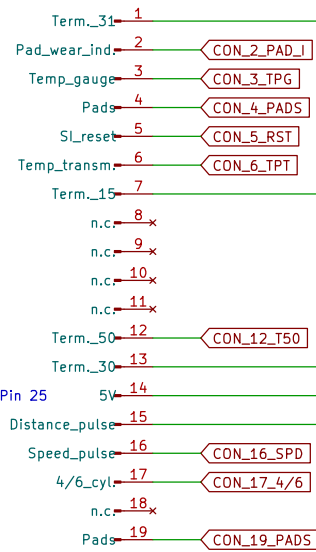


Main Connector (19 Pin)

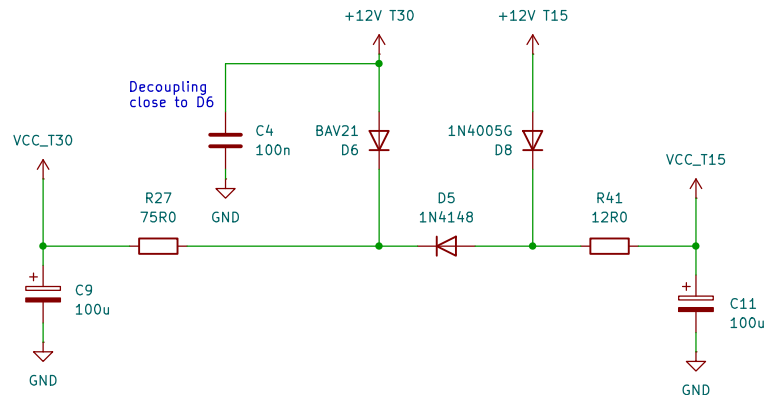
From Conn. I (blue) Pin 20 – Term. 31
To Pad Wear Indicator Bulb (h)
To Temperature Gauge
From Conn. I (blue) Pin 21
From Conn. I (blue) Pin 22
From Conn. I (blue) Pin 26
From Conn. II (white) Pin 6 – Term. 15

J2 Conn_01x19_Pin



For routing and connections on the cluster see images on bottom of the page

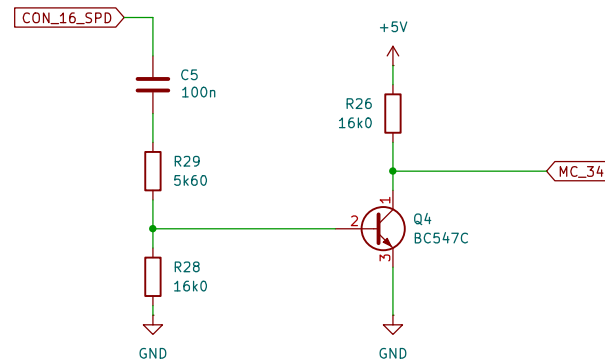
12V Power Supply



TODO: Check if +5V supplied from Tachometer also with T30 or only T15

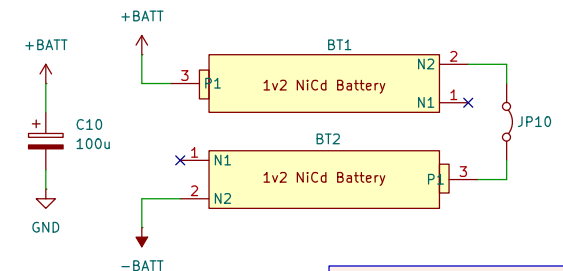
Terminal 30 (always hot) and Terminal 15 (hot with ignition) are separated. T30 powers the comparators even without T15. T15 supplies the service indicators and the relay.

Engine Speed Pulse Interfacing



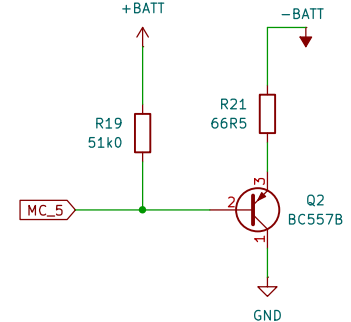
Pin MC_34 is pulled low through +12V pulse from Terminal 1 (Ignition Coil) that switches transistor T4

Batteries



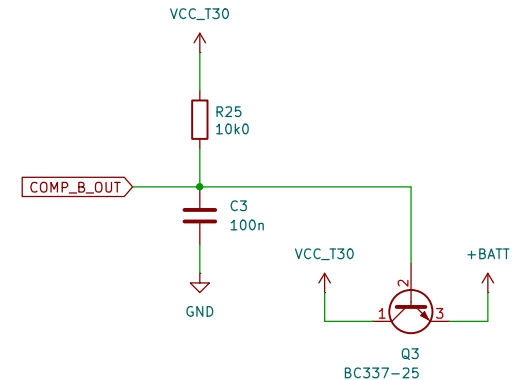
Jumper to prevent discharging of batteries while board in storage -> connect before installation

