

# **Clearly Visible Job Indicator Prevents Wrong Picking!**

## Suited for Miscellaneous Object Picking Jobs! Easy to Use and Clearly Visible!!

Wide-view bright job indicators which are clearly visible from any direction, the front or the side of the sensor, have been used.

Further, use of 8 orange LEDs contributes further to clear visibility. Picking location can be easily confirmed even in a brightly lit workplace.



Image: Constraint of the state of

#### Slim Body

**NA1-PK5** has an ultra-slim body, just 10mm thick. It fits into a small space, without obstructing normal operation.

#### **Excellent Mutual Interference Prevention Function**

Mutual interference can be prevented by setting different emission frequencies. This function allows the sensor to be safety used in applications covering a wide area or for installation of several sensors in a row along parts shelves.

#### **Selectable Detection Operation**

Detection on interruption of either minimum one beam or minimum two beams can be selected to suit the application.

#### **Lighting Pattern Selectable**

The job indicator operation can be selected as either continuous lighting or blinking.

#### PNP Output Type Is Available

PNP output type **NA1-PK5-PN** which is widely used in Europe is also available.

#### **CE Marked**

NA1-PK5 conforms to the EMC Directive.



· This product is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor. This product is not designed for use in safety applications.

#### **SPECIFICATIONS**

Hype         INPR Output         Price Output           Item         Model No.         NA1-PK5         NA1-PK5-PN           Sensing namge (Note 1)         0.1 to 1.2m (0.05 to 0.5m when set to SHORT)         Beam pitch         25mm           Number of beam channels         5 beam channels         Sensing object         #35mm or more opaque object           Supply voltage         12 to 24V DC ± 10%         Ripple P-P 10% or less         Emitter: 0.6W or less,           Power consumption         Receiver: 0.8W or less         Emitter: 0.6W or less,         Receiver: 0.9W or less           New addition of the solutage:         30V DC or less         (between output and 0V)         • Maximum source current: 100mA         • Applied voltage:           Output         • Residual voltage:         30V DC or less         (between output and 1V)         • Residual voltage:           • Vor less (at 100M Asink current)         0.4V or less (at 100M Asink current)         0.4V or less (at 100M Asource current)           Output operation         ON or OFF when one or more beams are interrupted/         Sout-circuit protection           Itilization category         DC-12 or DC-13         OV or less           Output operation         Incorporated         Nor orage beams are interrupted, selectable by operation mode switch           Stort-circuit protectin         10ms or less (when the interference p		Turne	NDN output	DND output	
Item         Wodel NO.         INATION         INATION           Sensing height         100mm           Sensing range (Note 1)         0.1 to 1.2m (0.05 to 0.5m when set to SHORT)           Beam pitch         25mm           Number of beam channels         5 beam channels           Sensing not get         #35mm or more opaque object           Supply voltage         12 to 24V DC ± 10%         Ripple P-P 10% or less           Power consumption (Note 2)         Emitter: 0.5W or less         Emitter: 0.6W or less, Receiver: 0.9W or less           Power consumption (Note 2)         NPN open-collector transistor         • Maximum sink current: 100mA • Applied voltage: 30V DC or less (between output and +V)         • Residual voltage: 30V DC or less (at 100m A source current)           Output         • Residual voltage: 1V or less (at 100m A source current)         • Advirum source current)           Output operation 0.4V or less (at 100m A sink current)         • OV or OFF when one or more beams are interrupted/ ON or OFF when two or more beams are interrupted/ ON or OFF when two or more beams are interrupted/ State: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Crange LED (lights up when one or more beams are interrupted ed, but lights up when the doble-beam-interruptin mo		Type			
Serising range (Note 1)         0.1 to 1.2m (0.05 to 0.5m when set to SHORT)           Beam pitch         25mm           Number of beam channels         5 beam channels           Sensing object         #35mm or more opaque object           Supply voltage         12 to 24V DC ± 10%         Ripple P-P 10% or less           Power consumption (Note 2)         Emitter: 0.5W or less         Emitter: 0.6W or less           NPN open-collector transistor • Maximum sink current: 100mA • Applied voltage: 30V DC or less (between output and 0V)         PNP open-collector transistor • Maximum source current: 100mA • Applied voltage: 30V DC or less (between output and +V)           Versidual Voltage:         1V or less (at 100mA sink current) 0.4V or less (at 100mA sink current)         • Recidual voltage: 1V or less (at 100mA source current)           Utilization category         DC-12 or DC-13         ON or OFF when two or more beams are interrupted/ 0N or OFF when two or more beams are interrupted, selectable by operation mode switch           Stort-cicul protection         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when two beams or more are interrupted in the double-beam-interruption mode input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Green LED (lights up when two beams or more are interrupted in the double-beam-interruption mode input is Low, lighting pattern is selected by operation mode switch <td colspan="2">Item Model No.</td> <td>NAT-PR5</td> <td>INAI-FRJ-FN</td>	Item Model No.		NAT-PR5	INAI-FRJ-FN	
