SWITCHBOARD POWER CABLING
MISCELLANEOUS WIRING OF MAJOR FRAMES
EQUIPMENT DESIGN REQUIREMENTS
PANEL SYSTEMS

1. GENERAL

Scope

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements for the miscellaneous wiring of major frames in panel offices using switchboard cable.

1.02 This specification is reissued to change the rating from "AT&TCo Standard" to "A&M Only."

2. SUPPLEMENTARY INFORMATION

815-000-000 - Panel Systems Index
AA128.006 - List of General Equipment Requirements Sections
X-65530 - List of General Equipment Requirements Sections
X-61200 - List of Equipment Design Requirements Sections Ground on the C.O. Relay
X-61400 - List of Equipment Design Requirements Sections - Battery on the C.O. Relay
X-61500 - List of Equipment Design Requirements Sections - Tandem Office

3. DRAWINGS

Keysheets

SD-21300-01 - Panel System (Battery on C.O. Relay)
SD-21301-01 - Panel Tandem System
SD-21680-01 - Panel System (Ground on C.O. Relay)

Wiring and Cabling

ED-90697-01 - DPTS Supports
ED-90945-01 - Fanning Ring
ED-20811-01 - Cabling Plan
*ED-20812-01 - Line Finder Frames
*ED-20813-01 - District Frames
*ED-20814-01 - 3 Wire Office Frames
*ED-20815-01 - Incoming Frames (6 Registers)
*ED-20815-02 - Incoming Frames (12 Registers)
*ED-20815-03 - Incoming Frames (Ringing Leads)
*ED-20816-01 - Final Frames
*ED-20817-01 - Subscribers Link Frames
*ED-20818-01 - C.D. "B" Link Frames
*ED-20820-01 - Decoder Connector Frames
*ED-20821-01 - Decoder Frames
*ED-20822-01 - "B" Sender Frames
*ED-20830-01 - Subscribers Sender Frames (Decoder Type)
*ED-20840-01 - Wiring of Aisle Pilots
*ED-20841-01 - Distant Office Frames

* These drawings are for information only and will not be kept up to date.

4. GENERAL DESCRIPTIVE NOTES

4.01 Prior to the issue of this specification local power cables were hand made of 20 BBE wire on a per order basis for each line of major frames. One terminal strip for the distributing power terminal strip and one for the secondary distributing power terminal strip when required were soldered to each cable in the shop. In order to secure the maximum switchboard cable economy, the DPTS for each group of frames were located at one central point which was on the end guard of one of the frames.

4.02 In order to eliminate these tailor made forms and to have a uniform arrangement for each group of major frames, switchboard cable shall be run from the centralized DPTS on top of the rack for each row of frames. At each frame the cable shall be looped at the miscellaneous terminal strips as shown on the cabling plan and connected in accordance with the individual switchboard power cable drawing.

4.03 In general, the switchboard power cables shall be installed first in the center of the cable rack and the major cable run on both sides and above.

4.04 Switchboard power cables shall be cut to length as required by the installer. The drawings for these cables have a figure giving dimensions for stripping the cable and is based on standard frames aligned adjacent. If old frames are reused or if the frames are not adjacent due to a column, these figures shall be modified accordingly. Switchboard power cables shall be 6000 type using 22 gauge wire. The "C" wiring shall be in a separate 1400 type cable. Sufficient length of cable should be provided for future frames if the cable rack is furnished initially.

4.05 When there are different types of frames in the same line, or additional frames to be added, separate cables shall be furnished to the associated DPTS as if they were in separate lines. This method may also be applied to additional frames not already provided for in the existing local power cable.

4.06 If one frame of a group should be located with another group or across a main aisle it shall be treated as a separate row and cabled to its associated DPTS and not to the DPTS of the group in which it may be located.

4.07 When using switchboard power cable, the terminal strips at the DPTS shall be stamped with functional designations instead of numbered punchingsthus eliminating

the power punching lists. At the DPTS, a vertical row of punchings is provided for each line of associated frames. On some double sided frames, two vertical rows are provided, one for the front and one for the rear of each line. The multiple leads are strapped together horizontally and thus eliminate the previous hand made vertical form.

4.08 Sufficient leads are provided in the switchboard power cables, so that any regrouping or rearrangement of groups affecting the motor stop or register leads, may be done by restrapping at the miscellaneous and distributing power terminal strips without disturbing the power cable. If any future circuit changes require additional leads and there are not sufficient wires in the cable, a new cable can readily be added as required.

