

# KV Series Wiring Harness Specification

SPECIFICATION

Rev 1.1



KV SERIES

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## 1.0 Introduction

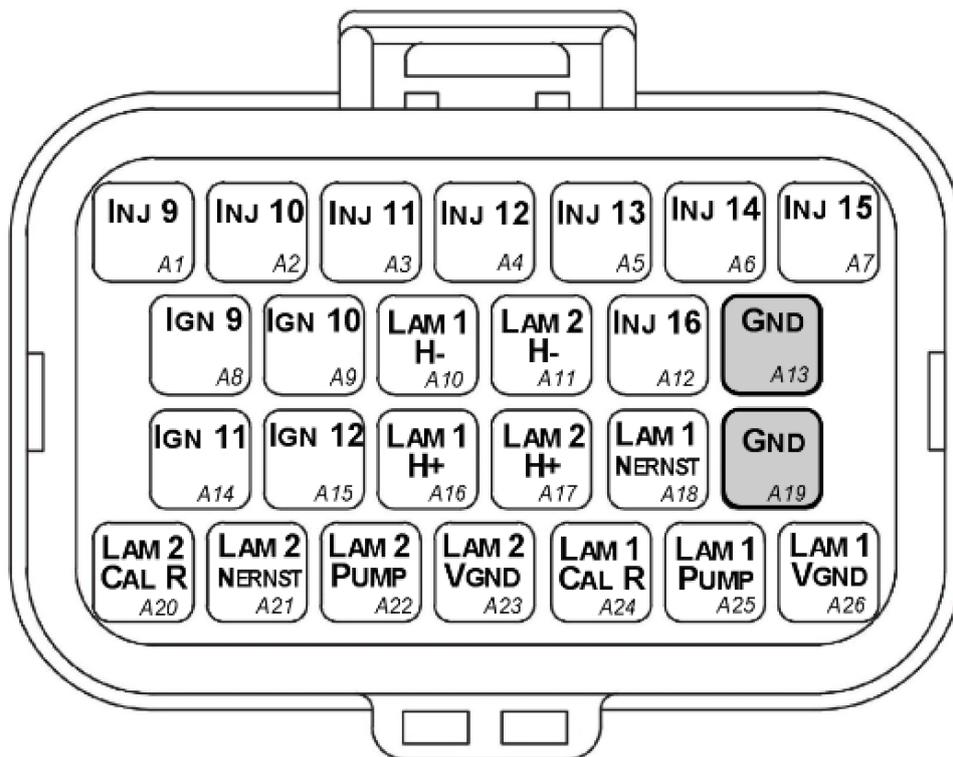
The document contains the specification for the Emtron KV Series wiring harness.

Loom Length = 2.5 meters.

Wire Type = AVSS.

Any unused pins or not fitted wires **MUST** have blanking bungs fitted to the connector to keep the plug rated at its IP standard.