Setsing large (wite i)         0.1 k0 1.2lin (0.03 k0 0.3lin when set to 3rhOk1)           Beam pitch         25mm           Number of beam channels         5 beam channels           Sensing object         #35mm or more opaque object           Supply voltage         12 to 24V DC ± 10%         Ripple P-P 10% or less           Power consumption (Note 2)         Emitter: 0.5W or less         Emitter: 0.6W or less           NPN open-collector transistor • Maximum sink current: 100mA • Applied voltage: 30V DC or less (between output and 0V)         • Awaimum source current: 100mA • Applied voltage: 30V DC or less (at 100mA sink current)           Utilization category         DC-12 or DC-13           Output operation Output operation         ON or OFF when one or more beams are interrupted, selectable by operation mode switch           Short-circuit protection         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up when the power is ON) Job indicator: Orange LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Green LED (lights up when the obaems or more are interrupted in the double-beam-interruption mode input is Low, lighting pattern is selected by operation mode switch           Intelference preventio function         Incorporated           Pollution degree	Sensing neight				
Determ plicht         Zummer           Number of beam channels         5 beam channels           Sensing object         435mm or more opaque object           Supply voltage         12 to 24V DC ± 10%         Ripple P-P 10% or less           Power consumption (Note 2)         Emitter: 0.5W or less Receiver: 0.8W or less Receiver: 0.9W or less Receiver: 0.9W or less         Emitter: 0.6W or less, Receiver: 0.9W or less           Output         NPN open-collector transistor • Maximum sink current: 100mA • Applied voltage: 30V DC or less (between output and 0V)         • Maximum source current: 100mA • Applied voltage: 30V DC or less (between output and +V)           • Residual voltage: 1V or less (at 100mA sink current)         0.4V or less (at 100mA source current) 0.4V or less (at 100mA source current)           • Output operation         ON or OFF when one or more beams are interrupted/ ON or OFF when two or more beams are interrupted, selectable by operation mode switch           • Stortcircuit protection         Incorporated           Response time         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Job indicator: Orange LED         (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Itterference prevention function         Incorporated           P	Sensing range (Note 1)		0.1 to 1.2m (0.05 to 0.5m when set to SHORT)		
United to be and channess         So be and channess           Sensing object         \$35mm or more opaque object           Supply voltage         12 to 24V DC ± 10%         Ripple P-P 10% or less           Power consumption (Note 2)         Emitter: 0.5W or less Receiver: 0.8W or less         Emitter: 0.6W or less, Receiver: 0.9W or less           NPN open-collector transistor         • Maximum sink current: 100mA • Applied voltage: 30V DC or less (between output and 0V)         • Residual voltage: 1V or less (at 100mA sink current)         • Applied voltage: 1V or less (at 100mA sink current)         • Applied voltage: 1V or less (at 100mA sink current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100mA source current)         • Applied voltage: 1V or less (at 100m Asource curren	Beam pitch		23i	abannala	
Seriary object         ##35/min of more opaque object           Supply voltage         12 to 24V DC ± 10%         Ripple P-P 10% or less           Power consumption (Note 2)         Emitter: 0.5W or less         Emitter: 0.6W or less, Receiver: 0.9W or less           Output         Maximum sink current: 100mA • Applied voltage: 30V DC or less (between output and 0V) • Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 100mA sink current)         • Maximum source current: 100mA • Applied voltage: 30V DC or less (between output and 0V) • Residual voltage: 1V or less (at 100mA sink current)         • Vor less (at 100mA source current) 0.4V or less (at 100mA sink current)         • Nesidual voltage: 1V or less (at 100mA sink current)         • Vor less (at 100mA source current) 0.4V or less (at 100mA source current)         • Vor less (at 100mA source current)           Output operation         ON or OFF when one or more beams are interrupted/ ON or OFF when two or more beams are interrupted, selectable by operation mode switch           Stort-circuit protection         Incorporated           Iteriter         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Crange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Crange LED (lights up or blinks when the job indica	Number of beam channels		5 beam channels		
