Optional Interfaces

for BABY18DAD and TOY18DAD

Document properties	
File:	Manual-Optional_interfaces-en-00.doc
Number of pages:	18
File size:	13168 kB
Last save:	1/18/2021 7:10:00 AM

Ver.	Date	Author	Approved by	Description
00	12.01.2021	Dominika Pavlová	Jakub Hodaň	First issue.

Related documents	

CONTENT:

1. FULL CONNECTING BASIC SCHEME

Various interface devices can be connected to the AMY-17 board - *Communication module* (Ethernet and USB), *RS232*, *Analog output*, *Leakage sensor*, *Front panel LEDs module*, *I/O Interface* and *Display with keyboard*.

The devices do not need to be activated; the AMY-17 board detects their presence when switched on.
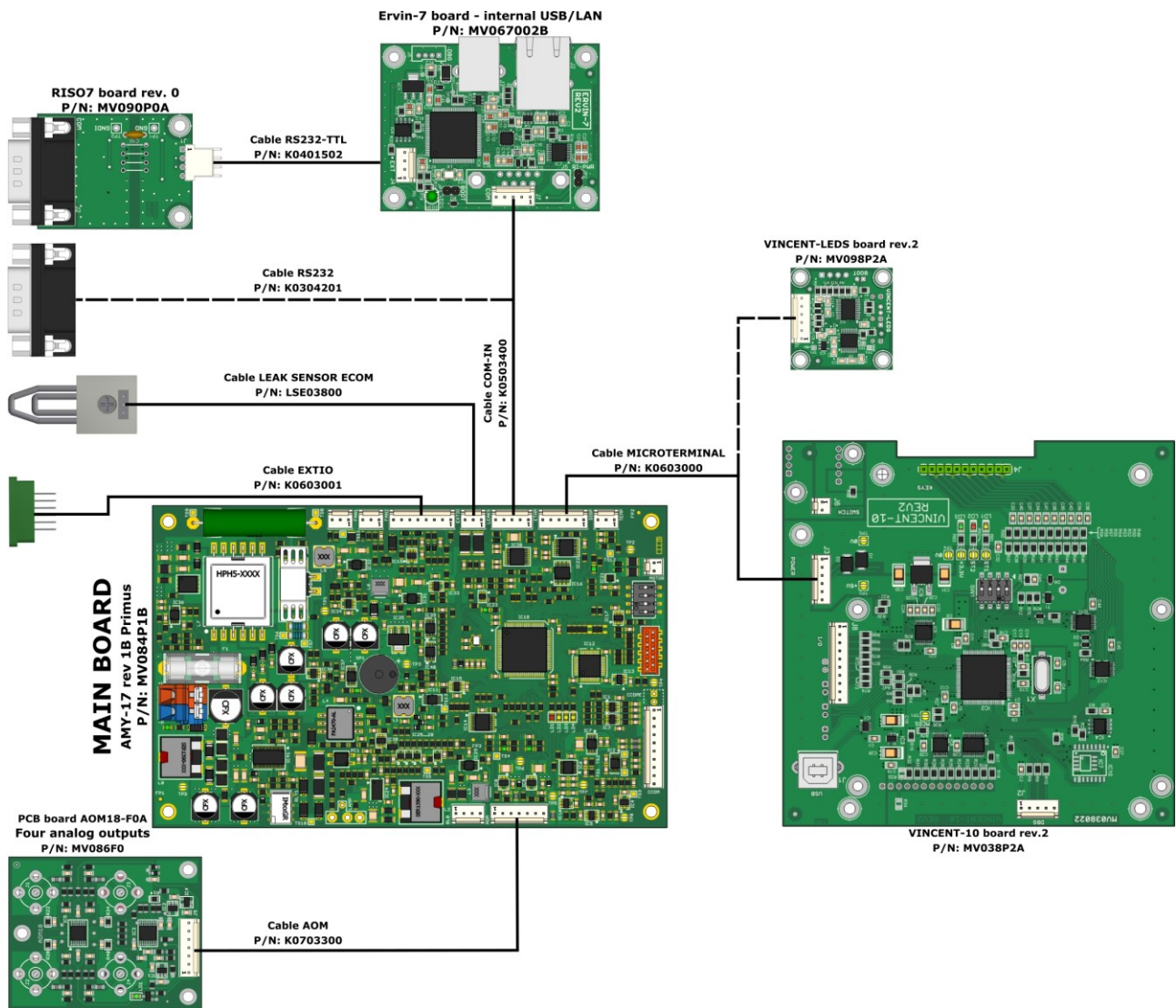

2. COMMUNICATION MODULE

There are three versions of communication ports creating - RS232,   Ethernet   and   USB; Ethernet and USB or only RS232.

The device IP address needs to be configured right to enable valid communication through control software. The device is shipped with automatic IP address assignment (DHCP) enabled and any valid address should be set by default. Control software can find the IP address by search mechanism, but it cannot change it.

Special application **EccmConf** can be used to search and manage device IP setting. The application can be downloaded from ECOM website.
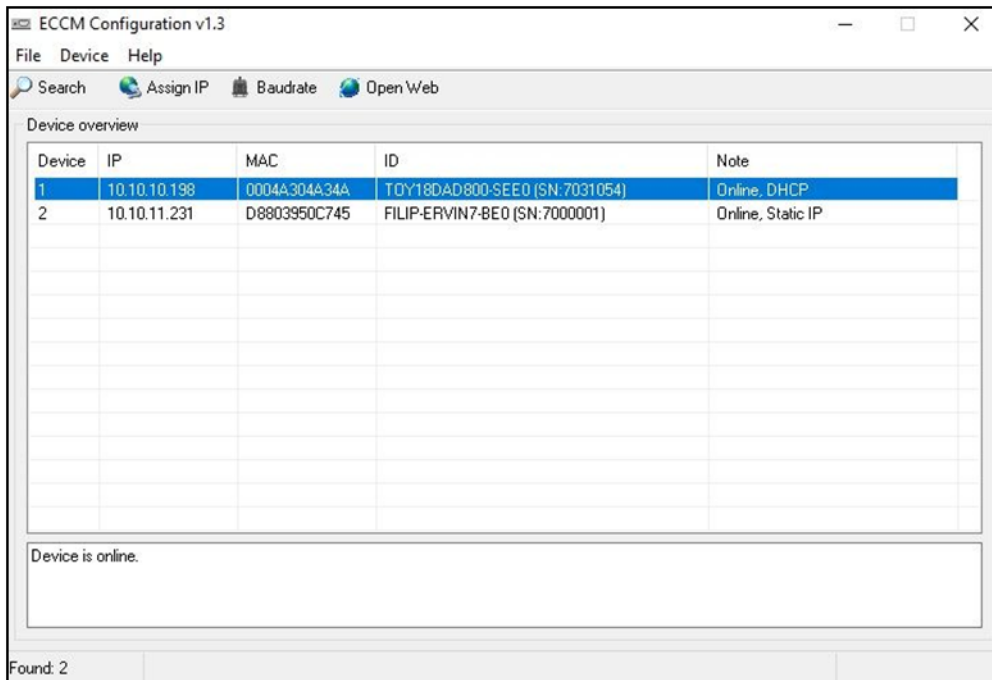

Search icon can be used to find all adequate network units. When no device is found, check unit power supply and ethernet connection (LEDs on connector should shine). The problem can be cause by firewall or network restrictions too (contact network administrator).