4.09 The switchboard power cable drawings for double sided frames show the cables connected when the DPTS is on the left end of a line of frames facing the front. The term rear and front as applied to the leads which multiple front to rear of each frame should be considered reversed when the DPTS is on the other end. In any event the cable should be connected from the DPTS to the nearest miscellaneous terminal strip.

4.10 For each group of frames, the distributing power terminal strips shall be furnished as required and numbered as shown on the various switchboard power cable drawings to care for the line having the largest number of frames in the group.

4.11 If the capacity of the DPTS is exceeded two or more grouping points shall be provided and the multiple leads cabled together.

4.12 The incoming switchboard cables and the switchboard power cables to the DPTS shall be butted above the top terminal strip and supported by the detail shown on the cabling plan which is a part of group 6 or 12 of ED-90697-01. These cables are then fanned to the DPTS through rings per group 13 of ED-90697-01 one of which shall be mounted above each terminal strip. These rings shall also be used for fanning the cables to the sender monitor distributing terminal strip.

4.13 The switchboard power cable shall be looped down between adjacent double sided frames between two cross bars of the cable rack. Each butt of the cable shall be fastened above the miscellaneous terminal strips with the loop hung down between them through two fanning rings below the terminal strips. Leads which connect to the miscellaneous terminal strips shall be fanned in and the remainder looped and not cut.

4.14 In order to keep the length of the stripped loop to a minimum, the multiple leads shall be cut at the bottom of the loop and fanned to the miscellaneous terminal strips. These leads shall then be connected together with separate wires or jumpers of the same color using the fanning rings per P-420159 at the bottom of the loop as shown on the cabling plan.

4.15 At single sided frames, the switchboard power cable shall be looped at the miscellaneous terminal strip. The two butts of the cable shall be fastened together above the terminal strip and the proper leads fanned in. The remaining leads are looped straight down uncut with a few ties to present a good appearance. On frames having relay casing immediately below the miscellaneous terminal strip, such as sender frames, the loop shall be stored in a fibre tube and tied to the inside of the top angle of the interrupter unit.

Line Finder Frames

4.16 The switchboard power cable contains the multiple and individual leads for each frame in the lineup. The code of cable to use depends on the number of frames in the line and is specified on the switchboard power cable drawing.

4.17 The register and motor stop leads for each side of each frame shall be connected in all cases to the miscellaneous terminal strip and to the DPTS. The incoming switchboard cables shall then be connected as required depending on the grouping or the drive motor arrangement.

4.18 The arrangement shown on the switchboard power cable drawing provides a maximum capacity at the DPTS for six lines of frames.

District Frames

4.19 The switchboard power cable contains the multiple and individual leads for each frame in the lineup. The code of cable to use depends on the number of frames in the line and is specified on the switchboard power cable drawing.

4.20 The register and motor stop leads for each side of each frame shall be connected in all cases to the miscellaneous terminal strip and to the DPTS. The incoming switchboard cables shall then be connected as required depending on the grouping or the drive motor arrangement.

4.21 The start leads ST and K to the subscribers link frames were in the local power cables with parallel wiring to the SDPTS. They shall be wired direct from the district frame in the switchboard cables to the district finder multiple banks on the link frames.

4.22 The (BR) register leads have been omitted as these registers are now connected to the start circuits on the line

finder frames to distinguish in an all paths busy condition between all districts or all links busy.

4.23 When the old register arrangement is specified the BR leads shall be furnished in a separate cable as required.

4.24 The RO leads to the miscellaneous interrupter frame for the dialing or key pulsing district selector circuits shall be cabled direct using one cable per line of frames and connected as required.

4.25 The low tone lead shall be combined with the paths busy interrupter leads in a separate 1400 type cable to avoid induced tones in the power cable.

4.26 The arrangement shown on the switchboard power cable drawing provides a maximum capacity at the DPTS for four lines of frames.

Tandem District Frames

4.27 If orders are received for this type of equipment, a switchboard power cable drawing shall be originated.

3 Wire Office Frames

4.28 The switchboard power cable contains the multiple and individual leads for each frame in the lineup. The code of cable to use depends on the number of frames in the line and is specified on the switchboard power cable drawing.

4.29 The register and motor stop leads for each side of each frame shall be connected in all cases to the miscellaneous terminal strip and to the DPTS. The incoming switchboard cables shall then be connected as required depending on the grouping or the drive motor arrangement.