Supply Voltage         The tot 2 to 2 4 V DC 1 10% Reprint Prime Yow of tess           Power consumption (Note 2)         Emitter: 0.5W or less Receiver: 0.8W or less         Emitter: 0.6W or less Receiver: 0.9W or less           Output         NPN open-collector transistor • Maximum sink current: 100mA • Applied voltage: 30V DC or less (between output and 0V) • Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 100mA source current) 10 or or less (when the interforence prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Response time         10ms or less (when the interforence prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Crange LED (lights up when two beams or more are interrupted in the double-beam-interruption mod	Sensing object		#35mm or more opaque object		
Power consumption         Emitter         Convolution           Output         Applied voltage: 30V DC or less (between output and 0V) • Residual voltage: 30V DC or less (between output and 0V) • Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 100mA sink current)         PNP open-collector transistor • Maximum source current: 100mA • Applied voltage: 30V DC or less (between output and 0V) • Residual voltage: 1V or less (at 100mA sink current)         PNe open-collector transistor • Maximum source current: 100mA • Applied voltage: 30V DC or less (between output and +V)           Utilization category         DC-12 or DC-13           Utilization category         DC-12 or DC-13           Output operation         ON or OFF when two or more beams are interrupted/ 0N or OFF when two or more beams are interrupted, selectable by operation mode switch           Stort-cicul protection         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when two beams or more are interrupted in the double-beam-interruption mode urger stably received Job indicator: Orange LED (lights up when the obeams or more are interrupted in the double-beam-interruption mode stable incident beam indicator: Green LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to	Supply voltage		12 to 24V DC ± 10% Ripple P-P 10% or less		
Utilization category         Decision category         PNP open-collector transistor           Utilization category         OV or less (between output and 0V)         • Residual voltage: 1V or less (at 100mA sink current)         • Nor loss (at 100mA sink current)           Utilization category         DC-12 or DC-13         OV or less (at 16mA sink current)           Output operation         ON or OFF when one or more beams are interrupted, selectable by operation mode switch         • Applied voltage: 1V or less (at 16mA sink current)           Not or OFF when two or more beams are interrupted, selectable by operation mode switch         • Nors or less, (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up when the power is ON) Job indicator: Orange LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Red LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IPEQ (IEC)           Ambient temperature         -10 to +55°C (No dew condensation or iorig allowed), Storage: -20 to + 70°C           Ambient temperature         -10 to +55°C (No dew condensation or iorig allowed), Storage: -20 to + 70°C	(Note		Receiver: 0.8W or less	Receiver: 0.9W or less	
Output         • Maximum sink current: 100mA • Applied voltage: 30V DC or less (between output and 0V) • Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 100mA sink current) 0.4V or less (at 100mA sink current) 0.4V or less (at 100mA sink current)         • Maximum source current: 100mA • Applied voltage: 30V DC or less (between output and +V) • Residual voltage: 1V or less (at 100mA source current) 0.4V or less (at 100mA source current)           Utilization category         DC-12 or DC-13           Output operation         ON or OFF when one or more beams are interrupted/ ON or OFF when two or more beams are interrupted, selectable by operation mode switch           Stort-circuit protection         Incorporated           Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Red LED (lights up when one or more beams are interrupt- ied, but lights up when one or more beams are interrupt- ied, but lights up when one or more beams are interrupt- ied, but lights up when all beams are stably received Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Pollution degree         3 (Industrial environment)           Protection         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient tumperature         -10 to + 55°C (No dew condensation or icing allowed). Sto	(		NPN open-collector transistor	PNP open-collector transistor	
