



BIRD ELECTRONICS PRIVATE LIMITED



We design and manufacture embedded controls



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Focus areas

IOT

For Industrial, Commercial and Professional Applications
Using BLE Mesh, SubGhz

BLDC

BLDC Motor Controls, AC Induction Motor Controls
like Single phasing preventers, Overload Relays, Auto
starts, Soft starts

Beyond Borders – Without Compromises



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Focus areas

Fire Alarms

We have considerable experience and contacts in this industry

Consumer

Our success story on controls for Mosquito repellents – 15 Million+ Numbers produced in 9 months,

We are open to licensing our designs for production



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Design Process

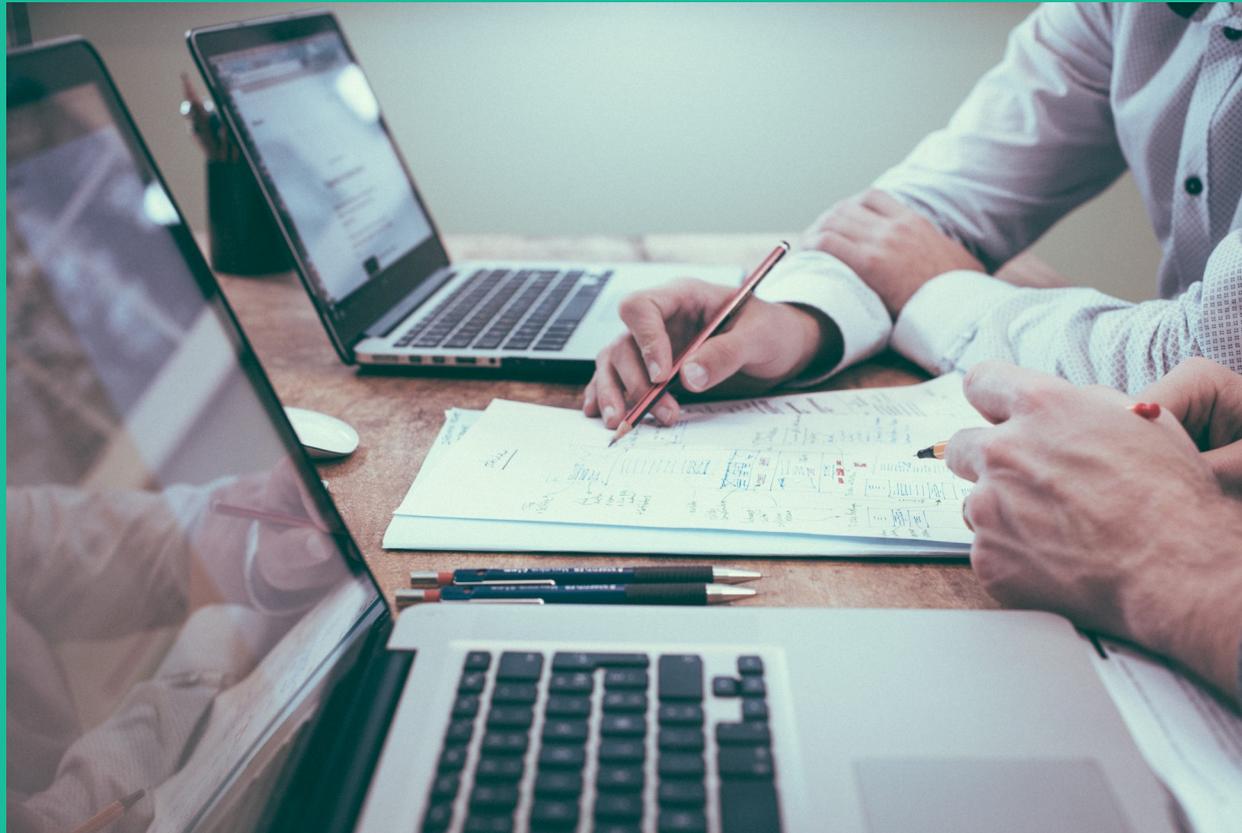


Project always starts with an Idea



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Design Process

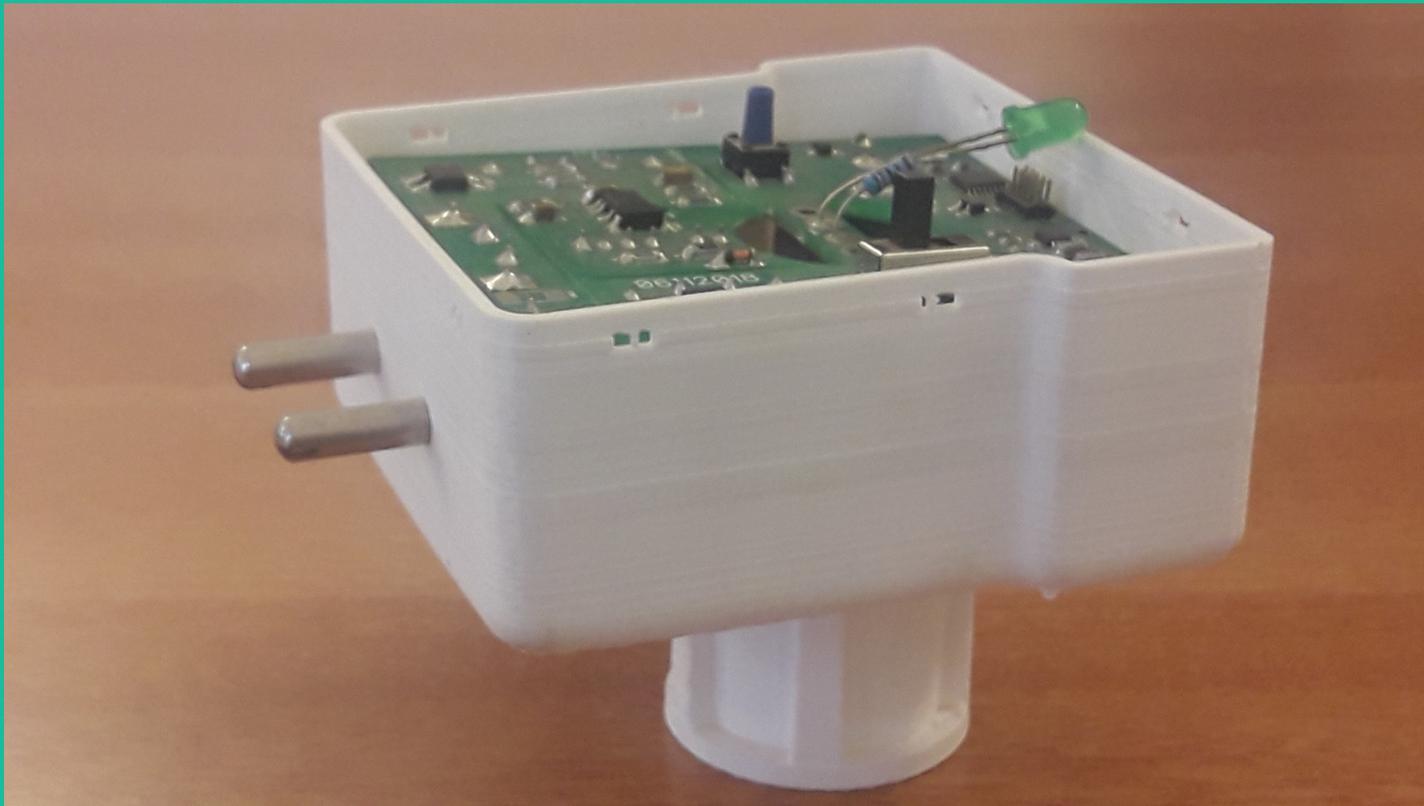


Idea is converted into detailed specifications and a contract is signed.
It can be a Design + Production contract or Design+ Royalty contract



