AEC220AC/DC RTD Signal Transmitter

- Suitable for combinations of RTD Inputs & process Voltage or Current Outputs
- True universal AC/DC supply voltage 21V through 265V AC/DC

Technical Specifications

Input

Any 2 or 3 wire RTD or Resistance change.
Typical Input: 0-100°C PT100 3 wire.

Output

The standard output signal is 4-20mA, other ranges are available on request.
The current source can be up to 20mA with a drive voltage of 13V. The voltage source can be up to 10V's, maximum drive 20mA.

The output current is configured as a source port as standard but on request can be configured as a sink port up to 22mA @ 30V max.

Other Typical Output ranges

0-10mA, 0-20mA, 1-5mA, 0-2V, 0.4-2.0V, 1-5V, 2-10V, 0-10V

Accuracy/Linearity

Accuracy: <±0.1%
Linearity: <±0.1% resistance Span.

Supply

Burden on 24Vdc supply 50mA
Burden on ac supply 1W

Isolation

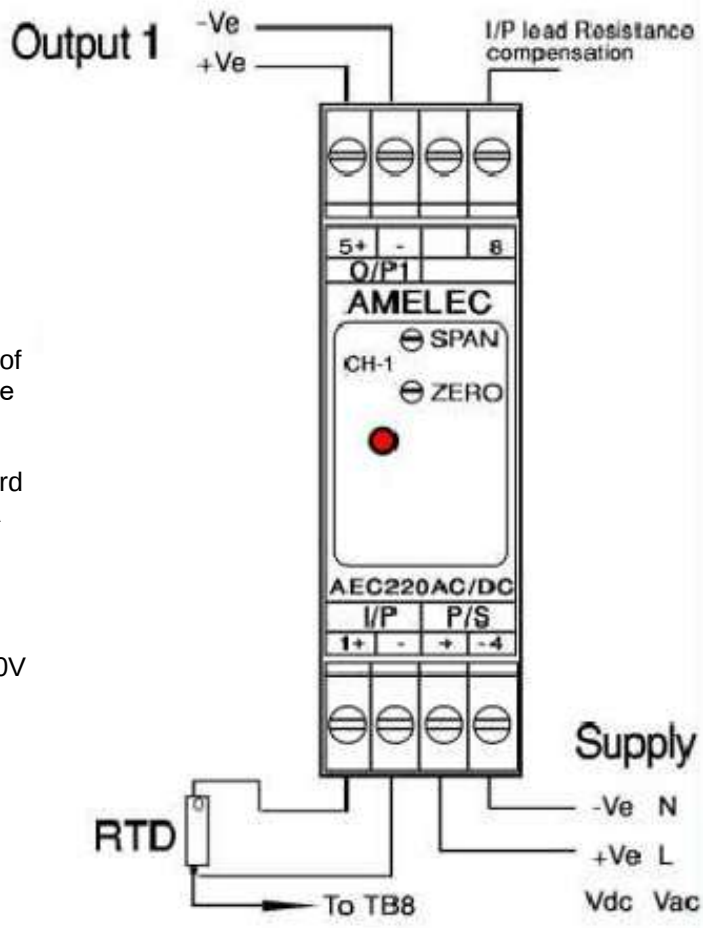
1000V RMS Input/Output/Supply

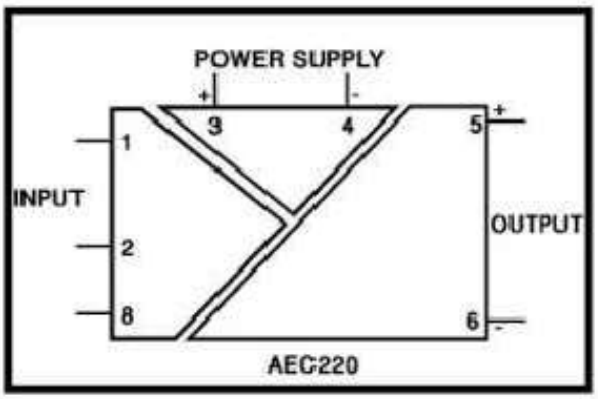
Environmental Conditions

Storage Temperature: -20°C to +70°C
Operating Ambient: 0°C to +55°C
Relative Humidity: 5% to 95% RH (Non-Condensing)
EMC: 2014/30/EU , EN 61326-1:2013 (Controlled EM)