4.30 The arrangement shown on the switchboard power cable drawing provides a maximum capacity at the DPTS for five lines of frames.

Distant Office Frames

4.31 The switchboard power cable contains the multiple and individual leads for each frame in the lineup. The code of cable to use depends on the number of frames in the line and is specified on the switchboard power cable drawing.

4.32 The register and motor stop leads for each side of each frame shall be connected in all cases to the miscellaneous terminal strip and to the DPTS. The incoming switchboard cables shall then be connected as required depending on the grouping or the drive motor arrangement.

4.33 The arrangement shown on the switchboard power cable drawing provides a maximum capacity at the DPTS for four lines of frames.

Incoming Frames

4.34 The switchboard power cable contains the multiple and individual leads for each frame in the lineup. The code of cable to use depends on the number of frames in the line and is specified on the switchboard power cable drawing.

4.35 The register and motor stop leads for each side of each frame shall be connected in all cases to the miscellaneous terminal strip and to the DPTS. The incoming switchboard cables shall then be connected as required depending on the grouping or the drive motor arrangement.

4.36 Two switchboard power cable drawings have been originated for incoming frames; one for areas having twelve registers per frame and one for areas having six registers per frame.

4.37 The ringing, start and coin control leads which were in the local power cables with parallel wiring to the SDPTS have been omitted from the switchboard power cables.

4.38 The ringing leads shall be cabled direct from the fuse board to each line or side of line of frames depending on the type of ringing. The cables shall be looped at the miscellaneous frame terminal strips, the proper leads connected and the remainder looped and not cut as shown on the ringing lead drawing. The code of cables specified on this drawing assumes only one long distance incoming frame in a line.

4.39 The start leads for the call distributing "B" incoming selectors shall be included in the cabling to the trunk finder multiple banks of the "B" link frame. The coin control leads for long distance frames shall be cabled direct from the miscellaneous relay rack with one cable per frame looped at the nearest end and terminated at the other side.

4.40 The ringing test jacks are multipled through all the incoming and final frames. Jack (B) of the incoming frames in each line are multipled together by using conductors in the ringing leads cable. All lineups are multipled together at the DPTS and then cabled to the final frame DPTS using a 1455 cable.

4.41 The (BR) register leads shall be connected only on incoming frames having call distributing incoming selectors.

4.42 The arrangement shown on the switchboard power cable drawing provides a maximum capacity at the DPTS for four lines of frames.

Final Frames

4.43 The switchboard power cable contains the multiple and individual leads for each frame in the lineup. The code of cable to use depends on the number of frames in the line and is specified on the switchboard power cable drawing.

4.44 The register and motor stop leads for each side of each frame shall be connected in all cases to the miscellaneous terminal strip and to the DPTS. The incoming switchboard cables shall then be connected as required depending on the grouping or the drive motor arrangement.

4.45 The ringing test jacks F and the 100 and 200 volt test battery supply leads shall be multipled through all the final frames in a separate cable.

4.46 The low tone supply lead shall be wired separately through all final frames to avoid induced noises in the other cables.

4.47 The arrangement shown on the switchboard power cable drawing provides a maximum capacity at the DPTS for four lines of frames.

Subscribers Link Frames

4.48 The switchboard power cable contains the multiple and individual leads for each frame in the lineup. The code of cable to use depends on the number of frames in the line and is specified on the switchboard power cable drawing.

4.49 The register and motor stop leads for each side of each frame shall be connected in all cases to the miscellaneous terminal strip and to the DPTS. The incoming switchboard cables shall then be connected as required depending on the grouping or the drive motor arrangement.

4.50 The start leads ST and K to the district frames, which were in the local power cables with parallel wiring to the SDPTS have been omitted from the switchboard power cable. They shall be wired direct from each link frame to the associated district frames in the district finder multiple bank cabling and terminated on the link frames on 203A terminal strips. These 203A terminal strips shall be connected to the miscellaneous frame terminal strips with switchboard cable.

4.51 In offices having zone and overtime registration, the link frames serving two party message rate districts shall be cabled direct to the message register connected frame using a cable per lineup. These leads were previously in the local power cable.

4.52 The low tone supply lead shall be wired separately through all the link frames to avoid induced noises in the other cables.

4.53 The arrangement shown on the switchboard power cable drawing provides a maximum capacity at the DPTS for five lines of frames.

Call Distributing "B" Link Frames

4.54 The switchboard power cable contains the multiple and individual leads for each frame in the lineup. The code of cable to use depends on the number of frames in the line and is specified on the switchboard power cable drawing.