## 2.0 Connector A



**CONNECTOR A**

Name: Superseal

Manufacturers: TE

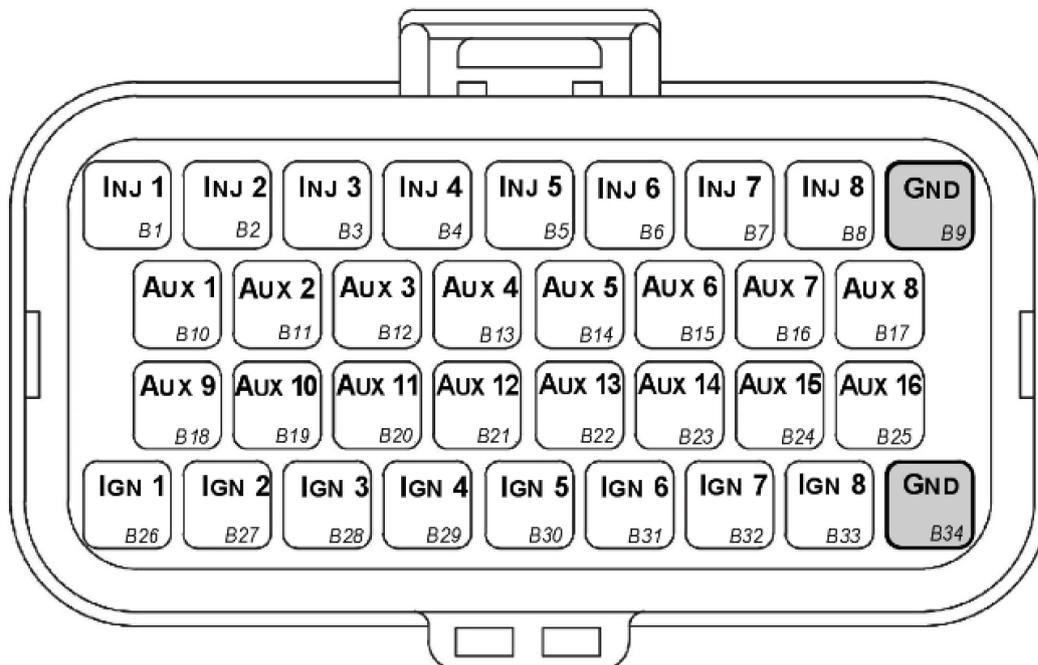
Description: 26 Way/Key 2

Part Number: 3-1437290-8

## 2.1 Connector A Wire Colours

	Pin Number	Description	Colour	Wire Size (sq mm)
<b>INJ 9</b>	A1	Injector Channel 9	Blue	0.50
<b>INJ 10</b>	A2	Injector Channel 10	Blue	0.50
<b>INJ 11</b>	A3	Injector Channel 11	Blue	0.50
<b>INJ 12</b>	A4	Injector Channel 12	Blue	0.50
<b>INJ 13</b>	A5	Injector Channel 13	Blue	0.50
<b>INJ 14</b>	A6	Injector Channel 14	Blue	0.50
<b>INJ 15</b>	A7	Injector Channel 15	Blue	0.50
<b>IGN 9</b>	A8	Ignition Channel 9	Yellow	0.50
<b>IGN 10</b>	A9	Ignition Channel 10	Yellow	0.50
<b>Lam 1 H-</b>	A10	Lambda 1 Heater -	Green	
<b>Lam 2 H-</b>	A11	Lambda 2 Heater -	Green	0.50
<b>INJ 16</b>	A12	Injector Channel 16	Blue	0.50
<b>GND</b>	A13	Power Ground	Black	0.85
<b>IGN 11</b>	A14	Ignition Channel 11	Yellow	0.50
<b>IGN 12</b>	A15	Ignition Channel 12	Yellow	0.50
<b>Lam 1 H+</b>	A16	Lambda 1 Heater 12V	Green	
<b>Lam 2 H+</b>	A17	Lambda 2 Heater 12V	Green	0.50
<b>LAM 1 Nernst</b>	A18	Lambda 1 Nernst Cell	Green	0.50
<b>GND</b>	A19	Power Ground	Black	0.85
<b>LAM 2 Cal R</b>	A20	Lambda 2 Cal Res.	Green	0.50
<b>LAM 2 Nernst</b>	A21	Lambda 2 Nernst Cell	Green	0.50
<b>LAM 2 Pump</b>	A22	Lambda 2 Pump	Green	0.50
<b>LAM 2 VGND</b>	A23	Lambda 2 Virtual Gnd	Green	0.50
<b>LAM 1 Cal R</b>	A24	Lambda 1 Cal Res.	Green	0.50
<b>LAM 1 Pump</b>	A25	Lambda 1 Pump	Green	0.50
<b>LAM 1 VGND</b>	A26	Lambda 1 Virtual Gnd	Green	0.50

