CCBu40

CONTROLLER

www.cedrat-technologies.com | actuator@cedrat-tec.com

APPLICATIONS

- Actuators position control
- Active control of vibrations
- Embedded solutions

KEY FEATURES

- All-in-one piezo driver and controller
- 2 channels, with push-pull capability
- PID control with stabilizing filters, tunable with GUI
- Integrated SG conditioner or external sensor option

RELATED PRODUCT

- Piezo actuators
- Piezo mechanisms

NON CONTRACTUAL PICTURE

SPECIFICATIONS

PARAMETER	TYPICAL VALUE	UNIT
General		
Function	All-in-one piezo driver and controller	
Number of control channels	2	
Integated sensor conditioning	Strain Gages	
Digital communication	RS422	
Graphical User Interface	CTEC HDPM	
Digital control		
Control strategy	Tunable PID + Stabilising filters	
Stabilising filters	Tunable lowpass and notch	
List of stabilising filters configurations	No filter 2nd order lowpass filter 2nd order notch filter 2 × 2nd order notch filters 4th order notch filter	
Sampling rate	50	kSps
Digital resolution	16	bits
Analog inputs		
Number of analog inputs	2	
Analog inputs Voltage range	-10 ... +10	V
Small signals bandwidth (-3 dB)	29	kHz

> Strain gauges (SG) conditioner

Number of channels	2	
Reference output voltage	5	Vdc
Maximum reference output current	30	mA
Typical bridge impedance	350	Ohm
Output voltage range	-10 ... +10	V
Output impedance	20k	Ohm
Real gain	546.45	V/V
Small signals bandwidth (-3 dB)	>150	kHz

> Piezo driver

Number of channels	2	
Push-pull rail nominal voltage	130	V
Nominal output voltage range	-20 ... +150	V
Peak output current	0.5	A
RMS output current (1)	0.35	Arms
Ideal gain	20	V/V
Small signals bandwidth (-6 dB)	29	kHz

> Protections

Overtemperature		
Overload		
Missing connector		

> Power supply

Recommended supply voltage	+28	Vdc
Supply voltage range	+24 ... +28	Vdc
Supply current (2)	0.2 ... 4	Arms
Power consumption	5 ... 100	W

MISCELLANEOUS

PARAMETER	TYPICAL VALUE	UNIT
Mass	0.7	kg
Dimensions	151 × 146 × 33	mm
Cooling	Heat-sinking surface	
Maximum dissipated power	100	W
Operating temperature range (4)	-40 ... +70	°C
Storage temperature range	-40 ... +85	°C
Warm up time	15	min

INTERFACES

> **Main connector**	NICOMATIC 221R26F25-0002-3500
> **Mechanism connector**	NICOMATIC 221R16F25

