

MICRO SWITCH Compact Limit Switches

002409

NGC Series Issue 8

Datasheet



DESCRIPTION

Honeywell's MICRO SWITCH Compact Limit Switches, NGC Series, are a configurable platform of medium-duty switches that allow the customer to choose SPDT (single pole, double throw) or DPDT (double pole, double throw) circuitry while maintaining the same housing and mounting footprint throughout the NGC Series. MICRO SWITCH NGC Series can be configured more than 380,000 ways, carries global approvals, and are sealed to IP67 for potential use in indoor and outdoor applications.

VALUE TO CUSTOMERS

- Cost-effective: Provides a single source for a compact SPDT and DPDT limit switch, which can help minimize the Original Equipment Manufacturer's sourcing expenses by simplifying their supply chain
- **Versatile:** Durable packaging allows for use in many harsh indoor or outdoor applications, providing performance confidence
- **Configurable:** Allows design engineers to standardize on a single footprint while meeting a variety of electrical requirements
- **Application support:** Customers with a global footprint can count on Honeywell for regional support for new applications and troubleshooting

FEATURES

- SPDT or DPDT configurable circuitry
- Snap-action, positive-break contacts
- Silver alloy and gold-plated contact options
- UL, CE, cUL, and CCC approvals
- Conforms to IEC 60947-5-1, IEC 61373, EN45545-2 (metal variants with M12 connectors only)
- NEMA 1, 4, 12, 13; IP67 sealing
- Metal and plastic housing options
- Low and high temperature variants
- Cable and connector terminations
- Variety of heads and actuator levers

POTENTIAL INDUSTRIAL APPLICATIONS

- Boom position detection
- Elevators and escalators
- Machine tools
- Mobile light towers
- Packaging equipment
- Rail doors
- Scissor lifts

DIFFERENTIATION

- With two times the vibration (10 g) and shock (50 g) ratings of comparable competitive devices, the NGC Series can be implemented in the harshest of environmental conditions, providing enhanced reliability and repeatability
- Broader current capacity (10 A) than comparable devices allows for potential use in a wider set of applications, making platform standardization an easier task

PORTFOLIO

The NGC Series joins the 14CE, 914CE, LS, and E6/V6 Series of Medium-Duty Limit Switches. Honeywell also offers a portfolio of MICRO SWITCH Heavy-Duty Limit Switches and Global Limit Switches.

