

# Acute TravelBus

## 邏輯分析儀 + 協定分析儀

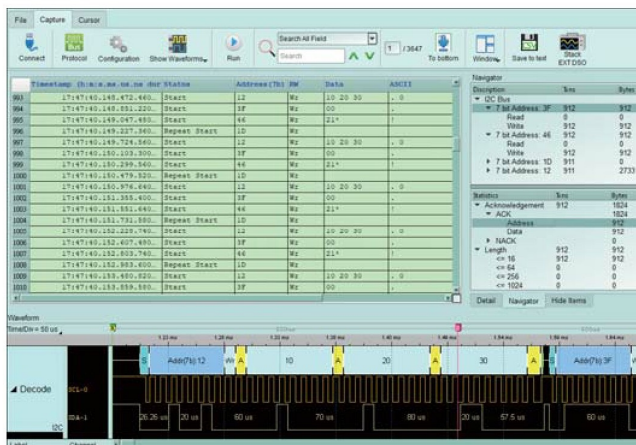
- PC-based, USB 3.0 介面 / 電源
- 800 MHz 時序分析/ 200 MHz 狀態分析
- 數位通道 : 16 (Data), 1 (CLK), 2 (I<sup>2</sup>C/DP\_AUX)
- 儲存空間 : PC RAM
- 匯流排解碼 : CAN FD, DALI2.0, DP\_Aux, I<sup>2</sup>C, I<sup>2</sup>S, LIN2.2, PMBus, PWM, SMBus, SPI, MIPI I3C 1.1, UART, USB PD 3, ... 70餘種, 見背面
- 協定模組 I : I<sup>2</sup>C, MIPI I3C 1.1, SPI, UART (RS232)
- 協定模組 II : HID over I<sup>2</sup>C, I<sup>2</sup>S, LIN2.2, MDIO, PMBus, SMBus, USB1.1
- 協定模組 III : BiSS-C, CAN2.0B, CAN-FD, DALI2.0, DP\_Aux, Modbus, Profibus, RS485, ...
  - 差動訊號通道 : 2 (CAN2.0B/CAN-FD), 4 (RS422/485)
  - 可堆疊示波器成為 MSO
  - 隔離埠 : CAN2.0B/CAN-FD, RS485 (不共地最高 1000Vrms)



96 x 74 x 24 mm<sup>3</sup>

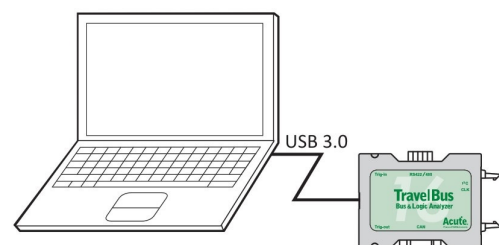
| 型號      | 通道數 | 協定模組       | 匯流排解碼 | 匯流排觸發      |
|---------|-----|------------|-------|------------|
| TB3016F | 19  | I          | 70+   | I          |
| TB3016E | 19  | I, II      | 70+   | I, II      |
| TB3016B | 25  | I, II, III | 70+   | I, II, III |

### 軟體畫面



### 系統需求

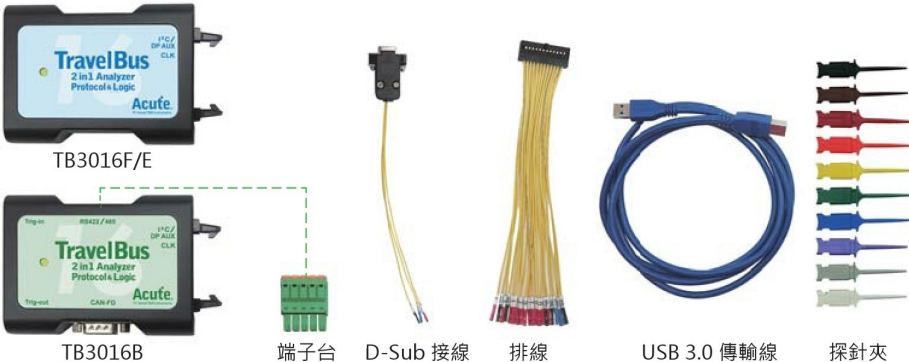
- USB 3.0 port
- Win 7, Win 8, Win 10, Win11 (64 bit)



