NATIONAL INSTITUTE OF TECHNOLOGY

TIRUCHIRAPPALLI - 620 015

DEPARTMENT OF ECE

NOTICE INVITING QUOTATION

File No.	NITT/F.NO.001/CAP.EXP.35/2020-21/ECE	Date:	24.3.2021

To

(Supplier Address)

Sealed quotations are invited from reputed Authorized Dealers / manufacturers for the supply of the Items.

Name of the Item		:	Various IOT Sensors
Quantity Required		:	30 (Each sensor 4 units)
Specification		:	(As per enclosed Schedule Annexure – I)
1.	Quotation Reference No.	:	NITT/F.NO.001/CAP.EXP.35/2020-21/ECE
2.	Last date and Time for receipt of quotation	:	22.3.2021 before 4.30PM **1st Extension date : 30.3.2021 at 4.30 PM**
3.	Date &Time of opening of Quotation	:	23.3.2021 At 3.00PM **1st Extension date : 31.3.2021 at 11.00 AM**
4.	EMD Amount	:	Bid Security declaration form to be submitted/-
5.	Validity (Days)	:	90 Days
6.	Address to which quotations are to be sent	:	The Director, National Institute of Technology, Tiruchirappalli – 620 015, Tamil Nadu, India
	Kind attention to	:	Dr. M. Bhaskar
	Phone	:	9443314616
	E-mail	:	bhaskar@nitt.edu

1. Quotations should be submitted in the format given in Annexure – I & Annexure-II
2. The envelope should contain the following details:

> **"QUOTATION AGAINST ENQUIRY (Various IOT Sensors) -**
>
> NITT/F.NO.001/CAP.EXP.35/2020-21/ECE
>
> **Kind attention to:** Dr. M. Bhaskar

NATIONAL INSTITUTE OF TECHNOLOGY

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Last date and Time for receipt of quotation : 22.3.2021 Before 4.30PM 1st Extension date : 30.3.2021 at 4.30 PM

Terms and Conditions:

1.	The quotation must be in the format furnished by NIT Tiruchirappalli and should be of typed format with proper signature of the authority, hand written rates and specification will not be accepted for evaluation. In case there is any unavoidable correction it should be clearly readable and properly attested. If not the quotation will not be considered. Hand written Quotation and incomplete will be rejected.
2.	a) Earnest Money Deposit (EMD) is to be submitted by way of Demand Draft drawn on any Nationalized bank in India in favor of "The Director, NIT, Tiruchirappalli" payable at Trichy. The bids submitted without EMD will be treated as non-responsive and will be rejected. EMD shall bear no interest. Bidder must fill the EMD returning Form (Annexure-III) and submit along with the quotation. EMD for this particular quotation is RS. Bid Security b) declaration form to be submitted/- c) EMD exemption will be given as per the GOVT of India norms. c) Canvassing by the Bidder in any form, unsolicited letter and post-tender correction will leads to rejection of the bid and result in forfeiture of EMD.
3.	You are invited to submit your most competitive quotation for the supply of goods according to the specifications, warranty, delivery and other terms as given by the NITT in the Specification annexure.
4.	Bidders may send the quotations in sealed covers with the quotation reference number and last date for receipt of quotations duly superscribed on the cover. **Kind Attention to: as mentioned in the point No. 6** NB: Mention the company Contact Number / E-mail id on the cover.
5.	Quotation will be opened on 23.3.2021 At 3.00PM 1st Extension date : 31.3.2021 at 11.00 AM at the Stores and Purchase Section, NIT, Tiruchirappalli in presence of the tenderers or their representatives who may wish to be present. (Any change in the date, time and venue of the quotation opening will be informed to the bidders through telephone / E-mail)
6.	The National Institute of Technology, Tiruchirappalli reserves the right to accept or reject any quotations, and to cancel the bidding process, and reject all quotations at any time prior to the award of order without assigning any specific reason thereof.
7.	**Eligibility:** Participation in this Limited tender is by invitation only. For any details / clarifications regarding could be obtained, free of cost, from the National Institute of Technology, Tiruchirappalli on all working days during 10 AM to 5 PM.
8.	Please quote whether your organization is large scale industry or small scale industry. If you have NSIC Certificate, please attach it to the quotation. Mention your registration details
9.	Manufacturer's name and country of origin of materials offered must be clearly specified. Printed brochures, Complete details and ISI specification if any must accompany the quotation. Make / brand of the item shall be stated wherever applicable. If you have got any counter offer as suitable to the material required by us, the same may be shown separately.

