

SERIES 54

PROXIMITY SENSORS TECHNICAL MANUAL

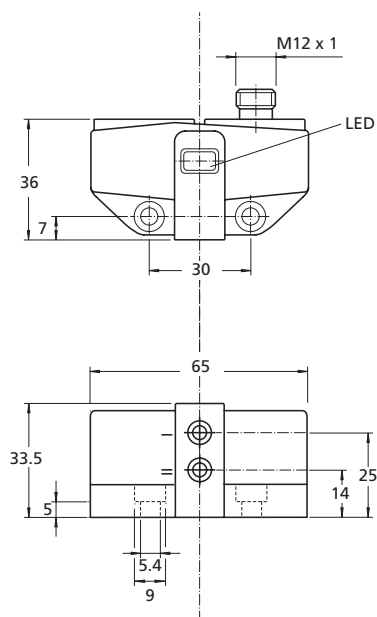


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DIMENSIONS



ACTIVATORS



Activators sold separately

FEATURES

- DC 3-wire PNP sensor
- IP 67 rugged plastic housing
- Hermetically sealed
- Vibration, shock and corrosion resistant
- Compact design
- High visibility LED for power and switch status

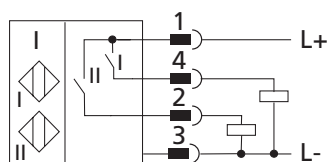
TECHNICAL DATA

General specifications			
Switching function		2 x normally open (NO)	
Output type		PNP, 3-wire	
Rated operating distance	s _n	3 mm	
Installation		Flush mountable	
Output polarity		DC	
Assured operating distance	s _a	0 ... 2.43 mm	
Actual operating distance	s _r	2.7 ... 3.3 mm typ.	
Nominal ratings			
Operating voltage	U _B	10 ... 30 V DC	
Switching frequency	f	0 ... 500 Hz	
Hysteresis	H	Typ 5 %	
Reverse polarity protection		All connections	
Short-circuit protection		Pulsing	
Voltage drop	U _d	≤ 3 V	
Operating current	I _L	0 ... 100 mA	
Off-state current	I _r	0 ... 0.5 mA typ. 0.1 µA at 25 °C	
No-load supply current	I _o	≤ 25 mA	
Operating voltage indicator		LED, green	
Switching state indicator		LED, yellow	
Functional safety related parameters			
MTTF _d		780 a	
Mission Time (TM)		20 a	
Diagnostic Coverage (DC)		0%	
Ambient conditions			
Ambient temperature	T _A	-25 ... 70 °C (-13 ... 158 °F)	
Mechanical specifications			
Connection (system side)		4-pin, M12 x 1 connector	
Housing material		PBT	
Sensing face material		PBT	
Degree of protection		IP67	
Standard conformity			
Standards		EN 60947-5-2:2007 EN 60947-5-2/A1:2012	IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
Approvals and certificates			
UL approval		cULus listed, general purpose	
CCC approval		Approval and marking not required for products rated ≤ 36 V	

ACTIVATOR AND MOUNTING KITS

30 x 80 mm NAMUR Mounting, adjustable	
54063A-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063A-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable	
54160A-14800536	Fits Bray S92/93 Sizes 160 to 210 - Imperial
54160A-14850536	Fits Bray S92/93 Sizes 160 to 255 - Metric
30 x 80 mm NAMUR Mounting, adjustable, High Visibility	
54063C-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063C-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable, High Visibility	
54160C-14800536	Fits Bray S92/93 Size 160 - Imperial
54160C-14850536	Fits Bray S92/93 Size 160 - Metric
54210C-14800536	Fits Bray S92/93 Size 210 - Imperial
54210C-14850536	Fits Bray S92/93 Sizes 210 to 255 - Metric

WIRING DIAGRAM



CONNECTOR PINOUT

Wire colors in accordance with EN 60947-5-2

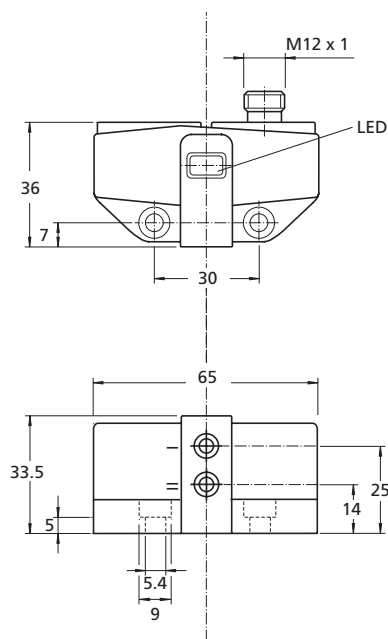


ACCESSORIES

090005-76145882	Sensor Cordset - M12 female straight connector (4-pin) to flying leads, 5 meters, zinc
090004-76145534	Sensor Cordset - M12 female straight connector (4-pin) to flying leads, 5 meters, stainless steel
600250-23663536	Y-Connector Cordset (S62, S63) - M12 female straight connector (4-pin sensor side) to M12 male straight connector (5-pin system side) AND Form B Type I solenoid connector (DIN 43650)
600250-23666536	Y-Connector Cordset (S60) - M12 female straight connector (4-pin sensor side) to M12 male straight connector (5-pin system side) AND Form A solenoid connector (DIN 43650)
630250-21524536	Series 63 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 24vdc coil
621250-21524536	Series 62 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 24vdc coil



DIMENSIONS



ACTIVATORS



Activators sold separately

FEATURES

- EC-Type Examination Certificate TÜV 17
- Usable up to SIL 2 acc. to IEC 61508
- IP 67 rugged plastic housing
- Hermetically sealed
- Vibration, shock and corrosion resistant
- Compact design
- High visibility LED for power and switch status

TECHNICAL DATA

General specifications

Switching function		2 x normally closed (NC)
Output type		NAMUR
Rated operating distance	s_n	3 mm
Installation		Flush mountable
Assured operating distance	s_a	0 ... 2.4 mm
Actual operating distance	s_r	2.7 ... 3.3 mm typ.
Actuating element		304 Stainless Steel

Nominal ratings

Nominal voltage	U_o	8 V
Switching frequency	f	0 ... 3 kHz
Hysteresis	H	Typ. 5 %
Reverse polarity protection		Reverse polarity protected
Short-circuit protection		Yes
Suitable for 2:1 technology		Yes, reverse polarity protection diode not required
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA
Time delay before availability	t_v	≤ 1.1 ms
Switching state indicator		LED, yellow

Functional safety related parameters

MTTFd		1470 a
Mission Time	T_M	20 a
Diagnostic Coverage	DC	0%

Ambient conditions

Ambient temperature	T_A	-25 ... 100°C (-13 ... 212°F)
Storage temperature		-40 ... 100°C (-40 ... 212°F)

Mechanical specifications

Connection (system side)		4-pin, M12 x 1 connector
Housing material		PBT
Sensing face		PBT
Degree of protection		IP67

General information

Use in hazardous area - ATEX		See instruction manuals for categories 1G & 2G
Use in hazardous area - N.A.		See control drawing: WD-000455

Compliance with standards and directives

Standard conformity	EN 60947-5-6:2000 IEC 60947-5-6:1999	NE 21:2007 EN/IEC 60947-5-2:2007
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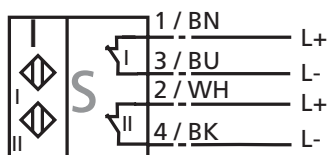
Approvals and certificates

UL approval		cULus Listed, General Purpose (E248934)
FM approval		FM 18 US0014X
TÜV NORD approval		IECE TÜV 17 0035X

ACTIVATOR AND MOUNTING KITS

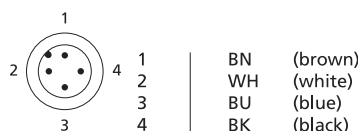
30 x 80 mm NAMUR Mounting, adjustable	
54063A-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063A-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable	
54160A-14800536	Fits Bray S92/93 Sizes 160 to 210 - Imperial
54160A-14850536	Fits Bray S92/93 Sizes 160 to 255 - Metric
30 x 80 mm NAMUR Mounting, adjustable, High Visibility	
54063C-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063C-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable, High Visibility	
54160C-14800536	Fits Bray S92/93 Size 160 - Imperial
54160C-14850536	Fits Bray S92/93 Size 160 - Metric
54210C-14800536	Fits Bray S92/93 Size 210 - Imperial
54210C-14850536	Fits Bray S92/93 Sizes 210 to 255 - Metric

WIRING DIAGRAM



CONNECTOR PINOUT

Wire colors in accordance with EN 60947-5-2



ACCESSORIES

090005-76158882	Sensor Cordset - M12 female straight connector (4-pin) to flying leads, 5 meters, zinc, intrinsically safe
600250-23662536	Y-Connector Cordset (S60) - M12 female straight connector (4-pin sensor side) to M12 male straight connector (6-pin system side) AND Form A solenoid connector (DIN 43650)
600250-21526536	Series 60 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form A connector (DIN 43560), intrinsically safe

INSTRUCTION MANUAL - ATEX (1G)

Equipment protection level Ga (ia)

Instruction		Manual electrical apparatus for hazardous areas - gas group IIC
Device category		1G, for use in hazardous areas with gas, vapour and mist
Protection concept		Intrinsic safety
Standards		EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007
CE marking		CE 0518
ATEX marking		II 1G Ex ia IIC T6...T1 Ga
EU-Type Examination Certificate		TÜV17 ATEX 203727X
Effective internal capacitance	C _i	≤ 100 nF. A cable length of 10 m is considered. The value is applicable for one sensor circuit.
Effective internal inductance	L _i	≤ 100 µH. A cable length of 10 m is considered. The value is applicable for one sensor circuit.
General		The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The EU-type examination certificate has to be observed. Special conditions must be adhered to. The ATEX directive and therefore the EU-type examination certificates apply in general only to the use of electrical apparatus under atmospheric conditions. The use in ambient temperatures of > 60°C was tested with regard to hot surfaces by the mentioned certification authority. If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration.
Ambient temperature	T _A	The temperature ranges, according to temperature class, are given in the EC-Type Examination Certificate. The maximum permissible ambient temperature of the data sheet must be noted, in addition, the lower of the two values must be maintained. Note: Use the temperature table for category 1. The 20% reduction in accordance with EN 1127-1:2007 has already been accounted for in the temperature table for category 1.
Installation, commissioning		Laws and/or regulations and standards governing the use or intended usage goal must be observed. The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety. The associated apparatus must satisfy the requirements of category ia. Due to the possible danger of ignition, which can arise due to faults and/or transient currents in the equipotential bonding system, galvanic isolation of the power supply and signal circuit is preferable. Associated apparatus without electrical isolation must only be used if the appropriate requirements of IEC 60079-14 are met. Install the device in such a way that the resin surface is not exposed to mechanical hazards.
Maintenance		No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.
Special conditions		
Protection from mechanical danger		When used in the temperature range below -20°C the sensor should be protected from knocks by the provision of an additional housing.
Electrostatic charge		Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding. Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Additional requirements for gas group IIC. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1

INSTRUCTION MANUAL - ATEX (2G)

Equipment protection level Gb (ia)

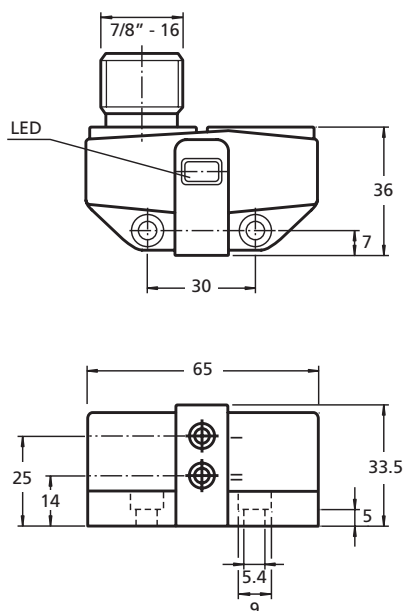
Instruction		Manual electrical apparatus for hazardous areas - gas group IIC
Device category		2G, for use in hazardous areas with gas, vapour and mist
Protection concept		Intrinsic safety
Standards		EN 60079-0:2012, EN 60079-11:2012
CE marking		CE 0518
ATEX marking		II 1G Ex ia IIC T6...T1 Ga
EU-Type Examination Certificate		TÜV17 ATEX 203727X
Effective internal capacitance	C _i	≤ 100 nF. A cable length of 10 m is considered. The value is applicable for one sensor circuit.
Effective internal inductance	L _i	≤ 100 µH. A cable length of 10 m is considered. The value is applicable for one sensor circuit.
General		The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The EU-type examination certificate has to be observed. Special conditions must be adhered to. The ATEX directive and therefore the EU-type examination certificates apply in general only to the use of electrical apparatus under atmospheric conditions. The use in ambient temperatures of > 60°C was tested with regard to hot surfaces by the mentioned certification authority. If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration.
Ambient temperature	T _A	The temperature ranges, according to temperature class, are given in the EC-Type Examination Certificate. The maximum permissible ambient temperature of the data sheet must be noted, in addition, the lower of the two values must be maintained.
Installation, commissioning		Laws and/or regulations and standards governing the use or intended usage goal must be observed. The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety. Install the device in such a way that the resin surface is not exposed to mechanical hazards.
Maintenance		No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.

