6 VDC, 4Ω; 12 VDC, 15Ω; 28 VDC, 60Ω			
Operate time, max. (ms)	**W, WC, WL**	**A, AJ**	**Busbar Series**	**Plug-in Series**	**Modcon Series**
DC Coil:	60	35	12 to 30	50	30
AC Coil:	60				
Release time, max. (ms)					
DC Coil:	40	15	10 to 15	20	30
AC Coil:	125				
Bounce time, max. (ms):	4	4	4	3	2
Environmental Data	**W, WC, WL**	**A, AJ**	**Busbar Series**	**Plug-in Series**	**Modcon Series**
Sinusoidal vibration (g):	10 @ 60-2000 Hz	10 @ 70-500 Hz 5 @ 500-2000 Hz	10@ 5-2000 Hz	‡‡‡‡	‡‡‡‡
Shock (g):	20	25	20	30	15
Temperature range	-55°C to 85°C	-55°C to +71°C	-54°C to +85°C	-15°C to +65°C	-40°C to + 85°C
Mechanical Data	**W, WC, WL**	**A, AJ**	**Busbar Series**	**Plug-in Series**	**Modcon Series**
Weight, max. (oz./lbs.):	4.5 lbs.	1.75 lbs.	Up to 2.0 lbs.	Up to 4.37 lbs.	0.5 lbs. to 2.7 lbs.
Dimensions, max. (in.): (L x W x H)	4.625 x 5.56 x 4.10	3.90 x 3.64 x 2.80	4.50in x 3.67in x 2.94in Max	4.43 x 4.43 x 5.0 Max	3.51 x 2.46 x 2.36 Max
Option(s) available:	Auxiliary 8 Amp contacts Magnetic latch ** Center-off versions †, GFI (W)	Auxiliary 5 Amp contacts	Auxiliary 2 Amp contact Dust proof enclosure Gasket Sealed	Auxiliary 5 Amp contacts Smart electronics Dust proof enclosure Gasket Sealed	Dust proof enclosure Gasket Sealed

*±20% @ 25°C **WL model † WC model †† Z model ‡ Current sensing with remote control capability ‡‡Short-time rated for starting loads. ‡‡‡‡Contact factory for detailed information