Switched -BATT to GND Connection

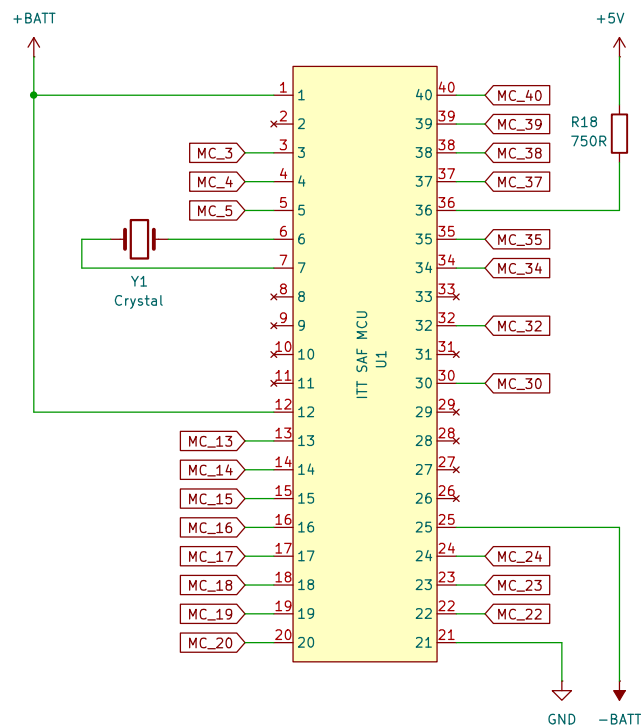


BC557B is a PNP: OFF when base is high through +BATT Pullup, ON when pulled low through MC_5

Switched +BATT to VCC_T30 Connection



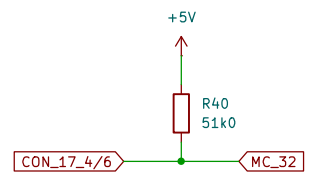
Microcontroller



Impossible to find datasheet. 5V Logic, DIP40 Package

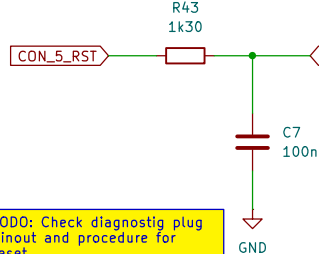
TODO: Measure crystal frequency (unmarked)