Special conditions

Protection from mechanical danger		No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible. When used in the temperature range below -20°C the sensor should be protected from knocks by the provision of an additional housing.
Electrostatic charge		Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding.



DIMENSIONS



ACTIVATORS



Activators sold separately

FEATURES

- AC/DC sensor
- IP67 rugged plastic housing
- Hermetically sealed
- Vibration, shock and corrosion resistant
- Compact design
- High visibility LED for power and switch status
- Quick installation

TECHNICAL DATA

General specifications

Switching function		2 x normally open (NO)
Output type		Two-wire
Rated operating distance	s_n	3 mm
Installation		Flush mountable
Output polarity		AC/DC
Assured operating distance	s_a	0 ... 2.43 mm
Output type		4-wire

Nominal ratings

Operating voltage	U_B	20 ... 250 V AC/DC
Switching frequency	f	25 Hz
Hysteresis	H	Typ. 3 %
Reverse polarity protection		Yes
Short-circuit protection		Yes
Voltage drop	U_d	≤ 8 V
Operating current	I_L	4 ... 400 mA
Off-state current	I_r	≤ 1.7 mA
Operating voltage indicator		LED, green
Switching state indicator		LED, yellow

Ambient conditions

Ambient temperature	T_A	-25 ... 70°C (-13 ... 158°F)
Storage temperature		-40 ... 100°C (-40 ... 212°F)

Mechanical specifications

Connection (system side)		V95 connector (7/8"-16 UN 2A), 5-pin
Housing material		PBT
Sensing face material		PBT
Degree of protection		IP67
Housing		PBT
Mass		90 g

Standard conformity

Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012	IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
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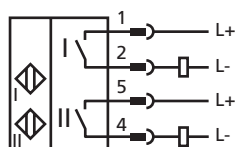
Approvals and certificates

Protection class		II
Rated insulation voltage	U_i	253 V
Rated impulse withstand voltage	U_{imp}	4 kV
UL approval		cULus listed, general purpose

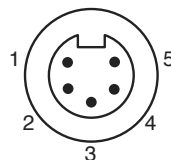
ACTIVATOR AND MOUNTING KITS

30 x 80 mm NAMUR Mounting, adjustable	
54063A-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063A-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable	
54160A-14800536	Fits Bray S92/93 Sizes 160 to 210 - Imperial
54160A-14850536	Fits Bray S92/93 Sizes 160 to 255 - Metric
30 x 80 mm NAMUR Mounting, adjustable, High Visibility	
54063C-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063C-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable, High Visibility	
54160C-14800536	Fits Bray S92/93 Size 160 - Imperial
54160C-14850536	Fits Bray S92/93 Size 160 - Metric
54210C-14800536	Fits Bray S92/93 Size 210 - Imperial
54210C-14850536	Fits Bray S92/93 Sizes 210 to 255 - Metric

WIRING DIAGRAM



CONNECTOR PINOUT



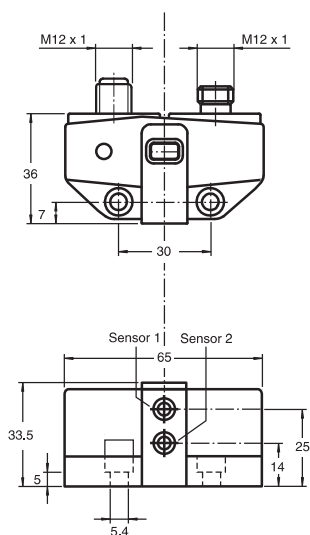
ACCESSORIES

090004-76144534	Sensor Cordset - 7/8" female straight connector (5-pin) to flying leads, 4 meters
090004-76153534*	Sensor Cordset - 7/8" female straight connector (6-pin) to flying leads, 4 meters
630250-21520536	Series 63 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 120V 50/60 Hz coil
630250-21522536	Series 63 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 240V 50/60 Hz coil
621250-21520536	Series 62 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 120V 50/60 Hz coil
621250-21522536	Series 62 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 240V 50/60 Hz coil
600250-23667536*	Y-connector Cordset (S62/S63) - 7/8" female straight connector (5- pin sensor side) to 7/8" male straight connector (6-pin system side) and Form B Type I solenoid connector (DIN 43650)

*Order 6-pin cordset in addition to Y-connector cordset



DIMENSIONS



Drawing without actuator

ACTIVATORS



Activators sold separately

FEATURES

- AS-i sensor
- A/B slave with extended addressing possibility for up to 62 devices
- Interoperable with higher-level BUS systems
- Protection degree IP67
- Communication monitoring, turn-off
- Lead breakage and short-circuit monitoring of solenoid valve
- System cable supports power and data
- Two M12 connections

TECHNICAL DATA

General specifications

Switching element function		Programmable
Rated operating distance	s_n	3 mm
Installation		Flush mountable
Output polarity		AS-Interface
Assured operating distance	s_a	0 ... 2.43 mm
Slave type		A/B slave
AS-Interface specification		V3.0
Required master specification		≥ V2.1

Nominal ratings

Operating voltage	U_B	26.5 ... 31.9 V via AS-i bus system
Switching frequency	f	0 ... 100 Hz
No-load supply current	I_0	≤ 35 mA

Functional safety related parameters

MTTF _d		842 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0%

Indicators/operating means

LED PWR		AS-Interface voltage; LED green
LED IN		Switching state (input); LED yellow
LED OUT		Binary LED yellow/red; yellow: switching state red: lead breakage/short-circuit

Electrical specifications

Rated operational voltage	U_e	26.5 ... 31.6 V from AS-Interface
Rated operational current	I_e	100 mA

Ambient conditions

Ambient temperature	T_A	-25 ... 70°C (-13 ... 158°F)
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Mechanical specifications

Connection (system side)		Connector M12 x 1, 4-pin
Connection (valve side)		Socket connector, M12 x 1, 4-pin
Housing material		PBT
Sensing face material		PBT
Degree of protection		IP67
Note		Valve voltage limited to 26,4 V max.; valve power 2,5 W max.

Standard conformity

Electromagnetic compatibility		EN 50295:1999-10
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2 AMD 1:2012

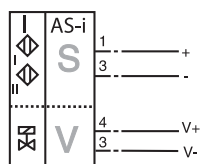
Approvals and certificates

UL approval		cULus listed, general purpose
CCC approval		Approval and marking not required for products rated ≤ 36 V

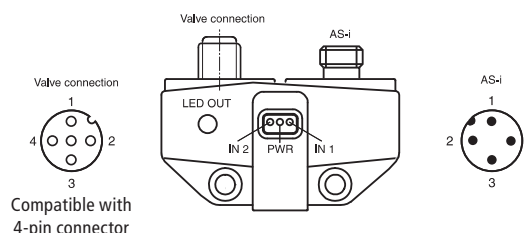
ACTIVATORS AND MOUNTING KITS

30 x 80 mm NAMUR Mounting, adjustable	
54063A-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063A-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable	
54160A-14800536	Fits Bray S92/93 Sizes 160 to 210 - Imperial
54160A-14850536	Fits Bray S92/93 Sizes 160 to 255 - Metric
30 x 80 mm NAMUR Mounting, adjustable, High Visibility	
54063C-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063C-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable, High Visibility	
54160C-14800536	Fits Bray S92/93 Size 160 - Imperial
54160C-14850536	Fits Bray S92/93 Size 160 - Metric
54210C-14800536	Fits Bray S92/93 Size 210 - Imperial
54210C-14850536	Fits Bray S92/93 Sizes 210 to 255 - Metric

WIRING DIAGRAM



CONNECTOR PINOUT

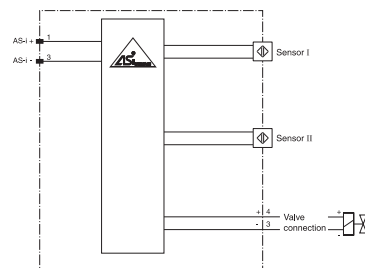


ACCESSORIES

090005-76145882	Sensor Cordset - M12 female straight connector (4-pin) to flying leads, 5 meters, zinc
090004-76145534	Sensor Cordset - M12 female straight connector (4-pin) to flying leads, 5 meters, stainless steel
090402-7115552T	Sensor Cordset - Single ended M12 female straight socket (4-pin) with screw terminal for field wiring. Field attachable.
66A000-14205533	Sensor Cordset - AS-i M12 female to flat cable piercing method
090001-76160882	S-Connector Cordset (S60) - M12 male right angle (2-pins+PE) to Form A solenoid connector (DIN 43650), 0.3 meters
600250-21540536	Series 60 -Solenoid Valve, Low Power (0.7W), NAMUR mount 5/2, Form A connector (DIN 43560), IP65, single 24vdc coil

INSTALLATION

The Series 54 is an inductive dual sensor used to indicate the valve positioning of actuators. The dual sensor is mounted directly on the actuator using two screws. Additional adjustment is not necessary. A switch box M12 x 1 on the sensor is used directly for the valve controls. The Series 54 is connected via a M12x1 screw fixing to the bus line. This makes it possible to transmit both the switch signal for the valve and the messages of the sensors via AS-Interface. They are both powered directly through the bus cable. Moreover, the valve is monitored for lead breakage and short circuit. The D1 data bit monitors the fault signal. The sensors can be programmed as normally closed and normally open contacts (parameter bit P1 and P2). If there are no communications on the bus cable, the valve is automatically de-energised. This communication monitoring can be turned off via the parameter bit P0.



