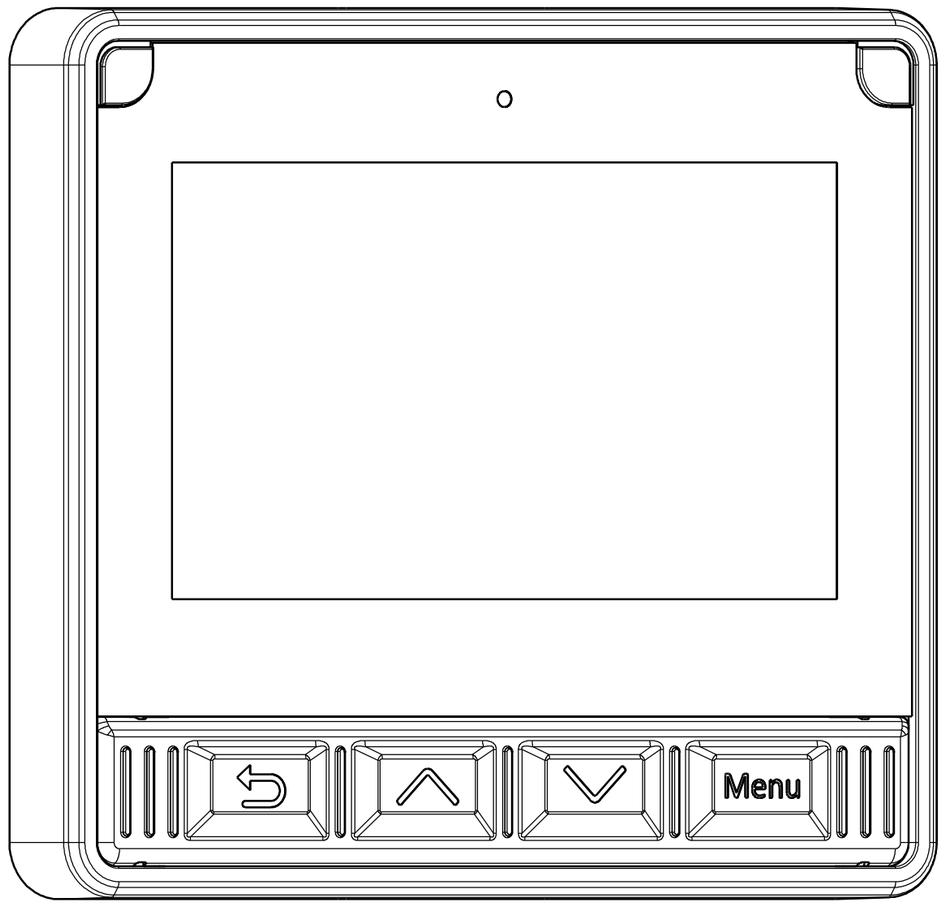


Customer	: EHR ELEKTRONİK
Customer Part No	:

Makersan Order No	: MO661_V0008
Makersan Config IID	: MO 661 - H1A - SV002 - P042 - E000
Part Name	: 4.3" Display
Project	:
HXX Hardware	: H1A
SXX Software	: SV002
PXXX Image Library	: P042

Special Requirements :

DİKKAT
CAUTION

- Şok ve darbeye maruz kalan veya yere düşen display hurdaya ayrılmalıdır. Kullanılmamalıdır.
  Display must be separeted to scrap if it has been exposed to any shock, impact or free fall.

- Display datasheet' indeki güvenlik talimatlarına uyulmalıdır.
  Display datasheet safety instruction shall be respected.

- Diplay datasheet' indeki hata modları, araç üreticisi tarafından dikkate alınmalıdır.
  Failure modes in the display datasheet shall be taken into account by the vehicle manufacturer.

Bu dökümanın tüm hakları MAKERSAN Mak.Otom.San.Tic.Ltd.Şti.' ye aittir. İzinsiz kısmen veya tamamen kullanılamaz, çoğaltılamaz veya üçüncü şahıslara verilemez. Değişiklik yapma hakkını saklı tutar. MAKERSAN Mak.Otom.San.Tic.Ltd.Şti. owns all the rights of this document. It is forbidden to use or copy this document partly or completely, and/ or to give third persons without any permission. MAKERSAN has the right of change the document without any prio information

REVIZYON REVISION	J	TARIH DATE	25-Jun-25 02:37:12 PM	KONTROL CHECKED BY	Levent ERKOCAK	ACIKLAMA DESCRIPTION	

Belirtilmeyen toleranslar / Unspecified tolerances according to TS1980-1			v	MALZEME/MATERIAL --	YUZEY/AREA_mm2 189288,884 / AGIRLIK/MASS_kg 0,248
CIZEN DRAWN BY	L.ERKOCAK	TARIH/DATE	10/07/25		
OLCEK/SCALE 1,000	A3			YUZEY ISLEM/FINISH --	ISIL ISLEM/HEAT TREATMENT -
PARCA/PART NO 661_HXX_SXXXX_EXXX				PARCA ADI/PART NAME 4.3" HMI Komplesi	MAKERSAN www.makersan.com

DATASHEET
MO 661.H1X.SXXXX.PXXX.EXXX

MAKERSAN

Display



Product Characteristics

Application	User Configurable or Custom
Main Processor	ARM Cortex M4, 32 bit
Graphic Processor	External
Boot Time	< 2 seconds

Display

Type	TFT with LED backlight
Size	4.3"
Bonding Type	Air Bonding or Optical Bonding
Resolution	480x272
Color Depth	24 bit RGB
Display Color	16.7M
Brightness and Contrast	1000 cd/m² 1000:1
Backlight Dimming	Automatic dimming through an ambient light sensor or manual
Viewing Angle	All O'clock

HMI

Touch Screen	None
Real Time Clock	Buffered with a supercap
Buzzer	Piezo alarm approx.85 dB and configurable
Soft Keys	4 Soft keys to navigate
Indicators	4 LEDs with membrane
Storage Memory	8 MByte Flash

Communication

CAN	ISO 11898, CAN specification 2.0A - 2.0B
Protocol	SAE J1939
Baud Rate	250 kbit/s default (500 kbit/s on request)
Termination Resistor	External

Electrical Data

Supply Voltage	8...32 VDC
Supply Current	85mA - 24VDC
Digital Inputs	
Active Low	Up to 14 - activation voltage <1V
Active High	Up to 14 - activation voltage >5V
Digital Outputs	
Low Side	Up to 2 - max. 500mA, the max. switching voltage 36V
High Side	Up to 2 - total max. 1A, the max. switching voltage 36V, only one current sense capability
Universal Inputs	
Voltage	Up to 12 - 0...32V
Current	Up to 4 - 0...20mA measuring range, 120R current sense resistor
Resistor	Up to 6 - 0...50kOhm
Frequency	Up to 4 - 0...10kHz
Overvoltage Protection	Up to 36 VDC
Reverse Battery Protection	Provided

- For applications outside this parameters, please consult us.

DATASHEET
MO 661.H1X.SXXXX.PXXX.EXXX

MAKERSAN
Display

Enclosure

Mating Connector	18 pin Tyco Seal Connector (TE-2203663-5)
Mechanical Installation	Panel mounting

Size and Weight

W x H x D (mm)	126 x 111 x 44.4
Weight (kg)	0.3

Environment

Temperature Range (°C)	
Operating	-30 ... +65°C
Storage	-30 ... +65°C
IP Class	IP67

All the tests specified above were performed in Makersan’s in-house testing facility for the purpose of design verification except EMC.
The in-house testing facility does not hold an accreditation.