Output         • Applied voltage: 30V DC or less (between output and 0V)         • Applied voltage: 30V DC or less (between output and 0V)         • Applied voltage: 30V DC or less (between output and +V)           • Utilization category         0.4V or less (at 100mA sink current)         • Vor less (at 100mA source current)           • Utilization category         DC-12 or DC-13           • Output operation         ON or OFF when one or more beams are interrupted/ Output operation         ON or OFF when two or more beams are interrupted/ Stotr-circuit protection           • Stotr-circuit protection         Incorporated         Incorporated           • Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           • Stable incident beam indicator: Green LED (lights up when the job indicator interrupted in the double-beam-interruption mode stable incident beam indicator: Green LED (lights up when all beams are stably received Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           • Interference prevention function         Incorporated           • Operation indicator: Crange LED (lights up when all beams interrupted in the double-beam-interruption mode interrupted in the doubl			Maximum sink current: 100mA	Maximum source current: 100mA	
Output         30V DC or less (between output and 0V) Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 100mA sink current) 0.4V or less (at 100mA sink current) 0.4V or less (at 100mA source current) 0.4V or less (at 16mA source current) 10ms or less (when the interrupted, state: 30ms or less, in Dark state: 13ms or less)           Response time         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Crange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Stable incident beam indicator: Green LED (lights up when two beams or more are interrupted in the double-beam-interruption mode lare stably received Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch <td></td> <td></td> <td><ul> <li>Applied voltage:</li> </ul></td> <td><ul> <li>Applied voltage:</li> </ul></td>			<ul> <li>Applied voltage:</li> </ul>	<ul> <li>Applied voltage:</li> </ul>	
Bottpart         (between output and 0V) • Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 100mA sink current) 0.4V or less (at 100mA sink current) 0.4V or less (at 100mA source current) 0.4V or less (at 16mA sink current)         • Residual voltage: 1V or less (at 100mA source current) 0.4V or less (at 16mA source current) 0.4V or less (at 16mA source current)           Utilization category         DC-12 or DC-13           Output operation         ON or OFF when two or more beams are interrupted, selectable by operation mode switch           Short-circuit protection         Incorporated           Response time         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Stable incident beam indicator: Green LED (lights up when two beams or more are interrupted in the double-beam-interruption mode stable incident beam indicator: Green LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Stable incident beam indicator: Green LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to +55°C (No dew condensation or icing allowed). Storage: -20 to +70°C	Outr	out	30V DC or less	30V DC or less	
	Out	Jui	(between output and 0V)	(between output and + V)	
IV or less (at 100mA sink current)         1V or less (at 100mA source current)           0.4V or less (at 16mA sink current)         0.4V or less (at 16mA source current)           Utilization category         DC-12 or DC-13           Output operation         ON or OFF when one or more beams are interrupted/ Stort-circuit protection           Stort-circuit protection         Incorporated           Response time         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Job indicator: Orange LED         lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Sorger         Operation indicator: Red LED (lights up when one or more beams are interrupt- ed, but lights up when two beams or more are interrupted in the double-beam-interruption mode (d, but lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Stable incident beam indicator: Green LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to +55°C (No dew condensation or icing allowed). Storage: -20 to + 70°C			Residual voltage:	Residual voltage:	
Utilization category         DC-12 or DC-13           Utilization category         DC-12 or DC-13           Output operation         ON or OFF when one or more beams are interrupted/ ON or OFF when two or more beams are interrupted, selectable by operation mode switch           Short-circuit protection         Incorporated           Response time         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up when two beams are interrupt- ed, but lights up when two beams or more are interrupted in the double-beam-interruption mode / (lights up when two beams or more are interrupted in the double-beam-interruption mode / Stable incident beam indicator: Green LED (lights up when two beams or more are interrupted in the double-beam-interruption mode / Stable incident beam indicator: Green LED (lights up when two beams or more are interrupted in the double-beam-interruption mode / Stable incident beam indicator: Green LED (lights up when two bindicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to + 55°C (No dew condensation or icing allowed). Storage: -20 to + 70°C           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: ENS0081-2, Immunity: ENS0082-2			1V or less (at 100mA sink current)	1V or less (at 100mA source current)	