AC/DC POWER CONTACTORS *100 - 700 Amps*




Leach Series:	ZC, ZCD Center-off	Z, ZG, ZJ	ZL, ZLD	CC02, CC04	Leach Series:	707-CC07
Rating:	100 Amps	120-180 Amps	Up to 120 Amps	200-500 Amps	Rating:	700 Amps
Contact configuration:	3 PDT-NO, 1 PDT/NO DM-DB	3 PDT, 3 PST/NO, SPDT-DB-DM	3 PDT	1 PST/NO DM	Contact configuration:	1 PNO - DM
Style:		SPST/NO-DM, SPST/NC-DB	1 PDT-DB-DM (latch)	Permanent duty bus bar mounting	Auxiliary:	(†)
Designed to:	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106	MIL-PRF-6106	Designed to:	MIL-PRF-6106
Qualified to:				AIR 7304 AIR 8456 B	Related standard:	AIR7304, AIR8456B, AIR9456
Electrical Data	**ZC, ZCD Center-off**	**Z, ZG, ZJ**	**ZL, ZLD**	**CC02, CC04**	**Electrical Data**	**707-CC07**
Contact rating (Amps)					Contact rating (Amps)	
@ 28 VDC					**@ 28 VDC**	
Resistive:	50	50	50	200-400	Resistive:	700 (In)
Inductive:	30	30	30	125-200	Inductive:	700
Motor:	30	30	30	125-200	Motor:	
Lamp:						
@ 115 VAC, 400 Hz, 3Ø	**ZC, ZCD Center-off**	**Z, ZG, ZJ**	**ZL, ZLD**	**CC02, CC04**	**Coil data @ 28Vdc & ambient temperature**	**707-CC07**
Resistive:	100	120-180	120			
Inductive:	100	120-180	120		Pull-in current (A):	6.5A
Motor:	60	80-120	80		Holding current (mA):	375mA
Lamp:						
@ 115 VAC, 50/60 Hz, 3Ø	**ZC, ZCD Center-off**	**Z, ZG, ZJ**	**ZL, ZLD**	**CC02, CC04**	**Auxiliaries @ 28 VDC**	**707-CC07**
Resistive:	60	60	60		Resistive:	
Inductive:	60	60	60		Inductive:	
Motor:	40	60	60			
Lamp:					Lamp:	1.5
Nominal coil voltage(s):	6, 12, 28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	6, 12, 28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	6, 12, 28 VDC 115 VAC, 400 Hz 115 VAC, 60 Hz	28 VDC	**Auxiliaries @ 115 VAC 400 Hz, 3Ø**	**707-CC07**
Resistance, Ohms ±10% @ 25° C for 28 VDC:	6 VDC, 9.3Ω; 12 VDC, 38Ω; 28 VDC, 150Ω **; 115 VAC, 0.9 Amp	6 VDC, 7Ω; 12 VDC, 28Ω; 28 VDC, 113Ω; 115 VAC, .12 Amp	6 VDC, 10Ω; 12 VDC, 40Ω; 28 VDC, 163Ω **	7.2/200, 4.4/152	Resistive:	-
					Lamp:	-
Operate time, max. (ms)	**ZC, ZCD Center-off**	**Z, ZG, ZJ**	**ZL, ZLD**	**CC02, CC04**	**Operate time, max. (ms)**	**707-CC07**
DC Coil:	60	60	60	30	DC Coil:	Up to 40
AC Coil:	60	60	60		AC Coil:	
Release time, max. (ms)					**Release time, max. (ms)**	
DC Coil:	40	40		20	DC Coil:	20
AC Coil:	80	40			AC Coil:	
Bounce time, max. (ms):	4	4	4		Bounce time, max. (ms):	4
Environmental Data	**ZC, ZCD Center-off**	**Z, ZG, ZJ**	**ZL, ZLD**	**CC02, CC04**	**Environmental Data**	**707-CC07**
Sinusoidal vibration (g):	5 @ 70-500 Hz	10 @ 70-1000 Hz	10 @ 55-500 Hz	10 @ 5-2000 Hz	Sinusoidal vibration (g):	10
Shock (g):	15	50	15	30	Shock (g):	30 to 50
Temperature range	-55°C to +71°C	-55°C to +71°C	-55°C to +71°C		Temperature range	-55° C to +125° C
Mechanical Data	**ZC, ZCD Center-off**	**Z, ZG, ZJ**	**ZL, ZLD**	**CC02, CC04**	**Mechanical Data**	**707-CC07**
Weight, max. (oz./lbs.):	32-43.2 oz.	32-43.2 oz.	2.0-2.75 lbs.	9 oz.	Weight, max. (oz./lbs.):	4.5 lbs.
Dimensions, max. (in.): (L x W x H)	3.65 diameter x 4.28	3.65 diameter x 4.28	3.65 diameter x 4.28	3.1 x 1.42 x 3.13	Dimensions, max. (in.): (L x W x H)	6.3 x 3.8 x 3
Option(s) available:	Gasket sealed models Magnetically latched models	Auxiliary 5 Amp contacts, GFI (Z) Gasket sealed models	Auxiliary 5 Amp contacts	Auxiliary 2 Amp contacts Low level contacts Dust proof enclosure	Option(s) available:	Auxiliary 5 Amp contacts Dust poor enclosure

*1NO + 1NC auxiliary contact ** ± 20% @ 25°C. May be associated with a Hall current sensor

† P/N ending by 7: no auxiliary contact. P/N ending by 6 and 9: 1 NO + 1NC aux contacts. P/N ending by 8: 2NO + 2NC aux contacts

TIME DELAY RELAY DATA

Specifying a Fixed Time Delay Period

Leach International Corporation and the military identify the time delay period in the same manner. A four-digit dash number specifies the delay period in milliseconds. The first three numbers are significant figures while the fourth indicates the number of zeros to follow the first three.

