TECHNICAL DATA SHEET

GIOTTO
GIOTTO K
CUSTOMIZABLE DISPLAYS



MTA®
Advanced Automotive Solutions

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PRODUCT VERSION

This technical data sheet is related to following version of GIOTTO and GIOTTO K:

1. GIOTTO display
   PN# 6100364/1X
2. GIOTTO K display
   PN# 6100393/1X

GENERAL DESCRIPTION

GIOTTO and GIOTTO K are displays designed for agricultural or off-highway vehicles, on wheels or tracks.

Power supply is 12Vdc (or optional 24Vdc as dedicated PNs#).

GIOTTO and GIOTTO K feature:

- 1 color 8" TFT LCD 800 x 480 pixel;
- touch screen (GIOTTO), keyboard (GIOTTO K);
- 8 digital/analog inputs hardware configurable (standard configuration is shown in table below);
- 2 frequency inputs;
- voltage output (Vref) for sensors supply (400mA);
- Real time clock (buffered by capacitors);
- loudspeaker mono;
- ambient light sensor;
- dual color status LED;
- 2 video inputs (auto PAL/NTSC) on 2 dedicated Mini-BNC connectors;
- 1 LIN bus;
- 1 RS232;
- 2 CAN bus;
- 2 BroadR-Reach Ethernet;
- 2 USB:
  1 USB user accessible on the lateral side of the display (type 'A' jack/socket);
  1 USB available on the main Tyco Superseal connector.

GIOTTO and GIOTTO K can be used as displays with the following features:

- hour meter, odometer, gear, speed, Engine RPM, trip data, etc.;
- PTO symbols, PTO RPM, clock, temperature, voltmeter;
- errors (FMI - SPN), service, etc.;
- analog signal interface and monitor;
- digital signal from external sensors.

Optional contents:

- bluetooth and WiFi combo module.

Memory:

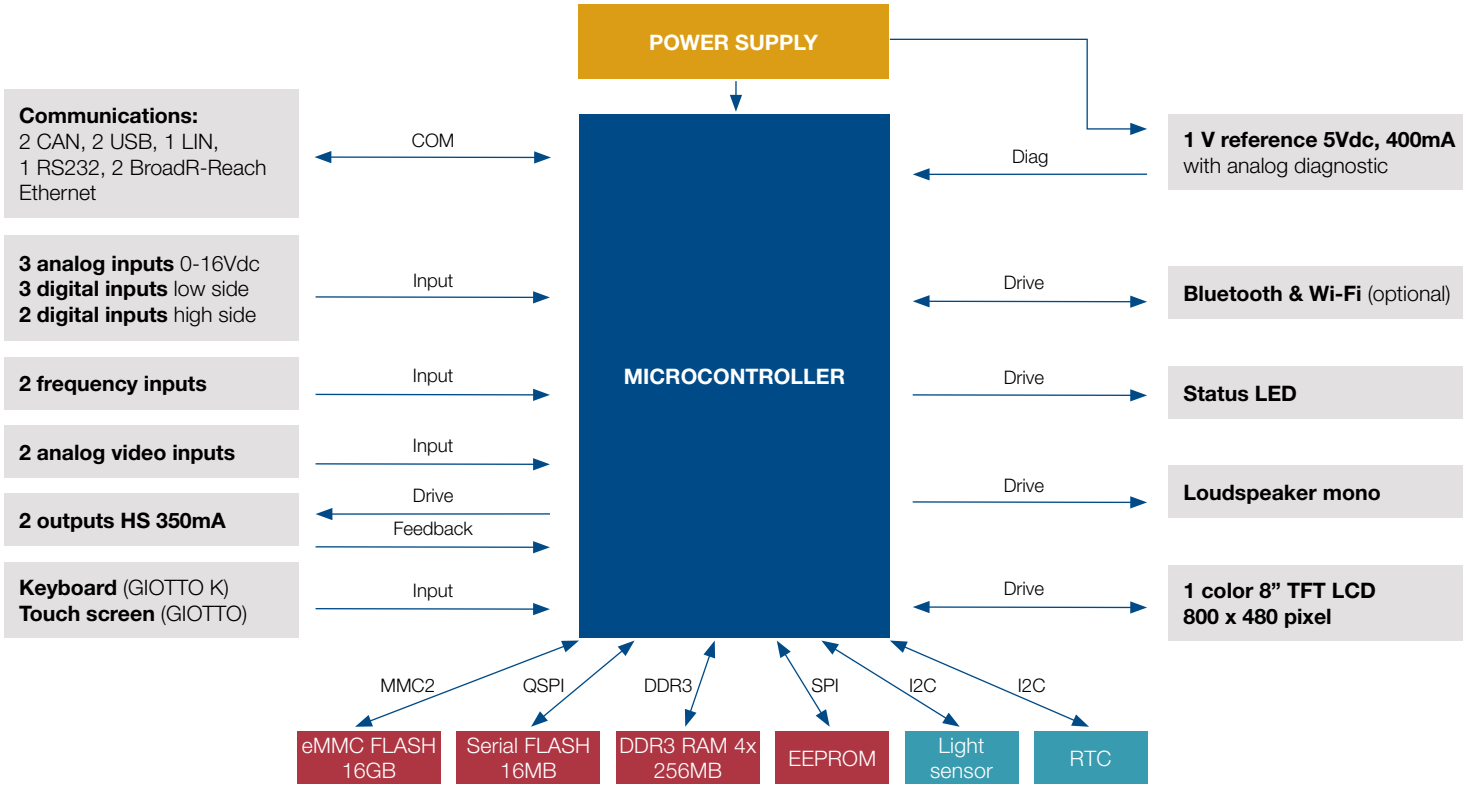
- DDR3 RAM 1GB (optional 2GB);
- Flash EMMC 16GB;
- SERIAL FLASH 16MB;
- EEPROM 32kB.