INCLUDED ACCESSORIES

> **HDPM45 Graphical User Interface**	Windows compatibility

OPTIONS

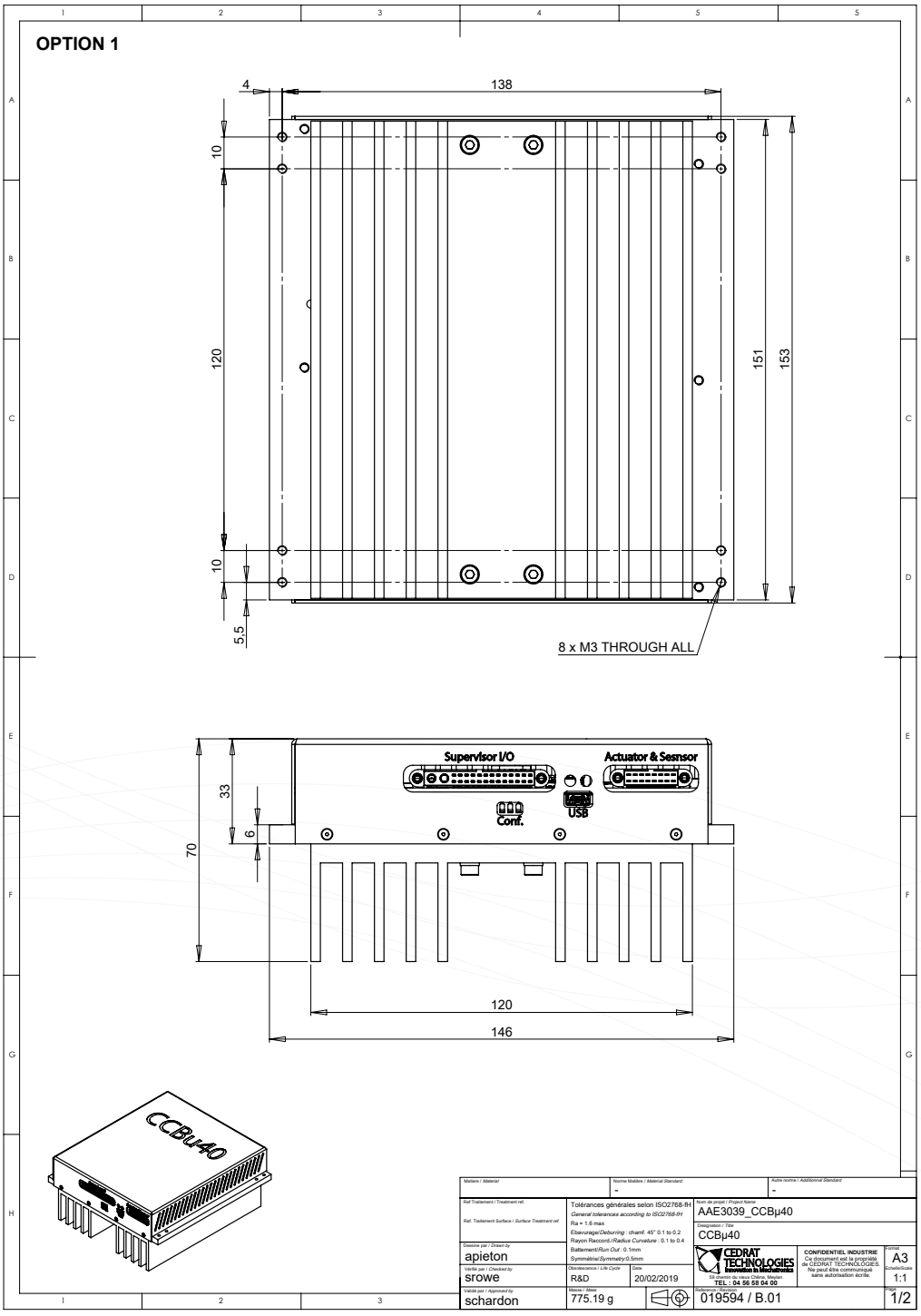
- **External sensor option** (5)
- **Functionality** — Connection of an external analog sensor on the CCBu20
- **Input voltage range** — -10 ... +10 V

ANNOTATIONS

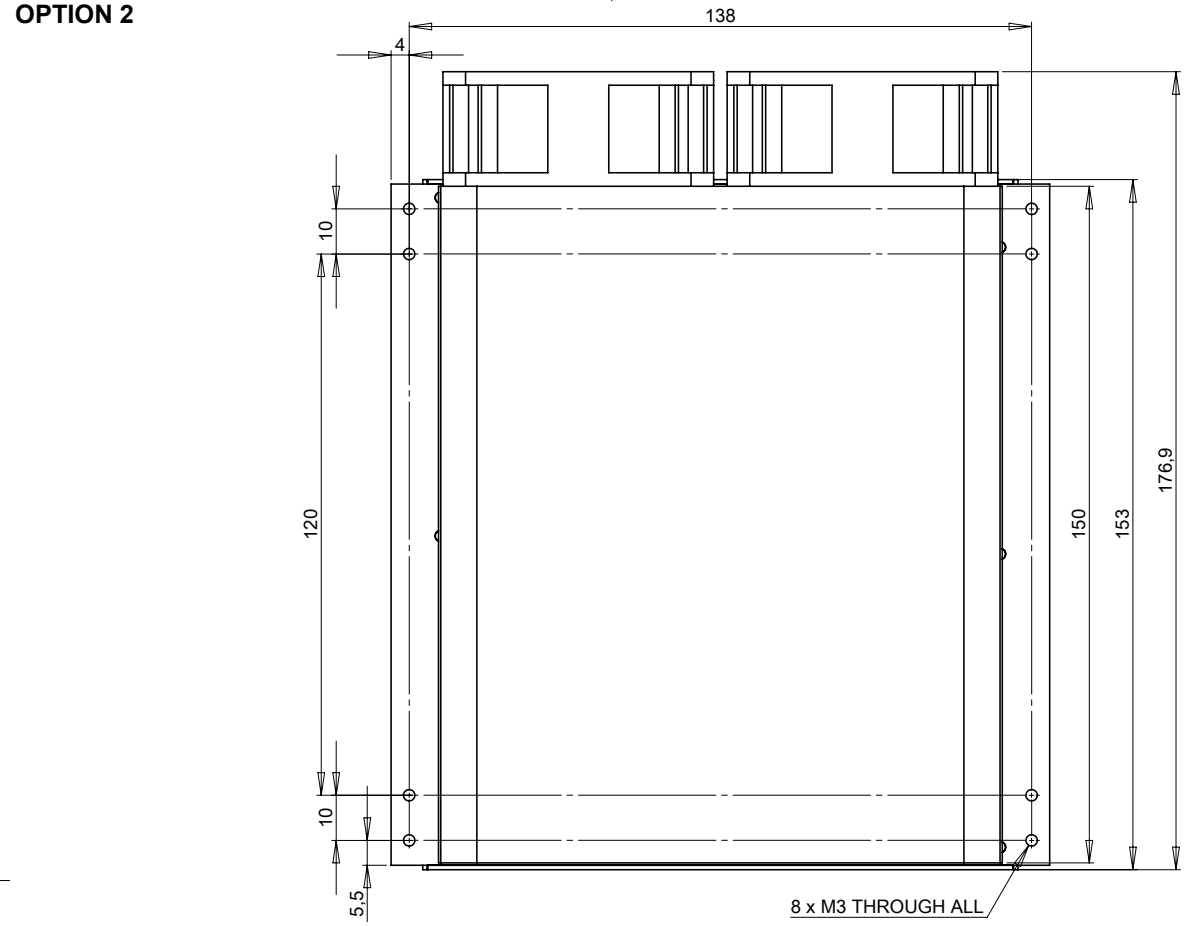
(1) At +28 Vdc supply. Lower output current has to be considered for lower supply voltages

