

# Intelligent Auto-Aligning Beam Detector



## Product overview

<b>Product Type</b>	Beam Detector
<b>Part No.</b>	SA7100-100APO
<b>Digital Communication Protocol</b>	XP95, Discovery & CoreProtocol®

## Product information

The Intelligent Auto-Aligning Beam Detector combines a transmitter/receiver in the same detector head with an automatic alignment motor. This combination with integrated addressability allows for quick and simple installation.

The Intelligent Auto-Aligning Beam Detector automatically compensates for environmental effects on the beam signal, keeping the unit in the best possible working order. This is achieved through the combination of software (automatic gain control) and motorised realignment of the beam.

**IMPORTANT: A second detector head uses the controller address plus 1.**

- Loop Powered and compatible with XP95, Discovery and CoreProtocol\*
- Incorporates a bi directional short-circuit isolator
- Automatic drift compensation
- Automatic reset
- Ground level Controller
- Automatic alignment compensation for building movement
- Laser assisted alignment for quick installation
- Allows for two detector heads per controller
- Up to 100m range
- Pre-alarm threshold

## Technical data

All data is supplied subject to change without notice. Specifications are typical at 24V, 25°C and 50% RH unless otherwise stated.

<b>Supply voltage</b>	17–35 V dc
<b>Digital communication protocol</b>	XP95, Discovery and CoreProtocol* compatible
<b>Operating current:</b>	
1 Detector Head	7.5 mA
2 Detector Heads	10 mA
<b>Alignment mode current with 1 or 2 Detector Heads</b>	36 mA
<b>Response threshold:</b>	
Default	35%
Range	10–60%
<b>Operating distance</b>	8–100 m
<b>Optical wave length</b>	850 nm
<b>Short circuit isolator type</b>	20T
<b>Operating temperature</b>	-10°C to 55°C
<b>Storage temperature</b>	-40°C to 85°C
<b>Humidity (no condensing or icing)</b>	0% to 93% RH
<b>Vibration, impact &amp; shock</b>	EN 54-12 & EN 54-17
<b>IP Rating</b>	Designed to IP54
<b>Standards &amp; approvals</b>	EN 54-12, EN 54-17, CPR & LPCB
<b>Dimensions:</b>	
Controller with base	230mm height x 202mm width x 87mm depth
Detector with base	131mm height x 134mm width x 134mm depth
Universal bracket	135mm height x 135mm width x 71mm depth
Reflector	100mm height x 100mm width x 10mm depth
<b>Weight:</b>	
Controller with base	1000g
Detector with base	537g
Universal bracket	200g
Reflector	100g
<b>Housing material</b>	Polycarbonate
<b>Colour</b>	Grey

### \* Notes:

1. The Auto-Aligning Beam Detector has a single mode i.e. sensitivity and has a non-controllable short-circuit isolator.
2. CoreProtocol compatibility is limited to high addressing, to 35 V dc only and Apollo compatible fire control panels.

# Intelligent Auto-Aligning Beam Detector

The Intelligent Auto-Aligning Beam Detector is a compact detector for detecting smoke in large open areas such as warehouses, theatres, churches and sports centres. It comprises a ground level loop-powered controller, a detector head with an operating range of 8m-50m and a single prism. The operating range of each detector head can be increased, up to 100m by using the Extension Kit, which comprises of three additional prisms. An additional detector head can be connected to the controller. Each head has a loop address. It also has a built in 20T negative bi-directional short circuit isolator, and it is compatible with control panels using CoreProtocol, Discovery and XP95 protocol.

A built-in laser provides rapid initial alignment and thereafter the detector head will continuously automatically align and compensate for any building movement. The status of each detector can be monitored through the controller which is sited at ground level. The detector head operates both as a transmitter and a receiver. A well-defined IR beam is projected to a prism mounted on the opposite wall, which is reflected back to the receiver. In the event of smoke partially obscuring the light an imbalance between the transmitted and received light will occur. The detector will then transmit an alarm value to the control panel.

The detector is factory set to a beam obscuration of 35% which is the best setting for most factories and warehouses. The setting can be changed to 25% for offices and clean areas such as theatres or to 50% for hostile areas such as mills or foundries. The detector reports a pre-alarm (analogue value 48) at approximately 75% of the alarm threshold.

The detector compensates automatically for gradual contamination of the lenses in order to avoid false alarms. The detector is non-latching and resets 30 seconds after an alarm event ceases and in 3 seconds after the removal of a fault.

## Electrical Considerations

The Intelligent Auto Aligning Beam Detector is loop-powered and requires no external power supply.

Each beam detector draws 10mA or less in quiescent and 36mA in alignment mode, from the analogue addressable loop and, unless proven by calculation\*\*, it is recommended that no more than ten beam detectors be powered from each loop.

A recommended 2-core fire rated cable should be used for connection between the controller and the detector head.

*\*\* A loop voltage drop calculation program, known as 'Loop Calculator', has been developed by Apollo for use by system designers and is available as a free download from the Apollo website ([www.apollo-fire.co.uk](http://www.apollo-fire.co.uk))*

## LED Fault Indication

A fault is indicated by the amber LED flashing every 10 seconds.

If the drift compensation function has reached its limit the amber LED flashes once every 10 seconds an error code is displayed on the ground level controller and an analogue value of 6 is transmitted. The detector will continue to function but maintenance procedures should be carried out at the earliest opportunity.

## Further Information

The Auto-Aligning Beam Detector must be installed in accordance with the Quick Start Guide supplied with the product. This guide contains more information on the topics that follow:

- System design
- Installing beam detectors
- Targeting, aligning and commissioning the Auto-Aligning Beam Detector
- Troubleshooting

The Quick Start Guide is available on request or can be downloaded from the Apollo website, [www.apollo-fire.co.uk](http://www.apollo-fire.co.uk). If further assistance is required, please contact the Technical Support department on 02392 492 412

## EMC Directive 2014/30/EU

The Intelligent Auto-Aligning Beam Detector complies with the essential requirements of the EMC Directive 2014/30/EU, provided that it is used as described in this data sheet.

A copy of the Declaration of Conformity is available from Apollo on request.

Conformity of the Intelligent Auto-Aligning Beam Detector with the EMC Directive does not confer compliance with the directive on any apparatus or systems connected to it.

## Construction Products Regulation 305/2011/EU

The Intelligent Auto-Aligning Beam Detector complies with the essential requirements of the Construction Products Regulation 305/2011/EU.

A copy of the Declaration of Performance is available from Apollo on request.

Table 1 Part Numbers

Part no	Description
SA7100-100APO	Intelligent Auto-Aligning Beam Detector 8-50m
29650-070	Additional Detector Head 8-50m
29600-526	Extension Kit 100m
29600-527	Universal Bracket (for use with detector head and prism mounting plates)
29600-528	Surface Mounting Plate for prisms
29600-529	Prism Mounting Plate (4 prisms- 50-100m)
29600-530	Prism Mounting Plate (1 prism 8-50m)

# Intelligent Auto-Aligning Beam Detector

Table 2 Analogue Values

Analogue Value	Name	Description
0	Microprocessor fault	Internal communications error
4	General fault	To cover all fault states other than those specified elsewhere in this table
5	Signal high fault	Signal > 110% or 125% (depending on how quick signal has changed)
6	AGC limit reached	Drift fault
16	Controller powering up	System controller is powering up but has yet to establish communication with detectors
25	Normal condition	
48	Pre-Alarm	Pre-alarm threshold reached
64	Alarm	Alarm threshold reached. Note: Beam detector heads are non-latching

Figure 1 Intelligent Auto-Aligning Beam Detector schematic