Engine Coding Interface



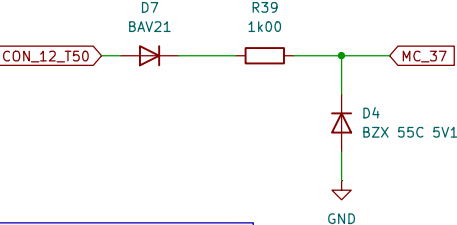
TODO: Check which of 4/6 is high/low

SI Reset Interfacing



TODO: Check diagnostig plug pinout and procedure for reset

T50 Interfacing



T50 is HIGH (+12V) with key in START position

BMW_E30_VFL_SI_Board_Instrument_Cluster

Cluster Wiring

Date: BMW_E30_VFL_SI_Board_Instrument_Cluster.kicad_sch

BMW_E30_VFL_SI_Board_Comparator_Circuit

LM2901
Comparator Circuit

BMW_E30_VFL_SI_Board_Pad_Wear_Indicator

Pad Wear Indicator

BMW_E30_VFL_SI_Board_Indicator_Lights

Indicator
Lights

Sheet: /
File: BMW E30 VFL SI Board V2.kicad_sch

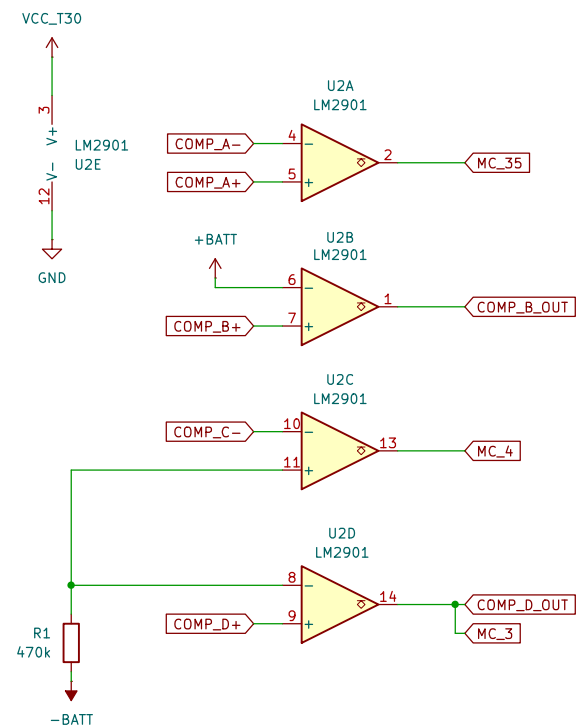
Title: BMW E30 Pre-Facelift SI Board

Size: A3
KiCad E.D.A. 8.0.1

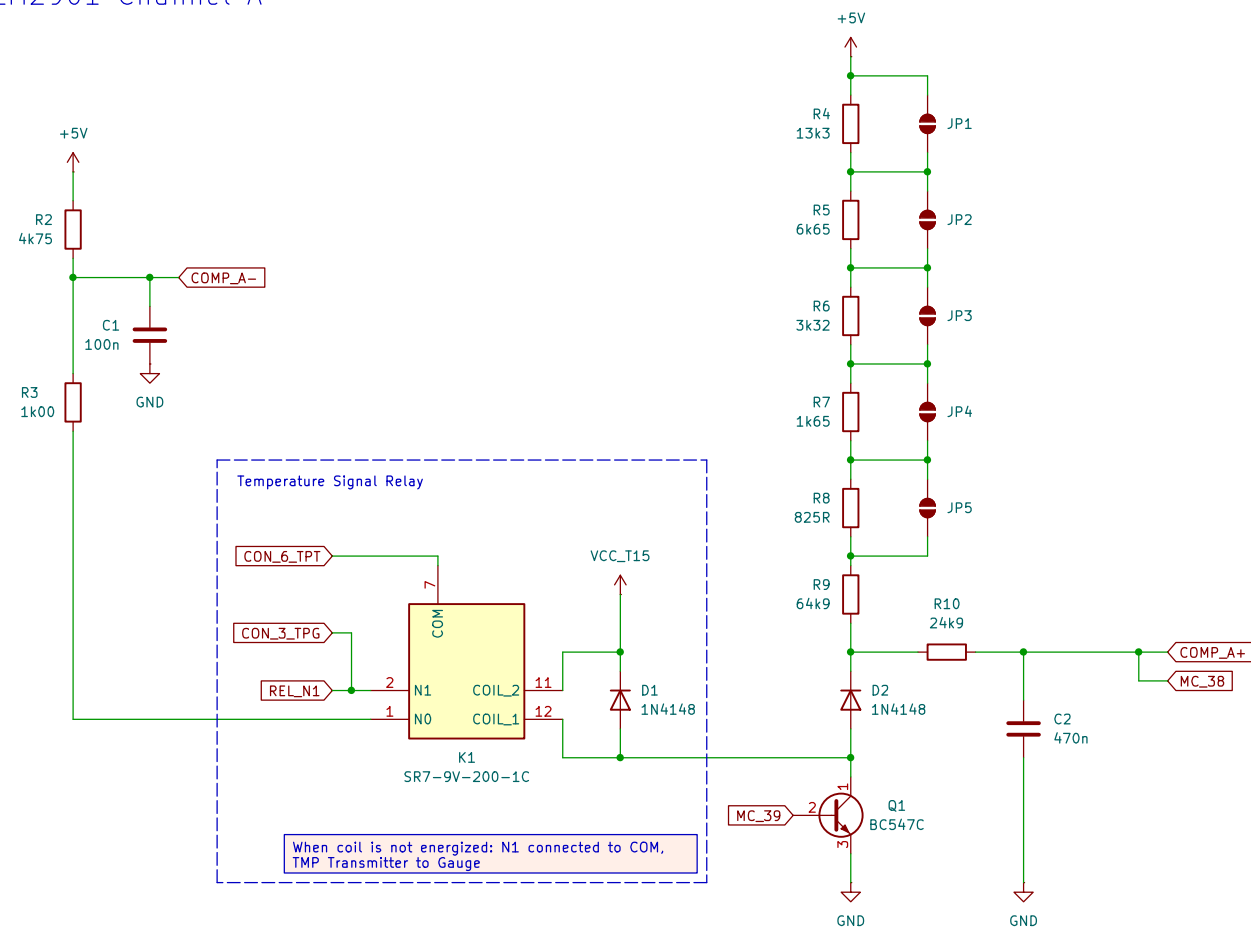
Date: 2024-06-15

Rev: 2
Id: 1/5

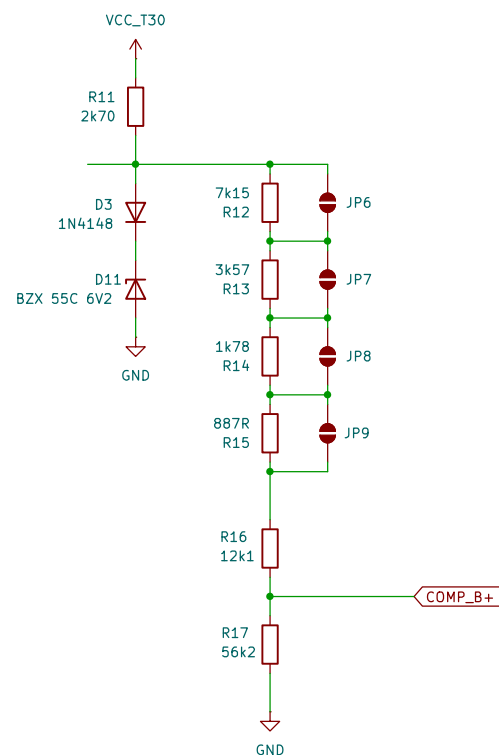
LM2901 Quad Channel Comparator



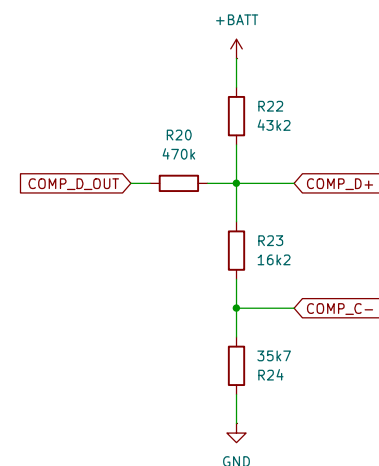
LM2901 Channel A



LM2901 Channel B



LM2901 Channels C and D



BMW_E30_VFL_SI_Board_Comparator_Circuit

Sheet: /BMW_E30_VFL_SI_Board_Comparator_Circuit/
File: BMW_E30_VFL_SI_Board_Comparator_Circuit.kicad_sch