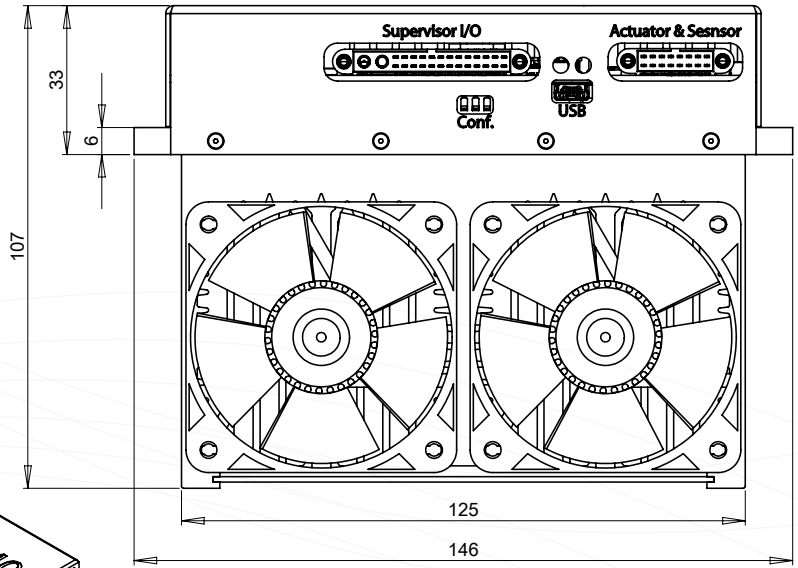
(2) At recommended supply voltage

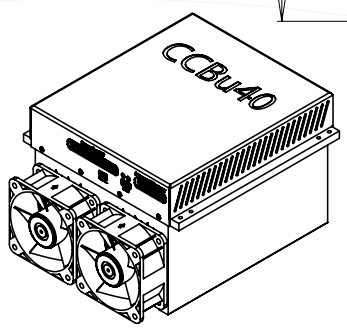
(4) Additional heatsink might be required



OPTION 2







Matière / *Material*	Norme Matière / *Material Standard*: -	Autre norme / *Additionnal Standard* -
Ref Traitement / *Treatment ref.*	Tolérances générales selon ISO2768-fH *General tolerances according to ISO2768-fH*	Nom de projet / *Project Name*: AAE3039_CCBµ40
Ref. Traitement Surface / *Surface Treatment ref.*	Ra = 1.6 max Ebavurage/*Deburring* : chamf. 45° 0.1 to 0.2 Rayon Raccord./*Radius Curvature* : 0.1 to 0.4 Battement/*Run Out* : 0.1mm Symétrie/*Symmetry*:0.5mm	Designation / *Title*: CCBµ40
Dessiné par / *Drawn by*: apieton		CEDRAT TECHNOLOGIES Innovation in Mechatronics 59 chemin du vieux Chêne, Meylan TEL : 04 56 58 04 00
Vérifié par / *Checked by*: srowe	Obsolescence / *Life Cycle*: R&D — Date: 20/02/2019	CONFIDENTIEL INDUSTRIE Ce document est la propriété de CEDRAT TECHNOLOGIES. Ne peut être communiqué sans autorisation écrite.
Validé par / *Approved by*: schardon	Masse / *Mass*: 775.19 g	Reference / Revision: 019594 / B.01

Format: A3 — Echelle/Scale: 1:1 — Page: 2/2

CCBu40 – Electrical ICD
(Preliminary)

Interface with the client / supervisor

For the interface of the CCBu40 with the client supervisor, the connector is a 26 pins NICOMATIC 221R26F26-0002-3500. It mate with 222S26M16-0002-4310. This special connector contains two power (HP0 and HP1) pins needed for the external 28VDC supply.

