REVELTRONICS
REVELATORY ELECTRONICS

UTCOMP-3 & UTCOMP-PRO

User & assembly manual (short version – for workshop)

Last update: (v3.7.1) ***2019-04-29***

Please read this manual carefully before device using[1]

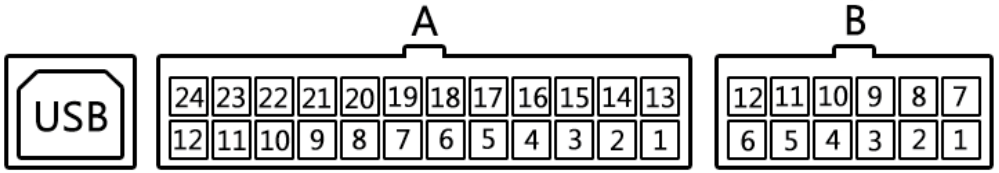
Contents:

[1] Full version of manual is available on REVELTRONICS' web page (www.reveltronics.com)

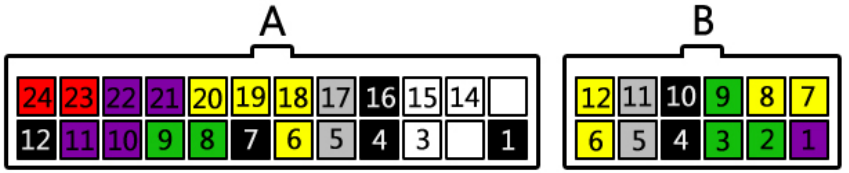
1. Documentation

1.1. Pinout

Connectors pinout (module side):



Plugs pinout (wire side):