Table 1. Specifications

Characteristic	Parameter	
Description	compact, medium-duty limit switches	
Actuators	Side Rotary Configurations Side rotary Side rotary (short) Side rotary with adjustable length roller lever Reversed side rotary (short) Reversed side rotary with adjustable length roller lever	Plunger Configurations Pin plunger (standard 4,8 mm [0.19 in] and long 7,4 mm [0.29 in]) Roller plunger (standard 15,3 mm [0.60 in] and long 17,85 mm [0.70 in]) Cross roller plunger (standard 15,3 mm [0.60 in] and long 17,85 mm [0.70 in]) Pin plunger with boot seal Panel-mount pin plunger Panel-mount roller plunger Panel-mount cross roller plunger Panel-mount pin plunger with boot seal Top roller lever arm
Terminations (SPDT)	Normal cable (refer to table 4) PUR cable (refer to table 4) Special application cable (refer to table 4) Railway cable (refer to table 4) Connector, 4-pin male, M12 thread Connector, 5-pin male, M12 thread	
Terminations (DPDT)	Normal cable (refer to table 4) PUR cable (refer to table 4) Special application cable (refer to table 4) Railway cable (refer to table 4)	
Material approval standard	(only applicable for product with non-halogen ca DIN5510-2-2009 (flammability rating: S3; smok toxic gas rating: FED(TZUL=15min)< 1)	
Switching options	SPDT, DPDT; snap action contacts (1NC/1NO, 2	NC/2NO)
Sealing	NEMA 1, 4, 12, 13; IP67 per IEC 60529 suitable for outdoor applications	
Contacts	snap action, positive break standard: silver alloy; gold: gold-plated	
Operating temperature	-25 °C to 75 °C [-13 °F to 167 °F] (for extended	operating temperature options, see Table 3)
Storage temperature	-40 °C to 85 °C [-40 °F to 185 °F]	
Mechanical endurance	1NC/1NO: 5 M cycles min. at 120 CPM 2NC/2NO: 5 M cycles min. at 60 CPM	
Electrical life	1 A, 110 Vdc, 500,000 cycles only for NC circuit 10 mA, 30 Vdc, 50,000 cycles only for gold-plate	d contacts
Thermal current	1NC/1NO: 10 A; 2NC/2NO: 5 A	
Rated insulation voltage (Ui)	1NC/1NO: 400 V as per IEC 60947-5-1 2NC/2NO: 250 V as per IEC 60947-5-1	
Dielectric strength	1890 Vac for metal housing; 2890 Vac for plastic 1500 Vac between all terminals to enclsoure after	
Impulse voltage	1NC/1NO: 2500 Vdc as per IEC 60947-5-1 2NC/2NO: 1500 Vac as per IEC 60947-5-1	
Pollution degree	3 (III)	
Humidity	95 %RH max.	
Operating speed	0,3 mm/s to 2 m/s	
Switching frequency	1NC/1NO: 120 CPM max. 2NC/2NO: 60 CPM max.	
Shock	50 g for 11 μs as per IEC 60068-2-27; railway ap	plication, per IEC 61373 Class I Car B type
Vibration	10 g as per IEC 60068-2-6, frequency range 10 l railway application per IEC 61373 Class I Car B ty	
Approvals	UL (UL508), cUL, CE (IEC 60947-5-1), CCC (GB:	14048.5-2008)
Conforming to standards	IEC 60947-5-1, IEC 61373, EN45545-2 HL 3 (m	netal variants with M12 connectors only)

Table 2. Electrical Ratings

Circuitry/contacts	Rating, Rated Voltage & Current		
1NC/1NO (silver-alloy contacts)	A300 AC15: 120 V 6 A; 240 V 3 A per IEC 60947-5-1 and UL508 Q300 DC13: 125 Vdc 0.55 A; 250 Vdc 0.27 A per IEC 60947-5-1 an UL508		
1NC/1NO (gold-plated contacts) low level current: 30 mVdc 10 mA resistive			
2NC/2NO (silver-alloy contacts)	C300 AC15: 0.75 A 240 Vac per IEC 60947-5-1 R300 DC13: 0.1 A 250 Vdc per IEC 60947-5-1		
2NC/2NO (gold-plated contacts)	low level current: 30 mVdc 10 mA resistive		

Figure 1. Product Nomenclature and Order Guide

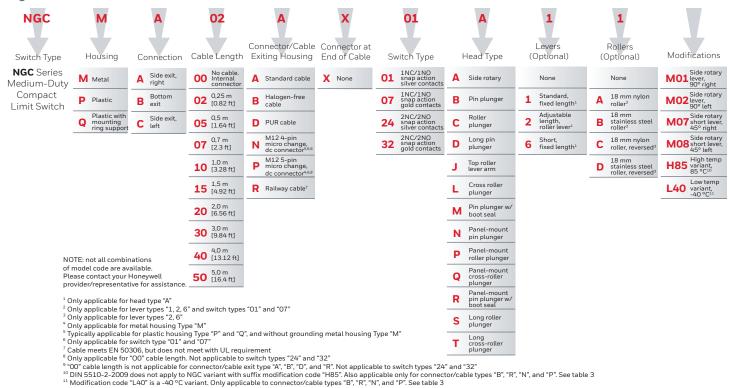


Table 3. Connector/Cable Type Temperature Options 10, 11

Connector/Cable type	Standard NGC Series (with modification code, none)		High Temp NGC S (with modification		Low Temp NGC Series (with modification code, L40)		
	Tmin	Tmax	Tmin	Tmax	Tmin	Tmax	
Α	-25 °C	75 °C	_	_	_	_	
В	-25 °C	75 °C	-25 °C	85 °C	-40 °C	75 °C	
D	-25 °C	75 °C	-	_	_	_	
R	-25 °C	75 °C	-25 °C	85 °C	-40 °C	75 °C	
N	-25 °C	75 °C	-25 °C	85 °C	-40 °C	75 °C	
P	-25 °C	75 °C	-25 °C	85 °C	-40 °C	75 °C	