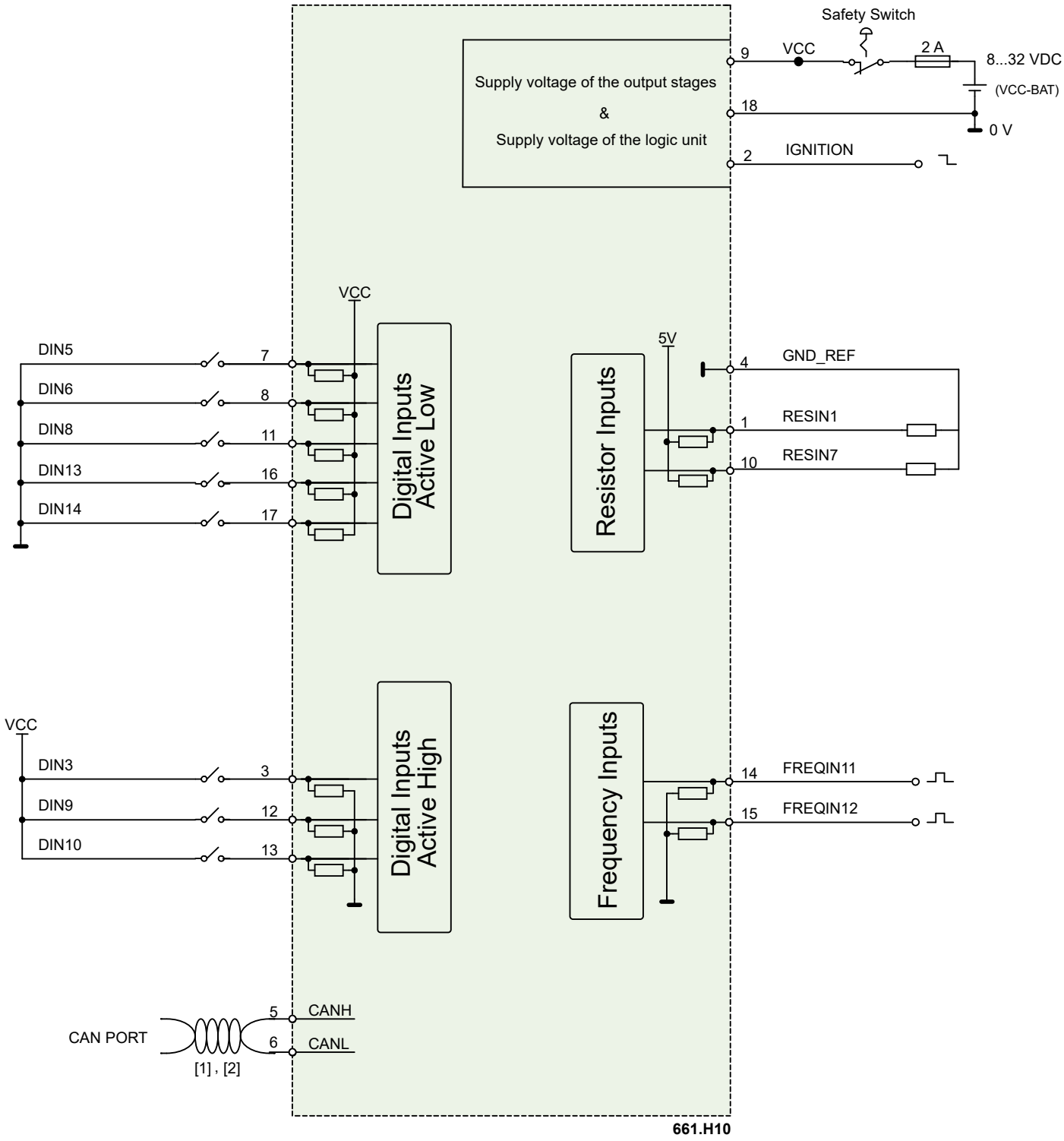
DATASHEET
MO 661.H1X.SXXXX.PXXX.EXXX

MAKERSAN
Display

Feature List

Features	661.H10.SXXXX.PXXX.E000	661.H11.SXXXX.PXXX.E200	661.H12.SXXXX.PXXX.E000	661.H13.SXXXX.PXXX.E000	661.H14.SXXXX.PXXX.E000	661.H15.SXXXX.PXXX.E000	661.H1A.SXXXX.PXXX.E000	661.H1B.SXXXX.PXXX.E200
CAN	1	1	1	1	2	3	1	1
RTC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Buzzer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5V_REF	-	-	-	-	-	-	-	-
Digital Input - Active Low	5	5	2	5	1	-	-	-
Digital Input - Active High	3	2	-	3	9	4	-	-
Universal Input - Voltage	-	1	-	1			-	-
Universal Input - Current	-	-	-	-	-	2	-	-
Universal Input - Frequency	2	-	-	-	-	-	-	-
Universal Input - Resistor	2	1	1	2	1	2	-	-
Digital Output - Low Side	-	-	-	-	-	2	-	-
Digital Output - High Side	-	1	-	1	2	2	-	-
Analog Output	-	-	-	-	-	-	-	-
Soft Keys	4	-	4	4	4	4	4	-
Indicators	-	4	-	-	-	-	-	4

Electrical Connection (MO 661.H10.SXXXX.PXXX.E000)



[1] No internal termination resistor for CAN BUS.

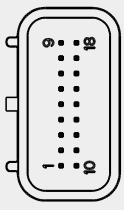
[2] CAN wiring should be kept away from the high current cables and cross them at right angles when necessary.

Electrical Connection (MO 661.H10.SXXXX.PXXX.E000)

Pin	Description	Alternative Functions 1	Alternative Functions 2
3,12,13	**Digital Inputs - Active High** 7.5 kΩ pulldown resistor DIN3, DIN9, DIN10	No	No
7,8,11,16,17	**Digital Inputs - Active Low** 5.1 kOhm internal pull-up resistor to 5 V DIN5, DIN6, DIN8, DIN13, DIN14	No	No
1,10	**Universal Inputs - Resistor** 0-30 kΩ input range 3 kΩ pullup resistor (to internal 5 V) 265 Hz cutoff frequency 1 ms measurement update rate RES1, RES7	**Temperature Sensor Input** Passive temperature sensor	**Digital Inputs** Active-Low 1.6 mA max. switch current
14,15	**Universal Inputs - Frequency** 0...10 kHz input range 3 kΩ pulldown resistor 6.26 MHz cutoff frequency FREQIN11 & FREQIN12	**Digital Inputs** Active-High 1 mA max. switch current	No
2	**Ignition Input / Terminal 2** 58 kΩ input resistance to GND	No	No
4	**GND-REF** Seperate from GND-BAT	No	No
9	**VCC-BAT** Supply voltage of outputs Must be connected through fuse	No	No
18	**GND-BAT**	No	No
5,6	**CAN** CAN 2.0A and CAN 2.0B (Termination resistor not present.)	No	No

Electrical Connection (MO 661.H10.SXXXX.PXXX.E000)