SUPPLEMENTARY INFORMATION

Programming Instructions

Address 00 preset, alterable via Busmaster or programming units
IO-code D
ID-code A
ID1-code 7
ID2-code E

Data bit

Bit	Function
D0	valve status (0=valve OFF; 1=valve ON)
D1	valve fault ¹⁾ (0=lead breakage/short circuit; 1=no fault)
D2	switch output sensor 1 ²⁾ (0=damped; 1=undamped)
D3	switch output sensor 2 ²⁾ (0=damped; 1=undamped)

Parameter bit

Bit	Function
P0	Watchdog (0=inactive; 1=active) ³⁾
P1	switching element function sensor II ⁴⁾ (0=NO; 1=NC)
P2	switching element function sensor I ⁴⁾ (0=NO; 1=NC)
P3	not used

- 1) Verification only with actuated valve (D0=1)
- 2) Applies to NC function (P2/P3=1; preset), with NO function (P2/P3=0) reversed characteristics
- 3) Watchdog active: valve voltage drops with the occurrence of an AS-I communication fault
- 4) Default setting: NC

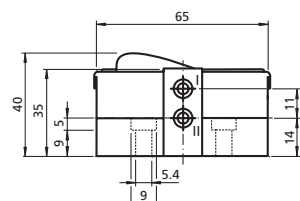
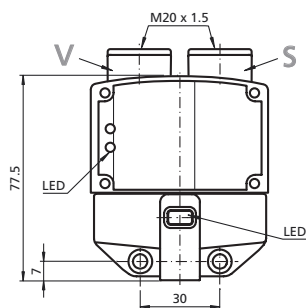


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DIMENSIONS



ACTIVATORS



Activators sold separately

FEATURES

- EC-Type Examination Certificate TÜV 17
- Usable up to SIL 2 acc. to IEC 61508
- Protection degree IP67
- LEDs for switching state of sensor and solenoid valve
- Valve LEDs disconnectable
- Two M20 x 1.5 system connections
- Large terminal space for ease of wiring
- Sensor electronics sealed from terminal compartment
- Screw terminals

TECHNICAL DATA

General specifications		
Switching function		2 x normally closed (NC)
Output type		NAMUR
Rated operating distance	s _n	3 mm
Installation		Flush mountable
Assured operating distance	s _a	0 ... 2.4 mm
Actual operating distance	s _r	2.7 ... 3.3 mm typ.
Actuating element		304 stainless steel
Nominal ratings		
Nominal voltage	U ₀	8 V
Switching frequency	f	0 ... 3 kHz
Hysteresis	H	Typ. - 5 %
Reverse polarity protection		Reverse polarity protected
Short-circuit protection		Yes
Suitable for 2:1 technology		Yes, reverse polarity protection diode not required
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA
Time delay before availability	t _v	≤ 1.1 ms
Switching state indicator		LED, yellow
Valve status indicator		LED, yellow
Functional safety related parameters		
MTTFd		1470 a
Mission Time	T _M	20 a
Diagnostic Coverage	DC	0%
Ambient conditions		
Ambient temperature	T _A	-25 ... 100°C (-13 ... 212°F)
Storage temperature		-40 ... 100°C (-40 ... 212°F)
Mechanical specifications		
Connection (system & valve)		Screw terminals, tightening torque min. 0.5 Nm Stripped length 7 mm
Core cross-section (system & valve)		Rigid: 0.14 ... 2.5 mm ² Flexible: 0.14 ... 1.5 mm ² Flexible with core-end sleeve: 0.25 ... 1.5 mm ²
Housing material		PBT
Sensing face material		PBT
Degree of protection		IP67
Tightening torque, housing screws		1 Nm
Tightening torque, cable gland		M20 x 1.5 ; ≤ 7 Nm
Note		LED switch-off
General information		
Use in the hazardous area -ATEX		See instruction manuals for categories 1G & 2G
Use in hazardous area - N.A.		See control drawing: WD-000455
Compliance with standards and directives		
Standard conformity	EN 60947-5-6:2000 IEC 60947-5-6:1999	NE 21:2007 EN/IEC 60947-5-2:2007
Approvals and certificates		
UL approval		cULus Listed, General Purpose (E248934)
FM approval		FM 18 US0014X
TÜV NORD approval		IECE TÜV 17 0035X

ACTIVATOR AND MOUNTING KITS

30 x 80 mm NAMUR Mounting, adjustable

54063A-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063A-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric

30 x 130 mm NAMUR Mounting, adjustable

54160A-14800536	Fits Bray S92/93 Sizes 160 to 210 - Imperial
54160A-14850536	Fits Bray S92/93 Sizes 160 to 255 - Metric

30 x 80 mm NAMUR Mounting, adjustable, High Visibility

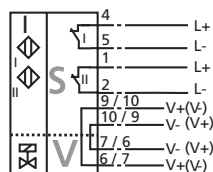
54063C-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063C-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric

30 x 130 mm NAMUR Mounting, adjustable, High Visibility

54160C-14800536	Fits Bray S92/93 Size 160 - Imperial
54160C-14850536	Fits Bray S92/93 Size 160 - Metric
54210C-14800536	Fits Bray S92/93 Size 210 - Imperial
54210C-14850536	Fits Bray S92/93 Sizes 210 to 255 - Metric

WIRING DIAGRAM

N4-K



APPLICATION

Note: The connections to this sensor are sealed with stopping plugs to protect against dirt and moisture. If your application does not require the use of all connections, permanently seal stopping plugs onto unused connections or ensure that stopping plugs are secure and impermeable during initial installation and when performing regular maintenance work. If necessary, re-tighten the stopping plugs to a torque of 1 Nm.

ACCESSORIES

600250-21526536	Series 60 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form A connector (DIN 43560), Intrinsically safe
-----------------	--

INSTRUCTION MANUAL - ATEX (1G)

Equipment protection level Ga (ia)

Instruction		Manual electrical apparatus for hazardous areas
Device category		1G, for use in hazardous areas with gas, vapour and mist
Protection concept		Intrinsic safety
Standards		EN 60079-0:2012, EN 60079-11:2012
CE marking		CE 0518
ATEX marking		II 1G Ex ia IIC T6...T1 Ga
EU-Type Examination Certificate		TÜV17 ATEX 203727X
Effective internal capacitance	C _i	≤ 100 nF. A cable length of 10 m is considered. The value is applicable for one sensor circuit.
Effective internal inductance	L _i	≤ 100 µH. A cable length of 10 m is considered. The value is applicable for one sensor circuit.
General		The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The EU-type examination certificate has to be observed. The special conditions must be adhered to. The ATEX directive and therefore the EU-type examination certificates apply in general only to the use of electrical apparatus under atmospheric conditions. The use in ambient temperatures of > 60°C was tested with regard to hot surfaces by the mentioned certification authority. If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration.
Ambient temperature	T _A	The temperature ranges, according to temperature class, are given in the EC-Type Examination Certificate. Note: Use the temperature table for category 1. The 20% reduction in accordance with EN 1127-1:2007 has already been accounted for in the temperature table for category 1.
Installation, commissioning		Laws and/or regulations and standards governing the use or intended usage goal must be observed. The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety. The associated apparatus must satisfy the requirements of category ia. Due to the possible danger of ignition, which can arise due to faults and/or transient currents in the equipotential bonding system, galvanic isolation of the power supply and signal circuit is preferable. Associated apparatus without electrical isolation must only be used if the appropriate requirements of IEC 60079-14 are met.
Maintenance		No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.
Special conditions		
Protection from mechanical danger		When used in the temperature range below -20°C the sensor should be protected from knocks by the provision of an additional housing.
Electrostatic charge		Additional requirements for gas group IIB/IIC. Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.
Lead insertion		The connection cables should either be fixed when laid and mechanically protected or installed in such a way, that a force of 30 N applied in the direction of the cable inlet for one hour, does not lead to any visible displacement of the cable connections, even though the cable sheathing is displaced, see also IEC 60079-11. Depending on the type of installation, a suitable cable in accordance with Type A or B of IEC 60079-14, must be used.

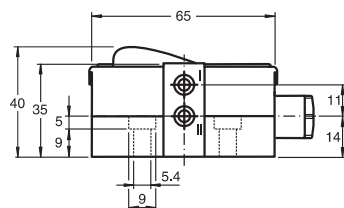
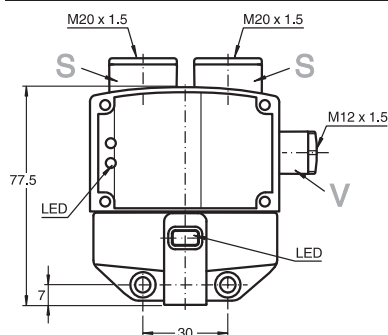
INSTRUCTION MANUAL - ATEX (2G)

Equipment protection level Gb (ia)

Instruction		Manual electrical apparatus for hazardous areas
Device category		2G, for use in hazardous areas with gas, vapour and mist
Protection concept		Intrinsic safety
Standards		EN 60079-0:2012, EN 60079-11:2012
CE marking		CE 0518
ATEX marking		II 1G Ex ia IIC T6...T1 Ga
EU-Type Examination Certificate		TÜV17 ATEX 203727X
Effective internal capacitance	C _i	≤ 100 nF. A cable length of 10 m is considered. The value is applicable for one sensor circuit.
Effective internal inductance	L _i	≤ 100 µH. A cable length of 10 m is considered. The value is applicable for one sensor circuit.
General		The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The EU-type examination certificate has to be observed. The special conditions must be adhered to. The ATEX directive and therefore the EU-type examination certificates apply in general only to the use of electrical apparatus under atmospheric conditions. The use in ambient temperatures of > 60°C was tested with regard to hot surfaces by the mentioned certification authority. If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration.
Ambient temperature	T _A	The temperature ranges, according to temperature class, are given in the EC-Type Examination Certificate.
Installation, commissioning		Laws and/or regulations and standards governing the use or intended usage goal must be observed. The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety.
Maintenance		No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.
Special conditions		
Protection from mechanical danger		When used in the temperature range below -20°C the sensor should be protected from knocks by the provision of an additional housing.
Electrostatic charge		Additional requirements for gas group IIC. Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.
Lead insertion		The connection cables should either be fixed when laid and mechanically protected or installed in such a way, that a force of 30 N applied in the direction of the cable inlet for one hour, does not lead to any visible displacement of the cable connections, even though the cable sheathing is displaced, see also IEC 60079-11. Depending on the type of installation, a suitable cable in accordance with Type A or B of IEC 60079-14, must be used.



DIMENSIONS



ACTIVATORS



Activators sold separately

FEATURES

- AS-i sensor
- A/B slave with extended addressing possibility for up to 62 devices
- Interoperable with higher-level BUS systems
- Protection degree IP67
- Communication monitoring, turn-off
- System cable supports power and data
- Lead breakage and short-circuit monitoring of solenoid valve
- Two M20 x 1.5 system connections
- One M12 x 1.5 valve connection
- Large terminal space for ease of wiring
- Sensor electronics sealed from terminal compartment

TECHNICAL DATA

General specifications

Switching element function		Programmable
Rated operating distance	s_n	3 mm
Installation		Flush mountable
Output polarity		AS-Interface
Assured operating distance	s_a	0 ... 2.43 mm
Slave type		A/B slave
AS-Interface specification		V3.0
Required master specification		≥ V2.1

Nominal ratings

Operating voltage	U_B	26.5 ... 31.9 V via AS-i bus system
Switching frequency	f	0 ... 100 Hz
No-load supply current	I_0	≤ 35 mA

Functional safety related parameters

MTTF _d		842 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %

Indicators/operating means

LED PWR		AS-Interface voltage; LED green
LED IN		Switching state (input); LED yellow
LED OUT		Binary LED yellow/red; yellow: switching state red: lead breakage/short-circuit

Electrical specifications

Rated operational voltage	U_e	26.5 ... 31.6 V from AS-Interface
Rated operational current	I_e	100 mA

Ambient conditions

Ambient temperature	T_A	-25 ... 70 °C (-13 ... 158 °F)
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Mechanical specifications

Connection (system side)		Screw terminals, M20 x 1.5, Cable gland, Qty 2
Core cross-section (system side)		1.5/2.5 mm ² flexible/rigid
Connection (valve side)		Screw terminals M12 x 1.5, Cable gland, Qty 1
Core cross-section (valve side)		1.5/2.5 mm ² flexible/rigid
Housing material		PBT
Sensing face material		PBT
Degree of protection		IP67
Tightening torque, housing screws		1 Nm
Tightening torque, cable gland		M20 x 1.5 ; ≤ 7 Nm M12 x 1.5 ; ≤ 3 Nm
Note		Valve voltage limited to 26,4 V max.; valve power 2,5 W max.