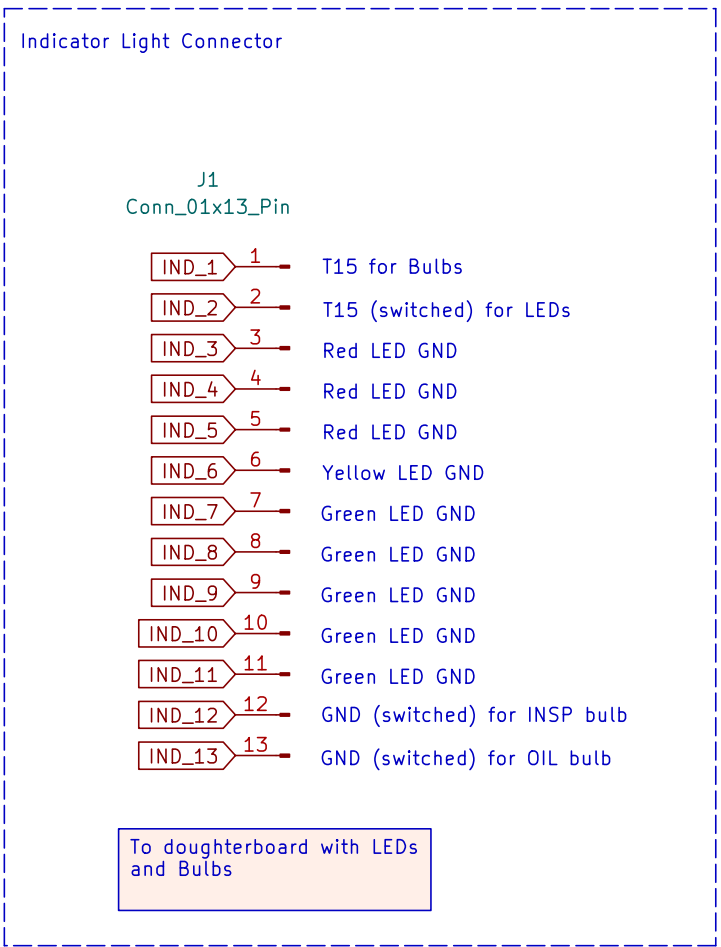
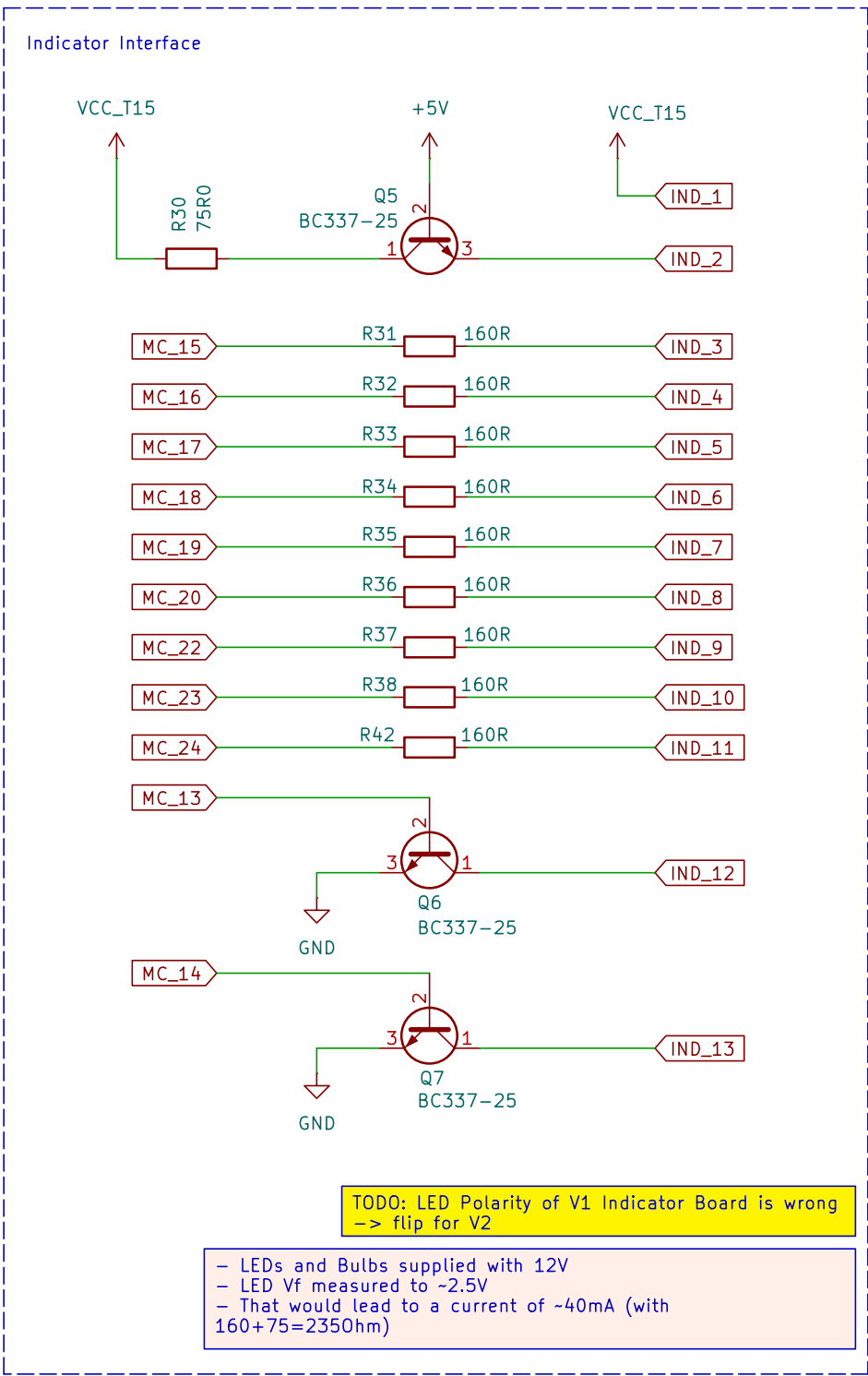
Title: BMW E30 Pre-Facelift SI Board

| | |
|----------|------------------|
| Size: A3 | Date: 2024-06-15 |
|----------|------------------|