### 3.0 Connector B



**CONNECTOR B**

Name: Superseal

Manufacturers: TE

Description: 34 Way/Key 2

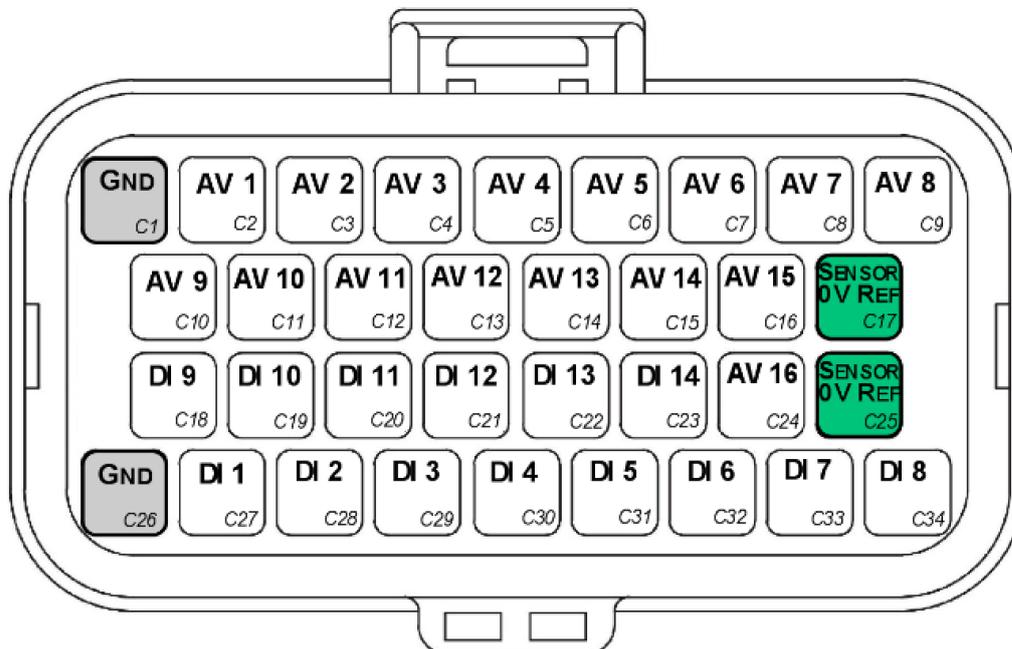
Part Number: 4-1437290-1

### 3.1 Connector B Wire Colours

Pin Name	Pin Number	Description	Colour	Wire Size (sq mm)
<b>INJ 1</b>	B1	Injector Channel 1	Blue	0.50
<b>INJ 2</b>	B2	Injector Channel 2	Blue	0.50
<b>INJ 3</b>	B3	Injector Channel 3	Blue	0.50
<b>INJ 4</b>	B4	Injector Channel 4	Blue	0.50
<b>INJ 5</b>	B5	Injector Channel 5	Blue	0.50
<b>INJ 6</b>	B6	Injector Channel 6	Blue	0.50
<b>INJ 7</b>	B7	Injector Channel 7	Blue	0.50
<b>INJ 8</b>	B8	Injector Channel 8	Blue	0.50
<b>IGN</b>				
<b>IGN 1</b>	B26	Ignition Channel 1	Yellow	0.50
<b>IGN 2</b>	B27	Ignition Channel 2	Yellow	0.50
<b>IGN 3</b>	B28	Ignition Channel 3	Yellow	0.50
<b>IGN 4</b>	B29	Ignition Channel 4	Yellow	0.50
<b>IGN 5</b>	B30	Ignition Channel 5	Yellow	0.50
<b>IGN 6</b>	B31	Ignition Channel 6	Yellow	0.50
<b>IGN 7</b>	B32	Ignition Channel 7	Yellow	0.50
<b>IGN 8</b>	B33	Ignition Channel 8	Yellow	0.50
<b>AUX</b>				
<b>AUX 1</b>	B10	Auxiliary Channel 1	Grey	0.50
<b>AUX 2</b>	B11	Auxiliary Channel 2	Grey	0.50
<b>AUX 3</b>	B12	Auxiliary Channel 3	Grey	0.50
<b>AUX 4</b>	B13	Auxiliary Channel 4	Grey	0.50
<b>AUX 5</b>	B14	Auxiliary Channel 5	Grey	0.50
<b>AUX 6</b>	B15	Auxiliary Channel 6	Grey	0.50
<b>AUX 7</b>	B16	Auxiliary Channel 7	Grey	0.50
<b>AUX 8</b>	B17	Auxiliary Channel 8	Grey	0.50
<b>AUX 9</b>	B18	Auxiliary Channel 9	Grey	0.50
<b>AUX 10</b>	B19	Auxiliary Channel 10	Grey	0.50

Pin Name	Pin Number	Description	Colour	Wire Size (sq mm)
<b>AUX 11</b>	B20	Auxiliary Channel 11	Grey	0.50
<b>AUX 12</b>	B21	Auxiliary Channel 12	Grey	0.50
<b>AUX 13</b>	B22	Auxiliary Channel 13	Grey	0.50
<b>AUX 14</b>	B23	Auxiliary Channel 14	Grey	0.50
<b>AUX 15</b>	B24	Auxiliary Channel 15	Grey	0.50
<b>AUX 16</b>	B25	Auxiliary Channel 16	Grey	0.50
<b>GND</b>	B9	Power Ground	Black	0.85
<b>GND</b>	B34	Power Ground	Black	0.85

