

**Minimum Technical Requirements
for Jackpot Systems**

of the
Gambling Act (Class 4 Gambling Equipment)
Minimum Standard 2004

February XX 2008

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1. Introduction

1. This standard covers the requirements for Class 4 jackpots only.
2. This standard takes effect from the date advised in the *New Zealand Gazette*
3. Where conformance to a specific requirement(s) of the Gambling Act (Class 4 Gambling Equipment) Minimum Standard 2004 is not detailed in this document, then those minimum standards apply as applicable.
4. Until 1 July 2012, the Progressive Gaming Australasia Pty Ltd SINFO protocol, as approved for use prior to the adoption of this standard, will for any currently approved or new jackpot approved under this standard:
 - (i) meet this minimum standard's protocol download requirements to a gaming machine; and
 - (ii) may utilise pulse collected turnover data from gaming machine hard meters; and/or
 - (iii) may utilise QCOM 'sniffer' technology as appropriate for verification of downloaded jackpot win information, collection of gaming machine turnover data, or other event information as appropriate.
5. Jackpot controllers in operation prior to the adoption of this standard where the jackpot win is not downloaded direct to the gaming machine electronically must:
 - (i) be permanently connected to the EMS site controller for the collection of audit data and remain powered on 24 hours per day; and
 - (ii) not remain in operation and be switched off as at 1 July 2009.

2. Linked Progressive Jackpot System

1. A linked progressive jackpot system is the only type of jackpot system permitted for use in Class 4 gambling.
2. A linked progressive jackpot is an arrangement where two or more gaming machines within a single venue:
 - (i) are linked electronically to a jackpot controller device or system for the purpose of play on a progressive jackpot; and
 - (ii) contribute a fixed equal increment percentage (contribution) of single game play turnover to the jackpot prize pool; and
 - (iii) contribute equally to a player's chance of winning the jackpot prize pool during game play.
3. A linked gaming machine that is not contributing to a jackpot is not eligible to win the jackpot.
4. The outcome of a jackpot prize win or loss must not be determined until a valid bet/contribution has been received by the jackpot controller.

5. The jackpot prize win amount must be downloaded electronically to the winning gaming machine's credit meter
6. The total effective increment percentage of a jackpot prize pool is the total of:
 - (i) the fixed increment percentage of contributions from the turnover of a machine linked to the jackpot; and
 - (ii) where the jackpot start-up value is greater than \$0, a percentage amount required to fund the preset start-up value.
7. A 'jackpot level' is each separate pool in which a jackpot prize can be won as the result of one play of a linked gaming machine.
8. Jackpot systems may have one or more jackpot levels.
9. Each jackpot level must have its own jackpot prize pool parameter values comprising, gaming machine contribution increment rate, preset start-up value and preset maximum win value (ceiling) providing:
 - (i) the preset maximum win value of all levels when added together does not exceed MAXPWIN;
 - (ii) the preset start-up value, excluding any rollover amount added from a previous jackpot pool(s) where applicable, can be a dollar value from \$0 and up to 80% of the maximum preset jackpot prize level;
 - (iii) the total effective increment rate of all levels when added together with the nominal RTP of a linked gaming machine game does not cause the combined RTP to exceed the gaming machine game MAXRTP; and
 - (iv) the total effective increment rate of the jackpot system of all levels when added together with the nominal RTP of a linked gaming machine game does not form part of the MINRTP of that game.

3. Progressive Jackpot Trigger Operation

1. A jackpot prize can only be triggered:
 - (i) for a Symbol Triggered Jackpot, by a random occurrence of a specified game play outcome of a single game play on a gaming machine (e.g. five of a Kind); and/or
 - (ii) for a Mystery Triggered jackpot, by a random mystery trigger event, for example, a gaming machine turnover contribution that when added to the current jackpot pool causes its value to equal or exceed a hidden randomly selected mystery trigger value that lies between the preset start-up amount and the preset maximum pool value
2. The randomly selected mystery trigger value must be chosen and stored using a method where the chosen value cannot be accessed and used other than for the purpose of Jackpot trigger determination

3. The chance of winning a jackpot prize by a single game play on any linked gaming machine must:
 - (i) be in proportion to its contribution to the jackpot;
 - (ii) have an equal chance of winning the jackpot when equal amounts are contributed at any one point in time;
 - (iii) not have proportionality factors that vary between gaming machines and/or game(s) played; and
 - (iv) not have proportionality factors achieved by modification of the method of selection or determination of the game result (e.g. fiddling with a deck of cards).
4. A jackpot prize must not be triggered as a result of a component of skill.