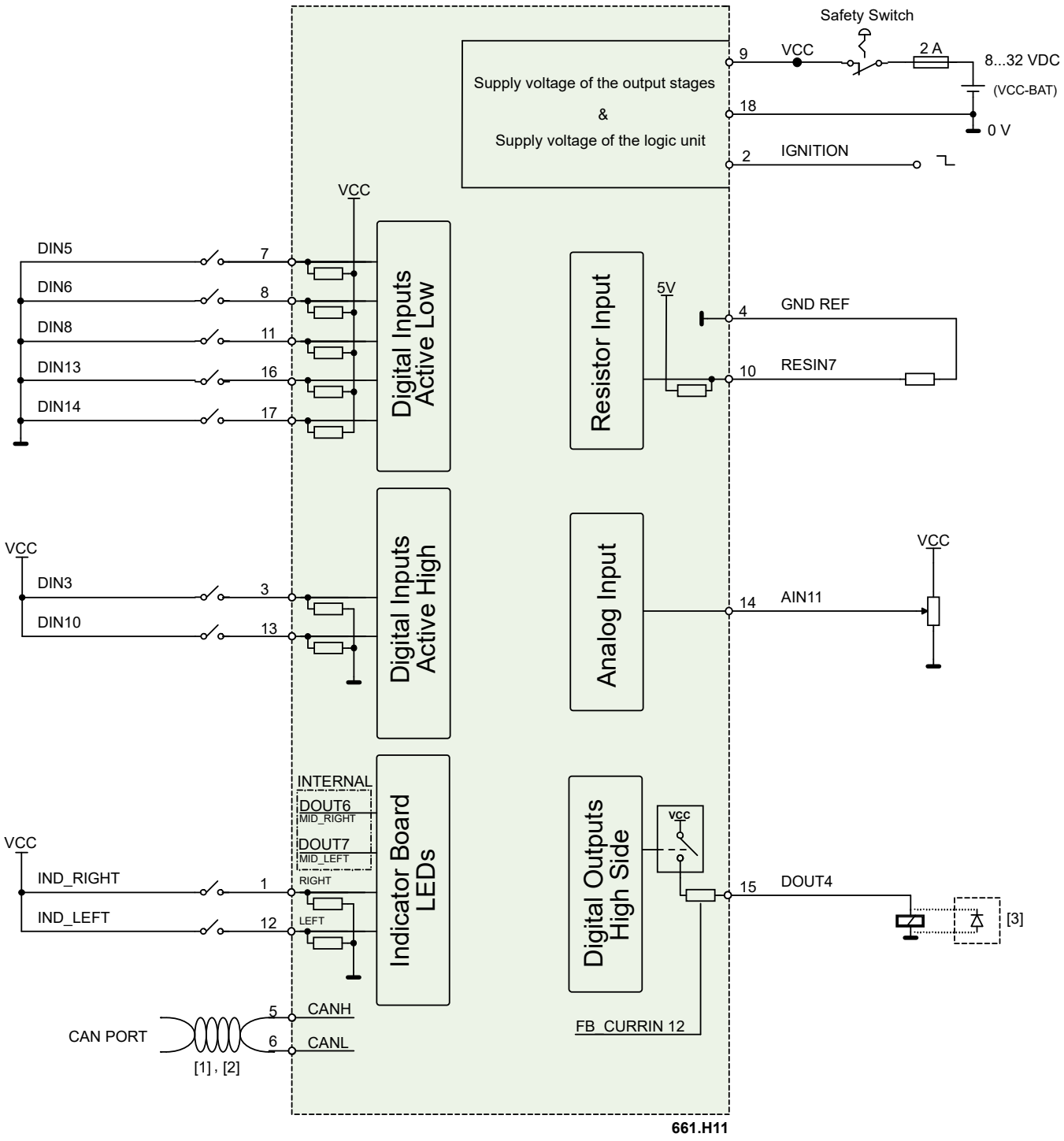
TYCO CONNECTOR



Mating Connector :
TE 2203663-5

Pin	Assignment	Pin	Assignment
1	RESIN1	10	RESIN7
2	K15	11	DIN8
3	DIN3	12	DIN9
4	GND_REF	13	DIN10
5	CAN1H	14	FREQ11
6	CAN1L	15	FREQ12
7	DIN5	16	DIN13
8	DIN6	17	DIN14
9	VCC_BAT	18	GND_BAT

Electrical Connection (MO 661.H11.SXXXX.PXXX.E200)



[1] No internal termination resistor for CAN BUS.

[2] CAN wiring should be kept away from the high current cables and cross them at right angles when necessary.

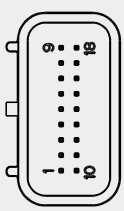
[3] For inductive load, an external free-wheeling diode must be connected if clamp energy exceeds 140 mJ. Solenoid return line should be connected to the battery ground. (e.g:chassis)

Electrical Connection (MO 661.H11.SXXXX.PXXX.E200)

Pin	Description	Alternative Functions 1	Alternative Functions 2
3,13	**Digital Inputs - Active High** 7.5 kΩ pulldown resistor DIN3, DIN10	No	No
7,8,11,16,17	**Digital Inputs - Active Low** 5.1 kOhm internal pull-up resistor to 5 V DIN5, DIN6, DIN8, DIN13, DIN14	No	No
14	**Universal Inputs - Voltage** 0-32 V (max. 36 V) 8.8 mV resolution 175 Hz cutoff frequency 1 ms measurement update rate AIN11	**Digital Input** Software programmable threshold	No
10	**Universal Inputs - Resistor** 0-30 kΩ input range 3 kΩ pullup resistor (to internal 5 V) 265 Hz cutoff frequency 1 ms measurement update rate RES7	**Temperature Sensor Input** Passive temperature sensor	**Digital Inputs** Active-Low 1.6 mA max. switch current
15	**Digital Outputs - High Side** Output current max. 2.5 A Inductive or Resistive Load For inductive load, an external free-wheeling diode must be connected externally if clamp energy exceeds 80 mJ. 27 kΩ internal pullup resistor to VCCBAT for open load detection Current feedback Short circuit protection (shutdown current limit min. 6 A) DOUT4	**Analog Inputs** Current Sense 16.6 mV resolution 8 ms measurement update rate 328 Hz cutoff frequency	**Digital Inputs** Active-High Software programmable threshold
1,12	**Indicators - Active High** 7.5 kΩ pulldown resistor DIN3, DIN10	**Digital Inputs** Active-High 1.6 mA max. switch current	No
2	**Ignition Input / Terminal 2** 58 kΩ input resistance to GND	No	No
4	**GND-REF** Seperate from GND-BAT	No	No
9	**VCC-BAT** Supply voltage of outputs Must be connected through fuse	No	No
18	**GND-BAT**	No	No
5,6	**CAN** CAN 2.0A and CAN 2.0B (Termination resistor not present.)	No	No

Electrical Connection (MO 661.H11.SXXXX.PXXX.E200)

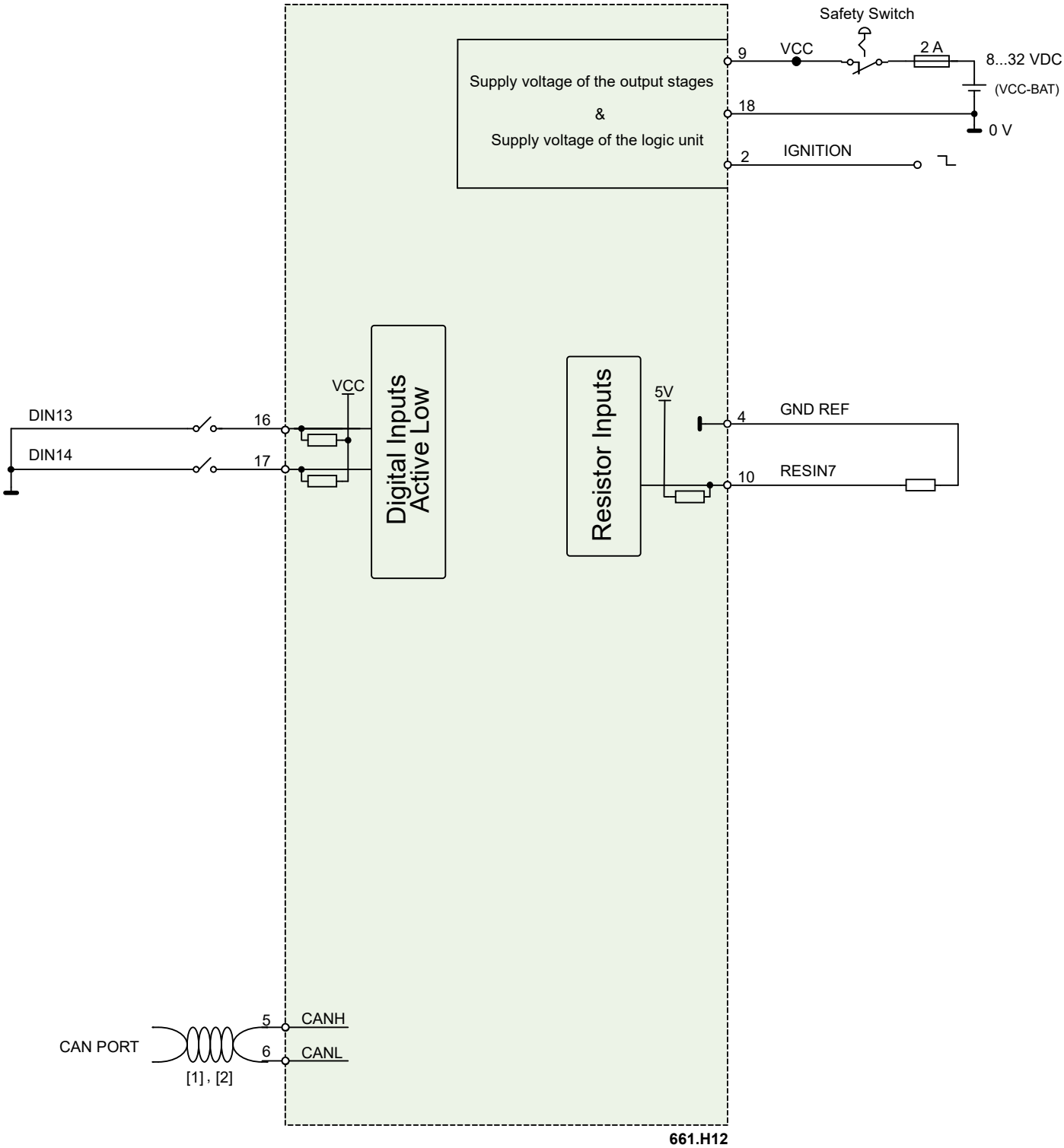
TYCO CONNECTOR



Mating Connector :
TE 2203663-5

Pin	Assignment	Pin	Assignment
1	IND_RIGHT	10	RESIN7
2	K15	11	DIN8
3	DIN3	12	IND_LEFT
4	GND_REF	13	DIN10
5	CAN1H	14	AIN11
6	CAN1L	15	DOUT4
7	DIN5	16	DIN13
8	DIN6	17	DIN14
9	VCC_BAT	18	GND_BAT

Electrical Connection (MO 661.H12.SXXXX.PXXX.E000)



[1] No internal termination resistor for CAN BUS.