10.	Samples must be submitted where specified along with the quotations. Samples must be carefully packed, sealed and labelled clearly with enquiry number, subject and sender's name for easy identification. Rejected samples will be returned at bidders cost only.
11.	All supplies are subject to inspection and approval before acceptance. Manufacturer / supplier warranty certificates and manufacturer / Government approved lab test certificate shall be furnished along with the supply, wherever applicable
12.	National Institute of Technology, Tiruchirappalli reserves the right to modify the quantity specified in this enquiry by +/- 25%.
13.	**Bid Price** a. The contract shall be for the entire quantity. Bidders must quote for entire quantity. Each bidder shall submit only one quotation in Indian Rupee only. b. List of reputed customers should be submitted, wherever applicable. c. The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account. d. All taxes, packing, forwarding and delivering other allied items at the destination shall be included in the price. All such price components may be shown in the quotation. If there is no indication regarding above charges. It will be considered as inclusive of all charges. e. In case of any discrepancy between unit price and total, the unit price shall prevail. f. In case the items in the enquiry are covered by any rate contract or any other state or central Government, it should be specified in your quotation and accepted contract rates should also be mentioned. It should be confirmed whether you could supply at the RC rates outside rate contract g. Quotations containing conditions like "subject to prior sale" may not be considered. h. Delivery period required for supplying the material should be invariably specified in the quotation i. Offer from Manufacturer / Authorized dealer / reputed contractor alone will be accepted.
14.	**Evaluation of quotations:** Quotations will be evaluated item-wise or lump sum basis. The purchase committee will evaluate and compare the quotations determined to be substantially responsive i.e. (i) are properly signed; (ii) Conform to the terms & conditions and specifications; and (iii) price offered are competitive.
15.	**Award of contract** a. The National Institute of Technology, Tiruchirappalli will award the Order for supply of Goods / Services to the bidder whose quotation has been determined to be substantially responsive, and who has offered the lowest evaluated quotation price. b. The Bidder should furnish the contract agreement and performance security within 15 days from the date of receipt of the order for supply of goods / services, failing which the order will be cancelled without further notice and awarded to next eligible bidder. c. Notwithstanding the above, National Institute of Technology, Tiruchirappalli reserves the right to accept or reject any quotations, and to cancel the bidding process, and reject all quotations at any time prior to the award of order without assigning any specific reason thereof. d. National Institute of Technology, Tiruchirappalli, prior to the expiration of the quotation validity period, will notify the bidder whose bid is accepted for the award of contract. The terms of accepted offer shall be incorporated in the purchase order.
16.	**Warranty: 12 MONTHS** shall be applicable to the supplied goods and installation work. Bidder should clearly indicate the arrangements for support and maintenance during the period for which the warranty shall be in force.
17.	**Performance Security:** The successful bidder need to submit performance security for an amount of Percentage **3%** of purchase order value either in the form of bank guarantee or crossed demand draft drawn on any Nationalized bank in India in favor of

	"The Director, NIT, Tiruchirappalli" payable at Trichy. The bank guarantee / Demand Draft will be returned to the supplier after 60 days from date of successful completion of supply, installation, and the warranty period.
18.	**Payment:** 100% will be paid after Installation and satisfactory working/date of completion of service if the documents are in order. The bill should be raised in favor of "The Director, National Institute of Technology, Tiruchirappalli, Tamil Nadu, India." with institute GST No. 33AAATN5491Q1ZZ. No advance will be provided to the supplier/service provider.
19.	**GST:** This institution has been included in the list of institutions approved for availing exemption from the payment of GST for research purchases under notification no. 45/2017 central tax – (rate), date: 14-11-2017 / notification no. 47 / 2017 integrated tax – (rate), dated: 14-11-2017
20.	**Liquidity damages:** If the bidder / supplier, after accepting the Purchase Order or supply of Goods / Services, fails to deliver any or all of the Goods or to perform Services within the period(s) specified in the Order, The National Institute of Technology, Tiruchirappalli shall impose penalty without assigning any reasons to the bidder / supplier a sum equivalent to 0.50 % of the total cost as indicated in the Purchase Order (which will be deemed as agreed price) for each week or part thereof of delay until actual delivery or performance is completed and such penal charges shall be limited to a maximum of 5% of the agreed price. Once the maximum is reached The National Institute of Technology, Tiruchirappalli, may proceed on its own to consider the termination / cancellation of the Order and may inform the bidder about the cancellation of the said purchase order. unless extension is obtained in writing from the office / Department mentioning the levy of LD clause on valid ground before expiry of delivery period
21.	If the deliveries are not maintained and due to that account Procuring Entity is forced to buy the material at your risk and cost from elsewhere, the loss or damage that may be sustained there by will be recovered from the defaulting supplier
22.	Dispute clause: Any dispute relating to the enquiry shall be subject to the jurisdiction of the court at Tiruchirappalli only

