Energy management system manual template

Management Information Systems (MIS) uses the integration of information technology to achieve the needs and objectives of ordinary employees, managers, and organizations. The development of JIS in an organization helps corporate executives apply business and economic decisions based on efficient and effective information technology. With new trends in information technology, managers and organizations will face the sophistication and flexible management of organizational information. Most organizations today rely heavily on IT systems. MIS has become an integral part of the organization's presence and applications in several specific areas. This includes strategic support, data processing, and job performance development. MIS transforms data into useful information to formulate effective administrative decisions. Mis data processing organizes vast amounts of business data and provides valuable time-saving benefits for organizations. The establishment of MIS will have a significant impact on the performance of the organization's human resources. Employees will have a more efficient and effective way of handling data and information. Functional JIS has five elements, including timeliness, accuracy, consistency, integrity and relevance. The effectiveness of MIS is suppressed every time one or more elements are compromised. The timeliness factor means that your organization's MIS can provide and distribute current information to users. The information processed from MIS must be accurate and free of defects. Mis consistency in processing data should take into account well-defined and documented processes and the ability to adapt to dynamic environments. To eliminate information overload, management requires complete and relevant information in a summarized format. MIS needs to be able to provide management with relevant data for effective planning and decision-making. MIS brings many benefits to your organization. Primarily, it facilitates organizational planning. MIS enhances management's sound decision-making skills by providing relevant information. Second, MIS minimizes the surplus of information by summarizing this in a standard format for administrators to have detailed and concise reports. Third, MIS facilities provide consolidation to the organization to maintain other departments that are lagging behind existing problems and needs. Finally, MIS facilitates management. This gives administrators the ability to evaluate and improve the performance of their organization. Management risks indicate the potential for economic events that can adversely affect the operation and profits of an organization. Management decisions based on misguided, ineffective or incomplete MIS can push up risk in certain areas such as commodity prices, company liquidity, interest rates and foreign currencies. Unsynthes or poorly programmed MIS can lead to hacking, data manipulation, unauthorized data access, and day-to-day tasks.This can lead to poor administrative decisions or planning. Reliable MIS plays an integral role in providing accurate management-related information for efficient decision-making. Today's JIS needs to be able to adapt to organizational complexity towards information technology for proper decision-making. Key people in your organization need to be able to get to know the MIS, ensure its reliability, and generate the right information. MIS should be able to mitigate the risk emanating from both internal and external factors of the organization. Energy meters are part of a distribution network that measures power consumption. To use an energy meter in a distribution network, you need an energy meter that can be adapted to different configurations. This will vary depending on part of the distribution network and the type of end consumer where the energy meter is installed. These configurations include a wide range of voltages and currents that the meter must function with, according to specifications. Under the above requirements, the meter engine must be adaptable so that the transducer that converts the input signal can be selected according to specifications while recording the actual value of the input line signal. The meter design consists of many components who may have different properties depending on various factors during the meter design. For components that form part of the circuit, resistance voltage partial pressure resistors • resistors • capacitors • inductors • inductors as shunt/voltage transducers used as current transformers (CT) or current transformers Variations in these characteristics can affect measurement signals that can result in offset additions, amplitude changes and signal phase changes. Taking all of the above factors into account, the standard values must be calibrated to achieve meter output. Calibration is the process by which line parameters are set to known values and various signal conditioning parameters such as gain, offset compensation, and phase compensation coefficients are calculated. Calibration is self-contained within the CS5490, and all calculations are performed by the device and stored in internal registers. Compensation requires the MCU to perform part of the calculation and store the results in the CS5490 register. Because the CS5490 does not have nonvolatile memory (NVM), calibration and compensation persistent storage must be placed in the MCU NVM and reloaded after the AFE reset state. In general, calibration and correction require the following steps: CS5490 Set initial conditions • 2. Apply analog inputs using stimuli from accurate sources • 3. Enable desired calibration • 4. Perform calibration • 5. Read results • 6. Calculate new register values for rewards • Perform general calibration to save results to 7.AFE and NVMIt andSame. For example, AC gain calibration and phase compensation require a similar input signal to be applied to the current and voltage channels, so calibration and correction are performed at the same time. The following procedure (performed for each reset in the field) outlines the steps required to get the meter into normal operating mode. Figure 2.3 shows a simplified flowchart of normal operation of the field. Reset CS5490.2. Restore configuration and control registers. Restore vgain and IGAIN registers from nonvolatile memory. If necessary, restore the offset register from NVM.5. If necessary, restore the phase compensation register from NVM.6. If necessary, restore no-load compensation from NVM.7 to the POFF and QOFF registers. Send a single conversion command to CS5490.8. Verify that the register checksum is valid or return to step 1.9. Send a continuous conversion command to CS5490.10. Enable and clear DRDY.11. Vote FOR DRDY.12. If DRDY is set, clear DRDY.13. Read IRMS, VRMS, and PAVG. Scale back IRMS, VRMS, and PAVG: Amps = Full_Scale_Current * (IRMS /0.6) volts = Full_Scale_Voltage * (VRMS /0.6) watts = Full_Scale_Power * (PAVG /0.36)14). Loop back to the polling DRDY step. Full calibration and correction procedure (performed once) The next step shows the steps required to perform calibration and correction. A flowchart showing the complete calibration procedure is shown in Figure 2.4. Figure 2.4 Main calibration steps 1. Turn on the CS5490 device and reset the 2.CS5490 device. Check the register checksum to make sure the reset was successful. Restore configuration and control registers. Connect the reference line voltage and load current to the meter with a phase angle of 60o current delay. If the reference load current is not full load, set the Scale register to a full-scale current ratio of 0.6 x 223xreference÷ load ratio. If the reference line voltage is lower than the maximum line voltage, see Non-full-scale gain calibration. Perform continuous conversion (0xD5 command) for 2 seconds. Stop continuous conversion (0xD8 instruction). Read IRMS, VRMS, PAVG, and PF to ensure that the reference voltages and current signals are connected correctly by verifying that IRMS, VRMS, PAVG, and PF are in a reasonable range. Clear the DRDY status bit. Send the AC Gain Adjustment Command (0xFE) to CS5490.12. Wait for DRDY to be configured. If necessary, perform phase compensation, AC offset calibration, and power offset compensation. Send continuous conversion (0xD8 command). Check the measurement accuracy. If the accuracy is not within specifications, check the setup or fail the meter. Read VGAIN, IGAIN, IACOFF, POFF, QOFF, PC, register checksum and save it to Flash/EEPROM.17. Calibration completed. System scaling hardware scale: CS5490 input is scaled using attenuation circuitry to apply maximum inputDepends on the 176mVRMS or 35mVRMS AFE gain settings of 10x gain or 50x gain, respectively. AFE scale: AFE registers the record input level displayed as the ratio of the maximum RMS voltage to the most recent measurement to the RMS current. The maximum RMS register value is generated using a ratio of 0.6. The register value is read as a 24-bit he/shed, which is proportional to represent the 0.6VRMS full scale. For maximum voltage (0.6) and maximum current (0.6), the maximum power must be PMAX = VRMSMAX × IRMSMAX = 0.6 × 0.6 = 0.36.MCU scale: The MCU must read all registers and interpret the 24-bit hexadecade based on full load conditions. Knowing the maximum hardware scaling and the latest AFE register values in relation to the full-scale input, the MCU routine can calculate the actual power measurements. Measurement.