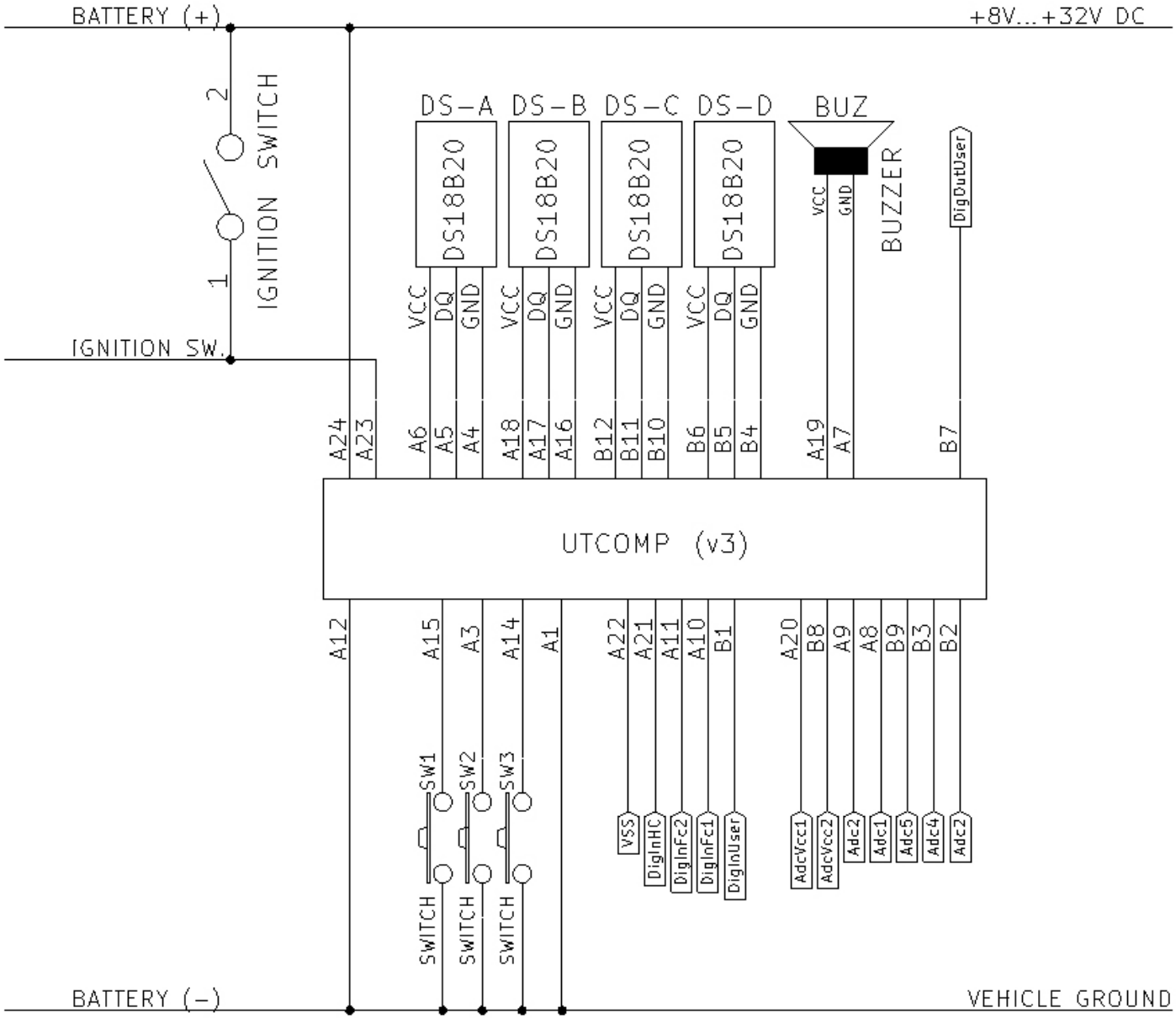


Connector "A" (UTCOMP and UTCOMP-PRO)				Connector "B" (UTCOMP-PRO)			
PIN	**LABEL**	**PIN**	**LABEL**	**PIN**	**LABEL**	**PIN**	**LABEL**
A1	SW_GND	A13	-	B1	DigInUser (RPM)	B7	DigOutUser (5V max 100mA)
A2	-	A14	SW_3	B2	Adc3 (0-5V)	B8	AdcVcc2 (0-5V, +5V PULL-UP)
A3	SW_2	A15	SW_1	B3	Adc4 (0-5V)	B9	Adc5 (0-30V)
A4	DS18B20-A_GND	A16	DS18B20-B_GND	B4	DS18B20-D_GND	B10	DS18B20-C_GND
A5	DS18B20-A_DQ (signal)	A17	DS18B20-B_DQ (signal)	B5	DS18B20-D_DQ (signal)	B11	DS18B20-C_DQ (signal)
A6	DS18B20-A_VCC (+5V OUT)	A18	DS18B20-B_VCC (+5V OUT)	B6	DS18B20-D_VCC (+5V OUT)	B12	DS18B20-C_VCC (+5V OUT)
A7	BUZZER_GND	A19	BUZZER_VCC (+5V OUT)				
A8	Adc1 (0-5V)	A20	AdcVcc1 (0-5V, +5V PULL-UP)				
A9	Adc2 (0-5V)	A21	DigInHC - HEADLIGHTS/COOLER				
A10	DigInFc1 - FUEL CONS. SIGNAL	A22	VEHICLE SPEED SIGNAL (VSS)				
A11	DigInFc2 - LPG/RPM	A23	+12/+24V IGNITION				
A12	GND (vehicle ground)	A24	+12/+24V BATTERY				

1.2. Pinout description

GROUP	DESCRIPTION
Battery A12 (-), A24 (+)	power supply for the device, safe range is +8V...+32V DC (0,6A fuse is built-in in UTCOMP module)
Ignition (A23)	positive voltage from ignition switch (0V - low state, 5V and more - high state) - wake up UTCOMP from sleep mode
SW...	output for the three-button keypad (monostable switches, powered +5V from UTCOMP, press button shorts to GND)
DS18B20...	output for digital temperature sensors (3 wires for each sensor) – keep out for power supply! – reverse connection VCC/GND can damage sensor
Buzzer...	pinout for buzzer (VCC = +5V OUT)
Adc...	input voltage signal from analog sensors, e.g. lambda o2 sensor, wideband o2 controller, pressure sensors, temperature sensor (NTC), TPS etc.
AdcVcc...	input for resistance sensors (pull-up to +5V from UTCOMP), e.g. temperature sensor (NTC), resistance pressure sensors etc.
DigInFc1 (A10)	input injector control signal (PWM 0V… +12V, or 0V….+5V) or fuel consumption signal (PWM/FREQ)
DigInFc2 (A11)	input signal from the LPG system (e.g. status LED indicator or electrovalve: 0V (OFF) – petrol +3…12V (ON) – lpg) or RPM signal from hall sensor
DigInHC (A21)	input signal from headlights or fan cooler relay: +12V (ON), 0V (OFF)
DigInUser (B1)	user input signal, e.g. RPM signal from hall sensor
DigOutUser (B7)	user output signal, e.g. relay 5V@100mA control
VSS (A22)	input signal from vehicle speed sensor - VSS (0V – low state, 5V and more – high state)

1.3. Wiring diagram



2. Assembly variants

2.1. Board computer functionality (basic)

Basic variant allows to get most important board computer functions, such as. speed, distance, fuel consumption etc. You will need about 2 hours for electrical connections:

1. POWER SUPPLY (pin A12, A23 and A24),
2. KEYBOARD (pin A1, A3, A14, A15)
3. VEHICLE SPEED SIGNAL (pin A22)
4. FUEL CONSUMPTION SIGNAL (pin A10)
5. LPG signal – if available (pin A11)

Full description for connections and required signals can be found in full version of manual[2]. If you are assembling UTCOMP at the first time, please read full version of manual!