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Design Process

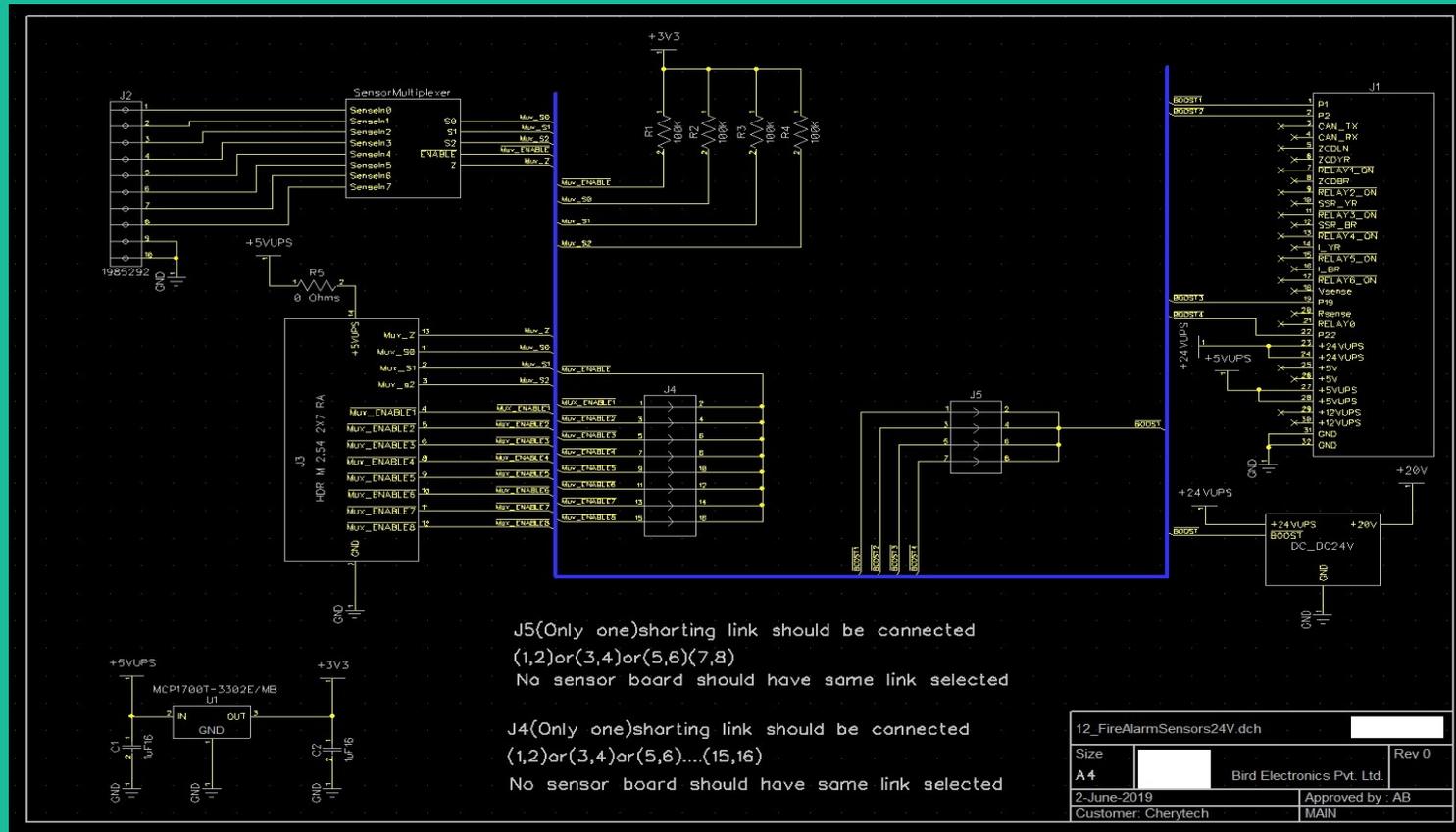


External look and feel and dimensions of product is decided and a 3D solid model is designed using software like Solid Works or Solid Edge. A sample is 3D printed using facilities available in-house.