Standard conformity

Electromagnetic compatibility		EN 50295:1999-10
Standards	EN 60947-5-2:2007	IEC 60947-5-2:2007
	EN 60947-5-2/A1:2012	IEC 60947-5-2 AMD 1:2012

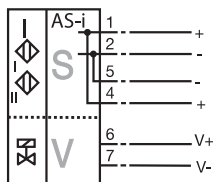
Approvals and certificates

UL approval		cULus listed, general purpose
CCC approval		Approval and marking not required for products rated ≤ 36 V

ACTIVATOR AND MOUNTING KITS

30 x 80 mm NAMUR Mounting, adjustable	
54063A-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063A-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable	
54160A-14800536	Fits Bray S92/93 Sizes 160 to 210 - Imperial
54160A-14850536	Fits Bray S92/93 Sizes 160 to 255 - Metric
30 x 80 mm NAMUR Mounting, adjustable, High Visibility	
54063C-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063C-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric
30 x 130 mm NAMUR Mounting, adjustable, High Visibility	
54160C-14800536	Fits Bray S92/93 Size 160 - Imperial
54160C-14850536	Fits Bray S92/93 Size 160 - Metric
54210C-14800536	Fits Bray S92/93 Size 210 - Imperial
54210C-14850536	Fits Bray S92/93 Sizes 210 to 255 - Metric

WIRING DIAGRAM



APPLICATION

Note: The connections to this sensor are sealed with stopping plugs to protect against dirt and moisture. If your application does not require the use of all connections, permanently seal stopping plugs onto unused connections or ensure that stopping plugs are secure and impermeable during initial installation and when performing regular maintenance work. If necessary, re-tighten the stopping plugs to a torque of 1 Nm.

ACCESSORIES

090005-76148533	S-Connector cordset (S60) - Form A solenoid connector (DIN 43650) (2C+Ground) to flying leads, 3 conductor, PUR, 5 meters
600250-21540536	Series 60 -Solenoid Valve, low power (0.7W), NAMUR mount 5/2, Form A connector (DIN 43560), IP65, single 24vdc coil

SUPPLEMENTARY INFORMATION

Programming Instructions

Address 00 preset, alterable via Busmaster or programming units
IO-code D
ID-code A
ID1-code 7
ID2-code E

Data bit

Bit	Function
D0	valve status (0=valve OFF, 1=valve ON)
D1	valve fault ¹⁾ (0=lead breakage/short circuit; 1=no fault)
D2	switch output sensor ¹⁾ (0=damped; 1=undamped)
D3	switch output sensor ²⁾ (0=damped; 1=undamped)

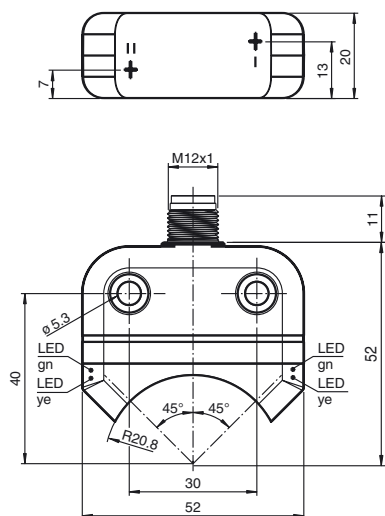
Parameter bit

Bit	Function
P0	Watchdog (0=inactive; 1=active ³⁾)
P1	switching element function sensor II ⁴⁾ (0=NO; 1= NC)
P2	switching element function sensor I ⁴⁾ (0=NO; 1= NC)
P3	not used

- 1) Verification only with actuated valve (D0=1)
- 2) Applies to NC function (P2/P3=1; preset), with NO function (P2/P3=0) reversed characteristics
- 3) Watchdog active: valve voltage drops with the occurrence of an AS-I communication fault
- 4) Default setting: NC



DIMENSIONS



ACTIVATOR



Activator sold separately

FEATURES

- DC 3-wire PNP sensor
- IP 67 rugged plastic housing
- Hermetically sealed
- Vibration, shock and corrosion resistant
- Small, compact design
- High visibility LED for power and switch status
- Quick Installation

TECHNICAL DATA

General specifications

Switching function		2 x normally open (NO)
Output type		PNP, 3-wire
Rated operating distance	s_n	4 mm
Installation		Flush mountable
Output polarity		DC
Assured operating distance	s_a	0 ... 3.24 mm
Actual operating distance	s_r	3.6 ... 4.4 mm typ.

Nominal ratings

Operating voltage	U_B	10 ... 30 V DC
Switching frequency	f	0 ... 1000 Hz
Hysteresis	H	Typ. 5 %
Reverse polarity protection		Reverse polarity protected
Short-circuit protection		Pulsing
Voltage drop	U_d	≤ 2.5 V
Operating current	I_L	0 ... 200 mA
Off-state current	I_r	0 ... 0.5 mA typ. 0.1 μ A at 25°C
No-load supply current	I_o	≤ 22.5 mA
Time delay before availability	t_v	≤ 100 ms
Operating voltage indicator		LED, green
Switching state indicator		LED, yellow

Ambient conditions

Ambient temperature	T_A	-25 ... 70°C (-13 ... 158°F)
Storage temperature		-40 ... 85°C (-40 ... 185°F)

Mechanical specifications

Connection type		Connector M12 x 1, 4-pin
Housing material		PBT
Sensing face material		PC
Degree of protection		IP67
Mass		48g
Tightening torque, fastening screws		M5 x 25 : 2.7Nm

Compliance with standards and directives

Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012	IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
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Approvals and certificates

UL approval		cULus listed, general purpose
CCC approval		Approval and marking not required for products rated ≤ 36 V

ACTIVATOR AND MOUNTING KITS

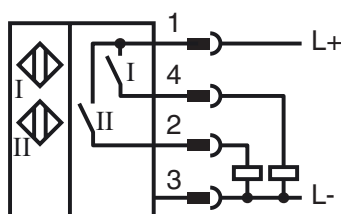
30 x 80 mm NAMUR Mounting, non adjustable

54063B-14800536	Fits Bray S92/93 Sizes 63 to 93 - Imperial
54063B-14850536	Fits Bray S92/93 Sizes 63 to 93 and Series 98 - Metric

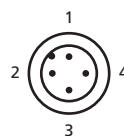
30 x 130 mm NAMUR Mounting, non adjustable

54119B-14800536	Fits Bray S92/93 Sizes 119 to 210 - Imperial
54119B-14850536	Fits Bray S92/93 Sizes 119 to 255 - Metric

WIRING DIAGRAM



CONNECTOR PINOUT



Wire colors in accordance with EN 60947-5-2

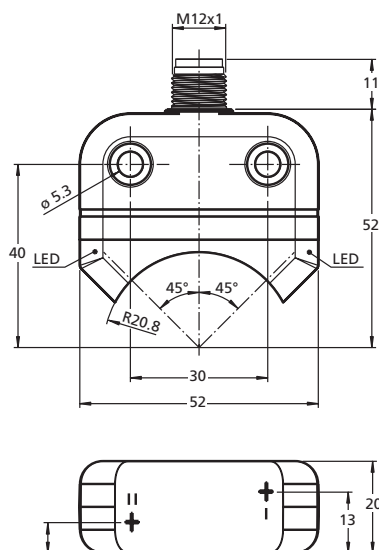
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

ACCESSORIES

090005-76145882	Sensor Cordset - M12 female straight connector (4-pin) to flying leads, 5 meters, zinc
090004-76145534	Sensor Cordset - M12 female straight connector (4-pin) to flying leads, 5 meters, stainless steel
600250-23663536	Y-Connector Cordset (S62, S63) - M12 female straight connector (4-pin sensor side) to M12 male straight connector (5-pin system side) AND Form B Type I solenoid connector (DIN 43650)
600250-23666536	Y-Connector Cordset (S60) - M12 female straight connector (4-pin sensor side) to M12 male straight connector (5-pin system side) AND Form A solenoid connector (DIN 43650)
630250-21524536	Series 63 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 24vdc coil
621250-21524536	Series 62 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 24vdc coil



DIMENSIONS



ACTIVATOR



Activator sold separately

FEATURES

- DC 2-wire sensor
- IP 67 rugged plastic housing
- Hermetically sealed
- Vibration, shock and corrosion resistant
- Small, compact design
- High visibility LED for power and switch status
- Min off state current optimized for PLCs

TECHNICAL DATA

General specifications

Switching function		2 x normally open (NO)
Output type		Two-wire
Rated operating distance	s_n	4 mm
Installation		Flush mountable
Output polarity		DC
Assured operating distance	s_a	0 ... 3.24 mm
Actual operating distance	s_r	3.6 ... 4.4 mm typ.
Output type		2 x 2-wire

Nominal ratings

Operating voltage	U_B	5 ... 30 V DC
Switching frequency	f	0 ... 500 Hz
Hysteresis	H	Typ. 5 %
Reverse polarity protection		Reverse polarity protected
Short-circuit protection		Pulsing
Voltage drop	U_d	≤ 4.5 V
Operating current	I_L	4 ... 100 mA
Off-state current	I_r	120 ... 200 μ A typ. 175 μ A at 25°C
Time delay before availability	t_v	≤ 100 ms
Switching state indicator		LED, yellow
Valve status indicator		LED, yellow

Ambient Conditions

Ambient temperature	T_A	-25 ... 70°C (-13 ... 158°F)
Storage temperature		-40 ... 85°C (-40 ... 185°F)

Mechanical specifications

Connection type		Connector M12 x 1, 4-pin
Housing material		PBT
Sensing face material		PC
Degree of protection		IP67
Mass		49 g
Tightening torque, fastening screws		M5 x 25 : 2.7 Nm

Compliance with standards and directives

Standards	EN 60947-5-2:2007	IEC 60947-5-2:2007
	EN 60947-5-2/A1:2012	IEC 60947-5-2 AMD 1:2012

Approvals and certificates

UL approval		cULus listed, general purpose
CCC approval		Approval and marking not required for products rated ≤ 36 V

ACTIVATOR AND MOUNTING KITS

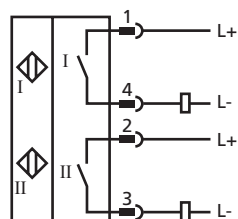
30 x 80 mm NAMUR Mounting, non adjustable

54063B-14800536	Fits Bray S92/93 Sizes 63 to 93 - Imperial
54063B-14850536	Fits Bray S92/93 Sizes 63 to 93 and Series 98 - Metric

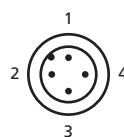
30 x 130 mm NAMUR Mounting, non adjustable

54119B-14800536	Fits Bray S92/93 Sizes 119 to 210 - Imperial
54119B-14850536	Fits Bray S92/93 Sizes 119 to 255 - Metric

WIRING DIAGRAM



CONNECTOR PINOUT



Wire colors in accordance with EN 60947-5-2

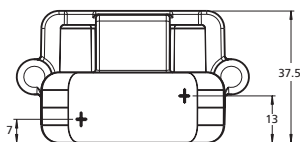
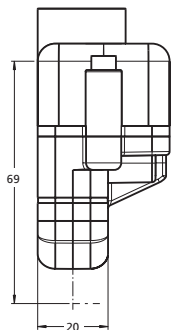
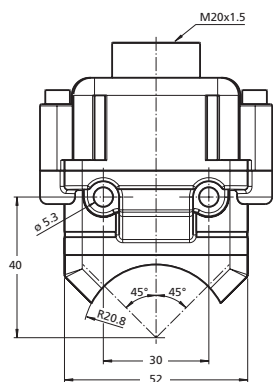
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