Figure 2. Connector Dimensions and Pin-Out Identification

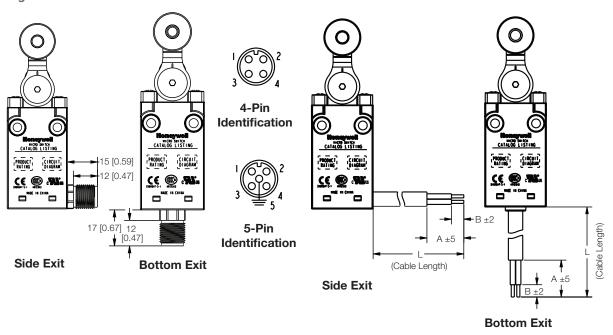


Table 4. Cable Descriptions

	Cable Description										
Listing	Length (L) min.	Jacket strip length (A)	Insulation strip length (B)	NGCP*01* NGCP*07* (01 or 07 switch type)	NGCM*01* NGCM*07* (01 or 07 switch type)	NGCP*24* NGCP*32* (24 or 32 switch type)	NGCM*24* NGCM*32* (24 or 32 switch type)				
NGC*00*	no cable (inter	nal connector)									
NGC*02*	0,25 m [9.8 in]	23 mm [0.91 in]	5 mm [0.20 in]								
NGC*05*	0,5 m [19,7]	32 mm [1.26]	17 mm [0.67 in]								
NGC*07*	0,7 m [27.6 in]	32 mm [1.26]	17 mm [0.67 in]								
NGC*10*	1 m [39.37 in]	23 mm [0.91 in]	5 mm [0.20 in]								
NGC*15*	1,5 m [59 in]	23 mm [0.91 in]	5 mm [0.20 in]	18 AWG or 4 x 0,75 mm ²	18 AWG or 5 x 0,75 mm ²	20 AWG or 8 x 0,5 mm ²	20 AWG or 9 x 0,5 mm ²				
NGC*20*	2 m [78.74 in]	23 mm [0.91 in]	5 mm [0.20 in]	7 7 0,7 3 111111	3 x 0,7 3 111111	0 x 0,5 111111	3 x 0,3 11111				
NGC*30*	3 m [9.84 ft]	23 mm [0.91 in]	5 mm [0.20 in]								
NGC*40*	4 m [13.12 ft]	23 mm [0.91 in]	5 mm [0.20 in]								
NGC*50*	5 m [16.4 ft]	23 mm [0.91 in]	5 mm [0.20 in]								

Figure 3. Side Rotary A1A/A1B Dimensions

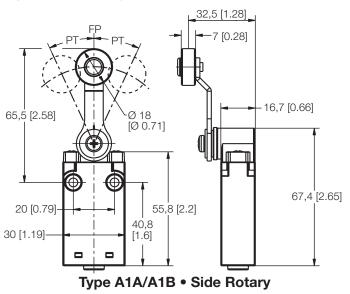


Figure 5. Side Rotary A2A/A2B Dimensions

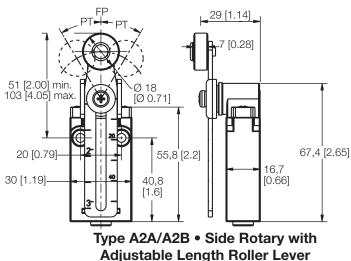
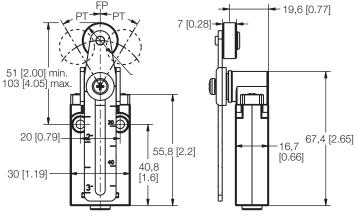
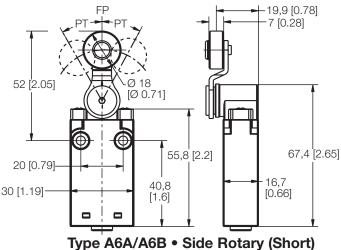