ACCEPTANCE BY THE BIDDER

I/We hereby certify that I/We shall abide hereby the terms and conditions and the Annexures of this limited quotation.

Signature & Seal of Vendor with Date

For any details / clarifications regarding could be obtained from Stores and Purchase Section on all working days during 10 AM to 5 PM.

For further detail related to Technical specifications kindly contact Dr. M. Bhaskar (Purchase initiator), **ECE,** bhaskar@nitt.edu, 9443314616.

(NB: Mention the Contact Number / E-mail on the cover. Any change in the date, time and venue of the tender opening will be informed to the bidders through telephone / E-mail)

Enclosures: 1) Specifications of the equipment — Annexure – I
2) Price Format — Annexure - II
3) EMD Return Format — Annexure – III
4) Bank Mandate Form — Annexure – IV

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DEPARTMENT OF ECE

Annexure- I

Specifications of the Equipment

Ref: NITT/F.NO.001/CAP.EXP.35/2020-21/ECE **Date:**

S. No	Specification of NIT-T	Specification of the Supplier	
1.	Detail specification Attached Annexure - V	Make	
		Model	
		(No hand written)	
Reasons (if there is difference in specification)			
1.			
2.			

S.No	Other requirements related to the equipment	NITT Requirement	Supplier commitment
1.	Installation required	**YES**	
2.	Warranty (in Month)	**12 MONTHS**	
3.	Comprehensive AMC required		
4.	Delivery Period (Weeks)	**4 Weeks**	
5.	Shipment terms		**At NIT-T**
6.	Performance Security in %		**3%**

Signature & Seal of Vendor with Date

Note:

Specification of the Supplier should be given in detail, single word confirmation like Complied / Yes / same will be treated as non - responsive Bid and summarily rejected.

Proof for the supplier's specification must be enclosed along with the quotations. (catalogue, brochure, and product website link if any)

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Annexure- II

PRICE BID FORMAT FOR BIDDERS

Quotation reference No. & Date : NITT/F.NO.001/CAP.EXP.35/2020-21/ECE

Bidder's Offer No. & Date :

S. No.	Description of item	Unit (Set / No) cost	QTY	Rate / Qty. in Rs. (excluding GST)	GST in Rs.			Total Value + GST in Rs.
					SGST	CGST	IGST	
1.	**Price of each sensor** 1) Inductive 4mm NPN-NO Proximity Sensor Switch.		Each sensor 4 units					
	2) Door Window Sensor Magnetic Switch							
	. . .							
	60) Iris sensor							
	(The price indicated shall be exclusive of all accessories, spares etc. as given in the scope of supply)							
2.	Other accessories / spares etc. as given in scope of supply (Individual item-wise break-up price shall be attached as an annexure to this price bid format.)							
3.	Installation and Commissioning (extra, if any)	YES						
4.	Packing & Forwarding charges (extra, if any)							
5.	Freight & Transit insurance charges, extra, if any							
6.	Total price							
7.	Value of Annual Maintenance Contract							
8.	**Net cost to be paid by NIT-T**							

Signature & Seal of Vendor

Note: The price quoted should be in Typed format only as per the above form. Hand written quotes will be rejected. No row shall be left blank, Kindly mention NA in case the item is "Not Applicable". If this format is not used or any column is left blank, then the bid will be rejected. AMC Value will not consider for arriving L1 bidder.