MTA STUDIO | Android Studio

GIOTTO and GIOTTO K are configurable with MTA Studio and Android Studio.

It is provided with load dump protection for 12Vdc systems.

BLOCK DIAGRAM



SPECIFICATIONS

		Qty
Operating voltage		
Nominal	12Vdc	
Supply voltage, permissible range	9÷16Vdc	
Current consumption		
Without load, 12Vdc system (inputs/outputs floating, Vref floating)	< 1.5A at key on (12Vdc) < 2mA at key off (12Vdc)	
With load, 12Vdc system (inputs/outputs active, Vref active)	< 2.5A at key on (12Vdc)	
Constant voltage source (Vref)		**1**
Max current 400mA	5Vdc ± 5%	
Multifunctional inputs hardware configurable		**8**
Analog 0-16Vdc	12bit	3 (up to 8 optional)
Digital low side with pull-up	1.6kΩ	3 (up to 8 optional)
Digital high side with pull-down	1.4kΩ	2 (up to 8 optional)
Frequency inputs		**2**
Multifunction inputs (see “Digital and analog inputs” paragraph)	up to 5kHz	up to 2

		Qty
High side outputs		**2**
Digital output with current sense (PWM possible)	max 350mA	
Interfaces		
CAN bus 2.0B high speed (up to 1Mb/s)	ISO 11898 Wake-up function	2
LIN	LIN 2.2 Wake-up function	1
RS232	Up to 115kbps	1
Ethernet AVB	BroadR-Reach Wake-up function	2
USB	2.0	2
WiFi	802.11 a/ac/b/g/n hardware supported	Not mounted (optional)
Bluetooth	v4.2 and BLE, v2.1+EDR hardware supported	Not mounted (optional)
CAN bus termination resistor		**1**
Termination resistor	CAN 1: activated/ deactivated by software after power on (default deactivated) CAN 2: not mounted as standard, optional available on a dedicated hardware PN#	

		Qty
Analog video inputs		**2**
Auto PAL/NTSC on 2 dedicated Mini-BNC connectors		
Fault detection in the event of cable break and short circuit		
Inputs	×	
Outputs	✓	
Reverse polarity protection		
Power supply	✓	
Inputs	✓	
Outputs	✓	
Status LED		**1**
High efficiency dual colors LED	Red, green colors with behavior software configurable	
Display		**1**
TFT diagonal 8”, form factor 16:9	800 x 480 pixel, 262k colors	
Backlight	With dimming function	
Protective glass features		
Optically bonded	✓	
Anti glare finish	✓	
Anti reflection finish	✓	
Anti fingerprint finish	✓	

		Qty
Touch screen and keyboard		
Touch screen	✓ (only GIOTTO) Capacitive touch screen with multi-touch capability (up to 10 points)	
Keyboard	✓ (only GIOTTO K) White backlight	
Wake-up		
Key and ON/OFF/RESET button, both CAN lines, LIN, both Ethernet, from 2 digital inputs		
Microcontroller		
Dual A15, Dual M4, DSP, 2D Graphics Accelerator and 3D GPU	JACINTO 6 (DRA744x)	
Operating junction temperature range	-40 to +125°C	
Clock frequency		
MHz	1MHz	
Internal memory capacity in microcontroller		
ROM	256kB	
RAM with ECC	512kB	