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Design Process

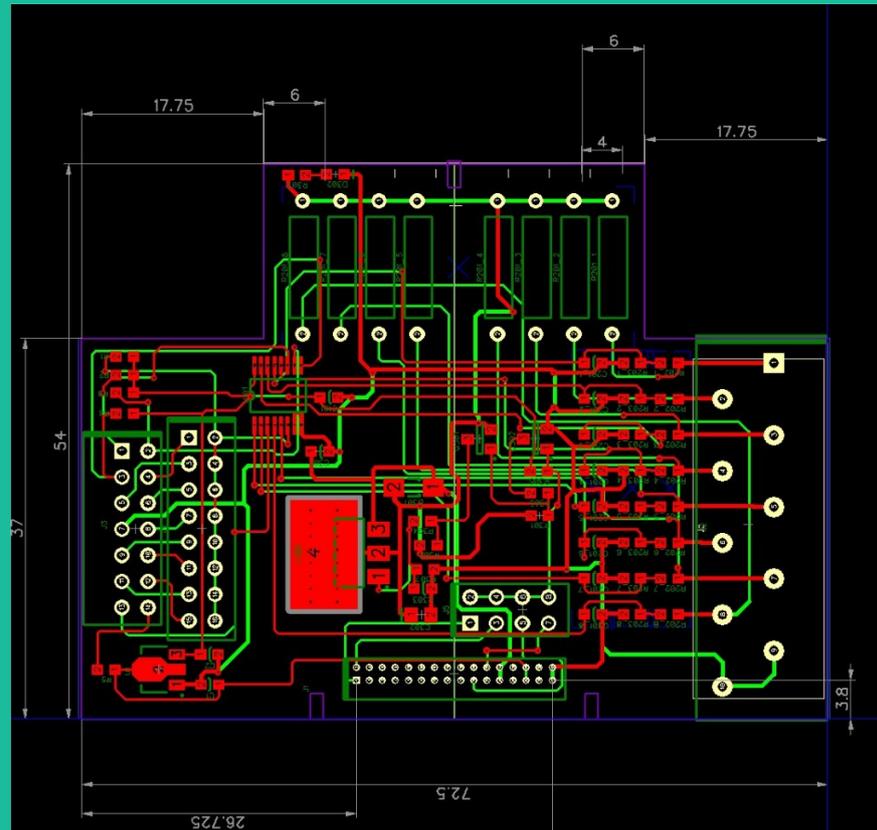


Product schematics are prepared and reviewed with customer



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Design Process

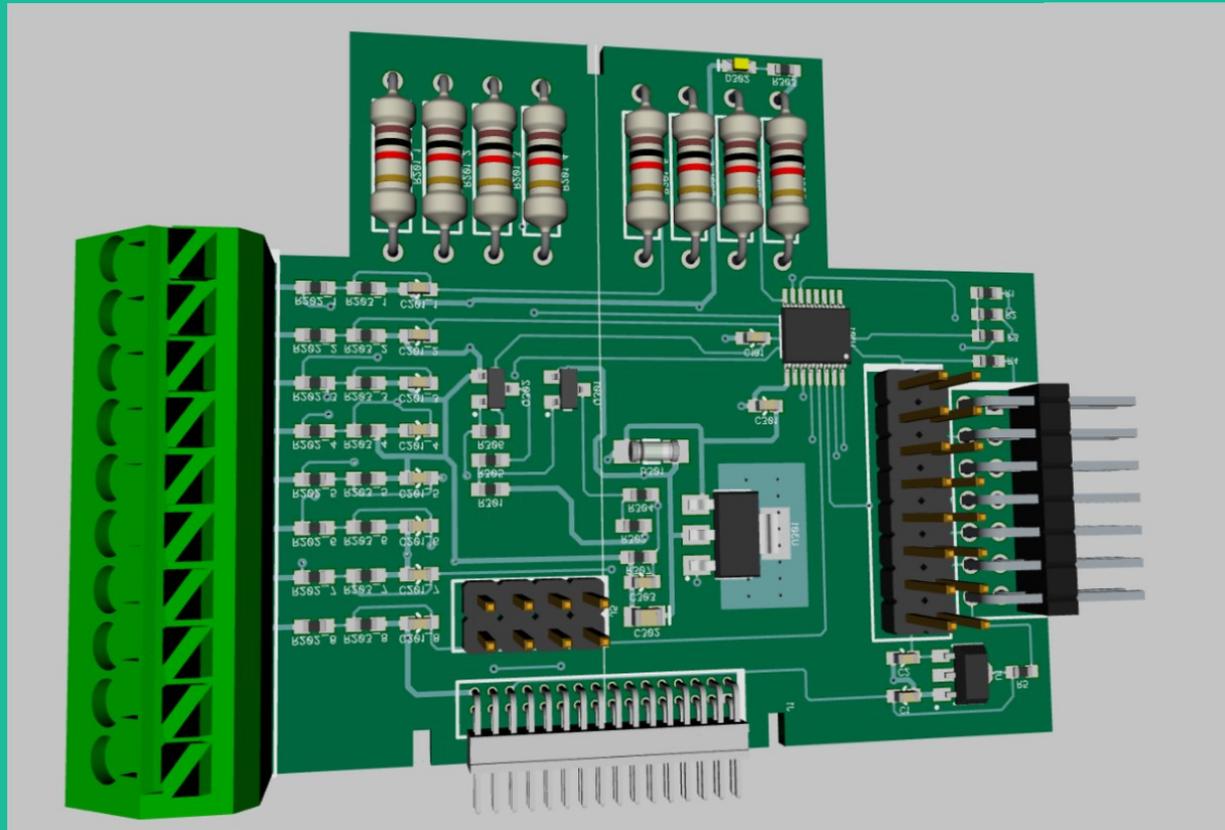


Schematic is converted into a PCB Layout



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Design Process



PCB design is done in 2D / 3D and a complete 3D view is available before making the PCB



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Design Process

```
190 MPU_InitStruct.BaseAddress = 0x20010000;
191 MPU_InitStruct.Size = MPU_REGION_SIZE_256KB;
192 MPU_InitStruct.AccessPermission = MPU_REGION_FULL_ACCESS;
193 MPU_InitStruct.IsBufferable = MPU_ACCESS_NOT_BUFFERABLE;
194 MPU_InitStruct.IsCacheable = MPU_ACCESS_CACHEABLE;
195 MPU_InitStruct.IsShareable = MPU_ACCESS_NOT_SHAREABLE;
196 MPU_InitStruct.Number = MPU_REGION_NUMBER0;
197 MPU_InitStruct.TypeExtField = MPU_TEX_LEVEL0;
198 MPU_InitStruct.SubRegionDisable = 0x00;
199 MPU_InitStruct.DisableExec = MPU_INSTRUCTION_ACCESS_ENABLE;
200
201 HAL_MPU_ConfigRegion(&MPU_InitStruct);
202
203 /* Enable the MPU */
204 HAL_MPU_Enable(MPU_PRIVILEGED_DEFAULT);
205
206
207 /**
208  * @brief CPU L1-Cache enable.
209  * @param None
210  * @retval None
211  */
212 static void CPU_CACHE_Enable(void)
213 {
214     /* Enable I-Cache */
215     SCB_EnableICache();
216
217     /* Enable D-Cache */
218     SCB_EnableDCache();
219 }
220
221 #ifndef USE_FULL_ASSERT
222
223 /**
224  * @brief Reports the name of the source file and the source line number
225  * where the assert_param error has occurred.
226  * @param file: pointer to the source file name
227  * @param line: assert_param error line source number
228  * @retval None
229  */
230 void assert_failed(uint8_t* file, uint32_t line)
231 {
232     /* User can add his own implementation to report the file name and line number,
233     ex: printf("Wrong parameters value: file %s on line %d\r\n", file, line) */
234
235     /* Infinite loop */
236     while (1)
```

Compilers like KEIL MDK Professional , Microchip MPLAB and Renesas e2 studio are available with us for firmware development



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Design Process



Debugging is done with appropriate debugger. KEIL ULINK2 is one of the good debugger suitable for use with KEIL MDK Professional.



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Design Process



Project completed and delivered
Next idea starts here !



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Production process and equipment



We have in house facilities for prototypes and low volume production. High volume production facilities are available with our associate company.



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Production process and equipment



Reflow oven can match/far exceed capacity of pick and place machine.



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Production process and equipment