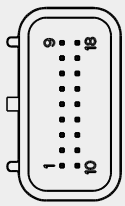
[2] CAN wiring should be kept away from the high current cables and cross them at right angles when necessary.

Electrical Connection (MO 661.H12.SXXXX.PXXX.E000)

Pin	Description	Alternative Functions 1	Alternative Functions 2
16,17	**Digital Inputs - Active Low** 5.1 kOhm internal pull-up resistor to 5 V DIN13, DIN14	No	No
10	**Universal Inputs - Resistor** 0-30 kΩ input range 3 kΩ pullup resistor (to internal 5 V) 265 Hz cutoff frequency 1 ms measurement update rate RES7	**Temperature Sensor Input** Passive temperature sensor	**Digital Inputs** Active-Low 1.6 mA max. switch current
2	**Ignition Input / Terminal 2** 58 kΩ input resistance to GND	No	No
4	**GND-REF** Seperate from GND-BAT	No	No
9	**VCC-BAT** Supply voltage of outputs Must be connected through fuse	No	No
18	**GND-BAT**	No	No
5,6	**CAN** CAN 2.0A and CAN 2.0B (Termination resistor not present.)	No	No

Electrical Connection (MO 661.H12.SXXXX.PXXX.E000)

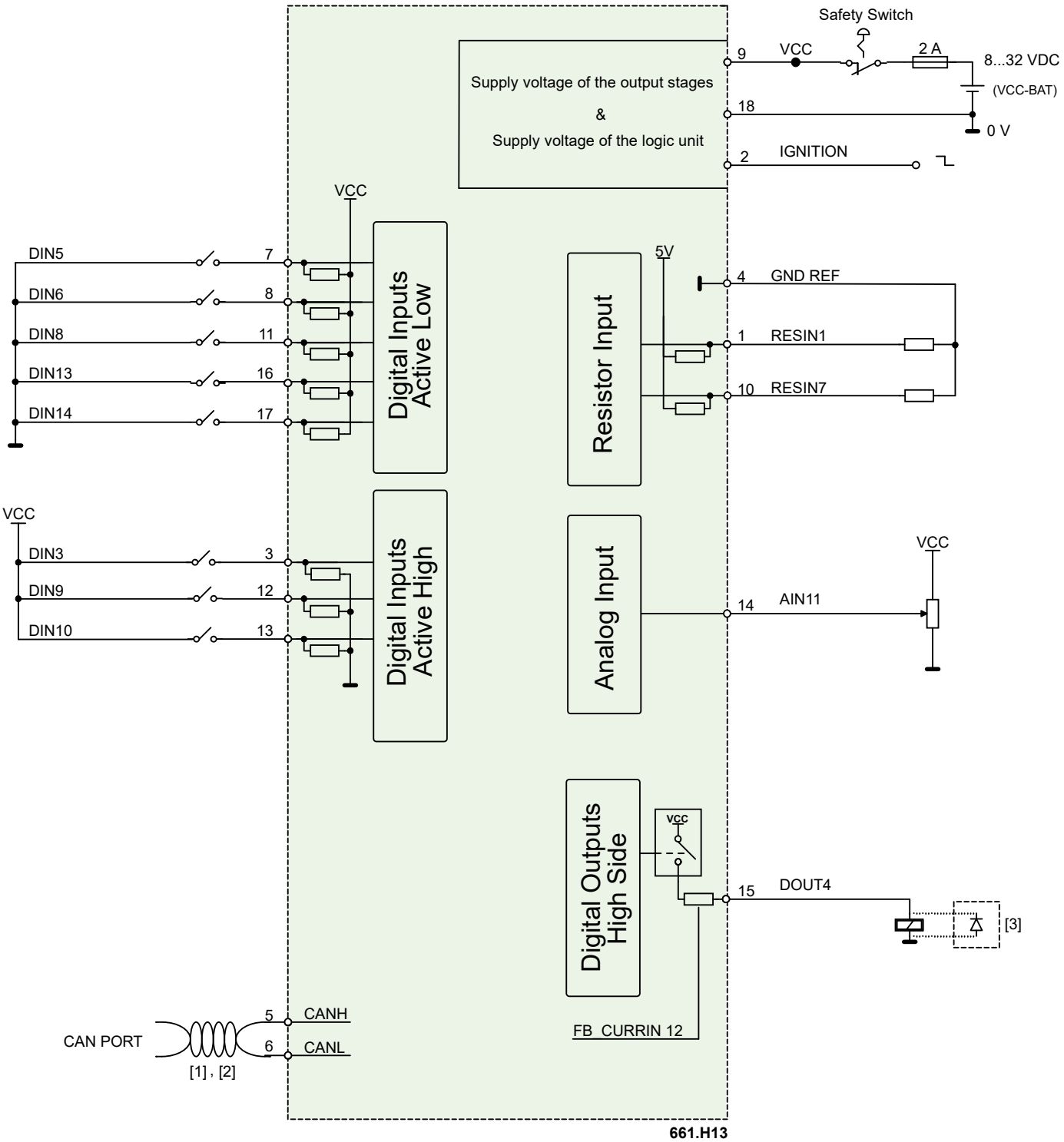
TYCO CONNECTOR



Mating Connector :
TE 2203663-5

Pin	Assignment	Pin	Assignment
1	NC	10	RESIN7
2	K15	11	NC
3	NC	12	NC
4	NC	13	NC
5	CAN1H	14	NC
6	CAN1L	15	NC
7	NC	16	DIN13
8	NC	17	DIN14
9	VCC_BAT	18	GND_BAT

Electrical Connection (MO 661.H13.SXXXX.PXXX.E000)



[1] No internal termination resistor for CAN BUS.

[2] CAN wiring should be kept away from the high current cables and cross them at right angles when necessary.

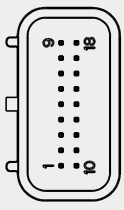
[3] For inductive load, an external free-wheeling diode must be connected if clamp energy exceeds 140 mJ. Solenoid return line should be connected to the battery ground. (e.g:chassis)

Electrical Connection (MO 661.H13.SXXXX.PXXX.E000)

Pin	Description	Alternative Functions 1	Alternative Functions 2
3,12,13	**Digital Inputs - Active High** 7.5 kΩ pulldown resistor DIN3, DIN9, DIN10	No	No
7,8,11,16,17	**Digital Inputs - Active Low** 5.1 kOhm internal pull-up resistor to 5 V DIN5, DIN6, DIN8, DIN13, DIN14	No	No
14	**Universal Inputs - Voltage** 0-32 V (max. 36 V) 8.8 mV resolution 175 Hz cutoff frequency 1 ms measurement update rate AIN11	**Digital Input** Software programmable threshold	No
1,10	**Universal Inputs - Resistor** 0-30 kΩ input range 3 kΩ pullup resistor (to internal 5 V) 265 Hz cutoff frequency 1 ms measurement update rate RESIN1,RESIN7	**Temperature Sensor Input** Passive temperature sensor	**Digital Inputs** Active-Low 1.6 mA max. switch current
15	**Digital Outputs - High Side** Output current max. 2.5 A Inductive or Resistive Load For inductive load, an external free-wheeling diode must be connected externally if clamp energy exceeds 80 mJ. 27 kΩ internal pullup resistor to VCCBAT for open load detection Current feedback Short circuit protection (shutdown current limit min. 6 A) DOUT4	**Analog Inputs** Current Sense 16.6 mV resolution 8 ms measurement update rate 328 Hz cutoff frequency	**Digital Inputs** Active-High Software programmable threshold
2	**Ignition Input / Terminal 2** 58 kΩ input resistance to GND	No	No
4	**GND-REF** Seperate from GND-BAT	No	No
9	**VCC-BAT** Supply voltage of outputs Must be connected through fuse	No	No
18	**GND-BAT**	No	No
5,6	**CAN** CAN 2.0A and CAN 2.0B (Termination resistor not present.)	No	No

