

LW-Series

WIPER/WASHER CONTROLS

The LW-Series Electronic Wiper Washer Control combines two switches into one self-contained unit allowing effortless control of both wash and wipe functions from a singular location. A variety of features and options including, Continuous low and high speed wiper positions, Six intermittent delay intervals ranging from 3-18 seconds, Push-to-wash button and an LED Night-light indicator combine to provide the flexibility to meet most any Cab design. The LW-Series is available for 14 or 28 volt operation and can be adapted to single or dual relay systems.



Product Highlights:

- Controls both wash and wipe functions of vehicles
- 14 or 28 Volts
- Illuminated or Non-illuminated options
- Laser etched legends available

Typical Applications:

- On/Off-Highway Equipment
- Agricultural Equipment
- Construction Equipment



Electrical

Contact Rating 1 relay
 8 amps, 14VDC
 4 amps, 28VDC
 2 relays
 1 amps, 14VDC
 1 amps, 28VDC

Terminals .187 (7.4mm) Quick Connect terminations standard.

Protection Reverse polarity protection
 Over voltage protection
 Cold cranking protection according to SAE J1455, Sections. 4.11.1.1.1 and 4.11.1.2.1
 Transient voltage protection which includes load dump and inductive switching according to SAE J1455, sec. 4.11.2.2
 Electrostatic discharge protection according to SAE J1455 Sec. 4.11.2.2.5.1 (Discharge a 150 pf capacitor that has been charged to a potential of 15kV through 150 Ohm resistor.)
 Meets all other EMI/EMC requirements for class C trucks.

Mechanical

Mechanical Vibration Sinusoidal Vibration: 10-55-10 Hz, 0.06" DA, one minute-cycle, three hours/axis
 Random Vibration: Three hours/axis, three mutually perpendicular axes with a test level 4G's.

Frequency	Amplitude
5Hz	0.16 G2/Hz
100Hz	0.16 G2/Hz
500Hz	-3dB/octave roll-off

Tests were conducted according to SAE J1455, Sec 5.7 and Sec. 4.9.4.
 Shock: MIL-STD-202G Method 213B, Test Condition K, 30G's, 11 ms.

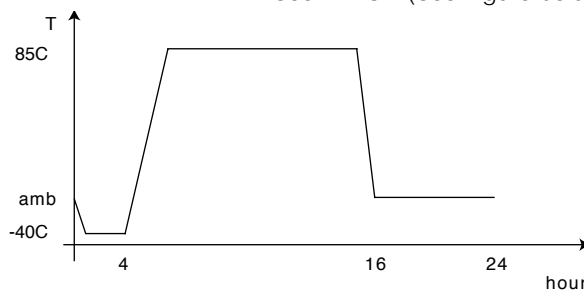
Endurance According to SAE J2349, March 97 for windshield washer switch for Trucks, Buses and Multipurpose Vehicles (20,000 cycle minimum).

Physical Characteristics

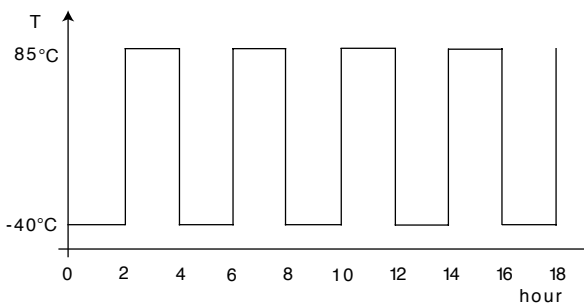
Illumination	LED, rated 100,000 hours 1/2 life
Cover	Acetate
Washer Actuator	Silicone
Toggle Actuator	Nylon 6/6 glass filled
Bracket	Nylon 6/6
Connector	Nylon 6/6 rated 85°C polarized
Washer Function	Momentary
Toggle Function	Maintained Intermittent
Operation	Momentary
Weight	44 grams