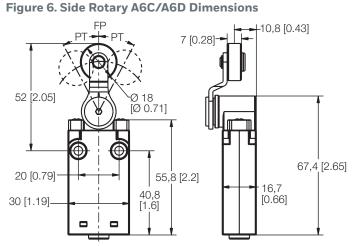
Figure 7. Side Rotary A2C/A2D Dimensions



Type A2C/A2D • Reversed Side Rotary with **Adjustable Length Roller Lever**

Figure 4. Side Rotary A6A/A6B Dimensions

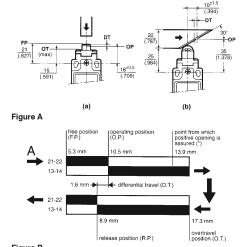




Type A6C/A6D • Reversed Side Rotary (Short)

Table 5. Side Rotary Operating Characteristics

Actua- tion	Catalog Listing	Connec- tor/ Cable Exit	Switch Type	Circuit Diagram	Bar Charts	Differen- tial Travel max.	Operating Force/ Torque max.	Release Force/ Torque max.
	NGCP****X01A**	А						
	NGCP****X01A**	В	01	Blue P Brown				
	NGCP****X01A**	D		13 — 14				
	NGCP****X07A**	А		21 22 Black Zb Black				
	NGCP****X07A**	В	07	White	00 050 450 050			
	NGCP****X07A**	D			21-22 25° 45° 65°			
	NGCP****X01A**	N	01	1602 3 4	13-14			2,5 Ncm [0.22 in-lb]
	NGCP****X07A**	N	07	3 4 21 Zb 22	DT-	15°	18 Ncm [1.59 in-lb]	
	NGCM****X01A**	А			21-22			
	NGCM****X01A**	В	01	Blue Brown 13 — 14 21 22 Black Zb Black	Contact Closed Contact Open			
	NGCM****X01A**	D						
	NGCM****X07A**	А						
	NGCM****X07A**	В	07	Green/Yellow				
Cida	NGCM****X07A**	D						
Side Rotary	NGCM****X01A**	Р	01	1602 3 4				
	NGCM****X07A**	Р	07	3 4 1 22 22 1 25 2 Green/Yellow				
	NGCP****X24A**	А						
	NGCP****X24A**	В	24	9 3	0° 26.5° 45° 65° White-Violet Gray-Black Brown-Red Orange-Blue →			
	NGCP****X24A**	D		Orange——Blue Brown——Red				
	NGCP****X32A**	А		Gray Black White Violet				
	NGCP****X32A**	В	32	2 Zb	DT- ► *			
	NGCP****X32A**	D			White-Violet Gray-Black	16.5°	17 Ncm	2,1 Ncm [0.19
	NGCM****X24A**	А		,	Gray-Black Brown-Red Orange-Blue	10.5	[1.5 in-lb]	in-lb]
	NGCM****X24A**	В	24	Orange Blue	Contact Closed Contact Open Positive Opening			
	NGCM****X24A**	D		Brown Red Gray Black				
	NGCM****X32A**	А		White Violet 2 Zb				
	NGCM****X32A**	В	32	Green/Yellow				
	NGCM****X32A**	D						



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How to read and understand the bar chart information

The following example relates to a unit which has a snap action basic and which has a roller pin plunger actuator. Follow the black arrows and the black strip on the chart. The black strip indicates that there is a circuit between the terminals whose numbers are shown on the left and when white there is no circuit.

Look at Figures A and B as examples. Actuator type used for test is the linear Cam travel type (b) shown left. The start point is at the arrow marked "A" (See fig. B). This shows the free position to be 5.3 mm from the vertical center line of the unit. At this stage there is a circuit between the terminals 21-22 but no circuit between terminals 13-14 . The unit can be actuated until it reaches the operating position which is 10.5 mm from the center line – a travel distance of 10.5 - 5.3 = 5.2 mm from the free position. At this point the circuit arrangement changes – no circuit between 21-22 but making a circuit between 13-14 . If, however, the contacts of terminals 21-22 weld together and will not separate, a mechanical safety feature will take effect if the switch is travelled past the point from which positive opening is assured, 13.9 mm. As the switch returns it reaches the release position at 8.9 mm from the center line. The circuit will change back to the original state and the difference between the operating position and the release position gives what is known as the differential travel i.e. 10.5 - 8.9 = 1.6 mm. The asterisk (*) indicates the point from which the positive opening is assured.