Electrical Connection (MO 661.H13.SXXXX.PXXX.E000)

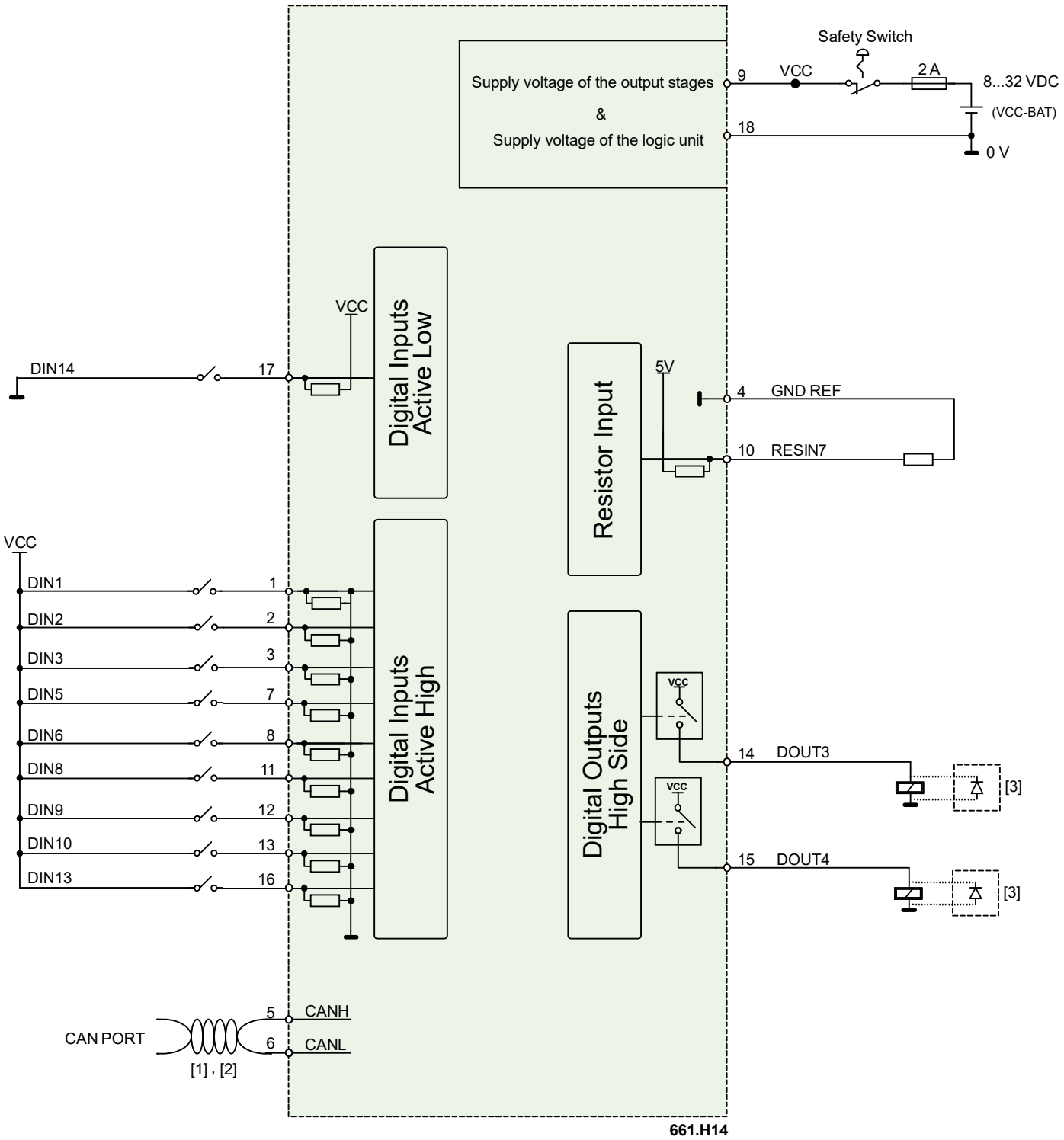
TYCO CONNECTOR



Mating Connector :
TE 2203663-5

Pin	Assignment	Pin	Assignment
1	RESIN1	10	RESIN7
2	K15	11	DIN8
3	DIN3	12	DIN9
4	GND_REF	13	DIN10
5	CAN1H	14	AIN11
6	CAN1L	15	DOUT4
7	DIN5	16	DIN13
8	DIN6	17	DIN14
9	VCC_BAT	18	GND_BAT

Electrical Connection (MO 661.H14.SXXXX.PXXX.E000)



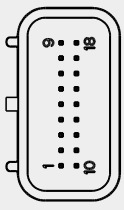
[1] No internal termination resistor for CAN BUS.
[2] CAN wiring should be kept away from the high current cables and cross them at right angles when necessary.
[3] For inductive load, an external free-wheeling diode must be connected if clamp energy exceeds 140 mJ. Solenoid return line should be connected to the battery ground. (e.g:chassis)

Electrical Connection (MO 661.H14.SXXXX.PXXX.E000)

Pin	Description	Alternative Functions 1	Alternative Functions 2
1,2,3,7,8,11,12,13,16	**Digital Inputs - Active High** 27 kΩ pulldown resistor DIN1, DIN3, DIN5, DIN6, DIN8, DIN9, DIN10, DIN13	No	No
17	**Digital Inputs - Active Low** 5.1 kOhm internal pull-up resistor to 5 V DIN14	No	No
10	**Universal Inputs - Resistor** 0-30 kΩ input range 3 kΩ pullup resistor (to internal 5 V) 265 Hz cutoff frequency 1 ms measurement update rate RES7	**Temperature Sensor Input** Passive temperature sensor	**Digital Inputs** Active-Low 1.6 mA max. switch current
14,15	**Digital Outputs - High Side** Output current max. 2.5 A (Dual channel total max 3A) Inductive or Resistive Load For inductive load, an external free-wheeling diode must be connected externally if clamp energy exceeds 80 mJ. Short circuit protection (shutdown current limit min. 6 A) DOUT3, DOUT4	No	No
4	**GND-REF** Seperate from GND-BAT	No	No
9	**VCC-BAT** Supply voltage of outputs Must be connected through fuse	No	No
18	**GND-BAT**	No	No
5,6	**CAN** CAN 2.0A and CAN 2.0B (Termination resistor not present.)	No	No

Electrical Connection (MO 661.H14.SXXXX.PXXX.E000)

