Implementation and Performance of the DAFNE Timing System, G. DI PIRRO, A. DRAGO, A. GHIGO, F. SANNIBALE, M. SERIO, INFN-LNF - In the high luminosity Phi-Factory DAFNE, a timing system has been provided for the control and proper synchronization of the injection process from the Linac, through an Accumulator/Damping Ring, into the e+/e- Main Rings, for the minimization of phase oscillations at injection and for the stability control of the Interaction Point. The Linac beam (e+ or e-, alternatively) is injected at ≤ 50 pps into an intermediate ring until the required intensity and emittances are reached, then the extraction from the damping ring and injection into a single bucket of the e+ or e- ring takes place at ≤ 2 pps. The accumulator RF phase, the firing instant of the Linac, of the injection/extraction kickers in the accumulator ring and of the injection kickers in the main ring must be properly synchronized in order to fill the selected bucket. In this paper we describe the operative procedures and the control programs, along with the hardware solutions and the technologies employed to get the synchronization signals within the required precisions, according to the type of timed element, down to a few picoseconds in the RF chains.