	Qty
Memories	
DDR3 RAM	1GB
Flash EMMC	16GB
SERIAL FLASH (QSPI bus)	16MB
EEPROM (SPI bus)	32kB
Real time clock	
Buffered by capacitors	Typical retention time 10’
Ambient light sensor	
Ambient light sensor for manual night and day view managing. No algorithm implemented	✓
Loud speaker mono	
Internal	Sound intensity of 85 ±3dbA (tone at 1kHz or 2kHz waveform type sine, at 10cm distance from speaker mounted inside the display)
PCB Temperature sensor	
Internal	✓
Battery Voltage measurement	
Internal	✓

	Qty
Backlight	
LCD	With dimming function
Keyboard (only GIOTTO K)	White with dimming function
Materials and other mechanical characteristics	
Front frame: Plastic PC+ABS/ TPS Black RAL 9005	
External cover glass: mineral glass	
Back side: metal aluminium Black RAL 9005	
Gore valve for chassis to environment air exchange	
Operating temperature	
External ambient temperature	-30 to +70°C
Storage temperature	
External ambient temperature	-40 to +85°C
Protection rate	
Front IP66	
Weight	
1250gr	

CHARACTERISTICS

COMMUNICATION INTERFACES

- 2 ETHERNET OPEN Alliance BroadR-Reach compliant. The device provides 100Mbit/s transmit and receive capability over a single Unshielded Twisted Pair (UTP) cable. Wake-up capability.
- 2 USB 2.0 full-speed compatible. USB Battery Charger Detection (USB BCS 1.2 Specification).
- Integrated WiFi 802.11 a/ac/b/g/n hardware supported, Bluetooth v4.2 and BLE, v2.1+EDR hardware supported. Not mounted (optional).

DIGITAL AND ANALOG INPUTS

Characteristics

- Digital high side input with pull-down of 1.4kOhm from 0Vdc to 16Vdc (pins 28, 4):
  logic level 0 when voltage input ≤ 1Vdc;
  logic level 1 when voltage input ≥ 5Vdc;
- Digital low side input with pull-up of 1.6kOhm from 16Vdc to 0Vdc (pins 21, 20, 13):
  logic level 1 when voltage input ≤ 1Vdc;
  logic level 0 when voltage input ≥ 5Vdc;
- Analog input (pins 29, 12, 3) with range:
  0-16Vdc (accuracy: ±5% of full scale value);

Wake-up functionality

2 digital Inputs (one high side and one low side) can provide wake up capability (pin 28 on rising edge, pin 20 on falling edge). For right edge detection, transitions have to be considered only between valid voltage level for digital signal as shown in previous table. Wetting current activation.

FREQUENCY INPUTS (PINS 14, 5)

Maximum frequency 5kHz, Duty Cycle Typ. 50%.

They can be used for:

- frequency input square wave:
  from 1Hz to 5kHz;
  VLmin: 0Vdc, VLmax: 1Vdc, VHmin: 2Vdc, VHmax: 16Vdc;
  accuracy: ±10% of read value;
- frequency input open collector:
  from 1Hz to 5kHz;
  VLmin: 0Vdc, VLmax: 1Vdc, VHmin: 2Vdc, VHmax: 16Vdc;
  accuracy: ±10% of read value.

To read this type of signal an internal pull-up resistor is provided.

OUTPUTS (PINS 17, 16)

2 high side outputs, max 350mA (PWM possible).

Protection

Driver protection in case of overload, short circuit and overvoltage. Current monitoring integrated inside output driver.

Output load characteristics

- Min 35 Ohm @ 12Vdc (46 Ohm @ 16Vdc); with current load < 50mA accuracy in current sense is > 10%.
- Lmax: 100mH.
- For inductive loads with characteristics out of these requirements a dedicated evaluation has to be done.

AUXILIARY SUPPLIES

One auxiliary supply for external sensors is provided at 5Vdc (accuracy: ±5% FS), with 400mA maximum current, in a range of 9÷16Vdc (pin 6).

NOTE: diagnostic measurement of output voltage is done by microcontroller.

KEYBOARD AND PUSH BUTTON

Only GIOTTO K includes the keyboard. Both GIOTTO and GIOTTO K are equipped with ON/OFF/RESET button.