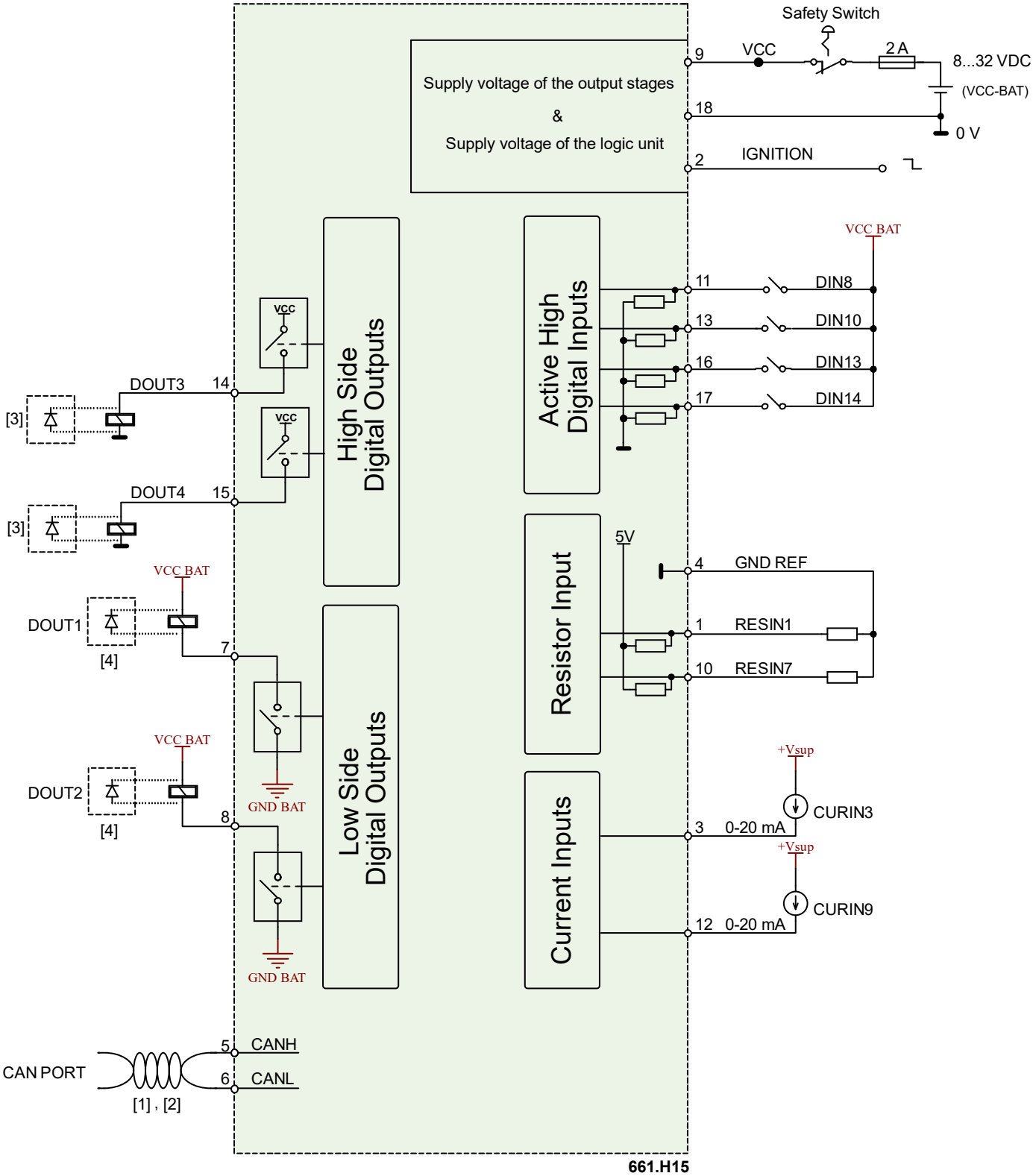
TYCO CONNECTOR



Mating Connector :
TE 2203663-5

Pin	Assignment	Pin	Assignment
1	DIN01	10	RESIN07
2	DIN02	11	DIN08
3	DIN03	12	DIN09
4	GND REF	13	DIN10
5	CANH	14	DOUT03
6	CANL	15	DOUT04
7	DIN05	16	DIN13
8	DIN06	17	DIN14
9	VCCBAT	18	GNDBAT

Electrical Connection (MO 661.H15.SXXXX.PXXX.E000)



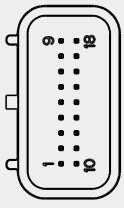
[1] No internal termination resistor for CAN BUS.
[2] CAN wiring should be kept away from the high current cables and cross them at right angles when necessary.
[3] For inductive load, an external free-wheeling diode must be connected if clamp energy exceeds 140 mJ. Solenoid return line should be connected to the battery ground. (e.g:chassis)
[4] For inductive load, an external free-wheeling diode must be connected if clamp energy exceeds 80 mJ.

Electrical Connection (MO 661.H15.SXXXX.PXXX.E000)

Pin	Description	Alternative Functions 1	Alternative Functions 2
11, 13, 16, 17	**Digital Inputs - Active High** 27 kΩ pulldown resistor DIN8, DIN10, DIN13, DIN14	No	No
1, 10	**Universal Inputs - Resistor** 0-30 kΩ input range 3 kΩ pullup resistor (to internal 5 V) 265 Hz cutoff frequency 1 ms measurement update rate RES1, RES7	**Temperature Sensor Input** Passive temperature sensor	**Digital Inputs** Active-Low 1.6 mA max. switch current
3, 12	**Current Input** 0-20 mA (max. 25 mA) If input current > 25 mA, input pin may be damaged. 12 bit resolution (64.4 µA) 120 Ohm current sense resistor CURIN3, CURIN9	No	No
14,15	**Digital Outputs - High Side** Output current max. 2.5 A (Dual channel total max 3A) Inductive or Resistive Load For inductive load, an external free-wheeling diode must be connected externally if clamp energy exceeds 140 mJ. Short circuit protection (shutdown current limit min. 6 A) DOUT3, DOUT4	No	No
7, 8	**Digital Outputs - Low Side** Low-Side Output current max. 500 mA sink (per channel) DOUT1, DOUT2	No	No
2	**Ignition Input / Terminal 2** 58 kΩ input resistance to GND	No	No
4	**GND-REF** Seperate from GND-BAT	No	No
9	**VCC-BAT** Supply voltage of outputs Must be connected through fuse	No	No
18	**GND-BAT**	No	No
5,6	**CAN** CAN 2.0A and CAN 2.0B (Termination resistor not present.)	No	No

Electrical Connection (MO 661.H15.SXXXX.PXXX.E000)

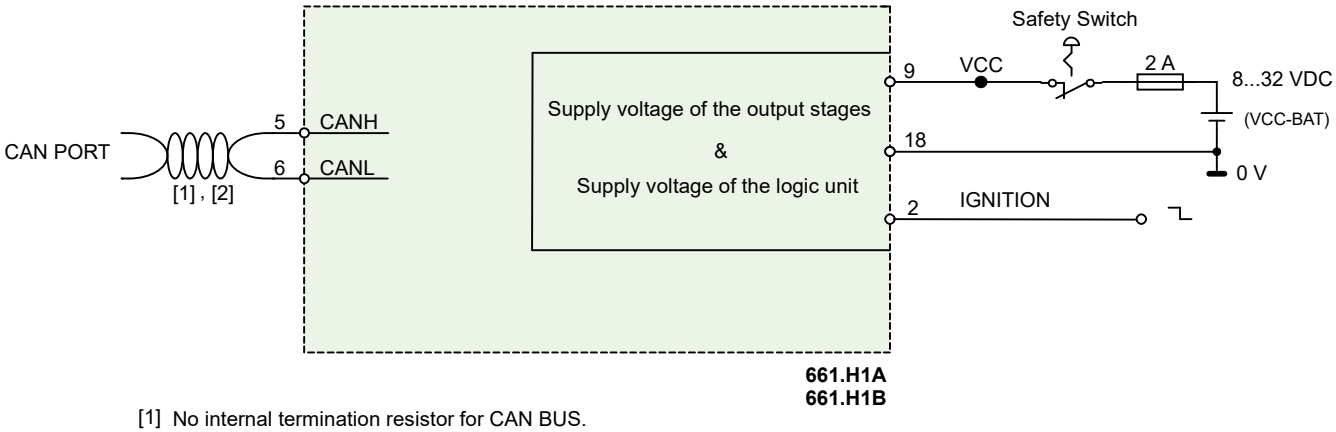
TYCO CONNECTOR



Mating Connector :
TE 2203663-5

Pin	Assignment	Pin	Assignment
1	RESIN01	10	RESIN07
2	K15	11	DIN08
3	CURRIN03	12	CURRIN09
4	GND REF	13	DIN10
5	CANH	14	DOUT03
6	CANL	15	DOUT04
7	DOUT01	16	DIN13
8	DOUT02	17	DIN14
9	VCCBAT	18	GNDBAT

Electrical Connection (MO 661.H1A.SXXXX.PXXX.E000)
Electrical Connection (MO 661.H1B.SXXXX.PXXX.E200)



[1] No internal termination resistor for CAN BUS.