Mounting / Dimensions
Din Rail (TS35)
Enclosure: H: 75mm W:22.5mm D:105mm

WIRING





Tel: 01908-567003 Email: sales@amelec-uk.com Visit: www.amelec-uk.com Fax: 01908-566735

AMELEC Instruments, Cochran Close, Crownhill, Milton Keynes, MK8 0AJ

Issue 2: 2019

AMELEC SIGNAL CONDITIONING

PROOF TEST / CALIBRATION CHECK PROCEDURE

AEC220 RTD Input, 4-20mA Output, Universal AC/DC Supply (230Vac example)

Even small voltages can cause potentially fatal shocks; this product is only to be tested by an electrically competent person.

The AEC220 is a single channel RTD signal transmitter/isolator which operates on any power supply from 22V through to 265V ac or dc, please refer to the general data sheet for termination details. The output is adjustable via the Zero/Span multi-turn blindset potentiometers located through the unit front fascia. The instrument will have been factory set and shouldn't require any further adjustments, however if you do need to check or adjust the output then please follow the procedure below;

Equipment required

- 230 Volt ac power supply (PSU)
- A variable Resistance source or RTD simulator
- A digital multi-meter (DMM) to be able to measure the supply voltage and the output current
- Small instrument screwdriver with slotted flat blade head for any blindset potentiometer adjustments
- 500ohm Resistor to simulate typical output loop device(s) loading.

Calibration check procedure

1. Connect the 230Vac power to the supply terminals as shown on the general data sheet**,** check the front fascia power ON LED illuminates and leave on for 25 minutes to allow the unit to acclimatise.
2. Connect the RTD simulator to the input terminals as shown on the general data sheet.
3. Set a DMM to measure mA, and connect the DMM to the output terminals
4. Apply 0% of the input temperature range from the RTD simulator
5. Measure output on the DMM and check/adjust the Zero potentiometer to read 0% of range (4mA)
6. Change input simulator to 100% of the input temperature range
7. Measure output on the DMM and check/adjust the Span potentiometer to read 100% of range (20mA)
8. Repeat steps 4 to 7 until the output is calibrated accurately to within +/-0.1% at 0% & 100% of span
9. Measure the output at 25% steps of the input range to ensure the output is linear ($\leq$+/-0.1% resistance span)
10. Open circuit the input and check that the output drives upscale (>20.5mA)
11. Fit the 500ohm resistor loading across the output terminals & re-apply 100% input temperature range
12. Set the DMM to measure Volts DC & check for 10V measurement across the output resistor (±0.1% span)
13. Vary the 230Vax PSU by +/-15% (+/-35V) if possible, and check that the output remains stable.
14. End. Re-install unit to the plant safety loop wiring.
15. Should any of the above steps not be achievable, replace the suspect unit with a spare calibrated unit asap and contact AMELEC technical support team for further assistance.

For more information and/or to discuss your application, please contact our technical staff at the factory in Milton Keynes;

Postal address: Cochran Close, Crownhill, Milton Keynes, Bucks. MK8 OAJ
Tel: 01908 567003 **Fax:** 01908 566735
Email: sales@amelec-uk.com

Issue 2: 08/19

AEC SERIES GENERAL SPECIFICATION

INPUT DATA

Input source

For details see individual specification

Open circuit response

For details see individual specification.

Input Impedance (Voltage input)

>1Mohm at amplifier input. This will be shunted by burnout drive or input conditioning components.

SUPPLY DATA

Power supplies

AC models	Universal 21-265V ac
DC models	Universal 21-265V dc

2 wire

Consumption

Transmitter / Trip amplifier	<2VA
Trip transmitter/ Splitter	<3VA
2 Wire transmitter	<3VA

OUTPUT DATA

Standard units

Any constant current from 0-100uA to 0-20mA (at up to 13V loop) or any constant voltage from 0-1V to 0-10V (at up to 2mA loading).

2-wire units

4-20mA or currents up to 21mA as modulation of supply voltage.

Response time

<400mSec. Unless otherwise stated.

Typical response time for a Trip with 4-20mA input; <10mS for 1% step change and <100mS for 100% step change.