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PROCESS COMPLIANCE/ACCEPTANCE OF TENDER CONDITIONS FORM

The Director,
National Institute of Technology,
Trichy – 15

Sub : Acceptance to the Process related & Terms and Conditions for the-Limited-tendering
Ref. : The Terms & Conditions for Limited-Tendering mentioned in tender No. : _____

Sir,
We hereby confirm the following.

The undersigned is authorized representative of the company. We have carefully gone through the NIT Tiruchirappalli, Tender Documents and the Rules governing the Limited Tender along with this document. We have examined and have no reservations to the Bidding Documents, including addendum (if any). We offer to supply in conformity with the Bidding Documents and in accordance with the condition of contact, specified in this tender document. We will honour the Bid submitted by us during the Limited Tender. We give undertaking that if any mistake occurs while submitting the bid from our side, we will honour the same.

Bid Securing Declaration: - We accept that if we withdraw or modify Bids during the period of validity, or if we are awarded the contract and fail to sign the contract, or to submit a performance security before the deadline defined in this bids document, we will be suspended for the period of 01 year from being eligible to submit Bids for contracts with National Institute of Technology, Tiruchirappalli.

We are aware that if NIT Tiruchirappalli has to carry out e-tender again due to our mistake, NIT Tiruchirappalli has the right to disqualify us for this tender. We confirm that NIT Tiruchirappalli shall not be liable & responsible in any manner when refloatal unforeseen circumstances etc. Our bid shall be valid for the period from the date fixed for the bid submission deadline, and it shall remain binding upon us and accepted at any time before the expiration of bid validity period as per this tender.

If our bid is accepted, we commit to provide a performance security at 3% in Bank Guarantee /Fixed Deposits for due performance of the contract as per NIT Tiruchirappalli policy and warranty-guarantee as per tender specification or agrees as per contract. We understand that this bid, together with your written acceptance thereof included in your notification of award/placement of order, shall constitute a binding contract between us. We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive. We accept that the competent authority in NIT Tiruchirappalli will have full right to reject any/all offer(s) without assigning any reason thereof and does not bind itself to accept the lowest or any other tender and full authority to postpone the tender issue date, submission /opening date or to alter any other condition of tender /cancellation of this tender, as per policy/committee recommendations of NIT Tiruchirappalli at any stage without assigning any reason thereof for which no claim from whomsoever will be entertained. I/We the undersigned have read the entire terms and conditions of this Tender document and we are fully agreeable to the terms and conditions mentioned herein. The decision of competent authority of NIT Tiruchirappalli with respect to this Tender-Result will be fully agreeable and binding on us.

This letter can be treated as signed and acceptance copy of tender documents and the forms submitted as signed by competent authority of firm submitting this tender and there is no need to submit separate signed copy of tender document.

Competent Authority of the Firm/Company/Enterprises to sign:

Name
Designation
Contact Details

Date with stamp & seal of organization:

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(TO BE PRINTED IN LETTER PAD OF THE FIRM)

Annexure – IV

MANDATE FORM FOR ELECTRONIC FUND TRANSFER/RTGS TRANSFER

Date: / /

To

The Director,
National Institute of Technology,
Tiruchirappalli – 620 015, Tamil Nadu

Sub	:	Authorization for release of payment / dues from National Institute of Technology, Tiruchirappalli through Electronic Fund Transfer/RTGS Transfer.

1. Name of the Party / Firm / Company / Institute :
2. Address of the Party :
3. City_____Pin Code_____
4. E-Mail_____Mobile No:_____
5. Permanent Account Number_____
6. Particulars of Bank:

Bank Name:		Branch Name:	
PIN Code:		Branch Code:	
IFS Code:(11 digit alpha numeric code)			
Account Type	Savings	Current	Cash Credit
Account Number:			

DECLARATION

I hereby declare that the particulars given above are correct and complete. If any transaction delayed and not effected for reasons of incomplete or incorrect information I shall not hold Director, National Institute of Technology Tiruchirappalli responsible. I also undertake to advise any change in the particulars of my account to facilitate updating of records for purpose of credit of amount through NEFT/RTGS Transfer.