Examples: -1001 = 1,000 milliseconds (1 second)
-2502 = 25,000 milliseconds (25 seconds)
-5000 = 500 milliseconds (0.5 second)

In the case of a repeat cycle timer (flasher), a similar method is used. The dash number indicates length of each cycle. (Note: each cycle is 50% on, 50% off).

Examples: -2500 = 250 milliseconds cycle or 4 cycles/sec.
-1001 = 1,000 milliseconds cycle or 1 cycle/sec.
-6002 = 60,000 milliseconds cycle or 1 cycle/min.

Use and Selection of Adjustable Timers

Adjustable timers are useful in system prototyping or breadboard circuits where the precise time delay period is unknown. By the use of an external resistor, these devices are adjustable over a specific "decade range." Although any decade range within the overall timing range can be supplied, the following ranges are offered as standards:

0.1 to 1 second (Specify -1001)
1.0 to 10 seconds (Specify -1002)
5 to 50 seconds (Specify -5002)
50 to 500 seconds (Specify -5003)

Note from above that in specifying a decade range, the four-digit dash number indicates the high or upper limit of the desired decade range. The formula below provides the proper resistance value to achieve the desired time delay:

$$R_{ext} = \left(\frac{T_1}{T_0} - 1\right) 100{,}000 \text{ Ohms}$$

Where: R_{ext} = External resistance value (Ohms)
T_1 = Desired time in seconds
T_0 = Minimum time (low end of the decade range) in seconds

For example, if a 30-second delay is desired and a 5- to 50-second adjustable timer is being used, the calculation is:

$$R_{ext} = \left(\frac{30}{5} - 1\right) 100{,}000 \text{ Ohms or } R_{ext} = 500 \text{ K Ohms}$$

Recommended resistors IAW MIL-R-55182 ⅛ WATT, 1% (RNC6OHXXXXFS).

Military Part Numbering Method

M83726 / XX - XXXX X X

1. Basic military specification
2. Specific "slash sheet"
3. Time range designation (see tables above)
4. Terminal and/or quality level designator

QPL Cross Reference - Military Part Number to Leach Part Number

Military Part Number	Leach Part Number	Operation Mode	Output	Time Range (seconds)
M83726/20	TD-1435	Delay on operate - fixed time	250MA, SPST	0.05-500
M83726/21	TD-1436	Delay on operate - adjustable**	250MA, SPST	0.05-500
M83726/22	TD-1412	Repeat cycle timer (flasher)	250MA, SPST	1-600 cycles/min.††
M83726/23	TD-1505	"True" delay on release - fixed †	10A, 4PDT	0.1-75
M83726/24	TDH-1609	Delay on operate - fixed time	150MA, SPST	0.05-500
M83726/25	TDH-1610	Delay on release - fixed time	150MA, SPST	0.05-500
M83726/28	TDH-8050/8051	Delay on operate - fixed time	10A, 2PDT	0.1-600 ‡
M83726/29	TDH-8070/8071	Delay on release - fixed time	10A, 2PDT	0.1-600 ‡
M83726/30	TDH-8060/8061	Delay on operate - adjustable	10A, 2PDT	0.1-600 ‡
M83726/31	TDH-8080/8081	Delay on release - adjustable	10A, 2PDT	0.1-600 ‡

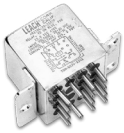
** All adjustable timers use external resistor (not supplied) to adjust timing range.

† "True" time delay on release requires no external power during timing period.

†† Each cycle is 50% on, 50% off.

‡ Timing ranges above 500 seconds are not MIL qualified.