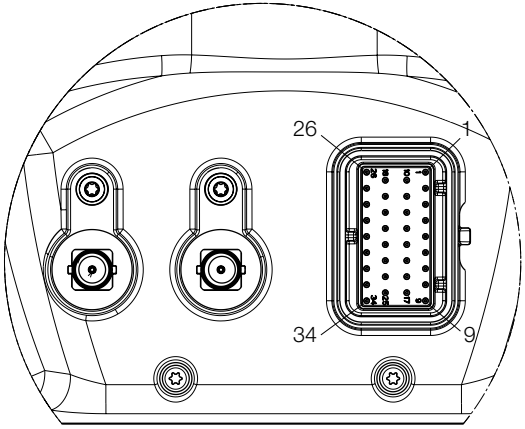
CONNECTORS

Main connector

Tyco 34 pins, 3 keys, PN# Tyco 4-1437290-0.

Video inputs 1 and 2

Molex MINI BNC connector PN# 73171-264.



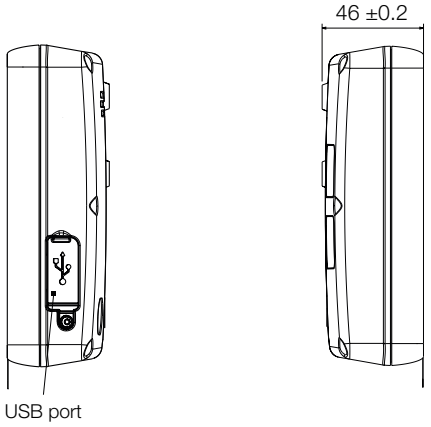
PINOUTS

PIN	NAME	TYPE
1	ETH2-BR-	BroadR-Reach Ethernet2 minus
2	ETH2-BR+	BroadR-Reach Ethernet2 plus
3	IN_4	Analog input 0-16Vdc *
4	IN_8	Digital input high side *
5	IN_9	Frequency input *
6	VSS	+5Vdc AUX power supply
7	GND (Terminal 31)	Battery ground
8	VB (Terminal 30)	Battery power supply
9	VCTRL (Terminal 15)	Ignition input
10	CAN2_H	CAN2 bus high
11	CAN2_L	CAN2 bus low
12	IN_3	Analog input 0-16Vdc *
13	IN_7	Digital input low side *
14	IN_10	Frequency input *
15	GND	Sensor supply ground
16	OUT_1	High side output 350mA
17	OUT_2	High side output 350mA
18	CAN1_H	CAN1 bus plus
19	CAN1_L	CAN1 bus low
20	IN_2	Digital input low side with wake up function on falling edge *
21	IN_6	Digital input low side *
22	LIN	LIN bus

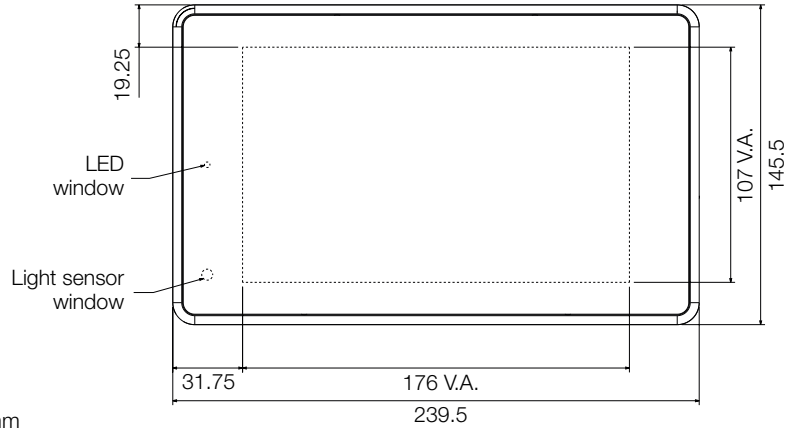
23	UART_GND	RS232 Ground
24	UART_RX	RS232 In
25	UART_TX	RS232 Out
26	ETH1-BR+	BroadR-Reach Ethernet1 Plus
27	ETH1-BR-	BroadR-Reach Ethernet1 Minus
28	IN_1	Digital input high side with wake up function on rising edge *
29	IN_5	Analog input 0-16Vdc *
30	-reserved-	-reserved-
31	USB2_GND	USB2 Ground
32	USB2_D+	USB2 Plus
33	USB2_D-	USB2 Minus
34	USB2_VCC	USB2 Power

