

# 7680 SERIES PHOTOELECTRIC SENSOR



INSTALLATION  
INSTRUCTIONS  
April 2004  
7680-000-01-00

## DESCRIPTION:

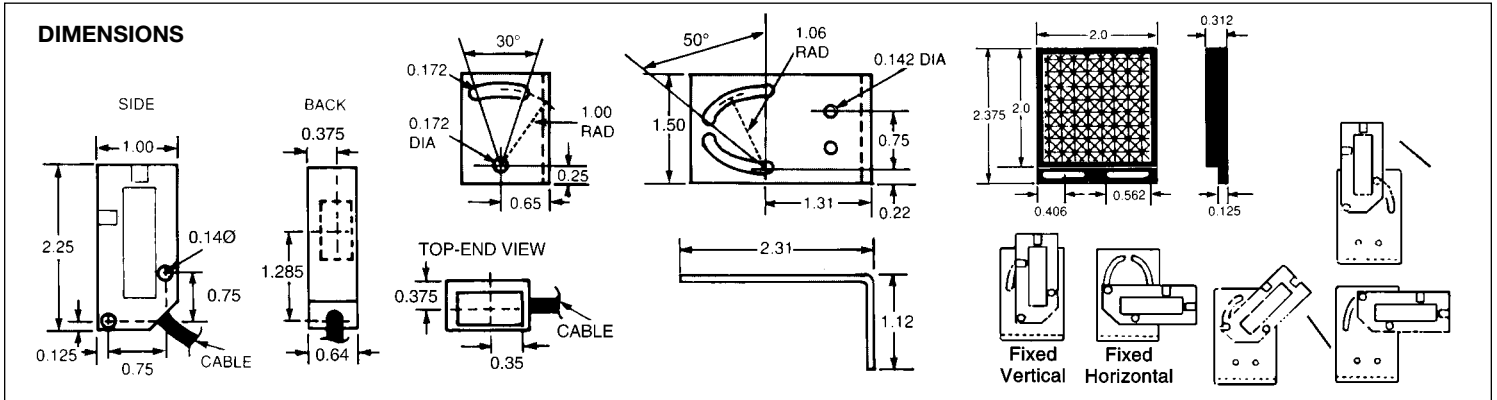
The ATC 7680 Series sensors are compact, self contained photoelectric sensors. The AC/D models come equipped with choice of Relay or FET outputs and the DC model comes with an NPN transistor current (sinking) output. The 7680 can operate as both a "Light On" and "Dark On" sensor. It has an output status LED which comes on when the output is energized.

### 7682A/7684A

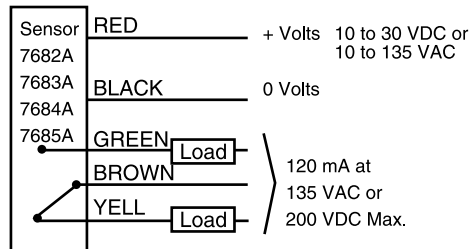
The 7682A and 7684A are diffuse photoelectric sensors. Each unit detects an object in its path by detecting the reflection of transmitted light from the surface of an object. The 7682A detects at a maximum range of 6 inches (15 cm), and the 7684A detects at a maximum range of 18 inches (45 cm).

### 7683A/7685A

The 7683A is a retroreflective photoelectric sensor which has an infrared, modulated LED light source. The 7685A is a polarized retroreflective sensor which has a visible red, modulated LED light source. These units sense an object by detecting the presence, or absence of the transmitted beam of light after it reflects from the reflector provided with each unit. The 7685A polarized unit incorporates filters so the sensor will not detect shiny surfaces other than the reflector supplied with the unit. Both the 7683A and the 7685A detect at a maximum range of 12 feet (3.5 m).

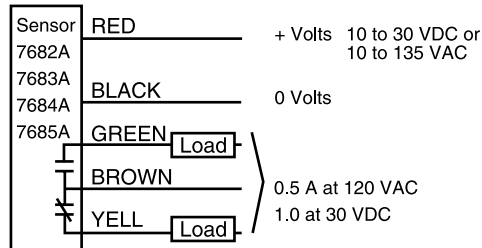


## WIRING SOLID



## DUAL FET OUTPUT (SPDT)

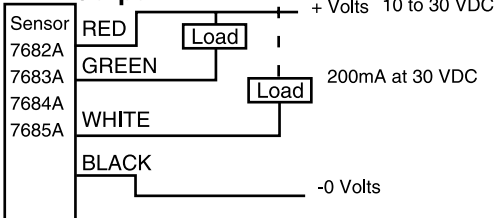
### RELAY



## RELAY OUTPUT

### WIRING (DC Model)

#### NPN Output



NOTE The load connected to the green wire is energized when the LED is on.  
The load connected to the white wire is energized when the LED is off.