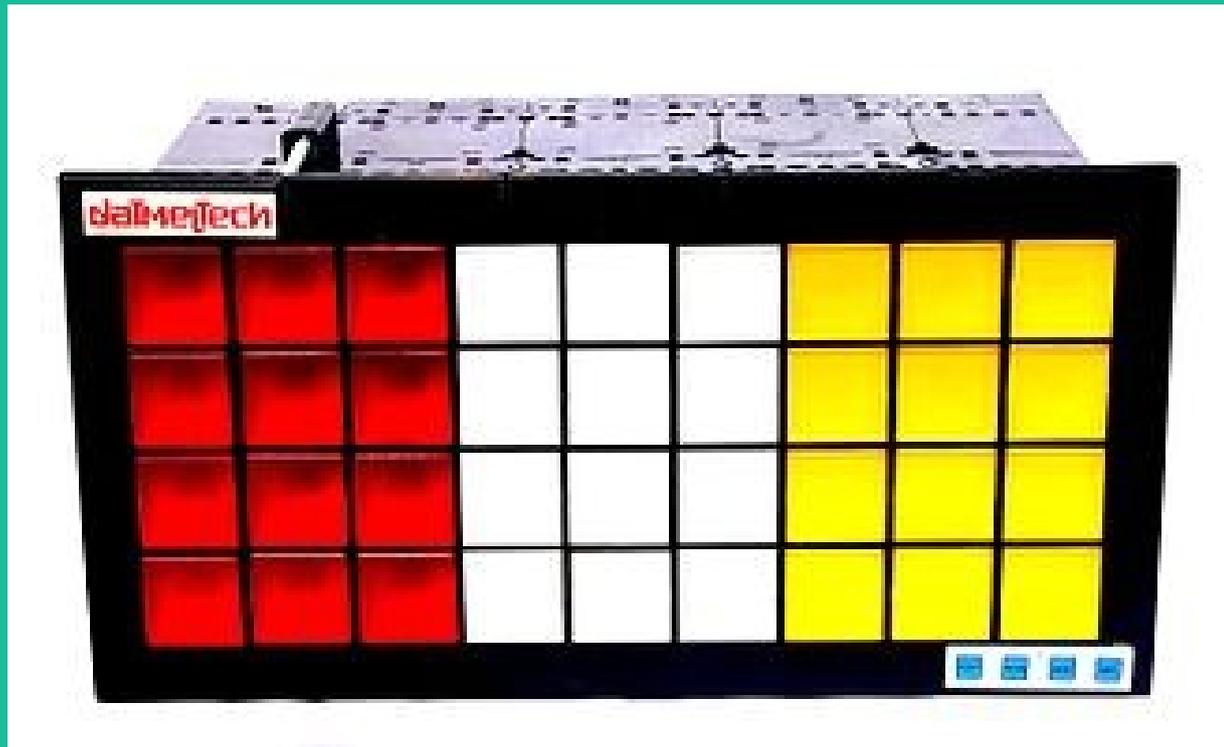


For PCBs with SMD and Thruhole components, we need a wave soldering machine. One machine can easily process matching components for PCBs processed on pick and place machine.



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About Us



Started business in 1986 as a family owned partnership firm. In 1996 became a family owned private limited company. Initially we manufactured Security guard Alert systems, water level controllers and Alarm Annunciators.



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About Us



1988 on-wards started manufacturing controllers for Centralized lubrication systems. These are used to provide controlled lubrication to heavy earth moving machines. Such timers were used by virtually all earth moving machines. These were used by companies like Grindwell Norton/ Lincoln Helios and SKF.