TIME DELAY RELAYS *10-25 Amps*

Leach Series:	TDH-6000	TDH-800	TDH-7000	T531
On operate, fixed time:	TDH-6050/51	TDH-8050/51	TDH-7050/51	T531
On operate, adjustable:	TDH-6060/61	TDH-8060/61	TDH-7060/61	T531
On release, fixed time:	TDH-6070/71	TDH-8070/71	TDH-7070/71	T531
On release, adjustable:		TDH-8080/81		T531
Repeat cycle timer (flasher):				
Designed to:		MIL-PRF-83726	MIL-PRF-83726	
Qualified to:		M83726/28, 29, 30, 31		
Electrical Data	**TDH-6000**	**TDH-8000**	**TDH-7000**	**T531**
Contact rating (resistive):	10 Amps	10 Amps	10 Amps	25 Amps
Contact form:	2 PDT	2 PDT	4 PDT	3 PDT
Timing range (seconds):	0.1-600	0.1-600	0.1-600	0.1-1000
Accuracy (percentage) *:	±10	±10	±10	±3 to ±10
Recycle time, max. (ms) **:	50	50	50	≤ 50
Input & control voltage:	20-30 VDC	20-30 VDC	20-30 VDC	18-32 VDC
Operating current, max.:	150 mAmps	150 mAmps	150 mAmps	
Control current, max.:				
EMI per MIL-STD-461 †:	Class 1D	Class 1D	Class 1D	
Dielectric strength, Vrms				
Sea level:	1000/60 Hz	1000/60 Hz	1000/60 Hz	500/50 Hz
80,000 ft.:	350/60 Hz	350/60 Hz	350/60 Hz	250/50 Hz
Insulation resistance megohms:	1000 @ 500 VDC ‡	1000 @ 500 VDC ‡	1000 @ 500 VDC ‡	≥ 500 @ 500 VDC
Environmental Data	**TDH-6000**	**TDH-8000**	**TDH-7000**	**T531**
Operating temperature (°C):	-55 to +125	-55 to +125	-55 to +125	-55 to +125
Vibration				
Sine (G):	20	30	20	20/10-2000 Hz
Random (G^2/Hz):	0.2	0.4	0.2	
Shock (g):	100	100	100	100/6 ms
Acceleration (g):	20	15	20	
Seal:	Hermetic	Hermetic	Hermetic	Hermetic
Mechanical Data	**TDH-6000**	**TDH-8000**	**TDH-7000**	**T531**
Weight, max. (oz./lbs.):	1.9 oz. (54 g.)	2.5 oz. (71 g.)	3.0 oz. (85 g.)	4.233 oz. (120 g.)
Dimensions, max. (in.): (L x W x H)	1.025 x 5.25 x 1.520	1.025 x 1.025 x 1.010	1.025 x 1.025 x 1.50	1.73 x 1.54 x 1.02
Mating socket P/N:	SO-1055-8693	SO-1043-8308	SO-1056-8691	S502, SF502
Terminal types ††:	TDH-60X0=PI TDH-60X1=SH	TDH-80X0=PI TDH-80X1=SH	TDH-70X0=PI TDH-70X1=SH	PI, SH

* The accuracy specification applies to any combination of temperature and voltage. For units with a timing range less than 1 second, add ±10 milliseconds to the ±10% tolerance.

** Recycle time is that action which must occur to assure a new timing cycle can be completed within tolerance:

A. TD on operate—Remove power from input terminals for the period specified.

B. TD on release—Apply power to the control terminal for the period specified.

C. "True" TD on release—Apply power to the input terminals for the period specified.

† EMI test limits will not be exceeded during the timing interval or when continuously energized under steady state conditions, per paragraph 3.23, MIL-PRF-83726A.

†† Definition of terminal type codes:

PI = Plug-in type for use with mating relay socket.

SH = Tinned solder hook terminals for direct hard wiring.

PC = Tinned straight pins for printed circuit board insertion.

TM = Compatible with M12883/52 socket module and M12883/53 mounting track.

‡ Terminals X1 and X2 must be connected together during the test. Dielectric withstanding voltage and insulation resistance are measured between all mutually insulated terminals and between all terminals and case.