4. **Player Fairness**

1. It is acceptable for a player's chance of winning to be passed on to the next play of the same gaming machine providing that all players have an equal chance of benefiting from this behaviour (e.g. due minimum gaming machine turnover contributions assimilation to the jackpot pool).
2. A jackpot must not be offered at any time when it cannot be won. For example, if there is a hardware or communication failure of the jackpot system, it must be clear that the jackpot is shutdown and unavailable.
3. The following applies to symbol triggered progressive jackpots:
 - (i) If jackpot contributions exceed the jackpot ceiling value on any current jackpot, then all subsequent contributions received once that ceiling is reached are to be credited to an overflow meter.
 - (ii) The overflow meter amount must be automatically transferred to the next jackpot pool or pools directly the current jackpot is won providing the amount transferred does not cause the next jackpot pool to exceed the set ceiling amount for that pool.
 - (iii) The choice of start-up value combined with play at any wager and number of lines must not cause the overflow pool to exceed a value which would not be reasonably expected, as shown by theoretical calculation and/or emulation, to be paid out during the lifetime of a jackpot.
 - (iv) Jackpot Systems must display what happens to overflow contributions. For example, jackpot artwork or notices may contain the statement: "Once the jackpot pool maximum level is reached, additional contributions are carried over to the next jackpot pool(s)".

5. Jackpot Contributions

1. All contributions to a jackpot must be returned to the players as wins except upon jackpot decommissioning or a failure of the jackpot system to operate correctly.
2. All contributions received once a jackpot prize pool has triggered must be applied to the next jackpot. No contributions are to be lost while the jackpot system processes a jackpot win.
3. A replacement jackpot consequent upon a jackpot decommissioning and/or reset following a jackpot failure is to start operation, where possible, at a pool value (including overflow pool value) equal to the decommissioned or faulty jackpot pool values.
4. Where a new commissioned jackpot has different start-up and maximum win parameters such that it is not possible to transfer a pool(s) value exactly, then the pool(s) is then distributed over the new jackpot pool(s) such that:
 - (i) the opening balance of the first jackpot is no more than 80% of the maximum prize payable;
 - (ii) any pool value not transferred under (i) is distributed fairly over other associated jackpot level pools; and
 - (iii) where a jackpot has an overflow pool, any overflow pool from the decommissioned jackpot is transferred, including any balance of pools not able to be distributed to other jackpot level pools.

6. Walk-aways

1. A 'Walk-away' occurs when a jackpot prize is awarded to a gaming machine with no player in attendance or a player mistakenly leaves the gaming machine not realising they have won a jackpot.
2. The 'Walk-away Period' is defined as the period of time starting the instant a play is completed that results in the player credit meter going to zero, until the time the gaming machine is awarded and displays to the player any jackpot prize which may occur as a result of the last play contribution.
3. Where Walk-away is possible, then the jackpot system (including the linked gaming machines) design and performance must:
 - (i) minimise the walk-away period; and
 - (ii) not have a walk-away period that exceeds 10 seconds inclusive of allowing 6 seconds to elapse after the gaming machine credit meter has been detected to have just gone to zero.
4. If a power failure or similar event occurs before the jackpot system would have awarded a jackpot to a winning gaming machine, then the jackpot

system must award the jackpot to the same gaming machine immediately after coming back on-line.