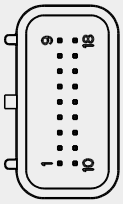
[2] CAN wiring should be kept away from the high current cables and cross them at right angles when necessary.

Electrical Connection (MO 661.H1A.SXXXX.PXXX.E000)
Electrical Connection (MO 661.H1B.SXXXX.PXXX.E200)

Pin	Description	Alternative Functions 1	Alternative Functions 2
2	**Ignition Input / Terminal 2** 58 kΩ input resistance to GND	No	No
4	**GND-REF** Seperate from GND-BAT	No	No
9	**VCC-BAT** Supply voltage of outputs Must be connected through fuse	No	No
18	**GND-BAT**	No	No
5,6	**CAN** CAN 2.0A and CAN 2.0B (Termination resistor not present.)	No	No

Electrical Connection (MO 661.H1A.SXXXX.PXXX.E000)
Electrical Connection (MO 661.H1B.SXXXX.PXXX.E200)

TYCO CONNECTOR



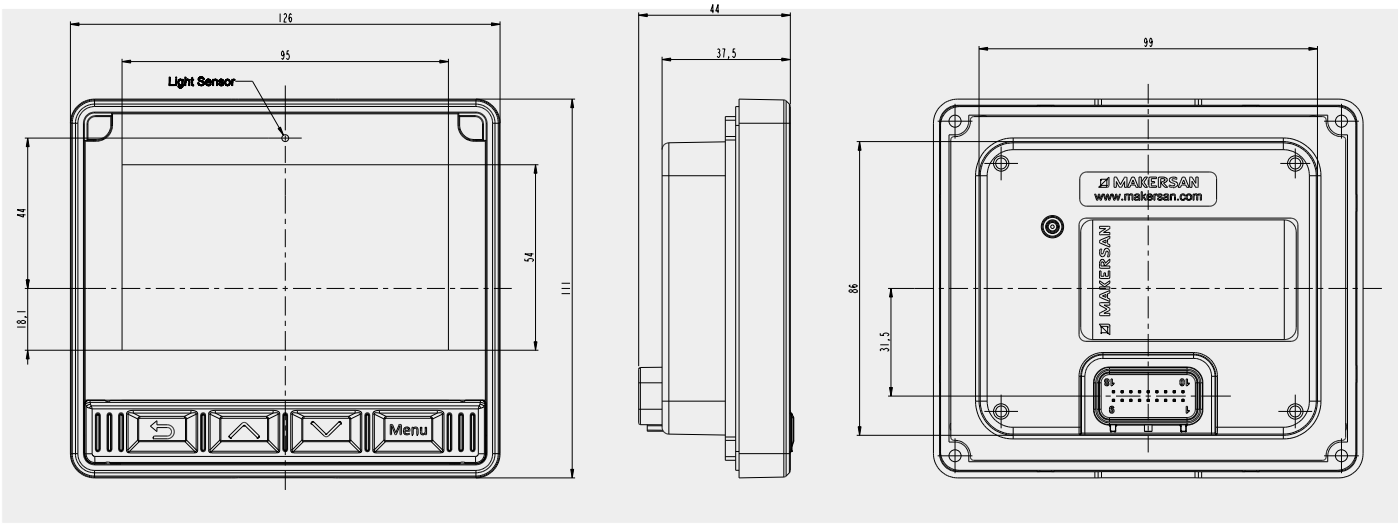
Mating Connector :
TE 2203663-5

Pin	Assignment	Pin	Assignment
1	NC	10	NC
2	K15	11	NC
3	NC	12	NC
4	NC	13	NC
5	CAN1H	14	NC
6	CAN1L	15	NC
7	NC	16	NC
8	NC	17	NC
9	VCC_BAT	18	GND_BAT

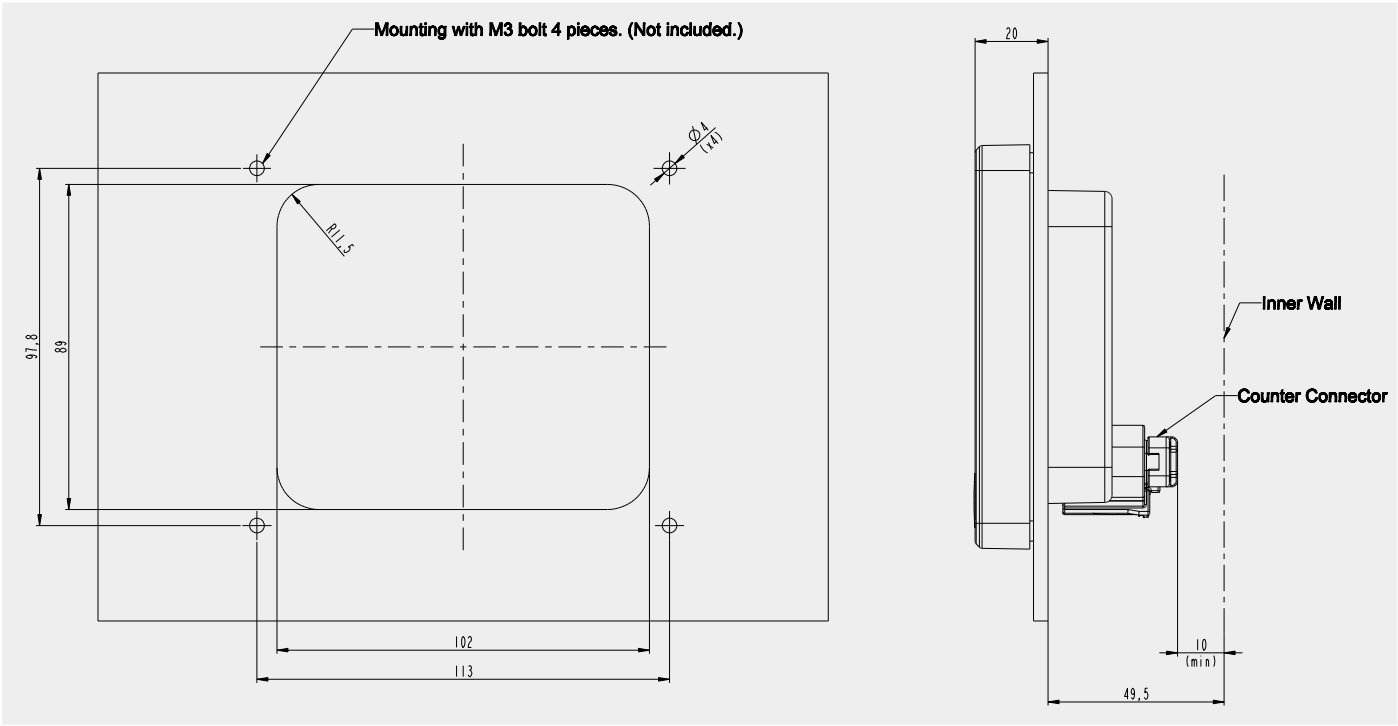
DATASHEET
MO 661.H1X.SXXXX.PXXX.EXXX

MAKERSAN
Display

Technical Drawing (MO 661.H1X.SXXXX.PXXX.E0XX)



Mounting Cut-Out (MO 661.H1X.SXXXX.PXXX.E0XX)



