The neural network system including three layers was used to treat the data obtained from photo-detector setup. The delta rule that is a gradient descent technique was used in learning proceeds by back propagation of error signal. Since the neural network system can map the nonlinear relation between input and output perfectly, the measure accuracy was improved and the measure range was expanded. The sensor can perform no-contact measurement, and high-speed measurement. The experiment result and related weight value of BP network are also given.

SMP01-3
Improvement & Realization of the A/C Sampling Accuracy of the Remote Terminal Unit

Zhen Yu
University of Xiamen, China

In this paper, we propose a method for improvement and realization of the A/C Synchronized sampling accuracy of RTU. This article is an analysis of the process of achieving synchronized sampling by using synchronized sampling A/D intelligent board IPC5454. The analysis reveals the major factors affecting the A/C signal metering accuracy . In consideration of these factors, this article proposes relevant measures for improvements by incorporating the design and upgrading of the new model of RTU. The improvement of the metering accuracy can largely be made by taking the following : the dynamic adjustment of the sampling cycle ; Sampling data process; the hardware improvement; and the software zero compensation and gain adjustment etc. Conclusion: The method can significantly improve the current signal metering accuracy compared with the previous method and can make it easier to achieve engineering realization。

SMP01-4
The Research and Development of the Mine Water Flow Monitoring and Forecasting System

Liping Shi, Xiao Zhang,, ChangXin Miao, Haibo Dong
China University of Mining and Technology, China

This paper puts forwards and establishes a measuring and forecasting system of water flow in mines. With the newest component technology, it has developed the component structural configuration software of monitoring system of water flow in mines. And also from this generated the application software of automatic monitoring system of water flow and developed mine intelligent interface location detection installation to solve the baffling problem of detecting interface between sediment and water. Having established a set method of data handling, it has obtained a more accurate value than traditional processing technique, Adopting grey theory, it has established a set of actual system and method of the forecast technology of water flow in mines.

SMP01-5
Grey Trend Relational Analysis and Its Application

Quan Liu, Ying Zhou, Feng Lu, Chao Xu
Wuhan University of Technology, China

The social economic system is an incomplete information system. According to the viewpoint of grey system, it belongs to the grey system. In this paper, the authors provide the basic concept and methods of decomposing grey relational space and grey trend relational analysis. After summarizing the general steps of analyzing