

## NELES ECLIPSE

### Limit Switch for Hazardous Areas and General Purposes

The new improved Neles Eclipse features dual solid state sensors with optional communications integrated into a sealed module. The function module and trigger/indicator attach quickly and conveniently to standard VDI/VDE 3845 (Namur) actuator mounting.

The Eclipse series is available in intrinsically safe and nonincendive versions (EN) for hazardous areas with a removable module and in a general purpose completely sealed micro-connector version (EG).

#### Feature Rich Design Offers Incredible Value

- Position sensors, communication electronics and power output for solenoids are integrated into an extremely compact, rugged enclosure.
- Red/Green visual indicator displays valve status and coordinates with Red/Green LEDs.
- Eclipse sensors and electronics are fully sealed with epoxy to eliminate hazard threat and corrosion problems.
- Direct attachment to ISO/Namur mounting pads used on most popular actuators.
- High intensity red and green LEDs indicate electronic switch status to confirm electrical operation.
- Sensor triggers are adjustable in 3.5 degree increments through 360 degrees for precision and flexibility.
- All mechanical parts are made of Lexan® or stainless steel for corrosion resistance and durability.
- No moving mating parts assure long life and trouble-free operation.

#### EN: The Ultimate in Convenience and Reliability

- Suitable for all hazardous areas.
- Approved for ATEX II 1 G, Ex ia IIC T5.
- Rated for IP67 (NEMA 4, 4X, 6)
- Additional termination points and dual conduit entries eliminate junction boxes for solenoid valve termination.
- Convenient wiring compartment and pre-labeled terminal strip enables rapid installation.



#### EG: Convenient Micro-Connector Wiring

- Rated for IP67 (NEMA 4, 4X, 6)
- Available with additional built in connector for solenoid termination.
- Microconnectors with potted and sealed enclosure eliminate any threat of moisture contamination in wiring.
- Electronic module integrated permanently into enclosure.



EG type with micro-connectors

## SENSING, COMMUNICATION AND VISUAL INDICATION

Neles Eclipse offer incredible value and space efficiency. Communications, position sensing, power outputs and auxiliary inputs are sealed in the Eclipse function module. Select from Namur sensors, SST switching sensors, AS-Interface, DeviceNet or Modbus valve communication terminals. All sensor options are fully solid state and sealed.



### SST Switching Sensors (\_33\_, \_34\_)

**Configuration:** 2 solid state sensors (Normally Open \_33\_ or Normally Closed \_34\_) 2 wire termination points for one solenoid

**Indications:** \_33\_: Target on sensor = LED on  
Target off sensor = LED off  
\_34\_: Target on sensor = LED off  
Target off sensor = LED on

**Operating voltage:** 8–125 V DC; 24–125 V AC  
**Maximum voltage drop:** 7.0 V / 100 mA  
**Current ratings:**  
Max inrush: 2.0 A  
Max continuous: 0.3 A  
Minimum on current: 3.0 mA (AC), 2.0 mA (DC)  
Max leakage current: 0.5 mA

### Namur Sensors (\_44\_)

**Configuration:** 2 Namur sensors (Normally Closed) 2 wire termination points for one solenoid

**Operating voltage:** 6–29 V DC  
**Current ratings:** Target on (LED off) <1.0 mA  
Target off (LED on) >3.0 mA

Must use intrinsically safe repeater barrier.  
Namur sensors conform to DIN 19234 standard.

### AS-Interface VCT (\_96\_)

**Communication protocol:** AS-Interface (AS-i)  
**Configuration:** 2 discrete inputs (sensors) 2 auxiliary discrete inputs 2 power outputs (for solenoids)

**Output voltage:** 25 - 30 V DC  
**Max. output current:** 160 mA, both outputs combined (current limited to 200 mA)  
**Max. output power:** 4 W, both outputs combined  
**AS-i version:** 2.1  
**Devices per network:** 31

### AS-Interface VCT (\_97\_) with Extended Addressing

**Communication protocol:** AS-Interface (AS-i)  
**Configuration:** 2 discrete inputs (sensors) 2 auxiliary discrete inputs 1 power outputs (for solenoids)

**Output voltage:** 25 - 30 V DC  
**Max. output current:** 100 mA  
**Max. output power:** 2.4 W  
**AS-i version:** 2.1  
**Devices per network:** 62

### DeviceNet VCT (\_92\_)

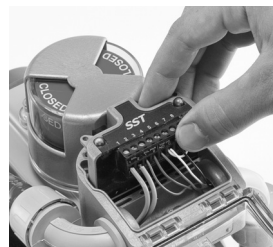
**Communication protocol:** DeviceNet  
**Configuration:** 2 discrete inputs (sensors) 2 discrete outputs (solenoids) 1 analog auxiliary input, 4-20mA

**Output voltage:** 24 V DC  
**Max. output current:** 160 mA, both outputs combined  
**Max. output power:** 4 W, both outputs combined

### Modbus VCT (\_95\_)

**Communication protocol:** Modbus  
**Configuration:** 2 discrete inputs (sensors) 2 power outputs (solenoids) 1 analog auxiliary input, 4-20mA

**Output voltage:** 24 V DC  
**Max. output current:** 160 mA, both outputs combined  
**Max. output power:** 4 W, both outputs combined



EN type features a removable, fully sealed dual module to facilitate quick, convenient maintenance and wiring.