Any found device will be shown in application list with following information (IP address, physical MAC address, device identification and connection note). Note describes connection status together with assignment state (Static IP/DHCP):

CONNECTION STATUS

Note state	Description
Online	Connection is right and the device is ready for communication.
Used	Connection is right, but communication cannot be opened. The device is used already.
Unreachable!	Connection is invalid. The device IP address doesn't correspond to local network address and communication cannot work without setting valid IP setting.

Assign IP icon can be used to set new IP settings. Assignment should work regardless the device is unreachable. IP parameters are following:
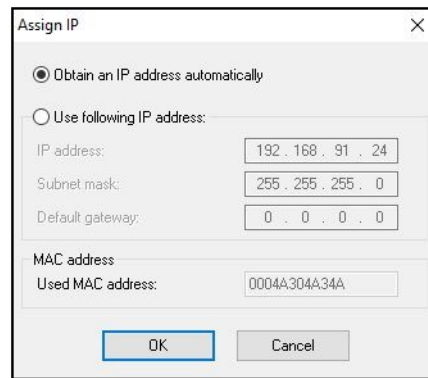
The option ***Obtain an IP address automatically*** enables DHCP and device will get IP from network DHCP server. When this server is not available (e.g. simple connection to PC), device will set AUTO IP address. The option is default.

Note:	DHCP generally assign IP address for some limited time period. When the device will be connected into network after this time elapsed, a different IP address can be assigned. The different IP will result in failing connection of control software. Please, contact network administrator to solve this problem (permanent DHCP IP or static IP).

The option ***Use following IP address*** uses static IP setting. It is necessary to set suitable connection parameters (IP address, subnet mask and default gateway).

IP address parameter defines logical address of device in network and it is used in static IP mode. Default value is 192.168.91.24.

Subnet mask parameter defines network and device addresses of IP address in static IP mode. Default value is 255.255.255.0.

Default gateway parameters defines gateway in network. Parameter is valid in static IP mode only. Default value is 0.0.0.0. This item is not used usually.

Used MAC address parameter defines physical address of device which should accepting the IP configuration.

Caution:	**The assignment of IP will not work when device is in use.**

Application icon ***Open Web*** can be used to open device website in an internet browser. Its function is at the moment only informative. Any browser can be used when valid actual device IP address (xxx.xxx.xxx.xxx) is entered to URL field.
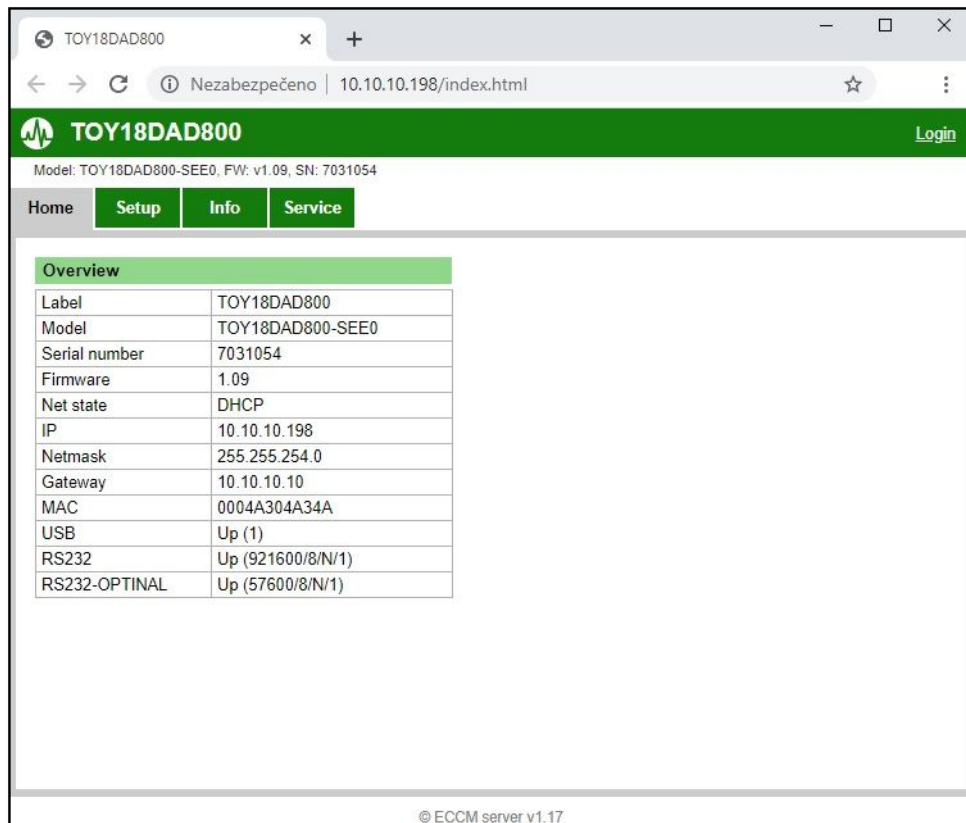
Device web pages offer basic device overview and configuration of network and serial settings. Setup is available after valid login. Default login is following:

