農田水利精準智慧管理
Precision Smart Management of Irrigation

執行單位：農業部農田水利署

農田水利署以新竹竹東圳灌區為示範場域，建構智慧灌溉系統，係整合水文感測元件、物聯網傳輸及遠端閘控技術，於圳路重要控制點建置水量感測設備、水閘門遠端閘控系統及影像監視器等，並降低成本、低功耗且高耐候性之感測技術導入。灌溉管理人員可利用水位感測設備精準掌握圳路水位變化，同時配合即時影像進行遠端遙控水閘門之啟閉與開度，不僅可精進配水管理、減少操作輸水損失，有效提高灌溉用水效率，同時亦可減少人員前往現地操作的時間成本，增加人員調度韌性。

面對氣候變遷下極端天氣事件增加，農田水利署運用智慧灌溉系統，以強化農業水資源整體用水調度及防災應變能力，同時提供決策所需之資訊。

The Irrigation Agency has designated the Zhudong Irrigation Area in Hsinchu as a demonstration site for the construction of a smart irrigation system. This system integrates hydrological sensing components, IoT transmission, and remote gate control technology. Key control points along the irrigation channels have been equipped with water level sensors, remote gate control systems, and surveillance cameras, incorporating cost-effective, low-power, and highly weather-resistant sensing technologies.

Irrigation managers can utilize water level sensors to accurately monitor changes in water levels along the irrigation channels. Coupled with real-time imaging, they can remotely control the opening and closing of water gates, optimizing water distribution management and reducing water loss during transportation. This approach not only enhances irrigation efficiency but also minimizes the time and labor costs associated

with on-site operations, increasing flexibility in personnel allocation.

In response to the growing frequency of extreme weather events due to climate change, the Irrigation Agency is employing smart irrigation systems to enhance the overall allocation of agricultural water resources, strengthen disaster response capabilities, and provide critical data for informed decision-making.

圖 1、水閘門遠端遙控系統

圖 2、於農田水利署操作平台查看現地影像與操作水閘門

圖 3、低功耗水位計