

The **SCU3000** is a series of miniature signal conditioning units (SCU's) that operate remotely with an LVDT sensor to provide the option of either a voltage or current output signal.

Extensively used in motorsport and industrial measurement systems where design space is a consideration, the SCU3101 XV provides an extremely lightweight and compact solution, measuring only 10mm x 12mm x 42mm in size. Manufactured to exacting quality standards, they have two mounting holes for the ease of installation in temperature, severe shock and vibration applications.

The SCU3101 XV and SCU3201 XV models are produced with a thermoplastic case providing environmental protection to IP67. They operate from both a 5VDC regulated and 8V to 30VDC unregulated supply, with the SCU3201 XV having the benefit of an integral connector to offer one simple connection point without the necessity of any additional wiring.

The low noise SCU3111 XV, SCU3121 XV and SCU3124 XA are produced from an aluminium case for additional strength and environmental protection against the ingress of dirt and water to IP68/IP69K. They operate from either a 5VDC regulated or 8V to 30VDC unregulated supply.

For total system integrity, all models, except the SCU3201 XV, are fitted with both 3 and 5 core chemical and high temperature resistant signal cabling.

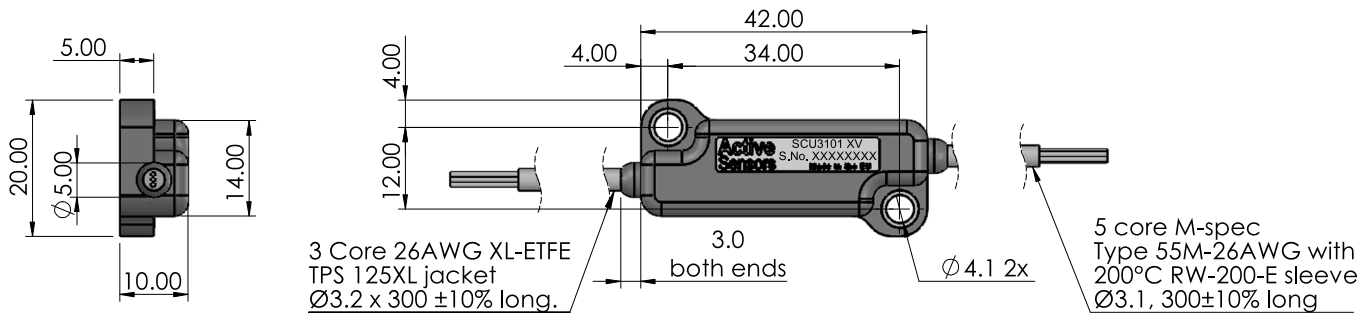
All models provide a voltage output and operate to an operational temperature of 125°, except the SCU3124 XA, which generates a 4 to 20mA signal and is rated to a maximum temperature of 120°C.

Key features and benefits

- Ultra-compact design
- Voltage or current output signal
- Maximum operating temperature 125°C (257°F)
- Mounting holes for direct installation
- SCU's can be calibrated to customer LVDT
- CAN bus and MOD bus options available
- SCU3201 XV has an integral connector
- SCU's can be fitted up to 10m from LVDT



SCU3101 XV - Electronic signal conditioning unit with voltage output



Ordering Information: SCU3101 XV

Output RV/EV see graph and note 4

Specification			
Supply voltage (+Vs)	5.0±5% regulated	8 to 30 unregulated	VDC
Line regulation	Ratiometric with supply	<0.10	%FS
Supply current	<60		mA
Output (Vout)	0.5 - 4.5		VDC
SCU non-linearity(see note 3)	<0.20		%FS
Output ripple	<10		mV
Output load	>2		K Ohms
LVDT excitation voltage	3		VRMS
LVDT excitation frequency	5		KHz
Temperature coefficient	<50	<110	ppm/°C
Operating temperature	-40 to +125	see de-rating graph	°C
Environmental	IP67		
Weight (approx)	12		grams
Materials	Body - Thermoplastic		
SCU error conditions (Vout)			
	LVDT disconnected		0.25VDC
	LVDT sum voltage error		0.25VDC
	SCU initialisation failure		0VDC

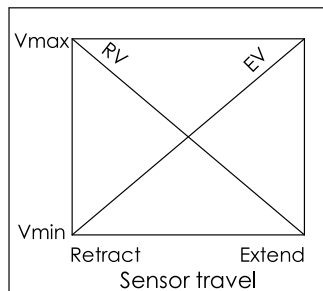
Notes:

1. Incorrect wiring may cause internal damage.
2. Do not operate between 5.25V and 8V.
3. Non-linearity is calculated from least squares best fit method.
4. LVDT wire colours listed match Active Sensors standard LVDTs.
5. When ordering SCU please state which LVDT the SCU will be paired with.
6. General dimension tolerance is ±0.25

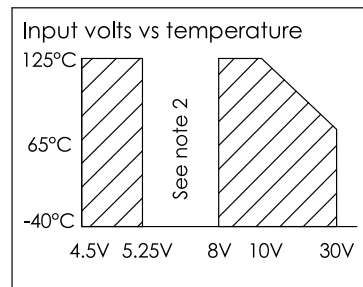
Electrical connections (see note 1)

LVDT connection	Wire colour
Primary +	Red
Primary -	Black
Secondary centre	Green
Secondary A	Blue
Secondary B	Yellow
LVDT connection	Wire colour
Supply (+Vs)	Red
Analogue signal (Vout)	White
Supply (0V)	Black

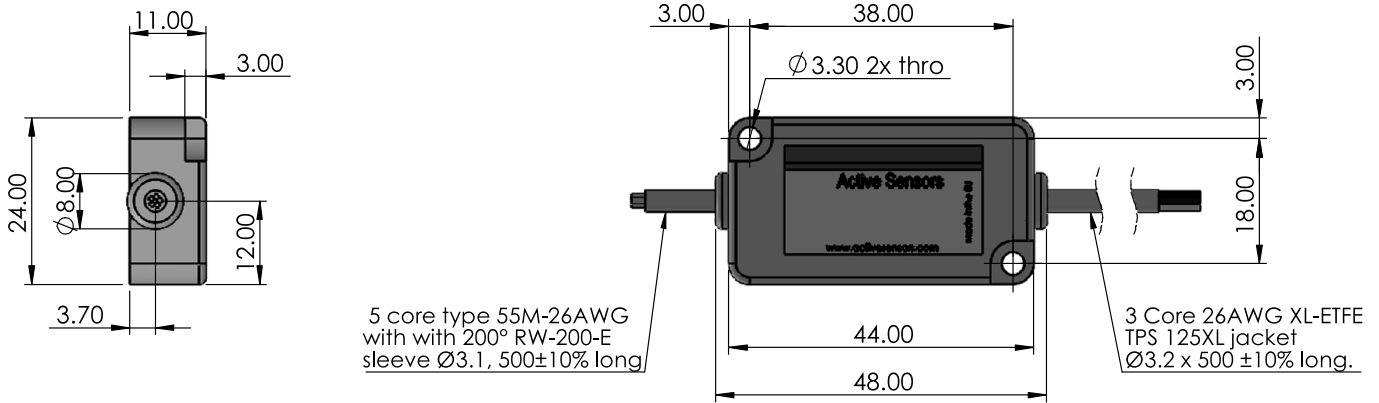
Output characteristics



Temperature de-rating



SCU31X1 XV – Electronic signal conditioning unit with voltage output



Ordering Information: **SCU31X1 XV**

X = voltage type, see table
Output RV/EV see graph and note 4

Specification			
Order code	SCU3111	SCU3121	mm
Supply voltage (+Vs)	5 ±10%	8-30 (see graph)	VDC
Line regulation	Ratiometric with supply	<0.10	%FS
Supply current	<60		mA
Reverse polarity protection	none	-24	VDC
Over voltage protection	none	Up to 50	VDC
Input voltage rise time	0.25 minimum		V/ms
Update rate (nominal)	600		Hz
Output voltage (Vout)	10-90% Vs	0 - 4.096	VDC
Output resolution	0.031	0.024	% LVDT measurement range
SCU non-linearity (see note 2)	<0.20		%FS
Output ripple	10		mV
Output load	>2		Kohms
LVDT excitation voltage	3		VRMS
LVDT excitation frequency	5		KHz
Temperature coefficient (Vout)	<50	<50	ppm/°C
Operating temperature	-40 to +125	See de-rating graph	°C
Environmental	IP68 and 69K		
Weight (approx)	20		grams
Materials	Case - Anodised aluminium Cover - Stainless steel 304		
SCU error conditions (Vout)			
	LVDT disconnected		0.25VDC
	LVDT sum voltage error		0.25VDC
	SCU initialisation failure		0VDC