| Default login	
User name	user
Password	1991

Note: Password can be reset to default be special command through USB or RS232 only.
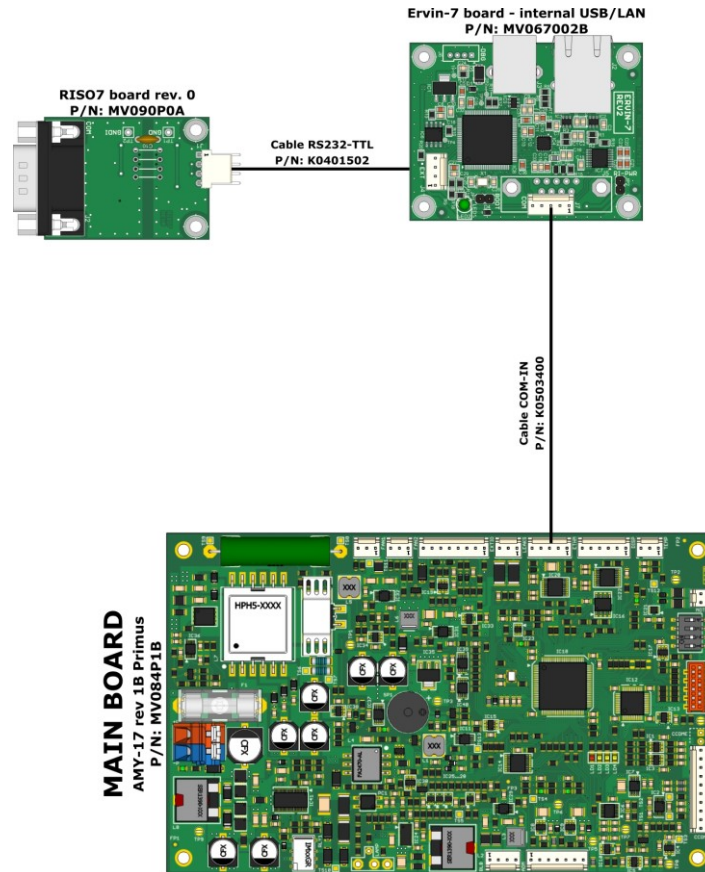
2.1. RS232, Ethernet and USB

Details on the RS232 / LAN / USB interfaces will be given in the subchapters below. For the RISO7 module, the RS232 connector is galvanically isolated.
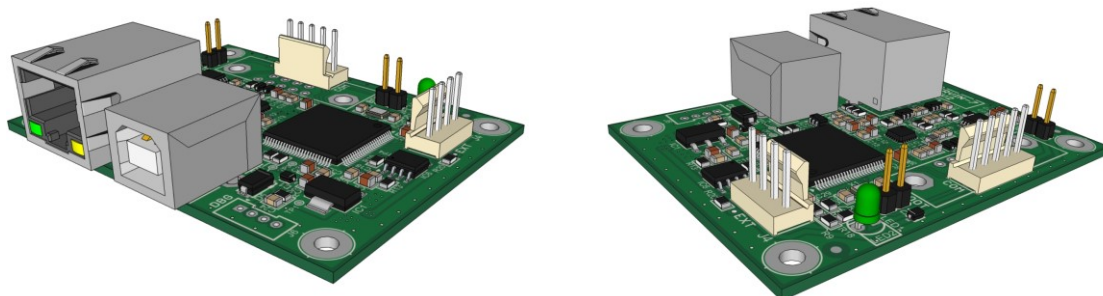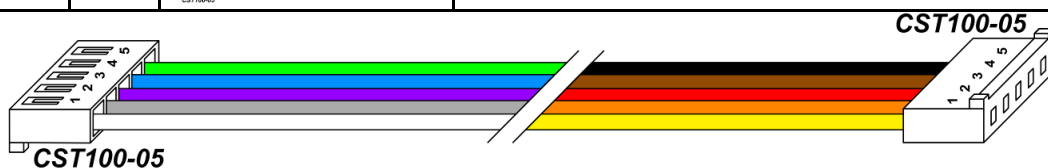

ERVIN-7 – Ethernet/USB (RS232) module (supports additional RS232 board RISO7)
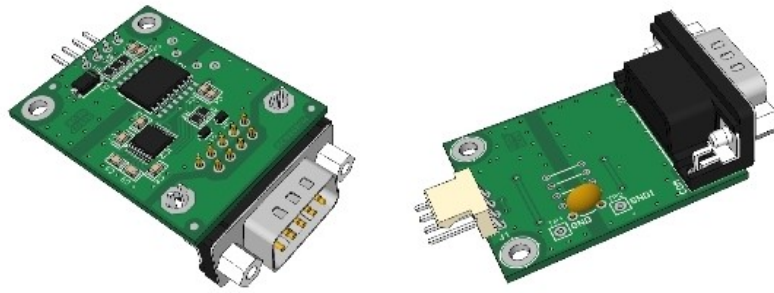
RISO7 – RS232 module

P/N	Qty	Picture	Description
MV067002B	1		Ervin-7 board - internal USB/LAN
MV090P0A	1		RISO7 board rev.0
K0401502	1		Cable RS232-TTL (RISO7 to ERVIN-7)
K0503400	1		Cable COM-IN (ERVIN-7 to AMY-17)

CST100-05	Color	CST100-05	Signal (ERVIN-7 board)	Note
1	WHITE/YELLOW	1	GND	Digital ground
2	GREY/ORANGE	2	TX	Transfer data out
3	VIOLET/RED	3	RX	Receiver data in
4	BLUE/BROWN	4	+5V	+5V for digital circuits
5	GREEN/BLACK	5	STR	Serial TX RX
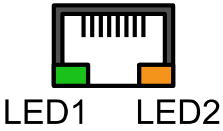
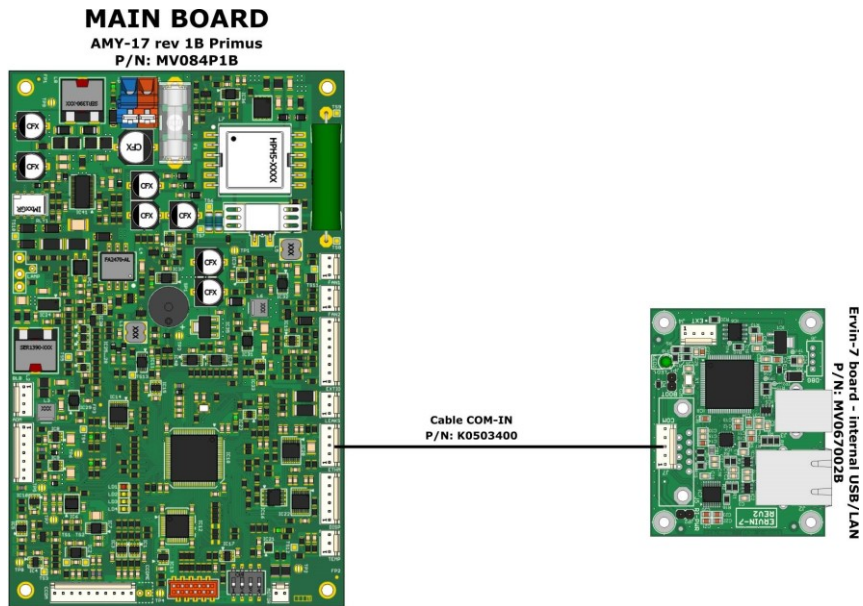| CST100-04	Color	CST100-04	Signal (RISO7 board)	Note
1	ORANGE	1	GND	Digital ground
2	RED	2	TX / OUT	Transfer data out
3	BROWN	3	RX / IN	Receiver data in
4	BLACK	4	5V / 3V3	+5V / +3V3 for digital circuits

2.2. Ethernet and USB

Ethernet interface supports communication speed 10/100 Mb/s. For connection can be used common UTP cable (Cat 5e). Main communication proceeds on port 10001 and function of automatic look up uses port 51455. The unit further supports the following services: DHCP client (automatic IP address allocation), AUTOIP [automatic IP address 169.254.x.y. (x.y. …random generated numbers), when there is no available DHCP server in the network], web server (port 80) and ICMP protocol (for connection test use tool PING).