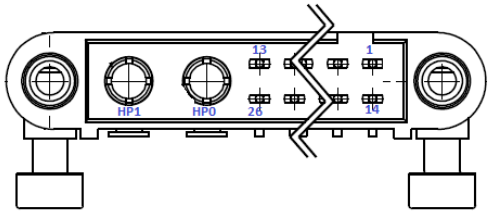


Figure 1. supervisor interface.

Mechanism connector			
Pin N°	**Signal**	**Description**	**Comment**
1,2,3,4,5,6,7,8,13,21,26	GND	CCBu40 ground reference	Reference of the CCBu40. For EMI concern this Ground should not be connected to HP0
9	TX+	Positive Transmit RS422 signal	
10	TX-	Negative Transmit RS422 signal	
11	RTS+	Positive Request To Send RS422 signal	
12	RTS-	Negative Request To Send RS422 signal	
14	SX	Analog sensor output for X axis	±10V output.
15	SY	Analog sensor output for Y axis	±10V output.
16	AIX	Analog order input for X axis	±10V input.
17	AIY	Analog order input for Y axis	±10V input.
18	T°C	Mechanism analog temperature output	0-3.3V output. Only valid if PT1000 is used on the mechanism.
19	Enable	Digital enable input	0-3.3V input. Referenced to GND
20	Fault	Digital fault output	0-3.3V output. Referenced to GND
22	RX+	Positive Receive RS422 signal	
23	RX-	Negative Receive RS422 signal	
24	CTS+	Positive Clear To Send RS422 signal	
25	CTS-	Negative Clear To Send RS422 signal	

CEDRAT TECHNOLOGIES • 59 Chemin du Vieux Chêne • Inovallée • 38246 MEYLAN Cedex France • Tel. : +33 (0)4 56 58 04 00

HP0	0V ext	Power supply reference	0V with maximum 4A continuous capability.
HP1	Vdc	CCBu40 power supply	+28V (+-3V), with maximum 4A continuous capability.

Interface with the piezo mechanism

For the interface of the CCBu40 with the piezo mechanism, the connector is a 16 pins NICOMATIC 221R16F26. It mates with 222S16M16.

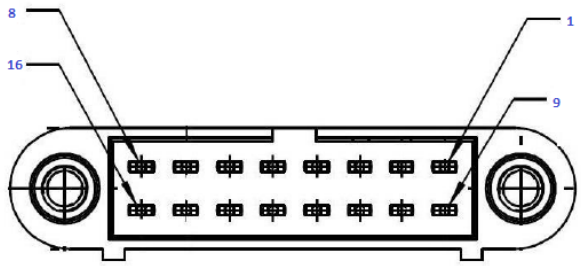


Figure 2. mechanism interface.

Mechanism connector			
Pin N°	**Signal**	**Description**	**Comment**
1	VREF	+5V voltage reference for supplying the two SG bridges	This voltage supplies two full SG bridges of 350Ω. Max current is 30mA.
2	SGX+	Positive middle node for the X axis SG bridge	Voltage increases when the displacement on the X axis increases.
3	SGY+	Positive middle node for the Y axis SG bridge	Voltage increases when the displacement on the Y axis increases.
5	1WIRE	1-wire bus for EEPROM memory	Optional: can be connected to a DS2431 EEPROM located on the mechanism.
7	VY	Y axis voltage output	This voltage is varying, and controls the displacement on the Y axis
8	VX	X axis voltage output	This voltage is varying, and controls the displacement on the X axis
10	SGX-	Negative middle node for the X axis SG bridge	Voltage decreases when the displacement on the X axis increases.
11	SGY-	Negative middle node for the Y axis SG bridge	Voltage decreases when the displacement on the Y axis increases.
12	+12V	+12V power supply	Max current is 20mA.
13	-12V	-12V power supply	Max current is 20mA.
14	T°C	Temperature signal from the integrated temperature probe	Optional: can be connected to a PT1000 temperature probe located on the mechanism.
16	+130V	+130V rail for the push-pull configuration	
6,9,15	GND	Ground reference	