‡‡ Not available for new design; commercially available.

SOLID-STATE TIME DELAY RELAYS *150-250 mAmps*

Programmable

Leach Series:	TDH-1609, TDH-1610	TD-1435, TD-1436	TD-1412‡‡‡	FLSH402
On operate, fixed time:	TDH-1609	TD-1435		FLSH402
On operate, adjustable:		TD-1436		FLSH402
On release, fixed time:	TDH-1610			FLSH402
On release, adjustable:				FLSH402
Repeat cycle timer (flasher):			TD-1412	FLSH402
Designed to:	MIL-PRF-83726	MIL-PRF-83726	MIL-PRF-83726	
Qualified to:	M83726/24, 25	M83726/20, 21	M83726/22	
Electrical Data	**TDH-1609, TDH-1610**	**TD-1435, TD-1436**	**TD-1412**	**FLSH402**
Contact rating (resistive):	150 mAmps	250 mAmps	250 mAmps ‡‡	250 mAmps
Contact form:	SPST	SPST	SPST	2 SSO
Timing range (seconds):	0.05-500	0.05-500	1 cycle/min. to 10 cycles/second	0.1-625
Accuracy (percentage) *:	±10	±10	±10	±3 to ±10
Recycle time, max. (ms) **:	10	10	10	≤20
Input & control voltage:	20-32 VDC	18-32 VDC	18-32 VDC	18-32 VDC
Operating current, max.:	10 mAmps	5 mAmps + load	5 mAmps + load	
Control current, max.:				5 mAmps @ 28 VDC
EMI per MIL-STD-461 †:	Class 1D	Class 1D	Class 1D	
Dielectric strength, Vrms				
Sea level:	1000/60 Hz	1000/60 Hz	1000/60 Hz	750/50 Hz
80,000 ft.:		350/60 Hz	350/60 Hz	
Insulation resistance megohms:	1000 @ 500 VDC ‡	1000 @ 500 VDC ‡	1000 @ 500 VDC ‡	≥ 100 @ 100 VDC
Environmental Data	**TDH-1609, TDH-1610**	**TD-1435, TD-1436**	**TD-1412**	**FLSH402**
Operating temperature (°C):	-55 to +125	-55 to +125	-55 to +125	-55 to +125
Vibration				
Sine (G):	20	30	30	30/70-2000 Hz
Random (G^2/Hz):				
Shock (g):	1100	1100	1100	50/11 ms
Acceleration (g):	100	100	100	
Seal:	Hermetic	Hermetic	Hermetic	Hermetic
Mechanical Data	**TDH-1609, TDH-1610**	**TD-1435, TD-1436**	**TD-1412**	**FLSH402**
Weight, max. (oz./lbs.):	.56 oz. (16g.)	0.5 oz. (14 g.)	0.5 oz. (14 g.)	0.353 oz. (10 g.)
Dimensions, max. (in.): (L x W x H)	.810 x .410 x .640	.810 x .410 x .310	.810 x .410 x .310	0.91 x 0.91 x 0.24
Mating socket P/N:	See note ††			
Terminal types ††:	TM	SH, PC	SH, PC	PI

* The accuracy specification applies to any combination of temperature and voltage. For units with a timing range less than 1 second, add ±10 milliseconds to the ±10% tolerance.

** Recycle time is that action which must occur to assure a new timing cycle can be completed within tolerance:

A. TD on operate—Remove power from input terminals for the period specified.

B. TD on release—Apply power to the control terminal for the period specified.

C. "True" TD on release—Apply power to the input terminals for the period specified.

† EMI test limits will not be exceeded during the timing interval or when continuously energized under steady state conditions, per paragraph 3.23, MIL-PRF-83726A.

†† Definition of terminal type codes:

PI = Plug-in type for use with mating relay socket.

SH = Tinned solder hook terminals for direct hard wiring.

PC = Tinned straight pins for printed circuit board insertion.

TM = Compatible with M12883/52 socket module and M12883/53 mounting track.