Wiring Information

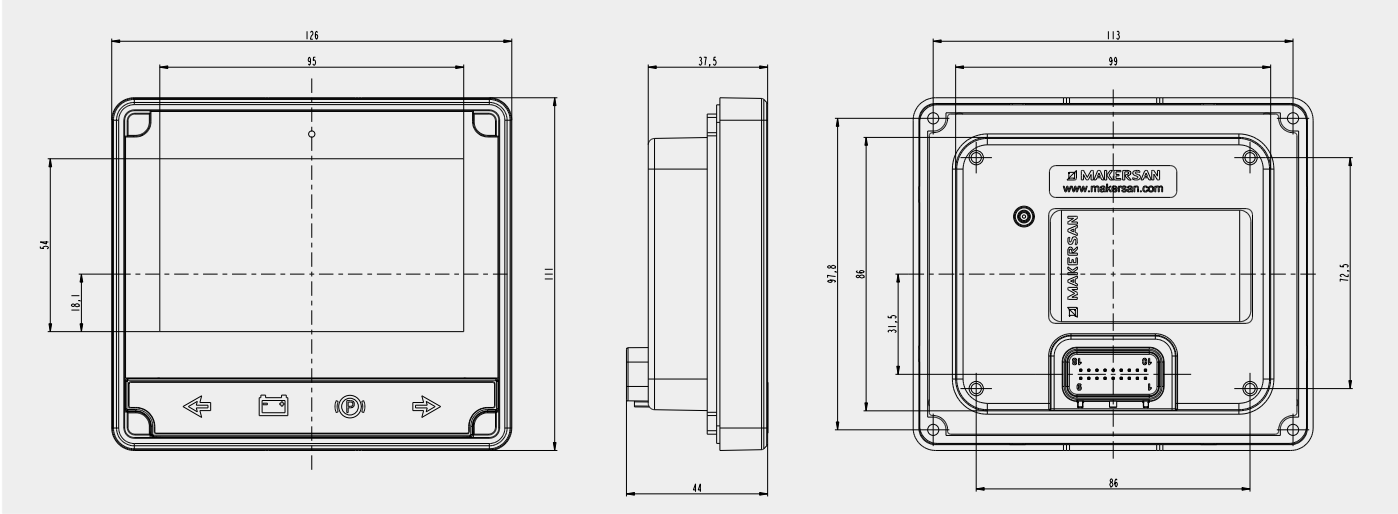
* All wiring must be suitable for the operating temperature range.

* Use appropriate type and size of cable for each I/O and power pins. Consider current carrying capability of cable and connector.

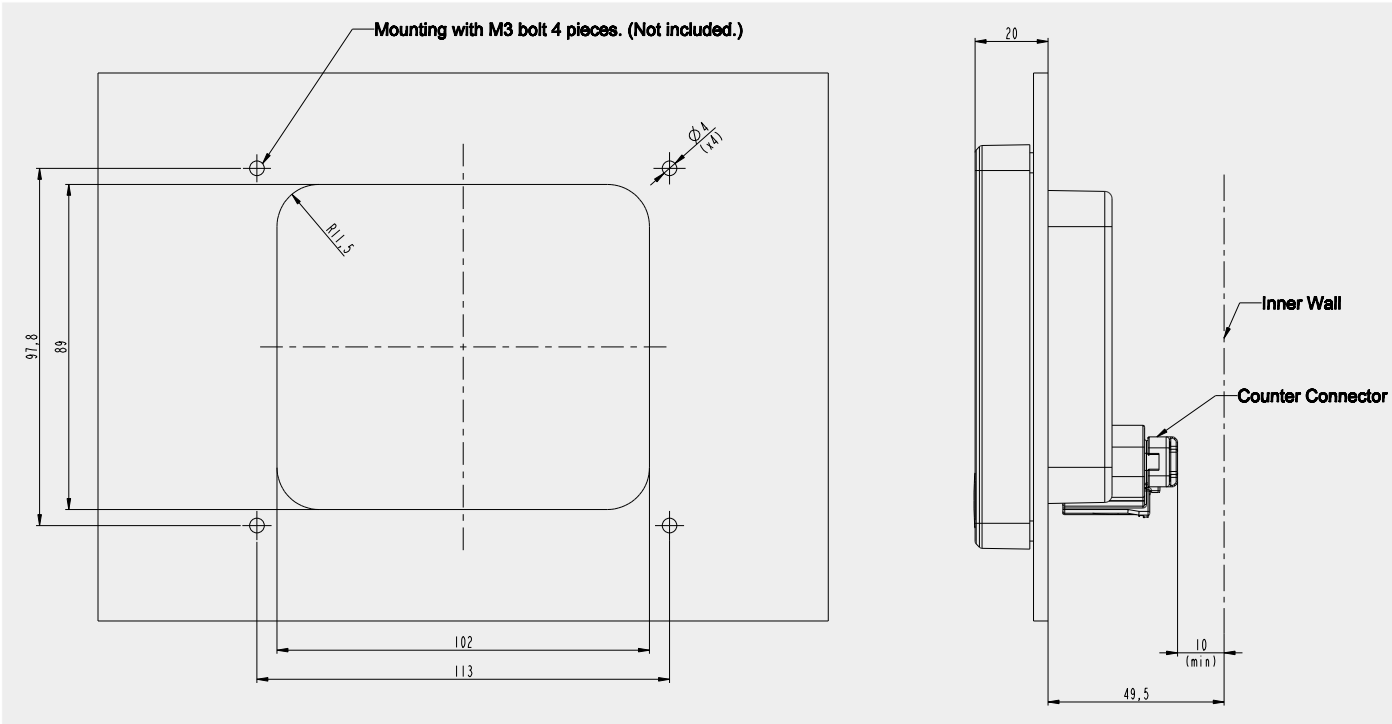
DATASHEET
MO 661.H1X.SXXXX.PXXX.EXXX

MAKERSAN
Display

Technical Drawing (MO 661.H1X.SXXXX.PXXX.E2XX)



Mounting Cut-Out (MO 661.H1X.SXXXX.PXXX.E2XX)



Wiring Information

* All wiring must be suitable for the operating temperature range.

* Use appropriate type and size of cable for each I/O and power pins. Consider current carrying capability of cable and connector.

DATASHEET
MO 661.H1X.SXXXX.PXXX.EXXX

MAKERSAN
Display

Ordering Code

MO 661 - H1X - SXXXX - PXXX - EXXX - OB**

Software:
S1000 - Default
* - Custom

Image Library:
P001 - Default
* - Custom

Add-On Board:
E0XX - Soft Keys
E000 - Buttons with default legend

E2XX - Indicators
E200 - Indicators (2 Indicators controlled by software, 2 Indicators controlled by external inputs with default legend)
* - Custom

Hardware Configurations:
H10 - 5 Active-Low Inputs, 3 Active-High Inputs, 2 Frequency Inputs, 2 Resistor Inputs with Buttons
H11 - 5 Active-Low Inputs, 2 Active-High Inputs, 1 Voltage Input, 1 Resistor Input, 1 High-Side Output with Indicators
H12 - 2 Active-Low Inputs, 1 Resistor Input with Buttons
H13 - 5 Active-Low Inputs, 3 Active-High Inputs, 1 Voltage Input, 2 Resistor Input, 1 High-Side Output with Buttons
H14 - 1 Active-Low Inputs, 8 Active-High Inputs, 1 Resistor Input, 2 High-Side Outputs with Buttons
H15 - 4 Active-High Inputs, 2 Resistor Inputs, 2 Current Inputs, 2 High-Side Outputs, 2 Low-Side Outputs with Buttons
H1A - Only CANbus with Buttons
H1B - Only CANbus with Indicators

* Available upon request with minimum order quantity.

** The standard version supports air bonding. Optical bonding is optional.

Example : MO 661 - H10 - S1000 - P100 - E000 is 5 Active-Low Inputs, 3 Active-High Inputs, 2 Frequency Inputs, 2 Resistor Inputs, with Buttons with SAE J1939 interface.

Safety Instructions

*Do not use the device in hazardous and explosive environment.

*Keep the device away from magnets and radio equipment .

*Do not place the device to the direct air flow of vehicles heating cooling air duct due to the high temperature stress.

*Screen with the vehicle's ground the electric cables connected to the device.Far away the device cable from power-conducting lines.

*Provide a clean power supply to the device. Otherwise voltage transients may damage the module.

*Do not direct the pressure washing jet to the device.

*Unplug connectors from the device during electrical welding operations.

*Damages which result from improper use, all warranty and liability claims with respect to the manufacturer void.

*To perform a risk analysis of the system is customer’s responsibility at use in safety-related functions of the device.

*These products are ESD (Electrostatic Discharge) sensitive devices. ESD may cause permanent damage. When handling these devices please observe standard ESD precautions.

*Please refer to product user manual for installation, commissioning and programming information.

*Makersan reserves the right to make corrections, enhancements, improvements and other changes to its products at any time and without notice.

Makersan Makina Otomotiv San.Tic.A.Ş.
Balçık Mahallesi, 3258 Sokak No:23
41400 Gebze / Kocaeli / Türkiye
Phone : +90 262 751 25 05 Fax : +90 262 751 35 80
Web : www.makersan.com
E-mail : contact@makersan.com