Utilization category         DC-13           Output operation         ON or OFF when one or more beams are interrupted/ ON or OFF when two or more beams are interrupted, selectable by operation mode switch           Response time         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Red LED Job indicator: Orange LED (lights up when one or more beams are interrupt- ed, but lights up when the bob beams or more are interrupted in the double-beam-interruption mode switch           Receiver         Operation indicator: Green LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to +55°C (No dew condensation or icing allowed), Storage: -20 to +70°C Ambient humidity           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           Emc         Emission: ENSO081-2, Immunity: ENSO082-2           Emitting element         Infrared LED (synchronized scanning system)			0.4V or less (at 16mA sink current)	0.4V or less (at 16mA source current)	
Output operation         ON or OFF when one or more beams are interrupted/ ON or OFF when two or more beams are interrupted/ Short-circuit protection           Response time         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up when ne or more beams are interrupt- ed, but lights up when the power is ON) Job indicator: Red LED (lights up when the power is ON) Job indicator: Orange LED (lights up when the power is ON) Job indicator: Orange LED (lights up when one or more beams are interrupt- ed, but lights up when now beams or more are interrupted in the double-beam-interruption mode Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP2 (IEC)           Ambient temperature         -10 to +55°C (No dew condensation or cing allowed), Storage: -20 to + 70°C           Ambient hundity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: ENS0081-2, Immunity: ENS0082-2           Emitting element         Infrared LED (synchronized scanning system)		Utilization category	DC-12 c	or DC-13	
Output operation         Other when two or more beams are interrupted, selectable by operation mode switch           Short-circuit protection         Incorporated           Response time         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the power is ON) Job indicator: Green LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Red LED (lights up when one or more beams are interrupted, d, but lights up when two beams or more are interrupted in the double-beam-interruption mode switch           Stable incident beam indicator: Green LED (lights up when all beams interrupted in the double-beam-interruption mode stable incident beam indicator: Green LED (lights up when all beams into the lob indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP262 (IEC)           Ambient temperature         -10 to + 55°C (No dew condensation or icing allowed). Storage: -20 to + 70°C           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: ENS0081-2, Immunity: ENS0082-2           Emitting element         Infrared LED (synchronized scanning system)		Quite it as continue	ON or OFF when one or more beams are interrupted/		
Selectable by operation indee switch           Start-circuit protection         Incorporated           Response time         10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Red LED (lights up when one or more beams are interrupted in the double-beam-interruption mode switch           Stable incident beam indicator: Creen LED (lights up when two beams or more are interrupted in the double-beam-interruption mode switch           Interference prevention function         Stable incident beam indicator: Green LED (lights up when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to + 55°C (No dew condensation or icing allowed). Storage: -20 to + 70°C           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: ENS0081-2, Immunity: ENS0082-2           Emitting element         Infrared LED (synchronized scanning system)		Output operation	ON or OFF when two or more beams are interrupted,		
Statistical protection       Interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)         Response time       10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)         Power indicator: Green LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch         Receiver       Operation indicator: Red LED (lights up when one or more beams are interrupted, dt, but lights up when two beams or more are interrupted in the double-beam-interruption mode         Stable incident beam indicator: Green LED (lights up when two beams or more are interrupted in the double-beam-interruption mode indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch         Interference prevention function       Incorporated         Pollution degree       3 (Industrial environment)         Protection       IP62 (IEC)         Ambient temperature       -10 to +55°C (No dew condensation or icing allowed), Storage: -20 to +70°C         Ambient humidity       35 to 85% RH, Storage: 35 to 85% RH         EMC       Emission: ENSO081-2, Immunity: ENSO082-2         Emitting element       Infrared LED (synchronized scanning system)		Oh and allow the sector of the	selectable by operation mod		