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About Us

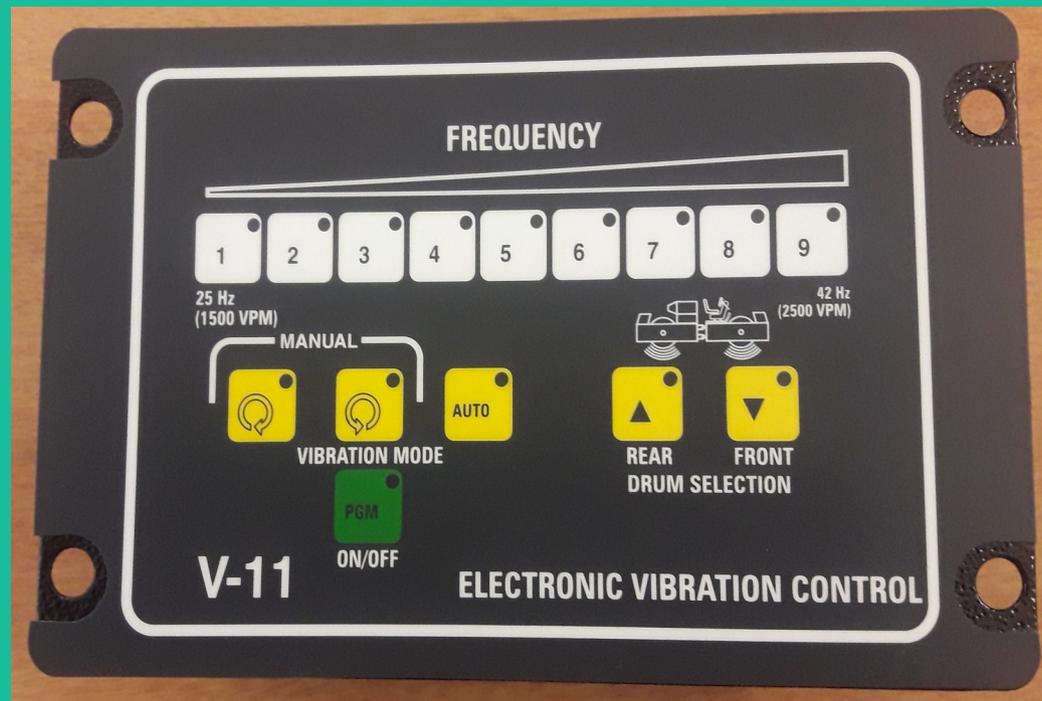


In the early 1990s brought in several controllers for Dental Medical equipment:
Dental Chair motion controls, X-Ray timers, Micro-motor controls, Autoclaves
and many more.



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About Us

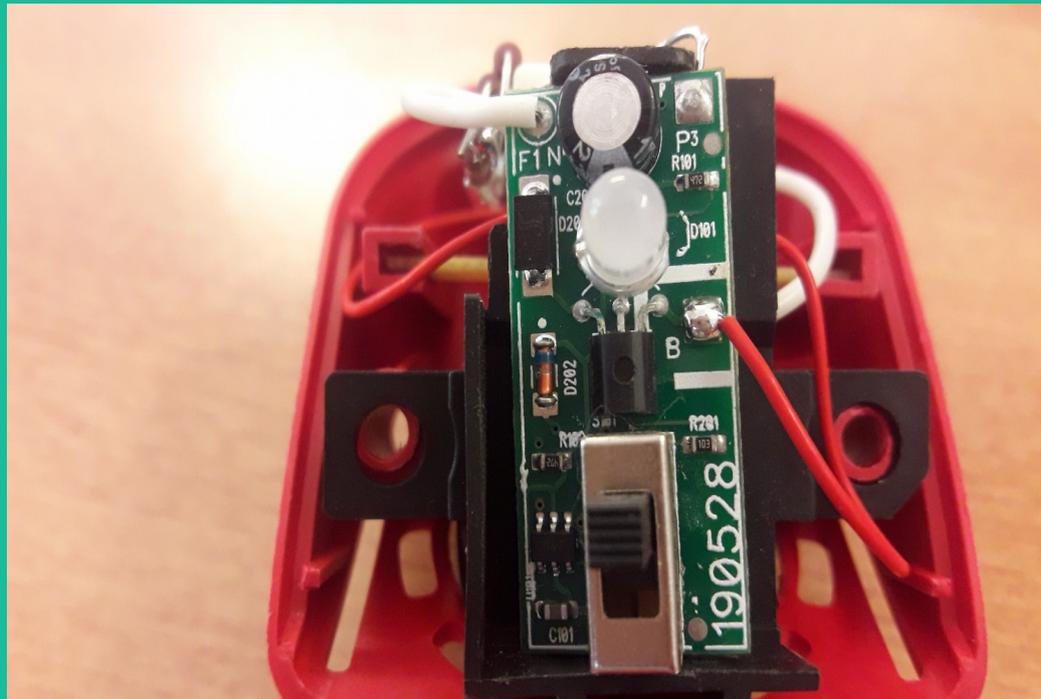


In the mid to late 1990s designed controllers for Asphalt compactors, drilling efficiency monitors for very large mining drills and some very complex timers. We still make some of these products without much change even after more than 20 years. The products are used by companies like Ingersoll Rand / Volvo.



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About Us



In 2019/2020 designed a controller for a mosquito repellent device which is a very low cost product. 15 Million + nos have been manufactured in less than 9 months since the launch of this product - and without a single unit with a failed component due to manufacturing defect.



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where

**Ecology and technology go
together**

We have been granted international patent (PCT) on mosquito repellents under Green Channel scheme. 2 more patents are in the pipeline on mosquito repellents.



BIRD ELECTRONICS PRIVATE LIMITED

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BECORPORATE REV3 29June2020

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