## 4.0 Connector C



**CONNECTOR C**

Name: Superseal

Manufacturers: TE

Description: 34 Way/Key 1

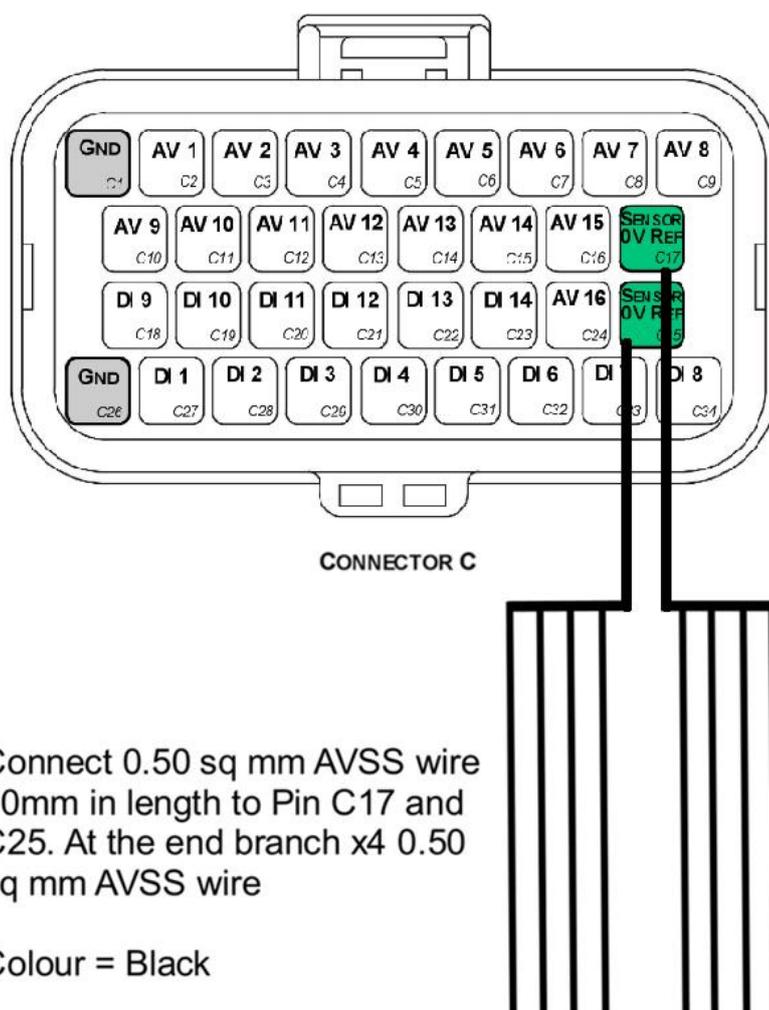
Part Number: 4-1437290-0

## 4.1 Connector C Wire Colours

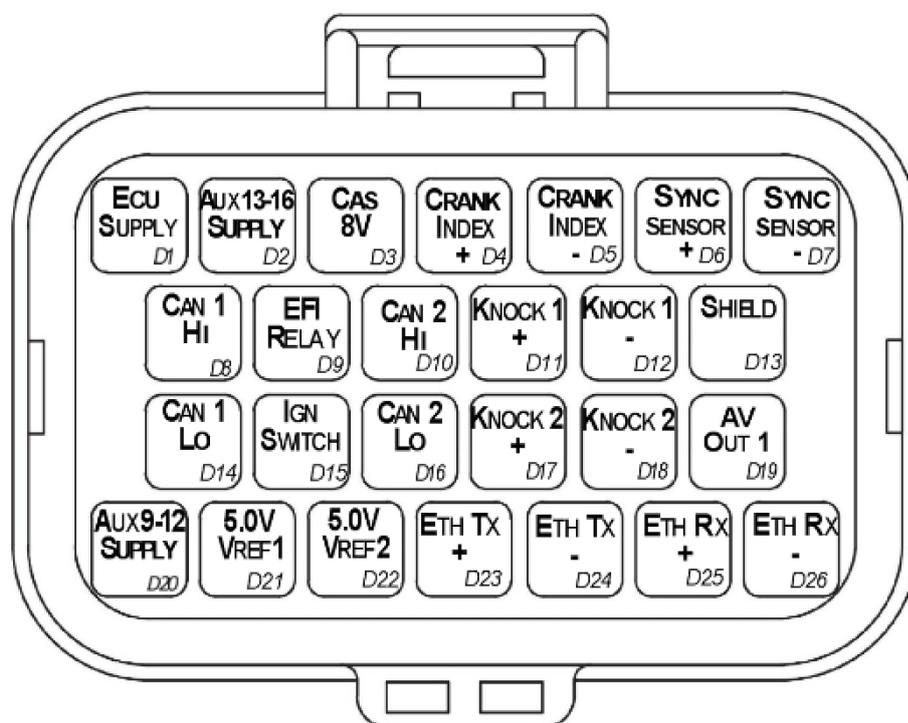
Pin Name	Pin Number	Description	Colour	Wire Size (sq mm)
<b>AV 1</b>	C2	Analog Voltage CH 1	White	0.50
<b>AV 2</b>	C3	Analog Voltage CH 2	White	0.50
<b>AV 3</b>	C4	Analog Voltage CH 3	White	0.50
<b>AV 4</b>	C5	Analog Voltage CH 4	White	0.50
<b>AV 5</b>	C6	Analog Voltage CH 5	White	0.50
<b>AV 6</b>	C7	Analog Voltage CH 6	White	0.50
<b>AV 7</b>	C8	Analog Voltage CH 7	White	0.50
<b>AV 8</b>	C9	Analog Voltage CH 8	White	0.50
<b>AV 9</b>	C10	Analog Voltage CH 9	White	0.50
<b>AV 10</b>	C11	Analog Voltage CH 10	White	0.50
<b>AV 11</b>	C12	Analog Voltage CH 11	White	0.50
<b>AV 12</b>	C13	Analog Voltage CH 12	White	0.50
<b>AV 13</b>	C14	Analog Voltage CH 13	White	0.50
<b>AV 14</b>	C15	Analog Voltage CH 14	White	0.50
<b>AV 15</b>	C16	Analog Voltage CH 15	White	0.50
<b>AV 16</b>	C24	Analog Voltage CH 16	White	0.50
<b>DI 1</b>	C27	Digital Input CH 1	White	0.50
<b>DI 2</b>	C28	Digital Input CH 2	White	0.50
<b>DI 3</b>	C29	Digital Input CH 3	White	0.50
<b>DI 4</b>	C30	Digital Input CH 4	White	0.50
<b>DI 5</b>	C31	Digital Input CH 5	White	0.50
<b>DI 6</b>	C32	Digital Input CH 6	White	0.50
<b>DI 7</b>	C33	Digital Input CH 7	White	0.50
<b>DI 8</b>	C34	Digital Input CH 8	White	0.50
<b>DI 9</b>	C18	Digital Input CH 9	White	0.50
<b>DI 10</b>	C19	Digital Input CH 10	White	0.50

Pin Name	Pin Number	Description	Colour	Wire Size (sq mm)
DI 11	C20	Digital Input CH 11	White	0.50
DI 12	C21	Digital Input CH 12	White	0.50
DI 13	C22	Digital Input CH 13	White	0.50
DI 14	C23	Digital Input CH 14	White	0.50
GND OUT	C17	Sensor 0V Ref (Branched Cable)	Black	0.50
GND OUT	C25	Sensor 0V Ref (Branched Cable)	Black	0.50
GND	C1	Power Ground	Black	0.85
GND	C26	Power Ground	Black	0.85