Connector for ethernet connection is on unit rear side and has two signalization diodes:

Location	Description
LED1 LED2	LED1 Meaning: Operating speed (OFF = 10 Mbit/s, green = 100 Mbit/s).
	LED2 Meaning: Link activity (OFF = inactive, orange = active). The LED blinks normally.

USB interface together with adequate driver emulates serial connection (Virtual Com port, full speed 12 Mb/s) and it removes the need of any USB/RS232 converter. The connector USB type B is on the unit back panel and standard USB print cable (A to B) can be used for connection to PC. We recommend to use good quality cable with length up to 2 meters for connection.

The driver **ECOM Instrument VCP** needs to be installed on the PC. It creates virtual serial port, which should be available for the device (see Windows Device Manager). The driver is part of ECOMAC software or it can be downloaded from our website. It is available for Windows 7, Windows 8 and 8.1. The driver is installed automatically from system on Windows 10.

MAIN BOARD
AMY-17 rev 1B Primus
P/N: MV084P1B

Cable COM-IN
P/N: K0503400

Ervin-7 board - internal USB/LAN
P/N: MV067002B

P/N	Qty	Picture	Description
MV067002B	1		Ervin-7 board - internal USB/LAN
K0503400	1		Cable COM-IN (ERVIN-7 to AMY-17)
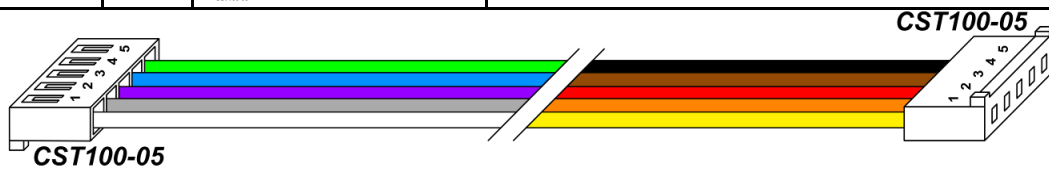
CST100-05

CST100-05

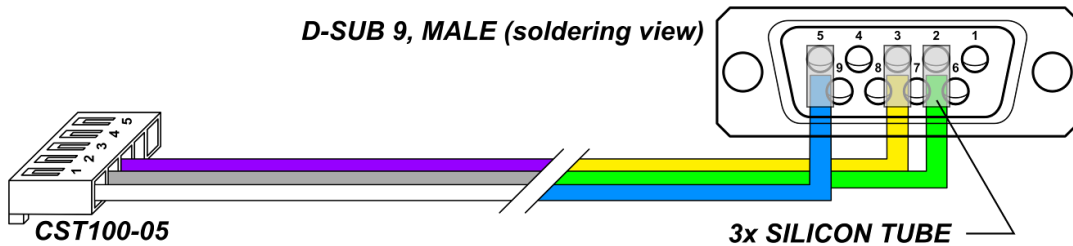| CST100-05	Color	CST100-05	Signal (ERVIN-7 board)	Note
1	WHITE/YELLOW	1	GND	Digital ground
2	GREY/ORANGE	2	TX	Transfer data out
3	VIOLET/RED	3	RX	Receiver data in
4	BLUE/BROWN	4	+5V	+5V for digital circuits
5	GREEN/BLACK	5	STR	Serial TX RX

2.3. RS232

RS232 port has configurable speed 57600, 115200, 230400 or 460800 Baud, 8 data bits, 1 start bit, 1 stop bit and no parity control. The speed is set using the board DIP switches as allows:

DIP1	DIP2	Baud rate
OFF	OFF	57600 (default)
ON	OFF	115200
OFF	ON	230400
ON	ON	460800

P/N	Qty	Picture	Description
K0304201	1		Cable RS232 (AMY-17 to back panel)

D-SUB 9, MALE (soldering view)

CST100-05

3x SILICON TUBE
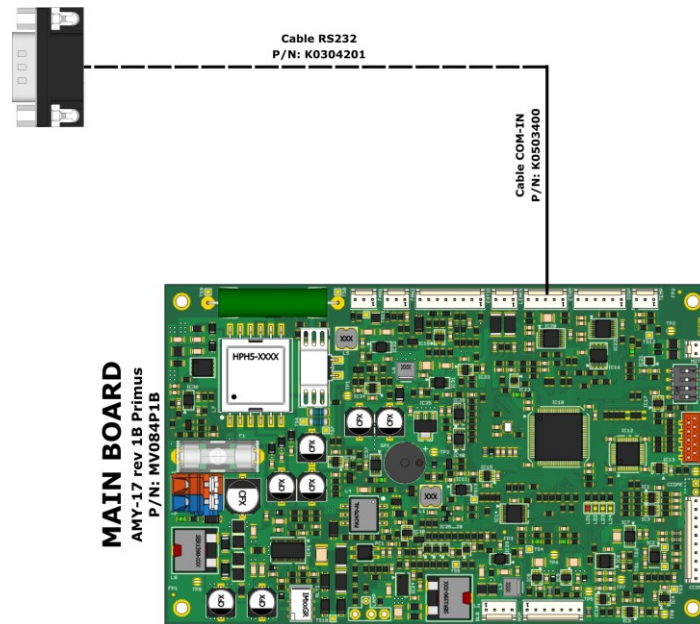
CST100-05	Color	D-SUB 9	Signal (AMY-17 board)	Note
1	WHITE/BLUE	5	GND	Digital ground
2	GREY/GREEN	2	RX	Receiver data in
3	VIOLET/YELLOW	3	TX	Transfer data out
4			NC	Not connected
5			NC	Not connected

