

TECHNICAL INSTRUCTION

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NETWORK RAIL - SIGNAL ENGINEERING Point Batteries for Point Operation

Relevant Standard: NR/L2/SIG/30050

Purpose

The introduction of new point operating mechanisms requires a review of the signalling power supply arrangements. In many instances this requires a greater capacity at the supply in order to operate the equipment reliably.

Scope

This technical instruction provides guidance for projects where point operating mechanisms are to be provided or changed in type.

Use of point batteries

When considering the best way of providing power to a point drive system, the preferred method is to use a point battery and BR1875 charger since peak load currents are sourced from the point battery rather via main feeder cables. Using this method gets round the problem of providing large diameter feeder cables to cope with high peak currents and the resultant volt-drop in such cables when peak current are drawn.

The use of transformer-rectifiers (T/Js) may be appropriate where a supply point is close to the point drive system and the provision of batteries and chargers would be more expensive than providing a sufficient supply system and cable. When this option is chosen however, care shall be taken to check that the T/J used is capable of delivering load current for the entire point operational cycle and that volt-drop in connecting cables is not excessive.

Note: When designing or reviewing a power distribution arrangement, the capacity has to be capable of supplying both the steady state load and the peak, often short term loads. A change of point mechanism often increases both the steady state load, e.g. SO backdrive condensation heaters, and the peak load. The use of batteries to reduce the peak loads enables smaller cables, switchgear and transformers to be supplied which reduces cost and potential for theft.

Hy-drive sites

The preferred arrangement is a sealed lead acid or NiCd batteries. A battery with a capacity of 5Ah can be used for up to 2 ends and a 25Ah battery will be capable of powering up to 4 ends. Chargers are available which are current limiting to 3A or 5A (110V input) able to charge either sizes of battery.

The use of a transformer rectifier is not recommended and should only be implemented where the power supply is close by, the unit is suitably rated for the load and appropriate sized cables are used.

Note: Designers will need to confirm, carrying out site specific analysis, that any transformer rectifiers intended for use are approved for, and are appropriate for the intended application.

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HPSS sites

The preferred arrangement is a battery pack and associated charger to product acceptance PA05/02866.

A standard T/J may be used but the restrictions on cable size identified in standard drawings shall be followed.

Other power operated points

Where the existing supply is capable of supplying the new mechanism without alteration then, unless it requires renewal for other reasons, a battery will not normally be provided.

Where the power supply needs renewal or alteration, the preferred arrangement is to use BR1875 charger in conjunction with either a 5Ah battery (up to 3 ends) or a 25Ah battery (up to 6 ends). The newest chargers are designed to have low inrush currents and limit their input current to either 3A or 5A.

Allocation of point drives on CBI systems (including SSI)

Designers should where possible seek to stagger point drive commands for points driven from a transformer rectifier or an object controller within interlocking logic for any sort of point operating mechanism in order to reduce the peak current demand. An example of such is already described in SSI8500 D Part 4 for clamplocks being driven directly from the PTFM.

Note: The sequential operation of point operation mechanisms in order to reduce peak operating current is to be avoided, especially in complex junction layouts, as it extends route setting times.

Action Required

This Technical Instruction shall be implemented for all track renewals and signalling projects which introduce or replace point operating equipment unless the project has completed GRIP 5.

Staff to be Briefed

Signal Project Engineers and Signalling Design Staff.

End