#### 4.2 Pin C17 and C25 Sensor Ground Branched Connections



## 5.0 Connector D



**CONNECTOR D**

Name: Superseal

Manufacturers: TE

Description: 26 Way/Key 1

Part Number: 3-1437290-7

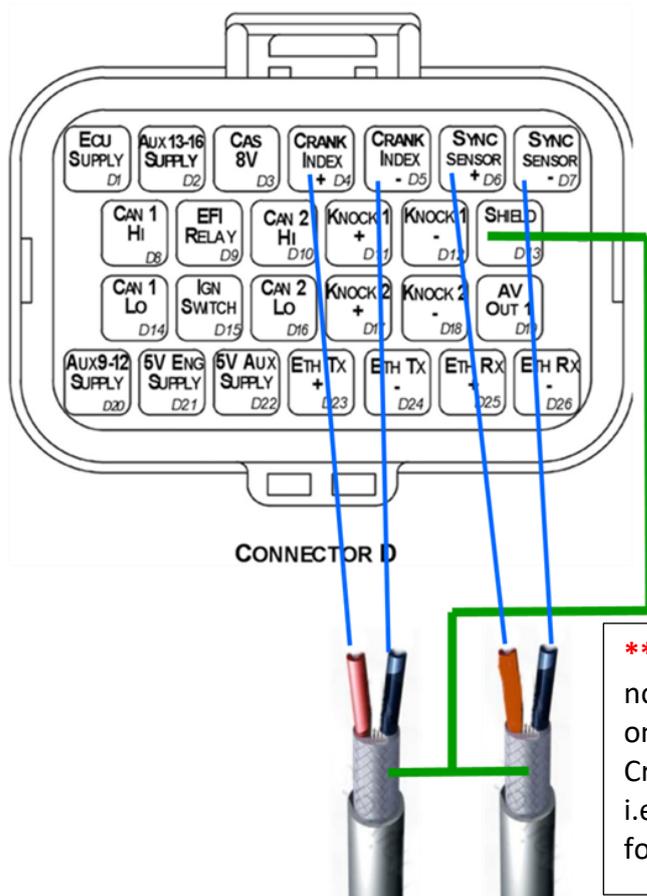
## 5.1 Connector D Wire Colours

	Pin Number	Description	Colour	Wire Size (sq mm)
<b>ECU SUPPLY</b>	D1	ECU Supply	Red	0.85
<b>AUX 13-16 Supply</b>	D2	Power supply for Aux 13-16	Red	0.85
<b>CAS 8V</b>	D3	8V Cas Supply	White/Orange	0.50
<b>CRANK INDEX +</b>	D4	Crank Index position sensor Positive	2 core Shielded Cable shared with Pin D5	
<b>CRANK INDEX -</b>	D5	Crank Index position sensor Negative	2 core Shielded Cable shared with Pin D4	
<b>SYNC SENSOR +</b>	D6	Sync Sensor Positive	2 core Shielded Cable shared with Pin D7	
<b>SYNC SENSOR -</b>	D7	Sync Sensor Negative	2 core Shielded Cable shared with Pin D6	
<b>CAN 1 HI</b>	D8	Main Engine CAN	White	0.50
<b>EFI RELAY</b>	D9	Main Relay Control	Grey	0.50
<b>CAN 2 HI</b>	D10	Auxiliary CAN	White	
<b>KNK 1 +</b>	D11	Knock Sensor 1 +	2 core Shielded Cable shared with Pin D12	
<b>KNK 1 -</b>	D12 C12	Knock Sensor 1 -	2 core Shielded Cable shared with Pin D11	
<b>SHIELD</b>	D13	Crank/Sync/Knock	White	0.50
<b>CAN 1 LO</b>	D14	Main Engine CAN	Green	0.50
<b>IGN SWITCH</b>	D15		Red	0.50
<b>CAN 2 LO</b>	D16	Auxiliary CAN	Green	
<b>KNK 2 +</b>	D17	Knock Sensor 2 +	2 core Shielded Cable shared with Pin D18	
<b>KNK 2 -</b>	D18 C12	Knock Sensor 2 -	2 core Shielded Cable shared with Pin D17	
<b>AVOUT 1</b>	D19	Analog Out 1	White	
<b>AUX 9 -12 SUPPLY</b>	D20	Power supply for Aux 9-12 high side	Red	0.85

Pin Name	Pin Number	Description	Colour	Wire Size (sq mm)
5V ENG SUPPLY	D21	Main 5V engine sensor supply (Branched)	Orange	0.50
5V AUX SUPPLY	D22	5V auxiliary sensor supply	Orange	0.50
Ethernet TX+	D23		Twisted Pair CAT 5E	
Ethernet TX-	D24		Twisted Pair CAT 5E	
Ethernet RX+	D25		Twisted Pair CAT 5E	
Ethernet RX-	D26		Twisted Pair CAT 5E	

## 5.2 Crank and Sync Shielded Cable Connections

- Use x1 2-core shielded cable for Pins B4 and B5
- Use x1 2-core shielded cable for Pins B6 and B7