‡ Terminals X1 and X2 must be connected together during the test. Dielectric withstanding voltage and insulation resistance are measured between all mutually insulated terminals and between all terminals and case.

‡‡ Output rating equivalent of two MS25237-387 lAmps in parallel.

‡‡‡ Not available for new design; commercially available.

POWER MONITORS AND SENSORS *2-10 Amps*





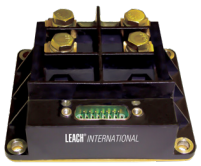

Leach Series:	V 610	V 110	V 210, V 310	F410	P510	CS 400, CS 500
Description:	AC Power Monitor	DC Voltage Sensor	AC Under or Over Voltage Sensor	Frequency Sensor	Phase Sequence Sensor	Current Sensing Relay
Operational Data	**V 610**	**V 110**	**V 210, V 310**	**F410**	**P510**	**CS 400, CS 500**
Input Supply:	90-150 VRMS 180-240 VRMS 44-450 Hz 3Ø, 4 wire	19.5-30 VDC	90-150 VRMS 180-240 VRMS 50-450 Hz 3Ø, 4 wire	80-150 VRMS 160-240 VRMS 40-480 Hz 3Ø, 4 wire	90-150 VRMS 180-240 VRMS 44-450 Hz 3Ø, 4 wire	18-32 VDC
Sensed voltage:		1-50 VDC				
Sensing Functions:	Trip point ranges Under voltage: 90-130 VRMS, ± 2% 180-220 VRMS, ± 2% Over voltage: 110-150 VRMS, ±2% 200-240 VRMS, ±2% Under frequency: 44-58 Hz, ±2% 350-390 Hz, ±2% Over frequency: 55-62 Hz, ±2% 410-450 Hz, ±2% Phase rotation ABC Time delay: .05-10 sec., ±10%	Energize above, de-energize below selected trip point: 1-50 VDC, ±2%	Selected trip point within: 90-130 VRMS or 180-230 VRMS, ±2%	Energize above, de-energize below selected trip point: 320-480 Hz, ±2% Senses any one line to neutral	Energize when phase sequence is ABC. De-energize for all other sequences, open neutral or loss of voltage	Sensing range: 0.8-49 Amps Min. pickup: — Max. pickup: 5.5-49 Amps Min. dropout: 0.08-.8 Amps Min. delta: 0.16-1.6 Amps Max. delta: 4-31 Amps
Output contacts: *	2 PDT, 10 Amps or 3 PDT, 10 Amps	10 Amps 2 PDT or 4 PDT	10 Amps 2 PDT or 4 PDT	10 Amps 2 PDT or 4 PDT	10 Amps 2 PDT or 4 PDT	2 Amps 2 PDT
Environmental Data	**V 610**	**V 110**	**V 210, V 310**	**F410**	**P510**	**CS 400, CS 500**
Operating temperature (°C):	-55 to +125	-55 to +125	-55 to +125	-55 to +125	-55 to +125	-55 to +125
Thermal shock (MIL-STD-202):	Method 107	Method 107	Method 107	Method 107	Method 107	
Vibration (MIL-STD-202):	Method 204 **	Method 204 **	Method 204 **	Method 204 **	Method 204 **	15 g./70-3000 Hz
Random:	Method 214 †	Method 214 †	Method 214 †	Method 214 †	Method 214 †	
Shock (MIL-STD-202):	Method 213 ††	Method 213 ††	Method 213 ††	Method 213 ††	Method 213 ††	50G/11 ms
Acceleration (MIL-STD-202):	Method 212	Method 212	Method 212	Method 212	Method 212	
Seal:	Hermetic (potted)	Potted	Potted	Potted	Potted	Hermetic
Mechanical Data	**V 610**	**V 110**	**V 210, V 310**	**F410**	**P510**	**CS 400, CS 500**
Weight, max. (oz./grams):	27 oz. (767 g.)	10 oz. (284 g.)	10 oz. (284 g.)	10 oz. (284 g.)	10 oz. (284 g.)	2.469 oz. (70 g.)
Dimensions, max. (in.): (L x W x H)	2.31 x 2.18 x 3.2 ‡	1.531 x 1.531 x 2.34	1.531 x 1.531 x 2.34	1.531 x 1.531 x 2.34	1.531 x 1.531 x 2.34	1.73 x 1.01 x 1.02
Finish:	Electro tin, type 1 ‡‡	Electro tin, type 1 ‡‡	Electro tin, type 1 ‡‡	Electro tin, type 1 ‡‡	Electro tin, type 1 ‡‡	Corrosion resistant
Engineering Data	**V 610**	**V 110**	**V 210, V 310**	**F410**	**P510**	**CS 400, CS 500**
Insulation resistance:	100 M Ohms ♦	100 M Ohms ♦	100 M Ohms ♦	100 M Ohms ♦	100 M Ohms ♦	>100 M Ohms @ 50VDC
Dielectric strength (MIL-STD-202):	Method 301	Method 301	Method 301	Method 301	Method 301	1000 VRMS/50 Hz.
Voltage strength (MIL-STD-202):	Method 301	Method 301	Method 301	Method 301	Method 301	
Voltage transients (MIL-STD-704):	Category B	Category B	Category B	Category B	Category B	
Operating current						
AC sensors, max. (mAmps):	75 per phase	75 per phase	75 per phase	75 per phase	75 per phase	
DC sensors, max. (mAmps):	175	175	175	175	175	
EMI (MIL-STD-461):	Class 1D	Class 1D	Class 1D	Class 1D	Class 1D	
Life test						
High level (cycles, min.):	100,000	100,000	100,000	100,000	100,000	
Low level (cycles, min.):	100,000 ♦♦	100,000 ♦♦	100,000 ♦♦	100,000 ♦♦	100,000 ♦♦	