Place:_____ Date: _____

Signature & Seal of the Authorized Signatory of the Party

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IoT Sensor Specifications — Annexure - V

Sl. No.	Sensor	Specifications
1	Inductive 4mm NPN-NO Proximity Sensor Switch	Operating Voltage 10-30 Vdc Operating Distance (mm) 2.5 Frequency of Operation (Hz) 1000 Rated Operating Current 100
2	Door Window Sensor Magnetic Switch	Contact Capacity(Max. Switch Current) 0.5A Voltage 100V Rated Power (W) 10 Actuation Distance (mm) 15 ~ 25
3	Proximity Switch Photoelectric Switch Sensor	Operating voltage 10-30 VDC Max. Load current 300 mA. Sensing distance 500-750 mm Adj. for standard object size Switching frequency 250 Hz.
4	Laser Through Beam Switch	Operating voltage: Transmitter DC3.3-5V, Receiver: DC4.5-17V Operating Current: Transmitter: 40mA, Receiver: 30mA Detection distance 0-30Meters
5	Loudness Sensor	Operating voltage: 3.5-10VDC (nominal 5V) Working frequency: 50~2000 Hz Sensitivity: -48 to 66 dB S/N ratio: >58 dB Output signal range: 0 – 1023 (Analog signal)
6	Small Microphone Sound Sensor Module	Operating Voltage: 3.3V to 5V DC. LM393 comparator with threshold preset. PCB Size: 3.4cm * 1.6cm. Induction distance: 0.5 Meter. Operating current: 4~5 mA. Microphone Sensitivity (1 KHz): 52 to 48 dB.
7	Sound Detection Module Sensor for Intelligent Vehicle	Working voltage: DC 3.3-5V Induction distance is 0.5M Single channel signal output.
8	Speak (Voice) Recognition Module V3 compatible with Arduino	Supply Voltage: 4.5 – 5.5 V. Current : <40 mA. Digital Interface : 5V TTL level for UART interface and GPIO. Analog Interface: 3.5 mm mono-channel microphone connector + microphone pin interface.
9	High Performance Microphone AGC Amplifier Module	Supply Voltage: 2.7v - 5.5v @ 3mA current Output: 2Vpp on 1.25V bias Frequency Response: 20Hz – 20 KHz Low Input-Referred Noise Density of 30 nV Low THD: 0.04% (typical)

10	RFID IC Key Tag	Dimension(LxWxH): 43.7×30.5×5.3 mm Response Frequency: 13.56 MHz Memory capacity: 8 kbit
11	Plug and Play RFID Reader	Operating Frequency 13.56 MHz Support OS Windows, Mac OS, Linux, Android, iOS Scan Area 88 x 58 mm Dimensions (LxWxH)mm 120 ×80×16 Operating temperature -10 ~50 ℃
12	RFID Card	Operating distance: Up to 1 to 5 cm (Depending on Antenna Geometry) Operating frequency: 125 KHz Data transfer: 106 kbit/s
13	USB Proximity Sensor Smart RFID ID Card Reader	Frequency: 125Khz. Support µEM4001, 4100, or its compatible RFID, ID card. Read first 10 digits of the RFID/Proximity card. Support Windows95/98/2000/XP/7/8.
14	RFID Read / Write Module	Operating Supply Voltage 2.5 V to 3.3 V Max. Operating Current 13-26mA Min. Current(Power down) 10µA Logic Inputs 5V Tolerant
15	Reader Module	Operating voltage of EM-18: +4.5V to +5.5V Current consumption: 50mA Operating temperature: 0ºC to +80ºC Operating frequency: 125KHz
16	Infrared Temperature Sensor	Power supply: 3-5V Communication mode: standard IIC communication protocol Size: 11.5 * 16.5 mm
17	Peltier cooler / generator	Voltage : 12V Vmax (V) : 15.4V Imax (A) : 6A QMax (W) : 92W Internal resistance: 1.98 Ohm +/- 10% Dimensions : 40mm x 40mm x 3.6mm
18	Digital Temperature And Humidity Sensor	Operating Voltage: 3.5V to 5.5V. Operating current: 0.3mA (measuring) 60uA (standby) Output: Serial data. Temperature Range: 0°C to 50°C. Humidity Range: 20% to 90% Resolution: Temperature and Humidity both are 16-bit. Accuracy: ±1°C and ±1%
19	Humidity Detection Sensor Module	Operating voltage: 3.3V - 5V. Dual output mode: digital/analog PCB size: 3cm * 1.6cm.
20	Thermocouple Sensor	Resolution 0.32°C at 625°C (0.58°F at 1157°F) Operating Voltage(VDC): 3 to 5.5 Temperature Range(°C): 0 to +1024