Relay specification

SP/ST for each trip, unless otherwise stated. Contacts are rated at 120 VAC, 2A, 100 VA (Resistive).

Relay function

Selected by Dip switch. Default is normally energised, relay to De-energise on Trip (fail safe operation).

Relay status

Indicated by green LED mounted on the front fascia for each trip point. Default is ON when relay Energised, Extinguished in Trip/ De-energised state.

Controls

ZERO	± 20%
SPAN	±20%
TRIP (When fitted)	0-100%
HYSTERISIS (When fitted)	1-4%

CONDITIONS

Ambient temperature

Working	-10°C to +50°C
Storage	-20°C to +70°C

Humidity
From 5% to 95% RH.

Vibration

1g at 15Hz to 150Hz.

ELECTRICAL STANDARDS

Insulation Input-output-contacts

1000V RMS continuous, 2000V for 2O uSec.

Fusing

Power supply fused.

WIRING AND MOUNTING

Terminals

For conductors up to 2.5mm²

Weight

<150g

Position

Ideally vertical but can be any position with ventilation

Mounting

Standard units will fit onto a low profile 35mm DIN rail.

Additional protection

Enclosures are available to NEMA 12 oil tight, NEMA 4 watertight and IP54 for N-protection.

PERFORMANCE

Input/output linearity

<±0.1% error, unless otherwise stated

Series mode rejection

<±01% error for 50Hz input at 5% of span amplitude.

Common mode rejection

<±01% error for 250V RMS.

Temperature effect on zero

<0.02% per °C.

Temperature effect on span

<0.01% of span per °C or <0.1°C per °C, whichever is the greater.

Temperature effect on suppression/elevation

<0.02% of suppression/elevation per °C.

Supply voltage effect

<0.01% per % input change.

Adjustments

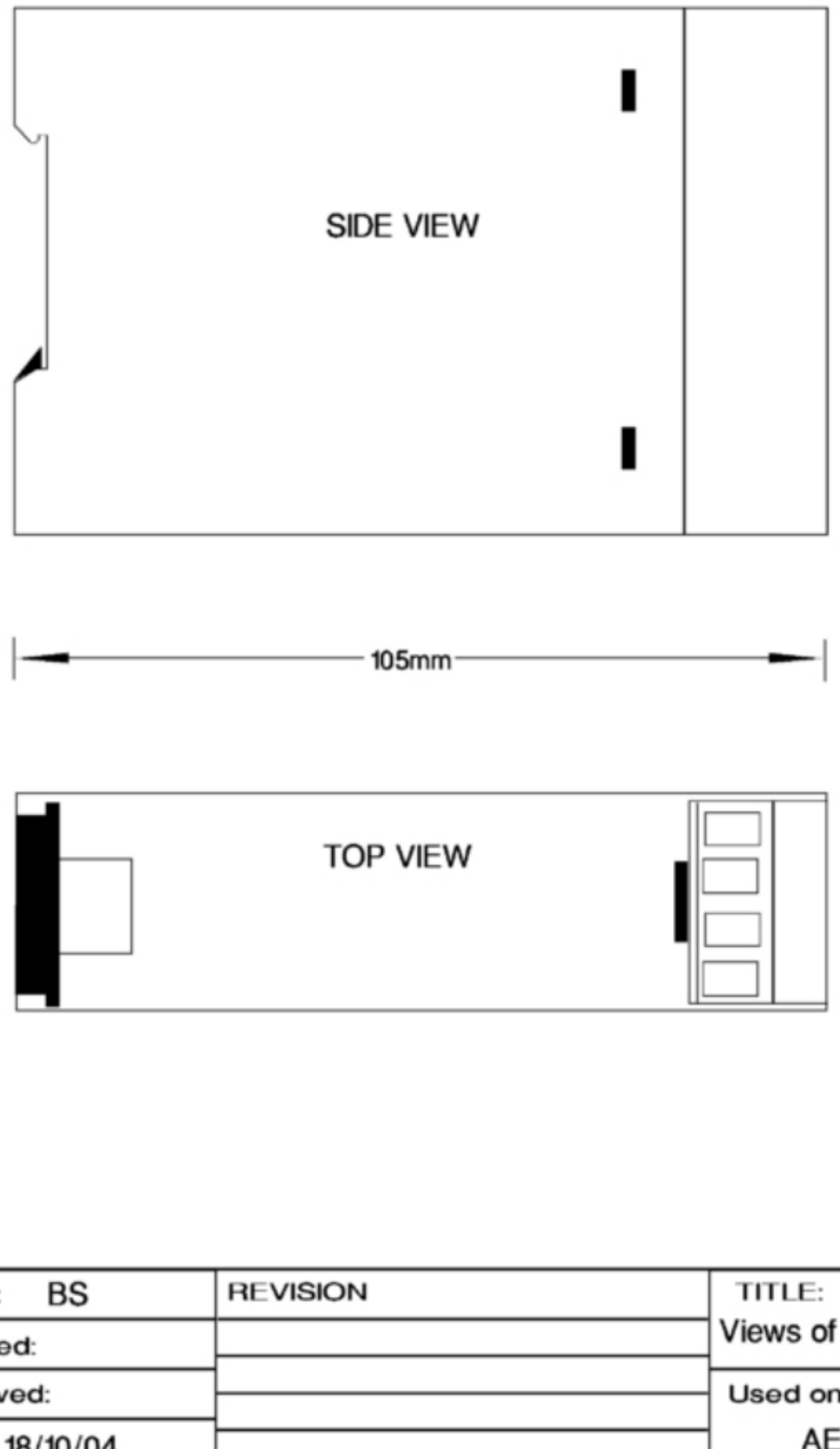
By multi-turn blindset potentiometers, which are accessible through the front fascia.