ACCESSORIES

090005-76145882	Sensor Cordset - M12 female straight connector (4-pin) to flying leads, 5 meters, zinc
090004-76145534	Sensor Cordset - M12 female straight connector (4-pin) to flying leads, 5 meters, stainless steel



DIMENSIONS



ACTIVATOR



FEATURES

- DC 2-wire sensor with plugin terminal
- IP 67 rugged plastic housing
- Hermetically sealed
- Vibration, shock and corrosion resistant
- Small, compact design
- High visibility LED for power and switch status
- Min off state current optimized for PLCs
- Sensor electronics sealed from terminal compartment

TECHNICAL DATA

General specifications		
Switching function		2 x normally open (NO)
Output type		Two-wire
Rated operating distance	s_n	4 mm
Installation		Flush mountable
Output polarity		DC
Assured operating distance	s_a	0 ... 3.24 mm
Actual operating distance	s_r	3.6 ... 4.4 mm typ.
Output type		2 x 2-wire
Nominal ratings		
Operating voltage	U_B	5 ... 30 V DC
Switching frequency	f	0 ... 500 Hz
Hysteresis	H	typ. 5%
Reverse polarity protection		Reverse polarity protected
Short-circuit protection		Pulsing
Voltage drop	U_d	≤ 4.5 V
Operating current	I_L	4 ... 100 mA
Off-state current	I_r	120 ... 200 μ A typ. 175 μ A at 25°C
Time delay before availability	t_v	≤ 100 ms
Switching state indicator		LED, yellow
Valve status indicator		LED, yellow
Ambient conditions		
Ambient temperature	T_A	-25 ... 70°C (-13 ... 158°F)
Storage temperature		-40 ... 85°C (-40 ... 185°F)
Mechanical specifications		
Connection (system side)		Screw terminal, M20 x 1.5 cable gland
Housing material		PBT
Sensing face material		PC
Degree of protection		IP67
Mass		98 g
Tightening torque, fastening screws		M5 x 25 : 2.7 Nm
Compliance with standards and directives		
Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012	IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
Approvals and certificates		
UL approval		cULus listed, general purpose
CCC approval		Approval and marking not required for products rated ≤ 36 V

ACTIVATOR AND MOUNTING KITS

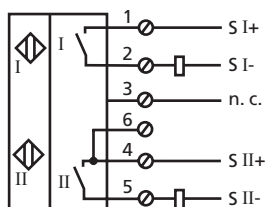
30 x 80 mm NAMUR Mounting, non adjustable

54063B-14800536	Fits Bray S92/93 Sizes 63 to 93 - Imperial
54063B-14850536	Fits Bray S92/93 Sizes 63 to 93 and Series 98 - Metric

30 x 130 mm NAMUR Mounting, non adjustable

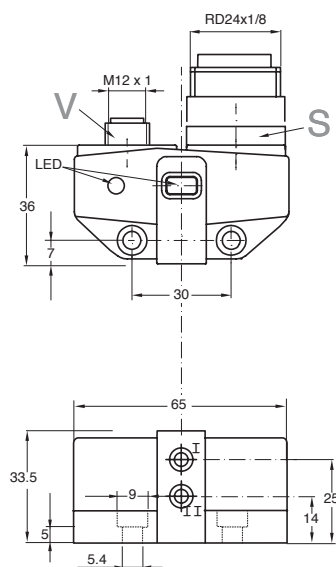
54119B-14800536	Fits Bray S92/93 Sizes 119 to 210 - Imperial
54119B-14850536	Fits Bray S92/93 Sizes 119 to 255 - Metric

WIRING DIAGRAM





DIMENSIONS



ACTIVATORS



Activators sold separately

FEATURES

- DC 3-wire PNP sensor
- IP 67 rugged plastic housing
- Hermetically sealed
- Vibration, shock and corrosion resistant
- Compact design
- High visibility LED for power and switch status
- System cable supports power for sensor and solenoid

TECHNICAL DATA

General specifications

Switching function		2 x normally open (NO)
Output type		PNP, 3-wire
Rated operating distance	S_n	3 mm
Installation		Flush mountable
Output polarity		DC
Assured operating distance	S_a	0 ... 2.43 mm

Nominal ratings

Operating voltage	U_B	10 ... 30 V DC
Switching frequency	f	0 ... 500 Hz
Hysteresis	H	Typ. 5%
Reverse polarity protection		All connections
Short-circuit protection		Pulsing
Voltage drop	U_d	≤ 3 V
Operating current	I_L	0 ... 100 mA
Off-state current	I_r	0 ... 0.5 mA typ. 0.1 μ A at 25°C
No-load supply current	I_o	≤ 25 mA
Operating voltage display		LED, green
Switching state indicator		LED, yellow

Functional safety related parameters

MTTFd		780 a
Mission Time (TM)		20 a
Diagnostic Coverage (DC)		0%

Ambient conditions

Ambient temperature	T_A	-25 ... 70°C (-13 ... 158°F)
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Mechanical specifications

Connection (system side)		Rd24 x 1/8, 6-pin+PE
Connection (valve side)		Socket connector, M12 x 1, 4-pin
Housing material		PBT
Sensing face material		PBT
Degree of protection		IP67
Note		Valve voltage limited to 26,4 V max.; valve power 6 W max.

Standard conformity

Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012	IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
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Approvals and certificates

UL approval		cULus listed, general purpose
CCC approval		Approval and marking not required for products rated ≤ 36 V

ACTIVATOR AND MOUNTING KITS

30 x 80 mm NAMUR Mounting, adjustable

54063A-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063A-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric

30 x 130 mm NAMUR Mounting, adjustable

54160A-14800536	Fits Bray S92/93 Sizes 160 to 210 - Imperial
54160A-14850536	Fits Bray S92/93 Sizes 160 to 255 - Metric

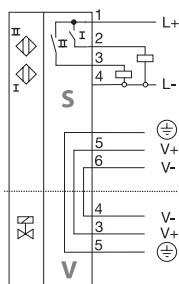
30 x 80 mm NAMUR Mounting, adjustable, High Visibility

54063C-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063C-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric

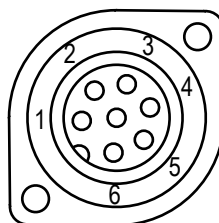
30 x 130 mm NAMUR Mounting, adjustable, High Visibility

54160C-14800536	Fits Bray S92/93 Size 160 - Imperial
54160C-14850536	Fits Bray S92/93 Size 160 - Metric
54210C-14800536	Fits Bray S92/93 Size 210 - Imperial
54210C-14850536	Fits Bray S92/93 Sizes 210 to 255 - Metric

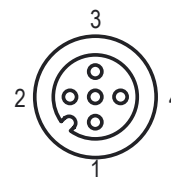
WIRING DIAGRAM



CONNECTOR PINOUT



System Side



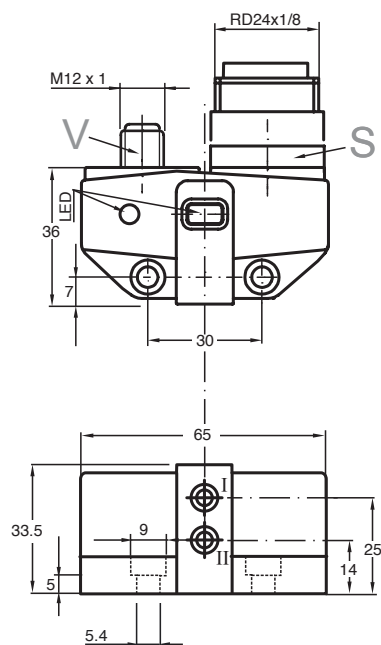
Valve Side
Compatible with 4-pin connector

ACCESSORIES

090700-71155517	Sensor Cordset - Single ended Rd24 female straight socket (6-pin + PE) with screw terminal for field wiring. Field attachable.
090001-76159882	S-Connector Cordset (S62, S63) - M12 male right angle 2-pins + PE to Form B Type I solenoid connector (DIN 43650), 0.6 meters
090001-76160882	S-Connector Cordset (S60) - M12 male right angle (2-pins + PE) to Form A solenoid connector (DIN 43650), 0.3 meters
630250-21524536	Series 63 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 24vdc coil
621250-21524536	Series 62 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 24vdc coil



DIMENSIONS



ACTIVATORS



Activators sold separately

FEATURES

- EC-Type Examination Certificate TÜV 17 ATEX 203727X
- IP 67 rugged plastic housing
- System cable supports power for sensor and solenoid
- Hermetically sealed compact design
- Fixed setting

TECHNICAL DATA

General specifications

Switching function		2 x normally closed (NC)
Output type		NAMUR
Rated operating distance	s_n	3 mm
Installation		Flush mountable
Assured operating distance	s_a	0 ... 2.4 mm
Actual operating distance	s_r	2.7 ... 3.3 mm typ.
Actuating element		304 Stainless steel
Output type		2-wire

Nominal ratings

Nominal voltage	U_0	8 V
Switching frequency	f	0 ... 3 kHz
Hysteresis	H	Typ. 5%
Reverse polarity protection		Reverse polarity protected
Short-circuit protection		Yes
Suitable for 2:1 technology		Yes, reverse polarity protection diode not required
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA
Time delay before availability	t_v	≤ 1.1 ms
Switching state indicator		LED, yellow
Valve status indicator		LED, yellow

Functional safety related parameters

MTTFd		1470 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0%

Valve circuit

Voltage		Max. 32 V DC
Current		Max. 240 mA
Short-circuit protection		No
Reverse polarity protection		Yes, with reversed output LED is out of function, therefore more power for solenoid valve

Ambient conditions

Ambient temperature	T_A	-25 ... 100°C (-13 ... 212°F)
Storage temperature		-40 ... 100°C (-40 ... 212°F)

Mechanical specifications

Connection (system side)		Rd24 x 1/8, 6-pin+PE
Connection (valve side)		Socket connector, M12 x 1, 4-pin
Housing material		PBT
Sensing face material		PBT
Degree of protection		IP67
Use in the hazardous area		See instruction manuals

Standard conformity

Standards	EN 60947-5-6:2000	IEC 60947-5-6:1999
	EN 60947-5-2:2007	IEC 60947-5-2:2007
	EN 60947-5-2/A1:2012	IEC 60947-5-2 AMD 1:2012
	NE 21:2007	

Approvals and certificates

UL approval		cULus Listed, General Purpose
FM approval		FM18US0014X
TÜV NORD-ATEX		TÜV 17 ATEX 203727X
TÜV NORD-IECEX		IECEX TUN 17.0035X

ACTIVATOR AND MOUNTING KITS

30 x 80 mm NAMUR Mounting, adjustable

54063A-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063A-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric

30 x 130 mm NAMUR Mounting, adjustable

54160A-14800536	Fits Bray S92/93 Sizes 160 to 210 - Imperial
54160A-14850536	Fits Bray S92/93 Sizes 160 to 255 - Metric

30 x 80 mm NAMUR Mounting, adjustable, High Visibility

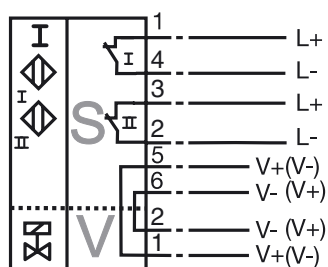
54063C-14800536	Fits Bray S92/93 Sizes 63 to 128 - Imperial
54063C-14850536	Fits Bray S92/93 Sizes 63 to 128 and Series 98 - Metric