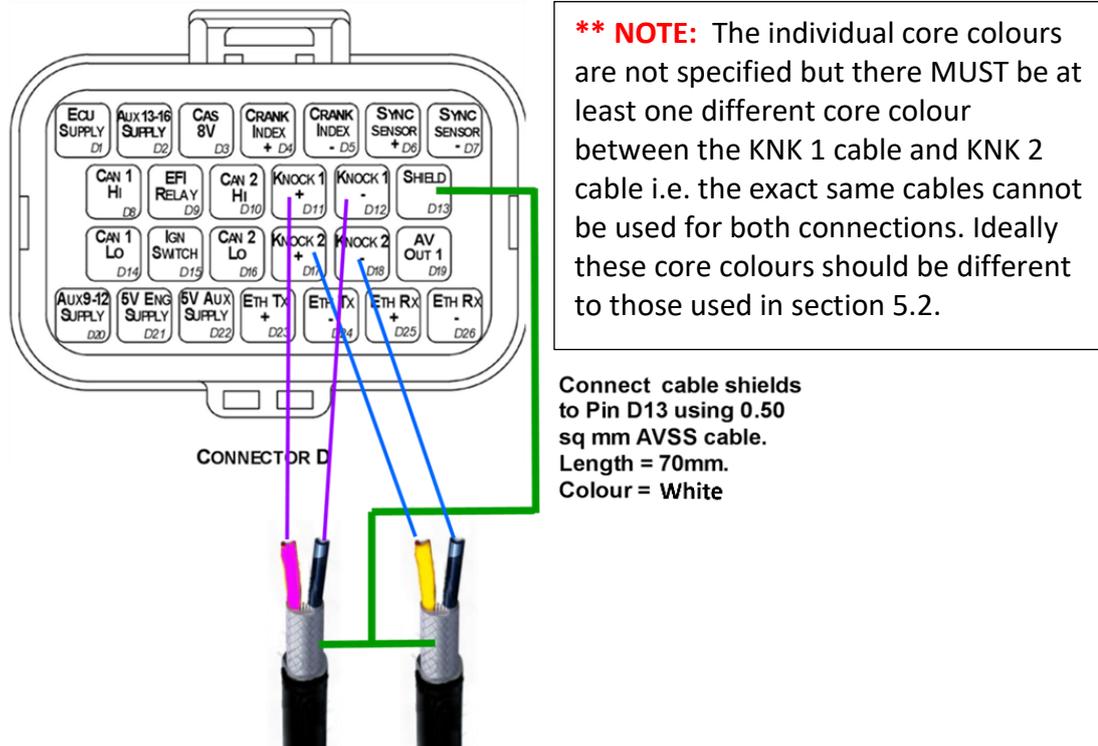


Connect cable shields to Pin D13 using 0.50 sq mm AVSS cable. Length = 70mm. Colour = White

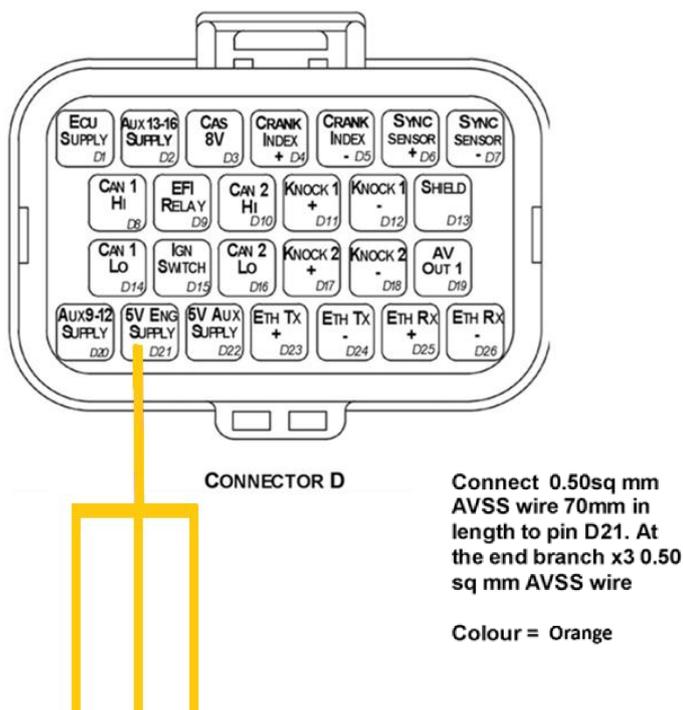
**\*\* NOTE:** The individual core colours are not specified but there MUST be at least one different core colour between the Crank Index cable and Sync Sensor cable i.e. the exact same cables cannot be used for both connections.

### 5.3 Knock Shielded Cable Connections

- Use x1 2-core shielded cable for Pins B11 and B12
- Use x1 2-core shielded cable for Pins B17 and B18