### Triggering & Visual Indicator



### Standard Red/Green Indicator

Red and green visual indication is viewable from 360 degrees around the automated valve and from above at distances up to 20 m. Eclipse solid state inductive sensors are activated by stainless steel targets embedded into the visual indicator drum. Open and Closed targets may be independently adjusted in 3.5 degree increments.

## OTHER SPECIFICATIONS

### Materials of Construction

Housing	Lexan® Polycarbonate
Drum Components	Lexan® Polycarbonate
Fasteners	Stainless Steel
Triggers and Coupling	Stainless Steel

Lexan® is a registered trademark of General Electric Corporation.

Operating Life	Unlimited
Temperature Range	-40...+80 °C (-40...+176 °F)
Weight	0.45 kg (1.0 lbs)

### Enclosure Protection

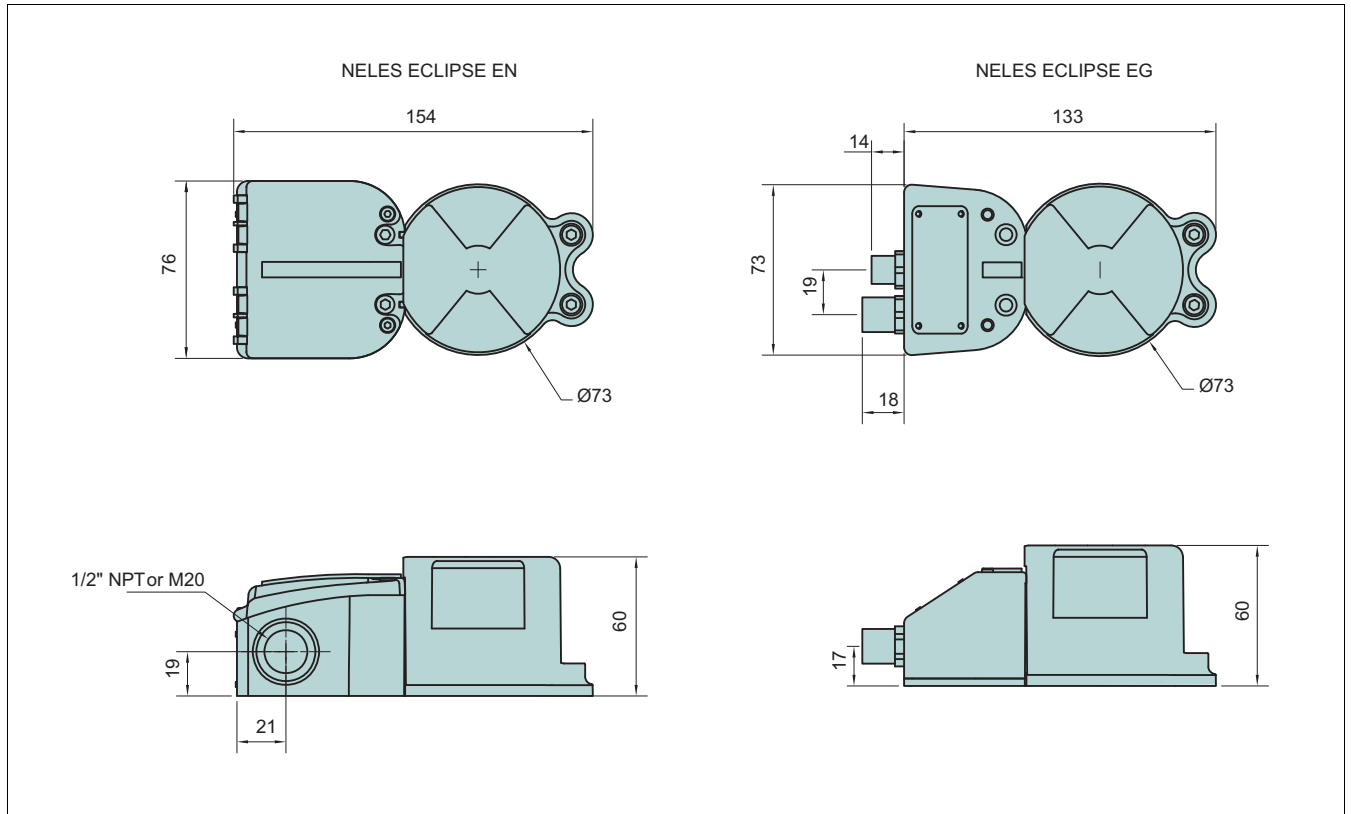
IP67 (NEMA 4, 4X, 6)