30 x 130 mm NAMUR Mounting, adjustable, High Visibility

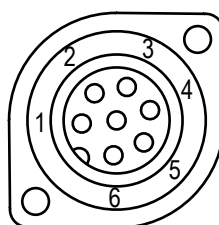
54160C-14800536	Fits Bray S92/93 Sizes 160 to 210 - Imperial
54160C-14850536	Fits Bray S92/93 Sizes 160 to 255 - Metric

WIRING DIAGRAM

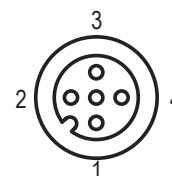
N4-K



CONNECTOR PINOUT



System Side



Valve Side
Compatible with 4-pin connector

ACCESSORIES

090700-71155517	Sensor Cordset - Single ended Rd24 female straight socket (6-pin + PE) with screw terminal for field wiring. Field attachable.
090001-76159882	S-Connector Cordset (S62, S63) - M12 male right angle (2-pins + PE) to Form B Type I solenoid connector (DIN 43650), 0.6 meters
090001-76160882	S-Connector Cordset (S60) - M12 male right angle 2-pins + PE) to Form A solenoid connector (DIN 43650), 0.3 meters
630250-21524536	Series 63 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 24vdc coil
621250-21524536	Series 62 - Solenoid Valve, NAMUR mount 3/2 or 5/2, Form B connector (DIN 43560), IP65, single 24vdc coil

INSTRUCTION MANUAL - ATEX (1G)

Equipment protection level Ga (ia)

Type of protection		Intrinsic safety
CE marking		CE 0518
Certificates		
ATEX certificate		TÜV 17 ATEX 203727X
ATEX marking		Ex II 1G Ex ia IIC T6...T1 Ga
Standards		EN 60079-0:2012+A11:2013, EN 60079-11:2012
IECEx certificate		IECEx TUN 17.0035X
IECEx marking		Ex ia IIC T6...T1 Ga
Standards		IEC 60079-0:2011, IEC 60079-11:2011
Effective internal inductivity	C_i	≤ 100 nF The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Effective internal inductance	L_i	≤ 100 μ H The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Maximum permissible ambient temperature	T_{amb}	Observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.
for ATEX		at $U_i = 15$ V, $I_i = 25$ mA, $P_i = 34$ mW or 64 mW T6 : 55°C (131°F) T5 : 70°C (158°F) T4 : 95°C (203°F) T3 : 95°C (203°F) T2 : 95°C (203°F) T1 : 95°C (203°F) at $U_i = 15$ V, $I_i = 52$ mA, $P_i = 169$ mW T6 : 50°C (122°F) T5 : 60°C (140°F) T4 : 90°C (194°F) T3 : 90°C (194°F) T2 : 90°C (194°F) T1 : 90°C (194°F)
for IECEx		at $U_i = 15$ V, $I_i = 25$ mA, $P_i = 34$ mW or 64 mW T6 : 75°C (167°F) T5 : 90°C (194°F) T4 : 100°C (212°F) T3 : 100°C (212°F) T2 : 100°C (212°F) T1 : 100°C (212°F) at $U_i = 15$ V, $I_i = 52$ mA, $P_i = 169$ mW T6 : 65°C (149°F) T5 : 80°C (176°F) T4 : 90°C (194°F) T3 : 90°C (194°F) T2 : 90°C (194°F) T1 : 90°C (194°F)
Maximum values of the valve circuit		The value applies to each valve circuit. A cable length of 10 m is considered
Voltage	U_i	≤ 32 V
Current	I_i	≤ 240 mA
Internal capacitance	C_i	≤ 10 nF
Internal inductance	L_i	≤ 20 μ H

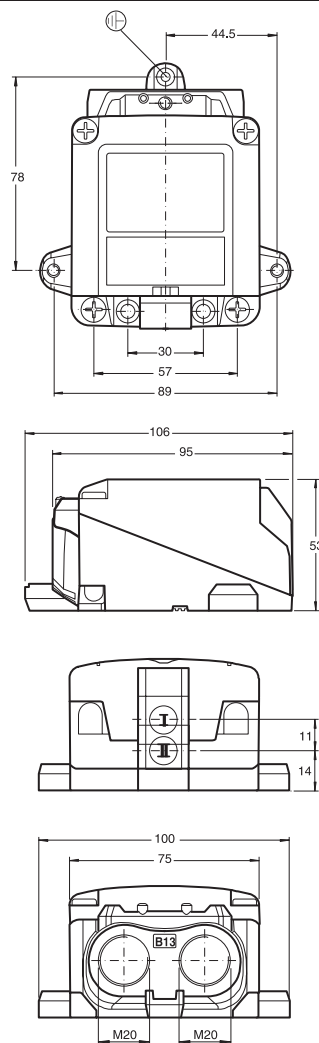
INSTRUCTION MANUAL - ATEX (2G)

Equipment protection level Gb (ib)

Type of protection		Intrinsic safety
CE marking		CE 0518
Certificates		
ATEX certificate		TÜV 17 ATEX 203727X
ATEX marking		Ex II 1G Ex ia IIC T6...T1 Ga
Standards		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
IECEX certificate		IECEX TUN 17.0035X
IECEX marking		Ex ia IIC T6...T1 Ga
Standards		IEC 60079-0:2011 , IEC 60079-11:2011
Effective internal inductivity	C_i	≤ 100 nF The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Effective internal inductance	L_i	≤ 100 μ H The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Maximum permissible ambient temperature	T_{amb}	Observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.
		At $U_i = 15$ V , $I_i = 25$ mA, $P_i = 34$ mW or 64 mW T6 : 75 °C (167 °F) T5 : 90 °C (194 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at $U_i = 15$ V , $I_i = 52$ mA, $P_i = 169$ mW T6 : 65 °C (149 °F) T5 : 80 °C (176 °F) T4 : 90 °C (194 °F) T3 : 90 °C (194 °F) T2 : 90 °C (194 °F) T1 : 90 °C (194 °F)
Maximum values of the valve circuit		The value applies to each valve circuit. A cable length of 10 m is considered
Voltage	U_i	≤ 32 V
Current	I_i	≤ 240 mA
Internal capacitance	C_i	≤ 10 nF
Internal inductance	L_i	≤ 20 μ H



DIMENSIONS



SENSOR FEATURES

- 2-wire DC sensor with minimum off-state current
- ATEX-approval for zone 2 and zone 22
- High temp, UV, salt water resistant
- Rugged metal base
- IP66/67/69K
- High impact protection
- Removable plug-in terminals
- Large terminal space for easy wiring

TECHNICAL DATA

General specifications	
Switching function	2 x normally open (NO)
Output type	Two-wire
Rated operating distance	s_n 2.5mm
Installation	For non-flush mounting
Output polarity	DC
Assured operating distance	s_a 0 ... 2.05mm
Output type	2 x 2-wire
Nominal ratings	
Operating voltage	U_B 6 ... 30V
Switching frequency	f 0 ... 100 Hz
Hysteresis	H Typical 0.5 mm
Reverse polarity protection	Reverse polarity tolerant
Short-circuit protection	No
Voltage drop	U_d $\leq$ 6 V
Operating current	I_L 4 ... 100mA
Off-state current	I_r 100 ... 200 μ A, typical 160 μ A
Functional safety related parameters	
MTTF _d	684 a
Mission Time	T_M 20 a
Diagnostic Coverage	DC 0%
Electrical specifications - valve circuit	
Voltage	10 ... 32V
Current	Max. 240 mA
Ambient conditions	
Ambient temperature	T_A -40 ... 75°C (-40 ... 167°F), restriction for use in hazardous area, see instruction manual
Storage temperature	-40 ... 85°C (-40 ... 185°F)
Mechanical specifications	
Connection (system side)	M20 x 1.5 cable gland, ground connection w/ earthing screw only for wire cross-section 4mm ² , use solid wire or stranded wire w/ wire end ferrule
Connection (valve side)	Screw terminal, cable gland M20 x 1.5
Housing material	Rugged polycarbonate (PC) + GF 10%, optimized for outdoor use
Housing base	Powder coated aluminum
Degree of protection	IP67; additional degree of protection IP66/IP69K with 540100-70600533 and 540100-21900533
Terminal assembly	
Number	10
Connection type	For connection of copper wires with 7 mm dismantle length. Tightening torque 0.5 ... 0.6 Nm
Type	Screw terminal block, pluggable
Terminal capacity	Conductor cross-section 0,25 ... 2,5 mm ² , flexible/rigid. For Multiple-wire connection: two wires of equal cross-section per 0.25...1 mm ²
Tightening torque, fastening screws	2 Nm
Tightening torque, housing screws	1.5 Nm
Tightening torque, earthing screw	1.5 Nm
Tightening torque, cable gland	$\leq$ 4 Nm
Tightening torque, stopping plug	2 Nm
General information	
Use in the hazardous area	See instruction manuals
Category	3G; 3D
Compliance with standards & directives	
Standards	EN 60947-5-2:2007 VDI / VDE 3845 IEC 60947-5-2:2007
CCC approval	Approval and marking not required for products rated $\leq$ 36 V



ACTIVATOR AND MOUNTING ASSEMBLY FEATURES

- High-visibility valve position display
- Protection against contamination and damage
- Three level adjustable
- Suitable for CW or CCW operation
- 30 x 80mm actuator mounting
- 30 x 130mm actuator mounting

TECHNICAL DATA

General specifications

Housing material	PC
Activator material	PA
Protective cover material	V4A/316L
Valve status indicator	Red = CLOSED Green = OPEN
Indicator adjustments	5 degree increments
Activator adjustment – top level	5 degree increments
Activator adjustment – bottom level	90 degree increments
Activator markings	5 degree increments
Hardware	316 stainless steel
Activator targets	303 stainless steel

ASSEMBLY

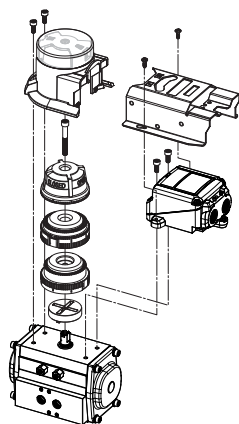
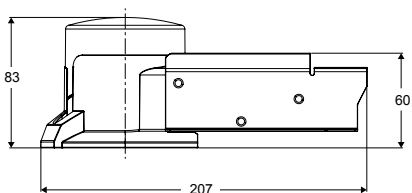
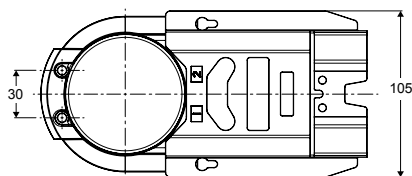


INDUCTIVE SENSOR KIT

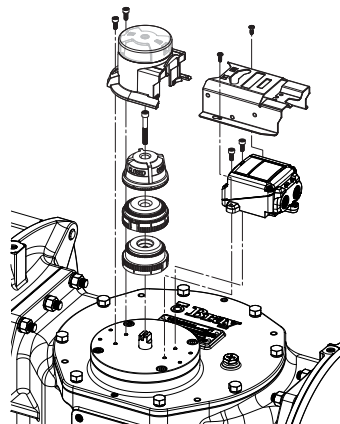
30 x 80mm mounting pattern, adjustable activator

Description	Hardware	Kit part number
Bray S92/93 Sizes 63 to 128	Imperial	540102-12600536
Bray S92/93 Sizes 63 to 128 and Series 98 NAMUR VDI/VDE 3845 Compliant mounting	Metric	540102-12650536