Figure 8. Pin Plunger B & D **Dimensions**

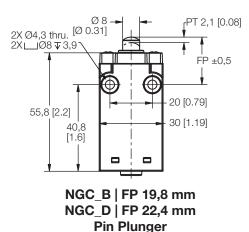
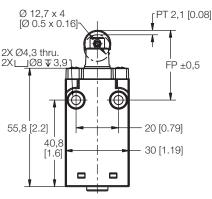


Figure 9. Roller Plunger C & S **Dimensions**



NGC C | FP 30,3 mm NGC S | FP 32,85 mm Roller Plunger

Figure 10. Cross Roller Plunger L & T **Dimensions**

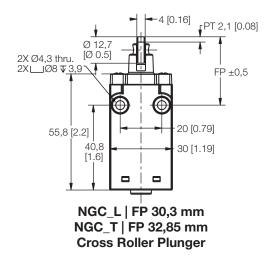


Figure 11. Pin Plunger with Boot Seal **M Dimensions**

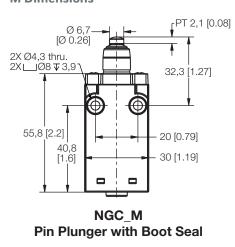
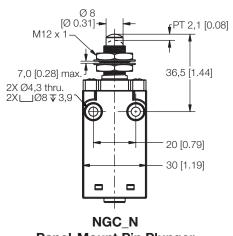
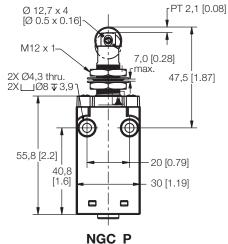


Figure 12. Panel-Mount PIn Plunger **N Dimensions**



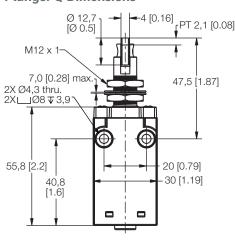
Panel-Mount Pin Plunger

Figure 13. Panel-Mount Roller **Plunger P Dimensions**



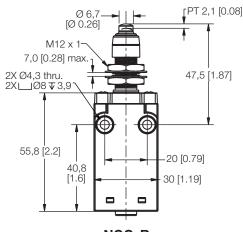
Panel-Mount Roller Plunger

Figure 14. Panel-Mount Cross Roller **Plunger Q Dimensions**



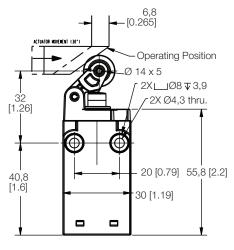
NGC Q **Panel-Mount Cross Roller Plunger**