7. Protocol Requirements

1. There must be a reliable 2-way communications protocol between all components forming part of a jackpot system.
2. Communication of data and information (e.g. base jackpot increment rate, gaming machine contributions and win notification) between a linked gaming machine and the Jackpot Controller is via a reliable 2-way communication protocol.
3. The protocols used must have some form of error detection and error recovery capability. The minimum error detection algorithm quality is a 16 bit CRC.
4. Jackpot controller communication ports must be galvanically isolated from each other to prevent any interference that could arise due to connection of subsidiary equipment on another port.
5. Data transferred to the gaming machine must, in addition to that required for the operation of a linked jackpot system, include the data required to ensure compliance with the minimum equipment standards for game and player information displays on gaming machines.
6. To prevent the loss of contributions due to device failure or transmission errors, discrete contribution packets are not allowed to be transferred between sub-systems at any stage within a jackpot system. All contributions must be attributed correctly.
7. Contributions to the jackpot pool must take no longer than 5 seconds to be incorporated into the jackpot pool amount.
8. The jackpot system must place unreasonable contribution limit tests on all contributions at every stage of transfer between sub-systems, and:
 - (i) the unreasonable contribution limit must be as small as possible without inadvertently creating exceptions;
 - (ii) the unreasonable contribution limit must be set proportional to the number of linked gaming machines and the time between successive contributions as applicable;
 - (iii) any linked gaming machine providing the unreasonable contribution must be removed from contributing to the jackpot and a message to that effect displayed for that gaming machine; and
 - (iv) any unreasonable contribution must not contribute to the jackpot current amount or give any chance of winning.

- 9 Where adjustments to the unreasonable contribution limit are possible (i.e. the limit is not hard coded), the jackpot controller must:
 - (i) provide adequate protection to ensure the limits can only be changed by authorised personnel; and
 - (ii) record the change, with full details, as an event.
10. The following are 'self-audit check' requirements for jackpot systems:
 - (i) The jackpot system must perform a self-audit check on each jackpot level whenever an event of significance occurs.
 - (ii) Events of significance include, but are not limited to, a jackpot reset, logic door close, memory reset, parameter change and gaming machine configuration change
 - (iii) Self-audit checks must also be performed prior to the updating of critical memory and upon a jackpot hit.
 - (iv) As minimum, the self-audit check should reconcile jackpot meters using the following formulae:

$$\text{Current Jackpot amount} + \text{Overflow} = (\text{Total turnover to jackpot} * \text{Percentage Increment}) + (\text{Hits} * \text{Reset Amount}) + \text{Initial Startup} - \text{Total Jackpot Wins}.$$
11. Failure of the self-audit check must cause the jackpot controller to enter an unrecoverable memory error.
12. For auditing purposes, any unreasonable contributions must result in an event with full details that contain, as a minimum:
 - (i) A date and time stamp;
 - (ii) Gaming Machine serial number;
 - (iii) Amount of the invalid contribution; and
 - (iv) New final total contribution meter amount.
13. Meters must be auditable and conform to Australian/New Zealand Gaming Machine National Standard meter width requirements.
14. It may be possible to trigger more than one jackpot level simultaneously on a multi-level jackpot system on any given play to the same player. Each win on a level may be combined into one prize, however, all audit information must clearly show the win and contribution for each level.
- 15 The jackpot controller must conform to Australian/New Zealand Gaming Machine National Standard requirements for cabinet and logic area security as applicable.
16. The jackpot controller must protect the parameter set configuration values and variables and recalculate the appropriate trigger variables (i.e. pick a new randomly selected mystery trigger value in the range of the current prize amount and the ceiling amount) if it detects any security breach. This must be done after every detected jackpot controller cabinet access
17. All jackpot and win events must be date and time-stamped.

18. Date and time information must be synchronised, as a minimum, with one of the linked gaming machines.
19. Real Time Clock use and setting must be in conformance with the requirements of the Australian/New Zealand Gaming Machine National Standard.

8. Audible Alarm

1. When a jackpot win occurs, a prominent audible alarm alarm/fanfare must sound.
2. The alarm must have a volume control easily identifiable and able to be adjusted separately from other sounds.