Response time         Toms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)           Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Red LED (lights up when one or more beams are interrupted, but lights up when two beams or more are interrupted in the double-beam-interruption mode           Stable incident beam indicator: Orange LED (lights up when two beams or more are interrupted in the double-beam-interruption mode)           Stable incident beam indicator: Green LED (lights up when all beams) are stably received           Job indicator: Orange LED (lights up or blinks when the job indicator) input is Low, lighting pattern is selected by operation mode switch           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to + 55°C (No dew condensation or cing allowed), Storage: -20 to + 70°C           Ambient humitity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: ENS0081-2, Immunity: ENS0082-2           Emitting element         Infrared LED (synchronized scanning system)		Short-circuit protection	Incorp		
Emitter         Power indicator: Green LED (lights up when the power is ON) Job indicator: Orange LED input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Red LED (lights up when one or more beams are interrupt- ed, but lights up when two beams or more are interrupted in the double-beam-interruption mode (a, but lights up when two beams or more are interrupted in the double-beam-interruption mode (are stably received) Job indicator: Orange LED Job indicator: Orange LED (lights up or blinks when the job indicator) (are stably received) Job indicator: Orange LED (lights up or blinks when the job indicator) input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to +55°C (No dew condensation or icing allowed), Storage: -20 to +70°C           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: ENSO081-2, Immunity: ENSO082-2           Emitting element         Infrared LED (synchronized scanning system)	Response time		10ms or less (when the interference prevention is used, in Light state: 30ms or less, in Dark state: 13ms or less)		
Emitter         Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Receiver         Operation indicator: Red LED (lights up when or or more beams are interrupt- ed, but lights up when two beams or more are interrupted in the double-beam-interruption mode)           Stable incident beam indicator: Green LED (lights up when all beams) are stably received Job indicator: Orange LED (lights up or blinks when the job indicator) input is Low, lighting pattern is selected by operation mode switch           Pollution degree         3 (Industrial environment)           Protection         IP22 (IEC)           Ambient temperature Ambient temperature         -10 to + 55°C (No dew condensation or cing allowed). Storage: -20 to + 70°C Ambient hundity           EMC         Emission: ENS0081-2, Immunity: ENS0082-2           Emitting element         Infrared LED (synchronized scanning system)			Power indicator: Green LED (ligh	nts up when the power is ON)	
Protection         Industrial         Input is Low, lighting pattern is selected by operation mode switch           Perform         Operation indicator: Red LED (lights up when one or more beams are interruptied, but lights up when two beams or more are interrupted in the double-beam-interrupted interrupted in the double-beam-interrupted interrupted intervet is Low, lighting pattern is selected by operation mode switch           Interrupt extends         Job indicator: Orange LED (lights up or blinks when the job indicator intervet extends in the double-beam interrupted in the double-beam interrupted is Low, lighting pattern is selected by operation mode switch           Pollution degree         3 (Industrial environment)           Protection		Emitter	Job indicator: Orange LED / lights u	p or blinks when the job indicator	
Solution         Coperation mode switch         Image: Coperation mode switch           Receiver         Operation indicator: Red LED (lights up when one or more beams are interrupted in the double-beam-interrupted in the double-beam-interupted in the double-beam-interupted in the double-beam-in			input is	Low, lighting pattern is selected by	
Sign         Operation indicator: red LED         lights up when one or more beams are interrupt- (ed, but lights up when two beams or more are interrupted in the double-beam-interruption mode / Stable incident beam indicator: Green LED         lights up when two beams or more are interrupted in the double-beam-interruption mode / are stably received Job indicator: Orange LED / lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to +55°C (No dew condensation or icing allowed). Storage: -20 to +70°C           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: ENS0081-2, Immunity: ENS0082-2           Emitting element         Infrared LED (synchronized scanning system)	6		Operation indicators Red LED (lister	n mode switch	
Bit         Control of the second	tor		Operation Indicator: Red LED rights up	ights up when two hoarrs or more are	