### 5.4 5V Eng Supply Branched Connections (Pin D21)



## 5.5 Ethernet Sub Harness - Pins D23- D26

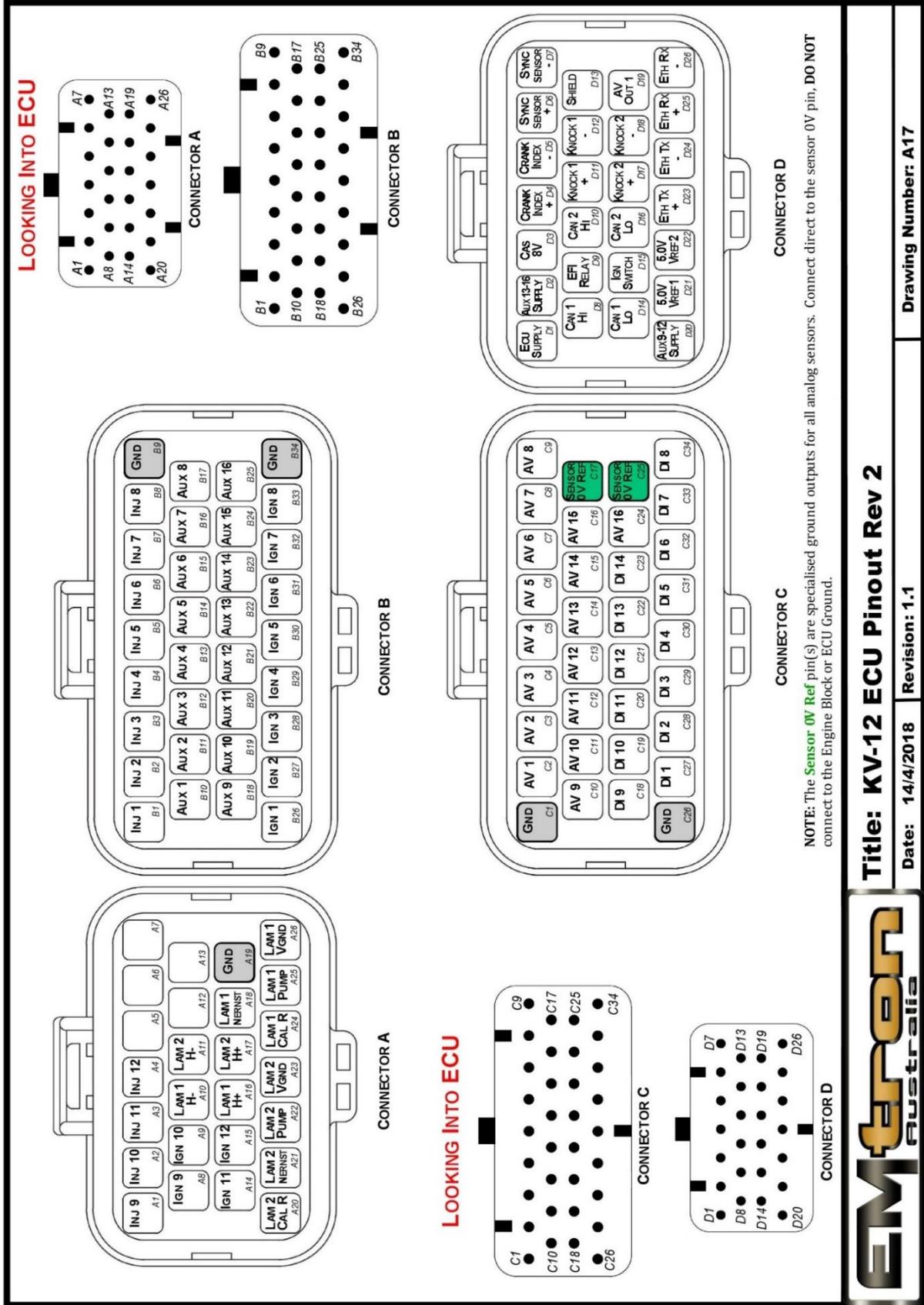
See Document "Ethernet to Superseal Loom Specification V1.x".