9. Random Number Generators

1. Software based pseudo RNGs must be used to trigger jackpots. The RNG algorithm must be in accordance with the RNG requirements of the Australian/New Zealand Gaming Machine National Standard.

10 Jackpot System Equipment – Hardware and software

1. Component(s) not contained within a linked gaming machine cabinet must be stored within a lockable, secure jackpot cabinet such that they are not accessible by unauthorised site staff or players.
2. Jackpot cabinets may be stored within a cashbox cabinet area provided there is a separately keyed locked barrier between the cashbox and jackpot controller.
3. All jackpot cabinets must be sealed.
4. Jackpot cabinets must be accessible to allow the inspection of seals.
5. The power supply to the controller and connected displays must not be able to be accessed by players.
6. All exposed cables must be enclosed in plastic conduits to prevent tampering.
7. A jackpot system must have a unique name. This does not prevent the jackpot being marketed under other names.

8. The lockable secure cabinet and/or each separate component in the jackpot system must have a secure label affixed showing the following information:
 - (i.) Link Jackpot System Name
 - (ii.) Manufacturer Manufacturers Name
 - (iii.) Unit Function #####
 - (iv.) Approval Number #####
 - (v.) Serial Number Unique serial number

9. Components such as generic displays and cabling need not be labeled.

10. Linked jackpot equipment must not be capable of affecting the outcome of a game on a gaming machine to which it is linked.

11. Jackpot systems must not have the capability to download software or parameter values remotely (off-venue).

12. All software including any approved jackpot parameter set must be securely stored in EPROM or other PSD.

13. The jackpot controller must provide a facility to authenticate the validity of the jackpot controller software including the configuration parameters. The following methods are recommended:
 - (i) Comparison of installed software against the approved software such as an EPROM verification.
 - (ii) Provision of a facility to perform a signature verification.

14. Signature algorithm and signature display requirements must comply with the Australian/New Zealand Gaming Machine National Standard as applicable.

15. Prior to the first jackpot and upon a RAM clear, a jackpot system must allow configuration of the start-up and overflow pool values in accordance with the transfer of the current pool value from a decommissioned or faulty jackpot.

16. Manuals must be provided as per applicable Australian/New Zealand Gaming Machine National Standard requirements.

11 Jackpot Shutdown

1. It must not be possible for the jackpot to be won while in the shutdown state. A jackpot shutdown also requires:
 - (i) all contributing gaming machines to have their jackpot feature disabled; and
 - (ii) all displays of jackpot information provide clear indication that the jackpot is not operating (e.g. by saying "Jackpot Closed" or "Jackpot Unavailable").

2. Activation of the jackpot from the shutdown state must return the jackpot with the identical parameters as that before the shutdown including the jackpot current pool values and trigger values for mystery jackpots.
3. Contributions received (except unreasonable contributions), for example, during a shutdown period, gaming machine disconnection, missed packets etc, are not to be added to the jackpot pool or pools. These contributions must be added to a gaming machine non-contribution meter.

12 Jackpot Update and Display

1. A meter displaying jackpot details (e.g. current value and indication of a jackpot win) should be readily visible to all players playing a gaming machine connected to the jackpot equipment without the player having to move significantly from the normal position of playing a gaming machine (e.g. the player should not have to turn 180 degrees to their rear to view a display).
2. Use of an overlay display on a linked gaming machine is permitted providing it does not obscure game play and/or artwork information and/or gaming machine monitoring information.
3. The display of the current amount of jackpot(s) must be updated accurately and as often as possible so as to reasonably reflect the current size of the prize pool. When a jackpot prize is won, the display is to 'catch up' to the precise value of the jackpot won.
4. If a jackpot display controller loses communication, then to avoid displaying aged or possibly incorrect current amounts, the display must timeout after 30 seconds.
5. If the jackpot controller loses communication to the primary jackpot display, and all other methods of displaying the current jackpot amount to participants of the jackpot have stopped operating, the jackpot must be shutdown.
6. Jackpot displays must show the latest win of the jackpot including amount won and the winning gaming machine number in an unambiguous format until the jackpot is reset.
7. Artwork must conform to requirements of NS as applicable
8. If gaming machines on a jackpot system remain in play during a jackpot win animation/jackpot notification, then the jackpot display system must be able to display two or more win animations/jackpot notifications in close succession without causing confusion.