2.3.1. ECCM2112 Converter Module

An external version of the Ervin-7 (*ECCM2112 Module; P/N SA060000*) board can be connected to the RS232 connector, giving the customer an Ethernet and USB interface option instead of RS232.
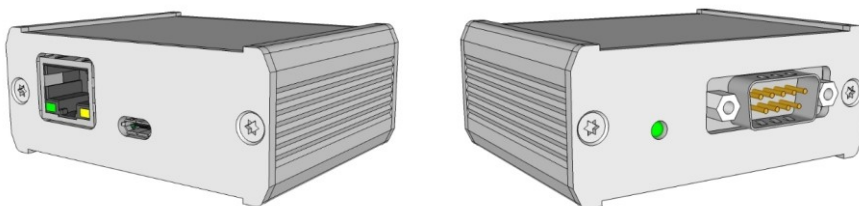
ECCM2112 RS232 - Ethernet converter module
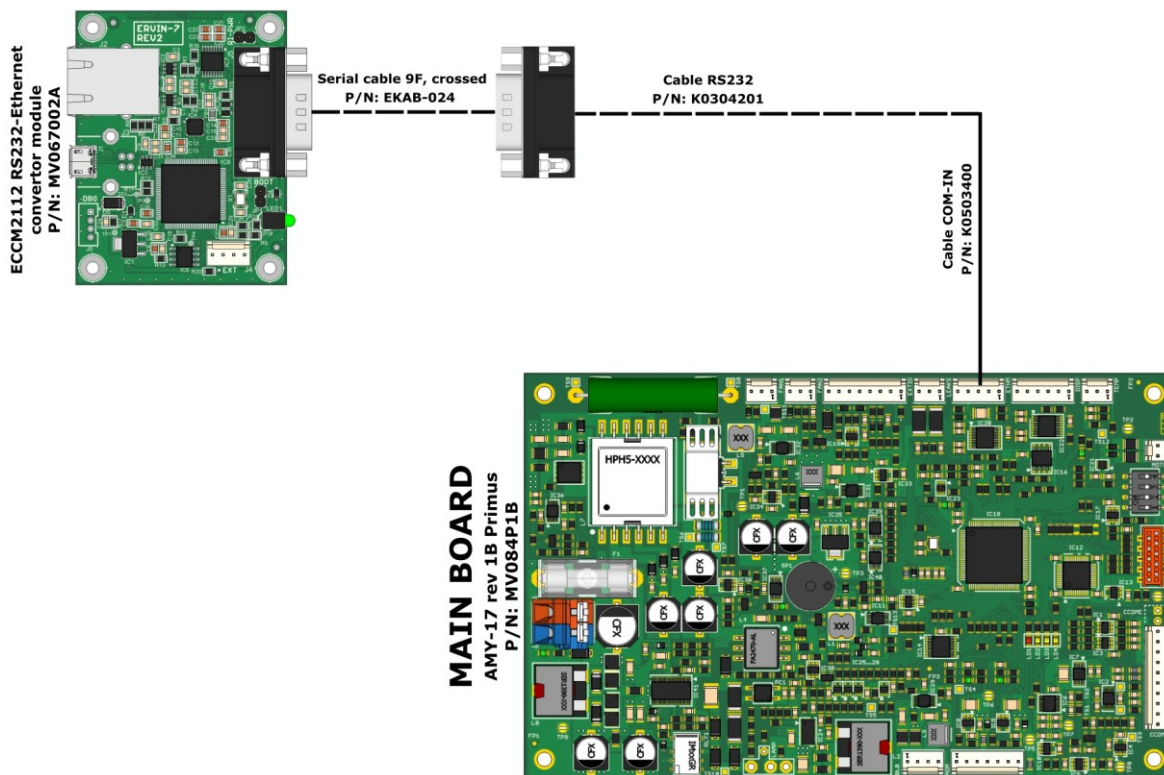
P/N	Qty	Picture	Description
K0304201	1		Cable RS232 (AMY-17 to back panel)
EKAB-024	1		Crossed serial cable 9pin RS232, 2 m

3. ANALOG OUTPUT MODULE

PCB board AOM18-F0A Four analog outputs (-0.25V to 1.125V) has four configurable analog outputs which transmit signal from four chosen wavelengths.

For each of the analog outputs can be preset OFFSET in the range of preset values from -0.100 V up to +0.500 V.

There can also be set a conversion ratio for output voltage / 1 AU (absorbance unit). This can be set in the range from 0.2 V / 1 AU up to 10.0 V / 1 AU.

In case of a warning about overflow of some of the unused analog outputs, it is possible to turn off these analog outputs by setting the Conversion Ratio in *Menu/IO Config/Analog Outputs/ANA 1/2/3/4/ Conversion Ratio* to OFF.

The calibration data is stored on the AOM18 board, so it is not necessary to calibrate the board after the installation. The AOM18 board can be assembled in 3 variants:

AOM Variant	Output voltage range	Resolution / minimum signal step	Offset error after calibration	Gain error after calibration	Output voltage noise
F	-250mV to +1125mV	16 bits / 21 uV	±85 uV maximum	±0.5 mV maximum	±5 uV maximum (0.1 Hz to 10 Hz)
G	-250mV to +2500mV	16 bits / 42 uV	±170 uV maximum	±1.0 mV maximum	±10 uV maximum (0.1 Hz to 10 Hz)

AOM Variant	Output voltage range	Resolution / minimum signal step	Offset error after calibration	Gain error after calibration	Output voltage noise
H	-250mV to +5250mV	16 bits / 84 uV	±340 uV maximum	±2.0 mV maximum	±20 uV maximum (0.1 Hz to 10 Hz)
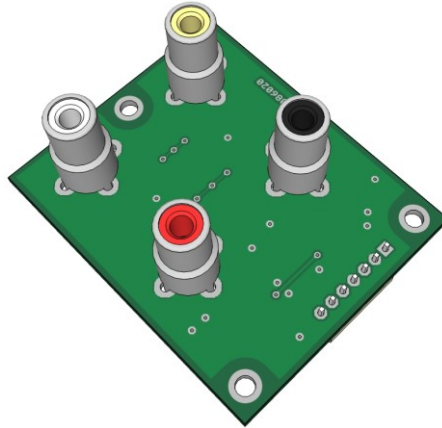
AOM18 – Analog output module
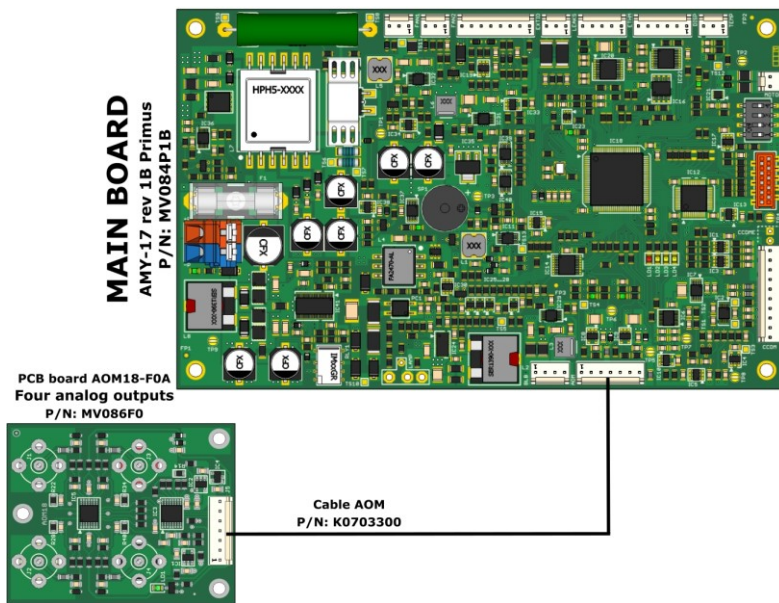
P/N	Qty	Picture	Description
MV086F0	1		PCB board AOM18-F0A Four analog outputs (-0.25V to 1.125V)
K0703300	1		Cable AOM (AOM18 to AMY-17)