Figure 15. Panel-Mount PIn Plunger With Boot Seal R Dimensions



NGC_R Panel-Mount Pin Plunger with Boot Seal

Figure 16. Top Roller Lever Arm **J Dimensions**



NGC_J Top Roller Lever Arm Sensing and Internet of Things

Table 6. Plunger Operating Characteristics

Actu- ation	Catalog Listing	Connector/ Cable Exit	Switch Type	Circuit Diagram	Bar Charts	Differ- ential Travel max.	Oper- ating Force/ Torque max.	Re- lease Force/ Torque max.
	NGCP****X01 B/C/D/L/M/N/P/Q/R/S/T	А		Blue Brown 13 — 14 21 — 22 Black Zb Black				
	NGCP****X01 B/C/D/L/M/N/P/Q/R/S/T	В	01					
	NGCP****X01 B/C/D/L/M/N/P/Q/R/S/T	D						
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	А	07					
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	В		White				
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	D						
	NGCP****X01 B/C/D/L/M/N/P/Q/R/S/T	N	01	1662 3 4	13-14 14 14 14 14 14 14 14 14 14 14 14 14 1		11 N [2.47 lb]	3 N [0.67 lb]
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	N	07	3 21 22 Zb 2		1,2 mm [0.047 in]		
	NGCM****X01 B/C/D/L/M/N/P/Q/R/S/T	А			4.0			
	NGCM****X01 B/C/D/L/M/N/P/Q/R/S/T	В	01	Blue Brown 13 12 Black Zb Black White Zb Black	4,9			
	NGCM****X01 B/C/D/L/M/N/P/Q/R/S/T	D			LDT Contact Closed			
	NGCM****X07 B/C/D/L/M/N/P/Q/R/S/T	А	07		Contact Open			
	NGCM****X07 B/C/D/L/M/N/P/Q/R/S/T	В			Positive Opening			
Plung-	NGCM****X07 B/C/D/L/M/N/P/Q/R/S/T	D						
er Head	NGCM****X01 B/C/D/L/M/N/P/Q/R/S/T	Р	01	1002 3 4				
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	Р	07	3 Green/Yellow				
	NGCP****X24 B/C/D/L/M/N/P/Q/R/S/T	А						
	NGCP****X24 B/C/D/L/M/N/P/Q/R/S/T	В	24	Orange Phys				
	NGCP****X24 B/C/D/L/M/N/P/Q/R/S/T	D		Orange——Blue Brown——Red	iolet sck Sed Blue sck Sed Sed			
	NGCP****X32 B/C/D/L/M/N/P/Q/R/S/T	А		Gray Black White Violet	Minite-Violet Gray-Black Brown-Red Orange-Blue White-Violet Gray-Black Brown-Red Brown-Red Orange-Blue			
	NGCP****X32 B/C/D/L/M/N/P/Q/R/S/T	В	32	2 Zb	0 20 0			
	NGCP****X32 B/C/D/L/M/N/P/Q/R/S/T	D			2,1	1,4 mm	9,5 N [2.14	2,2 N [0.49
	NGCM****X24 B/C/D/L/M/N/P/Q/R/S/T	А		f	4,0	[0.051 lb]	lb]	lb]
	NGCM****X24 B/C/D/L/M/N/P/Q/R/S/T	В	24	Orange — Blue	4,9 LL DT			
	NGCM****X24 B/C/D/L/M/N/P/Q/R/S/T	D		Brown Red Gray Black White 2 Zb	Contact Closed Contact Open Positive Opening			
	NGCM****X32 B/C/D/L/M/N/P/Q/R/S/T	А						
	NGCM****X32 B/C/D/L/M/N/P/Q/R/S/T	В	32					
	NGCM****X32 B/C/D/L/M/N/P/Q/R/S/T	D						

Table 7. Top Roller Arm Operating Characteristics, Head Type J

Actu- ation	Catalog Listing	Connec- tor/ Cable Exit	Switch Type	Circuit Diagram	Bar Charts	Differ- ential Travel max.	Oper- ating Force/ Torque max.	Release Force/ Torque max.
	NGCP****X01 J	А		Blue P Brown				
	NGCP****X01 J	В	01					
	NGCP****X01 J	D		13 — 14				
	NGCP****X07 J	А		21 22 Black/ Zb Black				
	NGCP****X07 J	В	07	White				
	NGCP****X07 J	D			1, 24 24 ↑			
	NGCP****X01 J	N	01	1602 3 4 14	21-22 13-14 13-14		5,5 N [1.24 lb]	1,2 N [0.27 lb]
	NGCP****X07 J	N	07	3 4 21 Zb 22	6,8	4 mm [0.157 in]		
	NGCM****X01 J	А			12,5			
	NGCM****X01 J	В	01	Blue Brown	15,2 L	[0.107 111]		
	NGCM****X01 J	D		1314	Contact Closed			
	NGCM****X07 J	А	07	# Green/Yellow	Contact Open Positive Opening			
	NGCM****X07 J	В						
Тор	NGCM****X07 J	D						
Roller Arm	NGCM****X01 J	Р	01	1602 3 4				
	NGCP****X07 J	Р	07	3 4				
	NGCP****X24 J	А			White-Violet Gray-Black Brown-Red Gray-Black			1,2 N [0.27 lb]
	NGCP****X24 J	В	24	ρ				
	NGCP****X24 J	D		Orange Blue Brown Red				
	NGCP****X32 J	А		Gray Black White Violet				
	NGCP****X32 J	В	32	Willie 1 2 Zb				
	NGCP****X32 J	D			6,8	4,3 mm	4,5 N	
	NGCM****X24 J	А		,	12,5	[0.169 in]	[1.01 lb]	
	NGCM****X24 J	В	24	iOrange Blue	15,2 DT Contact Closed Contact Open Positive Opening			
	NGCM****X24 J	D		Brown——Red Gray——Black				
	NGCM****X32 J	А		White Violet				
	NGCM****X32 J	В	32	⊕Green/Yellow				
	NGCM****X32 J	D						