## MOUNTING

A mounting bracket is provided with each unit and is designed to allow the sensor to be mounted in many ways. By using both slots, one for each mounting hole on the sensor, the sensor can be positioned from slightly below horizontal to slightly beyond vertical. This is for ease of alignment and aiming of the light beam. If one of the two lower holes are used the sensor can be mounted in a fixed horizontal or vertical plane. This can be achieved with either the end or side view option.

Select the mounting location on any flat surface free from excessive vibration. Avoid dusty or oily environments when possible. Locate the center of the mounting hole (on the short side of the bracket) and the center of the slot with a center punch. Hole to slot spacing is 1.0 inch. Use screws which will permit clearance in the bracket hole and slot. Drill the two mounting holes and any wire access holes needed.

If a reflector is being used (7683A and 7685A installations), mount the reflector across the path of the object opposite the sensor. No bracket or screws are provided for this mounting. The sensor will mount on either side of the bracket. Select the appropriate side and mount the bracket to the unit using the screws provided. Do not fully tighten the screws to allow for alignment. Mount the bracket/sensor assembly in the space provided. Again, do not fully tighten the screws to allow for alignment. Connect the power source and begin the alignment procedure.

## ALIGNMENT

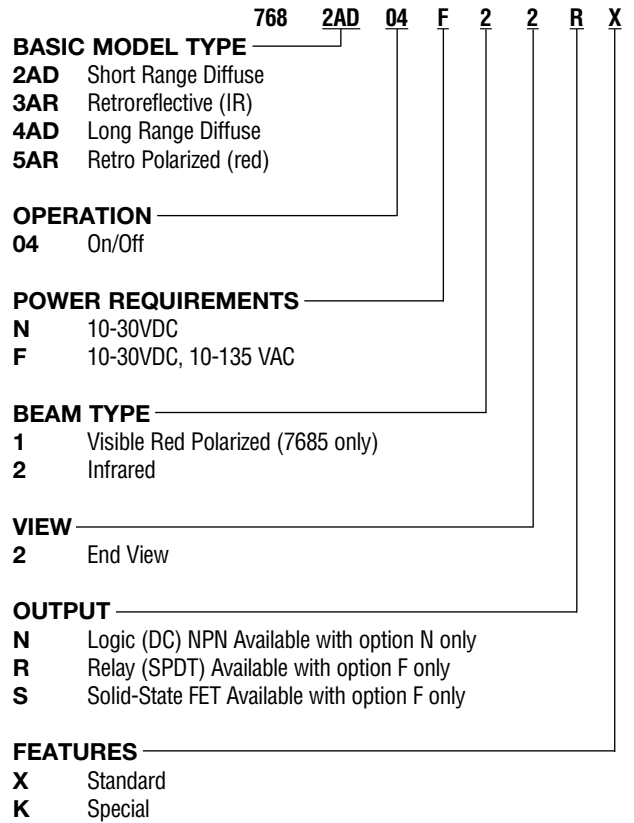
7682A/7685A Select a mounting position giving a clear view of the object and avoiding reflections from background surfaces, as much as possible. If some background reflection is still present, attempt to darken it. Align the sensor so that the object is within the sensing range and the LED is on. If the LED is not on, turn the sensitivity adjustment clock-wise until the LED comes on and stays on. Note: Do not turn the sensitivity more than 12 turns. Tighten the sensor in place.

7683A/7685A Mount the unit and the reflector to avoid reflections from background surfaces. Secure the reflector in place so that it is facing the sensor as best as possible. With the power ON to the sensor, tilt and swivel the unit until the red LED is OFF. Now place the object to be detected in the beam path between the sensor and the reflector. The red LED should come on. If this does not happen, check to see that the object is in the beam path and the size of the object is sufficient to block the beam. If detecting small objects, use a smaller reflector.

