

TECHNICAL NOTE

Replacing ProTime SER devices with CyTime™ SER-3200 Event Recorders

Summary

The question often arises: "How can I replace an existing ProTime Event Recorder with a CyTime SER-3200?" CyTime SER-3200 Event Recorders are functional replacements for ProTime Event Recorders from Monaghan Engineering, with several additional features.

This paper describes the application considerations for making such a substitution and gives a brief description of new functionality available once the ProTime is replaced by the CyTime SER-3200.

Introduction

CyTime SER-3200 Event Recorders from Cyber Sciences and ProTime Event Recorders from Monaghan Engineering each provide 1-ms event recording for 32 digital inputs with data accessible over Ethernet using Modbus TCP. Both devices support 24Vdc control power and digital inputs, and both use standard DIN-rail mounting. The wiring terminals for inputs also share a similar orientation at the bottom of each device.

When replacing a ProTime Event Recorder with a CyTime SER-3200 Event Recorder, the time-sync input may need to be considered. Three scenarios are described below, with application considerations and possible workarounds where necessary.

Application Considerations

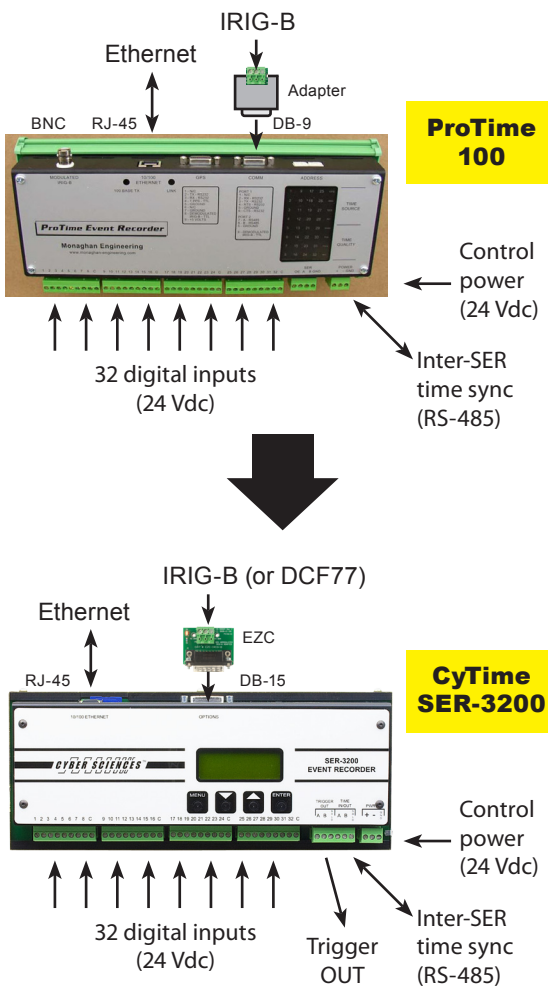
The ProTime has many of the same basic features as the CyTime SER-3200. Existing installations with the following characteristics should allow direct form-fit-feature replacement:

- Standard DIN-rail mounting
- Ethernet interface (Modbus TCP)
- 24 Vdc control power
- 32 digital inputs (also rated 24 Vdc)
- Time source: IRIG-B (DCLS, or "Unmodulated")

CASE A—Unmodulated IRIG-B input. The most commonly used method to time-sync ProTime is IRIG-B, type DC Level Shift (DCLS), more commonly known as "Unmodulated IRIG-B" (also called "Demodulated"). If the time-sync method used by the existing ProTime Event Recorder is Unmodulated IRIG-B, then the SER-3200 may be substituted without changes to existing wiring. Just as the ProTime accepts the IRIG-B twisted-pair cable via an adapter to its (DB-9) connector at the top, the SER-3200 accepts the IRIG-B signal via an (optional) EZC-IRIG-B connector to its own (DB-15) connector as shown. The EZC-IRIG-B also has a diagnostics LED which flashes when a valid IRIG-B signal is present, to facilitate commissioning or troubleshooting.

CASE B—Modulated IRIG-B (less common). If the time-sync method used by the existing ProTime Event Recorder is Modulated IRIG-B (via its BNC connector), then an alternate time source should be found for the SER-3200. The SER-3200 accepts PTP (IEEE 1588), Unmodulated IRIG-B, DCF77, or NTP, as well as its own RS-485 inter-SER time-sync subnet.

CASE C—ProTime Inter-SER Time Sync (Proprietary). Both the ProTime and CyTime event recorders can serve as a time-sync master to additional SER devices through an RS-485 sub-network. The ProTime uses a proprietary protocol over RS-485, whereas the CyTime uses IRIG-B or DCF77 standard time codes (matching the time source of the master). This difference makes the two types of "Inter-SER Time Sync" incompatible; ProTime and CyTime *cannot* be mixed on the same RS-485 Inter-SER daisy-chain. In such cases, all ProTime devices on the daisy-chain can be replaced with CyTime SER-3200 units (no changes to the existing RS-485 cabling); OR the target device can be replaced with a CyTime SER-3200, and an alternate time-sync method used (PTP, Unmodulated IRIG-B or DCF77). Often one of these signals is already present within the same enclosure to sync other devices. Two new CyTime SERs with PTP option (one as PTP master, the other as PTP slave) may also be used.