Rev: 2

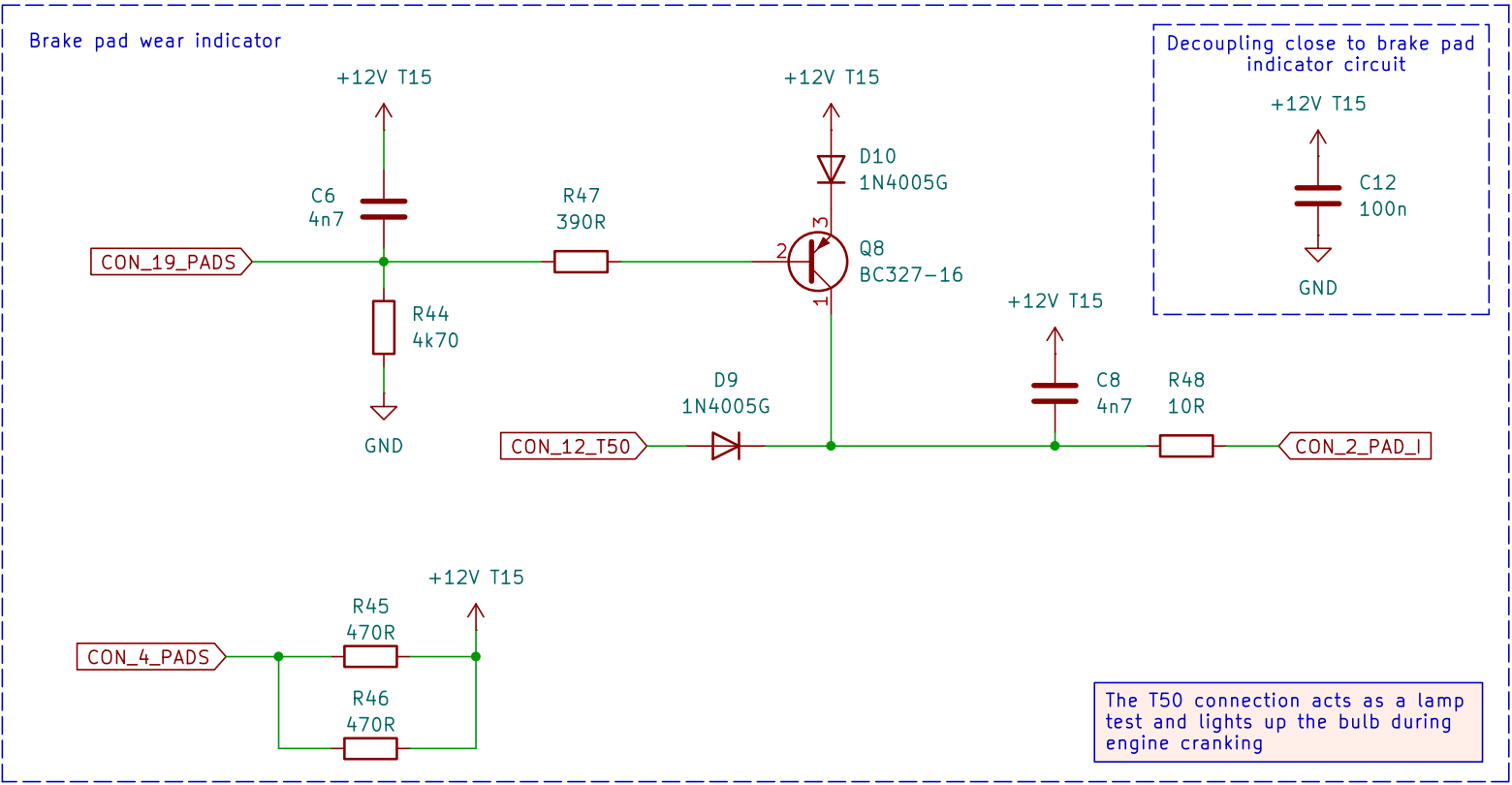
| | |
|--------------------|--|
| Size: A3 | |
| KiCad E.D.A. 8.0.1 | |

REV: 2
Id: 2/5



BMW_E30_VFL_SI_Board_Indicator_Lights

| | | |
|---|------------------|---------|
| Sheet: /BMW_E30_VFL_SI_Board_Indicator_Lights/ File: BMW_E30_VFL_SI_Board_Indicator_Lights.kicad_sch | | |
| Title: BMW E30 Pre-Facelift SI Board | | |
| Size: A4 | Date: 2024-06-15 | Rev: 2 |
| KiCad E.D.A. 8.0.1 | | Id: 3/5 |



BMW_E30_VFL_SI_Board_Pad_Wear_Indicator

Sheet: /BMW_E30_VFL_SI_Board_Pad_Wear_Indicator/
File: BMW_E30_VFL_SI_Board_Pad_Wear_Indicator.kicad_sch