		Cold Junction Compensation Range(°C): -20 to +80
21	Temperature & Humidity Sensor	Operating voltage: 3.3 V / 5 V Measuring current: 1.3 – 2.1 mA Measuring humidity range: 5% – 95% RH Measuring temperature range: -20 to 60 ℃
22	Smoke Methane Gas & Liquefied Flammable Gas Sensor Module	Analog Output Voltage 0V to 5V Digital Output Voltage 0V or 5V (TTL Logic) Dimensions in mm (LxWxH) 36x20x21
23	Alcohol Ethanol Gas Sensor Module	Input voltage: DC 5V, power consumption (current): 150 mA, DO output: TTL digital 1 and 0 (0. 1 and 5 V), AO output: 0.1 - 0.3 V Highest concentration of voltage: Approx. 4V detection range of alcohol: detection range of 10 ~ 1000 PPM.
24	Liquefied Gas (LPG Gas) & Coal Gas Sensor Module	High Sensitivity to LPG, iso-butane, propane. Detection Range: 100 - 10,000 ppm iso-butane propane. Fast Response Time: <10s. Heater Voltage: 5.0V
25	Carbon Monoxide Combustible Gas Sensor Module	Characteristic gas 100 ppm CO Sensitivity ≥ 3%. Return time ≤ 30 sec Heating resistance ± 31 Ω
26	Hydrogen H2 Gas Sensor Module	Measuring range. 0-1000 ppm, 0- 4 % Operating Voltage (VDC) 5 Current Consumption(mA) 150 . Output signal-Digital (UART), RS485 (modbus)
27	Thermoelectric Power Generator	Operating Temperature: 0-150°C Maximum Temperature: 150°C Open Circuit Voltage: 4.8V
28	Thermoelectric Cooler	Operating Voltage: 12V Maximum Voltage- Umax (V) : 15V Maximum Current- Imax (A) : 3A Maximum Power : 30 W. Power Cord: 15 cm.
29	Soil moisture Detector Sensor	Supply Voltage: 3.3 – 5 VDC Working Current: <20 mA Output Current: <30 mA DO: Digital Output AO: Analog Output
30	Analog PH Sensor Kit	Module power supply: 5 VDC. Measuring temperature: 0-50 ℃. Response time: ≤ 1min.
31	Grove Sound Sensor	supply voltage range: 4 V-12 V quiescent current drain: 4 mA size: 2.0cm x 2.0cm twig module
32	Wind Speed Sensor	Supply voltage: DC 9-24V. Power consumption ： Voltage MAX ≤ 0.3 W. Start wind speed0.4-0.8 m/s.

33	Dust Smoke Particle Sensor	Power supply voltage: DC5 ± 2V Sensitivity: 0.5V / (0.1mg / m3) Clean air voltage: 0.9V typ. current consumption (Icc: MAX. 20 mA)
34	Automatic Water Level Controller Pump Relay Switch Module	Operating Current – 200 mA Relay Switch Current - 10 A Operating Voltage : AC 12V DC 12V. I/O Pins : Water Level High input & Water Level Low input.
35	Photoelectric Optical Water Level Sensor Probe	Operating Voltage: 5V DC Output Current: 12mA Operating Temperature: - 25 ~ 105 °C Low Level Output: < 0.1 V High Level Output: > 4.6 V Liquid Level Detection Accuracy: ±0.5 mm
36	Small Float Level Control Switch	Contact Rating: 10 W. Switching Voltage: 220 V. Switching Current: 0.5 A. Breakdown Voltage: 220 VDC. Carry Current: 1 A.
37	SeeedStudio Grove Water Sensor	Working voltage: 4.75V to 5.25V Working humidity (without condensation): 10% to 90% Working temperature: 10℃ to 30℃ Current: <20mA
38	Water Level Depth Detection Sensor	Operating voltage: DC3-5V Operating current: less than 20mA Detection Area: 40mmx16mm Operating temperature: 10℃-30℃ Humidity: 10% -90% non-condensing
39	Water Flow Measurement Sensor	Working Voltage: 5 to 18V DC (min tested working voltage 4.5V). Max current draw: 15mA @ 5V. Working Flow Rate: 1 to 30 Liters/Minute. Maximum water pressure: 2.0 MPa.
40	Vibration Sensor	working voltage of 3.3V-5V. driving ability, more than 15mA
41	Piezo Vibration Sensor	Voltage Sensitivity (open-circuit, baseline): 1.1 V/g. Charge Sensitivity (baseline): 260 pC/g. Resonance Frequency: 75 Hz. Voltage Sensitivity (open-circuit, at resonance): 6 V/g. Upper Limiting Frequency (+3 dB): 42 Hz.
42	2 Channel Tilt Sensor Module	Operating voltage 3.3V-12V Maximum output current: 15Ma operating temperature: 0°C to + 80°C
43	Grove Collision Sensor	power supply range DC3.3V to 5V RoHS/WEEE lead-free compliant
44	Knock Sensor Module	Operating voltage: 3.3V-5V Temperature dependence of sensitivity 0.04 mV/g°C