End         Stable incident beam indicator: Green LED (lights up when all beams lare stably received           Job indicator: Orange LED (lights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function           Pollution degree           3 (Industrial environment)           Protection           ID to + 55°C (No dew condensation or icing allowed), Storage: -20 to + 70°C           Ambient temperature           -10 to + 55°C (No dew condensation or icing allowed), Storage: -20 to + 70°C           Ambient humitity           BMC           Emitting element           Infrared LED (synchronized scanning system)	lica		interrupte	d in the double-beam-interruption mode	
Receiver         are stably received           Job indicator: Orange LED         Jights up or blinks when the job indicator input is Low, lighting pattern is selected by operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP2 (IEC)           Ambient temperature         -10 to + 55°C (No dew condensation or icing allowed), Storage: -20 to + 70°C           Ambient hundity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: ENS0081-2, Immunity: ENS0082-2           Emitting element         Infrared LED (synchronized scanning system)	Ind		Stable incident beam indicator: Green LED / lights up when all beams )		
Job indicator: Orange LED // lights up or blinks when the job indicator / input is Low, lighting pattern is selected by / operation mode switch           Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to + 55°C (No dew condensation or icing allowed). Storage: -20 to + 70°C           Ambient humitity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: ENS0081-2, Immunity: ENS0082-2           Emitting element         Infrared LED (synchronized scanning system)			are stably received		
Input is Low, lighting pattern is selected by operation mode switch           Interference prevention function           Pollution degree           3 (Industrial environment)           Protection           IP62 (IEC)           Ambient temperature           - 10 to + 55°C (No dew condensation or icing allowed), Storage: -20 to + 70°C           Ambient humidity           35 to 85% RH, Storage: 35 to 85% RH           EMC           Emission: EN50081-2, Immunity: EN50082-2           Emitting element           Infrared LED (synchronized scanning system)			Job indicator: Orange LED / lights u	p or blinks when the job indicator	
Interference prevention function         Incorporated           Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to + 55°C (No dew condensation or icing allowed), Storage: -20 to + 70°C           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: EN50081-2, Immunity: EN50082-2           Emitting element         Infrared LED (synchronized scanning system)			input is Low, lighting pattern is selected by		
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Pollution degree         3 (Industrial environment)           Protection         IP62 (IEC)           Ambient temperature         -10 to + 55°C (No dew condensation or icing allowed), Storage: -20 to + 70°C           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: EN50081-2, Immunity: EN50082-2           Emitting element         Infrared LED (synchronized scanning system)	Interference prevention function		Incorporated		
Protection         IP62 (IEC)           Ambient temperature         -10 to + 55°C (No dew condensation or icing allowed), Storage: -20 to + 70°C           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: EN50081-2, Immunity: EN50082-2           Emitting element         Infrared LED (synchronized scanning system)	Pollution degree		3 (Industrial environment)		
Ambient temperature         - 10 to + 55°C (No dew condensation or icing allowed), Storage: - 20 to + 70°C           Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: EN50081-2, Immunity: EN50082-2           Emitting element         Infrared LED (synchronized scanning system)	Protection		IP62 (IEC)		
Ambient humidity         35 to 85% RH, Storage: 35 to 85% RH           EMC         Emission: EN50081-2, Immunity: EN50082-2           Emitting element         Infrared LED (synchronized scanning system)	Ambient temperature		-10 to $+55$ °C (No dew condensation or icing allowed), Storage: $-20$ to $+70$ °C		
EMC         Emission: EN50081-2, Immunity: EN50082-2           Emitting element         Infrared LED (synchronized scanning system)	Ambient humidity		35 to 85% RH, Storage: 35 to 85% RH		
Emitting element Infrared LED (synchronized scanning system)	EMC		Emission: EN50081-2, Immunity: EN50082-2		
	Emitting element		Infrared LED (synchronized scanning system)		
Material Enclosure: Heat-resistant ABS, Lens case: Acrylic, Indicator cover: Acrylic	Material		Enclosure: Heat-resistant ABS, Lens case: Acrylic, Indicator cover: Acrylic		
Cable 0.3mm <sup>2</sup> 4-core (emitter: 3-core) oil resistant cabtyre cable, 2m long	Cable		0.3mm <sup>2</sup> 4-core (emitter: 3-core) oil resistant cabtyre cable, 2m long		
Cable extension Extension up to total 100m is possible for both emitter and receiver with 0.3mm <sup>2</sup> , or more, cable.	Cable extension		Extension up to total 100m is possible for both emitter and receiver with 0.3mm <sup>2</sup> , or more, cable.		
Weight Emitter: 80g approx., Receiver: 85g approx.	Weight		Emitter: 80g approx., Receiver: 85g approx.		