9. On power up, a jackpot display system must not display current amounts until the current amounts have been updated by the jackpot controller.
10. The current amounts of the jackpot prize pool must be displayed to all players of the jackpot system during jackpot play except:
 - (i) during idle animations which can be displayed for no more than 45 seconds in every 5 minute period;
 - (ii) during win animations which can be displayed for no more than 30 seconds per win;¹ and
 - (iii) after a win animation, when it is acceptable to cycle short win messages with current amounts, until the win is paid.

13 Jackpot Win Notification and Reset

1. It must be automatically clear to a player upon winning a jackpot that they have won and what prize they are eligible for. As a minimum the following indications are to be present when a jackpot prize is won:
 - (i) An audible alarm;
 - (ii) A visual indication of being eligible for the win on the winning gaming machine; and
 - (iii) A visual indication of the winning prize and winning gaming machine ID on the main jackpot display, unless the prize information on the display is available on all the participating gaming machines.
2. Any win message downloaded to the gaming machine must in turn be verified with the controlling device as having been received and that the amount received is correct
3. As a minimum, every stage through which the win notification is transferred must be protected using error detection, error recovery and state recovery.
4. The time taken for the jackpot to reset after a jackpot win event must, as a minimum, not be less than the longest time taken to:
 - (i) announce the win on the display; and
 - (ii) notify the wining gaming machine and verify amount received.
5. Play may be disabled on the winning linked gaming machine to sound a win fanfare and display a win message on that gaming machine

14 Master and Slave Jackpot Controllers

1. Communication between masters and slaves must meet all of the communication requirements for linked gaming machines and other components of a jackpot system.

¹ This is to avoid a situation where there is a backlog of win animations.

2. All Slave Controller date/times must be synchronised with the designated Master Controller.
3. If supporting a Mystery Jackpot, the priority of receipt of contributions from all gaming machines, whether from Master or Slave controllers, should be virtually identical.

15 Jackpot Parameters

1. A manually settable flag must be provided such that if the flag is set to on when a jackpot or level is to be modified or closed, the jackpot or level is shutdown after the current jackpot is triggered.
2. Each unique set of jackpot parameters must be separately approved.
3. A set of jackpot parameters must include the following detail for approval as a minimum:
 - (i) Jackpot Minimum(s) - the Base or Reset amount(s) and how it is funded when a non-zero start-up value is specified.
 - (ii) Jackpot Maximum(s) and what happens to any excess contributions.
 - (iii) Jackpot Contribution Rate(s) as a percentage of the amount bet.
 - (iv) Jackpot Diversion Pool percentages and limit(s), if any.
 - (v) How the jackpot is reconciled against linked gaming machine turnover contributions.
4. Changes to a parameter set comprising start-up value, maximum win value, and increment rate for a jackpot or level, is only permitted following a full RAM clear.
5. Any changes to jackpot parameters must be via secure access and must only be possible by the jackpot manufacturer and/or their authorised agents.
6. To ensure the correct gaming machines are enrolled on the jackpot system (thereby preventing a jackpot going to the wrong gaming machine or jackpot display system), the jackpot system must have a set-up mode available at any time which allows each linked gaming machine or jackpot display system's serial/ID number to be displayed or printed and cross checked with its corresponding gaming machine venue ID, jackpot ID, and fibre loop ID numbers.
7. Jackpot amounts are to be stored in absolute rather than in terms of the number of plays of the jackpot.
8. There must not be any means to manually adjust:
 - (i) contribution values;
 - (ii) reset values, other than following a RAM clear; and
 - (iii) maximum values

16 Simultaneous Jackpot Winners

1. The jackpot design must be such that the occurrence of two or more players winning the same jackpot pool prize simultaneously is not possible or statistically of a very low occurrence. A simultaneous win is a win triggered by more than one gaming machine during the period before the jackpot display has indicated a win to the first gaming machine and/or reset jackpot level amounts to the new pool values.
2. The jackpot controller must correctly allocate the win to one gaming machine only. It is sufficient that the winning gaming machine is identified as the first gaming machine processed by the jackpot controller. The second and other machines are to be awarded the jackpot reset value.²
3. An 'event' should be generated for a simultaneous win where a win is registered by another gaming machine before the jackpot system has reset the jackpot level amounts to the new jackpot pool value.