| TravelBus 系列                                |           | TB3016F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | TB3016E                                                                                 | TB3016B            |
|---------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------|
| 電源                                          | 電源        | USB bus-power (+5V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                         |                    |
|                                             | 靜態消耗功率    | 0.75W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                         |                    |
|                                             | 瞬間最大消耗功率  | < 2.5W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                         |                    |
| 傳輸介面                                        |           | USB 3.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                         |                    |
| 時序分析 (異步, 採集頻率)                             |           | 800 MHz*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                         |                    |
| 狀態分析 (同步, 外部時脈)                             |           | 200 MHz*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                         |                    |
| 通道 (Data / CLK / I²C; DP_Aux / CAN / RS485) |           | 16 / 1 / 2 / - / -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                         | 16 / 1 / 2 / 2 / 4 |
| 時序<br>vs.<br>通道數                            | 時序分析      | 可用通道數                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                         |                    |
|                                             | 800 MHz   | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                         |                    |
|                                             | 400 MHz   | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                         |                    |
|                                             | 200 MHz   | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                         |                    |
| 觸發電壓                                        | 群組        | 2 (ch0~7, ch8~15 & clk0)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                         |                    |
|                                             | 範圍        | ±6V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                         |                    |
|                                             | 解析度       | 50mV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                         |                    |
|                                             | 參考電壓準確率   | ±100mV + 5%*Vth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                         |                    |
| 觸發                                          | 解析度       | 1.25 ns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                         |                    |
|                                             | 通道數       | 16 (Max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                         |                    |
|                                             | 前置/後置     | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                         |                    |
|                                             | 忽略次數      | Yes (0 ~ 65536 times)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                         |                    |
|                                             | 種類        | Channel, Pattern, Single, Width, Time-out, External                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                         |                    |
|                                             | I         | I²C, MIPI I3C 1.1, SPI, UART (RS232)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                         |                    |
|                                             | II        | ---                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | HID over I²C, I²S, LIN2.2, MDIO, PMBus, SMBus, USB1.1                                   |                    |
|                                             | III       | ---                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BiSS-C, CAN2.0B, CAN-FD, DALI2.0, DP_Aux, SENT Modbus, Profibus, RS422, RS485, USB PD 3 |                    |
|                                             | 輸入埠 (堆疊用) | ---                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | TTL 3.3V                                                                                |                    |
|                                             | 輸出埠       | ---                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | TTL 3.3V                                                                                |                    |
| 輸入電壓                                        | 最大        | ±40V DC, 15Vpp AC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                         |                    |
|                                             | 靈敏度       | 0.5Vpp @150MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                         |                    |
| 輸入阻抗                                        |           | 200KΩ // <5pF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                         |                    |
| 量測速度上限                                      |           | CAN Port: 10 Mbps, I²C Port: 400 KHz 3.3V, RS485 Port: Baud rate 20 Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                         |                    |
| 溫度                                          | 工作 / 保存溫度 | 5°C ~ 45°C (41°F ~ 113°F) / -10°C ~ 65°C (-14°F ~ 149°F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                         |                    |
| 協定分析                                        | I         | I²C, MIPI I3C 1.1, SPI, UART (RS232)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                         |                    |
|                                             | II        | ---                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | HID over I²C, I²S, LIN2.2, MDIO, PMBus, SMBus, USB1.1                                   |                    |
|                                             | III       | ---                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BiSS-C, CAN2.0B, CAN-FD, DALI2.0, DP_Aux, Modbus, Profibus, PWM, RS422, RS485, USB PD 3 |                    |
| 邏輯分析儀匯流排解碼                                  |           | 1-Wire, 3-Wire, 7-Segment, AccMeter, ADC, APML, BiSS-C, BSD, CAN2.0, CAN FD, Close Caption, CODEC_SSI, DALI2.0, Digital LED, DMX512, DP_Aux, EDID, FlexRay, HDLC, HDQ, HID over I²C, I²C, I²C EEPROM, I²S, ITU656, IrDA, ISELED, JTAG, JVC IR, LCD1602, LIN2.2, Line Decoding, Line Encoding, LPT, M-Bus, Math, MDIO, MHL Cbus, Microchip SWI, Microwire, Mini/Micro LED, MIPI CSI LP, MIPI DSI LP, MIPI I3C 1.1, MIPI SoundWire, Modbus, NEC IR, PDM, PECL, PMBus, Profibus, PS/2, PWM, QEI, QI, RC-5, RC-6, RT_SWI, SDQ, SENT, SGPIO, Smart Card (ISO7816), SMBus, SMI, SPI, SSI, ST7669, SWD, SWIM, SWP, UART, UNI/O, USB1.1, USB4/TBT3 SB Channel,USB PD 3, Wiegand |                                                                                         |                    |

\* 建議量測之訊號頻率不要超過 50MHz。

## 產品內容

| 項目                  | 數量      |                                                                                      |     |          |    |             |
|---------------------|---------|--------------------------------------------------------------------------------------|-----|----------|----|-------------|
| 1. TB3016 主機        | 1       |  |     |          |    |             |
| 2. 端子台 (F/E/B)      | 0/0/1   |                                                                                      |     |          |    |             |
| 3. D-Sub 接線 (F/E/B) | 0/0/1   |                                                                                      |     |          |    |             |
| 4. 排線 (24-pin)      | 1       |                                                                                      |     |          |    |             |
| 5. USB 3.0 傳輸線      | 1       |                                                                                      |     |          |    |             |
| 6. 探針夾 (F/E/B)      | 5/10/20 |                                                                                      |     |          |    |             |
|                     |         | TB3016F/E                                                                            | 端子台 | D-Sub 接線 | 排線 | USB 3.0 傳輸線 |
|                     |         | TB3016B                                                                              |     |          |    | 探針夾         |