**SPECIFICATIONS**

<b>SENSING</b> Max. Distance Min. Target Size	7682A	7683A	7684A	7685A
	6" (15cm) 0.1" (2.5mm)	12' (3.5m) 2.0" (5.1cm)	18" (45cm) 0.5" (1.25cm)	12' (3.5m) 2.0" (5.1cm)
<b>INPUT</b> Voltage Current (nominal)	10 to 30 VDC /10 to 135 VAC 10-30 VDC (NPN model only) 45mA Max. (AC/DC), 30mA Max. (DC)			
<b>OUTPUT</b> Type Capacity Response Time Max. Switching Rate	SPDT FET Short Circuit Protected using 10 to 30 VDC 120mA <3ms 166 Hz			
<b>Type</b> Capacity Response Time Max. Switching Rate	SPDT Relay 1.0A @ 30VDC; 0.5A @ 120 VAC <5ms 3 Hz			
<b>Type</b> Capacity Response Time Max. Switching Rate	NPN Current Sinking - Short Circuit Protected 200mA <2ms 500 Hz			
<b>FEATURES</b> Operating Mode Status Indicator Sensitivity Adj.	Light-On / Dark-On Red LED 12 Turn Pot (7682AD04F..., 7684AD04F... only)			
<b>ENVIRONMENT</b> Ambient Temp. Humidity	-13° to 131°F (-25° to 55°C) Max. Relative Humidity 85%			
<b>PHYSICAL</b> Housing Light Emitting Element Weight (shipping) Weight (unit)	Nonmetallic, NEMA 4			
	Infrared			Visible Red
	7.7 oz. 3.5 oz.	8.3 oz. 3.5 oz.	7.7 oz. 3.5 oz.	8.3 oz. 3.5 oz.

**ORDERING CODE**



**ACCESSORIES**

**7690-105-01-00** Mounting Bracket and Hardware

**REFLECTORS**

		Sens. Dist.
<b>7002-210-01-00</b>	3" Dia. Retroreflective Target	9.0 ft.
<b>7002-210-01-00</b>	1-5/8" Dia. Retroreflective Target	5.5 ft.
<b>7002-210-03-00</b>	7/8" Dia. Retroreflective Target	5.0 ft.
<b>7002-210-04-00</b>	5/8" Dia. Retroreflective Target	3.0 ft.
<b>0000-181-20-00</b>	1-1/2 x 3" Adhesive Backed Refl.	7.0 ft.
<b>0000-181-53-00</b>	1.4" Square Reflector	8.0 ft.
<b>0000-181-52-00</b>	2" Square Reflector	12.0 ft.

**A WORD ABOUT SAFETY**

Most of ATC's products are designed for general and not for specific applications. Because of this, we usually are not aware of how they eventually will be used. However, they are frequently employed in controlling automatic machinery or processes.

Although ATC makes product of high reliability, every product, given enough time can be expected to fail. Statistically, devices can fail after a short period of time or a long period of time or anything in between. In essentially all cases, failure means (1) failure to provide a logic signal or power to an electrical load when it should or (2) the providing of such a signal or power when it should be absent. Less often, failure means failure to meet some other specification. But, in all cases, it means to do something unwanted or unexpected.

No ATC product is fail-safe in and of itself.

The photoelectric controls that we manufacture and/or market are for general industrial application and are not designed as a primary optical safety device and are not fail-safe in and of themselves.

Since the failure of automatic machinery or processes can create hazardous conditions for personnel or property, whatever the definition of failure might be, it is necessary to consider the consequences of failure and design of the application in which the ATC product is used so that failure will not create a hazard to personnel or property. The design must insure that any failure will result in a fail-safe condition and there will be no danger to personnel and/or property involved in the use of the product.

Designs incorporating controls of any kind should be carefully considered to provide for their eventual failure.

**IMPORTANT NOTICE**

Our recommendation, if any, for the use of this product are based on tests believed to be reliable. The greatest care is exercised in the selection of our raw materials and in our manufacturing operations. However, since the use of this product is beyond the control of the manufacturer, no guarantee or warranty, express or implied is made as to such use or effects incidental to such use, handling or possession or the results to be obtained, whether in accordance with the directions or claimed so to be. The manufacturer expressly disclaims responsibility therefore. Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing laws and/or patents covering any material or us.

Warranties of Sale, disclaimer thereof and limitations of liability are covered exclusively by Automatic Timing and Controls' printed warranty statement for the controls. These instructions do not expand, reduce, modify or alter Automatic Timing and Controls' warranty statement and no warranty or remedy in favor of a customer or any other person arises out of these instructions.



**AUTOMATIC TIMING & CONTROLS**

State Route 2, Box 305 • Newell, WV 26050  
 800.727.5646 • 304-387-1212 fax  
 www.automatictiming.com