Environmental

Operating Temperature -25°C to +85°C
 Temperature Cycle According to SAE J1455, Sec. 4.1.3.1 (See Figure below)



Thermal Shock According to SAE J1455, Sec. 4.1.3.2 (See Figure below)

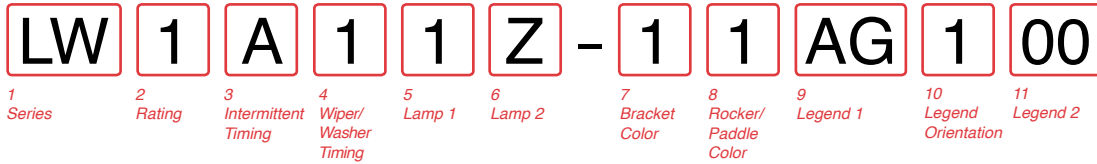


Humidity According to SAE J1455, Sec. 4.2.3 (30 cycles for 8 hrs. with maximum temperature of 85°C and 95% relative humidity).

Dust Bombardment According to SAE J1455, Sec. 4.7.3 (with dust concentration of 0.88gm/m for 24 hours.)

Salt Spray MIL-STD-202G, Method 101D for 96 hours.

*Manufacturer reserves the right to change product specification without prior notice.



1 SERIES
LW Wiper/Washer Control with six intermittent positions:
 low, high, wash/wipe

2 RATING 1

1 8A, 14VDC (1 relay)	4 1A, 14VDC (1 relay)
2 4A, 28VDC (1 relay)	5 1A, 14VDC (2 relay)
3 1A, 14VDC (1 relay)	6 1A, 28VDC (2 relay)

3 INTERMITTENT TIMING
A 2-15 seconds

4 WIPER/WASHER TIMING
1 3 seconds

5 LAMP #1 (ABOVE WASH)

Z No Lamp	2 Red LED
1 Green LED	3 Amber LED

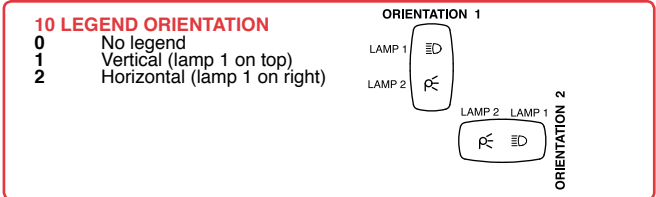
6 LAMP #2 (ABOVE WIPE)