		Capacity field 1,150 ± 200 pF
45	Vibration Switch Module	Maximum voltage: 12V Rated Heating Current: 20mA
46	Air Pressure Sensor	Measuring range: 0-40kPa Operating temperature range: -40 ℃ ~ + 125 ℃ Storage Temperature: -40 ℃ ~ + 150 ℃ Humidity: (50% ± 10%) RH Power supply: ≤10V DC or ≤2.0mA DC
47	Weighing Load Cell Sensor	Weighing Range: 0 ~ 1 kg. Rated Output: 1.0 ± 0.1mV / V. Non Linear Output: ± 0.03% F.S. Input Impedance: 1066 ± 10% Ω. Output Impedance: 1000 ± 10% Ω.
48	A/D weight Pressure Sensor	Recommended excitation voltage: 5-10V. 50 and 60Hz supply rejection. Output Sensitivity: 1.0 ± 0.1 mV / V.
49	Pressure sensor	Response Time: < 5 µsec Operating Temperature: -40°C – 60°C (-40°F – 140°F) Error: < ±3% of Full Scale (Line drawn from 0 to 50% load)
50	Force Sensor	force range: 111 N (0 – 25 lb) Sensing area: 25.4 mm (1 in.) Operating temperature: -40ºC to +85ºC
51	Load Cell Sensor	Rated load: 50kg Rated output: 1.0 ±0.1mV/V Maximum working voltage: 8VDC Operating temperature range: -20~65°C
52	Bend Sensor for Hand Gesture Recognition	Flex length: 5.6 cm. Total Length: 2.2” (7 cm). Height : 0.43mm (0.017”), Flat Resistance: 10K Ohms ±30%. Power Rating: 0.5 Watts.
53	Barometer Sensor	Pressure: 300 –1200 hPa Temperature: -40 – 85 °C High-Pressure Precision: ± 0.002 hPa (or ±0.02 m)
54	Digital Barometric Sensor Module	Supply Voltage 1.8V to 3.6V power consumption – 0.5uA at 1Hz Pressure Range: 300 hPa to 1100 hPa (+9000 m to -500 m)
55	ECG Sensor	Gain: Minimum 1000 Range: ±1.47mV (with VCC=3V) Bandwidth: 25-100Hz Input Impedance: >100GOhm Cable Length: 100±0.5cm (customizable) Connector Type: UC-E6
56	EEG Sensor	Gain: Minimum 40000 Range: ±37.5µV (with VCC = 3V) Bandwidth: 0.8-49Hz

		Consumption: ~3mA Input Impedance: >100 GOhm
57	EMG Sensor	Gain: Minimum 1000 Range: ±1.5mV (with VCC = 3V) Bandwidth: 25-500Hz Consumption: ~1Ma Input Impedance: >100GOhm
58	Face recognition	Face Template Size 2.3 KB Face Matching Speed / Sec 8,00,000 Faces / sec Face Detection Time 0.07 F/Sec Cameras HD 2 MP Camera
59	Finger print sensor	Fingerprints capacity Minimum 120 fingerprints Resolution 500 DPI Work Voltage 5V
60	Iris sensor	Spatial Resolution : > 50% @ 1.0 LP/mm Pixel Resolution : > 10 Pixels/mm Image Margins Left & Right : >=0.6x IRIS Radius Pixel Depth : 8 bits/pixel