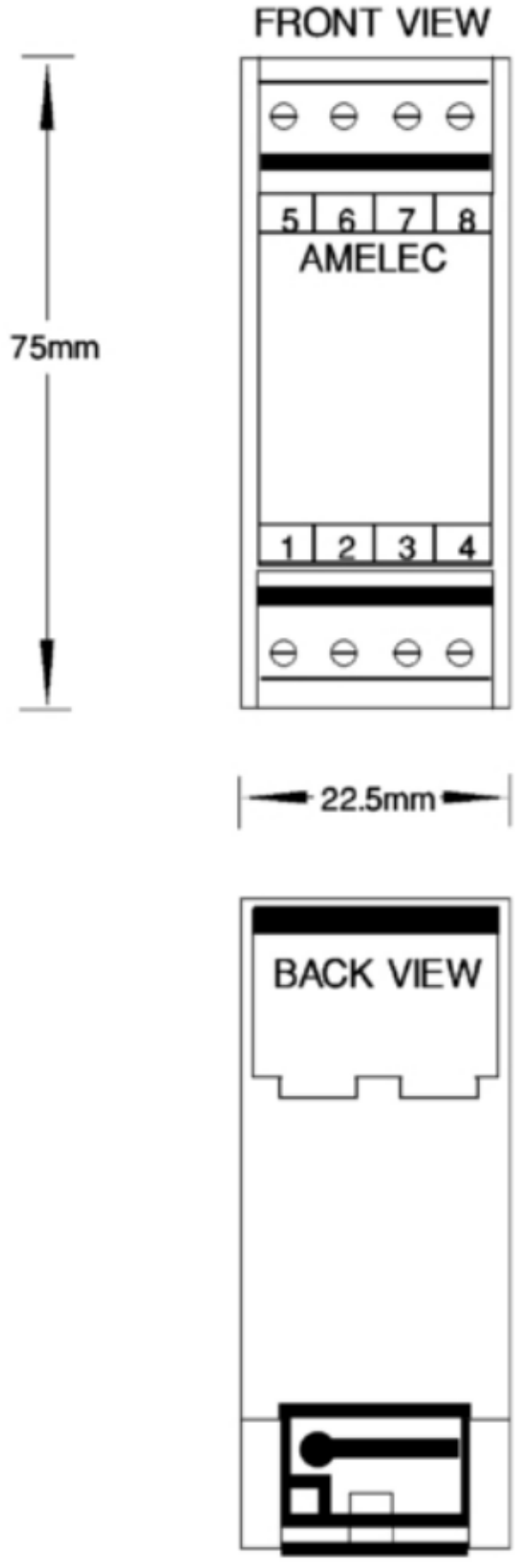
RFI rejection

Standard units meet the CE requirements, however for additional RFI protection to IEC61000-4-3:2006/A2:2010 please refer to the Compact A/AD series units with additional option ‘K’.