CST100-07	Color	CST100-07	Signal (AOM18 board)	Note
1	WHITE	1	+VMD	+6.8V for digital circuits
2	GREY	2	GND	Ground
3	VIOLET	3	-VMD	-3.2V for digital circuits
4	BLUE	4	GND	Ground
5	GREEN	5	DIN	Digital data in
6	YELLOW	6	SYN	Digital data sync.
7	ORANGE	7	CLK	Clock
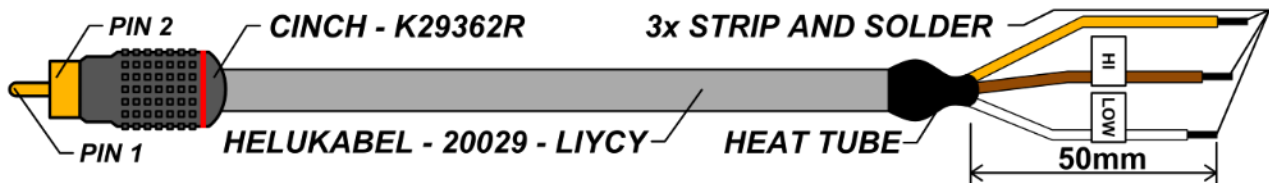
Analog output cable

ANALOG OUTPUT CABLE MARKING

| CINCH	Color	Signal	Note
1	BROWN	HI	AOUT (Analog output)
2	WHITE	LOW	AGND (Analog ground)
2	COPPER	SHIELD	AGND (Analog ground)

4. LEAKAGE SENSOR

The leak sensor contains a reference and a measuring sensor. If the measuring sensor is immersed in the liquid, a signal is generated within 24s. Processing of this signal depends on actual setting. Leakage sensor could behave as warning or error. See possible settings of detector parameter Leakage Use below for details.

SETTING OF LEAKAGE SENSOR BEHAVIOUR

| Setting	Description
OFF	Signal is ignored.
As flag	The unit detects a leak but does not report warning or error.
As warning	Set warning with short beep and detector does not stop. Default value.
As error	Set error with long beep and detector stops and turns to idle status.
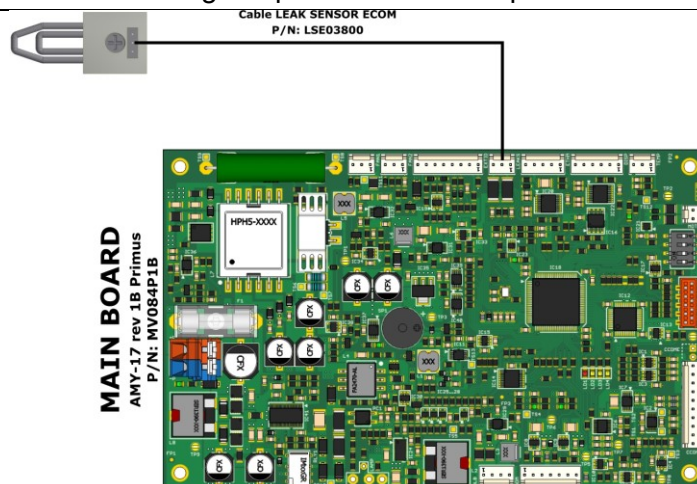
P/N	Qty	Picture	Description
LSE03800	1		Cable LEAK SENSOR (LEAK SENSOR on back panel to AMY-17)

CST100-03   **3x STRIP AND SOLDER**
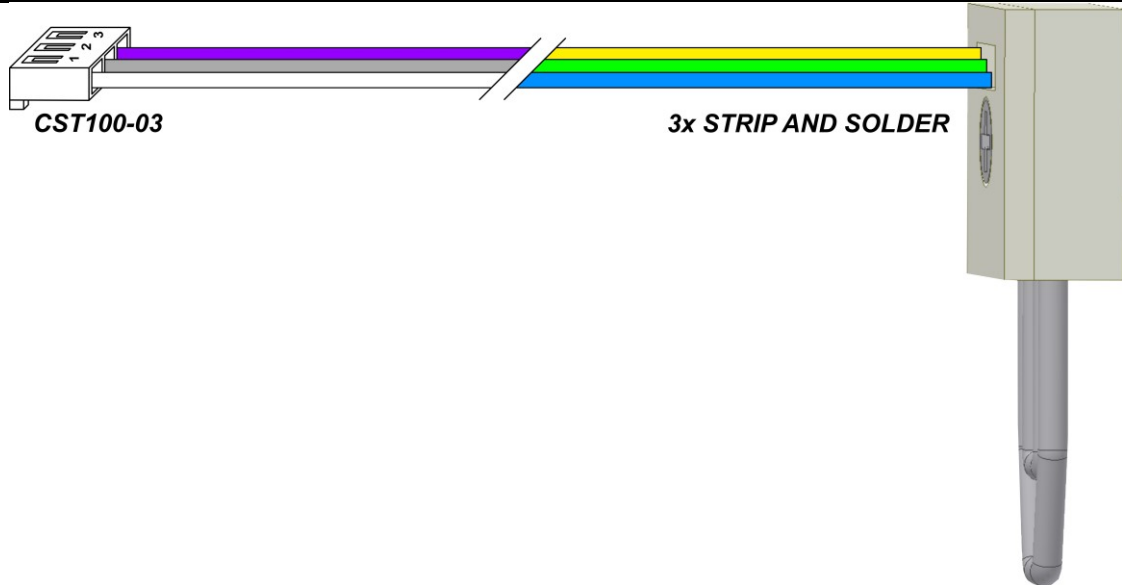
CST100-03	Color	LEAK SENSOR	Signal (LEAK SENSOR board)	Note
1	WHITE/BLUE	1 (square pad)	COM	Common ground
2	GREY/GREEN	2	LSR	Leak sensor reference
3	VIOLET/YELLOW	3	LSS	Leak sensor sample