CyTime SER-3200

Incremental Features of the SER-3200

The CyTime SER-3200 has many features not available with ProTime devices:

- Standards compliance: UL-Listed (UL 61010), CSA, CE Mark, RCM, RoHS
- Embedded web server for setup, test and monitoring via web browser
- PTP (IEEE 1588) time-sync (either PTP master or PTP slave)
- DCF77 time-sync
- NTP time-sync
- Trigger output for waveform capture by a compatible power meter
- Counters, with date/time of last reset stored individually per channel.
- Time-sync output (ASCII RS-485) to ION7550/7650 and PM8000 meters from Schneider Electric and ION9510/9610 meters from Siemens.
- Standard software drivers available for several major EPMS platforms

The CyTime SER-3200 also differs from the ProTime as follows:

- SER-3200 setup via Ethernet using a standard web browser; ProTime setup requires RS-232 serial connection and proprietary setup software.
- SER-3200 supports 44 simultaneous TCP connections; ProTime supports 12.
- SER-3200 supports access to event log via multiple masters; with ProTime, once data is read, the event-buffer is cleared.

For a complete list and descriptions of CyTime SER-3200 features, please refer to the documents referenced below, or contact Cyber Sciences for assistance.

Event	Date and Time	Channel	Event Type	Status	Time Quality	Delta Time
1204	09/19/2015 13:23:51.516	Input 04	Input Status Change	On -> Off	0:Good (< 1ms)	0.070
1203	09/19/2015 13:23:51.446	Input 03	Input Status Change	On -> Off	0:Good (< 1ms)	0.188
1202	09/19/2015 13:23:51.258	Input 02	Input Status Change	On -> Off	0:Good (< 1ms)	0.070
1201	09/19/2015 13:23:51.188	Input 01	Input Status Change	On -> Off	0:Good (< 1ms)	415 days
1200	07/30/2014 14:07:17.398	Input 24	Input Status Change	Off -> On	0:Good (< 1ms)	1.260
1199	07/30/2014 14:07:16.137	Input 23	Input Status Change	Off -> On	0:Good (< 1ms)	42.359
1198	07/30/2014 14:06:33.777	Input 22	Input Status Change	Off -> On	0:Good (< 1ms)	0.869
1197	07/30/2014 14:06:32.908	Input 21	Input Status Change	Off -> On	0:Good (< 1ms)	37.005
1196	07/30/2014 14:06:55.903	Input 20	Input Status Change	Off -> On	0:Good (< 1ms)	0.951
1195	07/30/2014 14:06:54.912	Input 19	Input Status Change	Off -> On	0:Good (< 1ms)	43.094
1194	07/30/2014 14:06:11.816	Input 18	Input Status Change	Off -> On	0:Good (< 1ms)	1.659
1193	07/30/2014 14:06:10.150	Input 17	Input Status Change	Off -> On	0:Good (< 1ms)	02:12.838
1192	07/30/2014 14:02:57.321	Input 16	Input Status Change	Off -> On	0:Good (< 1ms)	0.446
1191	07/30/2014 14:02:56.875	Input 15	Input Status Change	Off -> On	0:Good (< 1ms)	43.283
1190	07/30/2014 14:02:13.591	Input 14	Input Status Change	Off -> On	0:Good (< 1ms)	1.096
1189	07/30/2014 14:02:12.495	Input 13	Input Status Change	Off -> On	0:Good (< 1ms)	43.360
1188	07/30/2014 14:01:29.134	Input 12	Input Status Change	Off -> On	0:Good (< 1ms)	0.555
1187	07/30/2014 14:01:28.579	Input 11	Input Status Change	Off -> On	0:Good (< 1ms)	37.412
1186	07/30/2014 14:00:51.166	Input 10	Input Status Change	Off -> On	0:Good (< 1ms)	0.303
1185	07/30/2014 14:00:50.863	Input 09	Input Status Change	Off -> On	0:Good (< 1ms)	02:19.188

CyTime SER-3200 Events web page

For More Information

- CyTime SER-3200/2408 Data Sheet (DS-SER-01)
- CyTime SER-3200/2408 User's Guide (IB-SER-01)
- CyTime SER Reference Guide (IB-SER-02)
- Tech Note: Hi-res Time Sync using PTP/1588 (TN-100)
- Tech Note: SER System Architectures (TN-101)

Technical details for the Monaghan ProTime 100 SER were taken from the published instruction bulletin, v. 1.10, and are provided solely to assist customers wishing to replace a ProTime unit with a CyTime SER-3200 from Cyber Sciences. Information is subject to change without notice.

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