Permissible Input overload

mV input	20V
DC voltage Input	200V
DC current Input	500%
Resistance Input	O/C or S/C





DIMENSIONS in mm TOLERANCES ± Nominal 0.4 mm Decimal 0.15 mm Unless shown otherwise	Drawn: BS Checked: Approved: Date: 18/10/04	REVISION	TITLE: AEC series enclosure Views of enclosure showing major dimensions.		AMELEC INSTRUMENTS Cochran Close, Prosley Way Crownhill, Milton Keynes, MK8 0AJ
			Used on Assembly AEC series product	SCALE N.T.S.	DRAWING NO. AE enclosure Sht 1 of 1

AMELEC SIGNAL CONDITIONING

Notes: Good Practice when installing any Din Rail mounted instrumentation

To increase the life expectancy of your din rail mounted instruments, it is recommended that the following guidelines are adhered to:

Mounting Instruments along a Din Rail

Any signal conditioning/process control modules will contain electronic components and circuits which in certain conditions have to lose their excess energy as HEAT. Suppliers of such instruments cannot predict the site conditions or situations, so to make sure that hot spots do not occur it is recommended that electronic instruments are not bunched together horizontally in groups of more than FIVE units.

A space of 5-10mm every five units max will minimise any temperature rise within that group of instruments.

If mounted vertically it is recommend that no more than two instruments are stacked together, then with a minimum 5mm spacer between adjacent units/pairs.

Cabling/Relay Transient Suppression

The electronics in process control units are generally mounted in a small enclosure, which by the very size means that the wiring entering and leaving each enclosure is physically close together. All wiring must be carried out in accordance with current BS EN / IEC regulations. To avoid interference from one port to another the following rules of thumb are recommended:

a) Power cables and wires that carry transients are routed separately to the signal wiring, ideally crossing at 90° to each other.

b) Low level signal cables are kept as screened &/or twisted pairs where possible. On screened cables only earth the screen at one end.

c) Relay contacts that switch inductive loads or other arcing devices should be suppressed, ideally at or across the inductance or other source.

On DC circuits a free wheeling diode should be used, it's PIV at least 4 times the working voltage.

On AC circuits use an RC network, the values of the R and C chosen to match the L and R value of the coil itself.

These rules are very general, so if you encounter any specific problems please contact our sales support team for further assistance.

Amelec product

The Amelec Din Rail mounted instruments are available in a number of product packages:-

The Plastic enclosures; A variety, which may be supplied as either DIN rail or individually Surface mounting instruments. The AD, AEC or AS series' units can be clipped on to the TS35 rail, the ADG series units can be clipped on to either TS35 or G rail (light or heavy duty). The AD series units can also be surface mounted by utilising their corner fixing holes.

The Metal enclosure; is supplied as standard for DIN rail mounting (TS35 heavy duty rail). An optional rear Keyhole plate is available to surface mount the instrument for extra rigidity if required.

The Panel mounted enclosure is supplied in a metal enclosure. The panel cut out needs to be 51w x 76h mm (I.e. approx. 1mm more than the 50w x 75h mm enclosure extrusion dimensions). Two brackets from inside your panel secure the units as std. Optional front plate with corner fixing holes available if preferred.

CE Declaration of Conformity

The Manufacturer / Supplier of the products covered by this Declaration: -

Amelec Technical Solutions Ltd
Unit 5, Cochran Close,
Crownhill, Milton Keynes,
MK8 0AJ
Tel: 01908 567003
Fax: 01908 566735
Registration Number: 5185060

The Products Covered by this Declaration

Model No: AEC220 AC/DC

Conforms to applicable section of the following Directives / Standards:

EMC Directive 2014/30/EU Standard BS EN 61326-1: 2013 (controlled EM)

LVD Directive 2014/35/EU Standard BS EN 61010-1: 2010

Attention!

The attention of the user is drawn to special measures and limitations to use, which must be observed when these products are placed into service to maintain compliance with the above directives. It is also assumed that a competent person will handle the product and that the standard industry practises will be applied. Signal cabling shall be screened and routed separately to power carrying cabling (includes relay output wiring). The screen shall only be terminated to the power earth terminal.

==========

Signature:  **Position:** Director **Date: 20.04.2016**

Name: Mr B Sisodiya