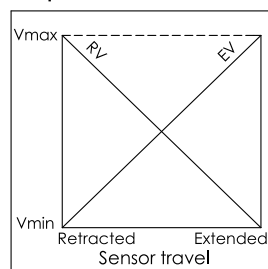
Notes:

1. Incorrect wiring may cause internal damage
2. Non-linearity is calculated from least square best fit method.
3. LVDT wire colours listed match Active Sensors standard LVDTs.
4. When ordering SCU please state which LVDT the SCU will be paired with.
5. General dimension tolerance is ±0.25.

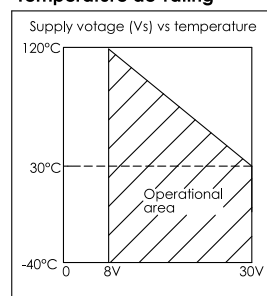
Electrical connections (see note 1)

LVDT connection	Wire colour
Primary +	Red
Primary -	Black
Secondary centre	Green
Secondary A	Blue
Secondary B	Yellow
LVDT connection	Wire colour
Supply (+Vs)	Red
Analogue signal (Vout)	White
Supply (0V)	Black

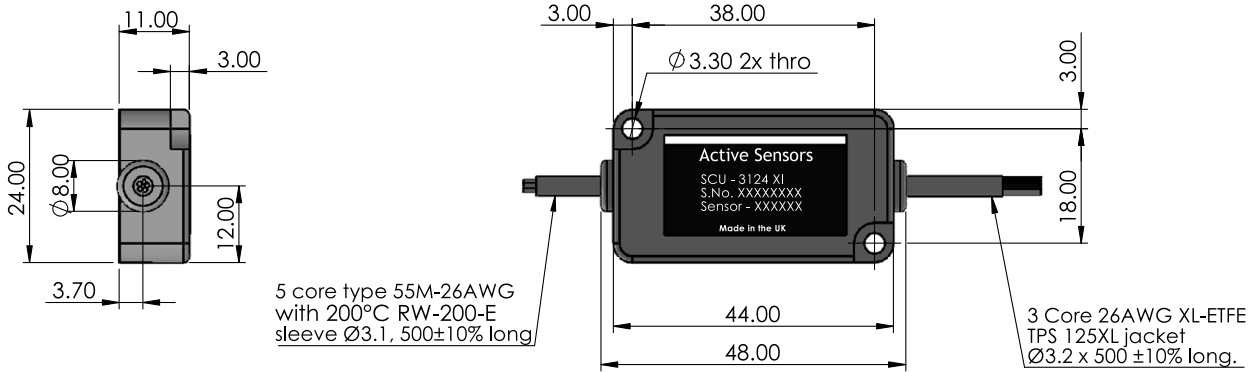
Output characteristics



Temperature de-rating



SCU3124 XA – Electronic signal conditioning unit with current output



Ordering Information: **SCU3124 XI**

Output RI/EI see graph and note 4

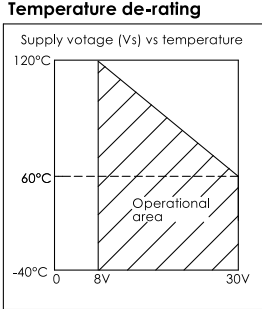
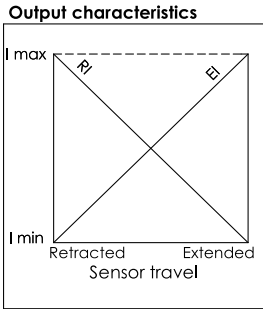
Specification		
Order code	SCU3124	
Supply voltage (+Vs)	8-30 (see graph)	VDC
Supply current	<60	mA
Line regulation	<0.10 TBD	%FS
Over voltage protection	Up to 50	VDC
Reverse polarity protection	50	VDC
Short circuit protection	Yes, continuous	
Output type	Analog current	
Output range (typical)	4 - 20	mA
Output resolution	0.024	% LVDT measurement range
Update rate (nominal)	500	Hz
SCU non linearity (see note 2)	<0.20 TBD	%FS
Min load resistance	Vs/20mA	Ohms
Output ripple	<10	µA RMS
LVDT excitation voltage (typical)	3	VAC
LVDT excitation frequency (typical)	5	KHz
Thermal drift	TBD	%FS/°C
Operating temperature	See de-rating graph	°C
Storage temperature	-55 to 150	°C
Environmental	IP68 and IP69K	
Weight (approx)	20	grams
Materials	Case - Anodised aluminium Cover - Stainless steel 304	
SCU error conditions (Iout)		
LVDT disconnected	2mA	
LVDT sum voltage error	2mA	
SCU initialisation failure	0mA	