Z No Lamp	2 Red LED
1 Green LED	3 Amber LED

7 BRACKET COLOR
1 Black

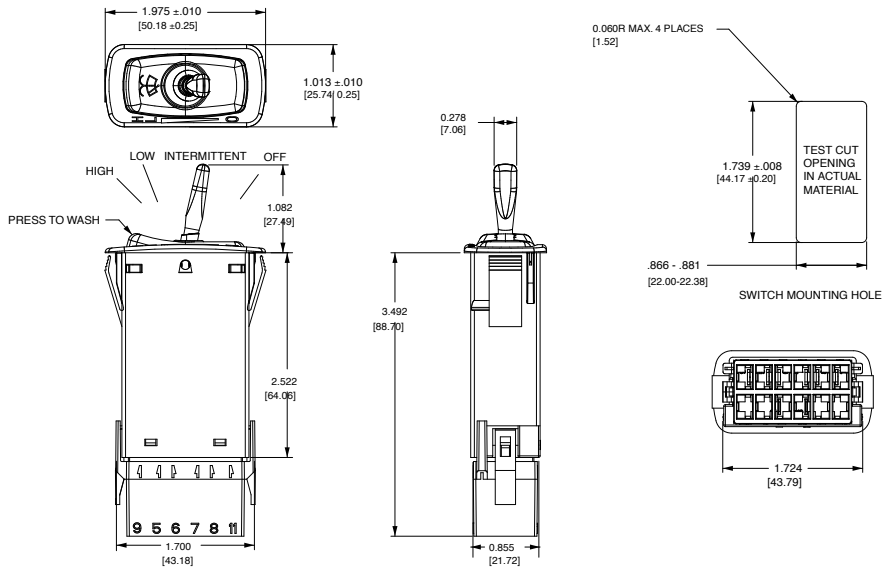
8 ROCKER / PADDLE COLOR
1 Black

9 LEGEND #1
00 No legend
 For legend options, visit us at carlingtech.com



11 LEGEND #2
00 No legend
 For legend options, visit us at carlingtech.com

Notes:
 1 Relay coil current is 1A max. Relay must have an arc suppression in parallel with the coil. Ref P/N LC2-01 for black wiper/washer connector housing.



Principles of operation:

From the OFF position, moving the toggle one step up puts the function into the intermittent slower mode (18 sec.). Moving the toggle another step up reduces the delay time by 3 sec for each of the next six steps. The seventh step up puts the motor into a continuous low-speed mode and the last step up puts the motor into the high-speed mode. Reversing the previous steps puts the motor finally into the stop/parking mode. During the OFF position, intermittent and low-speed modes, pressing the wash button activates the wash function. Wipe function starts after a two second delay from the onset of the washing and continues for three continuous wipes after the wash button is released. For convenience, the wash function is not active during the high-speed mode.

The Wiper Control is designed to interface with single or dual relay systems for intermittent delay and the park function. The high speed is driven directly via a power transistor internal to the module. The coil of the relay is pulled down to ground during the intermittent, low-speed and high-speed modes respectively. (Contact Carling Technologies for wiring diagrams)

Authorized Sales Representatives and Distributors

Click on a region of the map below to find your local representatives and distributors or visit www.carlingtech.com/findarep.



About Carling

Founded in 1920, Carling Technologies is a leading manufacturer of electrical and electronic switches and assemblies, circuit breakers, electronic controls, power distribution units, and multiplexed power distribution systems. With four ISO registered manufacturing facilities and technical sales offices worldwide, Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! To learn more about Carling please visit www.carlingtech.com/company-profile.

To view all of Carling's environmental, quality, health & safety certifications please visit www.carlingtech.com/environmental-certifications

Worldwide Headquarters

Carling Technologies, Inc.
60 Johnson Avenue, Plainville, CT 06062
Phone: 860.793.9281 **Fax:** 860.793.9231
Email: sales@carlingtech.com

Northern Region Sales Office: nrsm@carlingtech.com
Southeast Region Sales Office: sersm@carlingtech.com
Midwest Region Sales Office: mrrsm@carlingtech.com
West Region Sales Office: wrsm@carlingtech.com
Latin America Sales Office: larsm@carlingtech.com

Asia-Pacific Headquarters

Carling Technologies, Asia-Pacific Ltd.,
Suite 1607, 16/F Tower 2, The Gateway,
Harbour City, 25 Canton Road,
Tsimshatsui, Kowloon, Hong Kong
Phone: Int + 852-2737-2277 **Fax:** Int + 852-2736-9332
Email: sales@carlingtech.com.hk

Shenzhen, China: shenzhen@carlingtech.com
Shanghai, China: shanghai@carlingtech.com
Pune, India: india@carlingtech.com
Kaohsiung, Taiwan: taiwan@carlingtech.com
Yokohama, Japan: japan@carlingtech.com

Europe | Middle East | Africa Headquarters

Carling Technologies LTD
4 Airport Business Park, Exeter Airport,
Clyst Honiton, Exeter, Devon, EX5 2UL, UK
Phone: Int + 44 1392.364422 **Fax:** Int + 44 1392.364477
Email: ltd.sales@carlingtech.com

Germany: gmbh@carlingtech.com
France: sas@carlingtech.com



Carling Technologies®

Innovative Designs. Powerful Solutions.