ADDITIONAL MATERIALS

The following associated literature is available on the Honeywell web site at sensing.honeywell.com:

- Product line guide
- Product part listing/nomenclature tree
- Product range guide
- Application note

For more information

Honeywell Sensing and Internet of Things services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or the nearest Authorized Distributor, visit sensing.honeywell.com or call:

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⚠ WARNINGPERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

⚠ WARNINGMISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

Warranty/Remedy

or indirect damages.

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special,

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Honeywell:

NGCPB10AX01L NGCPB10AX07C NGCMB10AX01P NGCMB10AX01Q NGCMB10AX32C NGCPB10AX24C NGCPB10AX01P NGCPB10AX01A1A NGCMA10AX01C NGCMB10AX24C NGCPB10AX32C NGCMA10AX01M NGCPA00NX01A1A NGCPB10AX01B NGCPB10AX01R NGCMB10AX07C NGCPB10AX24A1A NGCMB10AX01L NGCMB10AX07A1A NGCPB10AX01C NGCMB10AX01C NGCPB10AX01N NGCPB10AX01Q NGCMB10AX24A1A NGCPB10AX01M NGCPA00NX01C NGCMB10AX01A1A NGCPB10AX07A1A NGCMB10AX01M NGCMA10AX01A1A NGCMB10AX01N NGCMB10AX01R NGCMA00PX01A1A NGCMB10AX01B NGCMB10AX01A1B NGCMB30AX01B NGCMA00PX01P NGCMC10AX01A1A NGCMB02AX24A6B NGCMA20AX01P NGCPA50AX32A1A NGCPA50AX32C NGCMA10AX01A1B NGCMA50AX32A1A NGCPC10BX07A6A-M01 NGCMA05BX32S NGCMA05DX24A6B-T02 NGCPC50AX32A1A NGCPB10BX32A6A-M07 NGCMA50AX32B NGCPA10AX01C NGCPA20AX01S NGCPA10AX01A1A NGCPA20AX01A2A NGCPA10DX07C NGCMA50AX32C NGCPB02AX01A1B NGCPA50AX32L NGCPB50AX32B NGCPB15BX01A NGCPB10BX07A2A NGCPB10AX01A1B NGCPB50AX32L NGCPB10BX07A6A-M01 NGCPA10AX01L NGCPA10BX07A6A NGCMA10DX07C NGCMB50AX32A1A NGCMB50AX32L NGCPB50AX32C NGCPC10AX01A1A NGCPB10AX01T NGCMA10AX01B NGCMC50AX32A1A NGCPA10BX07J NGCPB10BX07A6A-M02 NGCPA50AX32B NGCMB00PX01A2B NGCMB50AX32C NGCPA20AX01C NGCMB10AX01T NGCMB50AX32B NGCPB50AX32A1A NGCPA10BX32J NGCPA10AX01B NGCMA40AX01P NGCMA10AX01L NGCMA00PX01M NGCPB15BX01A2A NGCMA50AX32L NGCMA10DX07A1A NGCMA05AX01C