5. FRONT PANEL LEDS MODULE

The Vincent-LEDS board is an emulation of the Vincent-10 board (see chapter 7) - it contains only LEDs, the display and keyboard are not used.
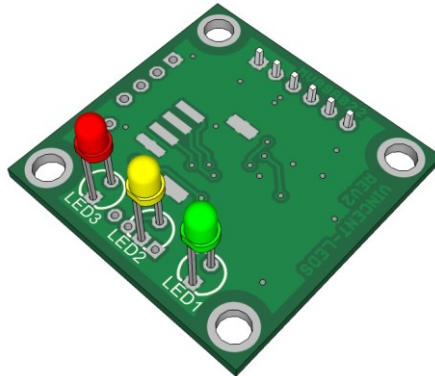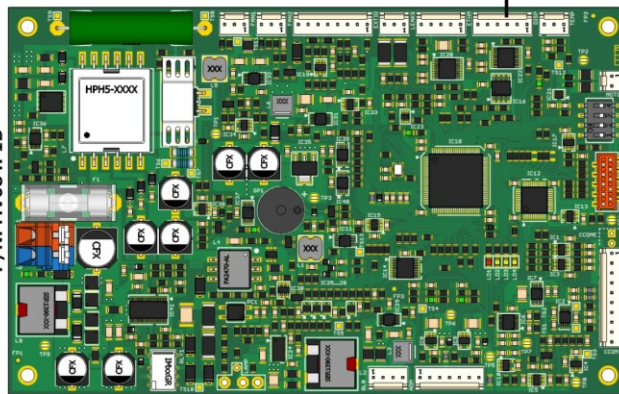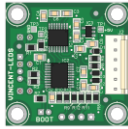

VINCENT LEDs - Front Panel LEDs Module
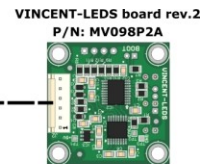
P/N	Qty	Picture	Description
MV098P2A	1		VINCENT-LEDS board rev. 2
K0603000	1		Cable MICROTERMINAL VINCENT-LEDS to AMY-17)

| CST100-06	Color	CST100-06	Signal (VINCENT LEDS board)	Note

| 1	WHITE	1	GND	Digital ground
2	GREY	2	GND	Digital ground
3	VIOLET	3	TX	Transmitter out
4	BLUE	4	RX	Receiver in
5	GREEN	5	+5V	+5V for digital circuits
6	YELLOW	6	+5V	+5V for digital circuits

6. I/O INTERFACE

An external interface connection to external devices. The interface has two universal inputs (DIN1 and DIN2) and two universal outputs (DOUT1 and DOUT2).
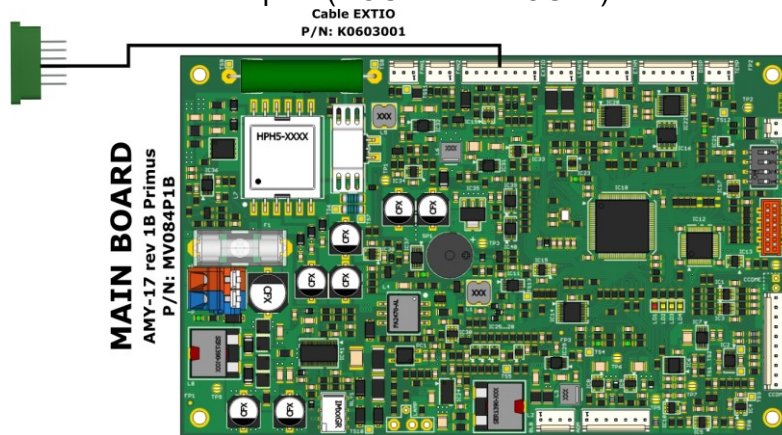
P/N	Qty	Picture	Description
K0603001	1		Cable EXTIO (I/O INTERFACE on back panel to AMY-17)

PIN NUMBERS
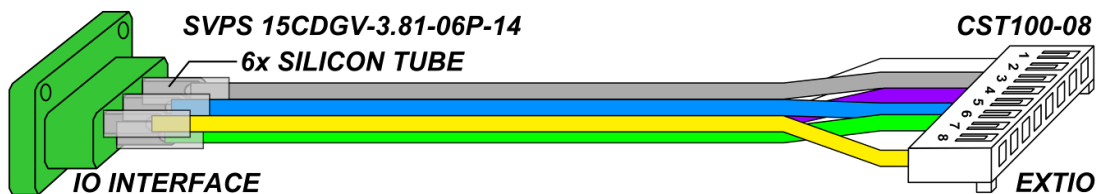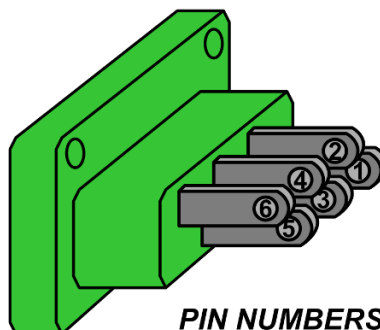
15CDGV	Color	CST100-08	Signal (I/O Interface board)	Note
-	-	1	NC	Not connected
1	WHITE	2	+5V	+5V for digital circuits
2	GREY	3	DIN1	Digital input 1
3	VIOLET	4	DIN2	Digital input 2

4	BLUE	5	DOUT1	Digital output 1
5	GREEN	6	DOUT2	Digital output 2
-	-	7	NC	Not connected
6	YELLOW	8	GND	Digital ground

INTERFACE SPECIFICATION FOR TOY18DAD DEVICES

| Pin	Abbr.	Name	Description
1	+24V	-	Auxiliary supply +24V DC, maximum output current 100mA. Not connected.
2	+5V	-	Auxiliary supply +5V DC, maximum output current 50mA.
3	DIN1	DIGITAL INPUT 1	Digital input 1. Compatible with TTL, HC, HCT. Overvoltage category up to 24 V. Opened at level H. Active at level L.
4	DIN2	DIGITAL INPUT 2	Digital input 2. Compatible with TTL, HC, HCT. Overvoltage category up to 24 V. Opened at level H. Active at level L.
5	DOUT1	DIGITAL OUTPUT 1	Digital output 1. Compatible with TTL, HC, HCT. Maximum output current 24mA. Output resistance 75ohm.
6	DOUT2	DIGITAL OUTPUT 2	Digital output 2. Compatible with TTL, HC, HCT. Maximum output current 24mA. Output resistance 75ohm.
7	OCOUT	-	Open Drain output. Maximum voltage 32V, maximum output current 100mA. Complementary with digital output 2. Not connected.
8	GND	GROUND	Ground. Internally connected with chassis.