Notes:

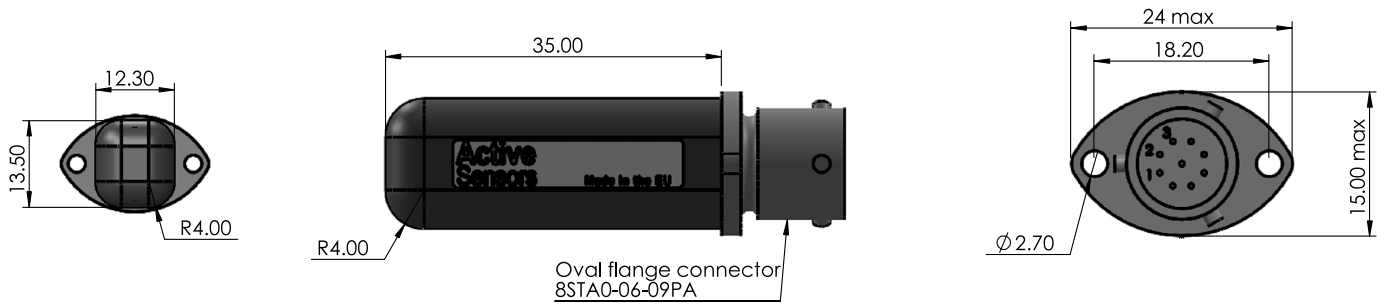
1. Incorrect wiring may cause internal damage
2. Non-linearity is calculated from least square best fit method.
3. LVDT wire colours listed match Active Sensors standard LVDTs.
4. When ordering SCU please state which LVDT the SCU will be paired with.
5. General dimension tolerance is ±0.25.

Electrical connections (see note 1)

LVDT connection	Wire colour
Primary +	Red
Primary -	Black
Secondary centre	Green
Secondary A	Blue
Secondary B	Yellow
LVDT connection	Wire colour
Supply (+Vs)	Red
Analogue signal (Iout)	White
Supply (0V)	Black



SCU3201 XV – Electronic signal conditioning unit with integral connector and voltage output



Ordering Information: SCU3201 XV

Output RV/EV see graph and note 4

Specification			
Supply voltage (+Vs)	5.0±5% regulated	8 to 30 unregulated	VDC
Line regulation	Ratiometric with supply	<0.10	%FS
Supply current	<60		mA
Output (Vout)	0.5 - 4.5		VDC
SCU non linearity (see note 3)	<0.20		%FS
Output ripple	<10		mV
Output load	>2		K Ohms
LVDT excitation voltage	3		VRMS
LVDT excitation frequency	5		KHz
Temperature coefficient	<50	<110	ppm/°C
Operating temperature	-40 to +125	see de-rating graph	°C
Environmental	IP67		
Weight (approx)	12		grams
Materials	Body - Thermoplastic Connector - 8STA0-06-09PA		
SCU error conditions (Vout)			
LVDT disconnected			0.25VDC
LVDT sum voltage error			0.25VDC
SCU initialisation failure			0VDC

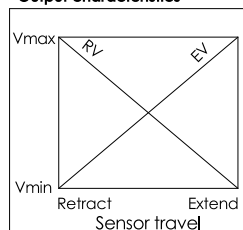
Notes:

1. Incorrect wiring may cause internal damage.
2. Do not operate between 5.25V and 8V.
3. Non-linearity is calculated from least squares best fit method.
4. When ordering SCU please state which LVDT the SCU will be paired with.
5. General dimension tolerance is ±0.25

Electrical connections (see note 1)

Signal description	Connector position
Secondary A (blue)	1
Secondary B (yellow)	2
Secondary Centre (green)	3
Primary - (black)	4
Primary + (red)	5
Analogue signal (Vout)	6
Supply (+Vs)	7
Supply (0V)	8

Output characteristics



Temperature de-rating