This sub harness should be plugged into connector D, Pins D23 -> D26

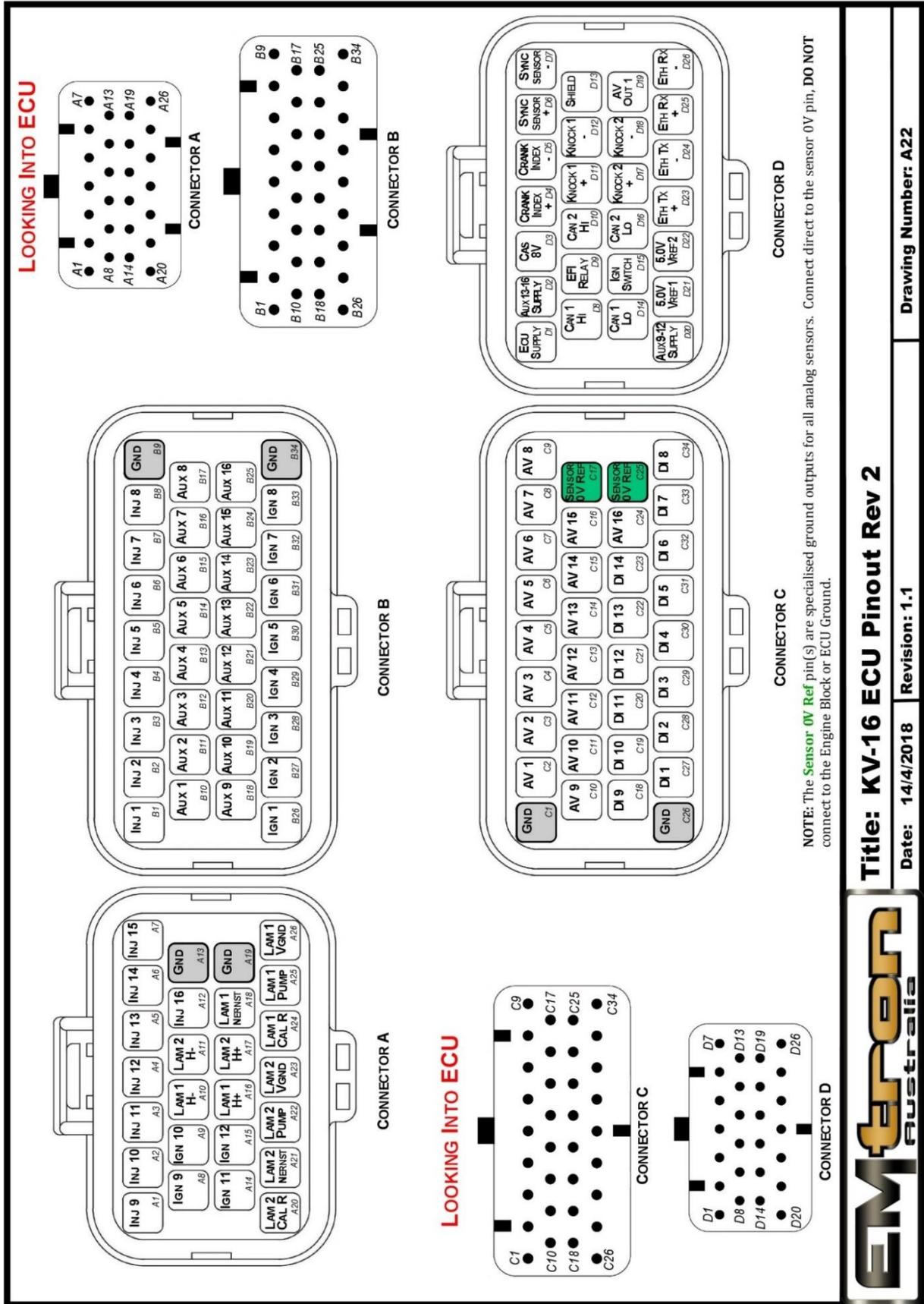
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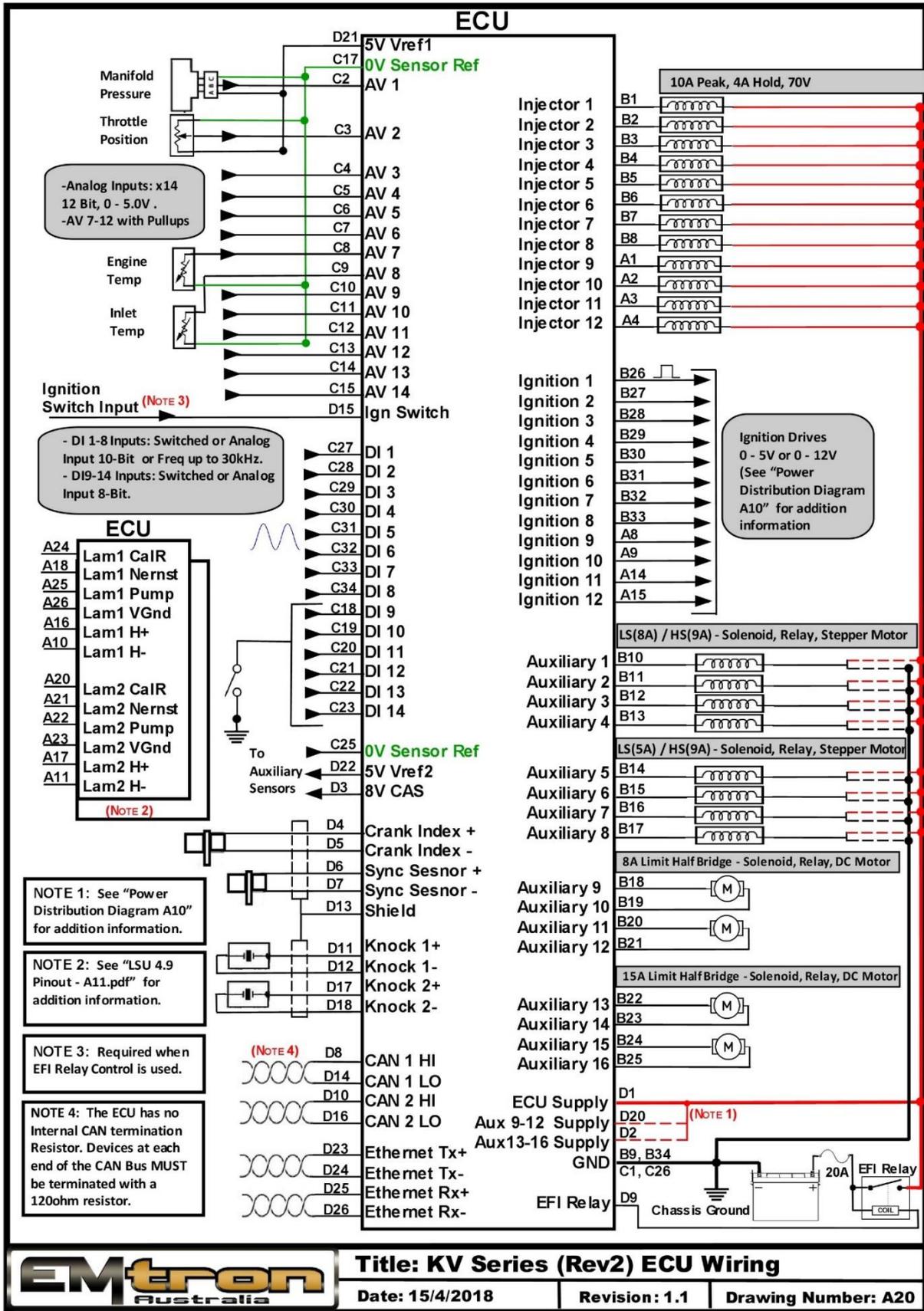
## Appendix B – KV12 ECU Pinout Drawing



## Appendix C – KV16 ECU Pinout Drawing



## Appendix D – KV Series ECU Wiring



Title: KV Series (Rev2) ECU Wiring

Date: 15/4/2018

Revision: 1.1

Drawing Number: A20

## Appendix E – KV Series Ethernet Wiring – A24





### Emtron Ethernet Pinout

RJ45 Pin	Emtron Pin	Description	Wire Colour / Cat 5e Standard
1	D23	Ethernet Tx +	white/green
2	D24	Ethernet Tx -	green
3	D25	Ethernet Rx +	white/orange
6	D26	Ethernet Rx -	orange

### Title: KV Series Ethernet Pinout

Date: 08/05/2018    Revision: 1.1

Drawing Number: A24