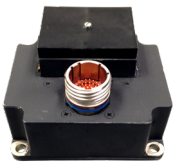
*Ratings shown are resistive loads @ 28 VDC, 115 VAC 400 Hz and 115/200 VAC 400 Hz. **Condition D, except 5-2000 Hz frequency. †Test condition IG; 15 min./plane.
†† Test condition A (50G) ‡ Solder hook or circular MIL connector. ‡‡ Per MIL-T-10727. ♦ Minimum intial test; 50 M Ohms after test. ♦♦Plus 400,000 cycles mechanical life.

SOLID STATE POWER CONTROLLERS




Leach Series:	EPM-109	EPM-110	P600-Air	P800
Rating:	7.5 and 12 Amps	40 Amps	80 Amps	150 Amps
Style/Voltage:			Stand Alone/28 VDC	Stand Alone/28VDC
Designed to:			MIL-P-81653**	
Configuration:	4 Channels	2 Channels		
Electrical Data	**EPM-109**	**EPM-110**	**P600-Air**	**P800**
Bias on (voltage):	4.5-5.5	4.5-5.5	4.5-5.5 or 16-33.5	16 - 33.5
Control on (voltage):			16-32	16 - 33.5
Status Output Type:			Load Current + Trip + RCCB	Gate, LVD + RCCB
Typical Operate Time (ms):			1	5
Full Load Voltage Drop (mV):			100	300
Environmental Data	**EPM-109**	**EPM-110**	**P600-Air**	**P800**
Operating temperature (°C):	-40 to +75	-40 to +75	-40 to +70	-40 to +71
Vibration (g):	20 (20-2000 Hz)	20 (20-2000 Hz)	5 (5-500 Hz)	13.3 (10 - 2000 Hz)
Shock (g):	500	500	30	6
Acceleration (g):	500	500	10	6.75
Seal:			Hermetic	
Mechanical Data	**EPM-109**	**EPM-110**	**P600-Air**	**P800**
Weight, max. (grams):	150	150	500	500
Dimensions, max. (mm): (L x W x H)	91 x 91 x 23	91 x 91 x 23	95 x 84.5 x 75	80 x 96 x 45