Notes: 1) The sensing range is the possible setting distance between the emitter and the receiver. The sensor can detect an object less than 0.1m (0.05m when set to SHORT) away.

2) Obtain the current consumption by the following equation.

Current consumption = Power consumption  $\div$  Supply voltage (e.g.) When the supply voltage is 12V, the current consumption of the emitter is:  $0.5W \div 12V \rightleftharpoons 0.042A = 42mA.$ 

#### **OPTIONS**

Designation	Model No.	Description
Sensor mounting	MS-NA1-1	Four bracket set
bracket	MS-NA2-1	(Screws, nuts and hooks are attached.)
Sensor protection	MS-NA3	Two silver-color bracket set (Screws and nuts are attached.)
bracket	MS-NA3-BK	Two black bracket set (Screws and nuts are attached.)

Sensor mounting bracket • MS-NA1-1 MS-NA2-1







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SENSING CHARACTERISTICS (TYPICAL)

#### Parallel deviation Vertical direction Vertical direction 2 Receiver Setting or Ξ. Ξ 1.5 LONG distance distance Emitte Setting o 1 SHOR Horizontal direction Settinc Setting 0.5 0⊥ 100 50 50 100 Ó -Center ► Un Down Emitter Operating point $\ell$ (mm) Angular deviation



Emitter angular deviation

10 --- Right

Setting on SHORT

Receive angular deviatio

10

- Center

Operating angle  $\theta$  (  $^{\circ}$  )

Ê

distance

Setting

0∔ 20

Left

ULTRA-SLIM BODY AREA SENSOR



#### DIMENSIONS (Unit: mm)



#### All information is subject to change without prior notice.

Internet home page http://www.sunx.co.jp/ Welcome to SUNX

Sensor protection bracket

MS-NA3(-BK)

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No. CE-NA1PK5-10 February, 2000