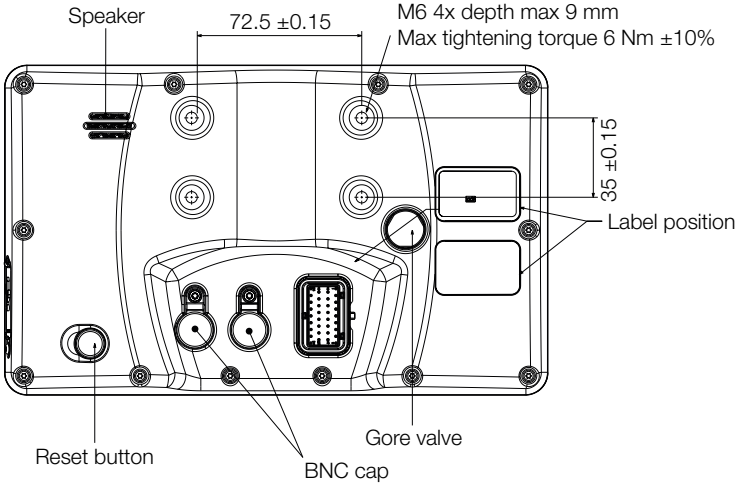
NOTE: the pin assignment is shown in standard hardware configuration.
Pins marked with * could have a different hardware population with specific device PN# (see table I/O characteristics).

DIMENSIONS


USB port

46 ±0.2


19.25
LED window
Light sensor window
107 V.A.
145.5
31.75
176 V.A.
239.5


Speaker
72.5 ±0.15
M6 4x depth max 9 mm
Max tightening torque 6 Nm ±10%
35 ±0.15
Label position
Reset button
BNC cap
Gore valve

FIXINGS

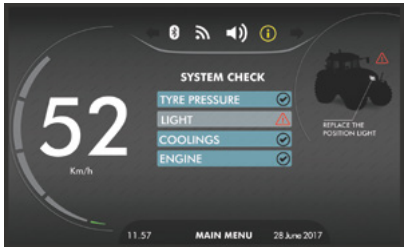
Fixing is made by 4 screw fixing points.



LCD

Features

- Diagonal: 8”
- Form factor: 16:9
- Active area: 176 x 107mm
- Resolution: 800 x 480pixel, 262k colors
- Contrast ratio: min 600:1
- Normally white
- Brightness: min 850 cd/*m*^2
- Viewing angles: 80/80/80/80
- Transmissive color TFT



LAYOUT


Capacitative touchscreen
Dual color status LED
Light sensor
Dual color status LED
Keyboard with
6 illuminated keys
SYSTEM CHECK
52
Km/h
TYRE PRESSURE
LIGHT
COOLINGS
ENGINE
11.57
MAIN MENU
28 June 2017
40
Km/h
TURN RIGHT
300 M
Gresham St.
Wood St.
11.57
NAVIGATION MAPS

MATING CONNECTORS

Mating connector used for wiring harness is a Tyco 34 pins.

The following parts are required for assembling a wiring harness connector:

- 34 pins, 3 keys, connector PN#: C-2-1437285-3-05

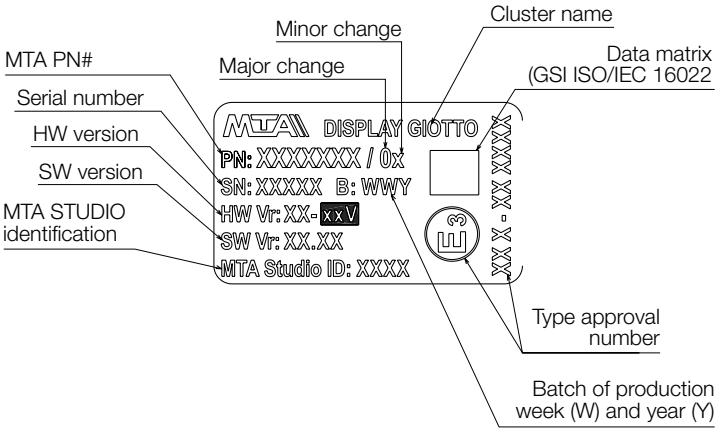
PRODUCT QUALIFICATION

GIOTTO and GIOTTO K are qualified following the MTA ESA Test Specification (Rev. 4) which includes:

- Environmental test
- Mechanical test
- Chemical test
- Electrical test
- EMC test
- CE Type Approval

Please contact MTA for any detail.

LABEL DETAILS





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GIOTTO
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