INTERFACE SPECIFICATION FOR BABY18DAD DEVICES

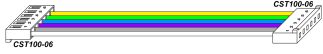| Pin	Abbr.	Name	Description
1	+15V	-	Auxiliary supply +15V DC, maximum output current 100mA. Not connected.
2	+5V	-	Auxiliary supply +5V DC, maximum output current 50mA.
3	DIN1	DIGITAL INPUT 1	Digital input 1. Compatible with TTL, HC, HCT. Overvoltage category up to 24 V. Opened at level H. Active at level L.
4	DIN2	DIGITAL INPUT 2	Digital input 2. Compatible with TTL, HC, HCT. Overvoltage category up to 24 V. Opened at level H. Active at level L.
5	DOUT1	DIGITAL OUTPUT 1	Digital output 1. Compatible with TTL, HC, HCT. Maximum output current 24mA. Output resistance 75ohm.
6	DOUT2	DIGITAL OUTPUT 2	Digital output 2. Compatible with TTL, HC, HCT. Maximum output current 24mA. Output resistance 75ohm.
7	OCOUT	-	Open Drain output. Maximum voltage 32V, maximum output current 100mA. Complementary with digital output 2. Not connected.
8	GND	GROUND	Ground. Internally connected with chassis.

7. DISPLAY AND KEYBOARD MODULE

The Vincent-10 board includes a vacuum fluorescent display (VFD) with a resolution of 140 x 32 dots, a red, yellow and green LED, a power button (only in conjunction with the ELZA-MOTHER board) and a keyboard.
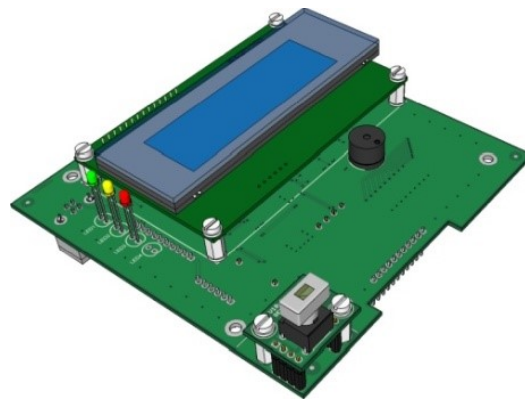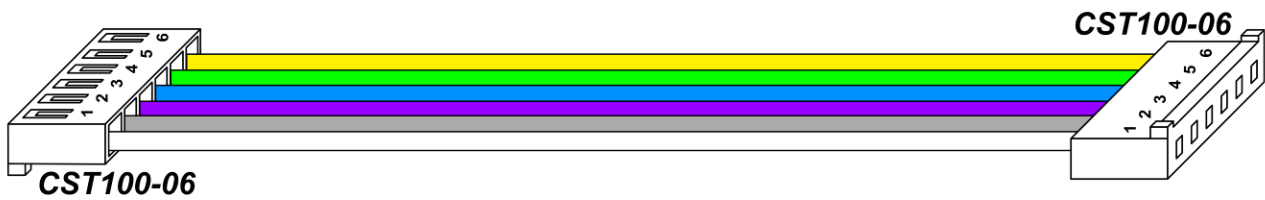

VINCENT 10 – Display and keyboard module
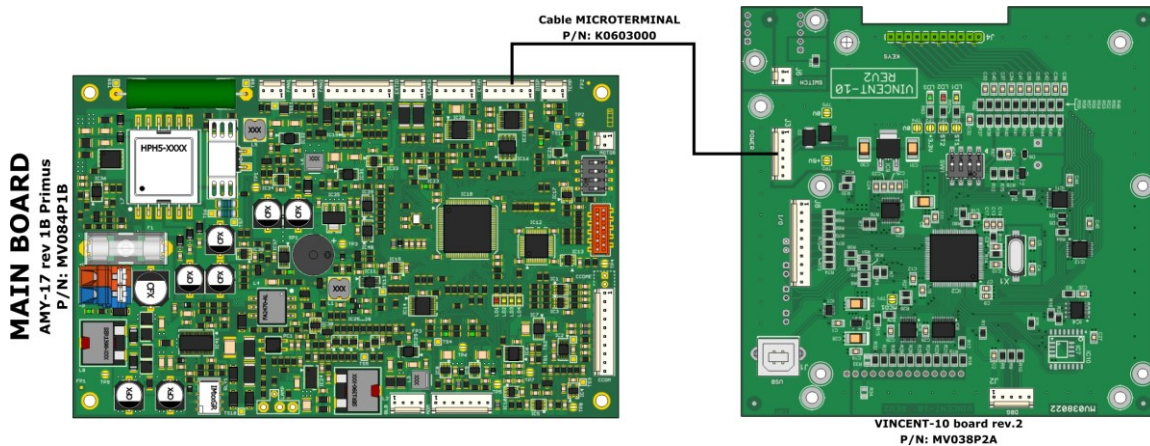
P/N	Qty	Picture	Description
MV038P2A	1		Board VINCENT-10 rev.2

P/N	Qty	Picture	Description
K0603000	1	CST100-06 CST100-06 CST100-06	Cable MICROTERMINAL (VINCENT-10 to AMY-17)

CST100-06

CST100-06

CST100-06	Color	CST100-06	Signal (VINCENT-10 board)	Note
1	WHITE	1	GND	Digital ground
2	GREY	2	GND	Digital ground
3	VIOLET	3	TX	Transmitter out
4	BLUE	4	RX	Receiver in
5	GREEN	5	+5V	+5V for digital circuits
6	YELLOW	6	+5V	+5V for digital circuits

8. SOFTWARE

ECOMAC and Clarity software have support implemented for TOY18DAD and BABY18DAD unit series.

To control the detector using Clarity, the latest updated version of the program should be used, which contains the drivers of this unit. For help with controlling this unit, see the Clarity installation directory (C:\Clarity; C:\Clarity\Bin) in the file: CswEcomTOY.chm. Double-clicking on the file opens the document for reading.

For more information about the software, see the user manual for the specific device.