DIMENSIONS



Series 92/93 Actuator



Series 98 Actuator

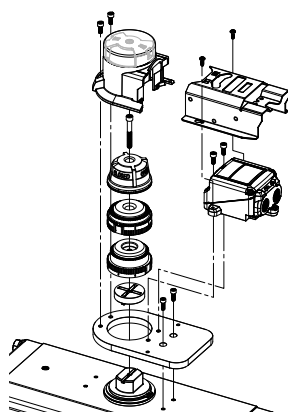
Parts List

Qty	Imperial - 540102-12600536	Metric - 540102-12650536
1	Sensor	Sensor
1	Activator assembly	Activator assembly
1	Protective cover - Zone 2/22	Protective cover - Zone 2/22
2	Socket head capscrew #10-32X1/2, SS	Socket head capscrew M5X0.8X12, SS

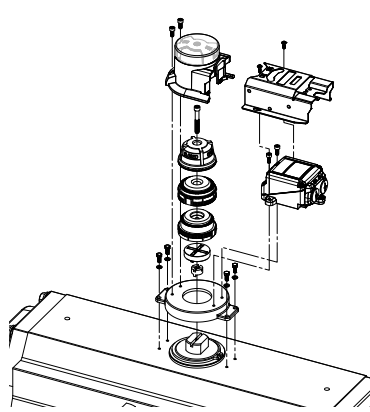
See Series 54 IOM for full mounting details

30 x 130mm mounting pattern, adjustable activator

Description	Hardware	Kit part number
Bray S92/93 Size 160	Imperial	540102-12601536
Bray S92/93 Size 160 NAMUR VDI/VDE 3845 Compliant mounting	Metric	540102-12651536
Bray Series 92/93 Size 210	Imperial	540102-12602536
Bray Series 92/93 Sizes 210 to 255	Metric	540102-12652536



Series 92/93 Actuator
Size 160

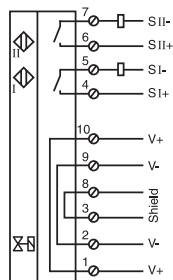


Series 92/93 Actuator
Sizes 210 to 255

Qty.	Imperial - 540102-12601536	Metric - 540102-12651536
1	Sensor	Sensor
1	Activator assembly	Activator assembly
1	Protective cover - Zone 2/22	Protective cover - Zone 2/22
1	Mounting plate assembly	Mounting plate assembly
2	Socket head capscrew #10-32X3/8, SS	Socket head capscrew M5X0.8X10, SS

See Series 54 IOM for full mounting details

WIRING DIAGRAM



APPLICATION

Note: The connections to this sensor are sealed with stopping plugs to protect against dirt and moisture. If your application does not require the use of all connections, permanently seal stopping plugs onto unused connections or ensure that stopping plugs are secure and impermeable during initial installation and when performing regular maintenance work. If necessary, re-tighten the stopping plugs to a torque of 1 Nm.

INSTRUCTION MANUAL - Gc (nA)

Equipment protection level Dc (tc)	Manual electrical apparatus for hazardous areas - Gas Group IIIC
Device category 3G (nA)	For use in hazardous areas with gas, vapor and mist
Certificate	BR 17 CERT 1705 X
CE marking	CE
ATEX marking	Ⓔ II 3G Ex nA IIC T6 ... T1 Gc The Ex-related marking can also be printed on the enclosed label.
Standards	EN 60079-0:2012+A11:2013, EN 60079-15:2010 - Protection by increased safety "nA".
General	The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The data stated in the data sheet are restricted by this operating instruction! The special conditions must be observed!
Installation, commissioning	Laws and/or regulations and standards governing the use or intended usage goal must be observed. If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion. After opening the housing, you should check that the seal is in the correct position and is clean and intact before closing the housing again. Seal any openings on the housing not in use, using the stainless steel stopping plugs supplied. No other devices should be used to seal the openings. The stopping plugs made of plastic must no longer be used.
Maintenance	No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible. After opening the housing, you should check that the seal is in the correct position and is clean and intact before closing the housing again.
Special Conditions	
Maximum operating current [I_L]	The maximum permissible load current must be restricted to the values given in the following list. High load currents and load short-circuits are not permitted.
Maximum operating voltage [U_{Bmax}]	The maximum permissible operating voltage U_{Bmax} is restricted to the values in the following list. Tolerances are not permitted.
Maximum permissible ambient temperature [T_{Umax}]	Depending on the load current I_L , the maximum operating voltage U_{Bmax} , and the temperature class. Details can be found in the following list.
at $U_{Bmax}=30\text{ V}$, $I_L=100\text{ mA}$, T6	35°C (95°F)
at $U_{Bmax}=30\text{ V}$, $I_L=100\text{ mA}$, T1 ... T5	57°C (134.6°F)
at $U_{Bmax}=30\text{ V}$, $I_L=50\text{ mA}$, T6	35°C (95°F)
at $U_{Bmax}=30\text{ V}$, $I_L=50\text{ mA}$, T1 ... T5	60°C (140°F)
Maximum values of the valve circuit	$U_v = 32\text{ V}$; $I_v = 240\text{ mA}$
Protection from mechanical danger	The sensor must not be exposed to any form of mechanical danger. If you use the protective cover 540100-70600533 and the actuator with protective cover 540100-21900533, it is ensured that the device is sufficiently protected in accordance with IEC/EN 60079-0. If protective cover becomes damaged, replace the protective cover.
Protection from UV light	The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas. If you use the protective cover 540100-70600533 and the actuator with protective cover 540100-21900533, it is ensured that the device is sufficiently protected in accordance with IEC/EN 60079-0. If the protective cover becomes damaged, replace the protective cover.
Electrostatic charge	Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding. Sliding contact discharges must be avoided. Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1. Do not attach the nameplate provided in areas where electrostatic charge can build up.
Lead insertion	If cable glands are required for the installation, then the following points must be observed. The cable glands must be certified in accordance with the application. The temperature range of the cable glands must be selected according to the application. The degree of protection must not be reduced by the cable glands. Seal the housing. Use a seal that meets the requirements of the application.
Material selection accessories	When selecting accessories, ensure that the material allows the temperature of the enclosure to rise to up to 70°C.
Plug connector	The plug connector must not be withdrawn under voltage. The proximity switch is identified as follows: "WARNING- DO NOT SEPARATE WHEN ENERGIZED". With the plug connector disconnected, soiling of the internal area must be prevented. (i.e. the area that is inaccessible when the connector is inserted).

INSTRUCTION MANUAL - Dc (tc)

Equipment protection level Dc (tc)	Manual electrical apparatus for hazardous areas - Dust Group IIIC
Device category 3D (tc)	For use in hazardous areas with combustible dust
Certificate	BR 17 CERT 1705 X
CE marking	CE
ATEX marking	Ex II 3D Ex tc IIIC T80°C Dc The Ex-related marking can also be printed on the enclosed label.
Standards	EN 60079-0:2012+A11:2013, EN 60079-31:2014 - Protection by enclosure "tc"
General	The corresponding datasheets, declarations of conformity, EC-type examination certificates, certifications, and control drawings, where applicable (see datasheets), form an integral part of this document. These documents can be found at www.bray.com . The maximum surface temperature of the device was determined without a layer of dust on the apparatus. Some of the information in this instruction manual is more specific than the information provided in the datasheet.
Installation, commissioning	Laws and/or regulations and standards governing the use or intended usage goal must be observed. If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion. After opening the housing, you should check that the seal is in the correct position and is clean and intact before closing the housing again. Seal any openings on the housing not in use, using the stainless steel stopping plugs supplied. No other devices should be used to seal the openings. The stopping plugs made of plastic must no longer be used.
Maintenance	No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible. After opening the housing, you should check that the seal is in the correct position and is clean and intact before closing the housing again.
Special Conditions	
Maximum operating current [I_L]	The maximum permissible load current must be restricted to the values given in the following list. High load currents and load short-circuits are not permitted.
Maximum operating voltage [U_{Bmax}]	The maximum permissible operating voltage U_{Bmax} is restricted to the values in the following list. Tolerances are not permitted.
Maximum permissible ambient temperature [T_{Umax}]	Dependant of the load current I_L and the maximum operating voltage U_{Bmax} . Details can be found in the following list.
at $U_{Bmax}=30\text{ V}$, $I_L=100\text{ mA}$, T80°C	57°C (134.6°F)
at $U_{Bmax}=30\text{ V}$, $I_L=50\text{ mA}$, T80°C	60°C (140°F)
Maximum values of the valve circuit	$U_V = 32\text{ V}$; $I_V = 240\text{ mA}$
Protection from mechanical danger	The sensor must not be exposed to ANY FORM of mechanical danger. If you use the protective cover 540100-70600533 and the actuator with protective cover 540100-21900533, it is ensured that the device is sufficiently protected in accordance with IEC/ EN 60079-0. If the protective cover becomes damaged, replace the protective cover.
Protection from UV light	The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas. If you use the protective cover 540100-70600533 and the actuator with protective cover 540100-21900533 it is ensured that the device is sufficiently protected in accordance with IEC/EN 60079-0. If the protective cover becomes damaged, replace the protective cover.
Electrostatic charge	Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding. Sliding contact discharges must be avoided. Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1. Do not attach the nameplate provided in areas where electrostatic charge can build up.
Lead insertion	If cable glands are required for the installation, then the following points must be observed. The cable glands must be certified in accordance with the application. The temperature range of the cable glands must be selected according to the application. The degree of protection must not be reduced by the cable glands. Seal the housing. Use a seal that meets the requirements of the application.
Plug connector	The plug connector must not be withdrawn under voltage. The proximity switch is identified as follows: "WARNING - DO NOT SEPARATE WHEN ENERGIZED". With the plug connector disconnected, soiling of the internal area must be prevented. (i.e. the area that is inaccessible when the connector is inserted).



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ASSEMBLY



FEATURES

- Independently adjustable open and close positions
- Low resistivity plastic
- Three level adjustable
- Suitable for CW or CCW operation
- 30 x 80mm actuator mounting
- 30 x 130mm actuator mounting

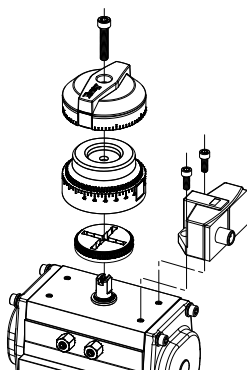
TECHNICAL DATA

Activator material	PA66 with carbon fiber
Pointer material	PA6
Activator adjustments	5 degree increments
Pointer adjustments	5 degree increments
Activator markings	-90° to +90° in 5 degree increments
Hardware	304 stainless steel
Activator targets	304 stainless steel

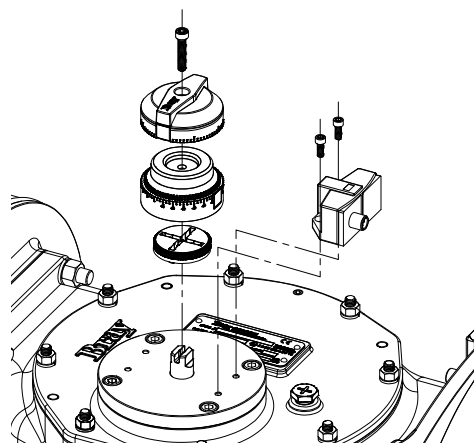
ACTIVATOR AND MOUNTING KITS

30 x 80mm mounting pattern, adjustable activator

Description	Hardware	Kit part number
Bray S92/93 Sizes 63 to 128	Imperial	54063A-14800536
Bray S92/93 Sizes 63 to 128 and Series 98 NAMUR VDI/VDE 3845 Compliant mounting	Metric	54063A-14850536