17 Jackpot Audit and Event Data

1. For the last 250 jackpots won, the jackpot controller must store and maintain, with a date and time stamp, the following software meters as a minimum for each jackpot level:
 - (i) History of individual jackpots won including the serial number of the winning linked gaming machines.
 - (ii) Total amount played for jackpots.
 - (iii) Total amount of jackpots won.
 - (iv) Total jackpot contributions made (including any diverted amounts).
 - (v) Current amount of jackpot.
 - (vi) Actual start-up jackpot value if different to parameter set start-up value
 - (vii) Number of times the logic area(s) have been accessed.
 - (viii) Current value of jackpot contributions diverted.
2. All jackpot systems must be fully auditable. The jackpot system must maintain complete audit trails, event logs and accounting meters.
3. An 'event' is any change in activity or status, if not specifically included in this document, such as a fault, security, communication and jackpot operation, the detail of which is necessary to aid in any subsequent audit and/or investigation as to the correct operation and integrity of the jackpot including contributions received and prizes paid.

² Where a gaming machine is awarded the jackpot reset value under a simultaneous win event condition, the value awarded is to be regarded for audit and reconciliation purposes as a jackpot win

4. All jackpot system current amounts must be fully reconcilable from meters (e.g. contributions, hits and wins per linked gaming machines etc) stored in the jackpot system.
5. All parameters, audit trails, variables, and events relating to at least the last 250 jackpots won must be stored in the jackpot controller.
6. For auditing and monitoring purposes, the jackpot system must provide:
 - (i) text display and button inputs sufficient to display auditing information upon request; or
 - (ii) an isolated serial communication port interface for connection to a venue PC with free interfacing software able to be utilised on a venue PC specified to meet the EMA standard software requirements; and
 - (iii) at least one additional isolated serial communication port to allow similar functionality.
7. The protocol design specification used to request and retrieve audit data must be readily available to any person upon request.
8. In audit mode or when audit information is downloaded, it must not be possible to alter any meters or status conditions (other than audit status) or other sensitive parameters.
9. It must be possible to reconcile contributions from each linked gaming machine with total contributions received by the jackpot controller via the audit interfaces.
10. If the jackpot controller and jackpot trigger device are not the same component, then it must be possible to reconcile total contributions received between the two components via an audit interface on each of the devices.
11. As a minimum, the following information is to be retrievable from the jackpot system audit interfaces upon request:
 - (i) The current date and time.
 - (ii) The last 250 jackpot wins showing jackpot level and gaming machine serial number
 - (iii) The meter value of all individual linked gaming machine contributions received.
 - (iv) The meter value of all individual linked gaming machine contributions not added to the jackpot pool.
 - (v) Current display meter value per jackpot level.
 - (vi) Pool overflow meter value per jackpot level.
 - (vii) All jackpot parameters such as:
 - Start-up (in \$)
 - Ceiling (in \$)
 - Percentage Increment (%)
 - (viii) Date and time of the last parameter change.

- (ix) Any available optional event data for jackpot and linked gaming machine status.

18 Critical Memory Error Detection

1. All jackpot system contributions received, all variables pertaining to the current jackpot pool or pools, hidden values, jackpot trigger, paid wins, and all jackpot parameter changes are to be regarded as critical data and must conform to the requirements of section 3 of the Australian/New Zealand Gaming Machine National Standard Version 9 01 as applicable.
2. The jackpot trigger program must be validated against possible corruption upon every power up, logic door closures, parameter changes and periodically (at a minimum once a day) by comparing it with the previously saved or hard-coded program digital signature.