DAC Product Series Introduction

Introduction to the DAC Product Series

DFRobot's DAC modules cover a variety of industry-standard signal requirements, including 0-5V, 0-10V, and 4-20mA, with product options of different accuracies and channel counts, helping to achieve seamless connection between devices and sensors in various scenarios from laboratory research to industrial control. Their high cost-performance ratio, easy and quick deployment, and support for mainstream controllers such as Arduino, Raspberry Pi, and STM32, make them widely used in automated scenarios such as laboratory testing, motor control, smart lighting, and volume adjustment.

Target User Groups and Application Scenarios for the DAC Product Series

Target User Groups	Application Scenario Descriptions	Product Features	Expected Usage Quantity (Example)
Developers	- In the R&D departments, for prototype testing and deployment to ensure the performance stability of new products before they hit the market. -The modular design allows project progress to be faster than originally drawing PCBs by hand.	A variety of voltage options, multiple protocols, modular design	Assuming a company with 50 engineers, each engineer uses 2 DAC modules during the project cycle, totaling 100 DAC modules needed.
College Students and Researchers	In university electronic engineering departments, professors and graduate students use DFRobot DAC modules for laboratory projects.	15-bit precision	Assuming a class with 30 graduate students, each student needs to use at least 2 DAC modules for different stages of experiments within a year, then the department will use 60 DAC modules within a year.

Makers	In maker spaces, makers use DFRobot DAC modules to solve practical problems, such as smart lighting systems. The 2-channel I2C and daisy-chain design greatly reduce the overall design difficulty.	2-channel I2C, daisy-chain design	Assuming there are 20 active makers, each maker uses 1 DAC module in a project, then the total number of DAC modules needed for maker projects within a year is 20.

Features of the DAC Product Series

- Supported Protocols: Supports I2C protocol and PWM. Supports I2C protocol conversion to 0-10V, with a unified interface standard.
- Standard Interfaces: The input end has industry-standard digital interfaces such as I2C/PWM, and the output end has industry-standard analog signals.
- High-Precision Conversion: High-resolution DAC chips ensure high precision and low error in signal conversion.
- Easy Integration: Compatible with a variety of microcontrollers, supporting rapid integration and flexible application.
- Diverse Choices: Covering a variety of module types from low voltage to high current output, meeting different application needs.

Specific Classification of DAC Product Series

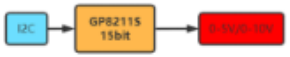
DFRobot's DAC modules are mainly divided into the following three categories:

- 0-2.5V/VCC Products: It is suitable for control projects within 3.3V, such as ESP32, Raspberry Pi, STM32, and other main controllers used for analog signal output.
- 0-5V/10V Products: This product can drive a large number of 0-10V or 0-5V controlled devices on the market through Arduino programming.
- 4-20mA Products: Used to drive 4-20mA controlled devices on the market, such as lights, motors, frequency converters, valves, pumps, etc. This product can drive 4-20mA controlled devices on the market through Arduino programming.

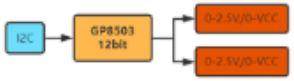
Selection Manual

Each module provides different resolutions, accuracies, channel quantities, etc., according to demand, to ensure the accuracy and stability of signal conversion. It is hoped that this DAC module selection guide will help you choose the appropriate module according to actual needs.

0-5V/0-10V Product

SKU	Name	Chip	Function Diagram	Channel	Output	Input	Resolution	Accuracy	Product Features
DFR0971	2-channel I2C to 0-5V/10V	GP8403		2	0-10V/5V	I2C	12bit	0.50%	2 channels, cascadable up to 8 modules
DFR1073	2-channel 15bit I2C to 0-5V/10V	GP8413		2	0-10V/5V	I2C	15bit	0.01%	2 channels, high resolution, high accuracy, cascadable up to 8 modules
DFR1071	1-channel 15bit I2C to 0-5V/10V	GP8211S		1	0-10V/5V	I2C	15bit	0.01%	High resolution, high accuracy
DFR1036	1-channel PWM to 0-5V/10V	GP8101		1	0-10V/5V	PWM	8bit	0.50%	PWM input, widely compatible

0-2.5V/0-VCC Product

SKU	Name	Chip	Function Diagram	Channel	Output	Input	Resolution	Accuracy	Product Features
DFR1034	2-channel I2C to 0-2.5V/0-VCC	GP8503		2	0-2.5V/VCC	I2C	12bit	0.50%	2 channels, cascadable up to 8 modules
DFR1037	2-channel PWM to 0-2.5V/0-VCC	GP8501		2	0-2.5V/VCC	PWM	8bit	0.50%	2 channels, PWM input, widely compatible
DFR1035	1-channel 15bit I2C to 0-2.5/0-VCC	GP8512		1	0-2.5V/VCC	I2C	15bit	0.01%	High resolution, high accuracy

4-20mA Product

SKU	Name	Chip	Function Diagram	Channel	Output	Input	Resolution	Accuracy	Product Features
DFR0972	1-channel I2C to 4-20mA	GP8302		1	0-25mA	I2C	12bit	0.20%	Current signal, more stable