2.2. Board computer functionality (extended)

Extended variant include additional assembling of temperature sensors (inside and outside the vehicle), buzzer and headlights signal (for headlights reminder). Operation is simple but may require additional 2 hours of time because of additional wiring connections and assembling outside temperature sensor.

Additional connections for extended variant:

6. INTERNAL TEMPERATURE SENSOR (pin A4, A5, A6 or A16, A17, A18)
7. OUTSIDE TEMPERATURE SENSOR (pin A16, A17, A18 or A4, A5, A6)
8. BUZZER (pin A7 and A19)
9. HEADLIGHTS SIGNAL (pin A21)

[2] Full version of manual is available at REVELTRONICS' site (www.reveltronics.com)

2.3. All in one gauge for sensors

There is possibility of connection more sensors: stock or additional, analog or digital: more temperature sensors (e.g. engine/coolant temperature, oil temperature etc.), oil pressure, turbo/boost pressure, fuel pressure, AFR/LAMBDA readings, EGT (exhaust gas temperature) etc.

All necessary information can be found on forum tutorials:

- Additional sensors tutorial: http://www.reveltronics.com/forum/viewtopic.php?f=28&t=127
- Analog sensors calibration: http://www.reveltronics.com/forum/viewtopic.php?f=28&t=58
- EGT tutorial: http://www.reveltronics.com/forum/viewtopic.php?f=28&t=71
- Oil temperature & oil pressure tutorial: http://www.reveltronics.com/forum/viewtopic.php?f=28&t=44
- Gear indicator: http://www.reveltronics.com/forum/viewtopic.php?f=28&t=87
- DS18B20 digital temperature sensors: http://www.reveltronics.com/forum/viewtopic.php?f=28&t=120
- Digital output (relay switch) control: http://www.reveltronics.com/forum/viewtopic.php?f=28&t=172
- Data-logger: https://forum.reveltronics.com/viewtopic.php?f=28&t=75
- EGT + BOOST + AFR + OIL PRESSURE & TEMP example: https://forum.reveltronics.com/viewtopic.php?f=28&t=265

2.4. Example functions and requirements – user

To activate following features of the UTCOMP some signals have to be connected. What kind of signal for each function is required shows the table below. You should connect only what are you interested with. You do not have to connect all signals.

Group	Example features	Requirements	No of wires
I	• date and time • battery voltage (voltmeter) + alerts • travel time • service & inspection with reminder (x2 for motohours + x2 for date) • customizable user screen(s) • splash screen (text or bitmap)	power supply	3
II	• temperatures (inside, outside, oil, engine, user-1, user-2) • alerts for temperatures (customizable, e.g. black ice alert, engine/oil temperature warnings etc.)	temperature sensor (analog NTC or digital DS18B20)	3 - for each digital sensor 1 - for each analog sensor
III	• vehicle speed (real-time velocity, average, maximum) • distance travelled • mileage • acceleration (and deceleration) measurement with user defined ranges • trip meter for off-road (normal/reverse/freeze modes) • service & inspections with reminder (x4 for milage) • speed limit alert	vehicle speed signal (VSS) (ref. to section 2.4.6)	1
IV	• current fuel consumption for PB/ON • average fuel consumption for PB/ON • travel cost • trip summary	fuel consumption signal (ref. to section 2.4.5) + req. from group III	1 (2)
V	• full support for vehicles with LPG system • independent measurements of distance & fuel consumption for PB	signal from LPG electrovalve or injector (ref. to section 2.4.9)	1

	and LPG (with auto-recognition of current fuel supply)	+ req. of groups III & IV	
VI	• fuel level in fuel tank(s) • estimated distance to refuel • low fuel level alert (configurable)	req. of groups III, IV, (V) (differential measurement) or fuel level signal (measurement from sensor)	0 (1)
VII	• headlights reminder (for the vehicle in traffic) • dimmer (2 modes of brightness e.g. day/night)	signal from headlights relay (ref. to section 2.4.7)	1
VIII	• fan cooler status (on/off)	signal from fan cooler relay (ref. to section 2.4.7)	1
IX	• RPM	from fuel consumption signal (some petrol engines) or signal from RPM hall sensor	0 (1)
X	• boost/turbo pressure + alerts + real-time chart • oil pressure + alerts + real-time chart • fuel pressure + real-time chart	pressure sensor (voltage or resistance type)	1 - for each sensor
XI	• lean/reach real-time chart from O2 sensor	signal from o2 lambda sensor	1
XII	• air fuel ratio (AFR or LAMBDA – 2 channels) + alerts + real-time chart	signal from wideband o2 controller	1
XIII	• exhaust temperature (EGT – 4 channels) + alerts + real-time chart	signal from EGT controller	1
XIV	• gear indicator	req. of groups III & IX (measurement from gear ratio) or signal from gear position sensor	0 (1)
XV	• data logger	function available only in UTCOMP-PRO	-
XVI	• digital output control (e.g. relay switch) depends on temperature or speed	function available only in UTCOMP-PRO	1