Title: BMW E30 Pre-Facelift SI Board

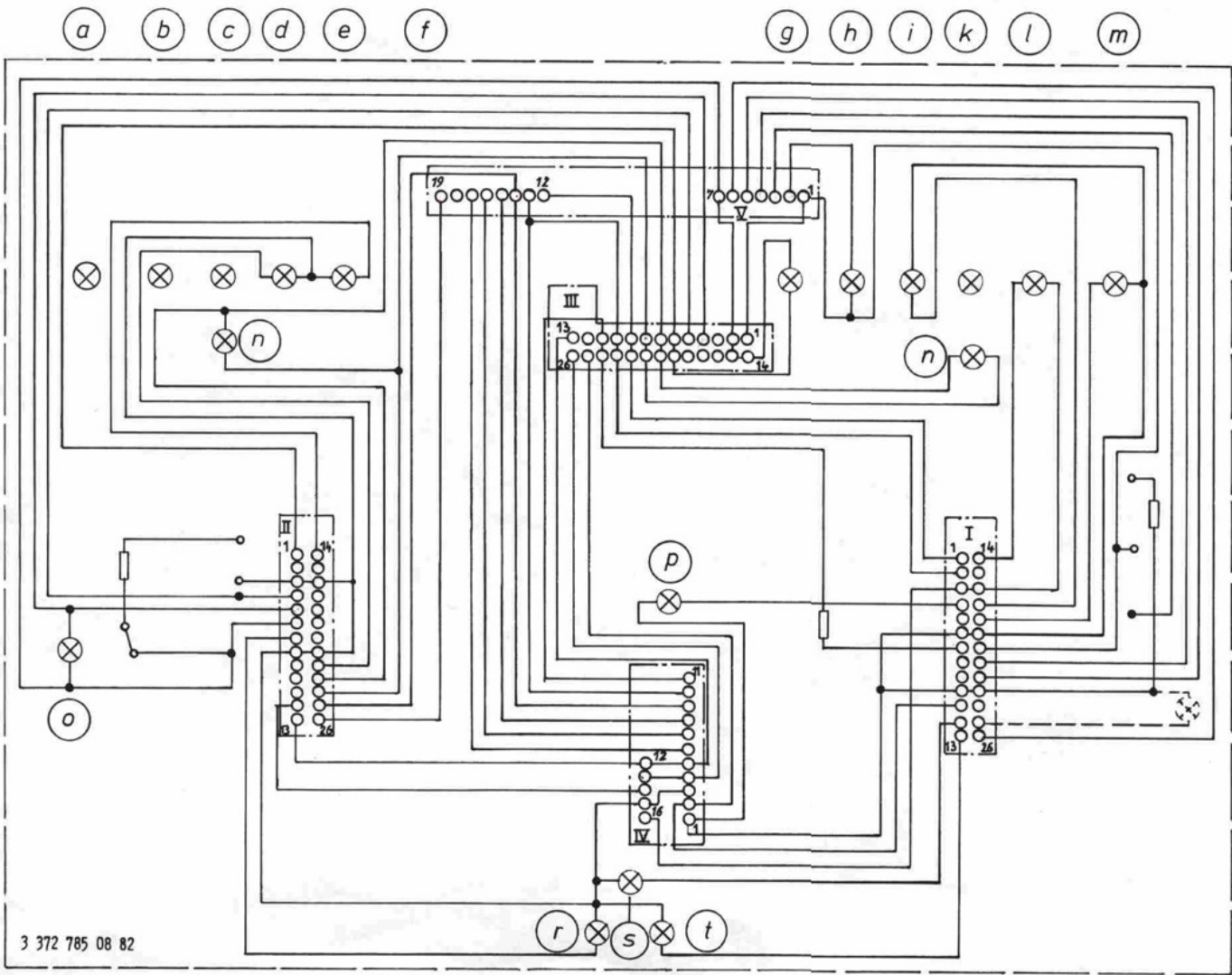
Size: A4

Date: 2024-06-15

Rev: 2

KiCad E.D.A. 8.0.1

Id: 4/5



Erläuterung zum Schaltplan Instrumenten-Kombination
– LL und RL – E 30 alle Modelle

| Stiftleiste blau (I) | | | | | Stiftleiste weiß (II) | | | | |
|----------------------|--------------------------|--------------------------------|---------|---------|-----------------------|---------------|------------------------------|---------|---------|
| Steckplatz | Benennung | Signal | Ausgang | Eingang | Steckplatz | Benennung | Signal | Ausgang | Eingang |
| 1 | Kl. 50 | +12 V | | x | 1 | Handbremse | Masse | | x |
| 2 | Kl. 30 | +12 V | | x | 2 | frei | | | |
| 3 | Kl. 61 | +12 V | | | 3 | Kl. 31 | Masse | | |
| 4 | Zentr. Kontrolle | (Frequenz) | | x | 4 | Tank-Geber | $R(\Omega) = 3...72(\Omega)$ | | x |
| 5 | frei | | | | 5 | Tank-Warn | $R(\Omega) =$ | | x |
| 6 | Kl. 15 | +12 V | | | 6 | Kl. 15 | +12 V | | x |
| 7 | Kl. 1 | +12 V | | x | 7 | Blinker links | +12 V | | x |
| 8 | frei | | | | 8 | Kl. 31 | Masse | | |
| 9 | frei | | | | 9 | frei | | | |
| 10 | Kl. 15 | +12 V | | | 10 | frei | | | |
| 11 | Kl. 11 (Einspritzsignal) | +12 V (Frequenz) | | x | 11 | frei | | | |
| 12 | Kl. 56a (Fernlicht) | +12 V | | x | 12 | Kl. 31b | (Frequenz) | | x |
| 13 | Blinker rechts | +12 V | | x | 13 | Kl. R | +12 V | | x |
| 14 | Kl. 15 (Ladekontrolle) | +12 V | | x | 14 | Nebelschluß | +12 V | | x |
| 15 | frei | | | | 15 | frei | | | |
| 16 | Kl. 61 (Ladekontrolle) | +12 V | | x | 16 | Kl. 31 | Masse | | x |
| 17 | Bremse | Masse | | x | 17 | frei | | | |
| 18 | Öldruck | Masse | | x | 18 | frei | | | |
| 19 | Kl. 15 | +12 V | | | 19 | frei | | | |
| 20 | Kl. 31 | Masse | | x | 20 | frei | | | |
| 21 | Bremsbelag | Masse | | x | 21 | Kl. 31 | Masse | | |
| 22 | Reset SI (Diagnose) | +5 V | | x | 22 | Nebel vorn | +12 V | | x |
| 23 | Kl. 15 | +12 V | | x | 23 | Kl. 58k | +12 V | | x |
| 24 | frei | | | | 24 | Kl. 31g | geregelt | | x |
| 25 | Temp. Warn | Masse | | | 25 | 5V Ausgang | 5V | | x |
| 26 | Temp. Geber | $R(\Omega) = 18...287(\Omega)$ | | x | 26 | Bremsbelag | Masse | | x |