4.55 The register and motor stop leads for each side of each frame shall be connected in all cases to the miscellaneous terminal strip and to the DPTS. The incoming switchboard cables shall then be connected as required depending on the grouping or the drive motor arrangement.

4.56 The start leads from the manual incoming selector frames which were in the local power cables with parallel wiring to the SDPTS have been omitted from the switchboard power cables. The start leads shall be wired direct to the link frames in the trunk finder cables and terminated on 203A terminal strips. These 203A terminal strips shall be connected to the miscellaneous frame terminal strips with switchboard cable.

4.57 The arrangement shown on the switchboard power cable drawing provides a maximum capacity at the DPTS for two lines of frames.

Tandem Link Frames

4.58 If orders are received for this type of equipment, a switchboard power cable drawing shall be originated.

Subscribers Sender Frames (Decoder Type)

4.59 The switchboard power cable contains the multiple and individual leads for each frame in the lineup. The code of cable to use depends on the number of frames in the line and is specified on the switchboard power cable drawing.

4.60 The register, motor stop and frame busy leads shall be connected in all cases to the miscellaneous terminal strip and to the DPTS. The incoming switchboard cables shall then be connected as required depending on the grouping or the drive motor arrangement.

4.61 When decoder connector frames are in line with sender frames separate cables shall be provided for each type of frame as if they were in separate lineups.

4.62 In order that the switchboard power cable terminate on only one terminal strip on each sender frame, the installer shall run one set of SS, GR and PB leads for each sender group between the register and miscellaneous terminal strips.

4.63 In offices having ground or both ground and battery on the (CO) relay, the wiring for test jacks E and F shall be included in the switchboard power cable.

4.64 The 24 volt battery leads D, E and F for key pulsing senders have been omitted from the switchboard power cables. These leads shall be cabled direct from the fuse board to the sender frames using one cable per lineup and connected as required.

4.65 The arrangement shown on the switchboard power cable drawing provides a maximum capacity at the DPTS for six lines of frames.

4.66 If orders are received for non-decoder type, time release or tandem senders, switchboard power cable drawings shall be originated.

Decoder Connector Frames

4.67 The switchboard power cable for each line of frames contains the multiple and individual leads for each decoder connector frame whether in line with subscribers sender frames or not. When both types of frames are in line the terminal strip at the DPTS for the decoder connector frames shall be mounted at the top.

4.68 The arrangement shown on the switchboard power cable drawing provides for either local or tandem offices and has a capacity at the DPTS for five lines of frames.

Decoder Frames

4.69 When the decoder frames are in different lines, switchboard power cables for each line of frames containing the multiple and individual leads for each decoder frame shall be run to the DPTS.

4.70 When all the decoder frames are in the same line, the DPTS shall be omitted and the incoming switchboard cables looped over the frames and connected in the same manner as switchboard power cable.

4.71 The arrangement shown on the switchboard power cable drawing provides for either local or tandem offices and has a capacity at the DPTS for three lines of frames.

C.D. "B" Sender Frames

4.72 When all the "B" Sender Frames are in the same line, the DPTS shall be omitted and the switchboard cables looped over the frames and connected in the same manner as switchboard power cable.

4.73 When the "B" sender frames are in more than one line, switchboard power cables for each line of frames containing the multiple and individual leads for each sender frame shall be run to the DPTS.

4.74 The arrangement shown on the switchboard power cable drawing provides for a maximum capacity at the DPTS for four lines of frames.

Aisle Pilots

4.75 Aisle pilot lamps are visible signals to indicate fuse or time alarm trouble on the frames. The aisle pilots are commercial five watt colored lamps. One aisle pilot lamp mounting equipped with lamp sockets and lamps as required, shall be mounted on the end guard or auxiliary aisle pilot support on the main aisle, one for each frame aisle. The color of the lamps shall be stamped on the mounting from bottom up in the following order: red, green, white and yellow.

4.76 The wiring for aisle pilot lamps which heretofore was included in the local power cables has been omitted from the switchboard power cables. These lamps shall be wired or cabled direct to the DPTS or miscellaneous terminal strip as shown on the aisle pilot drawing. When there is only one lamp or when the lamps are on the end guard with the DPTS 20 BBE wire shall be used and in all other cases switchboard cable.

4.77 One common battery lead shall be furnished when required for each eight lamps regardless of functional designation.

4.78 The aisle pilot lamps between the groups of frames shall be cabled to each associated DPTS as required.

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