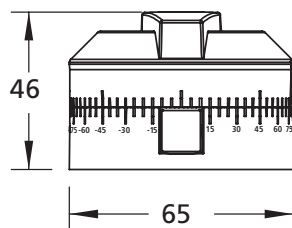


Series 92/93 Actuator



Series 98 Actuator

DIMENSIONS



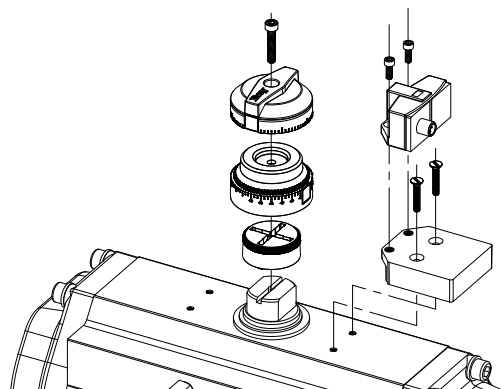
Parts List

Qty	Imperial - 54063A-14800536	Metric - 54063A-14850536
1	Activator	Activator
1	Pinion adaptor	Pinion adaptor
1	Socket head capscrew M6x1x30mm,SS	Socket head capscrew M6x1x30mm,SS
2	Socket head capscrew #10-32X7/16,SS	Socket head capscrew M5X.8,12MM,SS
2	Socket head capscrew #10-32X5/8,SS	Socket head capscrew M5X.8,15MM,SS

See Series 54 IOM for full mounting details

30 x 130mm mounting pattern, adjustable activator

Description	Hardware	Kit part number
Bray S92/93 Sizes 160 to 210	Imperial	54160A-14800536
Bray S92/93 Sizes 160 to 255 NAMUR VDI/VDE 3845 Compliant mounting	Metric	54160A-14850536



Series 92/93 Actuator

Qty.	Imperial - 54160A-14800536	Metric - 54160A-14850536
1	Activator	Activator
1	Pinion adaptor	Pinion adaptor
1	Series 54 sensor adaptor	Series 54 sensor adaptor
1	Socket head capscrew M6X1,40MM,SS	Socket head capscrew M6X1,40MM,SS
2	Socket head capscrew #10-32X7/16,SS	Socket head capscrew M5X.8,12MM,SS
2	Socket head capscrew #10-32X5/8,SS	Socket head capscrew M5X.8,15MM,SS
2	Counter sunk cross drive screw #10-32X1.00	Counter sunk slotted screw M5X35,18-8

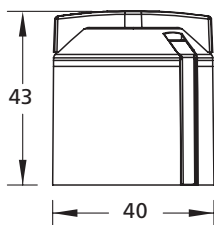
See Series 54 IOM for full mounting details



ASSEMBLY



DIMENSIONS



FEATURES

- Two fixed operation surfaces offset by 180 degrees
- Low resistivity plastic
- Suitable for CW or CCW operation
- 30 x 80mm actuator mounting
- 30 x 130mm actuator mounting
- Actuator mount parallel or perpendicular to pipe

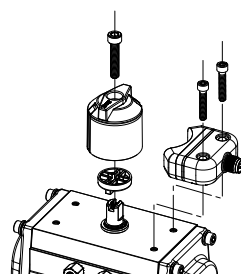
TECHNICAL DATA

Activator material	PA66 with carbon fiber
Pointer material	PA6
Hardware	304 stainless steel
Activator targets	304 stainless steel

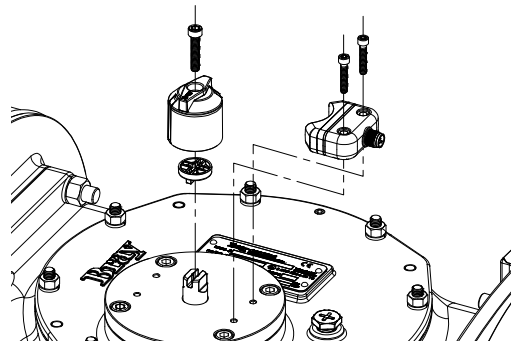
ACTIVATOR AND MOUNTING KITS

30 x 80mm mounting pattern, non adjustable activator

Description	Hardware	Kit part number
Bray S92/93 Sizes 63 to 93	Imperial	54063B-14800536
Bray S92/93 Sizes 63 to 93 and Series 98 NAMUR VDI/VDE 3845 compliant mounting	Metric	54063B-14850536



Series 92/93 Actuator



Series 98 Actuator

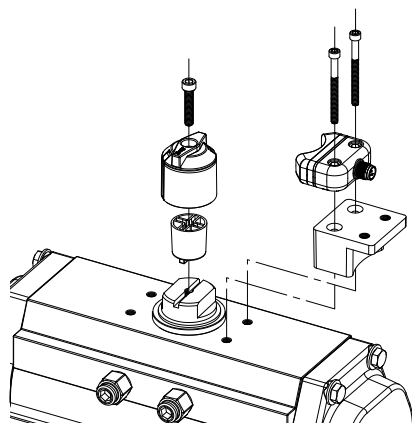
Parts List

Qty	Imperial - 54063B-14800536	Metric - 54063B-14850536
1	Activator	Activator
1	Pinion adaptor	Pinion adaptor
1	Socket head capscrew M6x1x30mm,SS	Socket head capscrew M6x1x30mm,SS
2	Socket head capscrew #10-32X1.0,SS	Socket head capscrew M5X0.8X25mm,SS
2	Socket head capscrew #10-32X1.50,SS	Socket head capscrew M5X0.8X40mm,SS

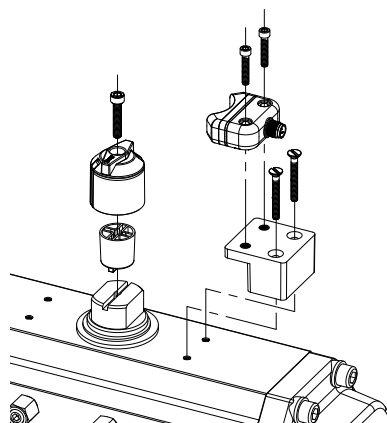
See Series 54 IOM for full mounting details

30 x 80mm or 30 x 130mm mounting pattern, non adjustable activator

Description	Hardware	Kit part number
Bray S92/93 Sizes 119 to 210	Imperial	54119B-14800536
Bray S92/93 Sizes 119 to 255 NAMUR VDI/VDE 3845 compliant mounting	Metric	54119B-14850536



Series 92/93 Actuator (Size 119 to 128)



Series 92/93 Actuator (Size 160 to 255)

Qty.	Imperial - 54119B-14800536	Metric - 54119B-14850536
1	Activator	Activator
1	Pinion adaptor	Pinion adaptor
1	Series 54 sensor adaptor	Series 54 sensor adaptor
1	Socket head capscREW M6X1,45MM,SS	Socket head capscREW M6X1,45MM,SS
2	Socket head capscREW #10-32X1.0,SS	Socket head capscREW M5X0.8X25mm,SS
2	Socket head capscREW #10-32X1.5,SS	Socket head capscREW M5X0.8X40mm,SS
2	Socket head capscREW #10-32X2.25,SS	Socket head capscREW M5x0.8x55mm,SS
2	Socket head capscREW #10-32X2.75,SS	Socket head capscREW M5X0.8X70mm,SS
2	Counter sunk cross drive screw #10-32X1.5	Counter sunk slotted screw M5X35,18-8

See Series 54 IOM for full mounting details



ASSEMBLY



FEATURES

- High-visibility display
- Three level adjustable activator
- Protection against contamination and damage
- Suitable for CW and CCW operation
- 30 x 80mm actuator mounting
- 30 x 130mm actuator mounting

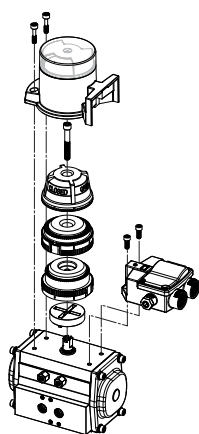
TECHNICAL DATA

Housing material	PC
Activator material	PA
Valve status indicator	Red = Closed Yellow = Open
Indicator adjustments	5 degree increments
Activator adjustment – top level	5 degree increments
Activator adjustment – bottom level	90 degree increments
Hardware	316 stainless steel
Activator targets	303 stainless steel

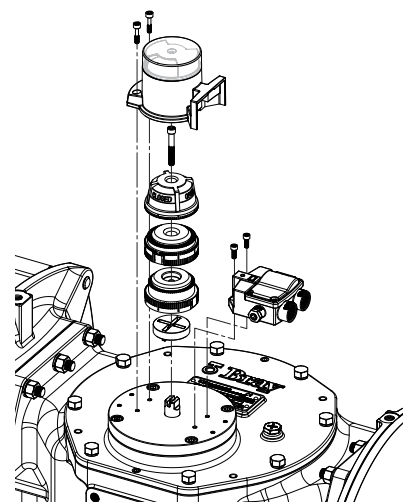
ACTIVATOR AND MOUNTING KITS

30 x 80mm mounting pattern, adjustable activator

Description	Hardware	Kit part number
Bray S92/93 Sizes 63 to 128	Imperial	54063C-14800536
Bray S92/93 Sizes 63 to 128 and Series 98 NAMUR VDI/VDE 3845 Compliant mounting	Metric	54063C-14850536



Series 92/93 Actuator



Series 98 Actuator

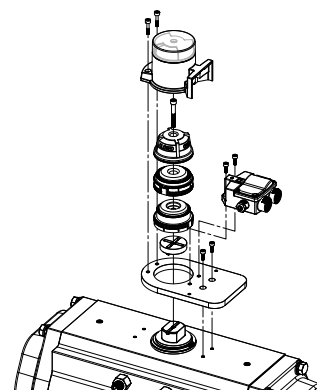
Parts List

Qty	Imperial - 54063C-14800536	Metric - 54063C-14850536
1	Activator assembly	Activator assembly

See Series 54 IOM for full mounting details

30 x 130mm mounting pattern, adjustable activator

Description	Hardware	Kit part number
Bray S92/93 Sizes 160	Imperial	54160C-14800536
Bray S92/93 Sizes 160 NAMUR VDI/VDE 3845 Compliant mounting	Metric	54160C-14850536
Bray S92/93 Sizes 210	Imperial	54210C-14800536
Bray S92/93 Sizes 210 to 255 NAMUR VDI/VDE 3845 Compliant mounting	Metric	54210C-14850536

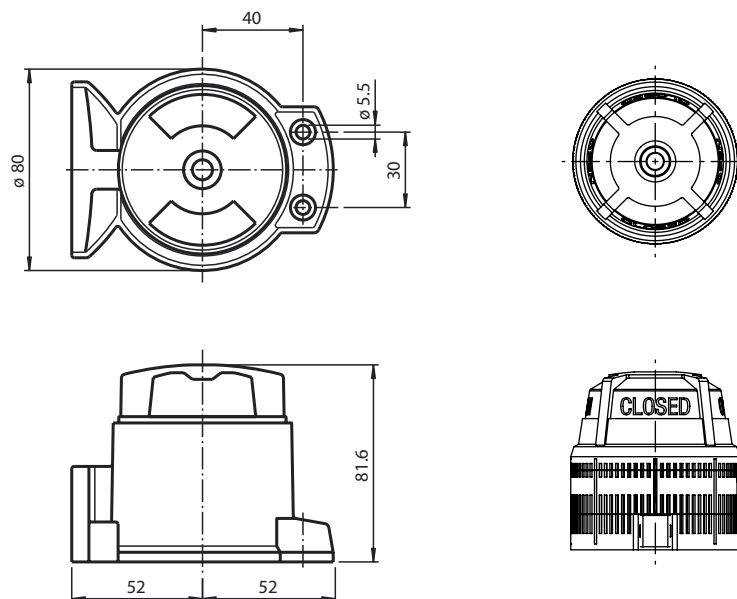


Series 92/93 Actuator

Qty.	Imperial - 54160C-14800536	Metric - 54160C-14850536
1	Activator assembly	Activator assembly
1	Mounting plate assembly	Mounting plate assembly

See Series 54 IOM for full mounting details

DIMENSIONS





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