- a Diesel vorglühen
b Diesel Start
c frei
d Nebelscheinwerfer
e Nebelschlußleuchte
f Anhänger Blinker
g Handbremse
h Bremsbelagverschleißanzeige
i Bremskontrolle

- k Antiblockiersystem
l Ladekontrolle
m Öldruck
n Instrumentenbeleuchtung
o Tankwarnleuchte
p Zentrale Kontrollleuchte
r Blinker links
s Fernlicht
t Blinker rechts

| Stiftleiste gelb (III) | | | | | Stiftleiste (IV) DZM, EC, Uhr, E-Tacho | | Stiftleiste (V) Service-Intervall | |
|------------------------|--------------------------|------------------------------|---------|---------|---|--------------------|--------------------------------------|--------------------|
| Steckplatz | Benennung | Signal | Ausgang | Eingang | Steckplatz | Benennung | Steckplatz | Benennung |
| 1 | Kl. 31 | Masse | x | | 1 | Kl. 15 | 1 | Kl. 31 |
| 2 | Kl. 15 | +12 V | x | | 2 | Kl. 11 | 2 | Bremsbelagverschl. |
| 3 | frei | | | | 3 | Kl. 31 | 3 | Temp.-Anzeige |
| 4 | Tank-Warn | $R(\Omega) =$ | x | | 4 | Analogsig.-Tacho | 4 | Bremsbelag |
| 5 | Tank-Geber | $R(\Omega) = 3...72(\Omega)$ | x | | 5 | Kl. R | 5 | SI-Reset |
| 6 | Handbremse | Masse | | | 6 | 4/6 Zyl. | 6 | Temperaturgeber |
| 7 | Kl. 58k | +12 V | x | | 7 | DZM Impuls | 7 | Kl. 15 |
| 8 | Kl. 31g | geregelt | x | | 8 | Wegimpuls | 8 | |
| 9 | Kl. 50 | +12 V | x | | 9 | 5 V | 9 | |
| 10 | Kl. 30 | +12 V | x | | 10 | Kl. 30 | 10 | |
| 11 | Kl. 1 | +12 V | x | | 11 | Kl. 1 | 11 | |
| 12 | frei | | | | 12 | Kl. 61 | 12 | Kl. 50 |
| 13 | Kl. R | +12 V | x | | 13 | Kl. 31 | 13 | Kl. 30 |
| 14 | Kl. 15 | +12 V | x | | 14 | Kl. 31b | 14 | 5 V |
| 15 | Kl. 15 | +12 V | x | | 15 | Analogsignal Tacho | 15 | Wegimpuls |
| 16 | frei | | | | 16 | Kl. R | 16 | DZM Impuls |
| 17 | frei | | | | | | 17 | 4/6 Zyl. |
| 18 | frei | | | | | | 18 | frei |
| 19 | Handbremse | Masse | | | | | 19 | Bremsbelag |
| 20 | Kl. 58k | +12 V | x | | | | | |
| 21 | Kl. 31g | geregelt | x | | | | | |
| 22 | Kl. 50 | +12 V | x | | | | | |
| 23 | Kl. 30 | +12 V | x | | | | | |
| 24 | Kl. 1 | +12 V | x | | | | | |
| 25 | Kl. 11 | +12 V (Frequenz) | x | | | | | |
| 26 | Analogausgang Tachometer | Frequenz | x | | | | | |

DZM = Drehzahlmesser EC = Economy Control E-Tacho = electron. Tacho Kl. = Klemme SI = Service-Intervall

Cluster Schematic and Pin Assignment

Sheet: /BMW_E30_VFL_SI_Board_Instrument_Cluster/
File: BMW_E30_VFL_SI_Board_Instrument_Cluster.kicad_sch

Title: BMW E30 Pre-Facelift SI Board

Size: A3 Date: 2024-06-15
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Rev: 2
Id: 5/5