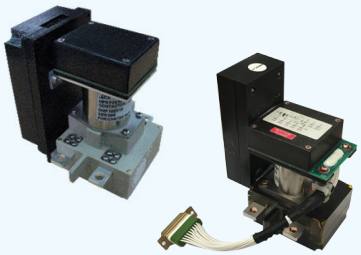




Leach Series:	EPM-111	EPM-112 (WHCU)
Rating:	60 Amps	40 Amps (Dual Channel)
Style/Voltage:		28 Vdc
Designed to:		
Electrical Data	**EPM-111**	**EPM-112 (WHCU)**
Bias on (voltage):	4.5-5.5	28 Vdc
Control on (voltage):		Temperature Controlled
Statue Output Type:		ARINC 429
Typical Operate Time (ms):		
Full Load Voltage Drop (mV):		100 mV
Environmental Data	**EPM-111**	**EPM-112 (WHCU)**
Operating temperature (°C):	-40 to +75	-40 to +71
Vibration (g):	20 (20-2000 Hz)	4.12 (10-2000 Hz)
Shock (g):	500	20
Acceleration (g):	500	18
Seal:		
Mechanical Data	**EPM-111**	**EPM-112 (WHCU)**
Weight, max. (grams):	500	650
Dimensions, max. (mm): (L x W x H)	80 x 96 x 41	80 x 96 x 62.3

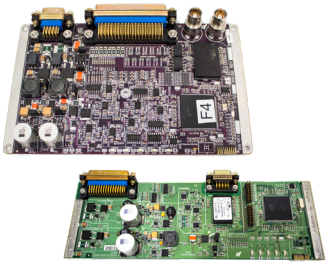
*1NO + 1NC auxiliary contact ** ± 20% @ 25°C † 2PDT auxiliary contact. May be associated with a Hall current sensor †† Refer to document RTCA/DO-160

ADDITIONAL CAPABILITIES



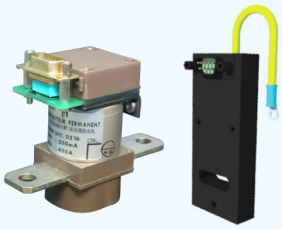
High Voltage DC Contactors

Utilizes conventional contactors with a proprietary active arc suppression. Shorter arc period, lower contact erosion, higher number of cycles. Flexible architecture up to 1000A can be used at 270VDC, 540VDC, and beyond.



270 Vdc Solid-State Power Controllers

Next generation Solid-State Power Controllers leveraging state of the art technologies. Ideal for a variety of aerospace, military and transportation applications.



DC Current Sensor Series

A Hall Effect current sensor with galvanic isolation designed to measure DC current, and certified for aerospace applications. The output provides a bidirectional linear voltage signal indicating measured current.

AC Smart Module

The AC Smart Module is fit for commercial and military aerospace power distribution systems. It can be used as a remote control circuit breaker when interfaced with a power contactor. It also has a dedicated load monitoring and protection function. Can be utilized to provide precision differential protection.

Business Jet Thrust Reverser Control Unit

Controls operation of the thrust reverser in response to pilot command and sensor inputs. The TRCU operates the hydraulic control valves that run the thrust reverser while providing monitoring via communication bus.

Solid State Relay

Featuring a solid state solution housed in a hermetically sealed 1 inch cube. The solid-state relay incorporates the overcurrent protection function of a circuit breaker and capable of switching 30 Amps (resistive load) at 28 Vdc.

Contact your local sales representative for product details.

www.leachcorp.com

LEACH® *INTERNATIONAL*
CORPORATION

Find your local Sales Representative
www.leachcorp.com

Applications and Technical Support
lina.information@leachcorp.com

FAA Repair Station Number FJ3D503L
Repair Station Contact: MSCGroup@leachcorp.com

6900 Orangethorpe Avenue
Buena Park, CA 90620
(714) 736-7598