### Certifications and Approvals

IEC/ATEX	II 1 G, Ex ia IIC T5, Zones 0, 1 & 2
NEC/CEC	I.S. for Class I, II, III, Div. 1, Groups ABCDEFG
	NI for Class I, Div. 2, Groups ABCD



## DIMENSIONS (mm)



## HOW TO ORDER Limit Switch Neles Eclipse

1.	2.	3.	4.	5.	6.
EN	33	A	05	D	M

1. sign	PRODUCT GROUP
	Neles Eclipse, Limit switch with inductive proximity switches.
EN	Enclosure with conduit entries or mini connectors. Applicable to 4. sign "02", "05", "11" or "12"
EG	Enclosure with micro (M12) connectors. Applicable to 3. sign "P" only. Applicable to 4. sign "23", "24", "25" or "26". No approvals.

2. sign	SWITCH TYPE
	<b>Dual Module</b> , 2 switches Temperature range -40 ... +80 °C / -40 ... +176 °F.
33	SST Sensor Dual Module, NO, 8-125 VDC / 24 -125 VAC
34	SST Sensor Dual Module, NC, 8-125 VDC / 24 -125 VAC
44	Namur Sensor Dual Module, (DIN 19234), 6 -29 VDC; > 3 mA; < 1 mA.
	<b>Valve Communication Terminal (VCT)</b> , 2 switches Temperature range -40 ... +80 °C / -40 ... +176 °F.
92	DeviceNet VCT
95	Modbus VCT
96	AS-Interface VCT
97	AS-Interface VCT, Extended addressing.

3. sign	ENCLOSURE
	Standard IP67 (Nema 4, 4X, 6), Lexan® polycarbonate housing. Linkage with hexagonal adapter. Attachment face according to standard VDI/VDE 3845.
A	Applicable to 1.sign "EN" only.  With no approvals applicable to 2. sign. "33", "34", "92", "95", "96" or "97"  With following approval applicable to 2. sign "44": <b>ATEX</b> certification: II 1 G Ex ia IIC T5 Ta=-40 °C to 80 °C, IP67 Ui = 22 V, Ii < 120 mA, Pi = 2.0 W, Ci = 98 nF, Li = 1.56 mH. Applicable to 2. sign "44" only
P	Applicable to 1. sign "EG" with no approvals, applicable to 2. sign. "33", "34", "92", "95", "96" or "97"  Applicable to 1. sign "EN" with following approvals: <b>cFMus</b> (USA, Canada) certifications:  Intrinsically Safe for Class I, II, III, Div. 1, Groups ABCDEFG, T5 Ta = 80 °C; Ui = 22 V, Ii = 120 mA, Ci = 98 nF, Li = 0.8 mH, Pi = 2.0 W Applicable to 2. sign "44" only.  Nonincendive for Class I, Div. 2, Groups ABCD, T5 Ta = 80 °C; Suitable for Class II, Div. 2, Groups FG, T5 Ta = 80 °C; Type 4, 4X, 6 Applicable to all switch types, 2. sign

4. sign	CONDUIT ENTRY / CONNECTOR
	Applicable to 1. sign "EN"
02	2 pcs 1/2" NPT conduit entries Applicable to all switch types, 2. sign
05	2 pcs M20x1,5 conduit entries Applicable to all switch types, 2. sign
11	1 pcs 5-pin mini connector, male, 1 pcs conduit plug. Applicable to 2. sign "33", "34" or "44"
12	1 pcs 5-pin mini connector, male, 1 pcs 3-pin mini connector, female. Applicable to 2. sign "33" or "34"
	Applicable to 1. sign "EG"
23	1 pcs 4-pin micro (M12) connector, male, metallic. Applicable to 2. sign "33", "34", "96" or "97"
24	2 pcs 4-pin micro (M12) connectors, male, metallic. Applicable to 2. sign "96" or "97"
25	1 pcs 5-pin micro (M12) connector, male, metallic. Applicable to 2. sign "92" or "95"
26	1 pcs 5-pin micro (M12) connector, male and 1 pcs 4-pin micro (M12) connectors, female, metallic. Applicable to 2. sign "33", "34", "92" or "95"

5. sign	INDICATOR
D	Red-Closed Green-Open.

6. sign	LABEL
M	Metso

Subject to change without prior notice.

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[www.metso.com/valves](http://www.metso.com/valves)

